STOCK ASSESSMENT AND FISHERY EVALUATION REPORT FOR THE GROUNDFISH FISHERIES OF THE GULF OF ALASKA AND BERING SEA/ALEUTIAN ISLANDS AREA:

ECONOMIC STATUS OF THE GROUNDFISH FISHERIES OFF ALASKA, 2020

by

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January 14, 2022

The authors of the Groundfish SAFE Economic Status Report invite users to provide feedback regarding the quality and usefulness of the Report and recommendations for improvement. AFSC's Economic and Social Sciences Research Program staff continually strive to improve the SAFE Economic Status Reports for Alaska Groundfish and BSAI Crab to incorporate additional analytical content and synthesis, improve online accessibility of public data in electronic formats, and otherwise improve the utility of the reports to users. We welcome any and all comments and suggestions for improvements to the SAFE Economic Status Reports. Please contact Ben Fissel at Ben.Fissel@noaa.gov with any comments or suggestions to improve the Economic SAFEs.

This report will be available at:
https://www.fisheries.noaa.gov/alaska/ecosystems/economic-status-reports-gulf-alaska-and-bering-sea-aleutian-islands

Time series and plots of data presented in this report are available at:
https://psesv.psmfc.org/PSESV2.html

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1. EXECUTIVE SUMMARY

The Economic SAFE report contains detailed information about economic aspects of the groundfish fisheries, including figures and tables, economic performance indices, 2021 product price and ex-vessel price projections, year-to-date information on volume and value, an Amendment 80 fishery economic data report (EDR) summary, a Gulf Trawl fishery EDR summary, and market profiles for the most commercially valuable species. Data tables are organized into four sections: (1) All Alaska, (2) BSAI, (3) GOA, and (4) Pacific halibut. The figures and tables in the report provide estimates of total groundfish catch, groundfish discards and discard rates, prohibited species catch (PSC) and PSC rates, the ex-vessel value of the groundfish catch, the ex-vessel value of the catch in other Alaska fisheries, the gross product value of the resulting groundfish seafood products, the number and sizes of vessels that participated in the groundfish fisheries off Alaska, vessel activity, and employment on at-sea processors. Generally, the data presented in this report cover 2015-2020, but limited catch and ex-vessel value data are reported for earlier years to illustrate the rapid development of the domestic groundfish fishery in the 1980s, and to provide a more complete historical perspective on catch. The data behind the tables from this and past Economic SAFE reports will be available online at: https://reports.psmfc.org/akfin and https://psesv.psmfc.org/PSESV-2/.

The commercial FMP groundfish fisheries off Alaska had a total catch of 2.1 million metric tons (mt) in 2020 (including catch in federal and state waters) (Fig. 3.2 and Table 1), a decrease of 4.5% from 2019. Groundfish accounted for 89% of Alaska's 2020 total catch (Table 4). Total catches of Alaska's FMP groundfish fisheries increased in 2020 for sablefish, Atka mackerel, and the flatfish species complex, and decreased for pollock, Pacific cod, and the rockfish species complex (Table 1). The contributions of the major groundfish species or species groups to the total catch are depicted in Fig. 3.2.

The aggregate ex-vessel value of the FMP groundfish fisheries off Alaska was $811 million, which was 54% of the ex-vessel value of all commercial fisheries off Alaska in 2020 (Table 4).[1] After adjustment for inflation, the real ex-vessel value of FMP groundfish decreased $139 million in 2020 due, in part, to an aggregate real ex-vessel price decrease of 10% to $0.18 per pound (Table 4). Nominal pollock ex-vessel prices decreased 10% to $0.13 per pound in the Bering Sea and Aleutian Islands (BSAI), and 14% to $0.12 per pound in the Gulf of Alaska (GOA) (Tables 12 and 28). Pacific cod nominal ex-vessel prices increased 18% to $0.51 per pound in the BSAI, and decreased 20% to $0.39 per pound in the GOA. Among the other species that are the focus of the shoreside ex-vessel fisheries: The GOA flatfish ex-vessel price fell 10%, GOA rockfish prices fell 34%, and GOA sablefish prices fell 35% (in nominal terms). For Alaska FMP groundfish in aggregate, the change in price was larger than the change in catch (Figures 5.6 and 5.10). For other fisheries in Alaska, halibut, salmon, and shellfish ex-vessel revenues decreased and herring revenue increased (Table 4).

The gross value of the 2020 groundfish catch after primary processing (first-wholesale) was $2.1 billion (Table 5), a decrease of 17% in real terms from 2019. This change was the combined effect of a 3% decrease in the real aggregate 2020 first-wholesale price to $1.1 per pound while aggregate

[1]The data required to estimate net benefits to either the participants in fisheries or the Nation, such as cost or quota value (where applicable) data, are not available. Unless otherwise noted 'value' should be interpreted as gross revenue.

production volumes decreased 10% to 835.4 thousand mt (Table 5). In the BSAI, aggregate first-wholesale value decreased 15% and value was decreasing for nearly all species including pollock, Pacific cod, sablefish, rockfish, and most flatfish except for Kamchatka flounder (Table 16). The average first-wholesale price for all products was decreasing for all species (Table 17). In the GOA aggregate first-wholesale value decreased (24%) with decreases in value for all species except for shallow-water flatfish (Table 32). Prices were decerasing for most species with the exception of marginal price increases for pollock and Pacific cod which were more than offset by substatial deceases in production volume (Tables 31 and 33).

Starting in 2020, COVID-19 has had an unprecedented impact on fisheries in Alaska. Undoubtedly, one of the significant economic impacts experienced by the industry were the mitigation costs experienced by the fishing and processing industries to continue to supply national and global markets for seafood. This report does not provide a comprehensive accounting of these costs, as they are not a part of our existing EDR data collections. The core economic data tables in this report focus on catch, revenues, and effort and changes occurring during the most recent year.

While catch was down substantially, the reductions were generally the result of anticipated reductions in the TAC, and for most species and regions, catch levels relative to TAC were within a typical range. One notable exception is BSAI pollock, however there have been media reports that indicate the unharvested pollock was largely related to a dispersed stock and difficult fishing conditions, coupled with small fish size that generate lower returns. At the first-wholesale market level, production for most species was stable given changes in catch. Pollock was an exception, where there was an increase in fishmeal and minced fish production, related, at least in part, to small fish size. Correspondingly, pollock fillet production was down. In contrast to changes in landings, however, there was a notable decrease in prices for many of the products with significant exports to China for reprocessing and Japan, which ultimately go to food service sectors. This includes H&G pollock and cod, flatfish, rockfish, Atka mackerel, and sablefish. The downward pressure on these prices is likely the result of COVID-19 related logistical difficulties in international shipping and inspections, as well as foodservice closures, and compounded the downward pressure on prices from tariffs. This downward pressure on fish product prices in the first-wholesale market coupled with cost pressure from COVID-19 mitigation efforts likely had upstream impacts on ex-vessel prices that decreased for these species.

The first-wholesale value of Alaska's FMP groundfish fisheries accounted for 57% of Alaska's total first-wholesale value from commercial fisheries (Table 5). First-wholesale value of Alaska's fisheries products other than FMP groundfish fisheries totaled $1.6 billion, most of which ($1.2 billion) came from Pacific salmon. Pacific salmon value decreased 31%, in part, because of the typical cycle in salmon returns and production, though year-over-year prices were up. Pacific halibut fisheries, which are concentrated in the Gulf of Alaska, saw a decrease of 24% in value in 2020 to $84 million.

The groundfish fisheries off Alaska are an important segment of the U.S. fishing industry. In 2019, it accounted for 50% of the weight of total U.S. domestic landings and 17% of the ex-vessel value of total U.S. domestic landings (Fisheries of the United States, 2019). Alaska fisheries as a whole (including salmon, halibut, herring, and shellfish) accounted for 60% of the weight of total U.S. domestic landings and 37% of the ex-vessel value of total U.S. domestic landings.

NOAA Fisheries collects only limited data on employment in the fisheries off Alaska. The most direct measure available is the number of 'crew weeks' on at-sea processing vessels and catcher vessels of FMP groundfish. These data indicate that in 2020 crew weeks for both sectors totaled

143,477 with the majority of them (120,326) occurring in the BSAI groundfish fishery (Tables 24, 40, 25, and 41). In the BSAI, the months with the highest employment correspond with peak of the pollock seasons in February-March and July-September. In the Gulf of Alaska, crew weeks peak February-May with the catcher vessel hook and line fisheries targeting sablefish and Pacific cod. Relative to 2019, annual crew weeks in Alaska decreased in 2020 by 4.5%.

Alaska's FMP groundfish fisheries have six major species (complexes); Alaska pollock, Pacific cod, sablefish, Atka mackerel, the flatfish complex, and the rockfish complex, plus Pacific halibut (which is not an FMP groundfish).[2] The fisheries for these species (complexes) are distributed across two regions: the Bering Sea & Aleutian Islands and the Gulf of Alaska. Each region can be broadly divided into two sectors: catcher vessels which deliver their harvest to shoreside processors, and the at-sea processing sector, whose processed product sells directly to the first-wholesale market. Catcher vessels account for a higher proportion of the ex-vessel value of groundfish landings than total catch because a higher share of their revenues come from high-priced species such as sablefish. The ex-vessel value of the at-sea sector is imputed from observed first-wholesale value to exclude the value added by at-sea processing. The following gives a summary of the economic status of the six FMP groundfish species' (complexes) fisheries in 2020.

Alaska pollock

Alaska pollock, the dominant species in terms of catch, accounted for 73% of FMP groundfish retained harvest. The majority of pollock is harvested in the BSAI (approximately 90%) where catch is divided between the shoreside and at-sea sectors. It also comprises a large share of the GOA shoreside revenues. Pollock is targeted exclusively with trawl gear. Retained catch of pollock for all Alaska decreased 3.7% to 1.5 million mt in 2020 (Table 2). This was the combined effect of catch decreases in both the BSAI and GOA. In the BSAI catch deceased 3.1% despite an increase in the TAC as poor fishing conditions resulted in only 95% of the TAC being harvested. In the GOA catch decreased 10% with a reduction in the TAC. The ex-vessel value of the BSAI pollock fishery decreased 13% to $390 million with the decrease in retained catch as ex-vessel prices fell 10% to $0.13 per pound (Tables 12 and 13). The ex-vessel value of the GOA pollock fishery decreased 23% to $28 million with the decrease in retained catch while ex-vessel prices fell 14% to $0.12 per pound (Tables 28 and 29).

Pollock is an abundant whitefish with extensive global markets and is harvested at or very near the Total Allowable Catch (TAC). Hence changes in pollock production largely reflect changes in the annual TAC, which is related to the sustainability of the resource, for which the AFSC carries out extensive annual stock assessments. Wholesale pollock prices can play a significant role in determining annual revenue and influence the mix of products produced for the wholesale market. Pollock has three primary product forms: fillets, surimi, and roe, whose combined share of pollock total first-wholesale value was 80.8% in the BSAI and 57.6% in the GOA (GOA processors produce a greater share of H&G products). Pollock first-wholesale value in the BSAI decreased 13.3% to $1.34 billion as the average first-wholesale price rose 1.4% to $1.4 at-sea and fell 6.3% to $1.05 shoreside (Tables 16 and 17). In the GOA first-wholesale value decreased 17.9% to $70.5 million with the decrease in catch and production (Table 32). First-wholesale prices rose 5.3% to $0.8.

[2] An FMP fishery is one where management, including total catch, is carried out under a federal Fishery Management Plan. Pacific halibut is not an FMP groundfish fishery and its total catch is set by the International Pacific Halibut Commission, though allocation of the catch among users is managed by the NPFMC and NMFS.

The decreases in 2020 revenues were largely driven by the decrease in catch and corresponding production as the average first-wholesale price was more stable. The primary revenue impact of COVID-19 pandemic was increased demand for retail products which put upward pressure on retail focused products like single-frozen fillets, minced, and surimi. However, smaller average size of fish in catch limited the quantity and grades of product forms which generally put downward pressure on prices. Price increases in fishmeal and minced fish offset decreases in the H&G, roe and surimi prices while fillet prices were more stable. Surimi is primarily a retail product, and demand in 2020 was strong with the increased focus on retail resulting from COVID-19 pandemic. Furthermore, the supply of tropical species used to produce surimi has been tight. Media reports indicate that for single-frozen fillets increased retail demand stemming from COVID-19 supported strong prices, however, low double-frozen fillets prices (which have a strong foodservice component) put downward pressure on single-frozen prices. Minced prices increased 11% and minced production rose 38% as demand for retail products increased as a result of COVID-19. Fishmeal prices rose 43% with a reduced Peruvian fishmeal supply because of a temporary fishery closure early in the year. Retail and foodservice are both significant components of the market for pollock products. As such, the impact of COVID-19 on prices appears muted with only marginal changes in first-wholesale and export prices. Cost pressure from COVID-19 mitigation efforts likely had upstream impacts on ex-vessel prices, which decreased significantly.

Pacific cod

The fisheries for Pacific cod are the second largest by volume in Alaska with a retained catch of 171 thousand mt in 2020, a decrease of 19% from 2019 (Table 2). Pacific cod is harvested in the BSAI and the GOA regions by the shoreside and at-sea sectors, and by various fleets using different gear types. The largest fishery is located the BSAI at-sea sector, which is primarily prosecuted by the longline catcher/processor fleet, although fleets such as Amendment 80 also harvest Pacific cod in the BSAI at-sea sector. Fisheries in the shoreside sector utilize trawl, hook-and-line, and pot gear types. In the BSAI retained catch of Pacific cod across all sectors decreased 15% to 166 thousand mt, with catch levels below average relative to the last decade. The retained catch of the inshore sectors decreased 12% to 68,300 t. The reduction in catch resulted in an decrease in ex-vessel value of 0.35% to $188 million and ex-vessel prices rose 19% to $0.52 per pound (Tables 12 and 13).

In the GOA Pacific cod is predominantly harvested by the shoreside sector where catch is carried out using hook-and-line, jig, trawl, and pot gear. Like pollock, cod is typically harvested at or very near the TAC. Between 2017 and 2019 there was a prominent 70% decrease in retained catch in the GOA with conservation reductions in the TAC. The GOA Pacific cod fishery for 2020 was closed to directed fishing in federal waters as the level of the stock remains low following adverse environmental conditions and poor recruitment. From 2009-2016 Pacific cod typically accounted for just under 30% of the GOA's FMP groundfish harvest and over 20% of the total Pacific cod catch in Alaska. By 2020 these shares fell to 3% and 4%, respectively, with the closure. There was however a small state fishery. Retained catch in the GOA in 2020 was 4.8 thousand mt. Ex-vessel value was $4.4 million which was low relative to levels over the previous decade as a result of the reduction in catch and ex-vessel prices fell 20% to $0.39 per pound (Tables 28 and 29).

Pacific cod is processed into a number of different product forms for wholesale markets, the two most important of which are fillets and H&G. The at-sea sector produces mostly H&G products and the shoreside sector produces fillets, H&G, and other product forms. Commensurate with the decrease in catch, aggregate production fell. Decreasing prices for fillet and H&G products resulted in the average at-sea first-wholesale price falling 9% to $1.41 and the average shoreside price falling 1% to

$1.89 (Table 17). Pacific cod first-wholesale value in the BSAI decreased 23.3% to $265.7 million with value decreasing 26.9% in the at-sea and decreasing 16% in the shoreside sectors (Table 16).

The two primary product forms produced from cod in the GOA are fillets and head and gut (H&G), which comprised 68% and 23% of the value in 2020. Pacific cod first-wholesale value in the GOA was low at $15 million (Table 32). The average price of GOA Pacific cod products in 2020 increased 7.5% to $2.3 per pound as fillet prices were stable and H&G prices increased 9% (Table 33).

In 2020 COVID-19 closures resulted in increased demand for retail products and frozen products, and decreased foodservice and fresh products. Retail and foodservice are both significant components of the market for cod products. As such, the impact of COVID-19 on prices appears muted, with only marginal changes in first-wholesale and export prices. Cost pressure from COVID-19 mitigation efforts likely had impacts on net revenues as well as upstream impacts on ex-vessel prices, which decreased significantly.

Sablefish

Sablefish is primarily harvested by the GOA shoreside sector and is also caught by the BSAI shoreside and GOA at-sea sectors. In 2020 the GOA constitued 81% of the retained catch of sablefish in Alaska which is a decrease from recent recent year as catch has increased in the BSAI (Table 2). Most sablefish is caught using the hook-and-line gear type. As a valuable premium high-priced whitefish, sablefish is an important source of revenues for GOA catcher vessels. Beginning in the mid-2000s, decreasing biomass ratcheted down the TAC, however in 2016 this trend started to reverse. Since 2017 the TACs increased as a result of a strong 2014 year class, though younger, smaller, less valuable fish are comprising a larger share of the catch. In 2020 sablefish retained catch increased 7.8% to 14.1 thousand mt (Table 2). The retention rate (ratio of retained catch to total catch), typically above 90% prior to 2017, has dropped to 71% in 2020. This is in part related to the higher catch of juvenile sablefish by Bering Sea trawlers targeting other species. However, retention rates in the GOA have also decreased from 90-95% prior to 2017, to approximately 80% in 2018-2020. In 2020, there was a substantial increase in GOA pot gear catches. Between 2019 and 2020 the hook and line share of catch went from 72% to about 50%, while pot gear went from 18% to about 48%. The introduction of slinky pots may have been a contributing factor as they offer hook and line fishermen access to pot gear despite limited deck space. Unfortunately, the gear codes don't distinguish between slinky pots vs. other pot gear. The sablefish ABC rose by approximately 7000 t in both 2020 and 2021,even though TAC was increased more modestly. Sablefish catch levels relative to TAC in the GOA, typically between 85-90%, dropped to approximately 75% in 2020 suggesting that the downward pressure on price from COVID-19 may have been among the factors influencing harvest effort.

In the GOA retained catch increased 4.3% to 11 thousand mt. Sablefish ex-vessel value in the GOA decreased 33% to $46 million with a decrease in the ex-vessel price which fell 35% to $1.8 per pound (Tables 28 and 29). Ex-vessel value in the BSAI increased as the increase in retained catch offset the fall in prices (Tables 12 and 13). Real ex-vessel value and average price per pound have declined dramatically since 2017 and are now the lowest in the time series, in part due to smaller average fish size that have not grown to marketable sizes.

Sablefish first-wholesale value in the GOA decreased 19.8% to $57.1 million as the average first-wholesale price fell 19% to $4.07 (Tables 32 and 33). In the BSAI first-wholesale value increased 7% to $7.6 million with increased catch and production despite a similar decrease in prices (Tables 16

and 17). At the first-wholesale market level sablefish is primarily processed into the head and gut product form. Most sablefish produced is exported and Japan is the primary export market, but in recent years there has been stronger demand for sablefish in the U.S. and outside of Japan, including Europe, China and Southeast Asia. U.S. exports as a share of U.S. production has declined over time indicating increased domestic consumption. The increased abundance and supply of smaller fish puts downward pressure on the price of small fish, increases the price margin between small and large fish, and lowers the average price. Additionally, increased global supply, media reports of inventory buildup in Japan, and the small size of fish have put downward pressure on sablefish prices in 2019. There was a notable decrease in prices for many of the products, such as sablefish, which ultimately go to foodservice sectors as a result of COVID-19 related foodservice closures. This downward pressure on fish product prices in the first-wholesale market coupled with cost pressure from COVID-19 mitigation efforts likely had upstream impacts on ex-vessel prices that decreased significantly.

Flatfish species complex

The flatfish complex is comprised of a number of different species, and the species targeted vary by region. In the BSAI the primary target species are yellowfin sole, rock sole, flathead sole, arrowtooth flounder, and Kamchatka flounder which are mostly fished by catcher/processors in the Amendment 80 fleet. Yellowfin sole fishery is the largest of the flatfish fisheries accounting for 65% of the retained flatfish catch. Other flatfish which including Alaska plaice and Greenland turbot are also fished. In the BSAI retained catch of all species in aggregate increased 1.4%, to 201 thousand mt. Changes in the BSAI flatfish catch may also be associated with changes in the Atka mackerel and Pacific ocean perch catch as Amendment 80 vessels may prioritize these more highly valued fish.

In the GOA, arrowtooth is the primary target species, though other flatfish (e.g., flathead sole and rex sole) are caught in smaller quantities. GOA flatfish are caught by the western and central gulf trawl fleets which are comprised of both shoreside catcher vessels and at-sea catcher/processors. In the GOA retained catch for all flatfish species decreased 13%, to 24 thousand mt. The primary species with decreasing catch were arrowtooth flounder, flathead sole and rex sole. Catches in the shallow-water flatfish complex, which is largely comprised of rock sole, increased 65% to 4 thousand tons, however, it only accounts for 17% of the total GOA flatfish catch. Arrowtooth, the largest flatfish fishery in the GOA, can show considerable year-over-year catch variability, in part, because of regulatory changes.[3] Catch levels in 2020 catches were within the range of typical catches over the last decade. Ex-vessel value of GOA flatfish was down 19% from 2019 to $5 million in 2020, which was the result of a decrease in the ex-vessel price in addition to reduced catch levels. The average ex-vessel price decreased 14% to $0.084/lb and prices decreased for most species (complexes).

Flatfish are primarily processed into the H&G and whole fish product forms and changes in production volumes largely reflect changes in catch. First-wholesale value in the BSAI flatfish fisheries decreased 17% to $175 million with a 20% decrease in prices. [4] The price decline occured for all major species with a 23% decrease in yellowfin sole price, a 14% decrease in the rock sole

[3]In 2014, Amendment 95 (regulations to reduce GOA halibut PSC limits) implemented changes to the accounting of halibut PSC sideboard limits for Amendment 80 vessels that allowed the fleet to increase their groundfish catch, mostly arrowtooth flounder. Also, Amendment 95 revised halibut PSC limit apportionments used by trawl catcher vessels from May 15 through June 30 that extended the deep-water species fishery allowing for an increase in arrowtooth flounder catch for this fleet (for details see http://alaskafisheries.noaa.gov/frules/79fr9625.pdf).

[4]Because BSAI flatfish are primarily targeted by catcher/processor vessels there is not an substantive ex-vessel market for them.

price, a 25% decrease in the flathead sole price, and a 14% decrease in the arrowtooth flounder price. Prices for most flatfish were at a decadal high in 2018 and the decreases in 2020 brought the average 2020 price across species to a level that was approximately equal to recent 5-year average.

First-wholesale value of GOA flatfish in 2020 was $14.5 million, which was down slightly from 2019. Commensurate with the decrease in catch, production volume fell 7% to 14.1 thousand t. The average first-wholesale price decreased 14% to $0.47 per pound in 2020. The decrease was largely due to a decrease in the rex sole, shallow-water, and flathead sole prices, which fell to $0.63, $0.47, and $0.40 per pound in 2020, respectively. Relative to other flatfish, rex sole tends to be the higher priced species. H&G and whole fish prices for other flatfish typically range from $0.60-$0.75 per pound.

Processed products are primarily exported to China and South Korea, and a significant share of this product is re-processed into fillets and re-exported to North American and European markets. Tariffs between the U.S. and China, which begun in 2018, has the potential to inhibit value growth in flatfish markets, both as a direct market for flatfish exports and because of China's significance as a re-processor of flatfish products. This can also result in downward pressure on flatfish prices. Flatfish were among the species to receive relief under the USDA Seafood Tariff Relief Program in 2019-2020. Industry lacks immediate alternative reprocessing options to China on a large scale. Export quantities of flatfish increased in 2020 from 2019 and the share of exports to China was consistent with the average over the last decade.

BSAI and GOA flatfish catch levels relative to TAC were within a typical range suggesting that COVID-19 did not have a significant impact on catch levels. BSAI and GOA flatfish have significant end markets in North America and Europe in both foodservice and retail. The downward pressure on these prices is likely the result of COVID-19 related logistical difficulties in international shipping and inspections, as well as foodservice closures, and compounded the downward pressure on prices from tariffs. This downward pressure on fish product prices in the first-wholesale market coupled with cost pressure from COVID-19 mitigation efforts likely resulted in negative impacts on net revenues and in the GOA had upstream impacts on ex-vessel prices that decreased significantly.

Rockfish species complex

The rockfish fisheries target a diverse set of species which can vary by region and sector. By volume, the majority of rockfish is caught in the BSAI, which is largely attributable to the sizable BSAI fisheries for Pacific ocean perch (which is also the largest rockfish fishery in the GOA). The other five major species (dusky, rougheye, northern, shortraker, and thornyhead) are predominantly caught in the GOA, though most species are caught in both regions. Pacific ocean perch and northern rockfish are the largest of the rockfish fisheries, accounting for roughly 75-80% and 10-15% of the total Alaska rockfish revenues respectively.

In the BSAI rockfish are caught by at-sea catcher/processors while in the GOA catch is distributed between the catcher vessel and at-sea processing sectors. Rockfish retianed catch in the BSAI decreased to 46 thousand t with catch decreases for both of the primary rockfish species northern rockfish and Pacific ocean perch. (Table 10). In the GOA Rockfish retained catch decreased to 30.3 thousand t (Table 26). Ex-vessel value in the GOA rockfish fisheries in 2020 was $9.5 million down 35% from 2019. The change in ex-vessel value was combined effect of marginal decreases in catch and 37% decrease in prices to $0.15 per pound (Tables 28 and 29). While catch levels in both regions decreased in 2020, they remained high relative to historical averages. Rockfish catch levels

relative to TAC were within a typical range in the BSAI and GOA suggesting that COVID-19 did not have a significant impact on catch levels.

First-wholesale value in the BSAI was down 20% in 2020 to $34.1 million with decreased catch and production as first-wholesale prices fell 11% to an average of $0.72 per pound. First-wholesale prices decreased for Pacific ocean perch (8%) and northern rockfish (31%). First-wholesale value in the GOA decreased 13% to $29.2 million and was largely the result of a decrease in the first-wholesale price. The average price of rockfish products in the GOA decreased 17% to $0.75 per pound.

The majority of rockfish produced are exported, primarily to China, some of which is re-processed (e.g., as fillets) and re-exported to domestic and international markets. Tariffs between the U.S. and China and the associated uncertainty with trade policy has the potential to inhibit value growth in rockfish markets, both as a direct market for rockfish exports and because of China's significance as a re-processor of rockfish products. Industry lacks immediate alternative re-processing options to China. The COVID-19 pandemic created supply chain logistical difficulties, particularly in China, which put downward pressure on prices. The share of exports to Japan increased which mitigated the impact on value. In addition, foodservice closures in major end markets in Asia and North America for rockfish finished goods, also likely impacted prices negatively. This downward pressure on fish product prices in the first-wholesale market coupled with cost pressure from COVID-19 mitigation efforts likely had upstream impacts on ex-vessel prices which decreased significantly, as well as net revenues.

Atka Mackerel

Atka mackerel is predominantly caught in the BSAI, primarily in the Aleutian Islands, and almost exclusively by the Amendment 80 fleet.[5] The catch of Atka mackerel in 2019 creased 1.4% to 60 thousand t. Catches in 2020 remained strong relative to recent historical levels after reaching a high in 2018. Atka mackerel catch levels relative to TAC were within a typical range suggesting that COVID-19 did not have a significant impact on catch levels.

Commensurate with the change in catch, first-wholesale production increased to 34.2 thousand tons. The increase in production was offset by a 9.4% decrease in price to $1.05 per pound resulted in an 8.7% drop in first-wholesale revenue to $79.1 million. Atka mackerel first-wholesale prices in 2020 dropped to approximately 2016 levels. Nearly all of the Atka mackerel production value (99%) is processed as H&G. Most of the Atka mackerel produced is exported to Asia where it undergoes secondary processing into products like surimi, salted-and-split and other consumable product forms. Atka mackerel has significant end markets in Japan, China, and South Korea in both foodservice and retail. The COVID-19 pandemic created supply chain logistical difficulties, which may have put downward pressure on prices. In addition, foodservice closures in major markets for Atka mackerel finished goods, also likely impacted prices negatively.

Decomposition of the change in first-wholesale revenues from 2019-2020 in the BSAI

The following brief analysis summarizes the overall *nominal* revenue changes that occurred from 2019-2020 and the quantity produced and revenue generated from BSAI groundfish and how revenues

[5]Because Atka mackerel is only targeted by at-sea catcher/processor vessel there is not an effective ex-vessel market for it. Though ex-vessel statistics are computed for national reporting purposes.

have been impacted by changes in quantity or prices of each species and product group (Figure 3.8). These values are not adjusted for inflation.

By BSAI species group, an almost neutral price effect and large negative quantity effect resulted in a negative net effect of about $206 million for pollock (Figure 3.8, top panel). For Pacific cod, a negative price effect combined with a larger negative quantity effect, resulted in a $81 million net decrease in first-wholesale revenues for Pacific cod in the BSAI for 2019-20 (Figure 3.8). There was a nearly equal negative price effect and negative quantity effect for rockfish that resulted in a net negative effect of $8.6 million. Atka mackerel had a negative price effect and a smaller positive quantity effect, combining for a net negative effect of $6.6 million. Flatfish had a large negative price effect combined with a smaller positive quantity effect that resulted in a net revenue decrease of $35.2 million. Sablefish had a negative price effect of $0.9 million and a positive quantity effect of $1.4 million, combining for a net positive effect of $0.5 million. The "Other" species group experienced a net revenue decrease of $0.6 million.

By product group, almost neutral price effects coupled with large negative quantity effects in the fillets category resulted in a negative net effect of $130 million in the BSAI first-wholesale revenue decomposition for 2019-20 (Figure 3.8, bottom panel). For surimi, large negative price effects coupled with a slightly larger negative quantity effects resulted in a negative net effect of $111 million. For roe, negative price effects coupled with larger negative quantity effects resulted in a negative net effect of $21.5 million. For whole fish and head & gut, a large negative price effect combined with a smaller put still large negative quantity effect to produce a net negative effect of $127 million. For 'other' products, a positive price effect combined with a smaller negative quantity effect resulted in a net positive effect of $51.0 million.

In summary, the changes in first-wholesale revenues from the BSAI groundfish fisheries decreased significantly from 2019-20 due to negative price effects and quantity effects for most species. First-wholesale revenues also decreased from 2019-20 in the GOA, with price and quantity declines in almost all species.

Decomposition of the change in first-wholesale revenues from 2019-20 in the GOA

The following brief analysis summarizes the overall changes that occurred between 2019-20 in the quantity produced and revenue generated from GOA groundfish. According to data reported in the 2021 Economic SAFE report, the ex-vessel value of GOA groundfish continued to decreased from $144 million in 2019 to $94 million in 2020 (values adjusted to 2020 dollars) (Figure 3.4), and first-wholesale revenues from the processing and production of groundfish in the Gulf of Alaska (GOA) also continued to decrease between 2019 ($254 million) and 2020 ($191 million) (Figure 3.6). At the same time, the total quantity of groundfish products from the GOA decreased from 100 thousand metric tons to 82 thousand metric tons, a 18% decrease. Similarly in the BSAI, first-wholesale revenues from processing saw a 16% decrease for groundfish from 2019 to 2020 and a 9% year-to-year decrease in groundfish products.

Landings decreased for all groundfish species in the GOA with concurrent declines in price effects for most species driving precipitous declines in net values across the board. The largest decline was for Pacific cod with a $20 million wholesale revenue decline (Figure3.9). For GOA pollock, a minor positive price effect was insufficient to offset the decline in landings driving wholesale values down by $16 million. For sablefish, despite an increase in harvests, wholesale values declined by $14

million due to continued substantial declines in ex-vessel prices from 2017, as well as supply chain and demand issues associated with COVID-19. In the GOA, retained catch for all flatfish species decreased by 13%. For rockfish, a negative price effect led to a 4% decrease in wholesale values.

Similarly to impacts across the groundfish species, there were declines in wholesale revenues across all product groups. These were driven by both negative quantity and price effects nearly across the board of product types (surimi, fillet, head&gut, roe). Although the category of "other" had a minor positive price effect that did not offset the negative quantity effect. The whole and head and gut (whole-H&G) category had the most substantial negative wholesale revenue declines, of $37 million.

In summary, first-wholesale revenues from the GOA groundfish fisheries decreased by about $17.5 million from 2019-20, continuing a decline in values that began in 2016 and amounts to a $197 million (or 51%) decrease from 2016 to 2020. The impacts of COVID-19 exacerbated previous revenue declines associated with the decline of the GOA Pacific cod stocks, small sablefish and associated decreases in average prices, and negative impacts on prices associated with tariff issues for other groundfish.

1.1. Report Card Metrics for the Alaska Commercial Groundfish Fisheries off Alaska 1993-2019

The purpose of the report card metrics is to give a broad overview of the economic health of Alaska's FMP groundfish fisheries (Figure 1.1). The metrics cover the years 1993-2020 to help elucidate trends and provide historical context to the current state of the fishing industry. In general, these metrics focus on FMP groundfish fisheries, which are also the focus of this economic status report. As a result, halibut and salmon are not well represented by these metrics (except that the share of shoreside value for the top 5 ports does include salmon and halibut). The economic report card includes 9 items[6]:

1) Real first-wholesale revenue[7] index which measures changes in the first-wholesale revenue produced by all FMP groundfish species in Alaska using 2020 as the base year (value=100).

2) Real first-wholesale price index, which measures changes in first wholesale prices produced from all FMP groundfish species in Alaska using 2020 as the base year (value=100).

3) Production volume divided by total catch, where total catch is inclusive of discards and PSC. This metric approximates a recovery rate of product relative to total extractions across all FMP groundfish species.

4) The effective global share of Alaska pollock and cod catch, defined as the average shares of global catch volume weighted by Alaska first-wholesale revenue shares. This metric demonstrates how large the Alaska pollock and cod fisheries are relative to the global supply of these species which provides information as to the potential influence of changes in Alaska catches on global prices for these species.

[6]Metrics 1, 2, and 7 are adjusted for inflation using the GDP chain-type price index. For Metric 6 ex-vessel revenues are deflated using the Personal Consumption Expenditures chain-type price index. See the the Overview Section 2.2.6 for references.

[7]The revenue from the sale of fish products after primary processing.

5) Real effective exchange rate index, which is an average of foreign currencies to U.S. dollar exchange rate weighted by fisheries exports to each country.[8] The Alaska seafood industry exports approximately 80% of it's groundfish products. This metric provides information about how exchange rates are impacting Alaska groundfish producers across all of their export partners.

6) Ratio of ex-vessel over first-wholesale revenues. This revenue share is a function of a number of different factors including the value added from processing, bargaining power, global prices, and processing and harvesting costs.

7) Real first wholesale revenue per fishing week, where fishing weeks are defined as the number of vessels active in each week of the year, and is a productivity-related metric that can be thought of as revenue per unit effort.

8) Alaska resident share of FMP groundfish shoreside ex-vessel value, where residency is determined by the owner address of delivering vessels. This metric measures the share of gross FMP groundfish revenues staying in Alaska versus those going to vessel owners in other states.

9) Share of shoreside all Alaska fisheries ex-vessel value for the top 5 ports, which is not limited to just FMP groundfish to provide a more comprehensive account of community revenues. This metric measures the degree of concentration of landings across Alaska communities.

Real first wholesale value index dropped significantly although it remained within one standard deviation of the long-run mean (panels 1). The drop in this index was, in part, due to reduced catch primarily associated with TAC reductions in some key species, although BSAI pollock catches were lower that anticiapted due to poor fishing conditions. Additionally, real first wholesale prices, which have been persistently low over the last decade, dropped to below one standard deviation of the historical mean in 2020, as COVID-19 related supply chain distruptions and food service closures put downward pressure on prices (panel 2). Production per-unit-catch remained high, but dropped somewhat to below levels seen over the last decade (panels 3). Globally, Alaska has a significant effective share of pollock and cod at approximately 40%, which has remained stable since 2014. The effective real exchange rate index was stable in 2020, decreasing signaling minimal year-over-year exchange rate pressure on Alaska fish product export prices. The ratio of ex-vessel to wholesale revenues dropped significantly in 2016 as a result of low ex-vessel prices, particularly for pollock, but rebounded somewhat through 2017-2018 and in 2020 increased somewhat as the percent decrease real first-wholesale was greater than the percent decrease in real ex-vessel revenue (panel 6). This was largely related to the decrease in production per-unit catch (panel 3). Revenue per-unit-effort (measured by fishing weeks) increased in 2020 dropped but was still at one standard deviation above the long-run average (panel 7). Both revenue and fishing weeks declined in 2020, however the percent decrease real first-wholesale was greater than the percent decrease in fishing weeks, with decreasing production and prices. The decrease in fishing weeks was greatest in the CP sector. The share of shoreside revenue to AK residents dropped in 2020 to just below one standard deviation from the long-run mean (panel 8). This was due to Alaska resident's share of revenue in Pacific cod, which decreased from 48% in 2019 to 42% in 2020 with the closure of federal Pacific cod fisheries in the GOA. Roughly 63% of the shoreside revenues are concentrated in the top 5 key ports in 2020 which was a significant increase from prior levels (panel 9).

[8]Increases in this index indicate that exports are more expensive for foreign buyers which puts downward pressure on prices received by Alaska producers.

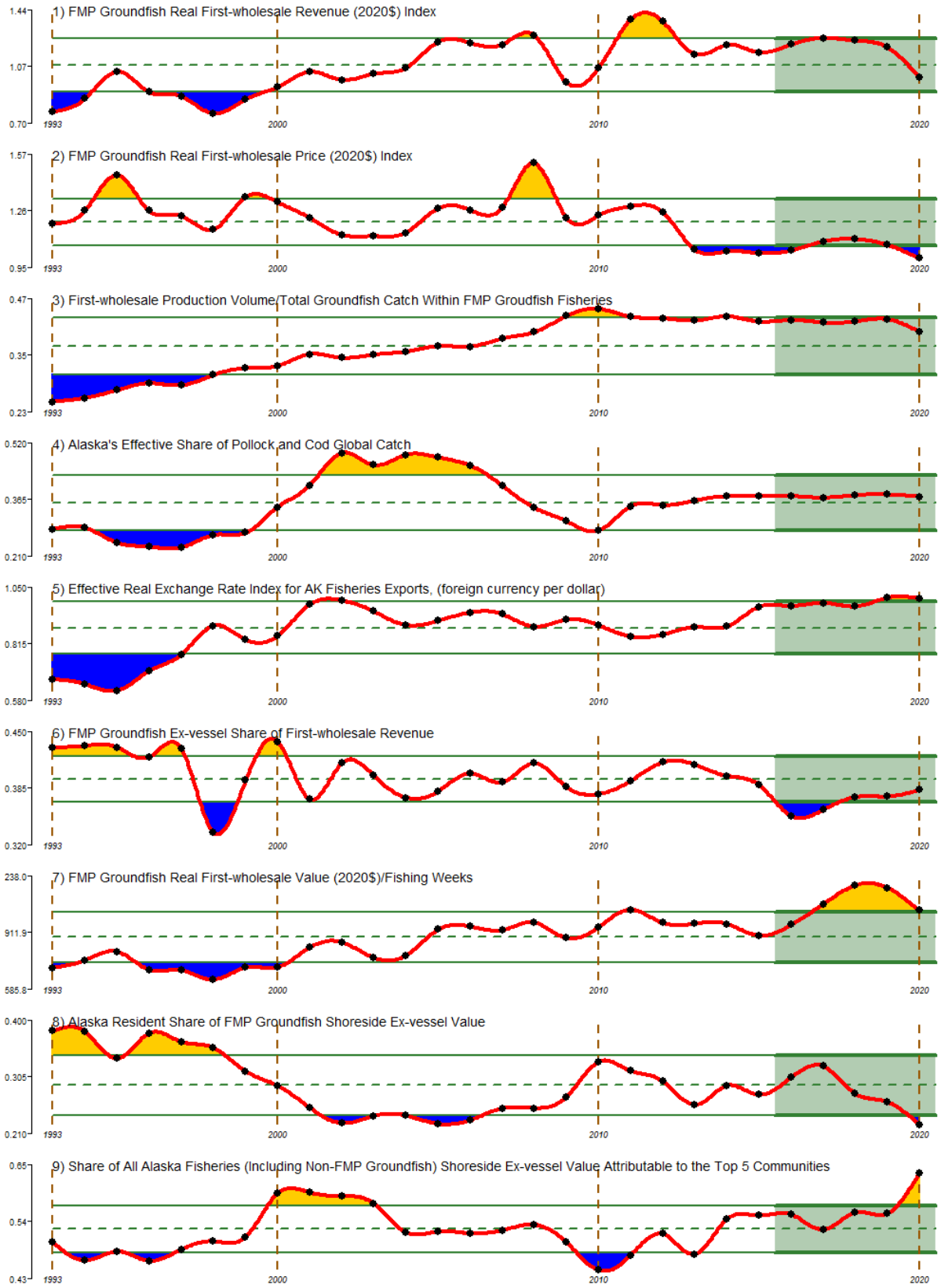

Figure 1.1: Economic report card metrics.

2. OVERVIEW OF ECONOMIC STATUS REPORT, 2020

2.1. Introduction

This report presents the economic status of groundfish fisheries off Alaska in terms of economic activity and outputs using estimates of catch, discards, prohibited-species catch (PSC), ex-vessel prices and value (i.e., revenue), effort (as measured by the size and level of activity of the groundfish fleet), and the first wholesale production volume and gross value of (i.e., F.O.B. Alaska revenue from) processed products.[1] The catch, ex-vessel value, fleet size, and activity data reported here reflect the fishing industry activities that are accounted for in the groundfish landings and production reports, North Pacific groundfish and halibut observer data, and the State of Alaska Commercial Operator's Annual Reports. Catch data in this report are sourced from the NMFS Alaska Regional Office (AKRO) catch-accounting system (CAS), which is used for in-season monitoring of groundfish and PSC quotas. The data descriptions, qualifications, and limitations noted in this overview of the fisheries and the footnotes to the tables are critical to understanding the information in this report. This report updates last year's report (Fissel *et al.* 2020) and is intended to serve as a reference document for those involved in making decisions with respect to conservation, management, and use of Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) groundfish fishery resources.

In addition to catch that is counted against a federal Total Allowable Catch (TAC) quota (i.e., managed under a federal Fishery Management Plan (FMP)), estimates provided in some of the following tables may include catch from other Alaska groundfish fisheries (as indicated by the footnotes). The distinction between catch managed under a federal FMP and catch managed by the State of Alaska is not merely a geographical distinction between catch occurring in the U.S. Exclusive Economic Zone (EEZ) and catch occurring in Alaska state waters (3-mile limit). The State of Alaska maintains authority over some rockfish fisheries in the EEZ of the GOA, for example, and parallel fisheries in state waters are managed under federal FMPs. It is not always possible, depending on data source(s), to definitively identify a unit of catch, or associated units, such as revenue or price, as being part of a federal FMP or otherwise, as noted in the footnotes. Additionally, unless explicitly indicated, phrases such as "groundfish fisheries off Alaska" or "Alaska groundfish", as used in this report, should not be construed to include any category of state or federally managed fishery or to refer to any specific geographic area. These and similar phrases may describe groundfish from both Alaska state waters and the federal EEZ off Alaska, groundfish managed only under federal FMPs, or managed under the authority of both NMFS and the state of Alaska.

The BSAI and GOA groundfish fisheries are widely considered to be among the best managed fisheries in the world. These fisheries produce high levels of catch, ex-vessel revenue, processed product revenue, exports, employment, and other measures of economic activity while maintaining ecological sustainability of the fish stocks. However, the data required to estimate the success of these management policies with respect to net benefits to either the participants in these fisheries or the Nation, such as cost or quota value data (where applicable), are not available for many of the fisheries. Fishery economists began discussing the potential for rent dissipation in fisheries managed with open-access catch policies long ago (Scott 1954, Gordon 1955). The North Pacific region has

[1] F.O.B. refers to the value (or price) excluding transportation costs. The acronym, F.O.B. stands for "Free On Board".

gradually moved away from such management, as discussed by Holland (2000), and instituted catch share programs in many of its fisheries. Seven of the seventeen catch-share programs currently in operation in the U.S. operate in the North Pacific, accounting for approximately 75% of Alaska's groundfish landings. By allocating the catch to individuals, cooperatives, communities, or other entities, catch share programs are intended to promote sustainability and increase economic benefits. Research on North Pacific fisheries has examined some of these issues after program implementation (e.g., Felthoven 2002, Homans and Wilen 2005, Wilen and Richardson 2008, Abbott et al. 2010, Fell and Haynie 2011, Torres and Felthoven 2014, Abbott et al. 2015).

There is considerable uncertainty concerning the future conditions of stocks, the resulting quotas, and potential changes to the fishery management regimes for the BSAI and GOA groundfish fisheries. The management tools used to allocate the catch among various user groups can significantly affect the economic health of the fishery as a whole or segments of the fishery. Changes in fishery management measures are expected to result from continued concerns with: 1) the catch of prohibited species; 2) the discard and utilization of groundfish catch; 3) the effects of the groundfish fisheries on marine mammals and sea birds; 4) other effects of the groundfish fisheries on the ecosystem and habitat; 5) the allocations of groundfish quotas among user groups; 6) maintaining sustainable fisheries and fishing communities that allow for new entrants into the fisheries; and 7) the response of the fisheries and ecosystem to climatic trends.

The remainder of this report is structured as follows: Section 2.2 gives a verbal description and important information for understanding the economic data tables in Section 4. Section 5 examines the economic performance of the North Pacific groundfish fisheries through market indices.

2.2. Description of the Economic Data Tables

2.2.1 Groundfish and Prohibited Species Catch Data Description

Data Sources

Total catch estimates in the groundfish fisheries off Alaska are generated by NMFS from data collected through an extensive fishery observer program and from information provided through required industry reports of harvest and at-sea discards. The North Pacific Observer Program (Observer Program), based at the NMFS Alaska Fisheries Science Center (AFSC), has had a vital role in the management of North Pacific groundfish fisheries since the late 1980s. Observer data are collected by NMFS-trained observers and provide scientific information for managing the groundfish fisheries and minimizing bycatch. Industry-reported data consists of catch and processed product amounts that are electronically recorded and submitted to NMFS through the Interagency Electronic Reporting System, known as eLandings. Observer information and industry reports are integrated into a NMFS application called the Alaska Catch Accounting System (CAS), which is used directly in managing fisheries.

The primary purpose of the CAS is to provide estimates of total catch for FMP species (including prohibited species) in the groundfish and halibut fisheries and allow the in-season monitoring of catch against the TACs and PSC limits. The harvests of groundfish in Federal waters are governed under fishery management plans (FMPs) that are specific to the Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) regions. The groundfish TACs are established and monitored in terms of total catch, which is the sum of retained and discarded catch. In addition, the FMPs describe policy

for setting bycatch limits for some species, such as halibut and salmon, whose retention is prohibited in the groundfish fisheries; bycatch of these species is referred to as Prohibited Species Catch (PSC).

In the CAS, at-sea sample and census data collected by observers are used to create discard and PSC rates (a ratio of the estimated discarded catch to the estimated total catch in sampled hauls). For trips that are unobserved, the discard and PSC rates are applied to industry-supplied landings of retained catch. Expanding on the observer data that are available, the extrapolation from observed vessels to unobserved vessels is based on varying levels of aggregated data. Data are matched based on processing sector (e.g., catcher/processor or catcher vessel), week, target fishery, gear, and federal reporting area. Further detail on the estimation procedure is available in Cahalan et al. (2014). With the exception of Pacific halibut PSC, all estimated at-sea discard is assumed to have 100% mortality. Halibut mortality rates are updated every three years based on the estimated condition of halibut sampled by observers (Williams 2012). These rates are applied to the total estimated halibut discards (for a gear type, FMP area (GOA or BSAI), fishery, and year).

Groundfish Catch Tables

The catch presented throughout these tables is total catch which includes retained and discarded catch. Catch data are sourced from the CAS. Catch for all Alaska including state and federal catches is displayed in Table 1. Retained catch for just FMP-managed groundfish is provided in Table 4 presents catch data by area (BSAI and GOA), gear (trawl, hook and line–used in this report to include longlines and jigs–and pot gear), vessel type (catcher vessels and catcher/processor vessels), and species (complex). Tables 10 and 26 provide additional information for the BSAI and GOA, respectively, with aggregation of gear types and species specific catch data for flatfish and rockfish. Tables 11 and 27 provide estimates of total catch by species, gear, and target species for the BSAI and GOA, respectively. In general, the species or species complex accounting for the largest proportion of retained catch on the trip or haul is considered the target species, with two exceptions. A target of pelagic pollock is assigned only if 95% or more of the total catch is pollock. In the BSAI, if flatfish species (flathead, rock, and yellowfin sole, and other flatfish) represent the largest amount of retained catch, then a target of yellowfin sole is assigned if this species represents at least 70% of the combined flatfish retained catch; otherwise, the flatfish species accounting for the greatest amount of retained flatfish catch is assigned as the target. Beginning in 2011, Kamchatka flounder was broken out from arrowtooth flounder in the BSAI. As such, the "other flatfish", and/or arrowtooth flounder target categories may not be directly comparable between 2011 and prior years in the historical catch data available online.

Groundfish Discards and Discard Rates

Discarded catch is the unretained catch of species that a vessel is, in general, legally able to target and retain (and thus does not include PSC). Discards are included in a vessel's total catch. Discards can occur for various reasons and in a variety of ways such as discarding of non-targets species, fish falling off of processing conveyor belts, dumping of large portions of nets before bringing them on-board the vessel, dumping fish from the decks, size sorting by crewmen, and quality-control. Discard rates can be high for non-target species. For the most common species (e.g. pollock and cod) retention requirements reduce the amount of discards for these species. The discard rate is the percent of total catch of a species that is discarded. Details on discard estimation can be found in Cahalan *et al.* (2014). The discards in the groundfish fisheries have received significant management attention by NMFS, the Council, Congress, and the public at large. Table 6 presents CAS estimates

of discarded groundfish catch and discard rates (calculated as the percent of total catch that is discarded) by gear, area, and species for years 2016-2020.

Prohibited-Species Catch

Prohibited-species catch (PSC) is the catch of species that a vessel is prohibited from targeting and retaining due to their economic value to users outside the FMP groundfish fisheries. These species include Pacific halibut, king and tanner crab (*Chionoecetes*, *Lithodes*, and *Paralithodes spp.*), Pacific salmon (*Oncorhynchus spp.*), and Pacific herring (*Clupea pallasi*). Monitoring and minimizing the amount PSC in the Alaska groundfish fisheries has historically been an issue that has received significant management attention. The retention of these species was prohibited first in the foreign groundfish fisheries to ensure that groundfish fishermen had no incentive to target these species. Estimates of PSC for 2016-2020 are summarized by area and gear in Table 7.

The at-sea observer program was developed for foreign fleets and then extended to the domestic fishery. The observer program, managed by the Fisheries Monitoring and Analysis Division (FMA) of the Alaska Fisheries Science Center, resulted in fundamental changes in the nature of the PSC problem. First, by providing estimates of total groundfish catch and non-groundfish PSC by species, it reduced the concern that total fishing mortality was being vastly underestimated due to fish that were discarded at sea. Second, it made it possible to establish, monitor, and enforce the groundfish quotas in terms of total catch as opposed to only retained catch. Third, it made it possible to implement and enforce PSC quotas for the non-groundfish species that by regulation had to be discarded at sea. Finally, it provided extensive information that managers and the industry could use to assess methods to reduce PSC and PSC mortality. In summary, the observer program provided fishery managers with the information and tools necessary to prevent PSC from adversely affecting the stocks of the PSC species. An example of how this program is being used is the Bering Sea pollock fishery, which became completely observed in 2011. As a result, salmon PSC estimates in the Bering Sea pollock fishery are a census rather than a sample, and since 2011, there has been a fixed "hard cap" in the fishery.[2] The information from the observer program helps identify the types of information and management measures that are required to reduce PSC to the extent practicable, as is required by the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

2.2.2 Ex-Vessel Prices and Value

The ex-vessel market is the transaction of catch delivered by vessels to processors. In general, ex-vessel prices are derived from Commercial Operator Annual Report (COAR) buying reports. Some catcher-vessels minimally processes (e.g., head-and-gut) the catch prior to delivery to the processor. The value of this on-board processing is discounted from the ex-vessel price so that it represents the round-weight (unprocessed) prices of the retained catch. Ex-vessel value is calculated by multiplying ex-vessel prices by retained catch. For the at-sea sector much of catch is both caught and processed for first-wholesale distribution by a single entity and as such a true "ex-vessel" market does not exist. For national accounting purposes the "ex-vessel" value of the at-sea sector are calculated by applying COAR buying prices for the corresponding species (complex), region, and gear-type of the retained catch. For a subset of fisheries that are prosecuted primarily by the at-sea catcher/processor fleet, and for which COAR buying data are sparse, we impute prices as

[2]These rules for salmon bycatch management were put in place through Amendment 91 to the BSAI FMP. For details see https://www.federalregister.gov/documents/2010/08/30/2010-20618/fisheries-of-the-exclusive-economic-zone-off-alaska-chinook-salmon-bycatch-management-in-the-bering

a percentage (40%) of the estimated wholesale value per round weight. This percentage reflects the long-term average of the ratio of ex-vessel prices to head-and-gut (H&G) processed-product prices for species (primarily Pacific cod) that are well represented in COAR buying and production reports. Ex-vessel prices and value include post-season adjustments.

Tables 4 contains data on the real ex-vessel value and catch of groundfish and non-groundfish species in Alaska, adjusted to 2020 dollars by applying the Personal Consumption Expenditure Index (https://research.stlouisfed.org/fred2/series/PCEPI) to account for effects of inflation on fishermen's revenue. Table 8 provides estimates of ex-vessel value by residency (Alaska compared to the rest of the U.S., labeled 'Other') of primary vessel owners, area, and species. Residency of primary vessel owners are determined from the CAS combined with State of Alaska groundfish fish ticket data and vessel registration data, the latter of which includes the stated residency of the primary vessel owner. Residents of Alaska and of other states, particularly Washington and Oregon, are active participants in the BSAI and GOA groundfish fisheries. For the BSAI and GOA combined, 78% of the 2020 groundifsh ex-vessel value was accounted for by vessels with primary owners who indicated that they were not residents of Alaska.

Tables 12 and 28 contain estimated ex-vessel prices that are used with estimates of retained catch to calculate ex-vessel values (gross revenues) for the BSAI and GOA, respectively. Prices in these tables may include data from both federally-managed and state-managed fisheries. Estimates of ex-vessel value by area, gear, type of vessel, and species are presented in Tables 13 and 29 for the BSAI and GOA, respectively. Table 14 presents estimates of ex-vessel value of catch and value per vessel, vessel and permit counts, in the BSAI and the percent value of BSAI FMP groundfish and all BSAI fisheries by processor group. Table 14 provides these same data for the GOA.

2.2.3 First Wholesale Production, Prices and Value

The first wholesale market is the first sale of fisheries products after initial processing by a commercial processor with a Federal Processor Permit (FPP).[3] Groundfish first wholesale production data are sourced from at-sea and shoreside groundfish production reports. Product pricing and value reflect COAR product report price data appended to these production data per the AKFIN product pricing index. While groundfish production reports are a federal reporting requirement, there is typically no distinction made in this reporting between product derived from federally-managed catch and product derived from state-managed catch. Likewise, while COAR production reports include the area of processing, these data are insufficient for identifying the fishery inputs for units of finished production. As such, these tables reflect production volume and pricing from federal and some state-managed fisheries. Wholesale value and prices are given as F.O.B. (Free On Board) Alaska, indicating that transportation costs are not included in values and prices.

Table 5 reports estimates of the weight and first wholesale value of processed products from catch in the groundfish and non-groundfish commercial fisheries of Alaska. Estimates of first wholesale production weight of the processed products sourced from catch of groundfish are presented by species, product form, sector, and type of processor in Table 15 for the BSAI and Table 31 for the GOA. First-wholesale value (gross revenue) is presented in Tables 16 and 32 for the BSAI and GOA, respectively. Product price-per-pound estimates are presented in Tables 17 and 33, and estimates of total first wholesale product value per round metric ton of retained catch are reported

[3] An FPP is required for all processors receiving and/or processing groundfish harvested in Federal waters.

in Table 18 and for the BSAI and GOA, respectively. For these tables we source the round weight of retained catch from CAS data rather than using product recovery rates to derive round weights from production data.

Tables 19 and 35 present number of processors, gross product value and value per processor, and percent of total wholesale value of processed groundfish accounted for by different processing groups, for the BSAI and GOA, respectively. Data in these tables are summarized from COAR product reporting, and no distinction is made between state-managed and federally-managed groundfish sources of production.

2.2.4 Effort (Fleet Size, Weeks of Fishing, Crew Weeks)

Data on measures of fishing capacity and effort in federally-managed Alaska groundfish fisheries, including fleet size, duration of fishing, and levels of harvesting and processing employment are sourced from CAS data, ADF&G groundfish fish tickets, North Pacific groundfish observer data, and at-sea groundfish production reports.

The numbers of vessels that landed groundfish are depicted in Fig. 3.10 by gear type. Vessel participation by area, vessel type, and target are shown in Table 9. Number of vessels, average and median length, and average and median capacity (registered net tonnage) of vessels by vessel type and gear are shown in Tables 20 and 36.

Tables 22 and 38 provide estimates of vessel weeks for catcher vessels in the BSAI and GOA, respectively, stratified by length class, area, gear, and target fishery. Tables 23 and 39 provide the same stratification of vessel weeks for catcher/processors in the BSAI and GOA, respectively. Vessel weeks are apportioned by catch volume in cases where a vessel is identified with activity in multiple gears, areas, and/or targets in a given week.

Catcher vessel crew weeks are sourced from ADF&G fish tickets/eLandings, which include data on the number of licensed crew working aboard vessels by month and area shown in Tables 24 and 40, in the BSAI and GOA, respectively. At-sea production reports provide that information for motherships and catcher/processors shown in Tables 25 and 41 for the BSAI and GOA, respectively. A single crew week represents one crew member aboard one vessel for a week. Crew weeks are apportioned by catch volume in cases where a vessel is identified with activity in multiple areas in a given week. These data do not include employment levels in the shoreside and inshore processing sectors.

2.2.5 Description of the Category "Other" in Data Tables

The category 'Other' has different meanings in different tables, as described below.

- Table 5: "Other" includes lingcod, non-crab shellfish (mussel, clam, scallop, shrimp), and various freshwater and anadromous finfish species other than federally managed groundfish, salmon, halibut, and herring (e.g., whitefish, trout, Arctic char).
- Tables 11, 27: "Other flatfish" in the BSAI include Alaska Plaice and species within the BSAI other flatfish management complex, including starry flounder and dover, rex, butter, English, petrale, and sand sole.

- Table 7: "Other salmon" are non-Chinook salmon species (sockeye, coho, pink, chum). "Other King crab" are blue, golden (brown), and scarlet king crab species. "Other Tanner crab" are snow, grooved, and triangle Tanner crab species.
- Tables 15, 16, 17, 31, 32, 33: "Other fillets" for pollock include fillets with skin and ribs; fillets with skin, no ribs; fillets with ribs, no skin; and skinless/boneless fillets. "Flat Other" includes BSAI Alaska Plaice and species within the BSAI other flatfish management complex (starry flounder and dover, rex, butter, english, petrale, and sand sole).
- Tables 18, 34: "Other" species are primarily skate, squid, octopus, shark, and sculpin.

2.2.6 Additional Notes

- Confidential values are excluded from the computation of aggregates (e.g. sums and averages) within a table. This is particularly important to remember for highly stratified tables, such as Tables 12, 13, 15, 17, 28, 29, 31, and 33. Care should be taken when comparing totals from tables containing values suppressed for confidentiality. In general, preference should be given to aggregate numbers from less stratified tables.
- Within the data tables, numbers that are smaller than the level of precision used within the table are printed as '0'. For example, if a table uses the one decimal place level of precision, then an actual value of '0.01' is presented in the table as '0'.
- The Personal Consumption Expenditures: chain-type price index (https://research.stlouisfed.org/fred2/series/PCEPI) was used to deflate the ex-vessel estimates reported in Table 4. The PCE is used to adjust fishermen's ex-vessel revenues to account for the change in general US consumption expenditures. The GDP: chain-type price index https://research.stlouisfed.org/fred2/series/GDPCTPI was used to deflate the first wholesale value estimates reported in Table 5. The GDP price index is used to adjust to fishermen's wholesale production revenues to account for the change in general US production prices. The use of these indices began in 2014. Before 2014 this annual report used the Producer Price Index (PPI) for unprocessed and packaged fish for real adjustments (http://data.bls.gov/cgi-bin/srgate, using the series ID 'WPU0223').
- Estimates of U.S. imports and per-capita consumption of various fisheries products, previously published in Tables 54-56 of this report, are available in Fisheries of the United States (FUS), published annually by the NMFS Office of Science & Technology. The most recent FUS is available at: https://www.fisheries.noaa.gov/national/sustainable-fisheries/fisheries-united-states.
- Observer coverage costs: In previous years, Table 51 provided estimates of the numbers of vessels and plants with observers, the numbers of observer-deployment days, and observer costs by year and type of operation. In 2013, the restructured observer program was implemented and more detailed treatment of observer cost estimates can be found in the Observer Annual Report at: http://alaskafisheries.noaa.gov/fisheries/observer-program-reports.

2.3. Request for Feedback

The data and estimates in this report are intended both to provide information that can be used to describe the Alaska groundfish fisheries and to provide the industry and others an opportunity to

comment on the validity of these estimates. We hope that industry representatives and others will identify any data or estimates in this report that can be improved and provide the information and methods necessary to improve them for both past and future years. There are two reasons why it is important that such improvements be made. First, with better estimates, the report will be more useful in monitoring the economic performance of the fisheries and in identifying changes in economic performance that may be attributable to regulatory actions. Second, the estimates in this report often will be used as the basis for estimating the effects of proposed fishery management actions. Therefore, improved estimates in this report will allow more informed decisions by those involved in managing and conducting the Alaska groundfish fisheries. The industry and other stakeholders in these fisheries can further improve the usefulness of this report by suggesting other measures of economic performance that should be included in the report, or other ways of summarizing the data that are the basis for this report, and participating in voluntary survey efforts NMFS may undertake in the future to improve existing data shortages. Please contact Ben Fissel at Ben.Fissel@noaa.gov with any comments or suggestions to improve the Economic SAFE.

2.4. Citations

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2.5. Acknowledgements

ESSRP wishes to thank the Alaska Fisheries Information Network (AKFIN) for database programming and data management services to support production of the Economic SAFE. Other parties who provided assistance or feedback in the assembly of this report or earlier versions include: Terry Hiatt, Ren Narita, Camille Kohler, Mike Fey (AKFIN); Jennifer Mondragon (NMFS Alaska Region Office, Sustainable Fisheries Division), Mary Furuness (NMFS Alaska Region Office, Sustainable Fisheries Division).

3. FIGURES REPORTING ECONOMIC DATA OF THE GROUNDFISH FISHERIES OFF ALASKA

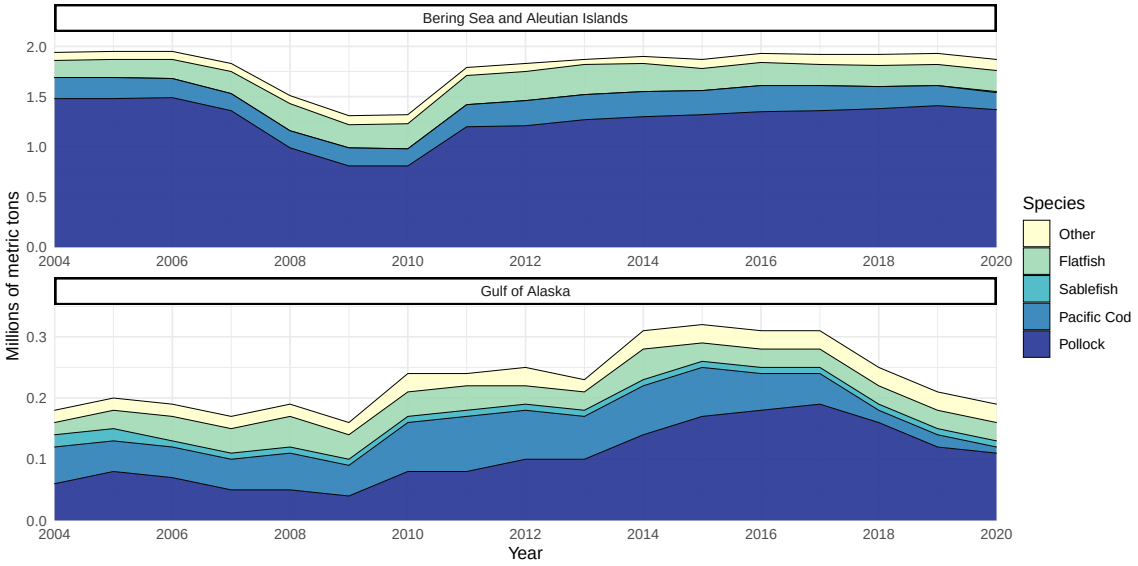


Figure 3.1: Groundfish catch in the commercial fisheries of the BSAI and GOA by species, 2004-2020.

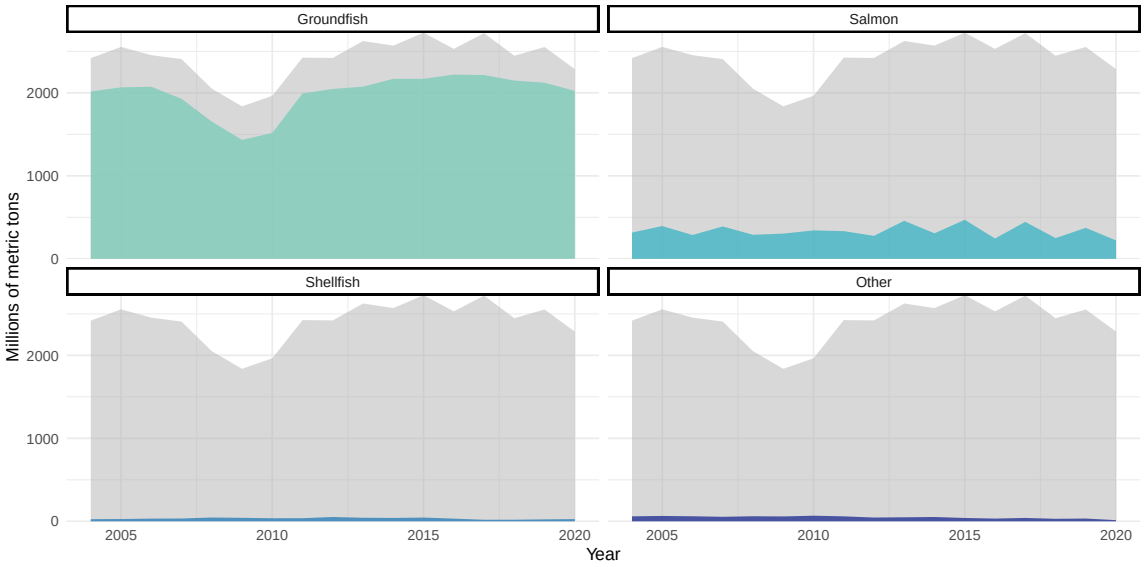


Figure 3.2: Catch of fish and shellfish catch off Alaska by species group, 2004-2020.

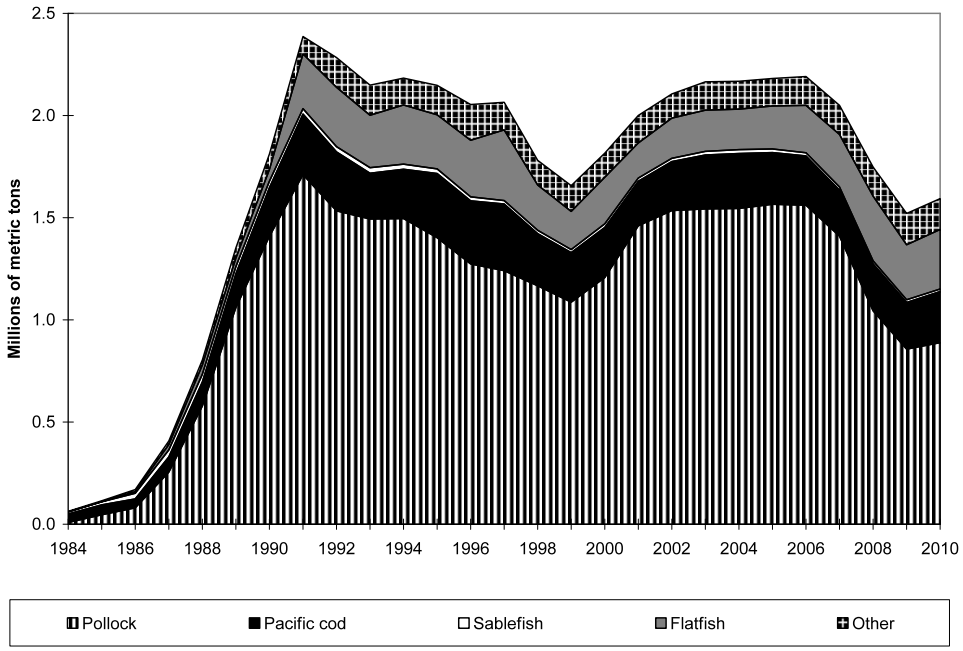


Figure 3.3: Groundfish catch in the commercial fisheries off Alaska by species, (1984-2010).
Notes: Catch for 2011 and onward are displayed in Figure 3.1.

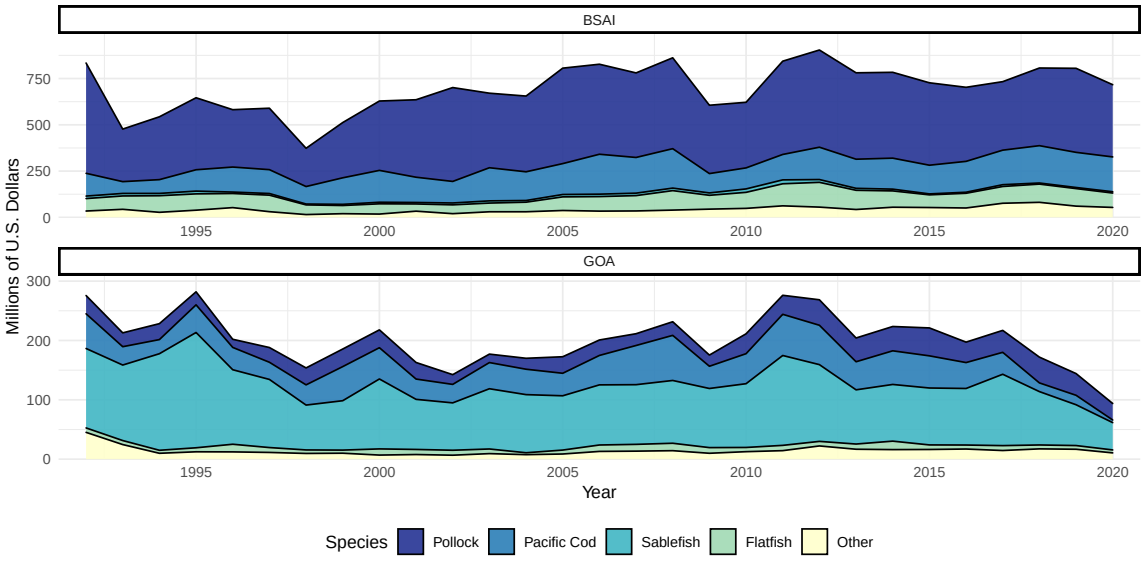


Figure 3.4: Real ex-vessel value of the groundfish catch in the commercial fisheries off Alaska by species, 1992-2020 (base year = 1992).

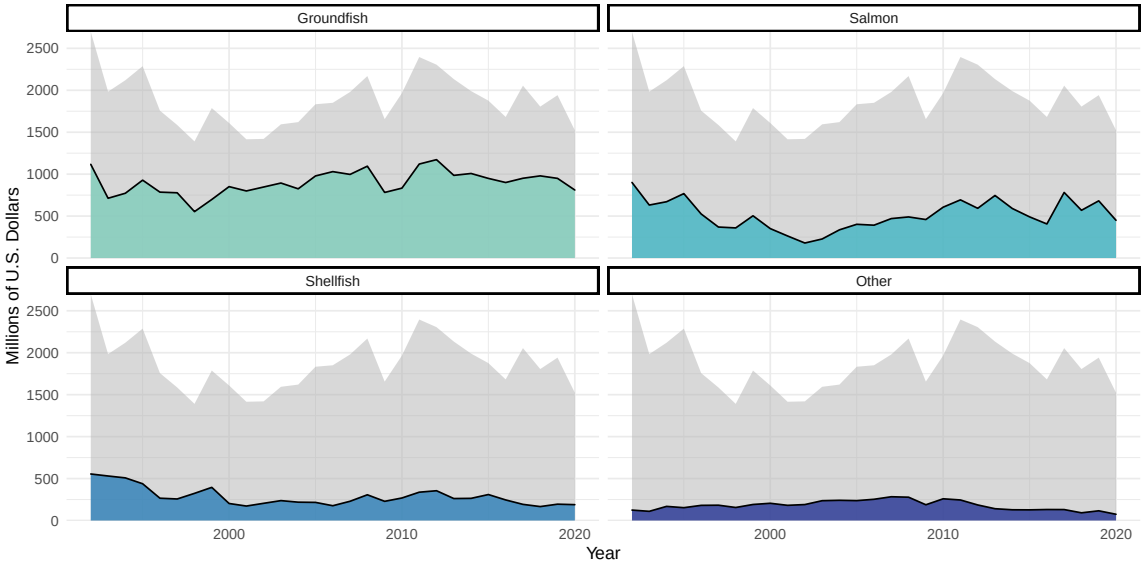


Figure 3.5: Real ex-vessel value of fish and shellfish catch off Alaska by species group, 1992-2020 (base year = 2020).

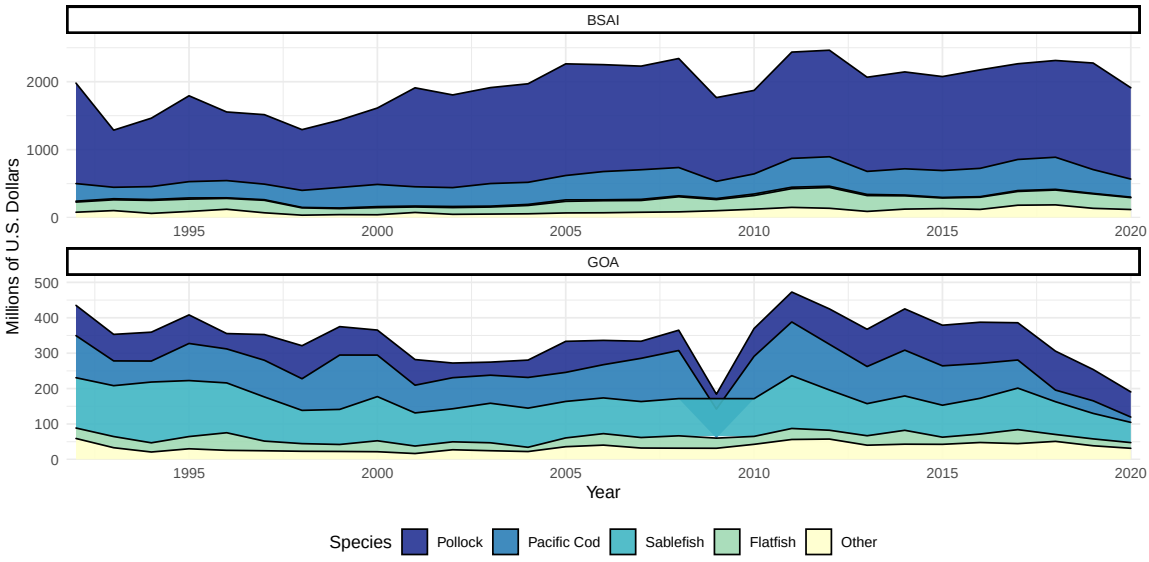


Figure 3.6: Real gross product value of the groundfish in the BSAI and GOA by species, 1992-2020 (base year = 2020).

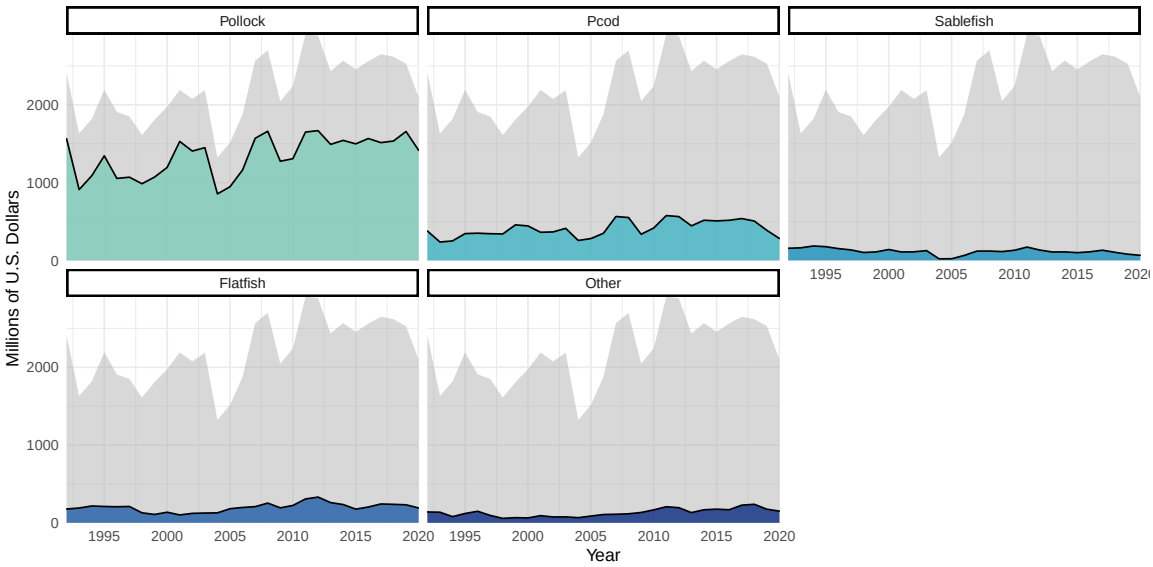


Figure 3.7: Real gross product value of the groundfish catch off Alaska by species, 1992-2020 (base year = 2020).

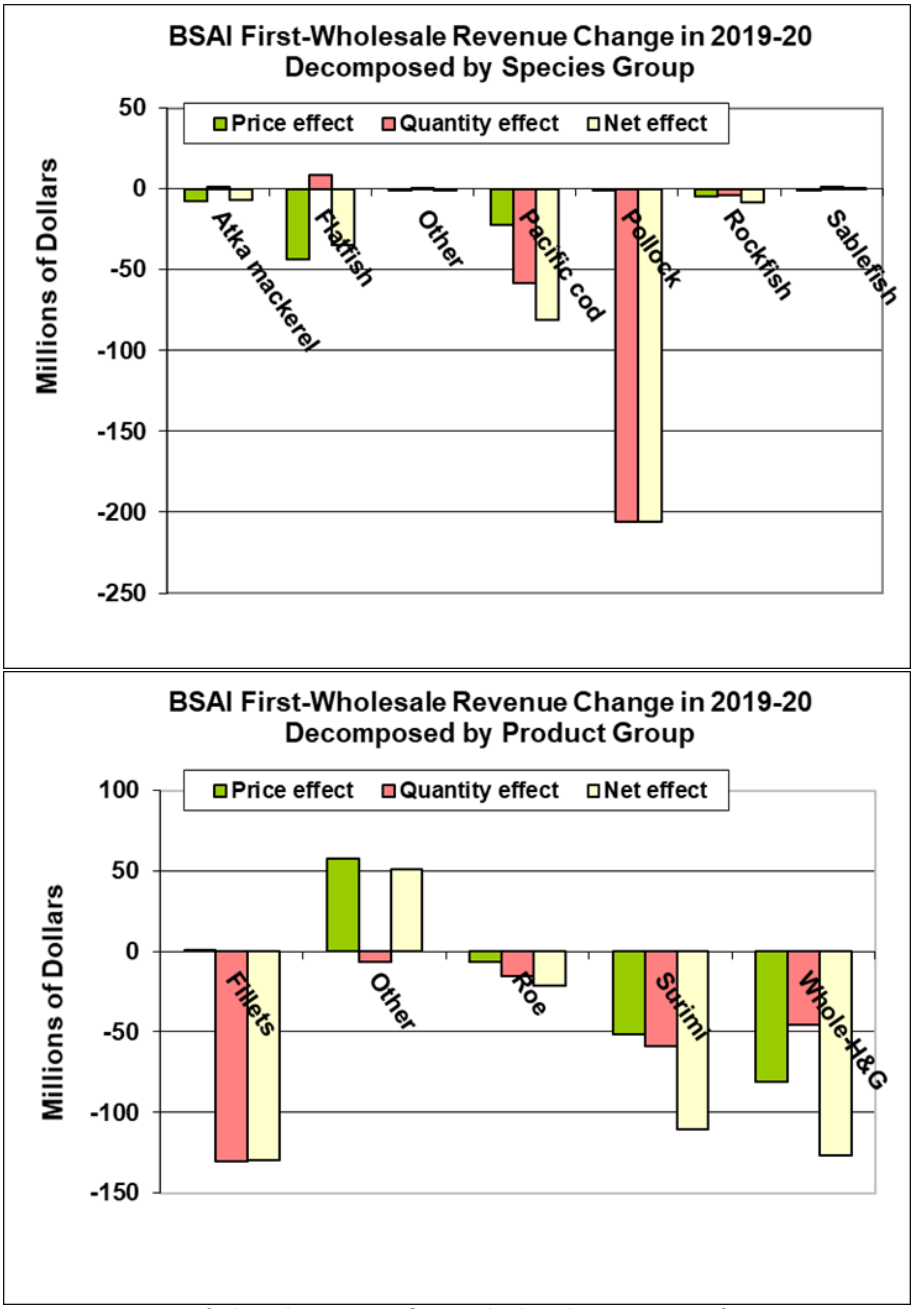
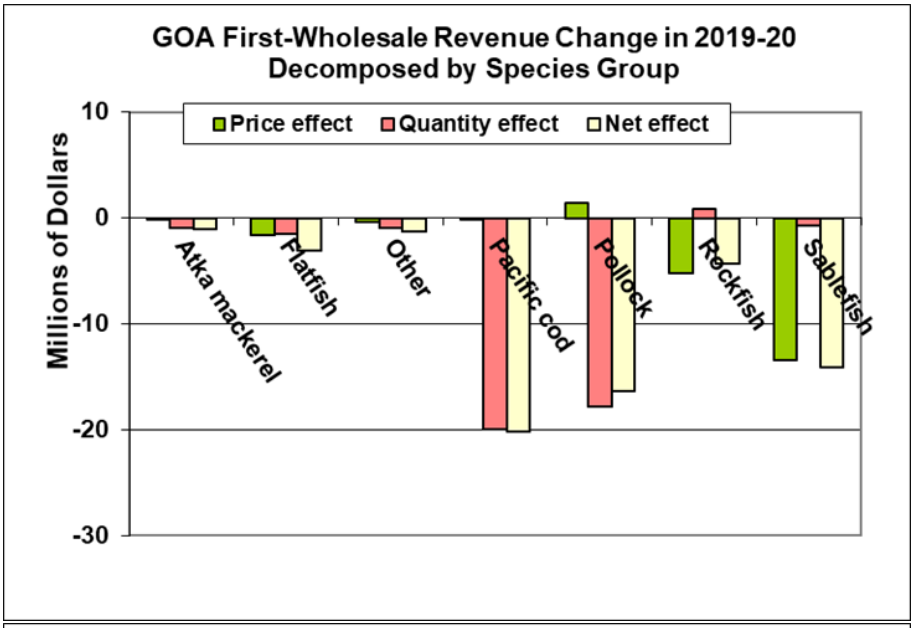


Figure 3.8: Decomposition of the change in first-wholesale revenues from 2019-2020 in the BSAI area.

Notes: The first decomposition is by the species groups used in the Economic SAFE report, and the second decomposition is by product group. The price effect refers to the change in revenues due to the change in the first-wholesale price index (current dollars per metric ton) for each group. The quantity effect refers to the change in revenues due to the change in production (in metric tons) for each group. The net effect is the sum of price and quantity effects. Year-to-year changes in the total quantity of first-wholesale groundfish products include changes in total catch and the mix of product types (e.g., fillet vs. surimi).



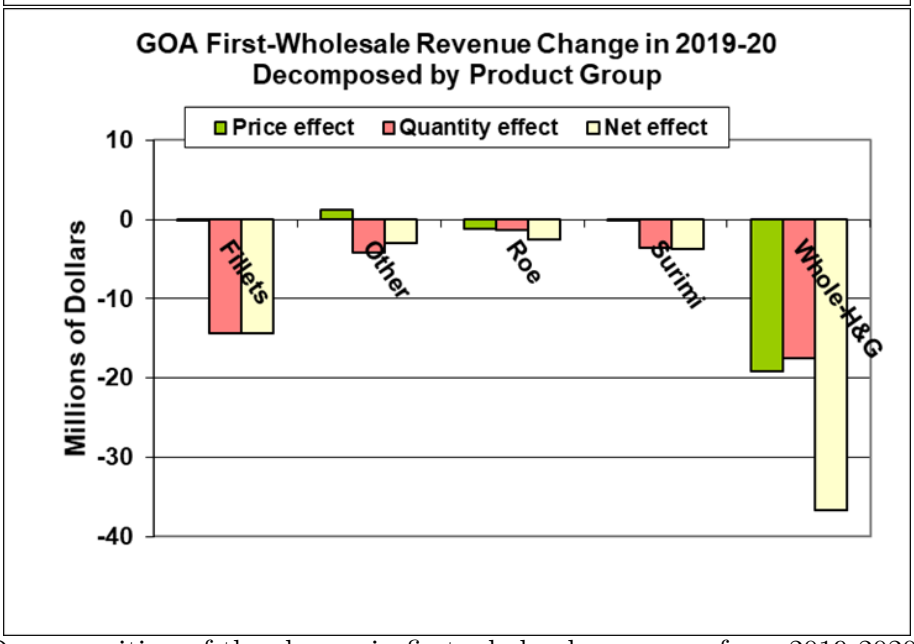


Figure 3.9: Decomposition of the change in first-wholesale revenues from 2019-2020 in the GOA area.

Notes: The first decomposition is by the species groups used in the Economic SAFE report, and the second decomposition is by product group. The price effect refers to the change in revenues due to the change in the first-wholesale price index (current dollars per metric ton) for each group. The quantity effect refers to the change in revenues due to the change in production (in metric tons) for each group. The net effect is the sum of price and quantity effects. Year-to-year changes in the total quantity of first-wholesale groundfish products include changes in total catch and the mix of product types (e.g., fillet vs. surimi).

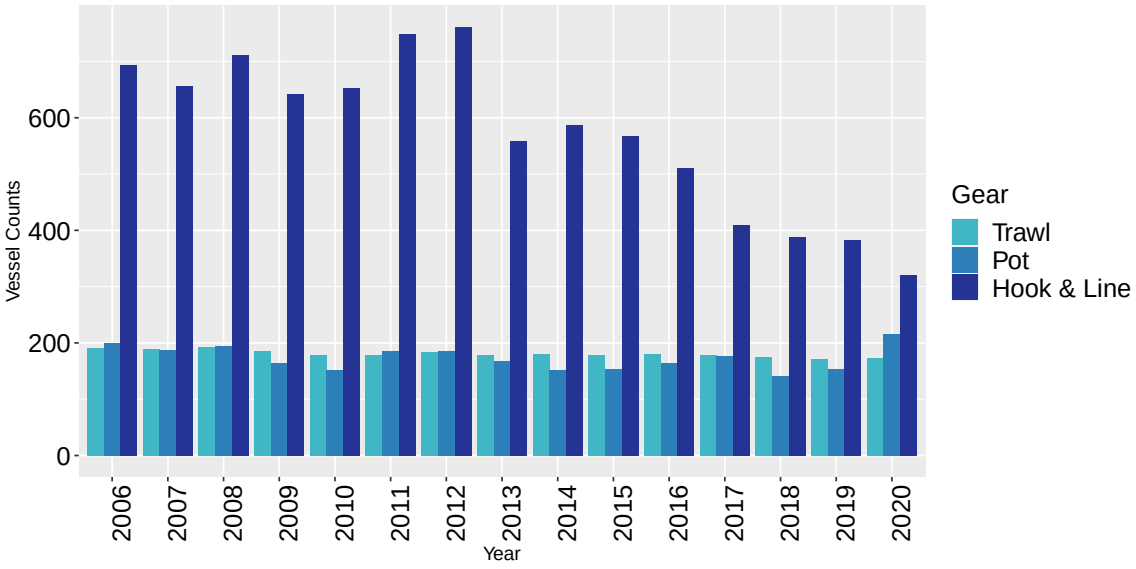


Figure 3.10: Number of vessels in the fisheries off Alaska by gear type, 2006-2020.

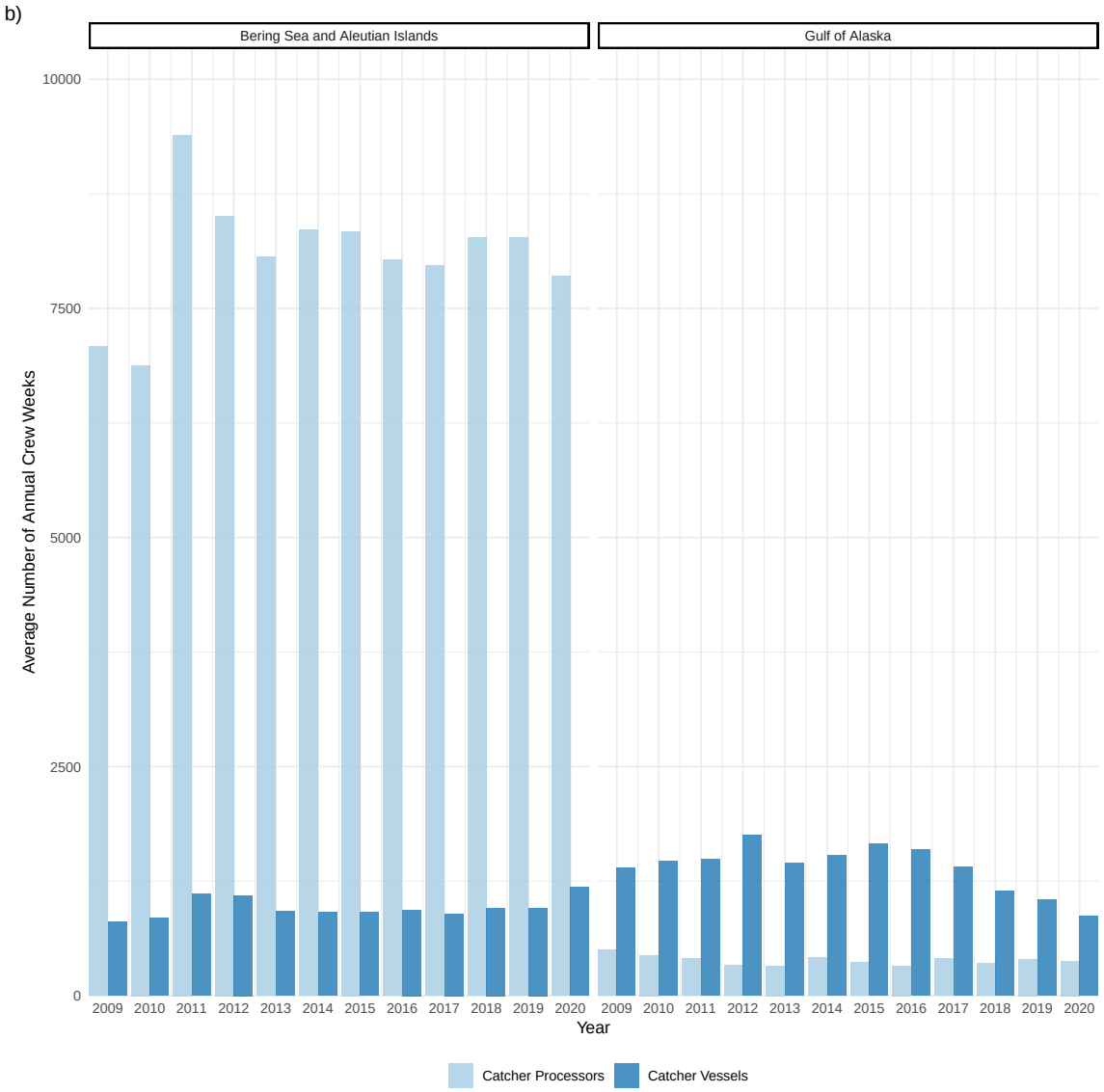


Figure 3.11: Crew weeks in the BSAI and GOA for catcher processors and catcher vessels: (a) monthly average b) annual average, 2009-2020.

4. TABLES REPORTING ECONOMIC DATA OF THE GROUNDFISH FISHERIES OFF ALASKA

Table 1: Groundfish catch in the commercial fisheries off Alaska by area and species, 2011-2020 (1,000 metric tons, round weight).

	Year	Pollock	Sablefish	Pacific Cod	Flatfish	Rockfish	Atka Mackerel	Total
	2011	1,200.4	1.7	220.1	285.9	28.2	51.8	1,818.4
	2012	1,206.3	2.0	251.0	291.2	28.1	47.8	1,857.9
	2013	1,273.8	1.7	250.3	297.3	34.9	23.2	1,914.9
Bering	2014	1,300.2	1.1	249.3	276.0	36.1	31.0	1,928.2
Sea and	2015	1,323.2	0.6	242.0	219.2	39.6	53.3	1,914.1
Aleutian	2016	1,354.9	0.9	260.8	225.1	36.8	54.5	1,968.8
Islands	2017	1,360.9	1.7	253.0	210.9	38.0	64.4	1,968.4
	2018	1,381.2	2.2	220.3	211.9	41.7	70.4	1,965.8
	2019	1,411.0	3.8	198.0	208.3	54.3	57.5	1,959.1
	2020	1,369.7	6.5	168.3	211.1	50.8	58.9	1,890.3
	2011	81.5	12.1	85.4	41.0	23.1	1.6	252.1
	2012	104.0	12.7	77.9	29.5	27.4	1.2	258.9
	2013	96.4	12.9	68.0	33.8	24.8	1.3	248.2
	2014	142.6	11.1	84.6	47.6	28.9	1.0	325.3
Gulf of	2015	167.5	11.1	79.4	26.7	29.0	1.2	323.9
Alaska	2016	177.1	10.0	64.0	28.1	33.9	1.1	323.4
	2017	186.2	11.3	48.6	33.3	31.8	1.1	320.7
	2018	158.1	13.0	15.1	25.8	34.2	1.4	254.5
	2019	120.2	13.7	15.7	31.9	34.2	1.3	223.5
	2020	107.5	13.4	6.7	28.8	32.3	0.6	194.1
	2011	1,281.9	13.8	305.5	326.9	51.3	53.4	2,070.6
	2012	1,310.2	14.7	328.9	320.7	55.5	49.0	2,116.8
	2013	1,370.2	14.6	318.4	331.2	59.8	24.5	2,163.1
	2014	1,442.9	12.3	333.9	323.6	64.9	32.0	2,253.6
All	2015	1,490.8	11.7	321.4	245.9	68.6	54.5	2,238.0
Alaska	2016	1,532.1	10.9	324.9	253.1	70.6	55.6	2,292.2
	2017	1,547.0	13.0	301.6	244.2	69.8	65.5	2,289.1
	2018	1,539.2	15.2	235.4	237.7	75.9	71.8	2,220.3
	2019	1,531.2	17.5	213.7	240.2	88.5	58.7	2,182.6
	2020	1,477.2	19.9	175.0	239.9	83.0	59.5	2,084.4

Notes: The estimates are of total catch (i.e., retained and discarded catch). These estimates include catch from both federal and state of Alaska fisheries. As such, totals may be slightly larger than retained catch estimates provided in later tables.

Source: NMFS Office of Science and Technology, Fisheries Statistics Division, Fisheries of the United States. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 2: Groundfish retained catch off Alaska by area, sector, and species, 2016-2020 (1,000 metric tons, round weight).

		Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
	Year	Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total
Pollock	2016	703.95	641.77	1,345.72	175.50	0.57	176.07	879.45	642.33	1,521.78
	2017	710.38	642.25	1,352.63	183.26	1.07	184.33	893.65	643.31	1,536.96
	2018	718.33	651.43	1,369.77	155.28	0.60	155.88	873.61	652.04	1,525.65
	2019	735.60	666.24	1,401.84	118.56	0.33	118.89	854.16	666.57	1,520.73
	2020	724.54	633.30	1,357.85	106.29	0.34	106.63	830.83	633.64	1,464.47
Sablefish	2016	0.40	0.39	0.80	8.28	0.78	9.06	8.69	1.17	9.86
	2017	0.70	0.76	1.46	9.05	1.02	10.08	9.76	1.79	11.54
	2018	0.83	0.95	1.78	9.51	1.02	10.53	10.34	1.97	12.31
	2019	1.56	0.61	2.17	9.78	1.10	10.88	11.34	1.71	13.05
	2020	1.66	1.05	2.71	10.41	0.95	11.35	12.07	2.00	14.07
Pacific Cod	2016	86.05	171.64	257.69	57.90	5.20	63.11	143.95	176.84	320.79
	2017	87.97	162.10	250.07	41.87	6.10	47.97	129.84	168.20	298.04
	2018	82.48	135.53	218.01	12.66	1.75	14.40	95.14	137.27	232.41
	2019	77.58	118.40	195.98	12.90	1.55	14.45	90.47	119.95	210.43
	2020	67.17	98.69	165.86	4.77	0.07	4.84	71.94	98.76	170.70
Flatfish	2016	14.68	196.76	211.44	17.76	5.85	23.61	32.44	202.61	235.05
	2017	21.15	177.45	198.60	14.52	14.79	29.30	35.67	192.24	227.91
	2018	16.56	180.84	197.40	17.71	4.89	22.60	34.27	185.73	220.00
	2019	23.58	174.56	198.14	21.32	6.84	28.16	44.90	181.40	226.30
	2020	21.23	179.61	200.84	19.06	5.31	24.37	40.28	184.92	225.20

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Table 2: Continued

	Year	Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
		Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total
Rockfish	2016	2.54	32.79	35.34	15.18	15.64	30.82	17.73	48.43	66.16
	2017	2.53	32.97	35.49	11.31	15.61	26.92	13.83	48.58	62.41
	2018	3.51	35.27	38.78	14.69	16.71	31.40	18.20	51.98	70.18
	2019	4.89	44.98	49.87	14.90	15.88	30.78	19.79	60.86	80.65
	2020	5.31	40.70	46.00	15.52	14.76	30.28	20.83	55.46	76.28
Atka Mackerel	2016	3.68	50.38	54.06	0.41	0.39	0.80	4.09	50.77	54.86
	2017	4.57	59.48	64.05	0.13	0.52	0.65	4.70	60.00	64.71
	2018	5.65	63.86	69.51	0.18	1.10	1.28	5.83	64.96	70.78
	2019	3.25	53.59	56.85	0.11	0.79	0.90	3.36	54.39	57.75
	2020	5.63	52.49	58.13	*	0.51	0.51	5.63	53.00	58.64
All Groundfish	2016	811.84	1,100.54	1,912.38	276.52	28.64	305.15	1,088.36	1,129.17	2,217.53
	2017	828.42	1,084.39	1,912.80	261.14	39.40	300.54	1,089.56	1,123.78	2,213.34
	2018	829.18	1,079.90	1,909.08	210.96	26.17	237.13	1,040.14	1,106.06	2,146.21
	2019	847.14	1,067.51	1,914.65	178.71	26.57	205.28	1,025.85	1,094.09	2,119.93
	2020	826.14	1,014.20	1,840.34	156.87	21.95	178.82	983.01	1,036.15	2,019.16

Notes: The estimates are of retained catch (i.e., excludes discarded catch). All groundfish include additional species categories. These estimates include only catch counted against federal TACs. Includes FMP groundfish catch on halibut targets. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 3: Groundfish ex-vessel value off Alaska by area, sector, and species, 2016-2020 ($ millions).

		Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
	Year	Catcher Vessels	Catcher Proces-sors	Total	Catcher Vessels	Catcher Proces-sors	Total	Catcher Vessels	Catcher Proces-sors	Total
Pollock	2016	209.9	165.0	374.9	32.2	0.1	32.2	242.0	165.1	407.1
	2017	206.1	146.8	352.9	35.0	0.2	35.2	241.2	147.0	388.1
	2018	237.1	171.1	408.2	42.0	0.2	42.2	279.2	171.3	450.4
	2019	260.5	187.8	448.3	36.0	0.1	36.1	296.5	187.9	484.4
	2020	234.4	155.7	390.0	27.6	0.1	27.7	262.0	155.7	417.7
Sablefish	2016	3.5	1.8	5.3	85.6	3.8	89.4	89.2	5.6	94.7
	2017	5.8	3.3	9.1	106.0	9.1	115.1	111.8	12.4	124.2
	2018	3.1	2.7	5.8	81.4	6.4	87.8	84.5	9.1	93.6
	2019	4.4	1.4	5.8	61.8	5.7	67.6	66.3	7.1	73.4
	2020	2.7	2.3	4.9	43.3	2.6	45.9	46.0	4.9	50.8
Pacific Cod	2016	49.7	106.6	156.3	37.6	3.3	40.9	87.3	109.9	197.2
	2017	60.4	117.5	178.0	30.9	4.3	35.2	91.3	121.9	213.2
	2018	71.5	124.7	196.2	12.5	1.7	14.2	84.0	126.4	210.4
	2019	69.9	117.7	187.6	14.1	1.6	15.7	84.0	119.3	203.3
	2020	56.6	131.7	188.3	4.2	0.1	4.2	60.8	131.7	192.5
Flatfish	2016	4.9	69.6	74.5	4.2	1.5	5.7	9.2	71.1	80.3
	2017	8.7	77.5	86.2	3.7	3.9	7.6	12.4	81.4	93.8
	2018	7.8	87.9	95.7	4.7	1.4	6.1	12.5	89.2	101.8
	2019	10.8	82.7	93.5	4.3	1.5	5.7	15.0	84.2	99.2
	2020	8.0	69.5	77.5	3.4	1.0	4.5	11.4	70.5	81.9

Continued on next page.

Table 3: Continued

	Year	Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
		Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total
Rockfish	2016	1.0	12.9	13.9	7.4	6.4	13.8	8.4	19.3	27.7
	2017	1.2	15.6	16.8	5.7	6.3	12.0	7.0	21.9	28.8
	2018	1.7	16.5	18.1	7.7	7.1	14.8	9.3	23.6	32.9
	2019	1.7	16.0	17.8	7.6	6.9	14.5	9.3	22.9	32.3
	2020	1.7	13.0	14.7	5.3	4.2	9.5	7.0	17.2	24.2
Atka Mackerel	2016	2.1	28.1	30.1	0.3	0.3	0.5	2.3	28.3	30.7
	2017	3.6	46.7	50.2	0.1	0.4	0.6	3.7	47.1	50.8
	2018	4.3	48.9	53.3	0.1	0.9	1.0	4.5	49.8	54.3
	2019	2.0	33.5	35.5	0.1	0.5	0.6	2.1	34.0	36.1
	2020	3.2	29.7	32.9	*	0.3	0.3	3.2	30.0	33.2
All Groundfish	2016	271.3	387.2	658.4	168.8	15.4	184.3	440.1	402.6	842.7
	2017	286.3	412.5	698.8	182.5	24.5	207.0	468.8	437.1	905.8
	2018	326.2	458.7	784.9	149.4	17.7	167.1	475.6	476.4	952.0
	2019	349.6	445.7	795.2	125.0	16.3	141.4	474.6	462.0	936.6
	2020	306.6	407.7	714.3	84.7	8.2	92.9	391.3	415.9	807.2

Notes: Ex-vessel value is calculated by multiplying ex-vessel prices by the retained round weight catch. The value added by at-sea processing is not included in these estimates of ex-vessel value. All groundfish includes additional species categories. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 4: Catch and real ex-vessel value of the commercial fisheries off Alaska by species group and area, 2016-2020; calculations based on COAR (1,000 metric tons and $ millions, base year = 2020).

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Species.group	Quantity	Value	Quantity	Value	Quantity	Value
2016	Groundfish	1,912.5	$ 702.7	307.7	$ 197.4	2,220.3	$ 900.1
	Salmon	110.1	$ 233.3	134.7	$ 245.1	244.8	$ 478.4
	Halibut	1.5	$ 20.9	6.9	$ 106.0	8.4	$ 126.9
	Herring	13.8	$ 1.9	9.6	$ 5.0	23.3	$ 6.9
	Shellfish	29.2	$ 262.7	3.0	$ 22.6	32.2	$ 285.3
	Other	-	$ -	1.2	$ 7.4	1.2	$ 7.4
	All Species	2,067.1	$ 1,221.5	463.0	$ 583.6	2,530.1	$ 1,805.1
2017	Groundfish	1,913.2	$ 733.3	301.9	$ 217.6	2,215.2	$ 950.9
	Salmon	115.4	$ 323.4	330.0	$ 456.3	445.4	$ 779.7
	Halibut	1.6	$ 20.1	7.0	$ 93.7	8.7	$ 113.8
	Herring	17.6	$ 2.5	13.3	$ 5.8	30.9	$ 8.4
	Shellfish	16.0	$ 169.2	2.7	$ 22.9	18.8	$ 192.1
	Other	-	$ -	1.0	$ 8.5	1.0	$ 8.5
	All Species	2,063.9	$ 1,248.5	656.0	$ 804.9	2,719.9	$ 2,053.4
2018	Groundfish	1,909.4	$ 806.8	238.9	$ 172.4	2,148.2	$ 979.3
	Salmon	116.2	$ 402.6	133.8	$ 273.1	250.0	$ 675.7
	Halibut	1.6	$ 15.9	6.7	$ 77.5	8.3	$ 93.3
	Herring	16.8	$ 2.4	3.7	$ 4.2	20.5	$ 6.6
	Shellfish	14.6	$ 165.7	4.6	$ 34.4	19.2	$ 200.2
	Other	-	$ -	1.4	$ 11.3	1.4	$ 11.3
	All Species	2,058.6	$ 1,393.3	389.1	$ 572.9	2,447.7	$ 1,966.3
2019	Groundfish	1,914.8	$ 805.3	207.7	$ 144.4	2,122.5	$ 949.7
	Salmon	116.7	$ 379.7	256.7	$ 322.0	373.4	$ 701.7
	Halibut	1.7	$ 15.5	7.0	$ 80.6	8.7	$ 96.1
	Herring	22.3	$ 2.3	0.9	$ 2.9	23.2	$ 5.2
	Shellfish	17.7	$ 196.1	5.8	$ 42.2	23.5	$ 238.3
	Other	-	$ -	1.5	$ 12.1	1.5	$ 12.1
	All Species	2,073.2	$ 1,398.9	479.7	$ 604.2	2,552.9	$ 2,003.1
2020	Groundfish	1,841.7	$ 716.8	182.2	$ 93.8	2,023.9	$ 810.6
	Salmon	98.9	$ 219.2	122.9	$ 158.1	221.8	$ 377.3
	Halibut	1.6	$ 12.7	6.4	$ 57.7	8.0	$ 70.4
	Herring	3.0	$ 0.5	1.8	$ 3.3	4.8	$ 3.8
	Shellfish	19.5	$ 198.4	6.9	$ 36.4	26.4	$ 234.8
	Other	-	$ -	1.2	$ 6.9	1.2	$ 6.9
	All Species	1,964.7	$ 1,147.5	321.5	$ 356.2	2,286.2	$ 1,503.8

Notes: These estimates include the value of catch from both federal and state of Alaska fisheries. The data have been adjusted to 2020 dollars by applying the Personal Consumption Expenditure Index at https://research.stlouisfed.org/fred2/series/PCEPI to account for affects of inflation on fishery revenue.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; ADF&G Commercial Operators Annual Reports (COAR); and NMFS Office of Science and Technology, Fisheries Statistics Division, Fisheries of the United States. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5: Production and real gross value of groundfish and non-groundfish products in the commercial fisheries off Alaska by species group and area of processing, 2016-2020 (1,000 metric tons product weight and $ millions, base year = 2020).

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Species	Quantity	Value	Quantity	Value	Quantity	Value
2016	Groundfish	838.2	$ 2,174.6	134.9	$ 387.4	973.1	$ 2,562.0
	Salmon	73.6	$ 559.1	130.3	$ 797.2	204.0	$ 1,356.4
	Halibut	2.4	$ 33.3	5.8	$ 115.7	8.2	$ 149.0
	Herring	10.2	$ 16.4	10.7	$ 14.0	20.9	$ 30.5
	Shellfish	18.0	$ 322.8	3.9	$ 66.3	22.0	$ 389.1
	Other	0	$ 0.3	1.1	$ 21.9	1.1	$ 22.2
	All Species	942.5	$ 3,106.6	286.7	$ 1,402.6	1,229.2	$ 4,509.2
2017	Groundfish	823.7	$ 2,264.4	136.8	$ 385.9	960.5	$ 2,650.3
	Salmon	74.6	$ 640.8	258.0	$ 1,350.5	332.7	$ 1,991.3
	Halibut	1.2	$ 23.7	6.3	$ 120.1	7.5	$ 143.8
	Herring	16.9	$ 15.4	14.2	$ 14.1	31.1	$ 29.5
	Shellfish	11.4	$ 234.7	1.7	$ 30.8	13.2	$ 265.5
	Other	*	$ *	2.1	$ 34.0	2.1	$ 34.0
	All Species	927.8	$ 3,179.0	419.1	$ 1,935.4	1,347.0	$ 5,114.3
2018	Groundfish	823.2	$ 2,312.7	113.5	$ 305.8	936.7	$ 2,618.5
	Salmon	79.8	$ 765.6	133.1	$ 845.6	212.9	$ 1,611.2
	Halibut	0.9	$ 15.9	5.6	$ 97.9	6.5	$ 113.8
	Herring	12.7	$ 10.9	3.7	$ 8.6	16.4	$ 19.5
	Shellfish	9.6	$ 178.6	2.7	$ 54.4	12.2	$ 233.0
	Other	*	$ *	1.5	$ 19.3	1.5	$ 19.3
	All Species	926.1	$ 3,283.7	260.2	$ 1,331.6	1,186.3	$ 4,615.3
2019	Groundfish	831.4	$ 2,274.9	99.9	$ 253.9	931.3	$ 2,528.9
	Salmon	83.5	$ 740.5	205.2	$ 1,013.4	288.7	$ 1,753.9
	Halibut	1.1	$ 14.2	6.0	$ 95.8	7.1	$ 110.0
	Herring	19.2	$ 16.5	0.9	$ 4.7	20.2	$ 21.1
	Shellfish	12.8	$ 236.3	3.2	$ 63.3	16.0	$ 299.6
	Other	0	$ 0.1	1.6	$ 24.3	1.6	$ 24.5
	All Species	948.1	$ 3,282.5	316.9	$ 1,455.4	1,264.9	$ 4,737.8
2020	Groundfish	753.0	$ 1,911.5	82.4	$ 190.6	835.4	$ 2,102.1
	Salmon	60.5	$ 522.6	104.0	$ 682.6	164.5	$ 1,205.2
	Halibut	1.2	$ 12.8	4.4	$ 70.8	5.6	$ 83.6
	Herring	0.5	$ 0.5	4.1	$ 7.8	4.6	$ 8.3
	Shellfish	14.0	$ 225.4	4.0	$ 68.1	18.0	$ 293.5
	Other	-	$ -	1.1	$ 13.7	1.1	$ 13.7
	All Species	829.1	$ 2,672.9	200.0	$ 1,033.6	1,029.1	$ 3,706.4

Notes: These estimates include production resulting from catch in both federal and state of Alaska fisheries. The data have been adjusted to 2020 dollars by applying the GDP: chain-type price index at https://research.stlouisfed.org/fred2/series/GDPCTPI. to account for affects of inflation on processor's revenue. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 6: Discards and discard rates for groundfish catch off Alaska by gear, and species, 2016-2020 (1,000 metric tons, round weight).

		Fixed		Trawl		All Gear	
	Year	Total Discards	Discard Rate	Total Discards	Discard Rate	Total Discards	Discard Rate
Pollock	2016	0.8	12	9.4	1	10.2	1
	2017	0.8	11	9.2	1	10.0	1
	2018	0.6	10	12.8	1	13.4	1
	2019	0.7	11	9.7	1	10.4	1
	2020	0.5	11	11.9	1	12.4	1
Sablefish	2016	0.8	9	0.2	14	1.0	9
	2017	0.8	7	0.6	27	1.4	11
	2018	0.9	8	1.9	51	2.8	19
	2019	1.7	13	2.7	52	4.3	25
	2020	1.0	8	4.1	56	5.1	26
Pacific Cod	2016	3.4	2	0.5	1	4.0	1
	2017	2.6	1	0.9	1	3.5	1
	2018	2.2	1	0.7	1	2.9	1
	2019	1.9	1	1.2	2	3.2	1
	2020	1.7	1	2.3	4	4.0	2
Flatfish	2016	3.1	76	12.7	5	15.9	6
	2017	3.0	70	11.9	5	14.9	6
	2018	3.1	83	13.3	6	16.5	7
	2019	2.3	76	9.6	4	12.0	5
	2020	1.7	79	9.6	4	11.3	5
Rockfish	2016	0.8	41	3.6	5	4.4	6
	2017	0.9	46	6.3	9	7.2	10
	2018	1.0	49	4.5	6	5.6	7
	2019	0.9	46	6.5	8	7.4	8
	2020	0.7	46	5.7	7	6.4	8
Atka Mackerel	2016	0	97	0.5	1	0.6	1
	2017	0	70	0.7	1	0.8	1
	2018	0	79	0.7	1	0.7	1
	2019	0	68	0.7	1	0.7	1
	2020	0	49	0.8	1	0.8	1
All Groundfish	2016	37.5	13	34.4	2	72.0	3
	2017	36.1	13	37.6	2	73.8	3
	2018	30.8	13	41.2	2	72.0	3
	2019	20.7	10	38.7	2	59.4	3
	2020	19.0	11	41.2	2	60.2	3

Notes: All groundfish and all gear may include additional species or gear types. Discards rates are calculated as 100*discards/(total catch). See the seventh bullet in Section efsec:additional-notes for an explanation of 0 discards with positive discard rates. For details on discard estimation see Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 7: Prohibited species catch (PSC) by species, area and gear, 2016-2020 (metric tons (t) or number in 1,000s).

		Year	Halibut (t)	Herring (t)	Chinook (1,000s)	Other Salmon (1,000s)	Red King Crab (1,000s)	Other King Crab (1,000s)	Bairdi (1,000s)	Other Tanner (1,000s)
Bering Sea and Aleutian Islands	Fixed	2016	225	*	0.04	0.25	26.73	16.28	315.22	43.10
		2017	193	0	0.03	0.21	34.93	77.39	357.21	167.71
		2018	133	0	0.07	0.18	338.84	48.31	271.57	66.52
		2019	88	0	0.02	0.33	47.28	12.58	126.44	88.20
		2020	93	0	0.02	0.13	23.27	9.91	87.21	154.28
	Trawl	2016	2,132	1,494	32.88	347.10	41.36	14.77	221.19	166.97
		2017	1,775	1,021	36.25	471.25	60.42	10.59	353.01	159.68
		2018	1,952	541	17.33	308.84	30.74	16.03	183.83	1,582.43
		2019	2,267	1,182	31.44	358.48	70.14	33.95	344.00	941.30
		2020	1,577	3,934	34.97	322.90	64.60	13.82	598.05	780.57
	All Gear	2016	2,357	1,494	32.93	347.36	68.09	31.05	536.42	210.08
		2017	1,968	1,021	36.28	471.45	95.35	87.98	710.22	327.39
		2018	2,085	541	17.40	309.02	369.58	64.35	455.40	1,648.95
		2019	2,355	1,182	31.47	358.81	117.42	46.54	470.44	1,029.50
		2020	1,671	3,934	34.99	323.04	87.87	23.73	685.26	934.85
Gulf of Alaska	Fixed	2016	44	-	0.11	0.49	0.03	0.04	62.91	0
		2017	15	-	0.07	0.08	-	0.09	4.14	0
		2018	1	-	0.08	0.09	0	0.07	18.19	-
		2019	1	-	0	0.27	-	0.21	29.96	-
		2020	*	-	-	0.11	-	0.11	0.11	0.01
	Trawl	2016	1,331	144	21.87	2.76	-	0.72	91.80	0.18
		2017	1,214	6	24.93	5.67	-	0.24	122.82	-
		2018	1,192	45	17.00	9.15	-	0.32	235.73	-
		2019	1,099	81	23.90	6.41	-	0.36	245.17	-
		2020	788	67	11.75	3.32	*	0.06	623.01	-
	All Gear	2016	1,374	144	21.98	3.25	0.03	0.76	154.70	0.19
		2017	1,229	6	25.00	5.75	-	0.33	126.96	0
		2018	1,193	45	17.08	9.24	0	0.40	253.92	-
		2019	1,101	81	23.90	6.69	-	0.56	275.13	-
		2020	788	67	11.75	3.43	*	0.17	623.13	0.01

Notes: These estimates include only catches counted against federal TACs. Totals may include additional categories. Totals include halibut mortality taken by Amendment 80 vessels under the Exempted Fishing Permit No. 2015-02. The estimates of halibut bycatch mortality are based on the IPHC discard mortality rates that were used for in-season management. The halibut IFQ program allows retention of halibut in the hook-and-line groundfish fisheries, making true halibut bycatch numbers unavailable for these fisheries. This is particularly a problem in the GOA for all hook-and-line fisheries and in the BSAI for the sablefish hook-and-line fishery. Therefore, estimates of halibut bycatch mortality are not included in this table for those fisheries. There were substantial changes to the observer program in 2013 that could affect the comparability of 2013 and later years, to previous years. Excludes PSC on halibut targets. Excludes PSC in state fisheries (sablefish and P. cod targets in state waters) For details on prohibited species catch estimation see Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 8: Percentage of ex-vessel value of the groundfish catch off Alaska by area, residency, and species, 2016-2020; calculations based on COAR.

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Year	Alaska	Other	Alaska	Other	Alaska	Other
Pollock	2016	17 %	83 %	45 %	55 %	19 %	81 %
	2017	13 %	87 %	49 %	51 %	16 %	84 %
	2018	13 %	87 %	48 %	52 %	16 %	84 %
	2019	12 %	88 %	50 %	50 %	15 %	85 %
	2020	9 %	91 %	53 %	47 %	12 %	88 %
Sablefish	2016	32 %	68 %	61 %	39 %	59 %	41 %
	2017	38 %	62 %	61 %	39 %	60 %	40 %
	2018	27 %	73 %	63 %	37 %	61 %	39 %
	2019	36 %	64 %	62 %	38 %	60 %	40 %
	2020	29 %	71 %	66 %	34 %	62 %	38 %
Pacific Cod	2016	26 %	74 %	79 %	21 %	37 %	63 %
	2017	27 %	73 %	72 %	28 %	34 %	66 %
	2018	26 %	74 %	70 %	30 %	29 %	71 %
	2019	30 %	70 %	72 %	28 %	33 %	67 %
	2020	29 %	71 %	85 %	15 %	31 %	69 %
Flatfish	2016	16 %	84 %	47 %	53 %	18 %	82 %
	2017	20 %	80 %	42 %	58 %	22 %	78 %
	2018	22 %	78 %	59 %	41 %	24 %	76 %
	2019	24 %	76 %	63 %	37 %	26 %	74 %
	2020	22 %	78 %	60 %	40 %	25 %	75 %
Rockfish	2016	3 %	97 %	28 %	72 %	16 %	84 %
	2017	22 %	78 %	41 %	59 %	30 %	70 %
	2018	21 %	79 %	40 %	60 %	29 %	71 %
	2019	23 %	77 %	39 %	61 %	30 %	70 %
	2020	22 %	78 %	45 %	55 %	31 %	69 %
Atka Mackerel	2016	0 %	100 %	30 %	70 %	0 %	99 %
	2017	27 %	73 %	29 %	71 %	27 %	73 %
	2018	27 %	73 %	17 %	83 %	26 %	74 %
	2019	27 %	73 %	15 %	85 %	27 %	73 %
	2020	27 %	73 %	14 %	86 %	27 %	73 %
All Groundfish	2016	18 %	82 %	59 %	41 %	27 %	73 %
	2017	19 %	81 %	59 %	41 %	28 %	72 %
	2018	18 %	82 %	57 %	43 %	25 %	75 %
	2019	19 %	81 %	58 %	42 %	24 %	76 %
	2020	17 %	83 %	60 %	40 %	22 %	78 %

Notes: These estimates include only catches counted against federal TACs. Ex-vessel value is calculated using prices on Table 18. Please refer to Table 18 for a description of the price derivation. Catch delivered to motherships is classified by the residency of the owner of the mothership. All other catch is classified by the residence of the owner of the fishing vessel. All groundfish include additional species categories. For catch for which the residence is unknown, there are either no data or the data have been suppressed to preserve confidentiality. Values are not adjusted for inflation.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; ADF&G Commercial Operators Annual Reports (COAR); and CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 9: Number of vessels that caught groundfish off Alaska by area, vessel category, and target, 2016-2020.

		Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
	Year	Catcher Vessels	Catcher Proces-sors	Total	Catcher Vessels	Catcher Proces-sors	Total	Catcher Vessels	Catcher Proces-sors	Total
Pollock	2016	89	33	122	70	-	70	138	33	171
	2017	87	31	118	65	-	65	133	31	164
	2018	85	27	112	69	2	71	133	28	161
	2019	84	30	114	62	-	62	125	30	155
	2020	88	29	117	60	1	61	131	29	160
Sablefish	2016	17	6	23	270	5	275	278	10	288
	2017	15	6	21	268	5	273	275	9	284
	2018	17	9	26	273	6	279	282	13	295
	2019	13	5	18	249	6	255	255	10	265
	2020	13	7	20	246	5	251	251	10	261
Pacific Cod	2016	110	52	162	347	11	358	435	53	488
	2017	128	45	173	238	9	247	331	45	376
	2018	144	49	193	149	3	152	265	50	315
	2019	149	47	196	173	3	176	301	47	348
	2020	151	38	189	100	-	100	246	38	284
Flatfish	2016	9	30	39	27	5	32	36	31	67
	2017	8	26	34	19	4	23	27	27	54
	2018	9	26	35	34	4	38	42	27	69
	2019	9	26	35	30	4	34	39	27	66
	2020	8	25	33	22	5	27	30	26	56

Continued on next page.

Table 9: Continued

	Year	Bering Sea and Aleutian Islands			Gulf of Alaska			All Alaska		
		Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total	Catcher Vessels	Catcher Processors	Total
Rockfish	2016	3	18	21	124	12	136	127	21	148
	2017	3	16	19	127	11	138	130	19	149
	2018	4	21	25	110	9	119	114	24	138
	2019	5	22	27	105	9	114	110	24	134
	2020	6	18	24	89	8	97	95	22	117
Atka Mackerel	2016	4	9	13	2	-	2	6	9	15
	2017	4	12	16	-	1	1	4	13	17
	2018	4	14	18	1	2	3	5	16	21
	2019	4	14	18	-	-	-	4	14	18
	2020	3	13	16	-	-	-	3	13	16
All Targets	2016	170	71	241	621	26	647	737	73	810
	2017	182	68	250	522	22	544	644	70	714
	2018	196	66	262	467	16	483	588	68	656
	2019	195	65	260	468	19	487	594	67	661
	2020	206	59	265	413	14	427	555	61	616

Notes: The target is determined based on vessel, week, NMFS area, and gear. These estimates include only vessels that fished part of federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 10: Bering Sea & Aleutian Islands groundfish retained catch by vessel type, gear and species, 2016-2020 (1,000 metric tons, round weight).

		Catcher Vessels				Catcher Processors				Total			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Pollock	2016	-	-	703.9	704.0	-	-	636.0	641.8	-	-	1,339.9	1,345.7
	2017	-	-	710.4	710.4	-	-	635.9	642.2	-	-	1,346.2	1,352.6
	2018	-	-	718.3	718.3	-	-	646.2	651.4	-	-	1,364.5	1,369.8
	2019	-	-	735.6	735.6	-	-	660.6	666.2	-	-	1,396.2	1,401.8
	2020	-	-	724.5	724.5	-	-	629.0	633.3	-	-	1,353.5	1,357.8
Pacific Cod	2016	0	39.4	46.5	86.0	126.9	7.6	37.1	171.6	126.9	47.1	83.7	257.6
	2017	0.1	43.2	44.7	88.0	124.3	5.8	31.9	162.1	124.4	49.0	76.7	250.0
	2018	0.9	42.2	39.3	82.5	100.9	4.3	30.3	135.5	101.8	46.5	69.6	217.9
	2019	1.2	43.1	33.3	77.6	88.6	4.2	25.6	118.3	89.8	47.3	58.8	195.9
	2020	1.0	35.7	30.5	67.2	73.2	3.4	22.1	98.7	74.2	39.1	52.6	165.9
Sablefish	2016	0.2	*	0	0.2	0.1	-	0.3	0.4	0.3	*	0.3	0.6
	2017	0.2	*	0.1	0.2	0.1	*	0.5	0.5	0.2	*	0.5	0.8
	2018	0.2	0.3	0.3	0.8	0.1	*	0.6	0.7	0.3	0.3	0.9	1.5
	2019	0.2	0.5	0.8	1.6	0	*	0.4	0.4	0.2	0.5	1.2	2.0
	2020	0.1	0	1.6	1.7	0	*	0.7	0.7	0.1	0	2.2	2.3
Atka Mackerel	2016	-	-	3.7	3.7	-	-	50.4	50.4	-	-	54.1	54.1
	2017	-	-	4.4	4.4	-	-	59.4	59.4	-	-	63.8	63.8
	2018	-	-	5.6	5.7	-	-	63.8	63.9	-	-	69.5	69.5
	2019	-	-	3.3	3.3	-	-	53.6	53.6	-	-	56.8	56.8
	2020	-	-	5.6	5.6	-	-	52.5	52.5	-	-	58.1	58.1
Yellowfin	2016	-	-	10.8	10.8	*	-	120.4	120.4	*	-	131.2	131.2
	2017	-	-	15.2	15.2	0.1	-	113.3	113.4	0.1	-	128.6	128.6
	2018	-	-	12.2	12.3	0.2	-	114.9	115.0	0.2	-	127.1	127.3
	2019	-	-	17.3	17.3	0	-	108.8	108.8	0	-	126.1	126.1
	2020	-	-	14.4	14.4	*	-	115.6	115.6	*	-	129.9	129.9
Rock Sole	2016	-	-	2.4	2.4	*	-	40.9	40.9	*	-	43.3	43.3
	2017	-	-	3.1	3.1	0	-	30.8	30.8	0	-	33.9	33.9
	2018	*	-	1.6	1.6	0	-	25.6	25.6	0	-	27.1	27.1
	2019	*	-	2.4	2.4	0	-	22.0	22.0	0	-	24.4	24.4
	2020	-	-	2.2	2.2	*	-	22.0	22.0	*	-	24.3	24.3

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Table 10: Continued

		Catcher Vessels				Catcher Processors				Total			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Flathead Sole	2016	-	-	0.4	0.4	-	-	8.6	8.6	-	-	9.0	9.0
	2017	-	-	0.6	0.6	0	-	7.5	7.5	0	-	8.1	8.1
	2018	-	-	0.8	0.8	*	-	9.4	9.4	*	-	10.2	10.2
	2019	*	-	0.8	0.8	0	-	14.1	14.1	0	-	14.9	14.9
	2020	-	-	1.0	1.0	0	-	7.2	7.2	0	-	8.2	8.3
Arrowtooth	2016	*	-	0.2	0.2	0	-	8.8	8.8	0	-	9.0	9.0
	2017	*	-	0.1	0.1	0.2	-	5.2	5.4	0.2	-	5.4	5.6
	2018	0	-	0.2	0.2	0.1	-	5.6	5.7	0.1	-	5.8	5.9
	2019	-	-	0.6	0.6	0.1	-	8.3	8.4	0.1	-	8.9	9.0
	2020	*	-	0.3	0.3	0.1	-	9.4	9.5	0.1	-	9.7	9.8
Kamchatka Flounder	2016	-	-	0	0	0	-	4.5	4.5	0	-	4.5	4.5
	2017	-	-	0.1	0.1	0	-	4.1	4.1	0	-	4.2	4.2
	2018	-	-	0	0	0	-	2.8	2.8	0	-	2.9	2.9
	2019	-	-	0.1	0.1	0	-	4.1	4.1	0	-	4.2	4.2
	2020	*	-	0.2	0.2	0	-	6.9	6.9	0	-	7.2	7.2
Turbot	2016	*	-	0	0	0.9	-	1.2	2.1	0.9	-	1.2	2.1
	2017	-	-	0	0	0.9	-	1.8	2.7	0.9	-	1.8	2.7
	2018	-	-	0	0	0.3	-	1.5	1.7	0.3	-	1.5	1.7
	2019	*	-	0	0	0.5	-	2.2	2.8	0.5	-	2.3	2.8
	2020	*	-	0	0	0.3	-	1.9	2.1	0.3	-	1.9	2.1
Other Flatfish	2016	-	-	0.9	0.9	*	-	11.4	11.4	*	-	12.3	12.3
	2017	-	-	2.0	2.0	*	-	13.4	13.4	*	-	15.4	15.4
	2018	-	-	1.7	1.7	*	-	20.5	20.5	*	-	22.2	22.2
	2019	-	-	2.4	2.4	0	-	14.3	14.3	0	-	16.7	16.7
	2020	*	-	3.0	3.0	0	-	16.2	16.2	0	-	19.2	19.2
Pacific Ocean Perch	2016	*	-	2.3	2.3	*	-	28.0	28.0	*	-	30.3	30.3
	2017	-	-	2.3	2.3	0	-	28.0	28.0	0	-	30.3	30.3
	2018	*	-	3.0	3.0	0	-	29.4	29.4	0	-	32.4	32.4
	2019	*	-	4.4	4.4	0	-	35.4	35.4	0	-	39.8	39.8
	2020	*	-	4.4	4.4	*	-	33.1	33.1	*	-	37.5	37.5

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Table 10: Continued

		Catcher Vessels				Catcher Processors				Total			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Northern Rockfish	2016	*	-	0.2	0.2	0	-	4.0	4.0	0	-	4.2	4.2
	2017	-	-	0.2	0.2	0	-	4.2	4.2	0	-	4.4	4.4
	2018	*	-	0.4	0.4	0	-	4.8	4.9	0	-	5.2	5.2
	2019	-	-	0.4	0.4	*	-	8.2	8.2	*	-	8.6	8.6
	2020	-	-	0.8	0.8	0	-	6.5	6.5	0	-	7.3	7.3
Other Rockfish	2016	0	-	0	0.1	0	-	0.7	0.7	0.1	-	0.7	0.8
	2017	0	-	0	0.1	0	-	0.7	0.8	0.1	-	0.8	0.8
	2018	0	-	0.1	0.1	0	-	1.0	1.0	0.1	-	1.0	1.1
	2019	0	-	0.1	0.1	0	-	1.3	1.3	0	-	1.3	1.4
	2020	0	-	0.1	0.1	0	-	1.1	1.1	0	-	1.1	1.2
Other Groundfish	2016	0	-	0.5	0.5	5.1	-	1.7	6.8	5.1	-	2.1	7.3
	2017	*	-	1.0	1.1	7.7	-	1.7	9.4	7.7	-	2.7	10.5
	2018	0	-	1.6	1.8	9.5	-	2.5	12.0	9.5	-	4.2	13.8
	2019	0	-	0.5	0.7	6.3	-	2.7	9.1	6.4	-	3.2	9.7
	2020	0	-	0.5	0.6	6.5	-	1.9	8.4	6.5	-	2.3	9.0
All Groundfish	2016	0.3	-	771.8	811.6	138.9	-	953.9	1,100.4	139.2	-	1,725.7	1,912.1
	2017	0.3	-	784.2	827.8	139.6	-	938.4	1,083.9	139.9	-	1,722.7	1,911.7
	2018	1.2	-	785.2	829.2	116.3	-	959.0	1,079.5	117.4	-	1,744.2	1,908.7
	2019	1.4	-	801.9	847.1	101.3	-	961.5	1,067.0	102.7	-	1,763.5	1,914.1
	2020	1.1	-	789.2	826.1	84.5	-	925.9	1,013.8	85.6	-	1,715.1	1,839.9

Notes: The estimates are of retained catch (i.e., excludes discarded catch). All groundfish include additional species categories. These estimates include only catch counted against federal TACs. Includes FMP groundfish catch on halibut targets. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 11: Bering Sea & Aleutian Islands groundfish retained catch by species, gear, and target fishery, 2019-2020, (1,000 metric tons, round weight).

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Kamchatka Flounder	Flathead Sole	Rock Sole	Turbot	Yellowfin	Flat Other	Rockfish	Atka Mackerel	Other	All Species
Hook and Line	Catcher Processors	2019	Sablefish	*	*	-	*	*	-	-	*	-	-	*	-	-	*
			Pacific Cod	5.7	0	88.6	0.1	0	0	0	0	0	0	0	*	6.3	100.8
			Arrowtooth	-	-	-	*	*	-	-	*	-	-	*	-	-	*
			Turbot	*	*	*	*	*	-	-	0.5	-	-	0	-	0	0.5
			Rockfish	*	*	-	-	*	-	-	*	-	-	*	-	-	*
			Halibut	-	-	*	-	-	-	-	-	-	-	-	-	-	*
			All Targets	5.7	0	88.6	0.1	0	0	0	0.5	0	0	0	*	6.3	101.3
		2020	Pollock, Bottom	*	-	*	-	-	-	-	-	-	-	-	-	-	*
			Sablefish	*	0	*	*	*	-	-	*	-	*	*	-	*	0
			Pacific Cod	4.3	*	73.2	0.1	0	0	*	0.1	*	0	0	0	6.5	84.2
			Turbot	*	*	*	*	*	-	-	0.2	-	-	0	-	*	0.2
			Rockfish	-	-	-	-	-	*	-	*	-	-	*	-	-	*
			Halibut	-	-	*	-	-	-	-	-	-	-	-	-	-	*
			All Targets	4.3	0	73.2	0.1	0	0	*	0.3	*	0	0	0	6.5	84.5
	Catcher Vessels	2019	Sablefish	-	0.1	*	-	-	-	-	-	-	-	*	-	-	0.1
			Pacific Cod	*	*	1.1	-	-	*	*	-	-	-	*	-	0	1.2
			Halibut	-	0.1	0	-	-	-	-	*	-	-	0	-	0	0.2
			All Targets	*	0.2	1.2	-	-	*	*	*	-	-	0	-	0	1.4
		2020	Sablefish	-	*	-	-	-	-	-	-	-	-	*	-	-	*
			Pacific Cod	*	*	0.9	*	-	-	-	-	-	*	*	-	*	0.9
			Halibut	-	0.1	0	*	*	-	-	*	-	-	0	-	0	0.2
			All Targets	*	0.1	1.0	*	*	-	-	*	-	*	0	-	0	1.1
Pot	Catcher Processors	2019	Sablefish	*	*	*	*	*	-	-	*	-	-	*	-	-	*
			Pacific Cod	0	*	4.2	-	-	-	-	-	-	-	-	-	*	4.2
			All Targets	0	*	4.2	*	*	-	-	*	-	-	*	-	*	4.2
		2020	Sablefish	-	*	-	-	-	-	-	-	-	-	*	-	*	*
			Pacific Cod	*	*	3.4	-	-	-	-	-	-	-	-	-	*	3.4
			All Targets	*	*	3.4	-	-	-	-	-	-	-	*	-	*	3.4
	Catcher Vessels	2019	Sablefish	-	0.5	-	-	-	-	-	-	-	-	-	-	-	0.5
			Pacific Cod	0	*	43.1	*	-	0	0	-	0	0	0	0	0.1	43.3
			All Targets	0	0.5	43.1	*	-	0	0	-	0	0	0	0	0.1	43.8
		2020	Sablefish	-	*	*	*	-	-	-	*	-	-	*	-	-	*
			Pacific Cod	0	0	35.7	*	-	0	*	*	0	0	0	0	0.1	35.9
			Rockfish	-	-	-	-	-	-	-	-	-	-	*	-	-	*
			Halibut	-	*	-	-	-	-	-	-	-	-	*	-	-	*
			All Targets	0	0	35.7	*	-	0	*	*	0	0	0	0	0.1	35.9

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Table 11: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Kamchatka Flounder	Flathead Sole	Rock Sole	Turbot	Yellowfin	Flat Other	Rockfish	Atka Mackerel	Other	All Species
Trawl	Catcher Processors	2019	Pollock, Bottom	22.2	0	0.3	0.1	0	0.1	0.1	0	0.3	0.1	2.4	0.1	0	25.8
			Pollock, Pelagic	610.5	0	2.6	0.1	0	0.5	0.6	0	0.1	0.1	1.3	0	0.1	615.9
			Sablefish	*	*	-	*	*	*	-	*	*	*	*	-	*	*
			Pacific Cod	0.3	-	2.8	0.2	0	0.1	0.5	*	0.2	0	*	*	0	4.0
			Arrowtooth	0.2	0	0.1	1.1	0.3	0.1	0	0.2	0	0	0.1	*	0.1	2.2
			Kamchatka Flounder	0.1	0.1	0	0.4	1.4	0.1	0	0.3	*	0	0.3	0.1	0	2.8
			Flathead Sole	4.5	*	2.7	2.7	0.4	8.3	1.3	0.2	5.2	1.2	0.1	*	0.5	27.0
			Rock Sole	2.6	-	4.2	0.3	0	0.5	11.8	-	8.4	1.3	*	*	0.2	29.4
			Turbot	0.2	0	0	0.2	0.9	0.5	*	1.3	*	0.2	0.3	-	0	3.7
			Yellowfin	17.2	-	9.8	2.7	0.2	3.7	7.5	0	94.4	10.6	0	0	1.4	147.5
			Other Flatfish	0.3	0	0.1	0.1	0.1	0.1	0.1	0	0.2	0.5	0	-	0	1.6
			Rockfish	1.9	0.2	0.9	0.4	0.4	0.1	0	0.1	0	0.1	29.5	7.9	0.1	41.7
			Atka Mackerel	0.5	0	2.0	0.1	0.4	0	0.1	0	*	0	10.9	45.5	0.3	59.9
			All Targets	660.6	0.4	25.6	8.3	4.1	14.1	22.0	2.2	108.8	14.3	44.9	53.6	2.7	961.5
		2020	Pollock, Bottom	23.4	0	0.6	0.4	0.1	0.4	0.3	0.1	0.8	0.2	1.6	0	0.1	28.0
			Pollock, Pelagic	574.6	0	2.6	0.1	0	0.7	0.2	0	0.1	0.1	0.7	0	0.2	579.4
			Sablefish	0	0	-	0	0	0	-	0	-	0	0	-	-	0.1
			Pacific Cod	0.2	-	1.1	0	0	0	0.3	*	0	0	0	0	0	1.7
			Arrowtooth	0.6	0.1	0.2	3.9	1.0	0.5	0	0.2	0.1	0.3	0.4	0	0.1	7.5
			Kamchatka Flounder	0.6	0.4	0	1.6	4.7	0.1	0	0.8	*	0.1	1.1	*	0	9.3
			Flathead Sole	1.0	*	0.7	0.8	0.1	1.9	0.2	0	0.7	0.4	0	*	0.2	6.0
			Rock Sole	4.5	*	4.1	0.1	0	0.3	11.7	*	9.0	1.9	0	-	0.1	31.7
			Turbot	0.1	0	0	0.1	0.3	0.2	0	0.5	*	0	0	-	0	1.4
			Yellowfin	21.9	0	10.1	1.8	0.1	3.0	9.0	0	104.7	12.7	*	-	0.9	164.3
			Other Flatfish	0.1	*	0.1	*	*	0.1	0.1	*	0.1	0.4	*	*	*	0.9
			Rockfish	1.6	0.1	0.8	0.5	0.5	0.1	0	0.1	0	0.1	27.1	7.9	0.1	38.8
			Atka Mackerel	0.4	0	1.7	0.2	0.2	0	0	*	*	0	9.8	44.5	0.2	57.0
			All Targets	629.0	0.7	22.1	9.4	6.9	7.2	22.0	1.9	115.6	16.2	40.7	52.5	1.9	925.9

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Table 11: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Kamchatka Flounder	Flathead Sole	Rock Sole	Turbot	Yellowfin	Flat Other	Rockfish	Atka Mackerel	Other	All Species
Trawl	Catcher Vessels	2019	Pollock, Bottom	11.2	0.1	0.2	0	*	0	0	*	0	0	0.6	0.1	0	12.3
			Pollock, Pelagic	721.8	0.7	3.1	0.1	0	0.3	0.1	0	0	0.1	1.4	0.1	0.2	727.9
			Pacific Cod	0.6	*	27.5	0.1	0	0.1	0.2	*	0.2	0.1	0	*	0.1	28.8
			Flathead Sole	0.1	-	0.1	0.1	*	0.1	0	*	0.1	0	-	-	*	0.5
			Rock Sole	0.1	-	0.2	*	-	0	0.8	-	1.2	0.2	-	-	0	2.5
			Yellowfin	1.7	-	1.8	0.2	0	0.4	1.2	-	15.8	1.9	*	-	0.3	23.3
			Other Flatfish	*	-	*	*	*	*	*	-	*	*	-	-	*	*
			Rockfish	0.1	0	0.3	0	0.1	*	0	*	-	0	2.7	0.7	*	4.0
			Atka Mackerel	0	0	0.2	*	*	-	0	-	-	-	0.2	2.3	0	2.7
			All Targets	735.6	0.8	33.3	0.6	0.1	0.8	2.4	0	17.3	2.4	4.9	3.3	0.5	801.9
		2020	Pollock, Bottom	27.3	0.4	0.7	0	*	0.1	0	0	0.1	0.1	0.8	0.3	0	30.0
			Pollock, Pelagic	694.5	1.0	4.3	0.2	0	0.6	0.2	0	0	0.3	1.1	0.1	0.2	702.5
			Pacific Cod	0.3	0	23.0	0	*	0	0.1	*	0.1	0	*	*	0	23.5
			Flathead Sole	*	-	*	-	*	*	*	-	*	*	-	-	*	*
			Rock Sole	0.3	-	0.3	0	*	0	0.7	-	0.9	0.4	-	-	0	2.6
			Yellowfin	1.8	-	1.6	0.1	0	0.3	1.3	*	13.3	2.3	-	-	0.1	20.7
			Other Flatfish	*	-	*	-	-	*	*	-	*	*	-	-	*	*
			Rockfish	0.2	0.1	0.1	0	0.2	*	*	*	-	0	2.2	0.5	0	3.4
			Atka Mackerel	0.1	0	0.5	0	0	-	0	*	*	*	1.1	4.7	0.1	6.5
			All Targets	724.5	1.6	30.5	0.3	0.2	1.0	2.2	0	14.4	3.0	5.3	5.6	0.5	789.2
All Gear	Catch Proc.	2019	All Targets	666.2	0.4	118.3	8.4	4.1	14.1	22.0	2.8	108.8	14.3	44.9	53.6	9.1	1,067.0
		2020	All Targets	633.3	0.7	98.7	9.5	6.9	7.2	22.0	2.1	115.6	16.2	40.7	52.5	8.4	1,013.8
	Catch Vess.	2019	All Targets	735.6	1.6	77.6	0.6	0.1	0.8	2.4	0	17.3	2.4	4.9	3.3	0.7	847.1
		2020	All Targets	724.5	1.7	67.2	0.3	0.2	1.0	2.2	0	14.4	3.0	5.3	5.6	0.6	826.1

Notes: Totals may include additional categories. The target is derived from an algorithm used to determine preponderance of catch, accounting for processor, trip, processing mode, NMFS area, and gear. These estimates include only catch counted against federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 12: Bering Sea & Aleutian Islands ex-vessel prices in the groundfish fisheries by gear, and species, 2016-2020; calculations based on COAR ($/lb, round weight).

		Shoreside			At Sea			All Sectors		
	Year	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear
Pollock	2016	0.134	0.139	0.139	0.020	0.117	0.117	0.020	0.127	0.126
	2017	0.015	0.137	0.137	0.015	0.105	0.104	0.015	0.119	0.118
	2018	0.145	0.156	0.156	0.145	0.119	0.119	0.145	0.135	0.135
	2019	0.157	0.167	0.167	0.157	0.128	0.128	0.157	0.145	0.145
	2020	0.015	0.154	0.154	0.015	0.112	0.112	0.015	0.131	0.130
Pacific Cod	2016	0.278	0.249	0.264	0.292	0.246	0.280	0.288	0.247	0.275
	2017	0.332	0.294	0.316	0.340	0.283	0.326	0.338	0.288	0.323
	2018	0.410	0.383	0.399	0.437	0.349	0.413	0.429	0.364	0.408
	2019	0.443	0.369	0.418	0.478	0.351	0.443	0.467	0.358	0.434
	2020	0.418	0.346	0.389	0.691	0.308	0.589	0.603	0.326	0.515
Sablefish	2016	4.010	1.193	3.976	4.010	1.193	2.032	4.010	1.193	3.017
	2017	3.980	1.172	3.769	3.980	1.172	1.875	3.980	1.172	2.741
	2018	2.121	0.809	1.690	2.121	0.809	1.276	2.121	0.809	1.467
	2019	1.915	0.751	1.297	1.915	0.751	1.018	1.915	0.751	1.214
	2020	1.505	0.674	0.939	1.505	0.674	0.961	1.505	0.674	0.947
Atka Mackerel	2016	0.016	0.253	0.243	*	0.253	0.253	0.016	0.253	0.253
	2017	0.015	0.356	0.352	0.015	0.356	0.356	0.015	0.356	0.356
	2018	0.203	0.348	0.347	0.203	0.348	0.348	0.203	0.348	0.348
	2019	0.015	0.283	0.283	*	0.283	0.283	0.015	0.283	0.283
	2020	0.015	0.256	0.256	0.015	0.256	0.256	0.015	0.256	0.256
Yellowfin	2016	0.014	0.147	0.139	*	0.147	0.147	0.014	0.147	0.147
	2017	0.015	0.176	0.156	0.015	0.176	0.176	0.015	0.176	0.176
	2018	0.015	0.216	0.175	0.015	0.216	0.216	0.015	0.216	0.216
	2019	0.015	0.206	0.094	0.015	0.206	0.206	0.015	0.206	0.206
	2020	0.015	0.162	0.115	*	0.162	0.162	0.015	0.162	0.162
Rock Sole	2016	0.113	0.167	0.167	*	0.167	0.167	0.113	0.167	0.167
	2017	0.015	0.194	0.194	0.015	0.194	0.194	0.015	0.194	0.194
	2018	0.015	0.237	0.237	0.015	0.237	0.237	0.015	0.237	0.237
	2019	0.015	0.221	0.221	0.015	0.221	0.221	0.015	0.221	0.221
	2020	*	0.201	0.201	*	0.201	0.201	*	0.201	0.201

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Table 12: Continued

		Shoreside			At Sea			All Sectors		
	Year	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear
Flathead Sole	2016	0.113	0.194	0.193	-	0.193	0.193	0.113	0.193	0.193
	2017	0.015	0.221	0.220	0.015	0.221	0.221	0.015	0.221	0.221
	2018	0.016	0.255	0.254	*	0.255	0.255	0.016	0.255	0.254
	2019	0.015	0.222	0.220	0.015	0.222	0.222	0.015	0.222	0.222
	2020	0.015	0.164	0.164	0.015	0.164	0.164	0.015	0.164	0.164
Arrowtooth	2016	0.113	0.213	0.211	0.113	0.213	0.213	0.113	0.213	0.213
	2017	*	0.324	0.324	0.015	0.324	0.312	0.015	0.324	0.312
	2018	0.016	0.218	0.217	0.015	0.218	0.214	0.015	0.218	0.214
	2019	*	0.216	0.216	0.015	0.216	0.214	0.015	0.216	0.214
	2020	0.018	0.178	0.177	0.015	0.178	0.176	0.015	0.178	0.176
Kamchatka Flounder	2016	-	-	-	0.113	0.206	0.206	0.113	0.206	0.206
	2017	-	-	-	0.015	0.367	0.365	0.015	0.367	0.365
	2018	-	*	*	0.015	0.316	0.314	0.015	0.316	0.314
	2019	-	*	*	0.015	0.246	0.245	0.015	0.246	0.245
	2020	*	*	*	0.015	0.218	0.218	0.015	0.218	0.218
Turbot	2016	*	0.649	0.649	0.113	0.649	0.413	0.113	0.649	0.414
	2017	-	0.689	0.689	0.015	0.689	0.460	0.015	0.689	0.460
	2018	-	0.685	0.685	0.015	0.685	0.589	0.015	0.685	0.589
	2019	*	0.700	0.700	0.015	0.700	0.572	0.015	0.700	0.572
	2020	*	0.649	0.649	0.015	0.649	0.571	0.015	0.649	0.571
Other Flatfish	2016	0.113	0.366	0.364	*	0.145	0.145	0.113	0.146	0.146
	2017	*	0.406	0.406	*	0.229	0.229	*	0.229	0.229
	2018	0.015	0.208	0.204	0.015	0.169	0.169	0.015	0.169	0.169
	2019	0.015	0.580	0.551	0.015	0.188	0.188	0.015	0.192	0.191
	2020	0.015	0.398	0.397	0.015	0.168	0.168	0.015	0.171	0.171
Pacific Ocean Perch	2016	0.780	0.180	0.180	*	0.180	0.180	0.780	0.180	0.180
	2017	*	0.218	0.218	1.001	0.218	0.218	1.001	0.218	0.218
	2018	*	0.217	0.217	0.771	0.217	0.217	0.771	0.217	0.217
	2019	0.016	0.160	0.160	0.742	0.160	0.160	0.221	0.160	0.160
	2020	*	0.150	0.150	*	0.150	0.150	*	0.150	0.150

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Table 12: Continued

		Shoreside			At Sea			All Sectors		
	Year	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear
Northern Rockfish	2016	*	0.127	0.127	0.780	0.127	0.127	0.780	0.127	0.127
	2017	*	0.152	0.152	1.001	0.152	0.153	1.001	0.152	0.153
	2018	*	0.156	0.156	0.771	0.156	0.157	0.771	0.156	0.157
	2019	*	0.137	0.137	*	0.137	0.137	*	0.137	0.137
	2020	-	0.095	0.095	0.363	0.095	0.095	0.363	0.095	0.095
Other Rockfish	2016	0.721	0.301	0.646	0.780	0.351	0.390	0.764	0.351	0.400
	2017	0.933	0.327	0.802	1.001	0.381	0.424	0.984	0.381	0.436
	2018	0.894	0.296	0.722	0.771	0.296	0.313	0.819	0.296	0.325
	2019	0.765	0.268	0.478	0.742	0.349	0.355	0.751	0.348	0.358
	2020	0.449	0.211	0.305	0.363	0.289	0.290	0.409	0.287	0.290
Other Groundfish	2016	0.280	0.150	0.171	0.280	0.017	0.213	0.280	0.042	0.210
	2017	0.306	0.207	0.217	0.306	0.015	0.246	0.306	0.067	0.243
	2018	0.324	0.181	0.198	0.324	0.024	0.253	0.324	0.072	0.248
	2019	0.451	0.087	0.248	0.451	0.027	0.313	0.451	0.031	0.311
	2020	0.407	0.025	0.158	0.407	0.021	0.313	0.407	0.021	0.306

Notes: Prices are for catch from both federal and Alaska fisheries. The ex-vessel price is calculated as value of landings divided by estimated or actual round weight. Prices for catch processed by an at-sea processor without a COAR buying record (e.g., from catcher processors) are set using the prices for the matching species (group), region and gear-types for which buying records exist shoreside. Trawl-caught sablefish, rockfish and flatfish in the BSAI and trawl-caught Atka mackerel in both the BSAI and the GOA are not well represented in the COAR buying records. A price was calculated for these categories from product-report prices; the price in this case is the value of the first wholsale products divided by the calculated round weight and multiplied by a constant 0.4, a coarse estimate of the value added by processing based. The "All Alaska/All gear" column is the average weighted by retianed catch. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 13: Bering Sea & Aleutian Islands ex-vessel value of the groundfish catch by vessel category, gear, and species, 2016-2020; calculations based on COAR ($ millions).

		Catcher Vessel				Catcher Processor				All Sectors			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Pollock	2016	-	-	209.36	209.36	-	-	165.24	165.50	-	-	374.61	374.86
	2017	-	-	205.54	205.54	-	-	147.13	147.35	-	-	352.68	352.89
	2018	-	-	236.67	236.67	-	-	169.89	171.57	-	-	406.56	408.24
	2019	-	-	259.81	259.81	-	-	186.49	188.45	-	-	446.31	448.26
	2020	-	-	233.70	233.70	-	-	156.17	156.32	-	-	389.88	390.02
Pacific Cod	2016	0.04	24.16	20.42	44.62	81.58	4.89	25.20	111.67	81.62	29.05	45.62	156.29
	2017	0.08	31.63	22.28	53.98	93.25	4.38	26.36	123.99	93.33	36.01	48.64	177.98
	2018	0.84	38.16	26.00	65.00	97.20	4.12	29.90	131.22	98.04	42.28	55.90	196.22
	2019	1.16	42.04	19.06	62.26	93.51	4.49	27.39	125.40	94.67	46.53	46.45	187.65
	2020	0.89	32.92	19.51	53.32	111.50	5.21	18.27	134.99	112.39	38.14	37.78	188.31
Sablefish	2016	1.96	*	0.01	1.97	1.04	-	0.73	1.76	2.99	*	0.74	3.73
	2017	1.41	*	0.14	1.55	0.73	*	1.61	2.34	2.14	*	1.75	3.89
	2018	1.01	1.59	0.49	3.08	0.28	*	1.11	1.38	1.28	1.59	1.59	4.47
	2019	0.87	2.19	1.36	4.41	0.30	*	0.83	1.13	1.17	2.19	2.18	5.54
	2020	0.41	1.89	2.19	4.49	0.20	*	1.13	1.34	0.61	1.89	3.33	5.83
Atka Mackerel	2016	-	-	0.01	0.01	-	-	30.13	30.13	-	-	30.14	30.14
	2017	-	-	0.01	0.01	-	-	50.24	50.24	-	-	50.25	50.25
	2018	-	-	0.39	0.39	-	-	53.02	53.03	-	-	53.42	53.42
	2019	-	-	0.14	0.14	-	-	35.36	35.36	-	-	35.50	35.50
	2020	-	-	0.24	0.24	-	-	32.65	32.65	-	-	32.89	32.89
Yellowfin	2016	-	-	0.01	0.01	*	-	42.52	42.52	*	-	42.53	42.53
	2017	-	-	0.01	0.01	0	-	50.00	50.00	0	-	50.01	50.01
	2018	-	-	0.13	0.13	0.01	-	60.38	60.38	0.01	-	60.51	60.52
	2019	-	-	0.01	0.01	0	-	57.24	57.24	0	-	57.25	57.25
	2020	-	-	0.01	0.01	*	-	46.55	46.55	*	-	46.56	46.56
Rock Sole	2016	-	-	0.09	0.09	*	-	15.86	15.86	*	-	15.95	15.95
	2017	-	-	0.15	0.15	0	-	14.37	14.37	0	-	14.52	14.52
	2018	*	-	0.19	0.19	0	-	14.02	14.02	0	-	14.21	14.21
	2019	*	-	0.09	0.09	0	-	11.78	11.78	0	-	11.87	11.87
	2020	-	-	0.08	0.08	*	-	10.68	10.68	*	-	10.76	10.76

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Table 13: Continued

		Catcher Vessel				Catcher Processor				All Sectors			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Flathead Sole	2016	-	-	0.11	0.11	-	-	3.74	3.74	-	-	3.85	3.85
	2017	-	-	0.15	0.15	0	-	3.80	3.80	0	-	3.95	3.95
	2018	-	-	0.21	0.21	*	-	5.50	5.50	*	-	5.71	5.71
	2019	*	-	0.15	0.15	0	-	7.15	7.15	0	-	7.31	7.31
	2020	-	-	0.24	0.24	0	-	2.77	2.77	0	-	3.00	3.00
Arrowtooth	2016	0	-	0.02	0.02	0.01	-	4.19	4.20	0.01	-	4.21	4.22
	2017	*	-	0.04	0.04	0.01	-	3.82	3.83	0.01	-	3.86	3.87
	2018	0	-	0.05	0.05	0	-	2.73	2.74	0	-	2.78	2.78
	2019	-	-	0.06	0.06	0	-	4.18	4.19	0	-	4.24	4.25
	2020	*	-	0.07	0.07	0	-	3.77	3.77	0	-	3.84	3.85
Kamchatka Flounder	2016	-	-	*	*	0	-	2.06	2.06	0	-	2.06	2.06
	2017	-	-	*	*	0	-	3.41	3.41	0	-	3.41	3.41
	2018	-	-	0	0	0	-	1.99	1.99	0	-	1.99	1.99
	2019	-	-	0	0	0	-	2.28	2.28	0	-	2.28	2.28
	2020	*	-	0	0	0	-	3.47	3.47	0	-	3.47	3.47
Turbot	2016	*	-	0	0	0.24	-	1.73	1.96	0.24	-	1.73	1.97
	2017	-	-	0	0	0.03	-	2.74	2.77	0.03	-	2.74	2.77
	2018	-	-	0.01	0.01	0.01	-	2.27	2.28	0.01	-	2.28	2.29
	2019	*	-	0	0	0.02	-	3.51	3.52	0.02	-	3.51	3.53
	2020	*	-	0.01	0.01	0.01	-	2.81	2.82	0.01	-	2.81	2.82
Other Flatfish	2016	-	-	0.06	0.06	*	-	3.90	3.90	*	-	3.96	3.96
	2017	-	-	0.08	0.08	*	-	7.76	7.76	*	-	7.84	7.84
	2018	-	-	0.07	0.07	0	-	8.19	8.19	0	-	8.26	8.26
	2019	-	-	0.20	0.20	0	-	6.87	6.87	0	-	7.07	7.07
	2020	*	-	0.30	0.30	0	-	6.99	6.99	0	-	7.29	7.29
Pacific Ocean Perch	2016	0	-	0.25	0.25	*	-	11.78	11.78	0	-	12.03	12.03
	2017	-	-	0.31	0.31	0	-	14.24	14.24	0	-	14.56	14.56
	2018	*	-	0.54	0.54	0	-	14.98	14.98	0	-	15.52	15.52
	2019	*	-	0.68	0.68	0	-	13.35	13.35	0	-	14.03	14.03
	2020	*	-	0.62	0.62	*	-	11.84	11.84	*	-	12.46	12.46

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Table 13: Continued

		Catcher Vessel				Catcher Processor				All Sectors			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Northern Rockfish	2016	*	-	0	0	0	-	1.19	1.19	0	-	1.19	1.19
	2017	-	-	0	0	0.01	-	1.46	1.47	0.01	-	1.47	1.48
	2018	*	-	0.01	0.01	0.01	-	1.80	1.81	0.01	-	1.81	1.81
	2019	-	-	0.01	0.01	*	-	2.60	2.60	*	-	2.61	2.61
	2020	-	-	0.01	0.01	0.01	-	1.51	1.52	0.01	-	1.53	1.54
Other Rockfish	2016	0.04	-	0	0.05	0.13	-	0.59	0.72	0.17	-	0.60	0.77
	2017	0.04	-	0	0.05	0.13	-	0.68	0.82	0.18	-	0.69	0.86
	2018	0.04	-	0.01	0.05	0.06	-	0.68	0.74	0.11	-	0.68	0.80
	2019	0.02	-	0.01	0.04	0.03	-	1.04	1.08	0.06	-	1.06	1.12
	2020	0.02	-	0.01	0.03	0.01	-	0.73	0.74	0.03	-	0.74	0.78
Other Groundfish	2016	0	-	0.13	0.18	3.16	-	0.07	3.23	3.16	-	0.20	3.41
	2017	*	-	0.34	0.40	5.19	-	0.07	5.25	5.19	-	0.41	5.65
	2018	0	-	0.51	0.64	6.78	-	0.15	6.93	6.78	-	0.67	7.56
	2019	0.02	-	0.03	0.17	6.38	-	0.19	6.57	6.40	-	0.22	6.74
	2020	0	-	0.02	0.15	5.83	-	0.09	5.92	5.83	-	0.11	6.07
All Species	2016	2.05	-	230.50	256.75	86.41	-	308.91	400.21	88.46	-	539.41	656.96
	2017	1.54	-	229.06	262.28	99.57	-	327.70	431.65	101.10	-	556.75	693.92
	2018	1.89	-	265.28	307.05	106.03	-	366.60	476.75	107.92	-	631.88	783.80
	2019	2.06	-	281.61	328.02	102.22	-	360.26	466.97	104.28	-	641.87	794.99
	2020	1.32	-	257.00	293.26	117.72	-	299.45	422.38	119.03	-	556.45	715.64

Notes: Ex-vessel value is calculated by multiplying ex-vessel prices by the retained round weight catch. Refer to Table 12 for a description of the price derivation. The value added by at-sea processing is not included in these estimates of ex-vessel value. All groundfish includes additional species categories. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 14: Bering Sea & Aleutian Islands vessel and permit counts, ex-vessel value, value per vessel, and percent value of BSAI FMP groundfish and all BSAI fisheries by fleet, 2016-2020; calculations based on COAR ($ millions).

	Year	Vessels	Permits	Ex-vessel Value Per Vessel $1,000	Ex-vessel Value $million	Percent Value, BSAI FMP Groundfish	Percent Value, All BSAI Fisheries
AFA CV	2016	89	18	2,594.43	230.90	35.11	20.24
	2017	86	16	2,651.04	227.99	32.64	19.23
	2018	86	17	3,042.97	261.70	33.35	19.42
	2019	82	22	3,444.55	282.45	35.54	20.49
	2020	86	20	2,976.70	256.00	35.73	22.32
AFA CP	2016	16	16	10,173.61	162.78	24.75	14.27
	2017	16	16	9,877.42	158.04	22.63	13.33
	2018	15	15	11,002.72	165.04	21.04	12.25
	2019	16	16	11,924.39	190.79	24.00	13.84
	2020	13	13	11,612.35	150.96	21.07	13.16
A80	2016	19	19	6,593.72	125.28	19.05	10.98
	2017	19	19	7,877.29	149.67	21.43	12.63
	2018	19	19	8,731.60	165.90	21.15	12.31
	2019	20	20	7,397.80	147.96	18.62	10.73
	2020	19	19	6,515.38	123.79	17.28	10.79
BSAI Trawl	2016	13	12	1,572.62	20.44	3.11	1.79
	2017	16	15	1,316.03	21.06	3.01	1.78
	2018	21	18	1,868.62	39.24	5.00	2.91
	2019	18	18	1,148.40	20.67	2.60	1.50
	2020	15	16	1,713.41	25.70	3.59	2.24

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Table 14: Continued

	Year	Vessels	Permits	Ex-vessel Value Per Vessel $1,000	Ex-vessel Value $million	Percent Value, BSAI FMP Groundfish	Percent Value, All BSAI Fisheries
CV Hook and Line	2016	1	1	*	*	*	*
	2017	5	4	*	*	*	*
	2018	7	6	*	*	*	*
	2019	8	6	*	*	*	*
	2020	12	5	*	*	*	*
CP Hook and Line	2016	31	31	2,755.96	85.43	12.99	7.49
	2017	28	28	3,536.34	99.02	14.18	8.35
	2018	25	25	4,239.21	105.98	13.51	7.86
	2019	23	23	4,438.84	102.09	12.84	7.41
	2020	20	20	5,880.67	117.61	16.42	10.25
Sablefish IFQ	2016	19	7	193.19	3.67	0.56	0.32
	2017	17	10	382.16	6.50	0.93	0.55
	2018	21	9	167.95	3.53	0.45	0.26
	2019	14	8	219.10	3.07	0.39	0.22
	2020	16	5	199.78	3.20	0.45	0.28
Pot	2016	56	18	519.72	29.10	4.43	2.55
	2017	64	17	563.56	36.07	5.16	3.04
	2018	78	17	543.57	42.40	5.40	3.15
	2019	83	18	562.04	46.65	5.87	3.38
	2020	94	17	407.20	38.28	5.34	3.34

Notes: These tables include the value of groundfish purchases reported by processing plants, as well as by other entities, such as markets and restaurants, that normally would not report sales of groundfish products.Keep this in mind when comparing ex-vessel values in this table to gross processed-product values. The data are for catch from both federal and state of Alaska fisheries. The category "BSAI Trawl" does not include trawl vessel in the other categories (e.g. "AFA CV", "AFA CP", "A80"), for example TLAS. The column "permits" is a count of federal groundfish processor permits. Values are not adjusted for inflation.

Source: ADF&G Commercial Operators Annual Reports (COAR); and ADF&G Intent to Operate (ITO) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 15: Bering Sea & Aleutian Islands production of groundfish products by species, 2016-2020, (1,000 metric tons product weight).

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Pollock	Whole Fish	0.10	0.69	0.79	0.04	0.25	0.30	0.01	0.27	0.28	0.15	0.22	0.37	0.01	0.36	0.37
	Head And Gut	28.61	0.04	28.65	24.21	-	24.21	21.47	*	21.47	17.68	*	17.68	16.22	*	16.22
	Roe	10.44	3.82	14.26	11.71	6.72	18.43	13.00	7.64	20.64	16.18	11.77	27.95	15.73	8.96	24.68
	Deep-Skin Fillets	38.24	8.55	46.79	45.10	13.03	58.13	40.96	15.75	56.72	39.34	18.81	58.15	34.16	15.98	50.14
	Other Fillets	49.61	64.89	114.50	42.13	56.69	98.82	53.94	56.97	110.91	66.04	62.60	128.63	48.87	50.37	99.24
	Surimi	100.51	90.31	190.82	102.60	94.13	196.73	104.36	92.16	196.53	104.67	87.57	192.24	91.22	80.54	171.77
	Minced Fish	22.38	11.69	34.07	17.05	9.44	26.49	13.06	7.35	20.41	12.25	7.35	19.59	15.73	11.38	27.11
	Fishmeal	27.15	36.25	63.40	27.94	34.69	62.63	28.22	38.36	66.58	30.51	39.33	69.84	29.37	40.03	69.40
	Other Products	14.52	27.09	41.61	13.32	24.88	38.20	13.97	24.93	38.90	16.34	27.13	43.47	10.41	23.40	33.81
	All Products	291.54	243.34	534.88	284.10	239.84	523.94	289.00	243.43	532.44	303.17	254.76	557.93	261.72	231.02	492.74
Pacific Cod	Whole Fish	1.36	0.43	1.79	0.22	*	0.22	0.16	0.15	0.32	0.01	0.28	0.29	0.01	0.11	0.11
	Head And Gut	84.44	14.24	98.68	80.09	12.28	92.38	66.10	12.94	79.04	58.78	11.47	70.25	47.28	7.74	55.03
	Roe	0.52	1.61	2.13	0.47	1.73	2.20	1.05	2.50	3.55	1.31	1.69	3.01	0.85	2.02	2.87
	Fillets	0.14	9.89	10.03	0.14	9.88	10.01	0.14	10.23	10.36	0.23	7.80	8.02	0.18	7.33	7.51
	Other Products	6.61	7.16	13.77	7.07	7.66	14.73	6.81	7.33	14.14	7.39	6.01	13.40	6.21	5.87	12.08
	All Products	93.06	33.34	126.40	87.99	31.55	119.54	74.26	33.15	107.41	67.72	27.25	94.97	54.53	23.07	77.60
Sablefish	Head And Gut	0.22	0.28	0.50	0.42	0.45	0.87	0.56	0.40	0.96	0.34	0.58	0.92	0.56	0.55	1.12
	Other Products	0.01	0.01	0.02	0.05	0.04	0.08	0.09	0.03	0.13	0.04	0.02	0.05	0.01	0.02	0.03
	All Products	0.23	0.29	0.52	0.46	0.49	0.95	0.65	0.43	1.09	0.38	0.59	0.97	0.57	0.57	1.15

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Table 15: Continued

	Product	2016			2017			2018			2019			2020		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Atka Mackerel	Whole Fish	2.13	0.01	2.14	6.40	*	6.40	6.62	0.29	6.91	0.47	*	0.47	0.49	0.06	0.54
	Head And Gut	30.53	-	30.53	35.45	-	35.45	36.21	*	36.21	32.82	*	32.82	33.35	*	33.35
	Other Products	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.02	0.00	0.01	0.02	0.00	0.04	0.04
	All Products	32.66	0.01	32.67	41.85	0.00	41.85	42.83	0.30	43.13	33.29	0.01	33.30	33.84	0.10	33.94
Yellowfin	Whole Fish	9.76	-	9.76	9.23	-	9.23	6.88	0.20	7.08	4.88	-	4.88	8.00	-	8.00
	Head And Gut	68.36	-	68.36	67.77	-	67.77	69.59	-	69.59	70.31	-	70.31	73.20	-	73.20
	Fillets	-	-	-	*	-	*	-	-	-	-	-	-	-	-	-
	Other Products	0.16	0.01	0.16	0.09	0.00	0.10	0.05	0.02	0.08	0.04	0.00	0.04	0.08	0.01	0.09
	All Products	78.28	0.01	78.28	77.10	0.00	77.10	76.53	0.23	76.75	75.22	0.00	75.23	81.27	0.01	81.28
Rock Sole	Whole Fish	0.63	*	0.63	1.56	*	1.56	0.43	0.06	0.49	0.49	*	0.49	0.92	*	0.92
	Head And Gut	23.90	-	23.90	17.33	-	17.33	14.21	*	14.21	12.57	-	12.57	12.17	-	12.17
	Fillets	*	-	*	*	*	*	0.00	-	0.00	-	*	*	*	-	*
	Other Products	0.08	0.08	0.16	0.13	0.07	0.20	0.07	0.03	0.10	0.15	0.05	0.20	0.07	0.06	0.13
	All Products	24.61	0.08	24.69	19.02	0.07	19.09	14.72	0.08	14.80	13.22	0.05	13.27	13.16	0.06	13.22
Flathead Sole	Whole Fish	0.52	*	0.52	0.10	*	0.10	0.37	0.06	0.43	0.05	-	0.05	0.31	*	0.31
	Head And Gut	4.13	-	4.13	4.03	-	4.03	5.09	*	5.09	7.88	-	7.88	3.54	-	3.54
	Fillets	-	-	-	-	-	-	*	*	*	-	-	-	*	-	*
	Other Products	0.11	0.05	0.16	0.05	0.05	0.11	0.05	0.04	0.10	0.12	0.10	0.21	0.13	0.23	0.36
	All Products	4.75	0.05	4.80	4.19	0.05	4.25	5.52	0.10	5.62	8.04	0.10	8.14	3.99	0.23	4.21

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Table 15: Continued

	Product	2016			2017			2018			2019			2020		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Arrowtooth	Whole Fish	0.25	*	0.25	*	-	*	*	-	*	-	-	-	*	-	*
	Head And Gut	4.39	-	4.39	3.46	-	3.46	2.92	-	2.92	4.86	-	4.86	5.43	-	5.43
	Fillets	-	-	-	-	-	-	-	-	-	*	-	*	-	-	-
	Other Products	0.01	0.02	0.03	0.01	0.02	0.03	0.01	0.04	0.05	0.02	0.05	0.07	0.02	0.10	0.12
	All Products	4.64	0.02	4.67	3.46	0.02	3.48	2.93	0.04	2.97	4.88	0.05	4.93	5.45	0.10	5.55
Kamchatka Flounder	Whole Fish	*	-	*	-	-	-	-	-	-	-	-	-	*	-	*
	Head And Gut	2.72	-	2.72	2.05	-	2.05	1.40	-	1.40	2.13	-	2.13	3.97	-	3.97
	Fishmeal	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	*	0.00	0.01	-	0.01
	Other Products	-	-	-	-	-	-	*	-	*	-	-	-	*	-	*
	All Products	2.72	-	2.72	2.05	-	2.05	1.40	-	1.40	2.13	*	2.13	3.97	-	3.97
Turbot	Whole Fish	0.03	-	0.03	-	-	-	-	-	-	*	-	*	-	-	-
	Head And Gut	1.29	*	1.29	1.75	-	1.75	1.19	-	1.19	1.92	-	1.92	1.45	-	1.45
	Other Products	0.51	0.00	0.51	0.68	0.00	0.68	0.42	0.00	0.42	0.74	0.00	0.74	0.57	0.00	0.57
	All Products	1.83	0.00	1.83	2.43	0.00	2.43	1.61	0.00	1.61	2.66	0.00	2.67	2.02	0.00	2.02
Other Flatfish	Whole Fish	2.05	*	2.05	1.33	0.04	1.37	0.36	*	0.36	0.61	0.06	0.67	0.58	0.10	0.68
	Head And Gut	4.79	*	4.79	7.11	*	7.11	11.55	*	11.55	8.75	*	8.75	10.29	-	10.29
	Fillets	-	-	-	-	*	*	-	*	*	-	-	-	-	*	*
	Other Products	0.02	0.01	0.03	0.01	0.01	0.02	0.04	0.01	0.05	0.38	0.02	0.40	0.02	0.08	0.10
	All Products	6.87	0.01	6.87	8.45	0.04	8.49	11.94	0.01	11.96	9.74	0.07	9.82	10.89	0.17	11.06
Pacific Ocean Perch	Whole Fish	0.31	0.43	0.74	0.41	0.41	0.82	2.08	0.13	2.21	0.67	0.39	1.06	0.49	0.28	0.77
	Head And Gut	14.15	*	14.15	13.82	*	13.82	14.17	*	14.17	17.31	*	17.31	16.59	-	16.59
	Other Products	0.21	0.02	0.23	0.27	0.03	0.30	0.19	0.06	0.25	0.66	0.20	0.86	0.28	0.40	0.67
	All Products	14.67	0.45	15.12	14.50	0.44	14.94	16.44	0.19	16.63	18.63	0.59	19.22	17.36	0.67	18.03

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Table 15: Continued

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Northern Rockfish	Whole Fish	-	0.00	0.00	-	*	*	*	*	*	-	*	*	-	*	*
	Head And Gut	1.96	-	1.96	2.03	-	2.03	2.26	*	2.26	3.89	*	3.89	3.05	-	3.05
	Other Products	0.01	0.00	0.01	0.00	*	0.00	0.00	*	0.00	0.01	0.00	0.01	0.01	0.03	0.03
	All Products	1.97	0.00	1.97	2.03	*	2.03	2.27	*	2.27	3.90	0.00	3.90	3.05	0.03	3.08
Other Rockfish	Whole Fish	0.15	*	0.15	0.17	0.00	0.18	0.15	*	0.15	0.42	*	0.42	0.21	*	0.21
	Head And Gut	0.29	0.02	0.30	0.27	0.01	0.28	0.35	0.01	0.36	0.27	0.01	0.28	0.30	0.01	0.31
	Other Products	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.16	0.00	0.17	0.00	0.00	0.01
	All Products	0.44	0.02	0.46	0.45	0.02	0.46	0.50	0.01	0.51	0.86	0.01	0.87	0.52	0.01	0.53
Other Groundfish	Whole Fish	0.00	0.15	0.16	*	0.26	0.26	0.02	0.50	0.52	0.00	0.34	0.35	*	0.04	0.04
	Head And Gut	0.01	-	0.01	0.01	*	0.01	0.04	0.07	0.12	0.02	0.06	0.08	0.01	0.09	0.09
	Roe	-	-	-	-	-	-	*	-	*	-	-	-	-	-	-
	Fillets	*	-	*	-	-	-	*	-	*	-	-	-	-	-	-
	Fishmeal	0.05	0.15	0.19	0.06	0.17	0.23	0.04	0.07	0.12	0.17	0.60	0.77	0.10	1.59	1.69
	Other Products	1.79	0.02	1.81	2.40	*	2.40	3.42	0.02	3.44	2.65	*	2.65	2.17	*	2.17
	All Products	1.85	0.32	2.17	2.48	0.43	2.91	3.52	0.67	4.19	2.84	1.00	3.84	2.28	1.72	3.99

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Table 15: Continued

	Product	2016			2017			2018			2019			2020		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
All Species	Whole Fish	17.29	1.71	19.00	19.48	0.97	20.45	17.09	1.66	18.75	7.76	1.29	9.05	11.01	0.94	11.95
	Head And Gut	269.77	14.58	284.36	259.81	12.75	272.56	247.12	13.42	260.54	239.53	12.12	251.64	227.41	8.39	235.80
	Roe	10.96	5.43	16.39	12.17	8.46	20.63	14.06	10.14	24.19	17.50	13.46	30.96	16.58	10.97	27.55
	Fillets	0.14	9.89	10.03	0.14	9.88	10.01	0.14	10.23	10.36	0.23	7.80	8.02	0.18	7.33	7.51
	Deep-Skin Fillets	38.24	8.55	46.79	45.10	13.03	58.13	40.96	15.75	56.72	39.34	18.81	58.15	34.16	15.98	50.14
	Other Fillets	49.61	64.89	114.50	42.13	56.69	98.82	53.94	56.97	110.91	66.04	62.60	128.63	48.87	50.37	99.24
	Surimi	100.51	90.31	190.82	102.60	94.13	196.73	104.36	92.16	196.53	104.67	87.57	192.24	91.22	80.54	171.77
	Minced Fish	22.38	11.69	34.07	17.05	9.44	26.49	13.06	7.35	20.41	12.25	7.35	19.59	15.73	11.38	27.11
	Fishmeal	27.20	36.40	63.60	28.01	34.86	62.87	28.26	38.43	66.70	30.68	39.93	70.62	29.48	41.62	71.09
	Other Products	24.03	34.48	58.51	24.09	32.76	56.85	25.13	32.55	57.68	28.70	33.60	62.30	19.98	30.24	50.22
	All Products	560.12	277.94	838.06	550.57	272.96	823.54	544.13	278.66	822.79	546.69	284.51	831.20	494.62	257.76	752.38

Notes: Total includes additional species not listed in the production details as well as confidential data from Tables 28 and 29. These estimates are for catch from both federal and state of Alaska fisheries. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 16: Bering Sea & Aleutian Islands gross value of groundfish products by species, 2016-2020, ($ million).

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Pollock	Whole Fish	0.1	0.5	0.6	0.0	0.2	0.3	0.0	0.3	0.3	0.2	0.5	0.6	0.0	0.4	0.4
	Head And Gut	48.9	0.0	48.9	29.0	-	29.0	27.5	*	27.5	24.5	*	24.5	20.2	*	20.2
	Roe	72.4	17.1	89.4	85.9	31.0	116.9	90.5	40.9	131.4	89.9	42.3	132.2	81.3	29.1	110.4
	Deep-Skin Fillets	142.7	26.3	169.0	150.1	41.3	191.4	136.7	49.5	186.2	137.9	67.2	205.1	133.0	54.8	187.8
	Other Fillets	141.9	191.3	333.2	107.8	145.8	253.5	154.2	164.4	318.6	218.7	203.2	421.9	161.7	155.4	317.1
	Surimi	291.9	210.2	502.1	370.2	207.2	577.4	316.7	234.1	550.8	341.5	240.6	582.2	263.3	208.1	471.4
	Minced Fish	39.7	19.2	58.9	26.1	13.1	39.2	19.7	10.8	30.4	21.8	12.0	33.8	31.6	19.5	51.1
	Fishmeal	50.3	53.4	103.7	45.7	50.7	96.4	48.1	51.8	99.9	67.3	42.9	110.2	103.6	47.9	151.5
	Other Products	20.4	25.2	45.6	16.1	17.9	34.0	17.2	20.7	37.9	18.5	21.4	39.9	13.7	20.7	34.4
	All Products	808.3	543.2	1,351.5	830.8	507.3	1,338.1	810.5	572.6	1,383.1	920.3	630.2	1,550.5	808.3	535.8	1,344.1
Pacific Cod	Whole Fish	2.1	0.7	2.8	0.4	*	0.4	0.3	0.3	0.5	0.0	0.3	0.3	0.0	0.1	0.2
	Head And Gut	250.6	30.7	281.4	287.9	32.5	320.4	276.0	48.5	324.5	216.8	31.1	247.9	156.8	18.4	175.3
	Roe	0.6	2.3	2.8	0.6	2.7	3.4	2.5	7.2	9.7	2.3	3.4	5.7	1.5	4.6	6.1
	Fillets	0.4	74.1	74.5	0.5	81.2	81.7	0.9	93.3	94.2	1.6	67.6	69.2	1.3	60.5	61.8
	Other Products	15.0	11.8	26.9	13.6	15.2	28.7	11.8	18.0	29.8	11.3	12.1	23.4	9.9	12.5	22.4
	All Products	268.8	119.5	388.3	303.1	131.6	434.7	291.6	167.3	458.8	232.0	114.5	346.5	169.5	96.2	265.7
Sablefish	Head And Gut	3.0	4.9	7.9	4.7	7.2	11.9	4.2	5.0	9.3	2.3	4.7	7.0	3.3	4.1	7.4
	Other Products	0.0	0.1	0.1	0.1	0.5	0.6	0.1	0.6	0.8	0.1	0.1	0.1	0.0	0.2	0.2
	All Products	3.0	5.0	8.0	4.8	7.7	12.5	4.4	5.7	10.0	2.4	4.8	7.1	3.3	4.3	7.6

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Table 16: Continued

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Atka Mackerel	Whole Fish	4.1	0.0	4.1	11.9	*	11.9	15.0	0.5	15.5	1.0	*	1.0	0.8	0.1	0.8
	Head And Gut	69.6	-	69.6	114.8	-	114.8	112.7	*	112.7	84.0	*	84.0	77.6	*	77.6
	Other Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	All Products	73.7	0.0	73.7	126.6	0.0	126.6	127.7	0.5	128.1	85.0	0.0	85.0	78.4	0.1	78.5
Yellowfin	Whole Fish	10.6	-	10.6	12.4	-	12.4	10.8	0.3	11.1	6.9	-	6.9	7.2	-	7.2
	Head And Gut	83.3	-	83.3	98.2	-	98.2	125.4	-	125.4	121.9	-	121.9	100.4	-	100.4
	Fillets	-	-	-	*	-	*	-	-	-	-	-	-	-	-	-
	Other Products	0.3	0.0	0.3	0.2	0.0	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1
	All Products	94.2	0.0	94.2	110.8	0.0	110.8	136.3	0.3	136.6	128.8	0.0	128.8	107.8	0.0	107.8
Rock Sole	Whole Fish	0.8	*	0.8	2.0	*	2.0	0.7	0.1	0.8	1.0	*	1.0	1.0	*	1.0
	Head And Gut	33.0	-	33.0	28.0	-	28.0	28.2	*	28.2	23.2	-	23.2	19.8	-	19.8
	Fillets	*	-	*	*	*	*	0.0	-	0.0	-	*	*	*	-	*
	Other Products	0.1	0.1	0.3	0.2	0.1	0.3	0.1	0.0	0.2	0.2	0.1	0.3	0.1	0.1	0.2
	All Products	33.9	0.1	34.0	30.2	0.1	30.3	29.0	0.1	29.1	24.3	0.1	24.4	20.9	0.1	21.0
Flathead Sole	Whole Fish	0.6	*	0.6	0.1	*	0.1	0.7	0.1	0.7	0.1	-	0.1	0.4	*	0.4
	Head And Gut	6.9	-	6.9	7.7	-	7.7	11.0	*	11.0	14.9	-	14.9	5.0	-	5.0
	Fillets	-	-	-	-	-	-	*	*	*	-	-	-	*	-	*
	Other Products	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.3	0.5
	All Products	7.7	0.1	7.8	7.9	0.1	8.0	11.8	0.1	11.9	15.2	0.1	15.3	5.6	0.3	5.9

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Table 16: Continued

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Arrowtooth	Whole Fish	0.3	*	0.3	*	-	*	*	-	*	-	-	-	*	-	*
	Head And Gut	8.3	-	8.3	9.9	-	9.9	5.6	-	5.6	9.4	-	9.4	8.6	-	8.6
	Fillets	-	-	-	-	-	-	-	-	-	*	-	*	-	-	-
	Other Products	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1
	All Products	8.6	0.0	8.7	9.9	0.0	9.9	5.6	0.1	5.7	9.4	0.1	9.5	8.6	0.1	8.8
Kamchatka Flounder	Whole Fish	*	-	*	-	-	-	-	-	-	-	-	-	*	-	*
	Head And Gut	5.0	-	5.0	6.7	-	6.7	3.9	-	3.9	4.7	-	4.7	7.7	-	7.7
	Fishmeal	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	*	0.0	0.0	-	0.0
	Other Products	-	-	-	-	-	-	*	-	*	-	-	-	*	-	*
	All Products	5.0	-	5.0	6.7	-	6.7	3.9	-	3.9	4.7	*	4.7	7.7	-	7.7
Turbot	Whole Fish	0.1	-	0.1	-	-	-	-	-	-	*	-	*	-	-	-
	Head And Gut	7.2	*	7.2	9.3	-	9.3	6.4	-	6.4	10.7	-	10.7	6.9	-	6.9
	Other Products	2.0	0.0	2.0	2.2	0.0	2.2	1.0	0.0	1.0	1.7	0.0	1.7	1.5	0.0	1.5
	All Products	9.3	0.0	9.3	11.5	0.0	11.5	7.4	0.0	7.4	12.3	0.0	12.3	8.4	0.0	8.4
Other Flatfish	Whole Fish	2.7	*	2.7	2.3	0.1	2.4	0.5	*	0.5	1.7	0.2	1.9	1.3	0.1	1.4
	Head And Gut	5.0	*	5.0	12.7	*	12.7	16.4	*	16.4	12.5	*	12.5	13.6	-	13.6
	Fillets	-	-	-	-	*	*	-	*	*	-	-	-	-	*	*
	Other Products	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.5	0.0	0.5	0.0	0.1	0.1
	All Products	7.7	0.0	7.7	15.0	0.1	15.2	17.0	0.0	17.0	14.6	0.2	14.8	14.9	0.2	15.1
Pacific Ocean Perch	Whole Fish	0.4	0.5	1.0	0.5	0.5	1.0	2.8	0.2	3.0	1.1	0.4	1.4	0.8	0.3	1.0
	Head And Gut	29.1	*	29.1	34.6	*	34.6	34.5	*	34.5	31.2	*	31.2	27.5	-	27.5
	Other Products	0.3	0.0	0.3	0.4	0.0	0.4	0.3	0.1	0.4	0.8	0.6	1.4	0.5	0.5	1.0
	All Products	29.8	0.6	30.3	35.5	0.5	36.1	37.6	0.3	37.9	33.0	1.0	34.0	28.8	0.7	29.5

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Table 16: Continued

		2016			2017			2018			2019			2020		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Northern Rockfish	Whole Fish	-	0.0	0.0	-	*	*	*	*	*	-	*	*	-	*	*
	Head And Gut	2.8	-	2.8	3.4	-	3.4	3.9	*	3.9	5.9	*	5.9	3.2	-	3.2
	Other Products	0.0	0.0	0.0	0.0	*	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	All Products	2.8	0.0	2.8	3.4	*	3.4	3.9	*	3.9	5.9	0.0	5.9	3.2	0.0	3.2
Other Rockfish	Whole Fish	0.7	*	0.7	0.9	0.0	0.9	0.6	*	0.6	1.6	*	1.6	0.7	*	0.7
	Head And Gut	0.7	0.1	0.8	0.7	0.1	0.7	0.9	0.0	0.9	0.8	0.0	0.8	0.6	0.0	0.7
	Other Products	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0
	All Products	1.4	0.1	1.5	1.6	0.1	1.6	1.4	0.0	1.5	2.6	0.1	2.6	1.4	0.0	1.4
Other Groundfish	Whole Fish	0.0	0.3	0.3	*	0.5	0.5	0.0	1.2	1.2	0.0	0.5	0.5	*	0.1	0.1
	Head And Gut	0.0	-	0.0	0.0	*	0.0	0.1	0.4	0.5	0.1	0.1	0.2	0.0	0.2	0.2
	Roe	-	-	-	-	-	-	*	-	*	-	-	-	-	-	-
	Fillets	*	-	*	-	-	-	*	-	*	-	-	-	-	-	-
	Fishmeal	0.1	0.2	0.3	0.1	0.3	0.4	0.1	0.1	0.2	0.2	0.8	1.0	0.2	1.8	2.0
	Other Products	2.8	0.2	3.0	4.5	*	4.5	7.6	0.1	7.7	5.2	*	5.2	4.0	*	4.0
	All Products	2.9	0.7	3.7	4.6	0.8	5.3	7.8	1.8	9.6	5.5	1.4	6.9	4.2	2.1	6.3

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Table 16: Continued

	Product	2016			2017			2018			2019			2020		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
All Species	Whole Fish	22.6	2.0	24.6	30.6	1.3	31.9	31.4	2.8	34.2	13.5	1.8	15.3	12.2	1.0	13.2
	Head And Gut	553.4	35.8	589.1	647.6	39.8	687.4	656.8	54.0	710.8	562.7	36.0	598.6	451.2	22.8	474.0
	Roe	72.9	19.3	92.3	86.6	33.7	120.3	93.0	48.1	141.2	92.2	45.7	137.9	82.8	33.7	116.5
	Fillets	0.4	74.1	74.5	0.5	81.2	81.7	0.9	93.3	94.2	1.6	67.6	69.2	1.3	60.5	61.8
	Deep-Skin Fillets	142.7	26.3	169.0	150.1	41.3	191.4	136.7	49.5	186.2	137.9	67.2	205.1	133.0	54.8	187.8
	Other Fillets	141.9	191.3	333.2	107.8	145.8	253.5	154.2	164.4	318.6	218.7	203.2	421.9	161.7	155.4	317.1
	Surimi	291.9	210.2	502.1	370.2	207.2	577.4	316.7	234.1	550.8	341.5	240.6	582.2	263.3	208.1	471.4
	Minced Fish	39.7	19.2	58.9	26.1	13.1	39.2	19.7	10.8	30.4	21.8	12.0	33.8	31.6	19.5	51.1
	Fishmeal	50.4	53.6	104.0	45.8	51.0	96.8	48.2	51.9	100.1	67.5	43.6	111.1	103.8	49.7	153.5
	Other Products	41.2	37.6	78.8	37.1	33.9	71.1	38.4	39.8	78.2	38.7	34.4	73.1	30.2	34.4	64.6
	All Products	1,357.1	669.4	2,026.5	1,502.3	648.4	2,150.7	1,495.9	748.7	2,244.7	1,496.1	752.3	2,248.4	1,271.0	639.9	1,910.9

Notes: Total includes additional species not listed in the production details as well as confidential data from Tables 28 and 29. These estimates are for catch from both federal and state of Alaska fisheries. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 17: Bering Sea & Aleutian Islands price per pound of groundfish products by species and processing mode, 2016-2020, ($/lb).

		2016		2017		2018		2019		2020	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Pollock	Whole Fish	0.35	0.34	0.29	0.42	0.42	0.55	0.47	0.95	0.71	0.45
	Head And Gut	0.78	0.41	0.54	-	0.58	*	0.63	*	0.56	*
	Roe	3.14	2.03	3.33	2.09	3.16	2.43	2.52	1.63	2.34	1.47
	Deep-Skin Fillets	1.69	1.39	1.51	1.44	1.51	1.43	1.59	1.62	1.77	1.56
	Other Fillets	1.30	1.34	1.16	1.17	1.30	1.31	1.50	1.47	1.50	1.40
	Surimi	1.32	1.06	1.64	1.00	1.38	1.15	1.48	1.25	1.31	1.17
	Minced Fish	0.80	0.74	0.69	0.63	0.68	0.66	0.81	0.74	0.91	0.78
	Fishmeal	0.84	0.67	0.74	0.66	0.77	0.61	1.00	0.49	1.60	0.54
	Other Products	0.64	0.42	0.55	0.33	0.56	0.38	0.51	0.36	0.60	0.40
	All Products	1.26	1.01	1.33	0.96	1.27	1.07	1.38	1.12	1.40	1.05
Pacific Cod	Whole Fish	0.71	0.69	0.87	*	0.83	0.74	0.28	0.54	0.97	0.58
	Head And Gut	1.35	0.98	1.63	1.20	1.89	1.70	1.67	1.23	1.50	1.08
	Roe	0.51	0.64	0.62	0.71	1.08	1.31	0.81	0.90	0.81	1.03
	Fillets	1.37	3.40	1.79	3.73	2.98	4.14	3.18	3.93	3.22	3.74
	Other Products	1.03	0.75	0.87	0.90	0.79	1.11	0.69	0.91	0.72	0.97
	All Products	1.31	1.63	1.56	1.89	1.78	2.29	1.55	1.91	1.41	1.89
Sablefish	Head And Gut	6.24	7.93	5.12	7.22	3.42	5.70	3.07	3.70	2.65	3.40
	Other Products	0.83	3.17	0.87	6.31	0.61	8.58	0.90	1.67	1.12	3.22
	All Products	6.02	7.74	4.68	7.16	3.02	5.92	2.85	3.64	2.62	3.39
Atka Mackerel	Whole Fish	0.86	0.62	0.84	*	1.03	0.70	0.94	*	0.73	0.51
	Head And Gut	1.03	-	1.47	-	1.41	*	1.16	*	1.06	*
	Other Products	0.73	0.73	0.55	0.80	0.77	0.70	0.58	0.56	0.79	0.52
	All Products	1.02	0.65	1.37	0.80	1.35	0.70	1.16	0.56	1.05	0.52

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Table 17: Continued

		2016		2017		2018		2019		2020	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Yellowfin	Whole Fish	0.49	-	0.61	-	0.71	0.61	0.64	-	0.41	-
	Head And Gut	0.55	-	0.66	-	0.82	-	0.79	-	0.62	-
	Fillets	-	-	*	-	-	-	-	-	-	-
	Other Products	0.86	0.73	0.74	0.80	0.83	0.70	0.63	0.56	0.80	0.52
	All Products	0.55	0.73	0.65	0.80	0.81	0.62	0.78	0.56	0.60	0.52
Rock Sole	Whole Fish	0.59	*	0.59	*	0.75	0.46	0.90	*	0.47	*
	Head And Gut	0.56	-	0.65	-	0.83	*	0.79	-	0.64	-
	Head And Gut With Roe	1.00	-	1.24	-	1.50	-	1.32	-	1.28	-
	Fillets	*	-	*	*	2.73	-	-	*	*	-
	Other Products	0.78	0.73	0.63	0.80	0.72	0.70	0.58	0.56	0.79	0.52
	All Products	0.62	0.73	0.72	0.80	0.89	0.53	0.83	0.56	0.72	0.52
Flathead Sole	Whole Fish	0.57	*	0.61	*	0.82	0.52	0.80	-	0.58	*
	Head And Gut	0.76	-	0.87	-	0.98	*	0.86	-	0.64	-
	Fillets	-	-	-	-	*	*	-	-	*	-
	Other Products	0.66	0.73	0.59	0.80	0.70	0.70	0.57	0.56	0.80	0.52
	All Products	0.74	0.73	0.86	0.80	0.97	0.60	0.86	0.56	0.64	0.52
Arrowtooth	Whole Fish	0.56	*	*	-	*	-	-	-	*	-
	Head And Gut	0.86	-	1.30	-	0.87	-	0.88	-	0.72	-
	Fillets	-	-	-	-	-	-	*	-	-	-
	Other Products	0.64	0.73	0.65	0.80	0.70	0.70	0.58	0.56	0.81	0.52
	All Products	0.84	0.73	1.30	0.80	0.87	0.70	0.87	0.56	0.72	0.52
Kamchatka Flounder	Whole Fish	*	-	-	-	-	-	-	-	*	-
	Head And Gut	0.83	-	1.48	-	1.27	-	0.99	-	0.88	-
	Fishmeal	0.86	-	0.67	-	0.82	-	0.57	*	0.78	-
	Other Products	-	-	-	-	*	-	-	-	*	-
	All Products	0.83	-	1.48	-	1.27	-	0.99	*	0.88	-
Turbot	Whole Fish	1.97	-	-	-	-	-	*	-	-	-
	Head And Gut	2.52	*	2.41	-	2.44	-	2.51	-	2.17	-
	Other Products	1.76	0.73	1.45	0.80	1.04	0.70	1.03	0.56	1.18	0.52
	All Products	2.30	0.73	2.14	0.80	2.08	0.70	2.10	0.56	1.89	0.52

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Table 17: Continued

		2016		2017		2018		2019		2020	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Other Flatfish	Whole Fish	0.59	*	0.78	1.62	0.68	*	1.26	1.37	1.03	0.30
	Head And Gut	0.47	*	0.81	*	0.64	*	0.65	*	0.60	-
	Fillets	-	-	-	*	-	*	-	-	-	*
	Other Products	0.76	0.73	0.65	0.80	0.82	0.71	0.57	0.57	0.80	0.54
	All Products	0.51	0.73	0.81	1.49	0.64	0.71	0.68	1.19	0.62	0.41
Pacific Ocean Perch	Whole Fish	0.65	0.58	0.57	0.54	0.61	0.61	0.72	0.44	0.73	0.41
	Head And Gut	0.93	*	1.14	*	1.11	*	0.82	*	0.75	-
	Other Products	0.60	0.73	0.60	0.80	0.70	0.70	0.57	1.33	0.82	0.52
	All Products	0.92	0.58	1.11	0.56	1.04	0.64	0.80	0.74	0.75	0.48
Northern Rockfish	Whole Fish	-	0.68	-	*	*	*	-	*	-	*
	Head And Gut	0.64	-	0.77	-	0.79	*	0.69	*	0.47	-
	Other Products	0.59	0.73	0.61	*	0.63	*	0.57	0.69	0.81	0.52
	All Products	0.64	0.70	0.77	*	0.79	*	0.69	0.69	0.47	0.52
Other Rockfish	Whole Fish	2.27	*	2.29	0.69	1.72	*	1.71	*	1.58	*
	Head And Gut	1.06	2.95	1.14	2.42	1.14	1.74	1.26	2.00	0.94	1.60
	Other Products	0.78	1.39	0.75	0.76	0.87	0.82	0.57	0.77	0.79	0.84
	All Products	1.47	2.83	1.58	1.93	1.31	1.58	1.35	1.71	1.21	1.41
Other Groundfish	Whole Fish	1.02	0.96	*	0.80	0.12	1.08	1.54	0.64	*	1.11
	Head And Gut	1.83	-	0.78	*	0.81	2.70	1.19	1.10	0.71	1.09
	Roe	-	-	-	-	*	-	-	-	-	-
	Fillets	*	-	-	-	*	-	-	-	-	-
	Fishmeal	0.68	0.73	0.71	0.78	0.74	0.70	0.57	0.57	0.84	0.52
	Other Products	0.72	4.01	0.84	*	1.01	1.43	0.89	*	0.83	*
	All Products	0.72	1.03	0.84	0.79	1.00	1.23	0.88	0.62	0.83	0.56

Notes: These estimates are based on data from both federal and state of Alaska fisheries. Prices based on confidential data have been excluded. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 18: Bering Sea & Aleutian Islands total product value per round metric ton of retained catch by processor type, species, and year, 2016-2020, ($/mt).

	Species	2016	2017	2018	2019	2020
Motherships	Pollock	909	*	974	1,007	918
	Pacific Cod	709	*	397	331	297
Catcher/processors	Pollock	1,090	1,128	1,063	1,192	1,096
	Sablefish	7,707	5,760	4,529	3,655	2,850
	Pacific Cod	1,484	1,756	2,024	1,807	1,635
	Flatfish	789	969	1,077	1,061	870
	Rockfish	977	1,162	1,142	864	753
	Atka Mackerel	1,363	1,977	1,845	1,501	1,357
	Other	426	473	629	575	488
Shoreside processors	Pollock	929	860	959	1,032	893
	Sablefish	12,282	11,007	6,856	3,089	1,983
	Pacific Cod	1,564	1,714	2,268	1,706	1,561
	Flatfish	968	690	621	625	502
	Rockfish	1,142	958	867	732	459
	Other	1,501	934	1,246	4,647	5,191

Notes: These estimates include the product value of catch from both federal and state of Alaska fisheries. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; ADF&G Commercial Operators Annual Reports (COAR); and NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 19: Bering Sea & Aleutian Islands number of processors, gross product value, value per processor, and percent value of BSAI FMP groundfish of processed groundfish by processor group, 2016-2020 ($ millions).

	Year	Processors	Wholesale Value ($million)	Wholesale Value Per Processor ($1,000)	Percent Value, BSAI FMP Groundfish
AFA CP	2016	15	684.55	45,636.64	35.41
	2017	16	747.99	46,749.63	36.34
	2018	14	678.20	48,442.66	31.91
	2019	15	808.70	53,913.09	37.89
	2020	13	679.31	52,254.47	36.20
A80	2016	19	320.59	16,872.90	16.58
	2017	19	392.40	20,652.76	19.07
	2018	19	426.16	22,429.62	20.05
	2019	20	373.07	18,653.72	17.48
	2020	19	311.26	16,382.01	16.59
CP Hook and Line	2016	32	211.38	6,605.54	10.93
	2017	29	246.04	8,484.03	11.95
	2018	26	225.39	8,668.79	10.61
	2019	24	183.18	7,632.61	8.58
	2020	21	139.30	6,633.32	7.42
Sablefish IFQ	2016	7	1.40	200.11	0.07
	2017	6	1.68	280.05	0.08
	2018	8	1.84	230.39	0.09
	2019	5	0.70	139.83	0.03
	2020	4	1.61	403.70	0.09
Motherships & Inshore Floating Procs.	2016	4	106.69	26,673.69	5.52
	2017	2	*	*	*
	2018	3	116.49	38,828.46	5.48
	2019	4	123.52	30,879.46	5.79
	2020	3	111.94	37,312.65	5.96
BSAI Shoreside Processors	2016	7	576.25	82,321.86	29.81
	2017	7	555.74	79,391.83	27.00
	2018	7	629.17	89,881.78	29.60
	2019	7	638.29	91,184.38	29.91
	2020	7	605.52	86,503.29	32.27

Notes: The data are for catch from both federal and state of Alaska fisheries. The processor groups are defined as follows: "AFA CP" are the AFA catcher processors. "A80" are the catcher processors as defined under Amendment 80 of the BSAI FMP. "CP Hook and Line" are the hook and line catcher processors. "Sablefish IFQ" are processors processing sablefish IFQ. Values are not adjusted for inflation.

Source: ADF&G Commercial Operators Annual Reports (COAR); and ADF&G Intent to Operate (ITO) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 20: Bering Sea & Aleutian Islands number of vessels, average and median length, and average and median capacity (tonnage) of vessels that caught groundfish by vessel type, and gear, 2016-2020.

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
AFA CV	2016	89	127	124	159	133
	2017	86	126	123	157	132
	2018	86	127	123	159	132
	2019	82	127	123	158	132
	2020	86	128	124	162	133
AFA CP	2016	16	302	296	1,717	1,592
	2017	16	290	285	1,571	1,592
	2018	15	302	285	1,850	1,778
	2019	16	292	296	1,654	1,592
	2020	13	307	300	1,922	1,778
A80	2016	19	186	185	437	426
	2017	19	182	185	463	473
	2018	19	182	185	454	473
	2019	20	186	185	468	473
	2020	19	191	186	497	586
BSAI Trawl	2016	13	132	130	242	132
	2017	16	122	112	171	132
	2018	21	150	144	300	276
	2019	18	127	130	188	132
	2020	15	150	144	298	276
CV Hook and Line	2017	3	55	59	40	47
	2018	6	53	56	75	95
	2019	8	44	38	27	29
	2020	9	44	39	26	21
CP Hook and Line	2016	31	146	136	338	258
	2017	28	148	141	350	296
	2018	25	148	141	336	258
	2019	23	152	150	372	308
	2020	20	151	140	380	303
Sablefish IFQ	2016	23	88	98	106	111
	2017	22	85	58	110	96
	2018	27	93	98	128	127
	2019	20	92	85	145	105
	2020	18	85	58	127	105

Continued on next page.

Table 20: Continued

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
Pot	2016	56	80	58	114	105
	2017	64	83	58	119	105
	2018	78	80	58	108	105
	2019	83	76	58	102	105
	2020	94	74	58	100	99
Jig	2016	2	42	42	25	26
	2017	1	42	42	26	26
	2018	1	42	42	26	26
	2019	3	46	42	29	26
	2020	3	41	42	28	26
No Fleet/ Other	2017	2	31	30	14	13
	2018	1	34	34	17	17
	2020	1	34	34	17	17

Notes: These estimates include only vessels fishing part of federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 21: Bering Sea & Aleutian Islands number of vessels that caught groundfish by month, vessel type, and gear, 2016-2020.

		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Catcher Vessels	Hook & Line	2016	1	-	1	1	3	5	7	6	7	4	-	-	16
		2017	-	1	2	2	4	2	7	4	9	3	-	-	18
		2018	-	-	4	5	2	3	4	5	7	4	5	1	19
		2019	2	4	6	6	5	4	3	4	5	4	4	1	17
		2020	1	5	6	10	6	2	4	5	2	2	1	-	17
	Pot	2016	28	29	33	31	3	1	1	1	10	21	17	18	54
		2017	48	21	25	25	7	4	1	-	11	13	15	33	63
		2018	58	37	37	6	5	3	-	-	19	25	17	11	76
		2019	72	41	42	5	3	2	1	1	28	12	12	10	80
		2020	77	47	48	6	3	5	4	2	30	7	2	1	96
	Trawl	2016	71	91	91	69	8	61	70	69	53	16	1	-	101
		2017	71	92	79	70	6	68	69	65	46	14	2	-	102
		2018	77	96	91	62	8	61	67	70	60	3	3	-	105
		2019	80	92	90	66	6	56	66	74	58	26	6	-	100
		2020	81	85	87	59	14	60	72	74	73	62	6	-	99
	All Gear	2016	100	120	125	101	14	67	78	76	70	41	18	18	170
		2017	119	114	106	97	17	74	77	69	66	30	17	33	182
		2018	135	132	129	73	15	67	71	75	86	32	24	12	196
		2019	154	137	138	77	14	62	70	79	91	42	22	11	195
		2020	159	137	141	75	23	67	77	79	104	71	9	1	206
Catcher Processors	Hook & Line	2016	28	29	28	21	11	19	25	25	25	25	26	23	32
		2017	27	27	26	21	11	20	25	26	25	24	24	24	29
		2018	22	24	21	14	6	16	18	20	20	21	21	18	27
		2019	17	18	20	14	6	10	17	21	21	19	16	14	25
		2020	15	16	15	13	7	7	13	16	17	15	15	8	21
	Pot	2016	5	3	3	2	-	-	-	1	3	3	1	3	5
		2017	5	2	2	2	-	-	-	1	5	5	2	3	6
		2018	5	2	2	2	1	1	-	1	5	2	-	1	6
		2019	5	2	2	-	-	-	-	-	5	1	3	2	6
		2020	5	1	2	2	1	-	-	1	5	2	-	-	5
	Trawl	2016	32	32	33	25	20	29	30	30	32	24	12	4	35
		2017	26	33	33	27	19	29	32	32	29	19	14	2	35
		2018	29	33	35	25	21	29	30	33	33	22	14	4	35
		2019	27	34	35	25	22	30	29	32	30	29	15	3	35
		2020	27	34	34	24	19	22	28	31	30	28	16	6	34
	All Gear	2016	65	64	64	48	31	48	55	56	60	52	39	30	71
		2017	58	62	61	50	30	49	57	58	59	48	40	29	68
		2018	56	59	58	41	28	46	48	54	58	45	35	23	66
		2019	49	54	57	39	28	40	46	53	56	49	34	19	65
		2020	47	51	51	38	27	29	41	48	52	45	31	14	59

Notes: These estimates include only vessels fishing part of federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 22: Bering Sea & Aleutian Islands catcher vessel (excluding catcher/processors) weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2016-2020.

		Hook & Line		Pot			Trawl			All Gear		
	Year	<60ft	60-124ft	<60ft	60-124ft	>=125ft	<60ft	60-124ft	>=125ft	<60ft	60-124ft	>=125ft
Pollock	2016	-	-	-	-	-	-	843	589	-	843	589
	2017	-	-	-	-	-	-	844	517	-	844	517
	2018	-	-	-	-	-	-	900	521	-	900	521
	2019	-	-	-	-	-	0	945	534	0	945	534
	2020	-	-	-	-	-	-	1,176	727	-	1,176	727
Sablefish	2016	30	13	-	22	8	-	-	-	30	35	8
	2017	30	6	-	25	12	-	-	-	30	31	12
	2018	13	14	15	20	6	-	-	-	28	34	6
	2019	6	14	18	13	7	-	-	-	24	27	7
	2020	2	2	32	9	5	-	-	-	34	11	5
Pacific Cod	2016	13	-	428	149	15	-	279	38	441	428	53
	2017	21	-	395	173	39	-	208	33	416	381	72
	2018	46	1	373	152	29	37	199	44	456	352	73
	2019	82	-	458	153	24	6	143	40	546	296	64
	2020	86	1	486	147	22	7	108	23	579	256	45
Flatfish	2016	-	-	-	-	-	-	42	33	-	42	33
	2017	-	-	-	-	-	-	48	53	-	48	53
	2018	-	-	-	-	-	-	32	46	-	32	46
	2019	1	-	-	-	-	-	59	72	1	59	72
	2020	-	-	-	-	-	-	48	51	-	48	51
Rockfish	2016	-	-	-	-	-	-	2	4	-	2	4
	2017	-	-	-	-	-	-	3	4	-	3	4
	2018	0	-	-	-	-	-	3	3	0	3	3
	2019	1	-	-	-	-	-	4	11	1	4	11
	2020	-	-	-	-	-	-	5	13	-	5	13
Atka Mackerel	2016	-	-	-	-	-	-	6	13	-	6	13
	2017	-	-	-	-	-	-	5	15	-	5	15
	2018	-	-	-	-	-	-	9	21	-	9	21
	2019	-	-	-	-	-	-	4	8	-	4	8
	2020	-	-	-	-	-	-	7	18	-	7	18
All Groundfish	2016	43	13	-	-	-	-	1,171	677	471	1,355	700
	2017	51	6	-	-	-	-	1,109	623	446	1,312	674
	2018	59	15	-	-	-	37	1,143	635	485	1,330	670
	2019	90	14	-	-	-	6	1,154	664	572	1,334	695
	2020	88	3	-	-	-	7	1,344	832	614	1,503	859

Notes: These estimates include only vessels fishing part of federal TACs. A vessel that fished more than one category in a week is apportioned a partial week based on catch weight. A target is determined based on vessel, week, processing mode, NMFS area, and gear. All groundfish include additional target categories. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 23: Bering Sea & Aleutian Islands catcher/processor vessel weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2016-2020.

		Hook & Line			Pot			Trawl			All Gear			
	Year	<60ft	60-124ft	125-230ft	<60ft	60-124ft	125-230ft	60-124ft	125-230ft	>230ft	<60ft	60-124ft	125-230ft	>230ft
Pollock	2016	-	-	-	-	-	-	1	4	303	-	1	4	303
	2017	-	-	-	-	-	-	0	5	301	-	0	5	301
	2018	-	-	-	-	-	-	0	6	317	-	0	6	317
	2019	-	-	-	-	-	-	2	7	312	-	2	7	312
	2020	-	-	-	-	-	-	0	10	332	-	0	10	332
Sablefish	2016	11	26	0	-	-	-	-	0	-	11	26	0	-
	2017	19	-	1	-	9	-	0	0	-	19	9	1	-
	2018	0	6	2	-	17	-	-	3	-	0	23	5	-
	2019	7	-	2	-	-	7	-	0	-	7	-	9	-
	2020	-	-	2	-	-	9	0	1	-	-	0	12	-
Pacific Cod	2016	9	223	765	18	13	54	1	17	11	27	237	836	11
	2017	8	172	797	13	20	44	1	11	7	21	193	852	7
	2018	9	108	658	-	28	23	2	17	7	9	138	698	7
	2019	7	57	599	15	21	21	1	11	8	22	79	631	8
	2020	2	62	478	-	19	21	0	5	2	2	81	504	2
Flatfish	2016	-	-	25	-	-	-	100	427	60	-	100	452	60
	2017	-	-	26	-	-	-	88	406	52	-	88	432	52
	2018	-	-	13	-	-	-	94	421	56	-	94	434	56
	2019	-	-	16	-	-	-	95	436	76	-	95	452	76
	2020	-	-	10	-	-	-	57	425	70	-	57	435	70
Rockfish	2016	-	2	1	-	-	-	0	39	8	-	2	40	8
	2017	-	-	-	-	-	-	3	45	4	-	3	45	4
	2018	-	-	1	-	-	-	3	43	6	-	3	44	6
	2019	-	-	0	-	-	-	5	60	8	-	5	60	8
	2020	-	-	0	-	-	-	5	61	7	-	5	61	7
Atka Mackerel	2016	-	-	-	-	-	-	-	80	23	-	-	80	23
	2017	-	-	-	-	-	-	7	105	11	-	7	105	11
	2018	-	-	-	-	-	-	7	122	12	-	7	122	12
	2019	-	-	-	-	-	-	5	88	12	-	5	88	12
	2020	-	-	-	-	-	-	5	96	6	-	5	96	6
All Groundfish	2016	20	252	791	18	13	54	101	567	405	38	366	1,412	405
	2017	27	172	825	13	29	44	99	574	375	40	301	1,443	375
	2018	9	114	675	-	45	23	106	611	397	9	266	1,309	397
	2019	14	57	618	15	21	28	108	601	416	29	186	1,247	416
	2020	2	62	490	-	19	30	67	599	418	2	148	1,119	418

Notes: These estimates include only vessels fishing part of federal TACs. A vessel that fished more than one category in a week is apportioned a partial week based on catch weight. A target is determined based on vessel, week, processing mode, NMFS area, and gear. All groundfish include additional target categories. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 24: Bering Sea & Aleutian Islands catcher vessel crew weeks in the groundfish fisheries by month, 2016-2020.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2016	948	1,901	1,796	1,271	138	692	1,529	1,254	850	521	187	157	11,245
2017	1,102	1,768	1,660	989	238	739	1,430	1,116	872	340	236	242	10,732
2018	1,229	2,049	2,043	708	201	822	1,168	1,314	1,254	427	169	120	11,504
2019	1,082	2,014	2,116	649	225	729	1,050	1,475	1,254	466	346	94	11,499
2020	1,124	2,644	1,843	793	308	601	1,031	1,702	1,676	1,276	53	-	13,050

Notes: Crew weeks are calculated by summing weekly reported crew size over vessels and time period. These estimates include only vessels targeting groundfish counted toward federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea Production Reports. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 25: Bering Sea & Aleutian Islands at-sea processor vessel crew weeks in the groundfish fisheries by month, 2016-2020.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2016	7,231	13,368	12,457	6,660	3,785	6,325	13,134	11,704	9,298	7,214	3,108	2,108	96,392
2017	6,262	12,765	12,817	7,719	3,454	6,229	14,410	11,861	9,408	4,966	3,641	2,055	95,587
2018	5,792	13,559	15,843	5,232	3,750	8,022	11,726	12,878	12,374	4,982	3,201	1,897	99,256
2019	3,705	13,534	16,009	4,825	3,979	6,887	11,256	15,040	11,163	7,559	4,094	1,198	99,249
2020	3,824	16,312	12,475	4,929	4,013	4,183	9,344	13,599	11,198	10,443	3,071	834	94,225

Notes: Crew weeks are calculated by summing weekly reported crew size over vessels and time period. These estimates include only vessels targeting groundfish counted toward federal TACs. Catcher processors typically account for 90-95% of the total at-sea crew weeks in all areas. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea Production Reports. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 26: Gulf of Alaska groundfish retained catch by vessel type, gear, and species, 2016-2020 (1,000 metric tons, round weight).

		Central Gulf				Western Gulf				All Gulf			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Pollock	2016	-	-	110.9	111.1	-	-	61.0	61.0	-	-	175.8	176.0
	2017	-	-	133.1	133.2	-	-	49.2	49.2	-	-	184.2	184.3
	2018	-	-	118.3	118.3	-	-	30.5	30.5	-	-	155.7	155.8
	2019	-	-	87.8	87.8	-	-	21.7	21.7	-	-	118.7	118.7
	2020	-	-	80.5	80.5	-	-	19.0	19.0	-	-	106.8	106.8
Pacific Cod	2016	5.1	20.6	7.7	33.5	4.2	17.0	7.4	28.6	10.5	37.6	15.1	63.2
	2017	3.8	11.3	5.3	20.5	4.4	15.0	7.6	27.0	8.7	26.4	12.9	48.0
	2018	1.5	3.1	2.1	6.7	1.4	4.5	1.4	7.3	3.3	7.6	3.5	14.4
	2019	1.5	3.2	2.1	6.8	1.3	4.3	1.6	7.2	3.3	7.5	3.7	14.4
	2020	0.4	1.0	2.2	3.6	0.2	0.7	0.1	1.1	1.0	1.7	2.3	5.1
Sablefish	2016	3.2	-	0.7	3.8	0.9	-	0	0.9	8.2	-	0.9	9.0
	2017	3.0	0.4	0.7	4.2	0.8	0.2	0.1	1.1	8.2	0.9	1.0	10.1
	2018	2.9	0.5	0.6	4.0	0.7	0.4	0.1	1.2	8.4	1.1	0.9	10.5
	2019	2.5	1.1	0.7	4.3	0.7	0.4	0.3	1.3	7.8	1.9	1.1	10.9
	2020	1.3	2.5	0.8	4.6	0.2	1.1	0.2	1.4	5.6	4.7	1.0	11.3
Atka Mackerel	2016	-	-	0.8	0.8	-	-	0.1	0.1	-	-	1.0	1.0
	2017	-	-	0.2	0.2	-	-	0.4	0.4	-	-	0.7	0.7
	2018	-	-	0.7	0.7	-	-	0.6	0.6	-	-	1.3	1.3
	2019	-	-	0.5	0.5	-	-	0.6	0.6	-	-	1.1	1.1
	2020	-	-	0	0	-	-	0.5	0.5	-	-	0.5	0.5
Arrowtooth	2016	0	-	17.5	17.5	0	-	0.2	0.2	0	-	17.7	17.7
	2017	0	-	24.8	24.8	0	-	0.1	0.1	0	-	24.9	24.9
	2018	0	-	16.2	16.2	0	-	0	0.1	0	-	16.3	16.3
	2019	*	-	22.4	22.4	*	-	0.2	0.2	0	-	22.6	22.6
	2020	*	-	19.5	19.5	0	-	0.2	0.2	0	-	19.8	19.8
Flathead Sole	2016	-	-	2.2	2.2	-	-	0.1	0.1	-	-	2.2	2.2
	2017	-	-	1.9	1.9	-	-	0	0	-	-	1.9	1.9
	2018	-	-	2.0	2.0	-	-	0	0	-	-	2.0	2.0
	2019	-	-	2.1	2.1	*	-	0	0	*	-	2.2	2.2
	2020	-	-	1.8	1.8	-	-	0.1	0.1	-	-	1.8	1.8

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Table 26: Continued

		Central Gulf				Western Gulf				All Gulf			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Rex Sole	2016	-	-	1.5	1.5	-	-	0	0	-	-	1.5	1.5
	2017	-	-	1.2	1.2	-	-	0	0	-	-	1.2	1.2
	2018	-	-	1.1	1.1	-	-	0	0	-	-	1.2	1.2
	2019	-	-	1.1	1.1	-	-	0	0	-	-	1.1	1.1
	2020	-	-	1.0	1.0	-	-	0	0	-	-	1.0	1.0
Shallow-water Flatfish	2016	*	-	3.6	3.6	-	-	0	0	*	-	3.6	3.6
	2017	-	-	2.0	2.0	*	-	0	0	*	-	2.0	2.0
	2018	-	-	2.5	2.5	*	-	0	0	*	-	2.5	2.5
	2019	-	-	2.5	2.5	-	-	0	0	-	-	2.5	2.5
	2020	*	-	4.1	4.1	-	-	0	0	*	-	4.1	4.1
Deep-water Flatfish	2016	*	-	0.1	0.1	*	-	*	*	*	-	0.1	0.1
	2017	*	-	0.1	0.1	0	-	0	0	0	-	0.1	0.1
	2018	*	-	0.1	0.1	*	-	*	*	*	-	0.1	0.1
	2019	-	-	0	0	*	-	*	*	*	-	0	0
	2020	*	-	0.1	0.1	*	-	*	*	*	-	0.1	0.1
Pacific Ocean Perch	2016	-	-	16.1	16.1	*	-	2.5	2.5	*	-	18.6	18.6
	2017	0	-	14.9	14.9	*	-	2.6	2.6	0	-	17.5	17.5
	2018	0	-	17.1	17.1	-	-	3.1	3.1	0	-	20.3	20.3
	2019	*	-	17.3	17.3	*	-	3.1	3.1	*	-	20.5	20.5
	2020	-	-	21.3	21.3	*	-	1.3	1.3	*	-	22.6	22.6
Northern Rockfish	2016	*	-	3.2	3.2	0	-	0.1	0.1	0	-	3.2	3.2
	2017	0	-	1.5	1.5	0	-	0.2	0.2	0	-	1.7	1.7
	2018	*	-	2.0	2.0	*	-	0.3	0.3	*	-	2.3	2.3
	2019	-	-	1.8	1.8	*	-	0.8	0.8	*	-	2.6	2.6
	2020	*	-	1.6	1.6	-	-	0.8	0.8	*	-	2.4	2.4

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Table 26: Continued

	Year	Central Gulf				Western Gulf				All Gulf			
		Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Dusky Rockfish	2016	0	-	3.1	3.1	0	-	0.1	0.1	0.1	-	3.1	3.2
	2017	0	-	2.3	2.3	0	-	0.1	0.1	0	-	2.4	2.4
	2018	0	-	2.8	2.8	0	-	0	0	0	-	2.8	2.8
	2019	0	-	2.0	2.0	0	-	0.2	0.2	0	-	2.2	2.2
	2020	0	-	1.8	1.8	*	-	0.2	0.2	0	-	2.1	2.1
Other Rockfish	2016	0.3	-	1.6	1.9	0.1	-	0.2	0.3	1.0	-	2.0	2.9
	2017	0.3	-	1.2	1.6	0.1	-	0.1	0.2	1.0	-	1.6	2.5
	2018	0.3	-	1.4	1.7	0.1	-	0.2	0.2	1.0	-	1.7	2.7
	2019	0.2	-	1.0	1.2	0.1	-	0.2	0.2	0.9	-	1.4	2.3
	2020	0.1	-	0.8	0.9	0	-	0.1	0.1	0.7	-	0.9	1.7
Other Groundfish	2016	0.2	-	1.1	1.4	0.1	-	0	0.2	0.4	-	1.1	1.7
	2017	0.1	-	0.8	1.0	0.2	-	0	0.2	0.3	-	0.8	1.3
	2018	0	-	0.8	0.9	0	-	0	0.1	0.1	-	0.8	1.0
	2019	0.1	-	0.9	1.1	0	-	0	0.1	0.1	-	0.9	1.3
	2020	0	-	0.8	0.8	0	-	0	0	0	-	0.8	0.8

Notes: The estimates are of retained catch (i.e., excludes discarded catch). All groundfish include additional species categories. These estimates include only catch counted against federal TACs. Includes FMP groundfish catch on halibut targets. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 27: Gulf of Alaska groundfish retained catch by species, gear, and target fishery, 2019-2020, (1,000 metric tons, round weight).

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Hook and Line	Central Gulf	2019	Sablefish	-	2.3	0	*	-	-	-	-	0.2	-	0	2.4
			Pacific Cod	0	*	1.3	*	-	-	-	-	0	-	0	1.3
			Rockfish	-	-	0	-	-	-	-	-	0	-	*	0
			All Targets	0	2.5	1.3	*	-	-	-	-	0.2	-	0	4.1
		2020	Sablefish	-	1.1	0	*	-	-	*	-	0.1	-	0	1.2
			Pacific Cod	0	-	0.4	-	-	-	-	*	0	-	*	0.4
			Rockfish	-	-	0	-	-	-	-	-	0	-	-	0
			All Targets	0	1.3	0.4	*	-	-	*	*	0.1	-	0	1.8
	Western Gulf	2019	Sablefish	*	0.7	0	*	-	-	-	-	0.1	-	-	0.7
			Pacific Cod	*	*	1.3	*	*	-	*	-	*	-	*	1.3
			All Targets	*	0.7	1.3	*	*	-	*	-	0.1	-	0	2.0
		2020	Sablefish	-	0.2	*	*	-	-	*	-	0	-	*	0.2
			Pacific Cod	-	-	0.2	-	-	-	-	-	*	-	-	0.2
			All Targets	-	0.2	0.2	0	-	-	*	-	0	-	0	0.4
	All Gulf	2019	Sablefish	*	7.2	0	*	-	-	-	-	0.6	-	0	7.8
			Pacific Cod	0	*	2.9	*	*	-	*	-	0	-	0	3.0
			Rockfish	-	-	0	-	-	-	-	-	0.1	-	*	0.1
			All Targets	0	7.8	3.0	0	*	-	*	-	0.9	-	0.1	11.9
		2020	Sablefish	*	5.2	0	*	-	-	*	-	0.5	-	0	5.7
			Pacific Cod	0	-	0.9	-	-	-	-	*	0	-	0	0.9
			Rockfish	-	*	0	-	-	-	-	-	0	-	-	0
			All Targets	0	5.6	1.0	0	-	-	*	*	0.8	-	0	7.3
Pot	Central Gulf	2019	Sablefish	-	1.1	0	*	-	-	-	-	0	-	-	1.1
			Pacific Cod	0	*	3.2	*	-	-	-	-	*	-	0.1	3.3
			All Targets	0	1.1	3.2	*	-	-	-	-	0	-	0.1	4.4
		2020	Sablefish	-	2.5	0	*	-	-	-	-	0	-	*	2.5
			Pacific Cod	*	-	1.0	-	-	-	-	-	-	-	0	1.0
			All Targets	*	2.5	1.0	*	-	-	-	-	0	-	0	3.5

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Table 27: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Pot	Western Gulf	2019	Sablefish	-	0.4	*	-	-	-	-	-	0	-	-	0.4
			Pacific Cod	*	*	4.3	-	*	-	-	-	*	-	0.1	4.4
			All Targets	*	0.4	4.3	-	*	-	-	-	0	-	0.1	4.8
		2020	Pollock, Bottom	-	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	-	1.0	0	-	-	-	-	-	0	-	*	1.0
			Pacific Cod	0	-	0.7	-	-	-	-	-	-	-	*	0.7
			All Targets	0	1.0	0.7	-	-	-	-	-	0	-	*	1.7
	All Gulf	2019	Sablefish	-	1.9	0	*	-	-	-	-	0	-	-	1.9
			Pacific Cod	0	*	7.5	*	*	-	-	-	*	-	0.2	7.7
			All Targets	0	1.9	7.5	*	*	-	-	-	0	-	0.2	9.6
		2020	Pollock, Bottom	-	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	-	4.5	0	*	-	-	-	-	0	-	*	4.6
			Pacific Cod	0	-	1.7	-	-	-	-	-	-	-	0	1.8
			All Targets	0	4.6	1.7	*	-	-	-	-	0	-	0	6.4
Trawl	Central Gulf	2019	Pollock, Bottom	8.3	0	0.6	1.7	0.2	0.1	0	0.3	0.3	0.1	0.1	11.6
			Pollock, Pelagic	78.0	0	0.1	0.1	0	0	*	0	0.2	0	0	78.4
			Sablefish	*	0.1	0	*	*	*	0	*	0	-	*	0.2
			Pacific Cod	*	*	0.1	0	0	*	-	0	*	-	0	0.1
			Arrowtooth	1.2	0.2	1.0	19.7	1.8	0.9	0	0.7	1.4	0	0.7	27.7
			Flathead Sole	*	*	*	*	*	*	-	*	*	-	*	*
			Rex Sole	*	*	*	*	*	*	-	*	*	*	*	*
			Flatfish, Shallow	0.1	0	0.2	0.2	0.1	0	*	1.0	0	0	0	1.7
			Rockfish	0.2	0.4	0.1	0.5	0	0.1	0	0	20.2	0.2	0	21.7
			All Targets	87.8	0.7	2.1	22.3	2.1	1.1	0	2.0	22.1	0.3	0.9	141.3
		2020	Pollock, Bottom	9.5	0	0.7	1.6	0.2	0.1	0	0.1	0.4	*	0.1	12.7
			Pollock, Pelagic	69.7	0	0.1	0.1	0	0	*	0	0.3	*	0	70.3
			Sablefish	0	0.2	0	0	0	0	*	-	0.1	-	0	0.3
			Pacific Cod	*	*	0	*	*	-	*	*	*	-	*	0
			Arrowtooth	0.6	0.2	0.8	16.5	1.3	0.7	0	0.7	0.9	*	0.6	22.3
			Rex Sole	*	*	*	*	*	*	-	*	*	*	-	*
			Flatfish, Shallow	0	0	0.3	0.3	0.1	0	*	1.3	0	*	0.1	2.1
			Rockfish	0.4	0.4	0.1	0.7	0	0.1	0	0	23.7	*	0	25.5
			All Targets	80.2	0.8	2.0	19.3	1.6	0.9	0.1	2.1	25.4	*	0.8	133.1

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Table 27: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Trawl	Western Gulf	2019	Pollock, Bottom	0.9	*	0	0	*	*	-	*	*	-	*	1.0
			Pollock, Pelagic	20.6	0	0	0.1	0	0	-	0	0	*	0	20.8
			Pacific Cod	*	*	1.4	0	0	*	-	*	*	*	*	1.4
			Arrowtooth	*	*	*	*	*	*	*	*	*	*	*	*
			Flathead Sole	*	*	*	*	*	*	-	*	*	-	*	*
			Rockfish	0.2	0.2	0.2	0.1	0	0	*	0	4.2	0.6	0	5.6
			All Targets	21.7	0.3	1.6	0.2	0	0	*	0	4.2	0.6	0	28.7
		2020	Pollock, Bottom	1.1	*	0	0	0	*	-	0	*	-	0	1.2
			Pollock, Pelagic	17.7	0	0.1	0.1	0	0	-	0	0	*	0	17.9
			Rockfish	0.2	0.2	0	0	0.1	0	*	0	2.4	0.5	*	3.4
			All Targets	19.0	0.2	0.1	0.2	0.1	0	*	0	2.4	0.5	0	22.5

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Table 27: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Trawl	All Gulf	2019	Pollock, Bottom	9.2	0	0.6	1.7	0.2	0.1	0	0.3	0.3	0.1	0.1	12.5
			Pollock, Pelagic	107.7	0	0.1	0.2	0	0	*	0	0.4	0	0	108.4
			Sablefish	*	0.1	0	*	*	*	0	*	0	-	*	0.2
			Pacific Cod	*	*	1.4	0	0	*	-	0	*	*	0	1.5
			Arrowtooth	1.2	0.2	1.0	19.7	1.8	0.9	0	0.7	1.4	0	0.7	27.7
			Flathead Sole	*	*	*	*	*	*	-	*	*	-	*	*
			Rex Sole	*	*	*	*	*	*	-	*	*	*	*	*
			Flatfish, Shallow	0.1	0	0.2	0.2	0.1	0	*	1.0	0	0	0	1.7
			Rockfish	0.4	0.6	0.3	0.6	0	0.1	0	0	24.4	0.8	0	27.3
			All Targets	118.7	1.0	3.7	22.5	2.1	1.1	0	2.0	26.5	0.9	0.9	179.3
		2020	Pollock, Bottom	10.6	0	0.7	1.6	0.2	0.1	0	0.1	0.4	*	0.1	13.9
			Pollock, Pelagic	94.8	0	0.1	0.3	0	0	*	0	0.4	*	0	95.6
			Sablefish	0	0.2	0	0	0	0	*	-	0.1	-	0	0.3
			Pacific Cod	*	*	0	*	*	-	*	*	*	-	*	0
			Arrowtooth	0.6	0.2	0.8	16.5	1.3	0.7	0	0.7	0.9	*	0.6	22.3
			Rex Sole	*	*	*	*	*	*	-	*	*	*	-	*
			Flatfish, Shallow	0	0	0.3	0.3	0.1	0	*	1.3	0	*	0.1	2.1
			Rockfish	0.5	0.5	0.1	0.7	0.1	0.2	0	0	26.1	0.5	0	28.8
			All Targets	106.6	1.0	2.1	19.5	1.7	1.0	0.1	2.1	27.9	0.5	0.8	163.1
All Gear	Ctr. Gulf	2019	All Targets	87.8	4.3	6.6	22.3	2.1	1.1	0	2.0	22.4	0.3	1.0	149.8
		2020	All Targets	80.2	4.5	3.4	19.3	1.6	0.9	0.1	2.1	25.6	*	0.8	138.5
	West. Gulf	2019	All Targets	21.7	1.3	7.2	0.2	0	0	*	0	4.3	0.6	0.1	35.5
		2020	All Targets	19.0	1.4	1.1	0.2	0.1	0	*	0	2.4	0.5	0	24.6
	All Gulf	2019	All Targets	118.7	10.7	14.2	22.5	2.1	1.1	0	2.0	27.4	0.9	1.1	200.8
		2020	All Targets	106.6	11.2	4.8	19.5	1.7	1.0	0.1	2.1	28.6	0.5	0.8	176.9

Notes: Totals may include additional categories. The target is derived from an algorithm used to determine preponderance of catch, accounting for processor, trip, processing mode, NMFS area, and gear. These estimates include only catch counted against federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 28: Gulf of Alaska ex-vessel prices in the groundfish fisheries by gear, and species, 2016-2020; calculations based on COAR ($/lb, round weight).

	Year	Fixed	Trawl	All Gear
Pollock	2016	0.053	0.083	0.083
	2017	0.091	0.087	0.087
	2018	0.036	0.123	0.123
	2019	0.122	0.138	0.138
	2020	0.026	0.118	0.118
Pacific Cod	2016	0.302	0.269	0.294
	2017	0.335	0.328	0.333
	2018	0.457	0.411	0.446
	2019	0.504	0.456	0.492
	2020	0.424	0.358	0.394
Sablefish	2016	4.743	1.910	4.471
	2017	5.314	3.926	5.179
	2018	3.929	2.344	3.783
	2019	2.988	1.311	2.814
	2020	1.950	0.686	1.829
Atka Mackerel	2016	0.016	0.294	0.294
	2017	0.016	0.387	0.387
	2018	*	0.355	0.355
	2019	-	0.294	0.294
	2020	-	0.268	0.268
Arrowtooth	2016	0.105	0.085	0.085
	2017	0.088	0.108	0.108
	2018	0.245	0.102	0.102
	2019	0.060	0.073	0.073
	2020	0.016	0.067	0.067
Flathead Sole	2016	*	0.144	0.144
	2017	*	0.135	0.135
	2018	0.245	0.142	0.142
	2019	*	0.139	0.139
	2020	-	0.107	0.107
Rex Sole	2016	-	0.273	0.273
	2017	-	0.199	0.199
	2018	-	0.254	0.254
	2019	-	0.221	0.221
	2020	-	0.208	0.208
Shallow-water Flatfish	2016	0.105	0.142	0.142
	2017	0.088	0.158	0.158
	2018	0.245	0.160	0.160
	2019	-	0.155	0.155
	2020	*	0.116	0.116
Deep-water Flatfish	2016	0.105	0.098	0.098
	2017	0.088	0.110	0.110
	2018	*	0.108	0.108
	2019	*	0.101	0.101
	2020	0.016	0.135	0.135

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Table 28: Continued

	Year	Fixed	Trawl	All Gear
Pacific Ocean Perch	2016	0.010	0.186	0.186
	2017	0.440	0.178	0.178
	2018	1.174	0.192	0.192
	2019	0.416	0.196	0.196
	2020	0.291	0.128	0.128
Northern Rockfish	2016	0.640	0.171	0.171
	2017	0.748	0.172	0.172
	2018	0.843	0.180	0.180
	2019	*	0.187	0.187
	2020	*	0.129	0.129
Dusky Rockfish	2016	0.422	0.176	0.180
	2017	0.552	0.171	0.177
	2018	0.587	0.185	0.187
	2019	0.579	0.187	0.190
	2020	0.766	0.128	0.131
Other Rockfish	2016	0.788	0.200	0.397
	2017	0.850	0.195	0.443
	2018	0.906	0.186	0.449
	2019	0.823	0.190	0.441
	2020	0.657	0.144	0.362

Notes: Prices are for catch from both federal and state of Alaska fisheries. The unfrozen landings price is calculated as landed value divided by estimated or actual round weight. Prices for catch processed by an at-sea processor without a COAR buying record (e.g., from catcher processors) are set using the prices for the matching species (group), region and gear-types for which buying records exist. Trawl-caught sablefish, rockfish and flatfish in the GOA and trawl-caught Atka mackerel in both the GOA and the GOA are not well represented in the COAR buying records. A price was calculated for these categories from product-report prices; the price in this case is the value of the first wholsale products divided by the calculated round weight and multiplied by a constant 0.4 to correct for value added by processing. The "All Alaska/All gear" column is the average weighted by retianed catch. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 29: Gulf of Alaska ex-vessel value of the groundfish catch by vessel category, gear, and species, 2016-2020; calculations based on COAR ($ millions).

		Central Gulf				Western Gulf				All Gulf			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Pollock	2016	-	-	20.33	20.35	-	-	11.17	11.17	-	-	32.24	32.26
	2017	-	-	25.45	25.47	-	-	9.41	9.42	-	-	35.23	35.25
	2018	-	-	32.03	32.04	-	-	8.28	8.28	-	-	42.24	42.25
	2019	-	-	26.68	26.68	-	-	6.59	6.59	-	-	36.12	36.12
	2020	-	-	20.92	20.92	-	-	4.94	4.94	-	-	27.80	27.80
Pacific Cod	2016	3.41	13.77	4.57	21.75	2.70	11.34	4.41	18.45	6.85	25.11	8.98	40.95
	2017	2.82	8.41	3.86	15.09	3.15	11.16	5.49	19.80	6.32	19.57	9.35	35.24
	2018	1.55	3.16	1.93	6.63	1.34	4.59	1.33	7.25	3.29	7.74	3.26	14.29
	2019	1.69	3.60	2.18	7.47	1.36	4.84	1.59	7.79	3.54	8.44	3.77	15.74
	2020	0.39	0.95	1.74	3.08	0.18	0.71	0.11	1.00	0.91	1.66	1.85	4.42
Sablefish	2016	33.21	-	3.56	36.76	9.48	-	0.07	9.55	85.48	-	3.67	89.16
	2017	35.51	5.18	6.28	46.97	9.29	2.63	0.57	12.49	95.74	10.98	8.50	115.22
	2018	24.86	4.72	3.07	32.65	6.32	3.10	0.81	10.22	72.86	10.03	5.02	87.90
	2019	16.60	7.18	2.17	25.95	4.86	2.60	0.76	8.21	52.09	12.67	3.29	68.05
	2020	5.36	10.89	1.29	17.54	0.79	4.52	0.25	5.56	24.08	20.27	1.54	45.89
Atka Mackerel	2016	-	-	0.54	0.54	-	-	0.09	0.09	-	-	0.63	0.63
	2017	-	-	0.18	0.18	-	-	0.41	0.41	-	-	0.59	0.59
	2018	-	-	0.56	0.56	-	-	0.53	0.53	-	-	1.09	1.09
	2019	-	-	0.31	0.31	-	-	0.42	0.42	-	-	0.73	0.73
	2020	-	-	0	0	-	-	0.30	0.30	-	-	0.30	0.30
Arrowtooth	2016	0	-	3.27	3.28	0	-	0.13	0.13	0	-	3.41	3.41
	2017	0	-	5.91	5.91	0.01	-	0.03	0.03	0.01	-	5.94	5.95
	2018	0	-	3.67	3.67	0	-	0.20	0.20	0	-	3.88	3.88
	2019	0	-	3.67	3.67	0	-	0.07	0.07	0	-	3.75	3.76
	2020	*	-	2.89	2.89	0	-	0.03	0.03	0	-	2.92	2.92
Flathead Sole	2016	-	-	0.70	0.70	-	-	0.04	0.04	-	-	0.74	0.74
	2017	-	-	0.56	0.56	-	-	0.01	0.01	-	-	0.57	0.57
	2018	-	-	0.63	0.63	-	-	0.04	0.04	-	-	0.67	0.67
	2019	-	-	0.74	0.74	*	-	0.04	0.04	*	-	0.77	0.77
	2020	-	-	0.42	0.42	-	-	0.02	0.02	-	-	0.44	0.44

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Table 29: Continued

		Central Gulf				Western Gulf				All Gulf			
	Year	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Rex Sole	2016	-	-	0.97	0.97	-	-	0.04	0.04	-	-	1.01	1.01
	2017	-	-	0.61	0.61	-	-	0.01	0.01	-	-	0.63	0.63
	2018	-	-	0.89	0.89	-	-	0.05	0.05	-	-	0.94	0.94
	2019	-	-	0.74	0.74	-	-	0.01	0.01	-	-	0.75	0.75
	2020	-	-	0.53	0.53	-	-	0.01	0.01	-	-	0.54	0.54
Shallow-water Flatfish	2016	*	-	1.12	1.12	-	-	0	0	*	-	1.12	1.12
	2017	-	-	0.71	0.71	*	-	0	0	*	-	0.72	0.72
	2018	-	-	0.88	0.88	*	-	0.01	0.01	*	-	0.89	0.89
	2019	-	-	0.86	0.86	-	-	0.01	0.01	-	-	0.87	0.87
	2020	*	-	1.06	1.06	-	-	0	0	*	-	1.06	1.06
Deep-water Flatfish	2016	*	-	0.02	0.02	*	-	0	0	*	-	0.02	0.02
	2017	*	-	0.02	0.02	0	-	0	0	0	-	0.02	0.02
	2018	*	-	0.02	0.02	*	-	0	0	*	-	0.02	0.02
	2019	-	-	0.01	0.01	*	-	0	0	*	-	0.01	0.01
	2020	*	-	0.02	0.02	*	-	*	*	*	-	0.02	0.02
Pacific Ocean Perch	2016	-	-	6.61	6.61	*	-	1.03	1.03	*	-	8.79	8.79
	2017	0	-	5.89	5.89	*	-	1.03	1.03	0	-	8.00	8.00
	2018	0	-	7.29	7.29	-	-	1.33	1.33	0	-	9.99	9.99
	2019	*	-	7.53	7.53	*	-	1.32	1.32	*	-	10.18	10.18
	2020	-	-	5.99	5.99	*	-	0.37	0.37	*	-	6.76	6.76
Northern Rockfish	2016	*	-	1.19	1.19	0	-	0.04	0.04	0	-	1.23	1.23
	2017	0	-	0.57	0.57	0	-	0.08	0.08	0	-	0.64	0.64
	2018	0	-	0.78	0.78	*	-	0.12	0.12	0	-	0.90	0.90
	2019	-	-	0.73	0.73	*	-	0.34	0.34	*	-	1.07	1.07
	2020	*	-	0.45	0.45	-	-	0.21	0.21	*	-	0.67	0.67

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Table 29: Continued

	Year	Central Gulf				Western Gulf				All Gulf			
		Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear	Hook And Line	Pot	Trawl	All Gear
Dusky Rockfish	2016	0.04	-	1.18	1.23	0	-	0.03	0.03	0.05	-	1.21	1.26
	2017	0.02	-	0.86	0.88	0.02	-	0.03	0.05	0.04	-	0.89	0.94
	2018	0.01	-	1.13	1.14	0.01	-	0.02	0.02	0.02	-	1.15	1.17
	2019	0.02	-	0.83	0.85	0.01	-	0.08	0.09	0.03	-	0.91	0.94
	2020	0.01	-	0.51	0.53	*	-	0.06	0.06	0.01	-	0.58	0.59
Other Rockfish	2016	0.57	-	0.71	1.28	0.18	-	0.07	0.25	1.71	-	0.86	2.58
	2017	0.56	-	0.55	1.12	0.20	-	0.05	0.24	1.80	-	0.68	2.48
	2018	0.56	-	0.58	1.14	0.15	-	0.07	0.22	2.03	-	0.73	2.76
	2019	0.40	-	0.42	0.83	0.13	-	0.07	0.20	1.71	-	0.60	2.32
	2020	0.19	-	0.25	0.45	0.03	-	0.03	0.06	1.09	-	0.33	1.45
Other Groundfish	2016	0.17	-	1.05	1.36	0.08	-	0.01	0.16	0.30	-	1.09	1.59
	2017	0.10	-	0.83	1.05	0.14	-	0.02	0.23	0.27	-	0.85	1.31
	2018	0.04	-	0.76	0.86	0.03	-	0.05	0.16	0.11	-	0.81	1.05
	2019	0.07	-	0.95	1.13	0.02	-	0.02	0.14	0.11	-	0.98	1.30
	2020	0.01	-	0.78	0.79	0	-	0.01	0.01	0.02	-	0.78	0.81

Notes: Ex-vessel value is calculated by multiplying ex-vessel prices by the retained round weight catch. Refer to Table 18 for a description of the price derivation. The value added by at-sea processing is not included in these estimates of ex-vessel value. All groundfish includes additional species categories. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 30: Gulf of Alaska vessel and permit counts, ex-vessel value, value per vessel, and percent value of GOA FMP groundfish and all GOA fisheries by processor group, 2016-2020; calculations based on COAR ($ millions).

	Year	Vessels	Permits	Ex-vessel Value Per Vessel $1,000	Ex-vessel Value $million	Percent Value, GOA FMP Groundfish	Percent Value, All GOA Fisheries
Western Gulf Trawl	2016	40	16	428.44	17.14	9.61	3.18
	2017	42	15	407.88	17.13	8.54	2.27
	2018	36	12	355.95	12.81	7.93	2.33
	2019	35	10	323.27	11.31	8.21	1.92
	2020	33	10	191.75	6.33	6.94	1.79
Central Gulf Trawl	2016	63	17	727.30	45.82	25.68	8.50
	2017	58	13	901.66	52.30	26.07	6.93
	2018	61	14	889.06	54.23	33.55	9.84
	2019	62	16	771.38	47.83	34.69	8.11
	2020	62	15	594.41	36.85	40.40	10.43
CV Hook and Line	2016	99	31	32.95	3.26	1.83	0.61
	2017	85	34	35.74	3.04	1.51	0.40
	2018	69	27	39.69	2.74	1.69	0.50
	2019	73	30	32.28	2.36	1.71	0.40
	2020	27	18	20.69	0.56	0.61	0.16
CP Hook and Line	2016	11	11	292.58	3.22	1.80	0.60
	2017	9	9	478.93	4.31	2.15	0.57
	2018	3	3	460.40	1.38	0.85	0.25
	2019	3	3	554.33	1.66	1.21	0.28
Sablefish IFQ	2016	268	36	297.96	79.85	44.76	14.82
	2017	261	40	385.90	100.72	50.21	13.34
	2018	261	39	297.73	77.71	48.07	14.11
	2019	249	43	243.76	60.70	44.03	10.29
	2020	241	46	176.60	42.56	46.66	12.04
Pot	2016	119	26	215.28	25.62	14.36	4.75
	2017	110	26	179.75	19.77	9.86	2.62
	2018	58	21	135.68	7.87	4.87	1.43
	2019	59	16	146.60	8.65	6.27	1.47
	2020	38	17	49.20	1.87	2.05	0.53
Jig	2016	199	41	7.32	1.46	0.82	0.27
	2017	105	33	1.50	0.16	0.08	0.02
	2018	98	38	3.80	0.37	0.23	0.07
	2019	110	40	5.80	0.64	0.46	0.11
	2020	97	46	5.26	0.51	0.56	0.14

Notes: These tables include the value of groundfish purchases reported by processing plants, as well as by other entities, such as markets and restaurants, that normally would not report sales of groundfish products. Keep this in mind when comparing ex-vessel values in this table to gross processed-product values. The data are for catch from both federal and state of Alaska fisheries. The column "permits" is a count of federal groundfish processor permits. Values are not adjusted for inflation.

Source: ADF&G Commercial Operators Annual Reports (COAR); and ADF&G Intent to Operate (ITO) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 31: Gulf of Alaska production of groundfish products by species, 2016-2020, (1,000 metric tons product weight).

	Product	2016	2017	2018	2019	2020
Pollock	Whole Fish	14.49	9.34	0.56	3.12	0.42
	Head And Gut	27.81	37.39	39.83	28.41	22.62
	Roe	0.54	1.09	2.39	1.89	1.55
	Deep-Skin Fillets	*	0.63	*	*	0.23
	Other Fillets	14.32	15.09	13.08	8.80	7.60
	Surimi	13.41	10.61	9.77	6.95	5.43
	Minced Fish	1.25	1.44	0.98	0.84	1.80
	Fishmeal	1.39	*	1.11	*	*
	Other Products	1.92	2.46	1.34	1.07	0.30
	All Products	75.14	78.06	69.06	51.09	39.95
Pacific Cod	Whole Fish	0.25	0.14	0.25	0.26	0.03
	Head And Gut	8.43	6.11	1.92	3.02	1.15
	Salted/Split	-	-	-	-	*
	Roe	0.78	1.04	0.37	0.38	0.19
	Fillets	7.87	6.52	2.00	2.36	1.12
	Other Products	4.33	3.58	1.04	1.44	0.47
	All Products	21.65	17.39	5.58	7.47	2.97
Sablefish	Head And Gut	5.03	5.28	5.84	6.05	6.05
	Other Products	0.30	0.36	0.29	0.38	0.31
	All Products	5.34	5.64	6.13	6.43	6.36
Atka Mackerel	Whole Fish	*	*	0.08	-	-
	Head And Gut	0.45	0.37	0.73	0.63	0.25
	Other Products	*	*	*	*	*
	All Products	0.45	0.37	0.81	0.63	0.25
Arrowtooth	Whole Fish	1.09	3.22	2.28	2.04	1.97
	Head And Gut	7.05	11.28	6.24	8.97	7.31
	Kirimi	-	-	-	-	*
	Fillets	*	*	*	*	-
	Other Products	0.14	*	0.01	*	*
	All Products	8.28	14.50	8.53	11.01	9.28
Flathead Sole	Whole Fish	0.74	0.45	1.02	1.09	1.09
	Head And Gut	0.38	0.46	0.28	0.27	0.20
	Kirimi	*	*	*	*	*
	Fillets	*	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	1.11	0.91	1.29	1.35	1.29

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Table 31: Continued

	Product	2016	2017	2018	2019	2020
Rex Sole	Whole Fish	1.43	1.27	1.55	1.44	1.04
	Head And Gut	0.07	0.01	0.04	0.01	*
	Kirimi	-	-	*	-	-
	Fillets	*	0.00	*	*	*
	Other Products	*	*	*	*	*
	All Products	1.51	1.28	1.59	1.46	1.04
Shallow-water Flatfish	Whole Fish	0.93	0.89	0.82	0.91	1.52
	Head And Gut	0.66	0.21	0.58	0.43	1.00
	Kirimi	*	*	*	*	*
	Fillets	0.02	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	1.61	1.11	1.40	1.33	2.51
Deep-water Flatfish	Whole Fish	0.00	*	0.00	*	*
	Head And Gut	0.05	*	0.01	*	*
	Fillets	*	*	*	*	*
	Other Products	-	*	-	-	-
	All Products	0.05	*	0.02	*	*
Pacific Ocean Perch	Whole Fish	5.13	2.71	3.38	2.75	4.87
	Head And Gut	8.33	8.19	10.26	10.00	9.26
	Other Products	0.03	0.16	0.09	0.25	0.16
	All Products	13.49	11.06	13.73	13.01	14.29
Northern Rockfish	Whole Fish	0.02	0.00	0.01	*	*
	Head And Gut	1.42	0.83	1.23	1.39	1.26
	Other Products	0.08	0.01	0.00	0.00	0.00
	All Products	1.51	0.84	1.25	1.39	1.26
Dusky Rockfish	Whole Fish	0.22	0.28	0.06	0.14	0.32
	Head And Gut	1.36	0.97	1.42	1.17	0.88
	Other Products	0.07	0.07	0.02	0.01	0.02
	All Products	1.65	1.31	1.50	1.32	1.22

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Table 31: Continued

	Product	2016	2017	2018	2019	2020
Other Rockfish	Whole Fish	0.61	0.54	0.62	0.45	0.31
	Head And Gut	0.71	0.68	0.76	0.58	0.42
	Other Products	0.13	0.13	0.09	0.09	0.09
	All Products	1.45	1.34	1.46	1.12	0.82
Other Groundfish	Whole Fish	0.04	0.01	0.01	0.23	0.04
	Head And Gut	0.06	0.07	0.02	0.05	0.01
	Kirimi	-	*	-	-	-
	Fillets	-	-	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	0.49	0.35	0.32	0.40	0.31
	All Products	0.59	0.43	0.36	0.68	0.36
All Species	Whole Fish	24.94	18.84	10.64	12.43	11.60
	Head And Gut	61.82	71.85	69.16	60.97	50.42
	Salted/Split	-	-	-	-	*
	Kirimi	*	*	*	*	*
	Roe	1.32	2.13	2.76	2.27	1.74
	Fillets	7.89	6.53	2.00	2.36	1.12
	Deep-Skin Fillets	*	0.63	*	*	0.23
	Other Fillets	14.32	15.09	13.08	8.80	7.60
	Surimi	13.41	10.61	9.77	6.95	5.43
	Minced Fish	1.25	1.44	0.98	0.84	1.80
	Fishmeal	1.39	*	1.11	*	*
	Other Products	7.49	7.11	3.20	3.65	1.66
	All Products	133.84	134.23	112.71	98.28	81.61

Notes: Total includes additional species not listed in the production details as well as confidential data from Tables 28 and 29. These estimates are for catch from both federal and state of Alaska fisheries. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 32: Gulf of Alaska gross value of groundfish products by species, 2016-2020, ($ million).

	Product	2016	2017	2018	2019	2020
Pollock	Whole Fish	7.0	5.7	0.5	1.9	0.3
	Head And Gut	23.3	30.1	36.2	32.6	25.9
	Roe	1.7	4.3	9.7	5.9	3.8
	Deep-Skin Fillets	*	2.1	*	*	0.8
	Other Fillets	39.8	32.9	33.6	26.9	23.2
	Surimi	28.7	17.7	20.7	16.6	12.8
	Minced Fish	1.5	1.5	1.3	1.4	3.4
	Fishmeal	2.2	*	1.5	*	*
	Other Products	2.2	2.5	1.4	0.7	0.2
	All Products	106.4	96.7	104.9	85.9	70.5
Pacific Cod	Whole Fish	0.5	0.2	0.5	0.8	0.0
	Head And Gut	22.7	20.3	8.6	8.5	3.5
	Salted/Split	-	-	-	-	*
	Roe	1.3	1.6	1.1	0.9	0.4
	Fillets	57.3	45.3	19.2	21.5	10.1
	Other Products	9.9	8.0	2.6	3.5	0.9
	All Products	91.8	75.5	31.9	35.2	15.0
Sablefish	Head And Gut	91.6	108.2	88.0	66.1	53.6
	Other Products	2.4	3.1	1.9	5.0	3.5
	All Products	94.1	111.3	89.9	71.2	57.1
Atka Mackerel	Whole Fish	*	*	0.2	-	-
	Head And Gut	1.2	1.2	2.3	1.6	0.6
	Other Products	*	*	*	*	*
	All Products	1.2	1.2	2.5	1.6	0.6
Arrowtooth	Whole Fish	1.1	4.9	1.5	0.8	1.6
	Head And Gut	12.1	26.7	9.3	11.0	7.6
	Kirimi	-	-	-	-	*
	Fillets	*	*	*	*	-
	Other Products	0.1	*	0.0	*	*
	All Products	13.3	31.5	10.8	11.7	9.2
Flathead Sole	Whole Fish	0.8	0.6	1.2	0.9	0.9
	Head And Gut	0.7	0.7	0.6	0.5	0.3
	Kirimi	*	*	*	*	*
	Fillets	*	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	1.5	1.3	1.8	1.4	1.2

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Table 32: Continued

	Product	2016	2017	2018	2019	2020
Rex Sole	Whole Fish	3.2	2.8	3.3	3.1	1.9
	Head And Gut	0.2	0.0	0.1	0.0	*
	Kirimi	-	-	*	-	-
	Fillets	*	0.0	*	*	*
	Other Products	*	*	*	*	*
	All Products	3.4	2.8	3.4	3.2	1.9
Shallow-water Flatfish	Whole Fish	1.1	1.2	1.1	0.9	1.5
	Head And Gut	1.5	0.3	1.2	0.9	1.7
	Kirimi	*	*	*	*	*
	Fillets	0.1	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	2.7	1.5	2.3	1.8	3.2
Deep-water Flatfish	Whole Fish	0.0	*	0.0	*	*
	Head And Gut	0.1	*	0.0	*	*
	Fillets	*	*	*	*	*
	Other Products	-	*	-	-	-
	All Products	0.1	*	0.0	*	*
Pacific Ocean Perch	Whole Fish	7.4	3.3	4.0	2.8	4.7
	Head And Gut	17.0	24.1	27.7	19.1	15.9
	Other Products	0.2	0.8	0.4	1.9	1.6
	All Products	24.6	28.1	32.1	23.8	22.2
Northern Rockfish	Whole Fish	0.0	0.0	0.0	*	*
	Head And Gut	4.1	1.8	2.8	2.5	1.7
	Other Products	0.5	0.1	0.0	0.0	0.0
	All Products	4.6	1.9	2.8	2.5	1.7
Dusky Rockfish	Whole Fish	0.4	0.4	0.1	0.2	0.5
	Head And Gut	3.9	2.1	3.6	2.3	1.5
	Other Products	0.5	0.5	0.1	0.1	0.2
	All Products	4.8	3.0	3.8	2.6	2.2

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Table 32: Continued

	Product	2016	2017	2018	2019	2020
Other Rockfish	Whole Fish	2.3	2.4	2.5	1.8	1.1
	Head And Gut	2.9	3.0	3.2	1.9	1.3
	Other Products	0.8	0.8	1.0	1.1	0.9
	All Products	6.0	6.2	6.7	4.8	3.3
Other Groundfish	Whole Fish	0.1	0.0	0.0	0.8	0.1
	Head And Gut	0.2	0.2	0.1	0.2	0.0
	Kirimi	-	*	-	-	-
	Fillets	-	-	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	2.9	1.7	1.4	1.7	1.3
	All Products	3.2	1.9	1.5	2.7	1.4
All Species	Whole Fish	24.0	21.4	14.9	14.0	12.6
	Head And Gut	181.6	218.9	183.6	147.3	113.7
	Salted/Split	-	-	-	-	*
	Kirimi	*	*	*	*	*
	Roe	3.0	5.9	10.7	6.8	4.2
	Fillets	57.4	45.3	19.2	21.5	10.1
	Deep-Skin Fillets	*	2.1	*	*	0.8
	Other Fillets	39.8	32.9	33.6	26.9	23.2
	Surimi	28.7	17.7	20.7	16.6	12.8
	Minced Fish	1.5	1.5	1.3	1.4	3.4
	Fishmeal	2.2	*	1.5	*	*
	Other Products	19.5	17.4	8.8	13.9	8.6
	All Products	357.8	363.0	294.4	248.3	189.5

Notes: Total includes additional species not listed in the production details as well as confidential data from Tables 28 and 29. These estimates are for catch from both federal and state of Alaska fisheries. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 33: Gulf of Alaska price per pound of groundfish products by species, 2016-2020, ($/lb).

	Product	2016	2017	2018	2019	2020
Pollock	Whole Fish	0.22	0.28	0.37	0.27	0.32
	Head And Gut	0.38	0.36	0.41	0.52	0.52
	Roe	1.39	1.80	1.83	1.42	1.10
	Deep-Skin Fillets	*	1.49	*	*	1.46
	Other Fillets	1.26	0.99	1.16	1.39	1.39
	Surimi	0.97	0.76	0.96	1.08	1.07
	Minced Fish	0.53	0.46	0.61	0.75	0.87
	Fishmeal	0.71	*	0.62	*	*
	Other Products	0.51	0.45	0.49	0.28	0.37
	All Products	0.64	0.56	0.69	0.76	0.80
Pacific Cod	Whole Fish	0.95	0.81	0.86	1.42	0.59
	Head And Gut	1.22	1.51	2.04	1.28	1.39
	Roe	0.78	0.68	1.28	1.04	0.99
	Fillets	3.30	3.15	4.35	4.12	4.09
	Other Products	1.04	1.02	1.12	1.09	0.88
	All Products	1.92	1.97	2.59	2.14	2.30
Sablefish	Head And Gut	8.26	9.30	6.83	4.96	4.01
	Other Products	3.64	3.92	2.99	5.94	5.14
	All Products	7.99	8.95	6.65	5.02	4.07
Atka Mackerel	Whole Fish	*	*	0.97	-	-
	Head And Gut	1.21	1.47	1.42	1.17	1.10
	Other Products	*	*	*	*	*
	All Products	1.21	1.47	1.38	1.17	1.10
Arrowtooth	Whole Fish	0.46	0.69	0.30	0.17	0.37
	Head And Gut	0.78	1.07	0.67	0.55	0.47
	Fillets	*	*	*	*	-
	Other Products	0.45	*	0.38	*	*
	All Products	0.73	0.99	0.57	0.48	0.45
Flathead Sole	Whole Fish	0.49	0.59	0.53	0.39	0.38
	Head And Gut	0.86	0.74	0.95	0.87	0.66
	Fillets	*	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	0.62	0.67	0.62	0.49	0.42
Rex Sole	Whole Fish	1.01	0.99	0.97	0.98	0.83
	Head And Gut	1.33	1.45	1.35	1.44	*
	Fillets	*	0.34	*	*	*
	Other Products	*	*	*	*	*
	All Products	1.02	0.99	0.98	0.98	0.83
Shallow-water Flatfish	Whole Fish	0.55	0.61	0.61	0.44	0.43
	Head And Gut	1.03	0.68	0.90	0.93	0.79
	Fillets	2.08	*	*	*	*
	Other Products	*	*	*	*	*
	All Products	0.77	0.63	0.73	0.60	0.58

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Table 33: Continued

	Product	2016	2017	2018	2019	2020
Deep-water Flatfish	Whole Fish	0.50	*	0.45	*	*
	Head And Gut	0.73	*	0.39	*	*
	Fillets	*	*	*	*	*
	Other Products	-	*	-	-	-
	All Products	0.72	*	0.40	*	*
Pacific Ocean Perch	Whole Fish	0.65	0.55	0.54	0.46	0.44
	Head And Gut	0.93	1.33	1.22	0.87	0.78
	Other Products	2.70	2.18	2.02	3.36	4.29
	All Products	0.83	1.15	1.06	0.83	0.70
Northern Rockfish	Whole Fish	0.72	0.76	0.42	*	*
	Head And Gut	1.32	1.01	1.04	0.83	0.63
	Other Products	2.82	2.11	1.96	2.81	2.44
	All Products	1.38	1.03	1.03	0.83	0.63
Dusky Rockfish	Whole Fish	0.87	0.62	0.72	0.77	0.71
	Head And Gut	1.30	1.00	1.14	0.88	0.77
	Other Products	3.08	2.98	2.48	3.04	4.87
	All Products	1.31	1.02	1.15	0.88	0.82
Other Rockfish	Whole Fish	1.72	1.98	1.86	1.80	1.62
	Head And Gut	1.85	2.01	1.93	1.50	1.37
	Other Products	2.87	2.91	4.76	5.41	4.56
	All Products	1.89	2.08	2.08	1.95	1.80
Other Groundfish	Whole Fish	1.26	2.19	0.94	1.66	0.92
	Head And Gut	1.61	1.41	1.84	1.79	0.79
	Fillets	-	-	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	2.71	2.18	2.01	1.89	1.89
	All Products	2.50	2.06	1.96	1.81	1.76

Notes: These estimates are based on data from both federal and state of Alaska fisheries. Prices based on confidential data have been excluded. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 34: Gulf of Alaska total product value per round metric ton of retained catch by species and year, 2016-2020, ($/mt).

Species	2016	2017	2018	2019	2020
Pollock	616	542	684	735	664
Sablefish	10,363	11,032	8,526	6,488	5,004
Pacific Cod	1,452	1,571	2,194	2,421	2,951
Flatfish	863	1,233	795	641	593
Rockfish	1,297	1,451	1,444	1,091	968
Atka Mackerel	1,243	1,734	1,785	1,443	1,165
Other	1,907	1,496	1,440	2,085	1,673

Notes: These estimates include the product value of catch from both federal and state of Alaska fisheries. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea and Shoreside Production Reports; ADF&G Commercial Operators Annual Reports (COAR); and NMFS Alaska Region Blend and Catch-accounting System estimates. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 35: Gulf of Alaska number of processors, gross product value, value per processor, and percent value of GOA FMP groundfish of processed groundfish by processor group, 2016-2020, ($ millions).

	Year	Processors	Wholesale Value ($million)	Wholesale Value Per Processor ($1,000)	Percent Value, GOA FMP Groundfish
Central and Western Gulf Trawl	2016	15	33.46	2,230.49	7.36
	2017	11	50.35	4,576.89	10.96
	2018	9	34.64	3,849.20	8.30
	2019	11	28.78	2,616.46	7.88
	2020	9	21.89	2,431.82	9.71
CP Hook and Line	2016	12	7.47	622.09	1.64
	2017	11	10.22	929.25	2.22
	2018	7	2.94	420.58	0.71
	2019	7	2.46	351.83	0.67
	2020	4	0.08	19.74	0.04
Sablefish IFQ	2016	5	4.48	895.40	0.99
	2017	6	5.38	896.88	1.17
	2018	5	4.35	870.40	1.04
	2019	7	3.89	555.68	1.06
	2020	5	2.13	426.97	0.95
Motherships & Inshore Floating Procs.	2016	5	116.70	23,339.44	25.68
	2017	4	114.32	28,579.92	24.88
	2018	3	113.17	37,724.78	27.12
	2019	3	106.14	35,379.37	29.04
	2020	2	*	*	*
Kodiak Shoreside Procs.	2016	8	145.15	18,143.79	31.94
	2017	8	139.67	17,458.44	30.40
	2018	8	138.62	17,328.11	33.22
	2019	6	110.54	18,423.03	30.25
	2020	7	98.46	14,065.42	43.67
Southcentral Gulf Shoreside Procs.	2016	12	38.33	3,194.44	8.43
	2017	11	39.37	3,578.73	8.57
	2018	11	29.05	2,640.61	6.96
	2019	10	23.91	2,391.07	6.54
	2020	10	15.24	1,524.08	6.76
Southeastern Gulf Shoreside Procs.	2016	11	33.46	3,041.43	7.36
	2017	14	40.24	2,874.21	8.76
	2018	14	34.41	2,458.15	8.25
	2019	16	26.43	1,652.10	7.23
	2020	14	21.46	1,532.98	9.52
Western Gulf Shoreside Procs.	2016	3	75.43	25,144.97	16.60
	2017	3	59.88	19,959.23	13.03
	2018	2	*	*	*
	2019	3	63.28	21,092.43	17.32
	2020	4	38.46	9,614.72	17.06

Notes: The data are for catch from both federal and state of Alaska fisheries. The processor groups are defined as follows: "Western and Central Gulf Trawl" are the processors in the Western and Central Gulf. "CP Hook and Line" are the hook and line catcher processors. "Sablefish IFQ" are processors processing sablefish IFQ. Values are not adjusted for inflation.

Source: ADF&G Commercial Operators Annual Reports (COAR); and ADF&G Intent to Operate (ITO) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 36: Gulf of Alaska number of vessels, average and median length, and average and median capacity (tonnage) of vessels that caught groundfish by vessel type, and gear, 2016-2020.

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
Central and Western Gulf Trawl	2016	84	87	88.0	111	103.0
	2017	79	90	88.0	122	112.0
	2018	78	89	88.0	114	105.0
	2019	76	89	88.0	128	115.0
	2020	70	90	87.0	134	115.0
CV Hook and Line	2016	58	44	42.0	28	24.0
	2017	49	43	42.0	26	24.0
	2018	33	44	42.0	27	24.0
	2019	32	44	42.0	26	24.0
	2020	2	47	47.0	20	19.5
CP Hook and Line	2016	10	141	128.0	290	133.0
	2017	10	141	128.0	344	133.0
	2018	3	101	119.0	245	153.0
	2019	2	135	119.0	262	133.0
Sablefish IFQ	2016	264	57	57.5	48	38.0
	2017	262	56	57.0	48	36.0
	2018	261	57	57.0	48	39.0
	2019	254	57	57.0	48	36.0
	2020	240	57	57.0	50	39.0
Pot	2016	118	60	58.0	57	48.0
	2017	108	61	58.0	57	48.0
	2018	58	65	58.0	62	51.0
	2019	59	66	58.0	66	51.0
	2020	38	52	55.0	43	41.0
Jig	2016	195	41	41.0	17	15.0
	2017	103	37	36.0	14	12.0
	2018	98	39	36.0	14	12.0
	2019	108	40	41.0	16	15.0
	2020	94	39	38.0	15	15.0
No Fleet/ Other	2016	14	47	48.0	23	24.0
	2017	8	41	38.0	15	11.0
	2018	8	39	35.0	14	10.0
	2019	8	43	40.0	14	11.0
	2020	4	39	40.0	16	16.0

Notes: These estimates include only vessels fishing part of federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 37: Gulf of Alaska number of vessels that caught groundfish by month, vessel type, and gear, 2017-2021.

		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Catcher Vessels	Hook & Line	2017	54	81	124	164	172	129	79	73	122	104	56	19	371
		2018	10	48	98	125	179	123	59	103	174	114	103	17	353
		2019	29	59	140	173	150	123	60	93	113	106	69	10	351
		2020	4	19	88	98	141	86	54	72	100	113	38	5	290
	Pot	2017	74	86	89	91	16	11	9	5	11	18	15	8	127
		2018	24	30	46	10	14	11	5	6	16	14	13	5	78
		2019	24	24	39	15	18	13	4	7	22	25	18	3	88
		2020	-	8	37	22	35	28	20	33	55	62	36	3	137
		2021	-	-	-	-	-	-	-	-	-	1	-	1	2
	Trawl	2017	37	45	61	42	21	17	5	4	53	60	35	1	68
		2018	12	53	51	25	19	14	2	35	59	61	28	2	69
		2019	32	47	50	25	25	22	1	20	47	50	21	-	65
		2020	28	37	43	19	24	16	4	33	44	51	11	-	61
	All Gear	2017	165	208	258	292	206	155	91	81	185	177	105	28	522
		2018	46	131	187	158	211	146	66	142	248	188	141	24	467
		2019	85	130	221	209	191	156	65	119	180	177	106	13	468
		2020	32	64	163	134	189	123	72	127	175	195	74	8	413
		2021	-	-	-	-	-	-	-	-	-	1	-	1	2
Catcher Processors	Hook & Line	2017	-	3	7	7	3	2	3	1	6	3	1	1	11
		2018	-	2	5	3	1	2	1	1	3	-	1	-	7
		2019	-	1	1	1	2	2	2	1	4	2	2	-	8
		2020	-	-	1	1	2	1	-	1	1	-	-	-	4
	Pot	2020	-	-	-	-	-	-	-	-	-	1	1	-	1
	Trawl	2017	-	1	2	2	2	4	10	6	4	4	2	1	11
		2018	-	-	1	2	1	5	8	4	4	1	1	1	9
		2019	-	-	1	1	1	3	6	6	5	4	2	1	11
		2020	-	-	1	3	2	4	7	5	2	1	1	-	9
	All Gear	2017	-	4	9	9	5	6	13	7	10	7	3	2	22
		2018	-	2	6	5	2	7	9	5	7	1	2	1	16
		2019	-	1	2	2	3	5	8	7	9	6	4	1	19
		2020	-	-	2	4	4	5	7	6	3	2	2	-	14

Notes: These estimates include only vessels fishing part of federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 38: Gulf of Alaska catcher vessel (excluding catcher/processors) weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2017-2021.

		Hook & Line		Pot		Trawl		All Gear	
	Year	<60ft	60-124ft	<60ft	60-124ft	<60ft	60-124ft	<60ft	60-124ft
Pollock	2017	-	-	-	-	180	515	180	515
	2018	-	-	-	-	187	487	187	487
	2019	-	-	-	-	142	389	142	389
	2020	-	-	-	-	144	422	144	422
Sablefish	2017	1,334	274	130	45	-	9	1,464	328
	2018	1,461	287	134	57	-	18	1,595	362
	2019	1,322	298	199	62	-	12	1,521	372
	2020	1,002	164	466	202	1	10	1,469	376
	2021	-	-	-	1	-	-	-	1
Pacific Cod	2017	574	-	880	209	109	58	1,563	267
	2018	372	1	190	93	29	3	591	97
	2019	393	1	171	80	41	7	605	88
	2020	254	-	79	5	-	2	333	7
	2021	-	-	1	-	-	-	1	-
Flatfish	2017	-	-	-	-	-	102	-	102
	2018	-	-	-	-	26	136	26	136
	2019	-	-	-	-	17	165	17	165
	2020	-	-	-	-	2	150	2	150
Rockfish	2017	278	2	-	-	7	87	285	89
	2018	250	7	-	-	5	98	255	105
	2019	239	1	-	-	6	113	245	114
	2020	185	-	-	-	6	112	191	112
Atka Mackerel	2018	-	-	-	-	-	0	-	0
All Groundfish	2017	2,194	276	-	-	297	771	3,501	1,302
	2018	2,093	295	-	-	247	742	2,667	1,187
	2019	1,959	299	-	-	207	686	2,535	1,127
	2020	1,448	164	-	-	152	696	2,146	1,067
	2021	-	-	-	-	-	-	1	1

Notes: These estimates include only vessels fishing part of federal TACs. A vessel that fished more than one category in a week is apportioned a partial week based on catch weight. A target is determined based on vessel, week, processing mode, NMFS area, and gear. All groundfish include additional target categories. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 39: Gulf of Alaska catcher/processor vessel weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2016-2020.

		Hook & Line			Trawl			All Gear			
	Year	<60ft	60-124ft	125-230ft	60-124ft	125-230ft	>230ft	<60ft	60-124ft	125-230ft	>230ft
Pollock	2018	-	-	-	0	0	-	-	0	0	-
	2020	-	-	-	-	0	-	-	-	0	-
Sablefish	2016	9	-	17	-	-	-	9	-	17	-
	2017	9	-	20	-	-	-	9	-	20	-
	2018	10	-	21	0	-	-	10	0	21	-
	2019	8	-	23	0	-	-	8	0	23	-
	2020	9	-	11	-	-	-	9	-	18	-
Pacific Cod	2016	0	17	27	2	-	-	0	19	27	-
	2017	-	23	24	1	-	-	-	24	24	-
	2018	7	7	1	-	-	-	7	7	1	-
	2019	1	6	3	-	-	-	1	6	3	-
Flatfish	2016	-	-	-	41	8	-	-	41	8	-
	2017	-	-	-	62	16	-	-	62	16	-
	2018	-	-	-	34	4	-	-	34	4	-
	2019	-	-	-	45	10	-	-	45	10	-
	2020	-	-	-	28	10	3	-	28	10	3
Rockfish	2016	-	-	-	4	33	2	-	4	33	2
	2017	-	-	0	5	32	0	-	5	32	0
	2018	-	-	-	7	35	-	-	7	35	-
	2019	-	-	-	5	34	1	-	5	34	1
	2020	-	-	-	1	33	4	-	1	33	4
Atka Mackerel	2017	-	-	-	1	-	-	-	1	-	-
	2018	-	-	-	0	0	-	-	0	0	-
All Groundfish	2016	9	17	45	48	41	2	9	65	86	2
	2017	9	24	44	69	48	0	9	92	92	0
	2018	17	7	22	42	40	-	17	48	62	-
	2019	9	6	25	50	44	1	9	56	69	1
	2020	9	-	11	29	43	7	9	29	61	7

Notes: These estimates include only vessels fishing part of federal TACs. A vessel that fished more than one category in a week is apportioned a partial week based on catch weight. A target is determined based on vessel, week, processing mode, NMFS area, and gear. All groundfish include additional target categories. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; CFEC gross earnings (fish tickets) file; NMFS Alaska Region groundfish observer data; NMFS Alaska Region permit data; CFEC vessel registration file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 40: Gulf of Alaska catcher vessel crew weeks in the groundfish fisheries by month, 2016-2020.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2016	1,692	2,318	2,506	3,065	1,982	1,021	635	903	1,736	2,298	642	371	19,168
2017	1,500	2,191	2,262	2,556	1,486	1,185	598	616	1,682	1,858	648	228	16,810
2018	352	1,144	1,378	1,323	1,721	1,270	494	808	2,240	1,842	926	156	13,654
2019	428	1,055	1,492	1,396	1,642	1,209	442	924	1,456	1,712	729	72	12,558
2020	116	640	1,018	970	1,525	852	458	914	1,395	2,004	512	34	10,436

Notes: Crew weeks are calculated by summing weekly reported crew size over vessels and time period. These estimates include only vessels targeting groundfish counted toward federal TACs. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea Production Reports. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 41: Gulf of Alaska at-sea processor vessel crew weeks in the groundfish fisheries by month, 2016-2020.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2016	*	107	98	321	215	307	1,221	501	254	227	153	190	3,594
2017	-	113	463	262	135	317	1,116	615	592	297	156	*	4,066
2018	-	*	146	194	116	490	877	408	247	*	*	*	2,478
2019	-	*	*	*	134	332	604	556	526	346	312	*	2,810
2020	-	-	*	203	318	571	670	429	86	*	*	-	2,277

Notes: Crew weeks are calculated by summing weekly reported crew size over vessels and time period. These estimates include only vessels targeting groundfish counted toward federal TACs. Catcher processors typically account for 90-95% of the total at-sea crew weeks in all areas. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Region At-sea Production Reports. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H1: Catch (net landed weight) in the commercial Pacific halibut fisheries off Alaska by region, 2016-2020, (hundreds of metric tons).

Year	Gulf Of Alaska	Bering Sea And Aleutian Islands	All Alaska
2016	68.71	15.08	83.79
2017	70.19	16.50	86.68
2018	67.27	15.93	83.19
2019	69.67	17.16	86.83
2020	64.29	15.64	79.94

Notes: These estimates include catch from all Alaska commercial fisheries (including CDQ). Net weight is dressed, head-off, slime and ice deducted. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H2: Catch (net landed weight) and percent of regional catch in the commercial Pacific halibut fisheries off Alaska by vessel length (feet) and region, 2016-2020, (hundreds of metric tons).

		Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
	Length	Net Tons	Percent	Net Tons	Percent	Net Tons	Percent
2016	<20	0.11	0	*	*	0.11	0
	20-29	1.67	0.02	0.95	0.06	2.61	0.03
	30-39	10.99	0.16	1.98	0.13	12.97	0.16
	40-49	20.91	0.31	2.12	0.14	23.03	0.28
	50-59	25.15	0.37	6.42	0.43	31.57	0.38
	>=60	9.53	0.14	3.49	0.23	13.02	0.16
2017	<20	0.10	0	*	*	0.10	0
	20-29	1.55	0.02	0.91	0.06	2.46	0.03
	30-39	10.92	0.16	2.84	0.17	13.76	0.16
	40-49	21.23	0.30	2.74	0.17	23.97	0.28
	50-59	25.82	0.37	6.25	0.38	32.07	0.37
	>=60	10.26	0.15	3.65	0.22	13.91	0.16
2018	<20	0.09	0	*	*	0.09	0
	20-29	1.32	0.02	0.90	0.06	2.22	0.03
	30-39	10.67	0.16	3.19	0.20	13.86	0.17
	40-49	21.99	0.33	2.70	0.17	24.68	0.30
	50-59	23.83	0.36	5.55	0.35	29.38	0.35
	>=60	9.22	0.14	3.44	0.22	12.66	0.15
2019	<20	0.09	0	*	*	0.09	0
	20-29	1.57	0.02	0.89	0.05	2.46	0.03
	30-39	11.90	0.17	3.11	0.18	15.00	0.17
	40-49	22.37	0.32	2.47	0.15	24.84	0.29
	50-59	23.99	0.34	6.42	0.38	30.41	0.35
	>=60	9.62	0.14	3.93	0.23	13.56	0.16
2020	<20	*	*	*	*	0.00	0
	20-29	1.54	0.02	*	*	1.54	0.02
	30-39	11.23	0.18	1.25	0.08	12.48	0.16
	40-49	21.00	0.33	2.24	0.15	23.24	0.29
	50-59	21.47	0.33	7.85	0.51	29.32	0.37
	>=60	8.88	0.14	3.94	0.26	12.82	0.16

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery. These estimates include catch from all Alaska commercial fisheries (including CDQ). Net weight is dressed, head-off, slime and ice deducted. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H3: Non-halibut prohibited species catch on commercial Pacific halibut target trips off Alaska by PSC species and area, 2016-2020.

	Year	Bairdi Tanner Crab (Count)	Chinook Salmon (Count)	Herring (Tons)	Non-Chinook Salmon (Count)	Opilio Tanner (Snow) Crab (Count)	Other King Crab (Count)	Red King Crab (Count)
Gulf of Alaska	2016	29	38	-	156	-	15	131
	2017	1	*	-	51	*	*	-
	2018	108	-	-	52	-	56	15
	2019	45	14	-	80	-	13	-
	2020	1	-	-	-	0	136	-
Bering Sea and Aleutian Islands	2016	7	*	*	0	18	203	11
	2017	16	*	*	*	29	194	171
	2018	19	*	*	25	62	690	23
	2019	15	*	*	*	21	446	*
	2020	10	*	-	0	19	384	-

Notes: These estimates include catch from all Alaska commercial fisheries (including CDQ). For details on prohibited species catch estimation see Cahalan, J., J. Gasper, and J. Mondragon. 2014. Catch sampling and estimation in the federal groundfish fisheries off Alaska, 2015 edition. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-286, 46 p. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: NMFS Alaska Regional Office Prohibited Species Catch database. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H4A: Ex-vessel value and price in the commercial Pacific halibut fisheries off Alaska by region, 2016-2020, ($ millions and $/lb net weight, respectively).

	Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
Year	Value	Price	Value	Price	Value	Price
2016	99.36	6.56	19.58	5.89	118.95	6.44
2017	89.31	5.77	19.18	5.27	108.48	5.68
2018	75.38	5.08	15.44	4.40	90.82	4.95
2019	79.59	5.18	15.31	4.05	94.89	4.96
2020	57.74	4.07	12.65	3.67	70.39	4.00

Notes: These estimates include catch from all Alaska commercial fisheries (including CDQ). Price is calculated as landed value divided by net weight. Values are not adjusted for inflation. Net weight is dressed, head-off, slime and ice deducted. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H4B: Ex-vessel value and price in the commercial Pacific halibut fisheries off Alaska by IPHC area, 2016-2020, ($ millions and $/lb net weight, respectively).

	Variable	2016	2017	2018	2019	2020
2C	Value	27.35	23.09	19.25	19.79	14.66
	Price	6.62	5.86	5.06	5.26	4.10
3A	Value	50.26	46.04	40.46	45.25	30.85
	Price	6.60	5.81	5.15	5.28	4.11
3B	Value	17.89	16.48	13.35	12.24	10.04
	Price	6.43	5.61	5.01	5.03	4.02
4A	Value	8.36	7.48	6.07	5.79	4.68
	Price	6.22	5.48	4.54	3.86	3.68
4B	Value	6.30	5.98	5.07	4.50	3.63
	Price	5.76	5.14	4.40	4.16	3.66
4CDE	Value	8.79	9.41	6.63	7.32	6.53
	Price	5.82	5.28	4.34	4.07	3.66

Notes: Values and prices are for catch from all Alaska commercial fisheries (including CDQ). Price is calculated as landed value divided by net weight. Values are not adjusted for inflation. Net weight is dressed, head-off, slime and ice deducted. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H5: Ex-vessel value and average annual revenue per vessel in the commercial Pacific halibut fisheries off Alaska by region and vessel length (feet), 2016-2020, ($ millions and $ thousands, respectively).

		Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
	Length	Value	Avg. Value/Vessel	Value	Avg. Value/Vessel	Value	Avg. Value/Vessel
2016	<20	0.15	8.00	*	*	0.28	10.03
	20-29	2.41	23.62	1.06	39.22	3.47	26.89
	30-39	15.78	66.28	2.43	83.63	18.20	70.27
	40-49	30.12	120.50	2.71	208.23	32.83	128.75
	50-59	36.34	198.58	8.49	273.95	44.83	239.75
	>=60	14.06	312.39	4.77	280.73	18.83	400.63
2017	<20	0.13	9.86	*	*	0.27	12.07
	20-29	1.98	21.55	1.03	39.53	3.01	25.51
	30-39	13.82	58.07	3.25	92.90	17.07	64.92
	40-49	26.93	110.37	3.21	214.18	30.14	121.54
	50-59	32.83	194.23	7.18	256.55	40.01	236.74
	>=60	13.22	307.36	4.36	256.66	17.58	382.17
2018	<20	0.10	7.46	*	*	0.29	14.40
	20-29	1.47	18.63	0.83	34.53	2.30	22.33
	30-39	11.91	50.26	3.03	81.88	14.94	57.91
	40-49	24.60	101.25	2.63	164.67	27.24	109.83
	50-59	26.61	157.46	5.37	198.74	31.98	185.91
	>=60	10.53	234.09	3.39	199.26	13.92	290.04
2019	<20	0.10	6.29	*	*	0.50	18.42
	20-29	1.80	21.48	0.80	33.26	2.60	24.10
	30-39	13.35	53.82	2.72	73.39	16.06	59.06
	40-49	25.76	116.57	2.22	185.39	27.99	123.83
	50-59	27.28	168.41	5.69	218.90	32.97	201.06
	>=60	11.14	253.08	3.48	193.39	14.62	310.99
2020	<20	*	*	*	*	0.29	17.09
	20-29	1.36	17.92	*	*	1.41	17.16
	30-39	9.90	44.79	1.07	46.32	10.96	47.26
	40-49	18.78	84.61	1.80	138.18	20.58	90.66
	50-59	19.37	125.81	6.25	284.01	25.62	163.20
	>=60	8.18	194.67	3.23	189.90	11.40	253.43

Notes: Values are for catch from all Alaska commercial fisheries (including CDQ). Excludes vessels in the Annette Island commercial Pacific halibut fishery. Length is measured in feet. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H6: Ex-vessel value port ranking, annual ex-vessel value, price and percent of statewide value in the commercial Pacific halibut fisheries off Alaska, 2016-2020, ($ millions and $/lb net weight).

	Port	2016	2017	2018	2019	2020
Ex-vessel Value	Homer	18.31	12.38	13.27	15.07	12.99
	Kodiak	16.95	17.88	11.07	10.35	7.59
	Seward	13.26	13.23	13.20	11.82	5.94
	Dutch Harbor	*	*	*	*	*
	Sitka	8.17	*	6.55	7.35	5.16
	Juneau	7.51	4.04	5.48	*	5.92
	St Paul Island	*	*	*	3.23	*
	Petersburg	9.93	9.47	6.56	6.43	4.17
	Yakutat	4.33	*	*	*	*
Price	Homer	6.43	5.82	5.34	5.43	4.15
	Kodiak	6.60	5.59	4.95	4.80	3.88
	Seward	6.46	5.79	5.14	5.40	4.45
	Dutch Harbor	*	*	*	*	*
	Sitka	6.53	*	5.21	5.54	4.21
	Juneau	6.76	6.01	5.10	*	4.03
	St Paul Island	*	*	*	3.92	*
	Petersburg	6.72	5.93	4.86	4.98	4.17
	Yakutat	6.52	*	*	*	*
Percent State Value	Homer	15 %	11 %	15 %	16 %	18 %
	Kodiak	14 %	16 %	12 %	11 %	11 %
	Seward	11 %	12 %	15 %	12 %	8 %
	Dutch Harbor	*	*	*	*	*
	Sitka	7 %	*	7 %	8 %	7 %
	Juneau	6 %	4 %	6 %	*	8 %
	St Paul Island	*	*	*	3 %	*
	Petersburg	8 %	9 %	7 %	7 %	6 %
	Yakutat	4 %	*	*	*	*
Rank	Homer	1	3	1	1	1
	Kodiak	2	1	3	3	3
	Seward	3	2	2	2	4
	Dutch Harbor	5	5	6	8	2
	Sitka	6	6	5	4	6
	Juneau	7	8	7	5	5
	St Paul Island	11	10	11	10	25
	Petersburg	4	4	4	6	7
	Yakutat	9	9	8	7	9

Notes: Displays only the 10 Alaska ports of landing with the highest average ex-vessel value over the last 5 years. Values and prices are for catch from all Alaska commercial fisheries (including CDQ). Price is calculated as landed value divided by net weight. Net weight is dressed, head-off, slime and ice deducted. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H7: First wholesale production volume, value and price in the commercial Pacific halibut fisheries off Alaska by product, 2016-2020, (1000s of metric tons, $ millions and $/lb net weight, respectively).

	Year	Quantity	Value	Price
Head and Gut	2016	6.29	94.99	6.85
	2017	5.64	91.86	7.39
	2018	5.01	75.59	6.84
	2019	5.07	71.12	6.37
	2020	3.42	43.34	5.75
Fillet	2016	1.23	39.30	14.50
	2017	1.40	42.05	13.65
	2018	1.16	33.17	12.92
	2019	1.38	34.76	11.44
	2020	1.70	38.47	10.26
Other Products	2016	0.66	4.59	3.15
	2017	0.46	2.74	2.68
	2018	0.33	1.73	2.39
	2019	0.66	2.80	1.92
	2020	0.50	1.81	1.64
All Products	2016	8.18	138.88	7.70
	2017	7.50	136.64	8.27
	2018	6.50	110.50	7.71
	2019	7.11	108.69	6.94
	2020	5.62	83.62	6.75

Notes: Landings, values and prices for catch from all Alaska commercial fisheries (including CDQ). Price is calculated as landed value divided by net weight. Net weight is dressed, head-off, slime and ice deducted. Values are not adjusted for inflation. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H8: Number of vessels catching Pacific halibut commercially off Alaska and median vessel length by region and vessel length class, 2016-2020.

		Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
	Year	Vessels	Median Length	Vessels	Median Length	Vessels	Median Length
<20	2016	19	17	10	18	28	18
	2017	13	18	9	18	22	18
	2018	13	17	7	18	20	18
	2019	16	18	11	18	27	18
	2020	7	18	10	18	17	18
20-29	2016	102	25	27	28	129	25
	2017	92	25	26	28	118	25
	2018	79	26	24	28	103	27
	2019	84	26	24	28	108	26
	2020	76	26	6	28	82	26
30-39	2016	238	33	29	32	259	33
	2017	238	33	35	32	263	33
	2018	237	33	37	32	258	33
	2019	248	33	37	32	272	33
	2020	221	33	23	32	232	33
40-49	2016	250	44	13	47	255	43
	2017	244	44	15	47	248	44
	2018	243	44	16	47	248	44
	2019	221	44	12	47	226	44
	2020	222	44	13	47	227	44
50-59	2016	183	55	31	58	187	55
	2017	169	55	28	58	169	55
	2018	169	55	27	58	172	55
	2019	162	55	26	58	164	55
	2020	154	55	22	58	157	55
≥60	2016	45	72	17	76	47	72
	2017	43	72	17	76	46	73
	2018	45	70	17	76	48	72
	2019	44	71	18	76	47	72
	2020	42	71	17	76	45	72

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H9: Total vessel days fishing Pacific halibut commercially off Alaska by area, 2016-2020.

Year	Gulf Of Alaska	Bering Sea And Aleutian Islands	All Alaska
2016	12,748	2,800	15,343
2017	12,425	2,797	14,828
2018	12,792	2,646	15,106
2019	12,960	3,220	15,745
2020	12,252	2,384	14,239

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table H10: Crew days fishing Pacific halibut commercially off Alaska by month and area, 2016-2020.

	Year	Mar-Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gulf of Alaska	2016	10,297	10,087	4,964	3,566	5,887	5,078	3,358	627
	2017	9,296	8,904	5,534	3,581	5,290	6,209	4,566	646
	2018	8,738	8,359	5,735	4,000	6,287	6,756	4,699	1,102
	2019	10,090	8,244	5,040	3,816	5,450	5,832	5,208	1,615
	2020	4,917	6,497	4,588	4,225	5,479	6,584	6,293	1,969
Bering Sea and Aleutian Islands	2016	529	1,525	2,100	2,121	2,686	1,578	809	100
	2017	346	1,384	2,091	1,891	2,857	1,540	1,104	192
	2018	455	1,270	1,456	2,044	2,986	1,766	679	105
	2019	864	1,566	1,927	2,376	2,577	1,986	950	260
	2020	722	1,047	1,284	1,350	2,541	1,888	735	45
All Alaska	2016	10,729	11,373	6,845	5,642	8,417	6,584	4,098	695
	2017	9,569	10,121	7,499	5,332	7,609	7,459	5,362	838
	2018	9,121	9,402	7,027	5,931	8,845	8,307	5,351	1,157
	2019	10,857	9,635	6,863	5,938	7,727	7,289	5,893	1,835
	2020	5,603	7,397	5,713	5,495	7,564	8,011	6,824	2,011

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery because crew size is not reported for this fishery. Minimal fishing occurs in March and to enusre confidentiality it is combined with April. "*" indicates a confidential value; "-" indicates no applicable data or value.

Source: ADF&G fish tickets; CFEC gross earnings (fish tickets) file. Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

5. ECONOMIC PERFORMANCE INDICES FOR THE NORTH PACIFIC GROUNDFISH FISHERIES

5.1. Introduction

Fisheries markets are complex. A multitude of factors influence demand, supply, price, catch composition, product types produced and other market activity. Indices are a common method used by agencies to synthesize market information in a digestible format. Indices establish a baseline that helps characterize trends in the market for values, prices and quantities of fisheries goods. Market indices have many uses. From a management perspective indices can both retrospectively characterize changes in the market that may be related to policy decisions (such as a change in TAC), or allow managers to evaluate current market conditions in the context of future policy change. Indices may also be useful to market participants when making business decisions.

This section of the Economic Status of the Groundfish Fisheries off Alaska attempts to distill the numerous factors that affect the North Pacific groundfish markets into a simple set of indices that can be used to track performance. Indices of value, price and quantity are presented for the Bering Sea and Aleutian Island (BSAI) at-sea, the BSAI shoreside, and the Gulf of Alaska (GOA). Figure 5.1 displays the ex-vessel and first-wholesale values for the BSAI and GOA at-sea and shoreside sectors. For the BSAI at-sea sector, index analysis will focus on the wholesale market; for the BSAI shoreside and GOA sectors, index analysis will consider the wholesale and ex-vessel markets. To help understand and evaluate the indices, we plot the value share stratified by species and product type for wholesale markets, and by species and gear type for the ex-vessel markets. Value share is the proportion of total value from each of the stratified components, such as the proportion of total value that comes from pollock. Additionally, bar graphs provide detail on the division of production among species, product types and gear types. Specifically, for the wholesale market, these graphs show the composition of species within product types and the composition of product type for a given species, and in the ex-vessel market, they show composition of species harvested by a given gear type and the compistion of gear types used to harvest a species.

Aggregate indices, by their very nature, cumulate over the many species, products types, and gear types in a sector. The values, prices, and quantities from individual components of these factors (e.g., individual species) may contribute to the movements of the aggregate indices in very different ways. The myriad of market influences make it difficult to disentangle the relative importance of different species or products when monitoring aggregate performance, a problem that can be approached by using a value-share decomposition to examine the influence of these different components on the aggregate index. Decomposition relates the indices for each of the components of a single factor to the aggregate through its value share. For example, consider an aggregate price index for a sector. The aggregate price index is a function of the prices of all the species sold (e.g., pollock, Pacific cod, sablefish). Here, species type is the factor and the component indices of this factor are the price indices for all the species (e.g., pollock price index, Pacific cod price index). The importance of each individual species price index is determined by the proportion of total value in the sector for the species. By decomposing the aggregate index in this way, one can see how each of the species price indices influence the movement in the aggregate price index. Similar value-share decompositions

are also constructed for product types in the wholesale market, and for gear types in the ex-vessel market.

The primary tools we will use to analyze market performance are Figures 5.2-5.11. The index figures in Figures 5.2-5.11 are designed to help the reader visualize changes in the indices and relate the changes to shifts in aggregate value, prices, and quantities. All indices use 2018 as the base year for the index. All calculations and statistics are made using nominal U.S. dollars (i.e., not adjusted for inflation).[1] Aggregate indices are located in the upper-left panel and the value share decomposition of the aggregate index is below in the lower-left panels of the figures. Changes in the indices have been color coded to indicate the relevance in determining aggregate index movements. The relevance of a change in the price index in year t is calculated by $(year-on-year\ growth\ rate)*(share\ weight) = (I_{i,t}/I_{i,t-1}-1)*\tilde{w}(i,t)$ where $I_{i,t}$ is the level of the index and $\tilde{w}(i,t) = \frac{p_{i,t}*q_{i,t}}{\sum_j p_{j,t}*q_{j,t}}$ is the year t value share and i, j enumerates species, products, or gear types depending on the index. When the value $(year-on-year\ growth\ rate)*(share\ weight)$ is roughly zero, indicating little to no change or influence on the aggregate index, it is colored blue. When this value is less than -0.1, the index is colored red to indicate that it has had a significant negative impact on the aggregate index. When this value is greater than 0.1, the index is colored green, indicating a significant positive impact on the aggregate index. Shades in between these colors indicate intermediate impacts. The indices can take on these "significant colors" if the percentage change is large and/or the value share is large. The value share plot in the upper-right corner of each figure helps to discern the difference. For each sector and market, two decompositions are presented. The wholesale market is decomposed by species and product type, and the ex-vessel market is decomposed by species and gear type. To help relate the different decompositions, bar graphs in the lower-right panel of each figure show the composition of one factor (e.g., product type) for each relevant category of the other factor (e.g., species) as measured by production. The height of the bars shows the annual output in that market. Only the components of a factor with a value share greater than 1% have been plotted, although all prices and quantities were used in the construction of the aggregate index. Ex-vessel indices are constructed using catch that is counted against a federal total allowable catch (TAC). Hereafter, "wholesale value" and "ex-vessel value" refer to the revenue from production at the first wholesale level or from sales of catch on the ex-vessel market, respectively. Walleye pollock will often be referred to simply as "pollock"; similarly, Pacific cod will often be referred to as "cod". The "other" product type contains all products that are not fillets, H&G, surimi, meal and oil, or roe. In particular, the "other" product type include whole fish and minced fish.

Understanding the indices and their construction facilitates accurate interpretation. To properly interpret the indices, the reader must realize that the indices are merely descriptive and characterize the state of the market relative to other periods, and display the co-movement of different species, product types, or gear types both individually and in aggregate. The indices have no inherent causal interpretation. For example, it would be wrong to assert from these indices that a change in surimi prices "caused" a change in pollock price. Nor could we say the opposite. We can say that they are connected, as surimi is a significant portion of the value from pollock in some regions, but causality is beyond the scope of indices. Carefully designed regression analysis is better suited for addressing such causality questions. The indices are displayed graphically in Section 5.2 followed by tables with the index values.

[1] U.S. nominal dollars are used so price indices capture unadjusted changes in prices throughout time, allowing them to be used as deflator indices. For readers comparing these indices to other figures in the SAFE denominated in inflation adjusted terms, this adjustment should be kept in mind.

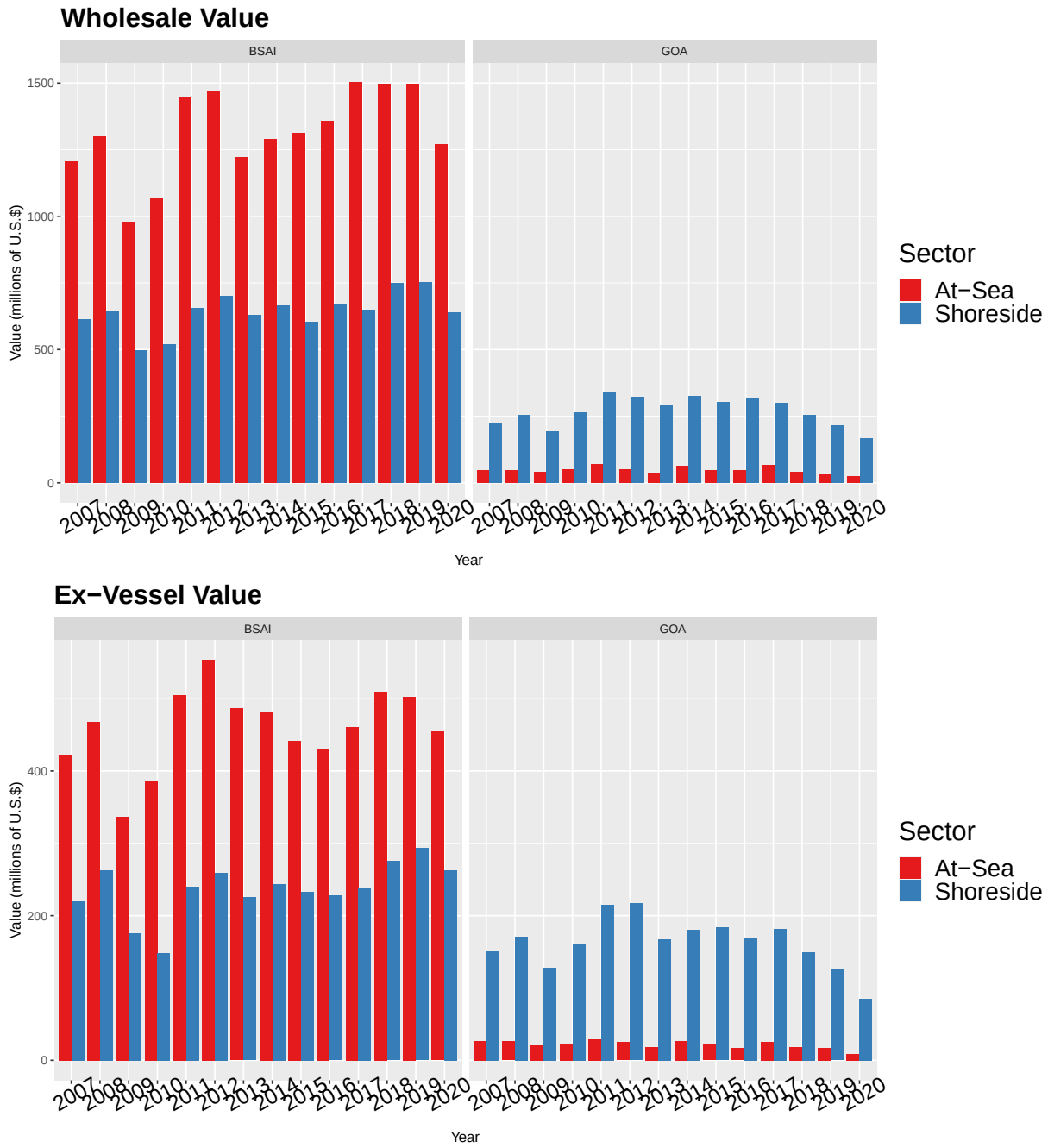

Figure 5.1: Wholesale and ex-vessel value by region and sector 2007-2020.
Source: NMFS Alaska Region's Catch-accounting system (CAS) and Weekly Production Report (WPR) estimates; Alaska Department of Fish and Game (ADF&G) Commercial Operator's Annual Report (COAR), National Marine Fisheries Service. P.O. Box 15700, Seattle, WA 98115-0070.

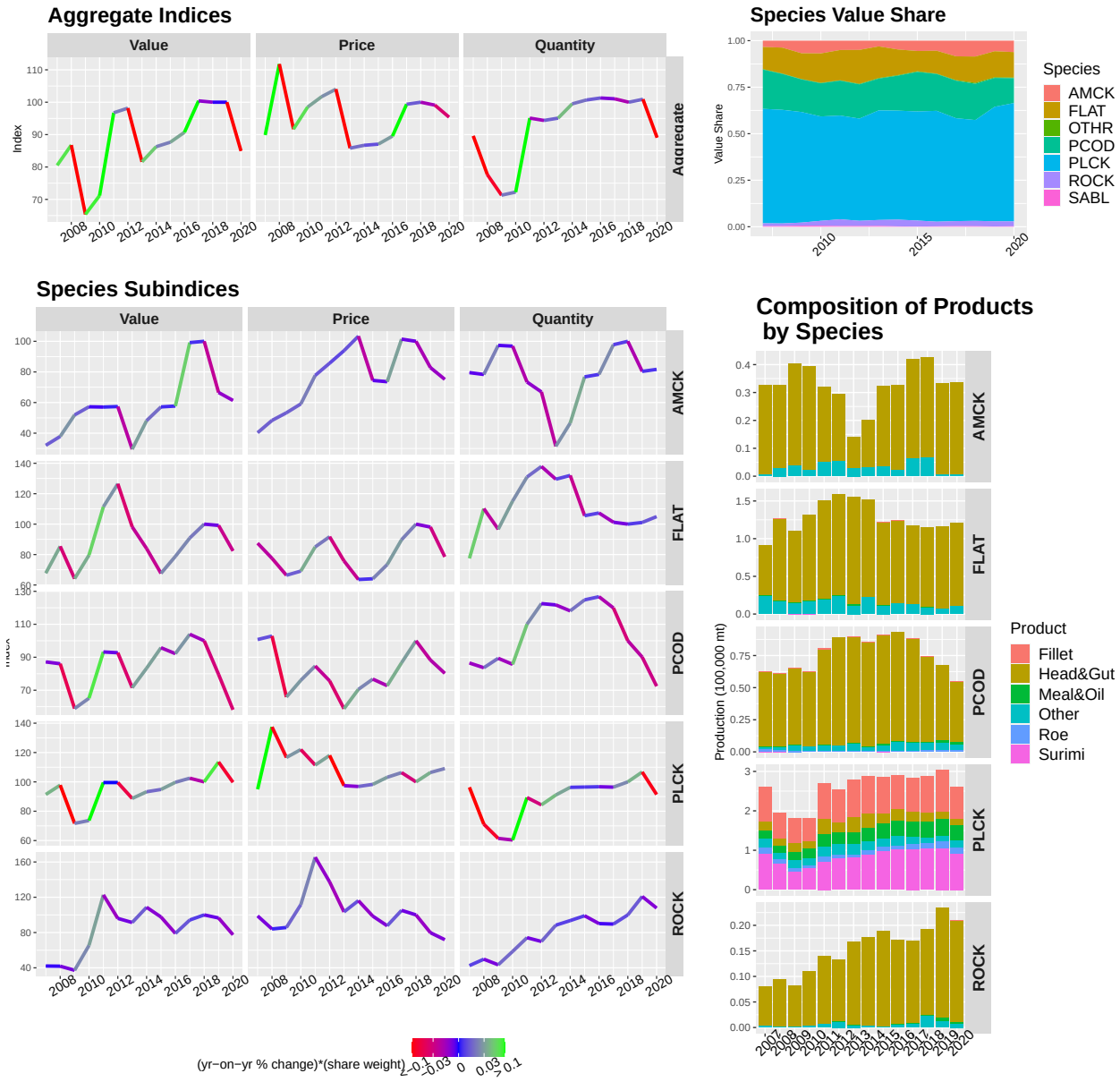

Figure 5.2: BSAI at-sea wholesale market: species decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.1. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

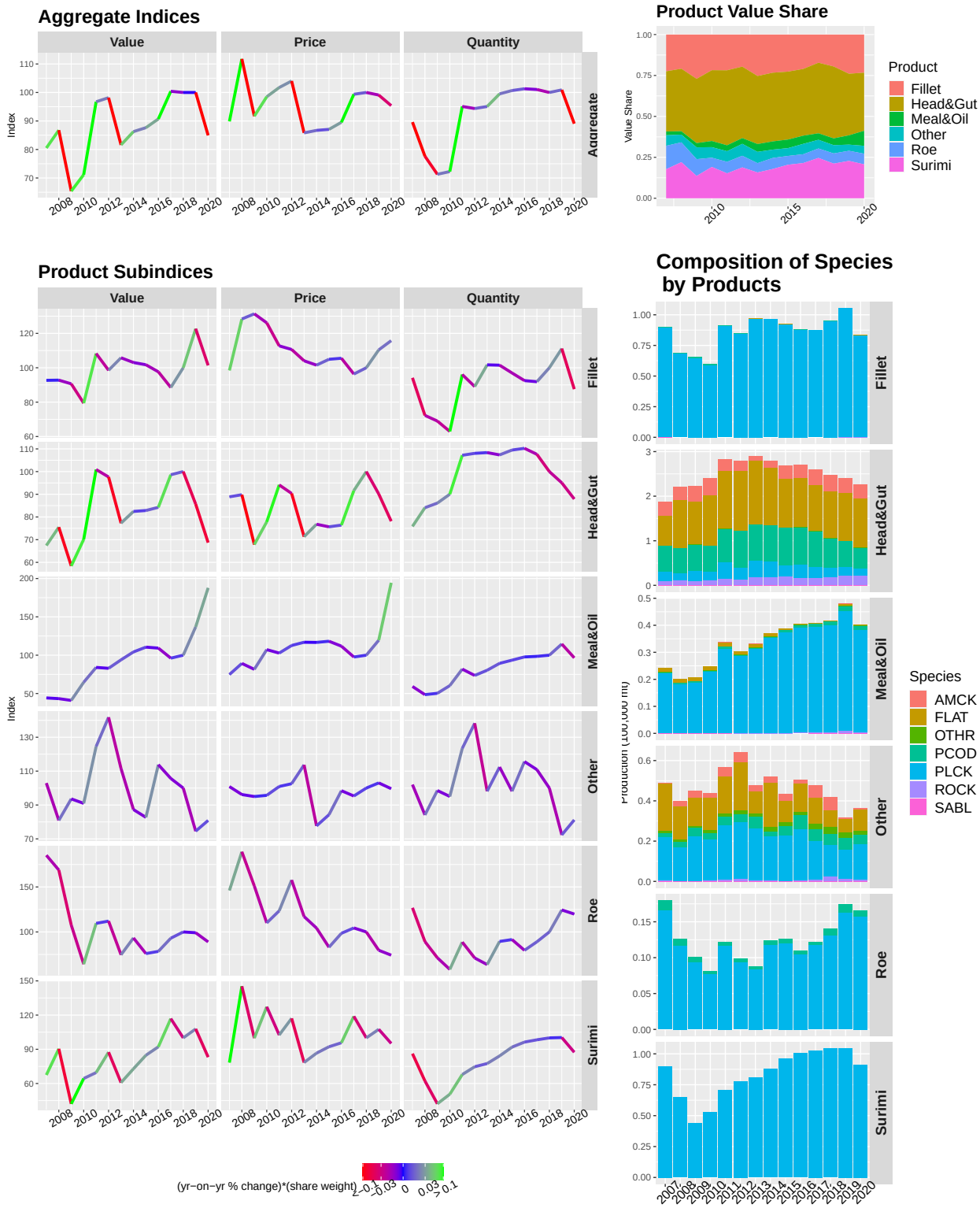

Figure 5.3: BSAI at-sea wholesale market: product decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.2. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

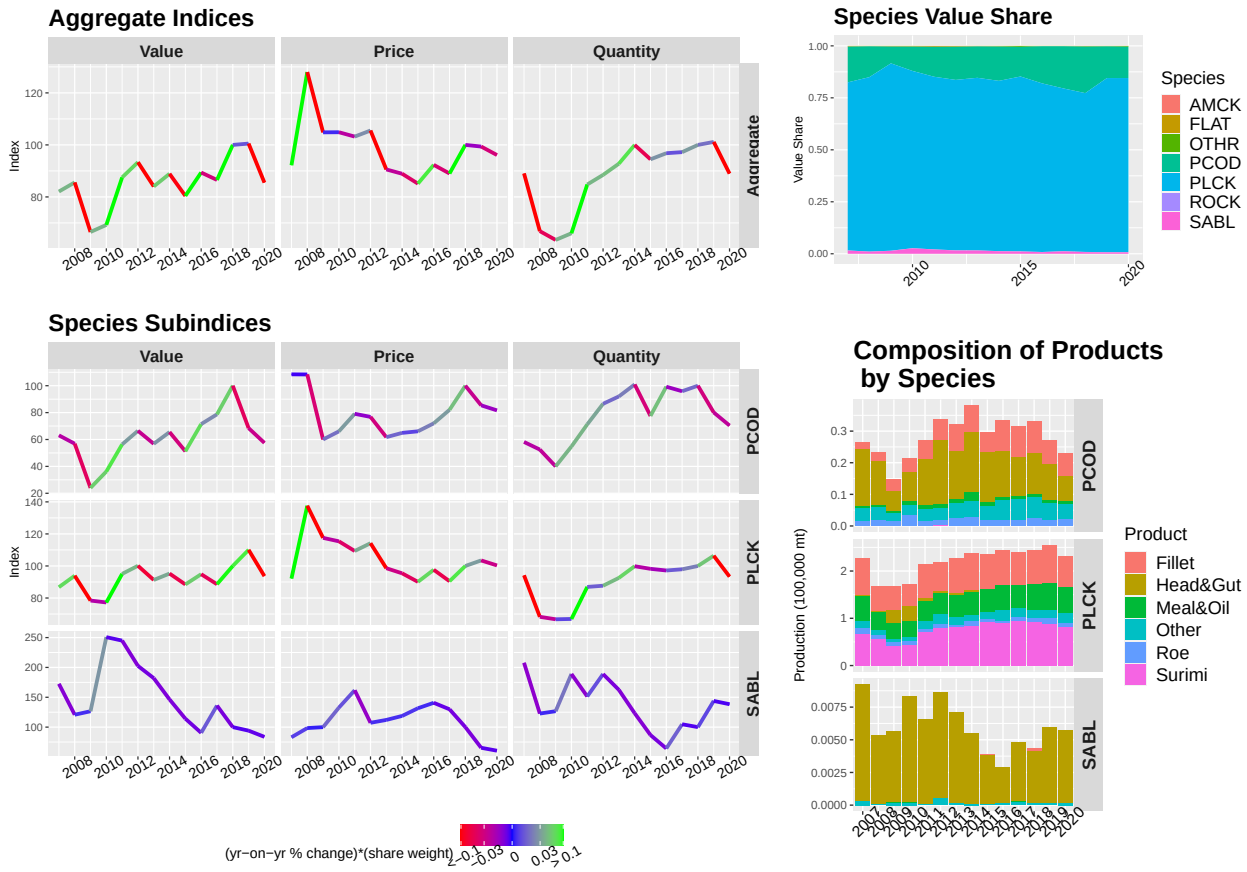

Figure 5.4: BSAI shoreside wholesale market: species decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.3. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

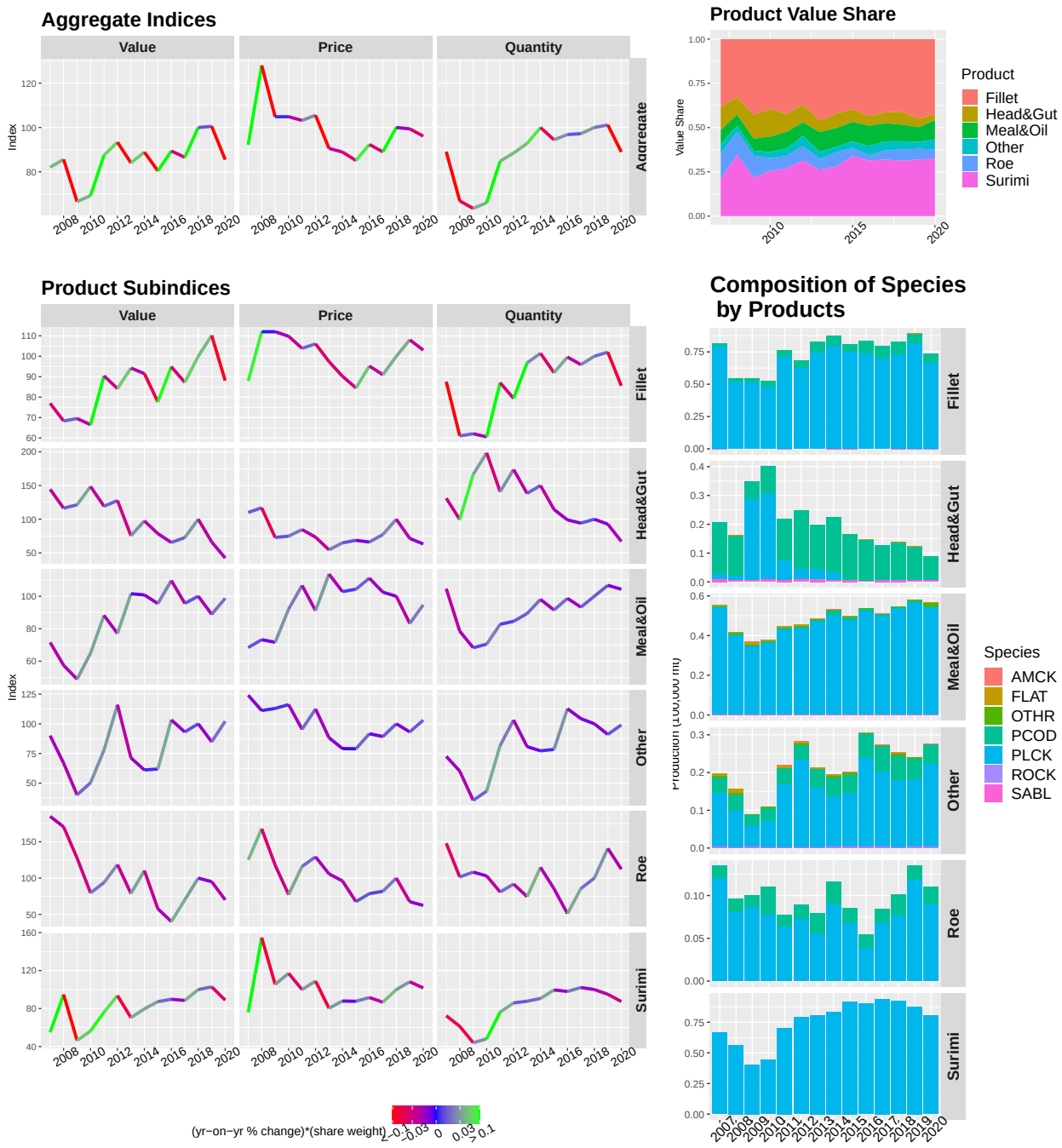

Figure 5.5: BSAI shoreside wholesale market: product decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.4. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

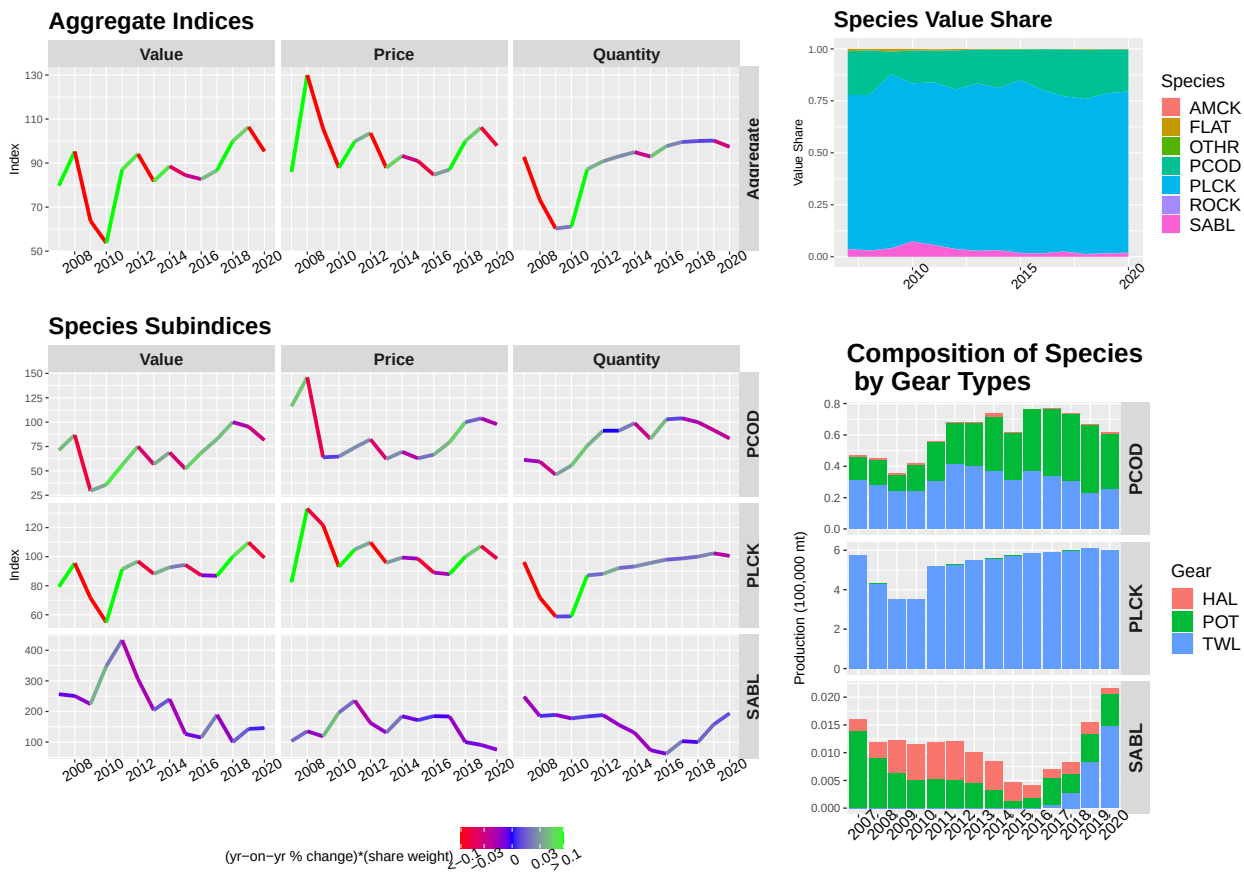

Figure 5.6: BSAI shoreside ex-vessel market: species decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.5. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Figure 5.7: BSAI shoreside ex-vessel market: gear decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.6. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

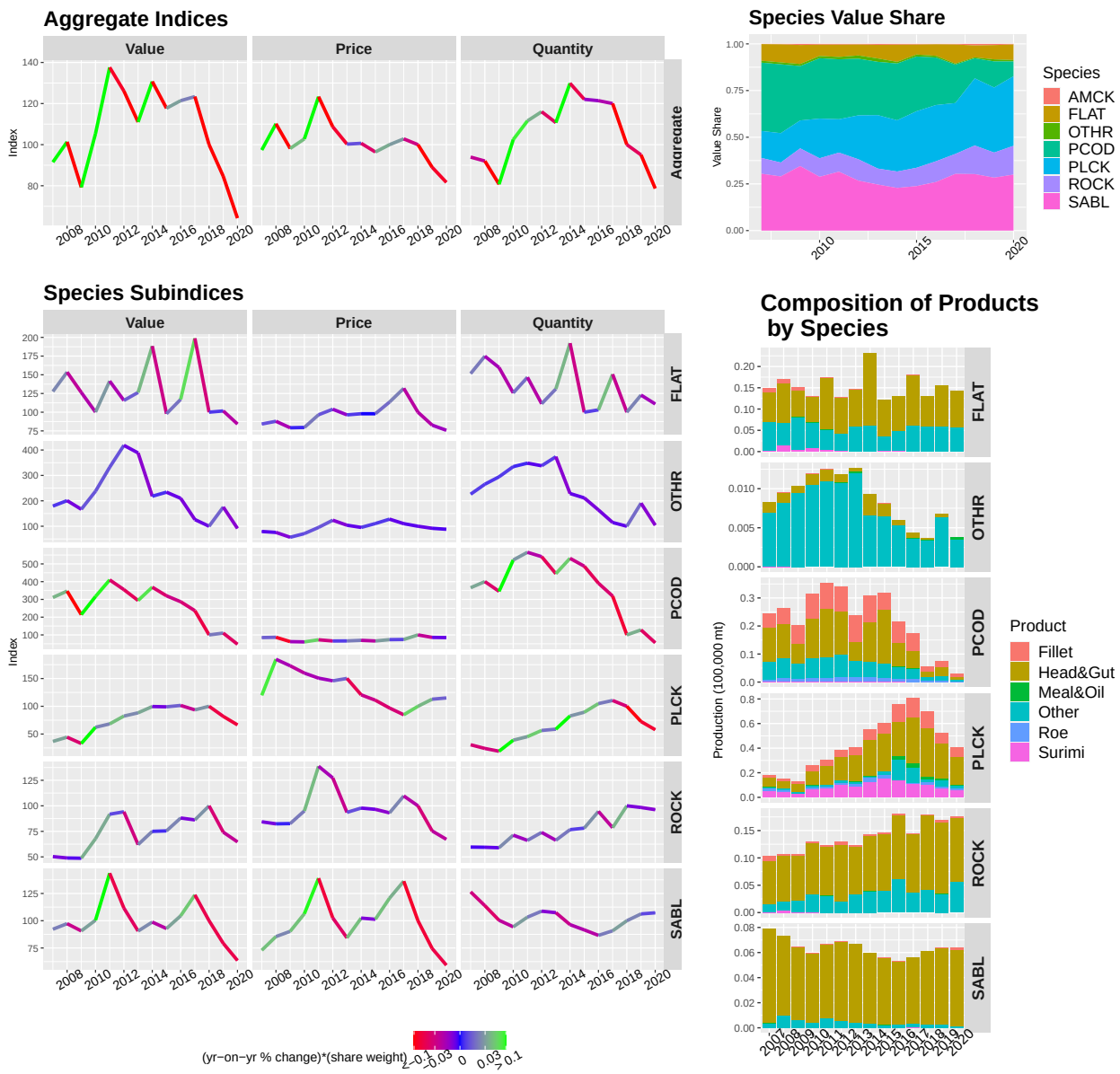

Figure 5.8: GOA wholesale market: species decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.7. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

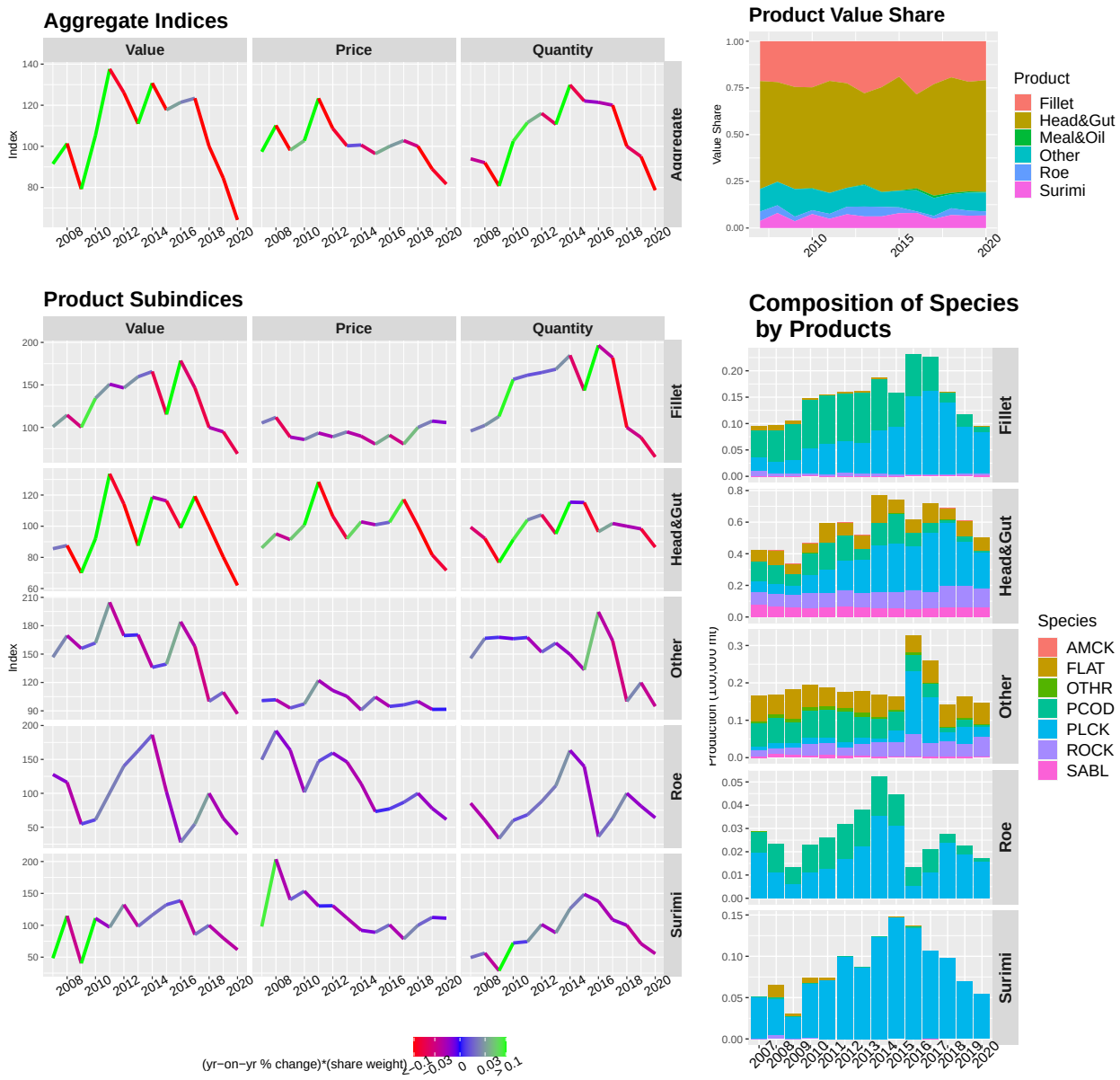

Figure 5.9: GOA wholesale market: product decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.8. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

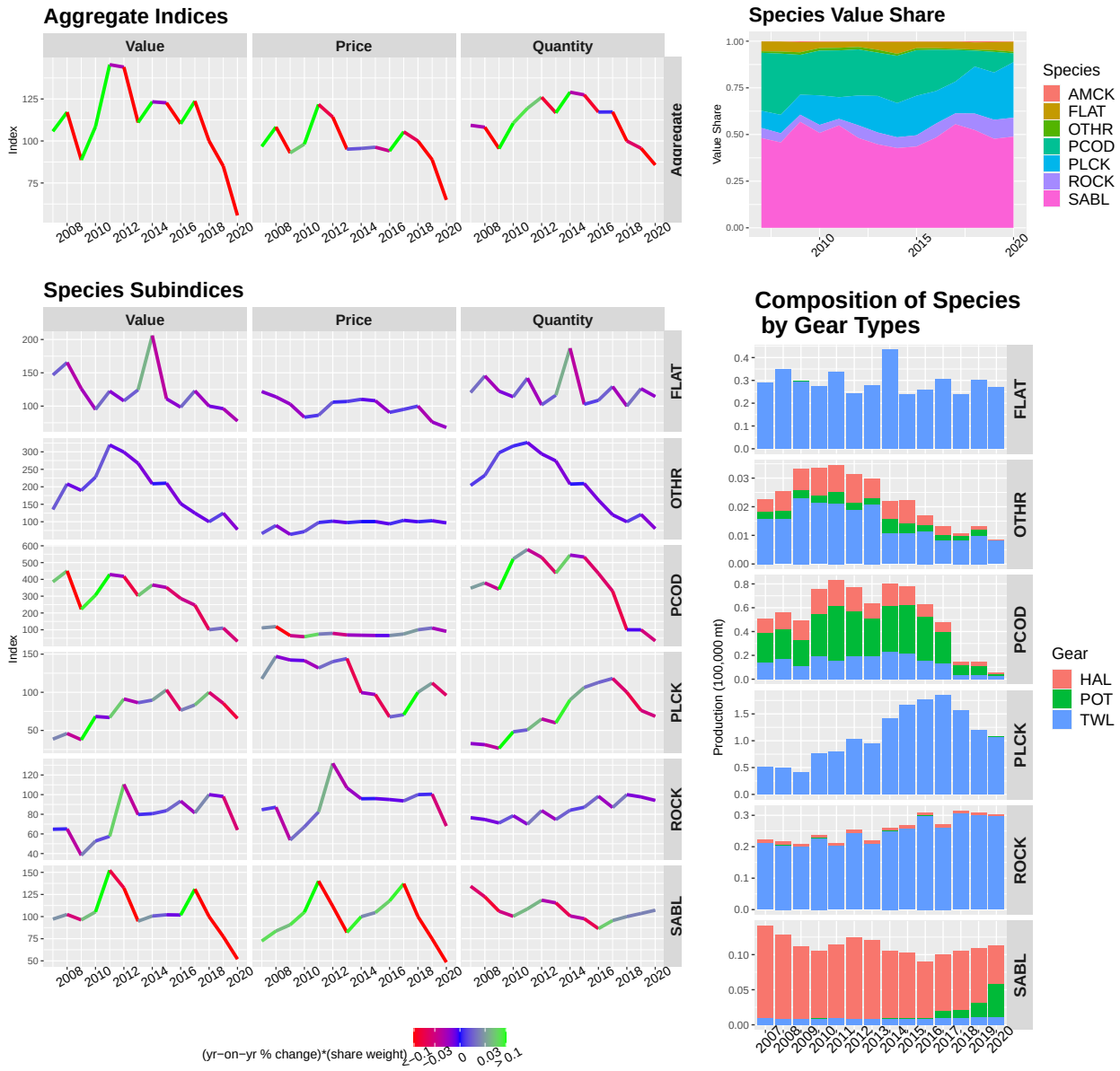

Figure 5.10: GOA ex-vessel market: species decomposition 2007-2020 (Index 2018 = 100). **Notes:** Index values for 2015-2020, notes and source information for the indices are on Table 5.9. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Figure 5.11: GOA ex-vessel market: gear decomposition 2007-2020 (Index 2018 = 100).
Notes: Index values for 2015-2020, notes and source information for the indices are on Table 5.10. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Table 5.1: Species indices and value share for the BSAI at-sea first-wholesale market 2015-2020.

Species	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	87.65	90.71	100.42	100.00	100.00	84.96
Aggregate	Price	87.05	89.54	99.37	100.00	99.10	95.39
Aggregate	Quantity	100.68	101.31	101.05	100.00	100.91	89.06
AMCK	Value	57.15	57.71	99.17	100.00	66.57	61.38
AMCK	Price	74.44	73.60	101.42	100.00	82.85	75.15
AMCK	Quantity	76.77	78.40	97.78	100.00	80.35	81.67
AMCK	Value Share	0.06	0.05	0.08	0.09	0.06	0.06
FLAT	Value	67.64	78.81	90.90	100.00	99.13	82.41
FLAT	Price	64.09	73.44	89.77	100.00	98.06	78.53
FLAT	Quantity	105.53	107.32	101.25	100.00	101.09	104.94
FLAT	Value Share	0.11	0.12	0.13	0.14	0.14	0.14
PCOD	Value	95.78	92.19	103.95	100.00	79.58	58.15
PCOD	Price	76.74	72.75	86.69	100.00	88.34	80.25
PCOD	Quantity	124.82	126.72	119.91	100.00	90.08	72.46
PCOD	Value Share	0.21	0.20	0.20	0.19	0.16	0.13
PLCK	Value	94.83	99.72	102.50	100.00	113.55	99.73
PLCK	Price	98.30	103.15	106.31	100.00	106.38	109.09
PLCK	Quantity	96.47	96.68	96.42	100.00	106.73	91.41
PLCK	Value Share	0.59	0.60	0.55	0.54	0.62	0.64
ROCK	Value	97.63	79.02	94.22	100.00	96.49	77.49
ROCK	Price	98.58	87.67	105.16	100.00	79.84	71.91
ROCK	Quantity	99.03	90.13	89.60	100.00	120.86	107.76
ROCK	Value Share	0.03	0.03	0.03	0.03	0.03	0.03

Notes: Species with a value share less than 1% were not included in this table. All groundfish species were used to calculate aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.2: Product indices and value share for the BSAI at-sea first-wholesale market 2015-2020.

Product	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	87.65	90.71	100.42	100.00	100.00	84.96
Aggregate	Price	87.05	89.54	99.37	100.00	99.10	95.39
Aggregate	Quantity	100.68	101.31	101.05	100.00	100.91	89.06
Fillet	Value	101.74	97.64	88.52	100.00	122.70	101.38
Fillet	Price	104.92	105.53	96.34	100.00	110.40	115.77
Fillet	Quantity	96.96	92.53	91.89	100.00	111.14	87.57
Fillet	Value Share	0.23	0.21	0.17	0.20	0.24	0.23
Head&Gut	Value	82.84	84.26	98.61	100.00	85.67	68.69
Head&Gut	Price	75.66	76.42	91.64	100.00	90.14	78.14
Head&Gut	Quantity	109.49	110.25	107.61	100.00	95.04	87.91
Head&Gut	Value Share	0.41	0.41	0.43	0.44	0.38	0.35
Meal&Oil	Value	110.50	109.22	96.13	100.00	136.97	187.74
Meal&Oil	Price	118.19	111.77	97.62	100.00	119.54	194.41
Meal&Oil	Quantity	93.49	97.72	98.48	100.00	114.57	96.57
Meal&Oil	Value Share	0.05	0.05	0.04	0.04	0.06	0.09
Other	Value	82.70	113.81	105.67	100.00	74.55	80.88
Other	Price	84.26	98.43	95.31	100.00	103.05	99.62
Other	Quantity	98.15	115.62	110.86	100.00	72.35	81.18
Other	Value Share	0.05	0.06	0.05	0.05	0.04	0.05
Roe	Value	75.96	78.39	93.06	100.00	99.13	88.98
Roe	Price	82.99	98.50	104.47	100.00	79.64	74.22
Roe	Quantity	91.53	79.59	89.07	100.00	124.46	119.89
Roe	Value Share	0.05	0.05	0.06	0.06	0.06	0.07
Surimi	Value	84.76	92.18	116.89	100.00	107.84	83.16
Surimi	Price	92.21	95.72	118.90	100.00	107.52	95.14
Surimi	Quantity	91.92	96.31	98.31	100.00	100.30	87.41
Surimi	Value Share	0.20	0.22	0.25	0.21	0.23	0.21

Notes: Products types 'Minced', 'Other' and those with a value share less than 1% were not included in this table. All product types were used to contruct aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.3: Species indices and value share for the BSAI shoreside first-wholesale market 2015-2020.

Species	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	80.40	89.38	86.54	100.00	100.51	85.50
Aggregate	Price	85.11	92.33	89.01	100.00	99.37	96.11
Aggregate	Quantity	94.47	96.81	97.22	100.00	101.15	88.96
PCOD	Value	51.24	71.46	78.72	100.00	68.45	57.48
PCOD	Price	66.08	72.01	82.10	100.00	85.42	81.66
PCOD	Quantity	77.54	99.25	95.89	100.00	80.12	70.39
PCOD	Value Share	0.14	0.18	0.20	0.22	0.15	0.15
PLCK	Value	88.47	94.86	88.60	100.00	110.06	93.66
PLCK	Price	90.08	97.62	90.48	100.00	103.47	100.33
PLCK	Quantity	98.21	97.18	97.93	100.00	106.38	93.35
PLCK	Value Share	0.84	0.81	0.78	0.76	0.84	0.84
SABL	Value	114.16	90.46	136.09	100.00	94.09	83.72
SABL	Price	131.62	140.76	129.86	100.00	65.40	60.51
SABL	Quantity	86.73	64.27	104.80	100.00	143.88	138.36
SABL	Value Share	0.01	0.01	0.01	0.01	0.01	0.01

Notes: Species with a value share less than 1% were not included in this table. All groundfish species were used to calculate aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.4: Product indices and value share for the BSAI shoreside first-wholesale market 2015-2020.

Product	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	80.40	89.38	86.54	100.00	100.51	85.50
Aggregate	Price	85.11	92.33	89.01	100.00	99.37	96.11
Aggregate	Quantity	94.47	96.81	97.22	100.00	101.15	88.96
Fillet	Value	77.69	94.85	87.23	100.00	110.17	88.12
Fillet	Price	84.49	95.21	90.95	100.00	108.03	103.01
Fillet	Quantity	91.95	99.62	95.91	100.00	101.98	85.55
Fillet	Value Share	0.40	0.44	0.41	0.41	0.45	0.42
Head&Gut	Value	78.69	65.53	72.83	100.00	66.27	42.50
Head&Gut	Price	68.73	66.17	77.29	100.00	71.51	63.35
Head&Gut	Quantity	114.49	99.02	94.23	100.00	92.67	67.09
Head&Gut	Value Share	0.07	0.05	0.06	0.07	0.05	0.04
Meal&Oil	Value	95.47	109.68	95.62	100.00	88.86	98.71
Meal&Oil	Price	104.34	111.12	102.49	100.00	83.26	94.66
Meal&Oil	Quantity	91.49	98.70	93.29	100.00	106.73	104.28
Meal&Oil	Value Share	0.11	0.11	0.10	0.09	0.08	0.11
Other	Value	61.95	103.30	93.14	100.00	84.82	102.12
Other	Price	78.96	91.65	89.27	100.00	93.15	103.09
Other	Quantity	78.46	112.71	104.33	100.00	91.05	99.06
Other	Value Share	0.04	0.05	0.05	0.05	0.04	0.06
Roe	Value	57.75	40.17	70.07	100.00	95.02	70.04
Roe	Price	67.60	78.62	81.78	100.00	67.42	62.37
Roe	Quantity	85.42	51.10	85.68	100.00	140.93	112.30
Roe	Value Share	0.05	0.03	0.05	0.06	0.06	0.05
Surimi	Value	87.30	89.76	88.51	100.00	102.78	88.87
Surimi	Price	87.64	91.60	86.66	100.00	108.18	101.69
Surimi	Quantity	99.61	97.99	102.14	100.00	95.01	87.39
Surimi	Value Share	0.34	0.31	0.32	0.31	0.32	0.32

Notes: Products types 'Minced', 'Other' and those with a value share less than 1% were not included in this table. All product types were used to contruct aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.5: Species indices and value share for the BSAI shoreside ex-vessel market 2015-2020.

Species	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	84.51	82.69	86.69	100.00	106.38	95.33
Aggregate	Price	90.92	84.66	87.05	100.00	106.16	97.89
Aggregate	Quantity	92.94	97.66	99.58	100.00	100.21	97.39
PCOD	Value	52.10	68.55	82.55	100.00	95.36	81.51
PCOD	Price	62.87	66.65	79.39	100.00	103.87	97.86
PCOD	Quantity	82.86	102.84	103.97	100.00	91.81	83.29
PCOD	Value Share	0.15	0.20	0.22	0.24	0.21	0.20
PLCK	Value	94.34	87.18	86.83	100.00	109.75	99.17
PLCK	Price	98.61	89.02	87.93	100.00	107.30	98.65
PLCK	Quantity	95.68	97.94	98.75	100.00	102.29	100.52
PLCK	Value Share	0.83	0.79	0.75	0.75	0.77	0.78
SABL	Value	126.61	114.84	189.16	100.00	143.06	145.84
SABL	Price	171.65	184.98	183.56	100.00	90.83	75.24
SABL	Quantity	73.76	62.08	103.05	100.00	157.50	193.82
SABL	Value Share	0.02	0.02	0.02	0.01	0.02	0.02

Notes: Species with a value share less than 1% were not included in this table. All groundfish species were used to calculate aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.6: Gear indices and value share for the BSAI shoreside ex-vessel market 2015-2020.

Gear	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	84.51	82.69	86.69	100.00	106.38	95.33
Aggregate	Price	90.92	84.66	87.05	100.00	106.16	97.89
Aggregate	Quantity	92.94	97.66	99.58	100.00	100.21	97.39
HAL	Value	181.87	108.30	81.27	100.00	109.10	69.68
HAL	Price	143.16	153.48	154.34	100.00	98.85	86.78
HAL	Quantity	127.05	70.56	52.65	100.00	110.37	80.30
HAL	Value Share	0.01	0.01	0.01	0.01	0.01	0.01
POT	Value	45.93	64.63	90.17	100.00	111.20	87.62
POT	Price	69.11	73.32	86.20	100.00	107.25	100.36
POT	Quantity	66.46	88.16	104.60	100.00	103.68	87.31
POT	Value Share	0.08	0.11	0.15	0.14	0.15	0.13
TWL	Value	90.30	85.56	86.14	100.00	105.54	96.86
TWL	Price	94.01	86.17	86.83	100.00	106.03	97.57
TWL	Quantity	96.05	99.30	99.21	100.00	99.54	99.27
TWL	Value Share	0.91	0.88	0.84	0.85	0.84	0.86

Notes: The Fisher index method was used to construct the indices. Further details on index construction and gear decomposition can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.7: Species indices and value share for the GOA first-wholesale market 2015-2020.

Species	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	117.73	121.40	123.39	100.00	84.57	64.23
Aggregate	Price	96.43	100.00	102.82	100.00	88.99	81.65
Aggregate	Quantity	122.08	121.40	120.01	100.00	95.03	78.67
FLAT	Value	97.91	117.17	198.71	100.00	101.66	84.17
FLAT	Price	97.95	113.60	131.88	100.00	82.72	75.83
FLAT	Quantity	99.96	103.14	150.68	100.00	122.90	111.00
FLAT	Value Share	0.05	0.06	0.10	0.06	0.08	0.08
OTHR	Value	234.00	209.86	126.32	100.00	175.41	91.46
OTHR	Price	110.63	127.84	110.11	100.00	91.90	88.06
OTHR	Quantity	211.52	164.16	114.73	100.00	190.88	103.86
OTHR	Value Share	0.01	0.01	0.01	0.01	0.01	0.01
PCOD	Value	320.34	286.81	236.48	100.00	110.13	47.36
PCOD	Price	65.78	73.30	74.18	100.00	85.92	84.88
PCOD	Quantity	487.00	391.30	318.80	100.00	128.18	55.79
PCOD	Value Share	0.29	0.25	0.21	0.11	0.14	0.08
PLCK	Value	99.04	101.56	93.52	100.00	81.82	66.47
PLCK	Price	110.93	96.87	84.68	100.00	112.78	115.03
PLCK	Quantity	89.28	104.84	110.44	100.00	72.55	57.78
PLCK	Value Share	0.30	0.30	0.27	0.36	0.35	0.37
ROCK	Value	75.46	88.07	86.21	100.00	74.20	64.68
ROCK	Price	96.55	93.13	109.68	100.00	75.43	67.20
ROCK	Quantity	78.16	94.57	78.60	100.00	98.38	96.25
ROCK	Value Share	0.10	0.11	0.11	0.15	0.13	0.15
SABL	Value	92.82	104.51	123.70	100.00	79.21	63.52
SABL	Price	101.32	120.73	136.28	100.00	74.56	59.22
SABL	Quantity	91.61	86.57	90.77	100.00	106.25	107.27
SABL	Value Share	0.24	0.26	0.30	0.30	0.28	0.30

Notes: Species with a value share less than 1% were not included in this table. All groundfish species were used to calculate aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.8: Product indices and value share for the GOA first-wholesale market 2015-2020.

Product	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	117.73	121.40	123.39	100.00	84.57	64.23
Aggregate	Price	96.43	100.00	102.82	100.00	88.99	81.65
Aggregate	Quantity	122.08	121.40	120.01	100.00	95.03	78.67
Fillet	Value	115.34	178.51	146.49	100.00	94.80	69.08
Fillet	Price	80.40	90.87	80.44	100.00	107.47	105.68
Fillet	Quantity	143.45	196.45	182.11	100.00	88.21	65.36
Fillet	Value Share	0.19	0.28	0.23	0.19	0.22	0.21
Head&Gut	Value	116.26	98.93	119.22	100.00	80.23	62.07
Head&Gut	Price	100.94	102.57	117.17	100.00	81.62	71.69
Head&Gut	Quantity	115.18	96.45	101.75	100.00	98.30	86.57
Head&Gut	Value Share	0.61	0.50	0.60	0.62	0.59	0.60
Other	Value	139.49	184.19	158.11	100.00	109.65	86.89
Other	Price	104.61	94.64	96.33	100.00	91.53	91.63
Other	Quantity	133.34	194.62	164.14	100.00	119.79	94.83
Other	Value Share	0.09	0.11	0.10	0.07	0.10	0.10
Roe	Value	102.16	27.88	54.87	100.00	63.15	39.33
Roe	Price	73.16	77.03	86.71	100.00	77.84	61.50
Roe	Quantity	139.64	36.19	63.28	100.00	81.12	63.94
Roe	Value Share	0.03	0.01	0.02	0.04	0.03	0.02
Surimi	Value	132.30	138.75	85.46	100.00	79.87	61.71
Surimi	Price	88.99	100.80	78.67	100.00	112.30	111.10
Surimi	Quantity	148.68	137.65	108.63	100.00	71.12	55.55
Surimi	Value Share	0.08	0.08	0.05	0.07	0.07	0.07

Notes: Products types 'Minced' and those with a value share less than 1% were not included in this table. All product types were used to contruct aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.9: Species indices and value share for the GOA ex-vessel market 2015-2020.

Species	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	122.69	110.27	123.69	100.00	85.01	55.70
Aggregate	Price	96.28	94.07	105.47	100.00	88.88	64.96
Aggregate	Quantity	127.43	117.22	117.28	100.00	95.65	85.76
FLAT	Value	110.98	98.37	122.98	100.00	96.13	77.66
FLAT	Price	108.03	90.52	95.10	100.00	76.17	67.91
FLAT	Quantity	102.72	108.67	129.32	100.00	126.22	114.36
FLAT	Value Share	0.03	0.03	0.04	0.04	0.04	0.05
OTHR	Value	210.30	151.88	124.73	100.00	124.48	77.79
OTHR	Price	100.52	93.82	104.07	100.00	102.94	96.73
OTHR	Quantity	209.21	161.88	119.86	100.00	120.92	80.42
OTHR	Value Share	0.01	0.01	0.01	0.01	0.01	0.01
PCOD	Value	351.78	286.57	246.64	100.00	110.19	30.95
PCOD	Price	65.98	65.80	74.83	100.00	110.42	90.68
PCOD	Quantity	533.15	435.52	329.60	100.00	99.79	34.13
PCOD	Value Share	0.24	0.22	0.17	0.09	0.11	0.05
PLCK	Value	103.20	76.36	83.43	100.00	85.50	65.80
PLCK	Price	97.03	67.66	70.64	100.00	112.14	96.03
PLCK	Quantity	106.37	112.86	118.11	100.00	76.24	68.52
PLCK	Value Share	0.21	0.17	0.17	0.25	0.25	0.30
ROCK	Value	83.64	93.46	81.37	100.00	98.11	64.05
ROCK	Price	95.99	95.01	93.63	100.00	100.45	68.06
ROCK	Quantity	87.13	98.37	86.91	100.00	97.67	94.11
ROCK	Value Share	0.06	0.07	0.06	0.09	0.10	0.10
SABL	Value	102.04	101.77	131.07	100.00	77.42	51.95
SABL	Price	104.52	117.75	137.19	100.00	74.81	48.45
SABL	Quantity	97.63	86.43	95.54	100.00	103.48	107.22
SABL	Value Share	0.44	0.48	0.56	0.52	0.48	0.49

Notes: Species with a value share less than 1% were not included in this table. All groundfish species were used to calculate aggregate indices and value share. The Fisher index method was used to construct the indices. Further details can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

Table 5.10: Gear indices and value share for the GOA ex-vessel market 2015-2020.

Gear	Index Type	2015	2016	2017	2018	2019	2020
Aggregate	Value	122.69	110.27	123.69	100.00	85.01	55.70
Aggregate	Price	96.28	94.07	105.47	100.00	88.88	64.96
Aggregate	Quantity	127.43	117.22	117.28	100.00	95.65	85.76
HAL	Value	123.91	120.56	133.04	100.00	73.40	33.35
HAL	Price	101.19	115.59	129.52	100.00	78.09	51.99
HAL	Quantity	122.46	104.31	102.72	100.00	93.99	64.14
HAL	Value Share	0.47	0.51	0.50	0.47	0.40	0.28
POT	Value	155.36	143.11	171.77	100.00	119.15	120.87
POT	Price	88.77	87.80	97.72	100.00	88.49	61.83
POT	Quantity	175.02	162.99	175.77	100.00	134.65	195.47
POT	Value Share	0.14	0.14	0.15	0.11	0.15	0.23
TWL	Value	113.18	90.79	101.43	100.00	89.18	63.87
TWL	Price	94.39	74.78	84.17	100.00	101.14	80.88
TWL	Quantity	119.91	121.41	120.51	100.00	88.17	78.96
TWL	Value Share	0.39	0.35	0.35	0.43	0.45	0.49

Notes: The Fisher index method was used to construct the indices. Further details on index construction and gear decomposition can be found in the text or by contacting ben.fissel@noaa.gov.

Source: NMFS Alaska Region Blend and Catch-accounting System estimates; NMFS Alaska Region At-sea and Shoreside Production Reports; and ADF&G Commercial Operators Annual Reports (COAR). Data compiled and provided by the Alaska Fisheries Information Network (AKFIN). National Marine Fisheries Service, P.O. Box 15700, Seattle, WA 98115-0070.

6. GROUNDFISH IN-SEASON EX-VESSEL REVENUE ESTIMATES FOR 2021

6.1. Overview

This section represents an ongoing effort by AFSC to provide the NPFMC, industry, and the public with economic information that is up to date through September 2021 for the annual groundfish harvest specifications process. Other sections of the Groundfish Economic SAFE (hereafter GFEconSAFE) are currently reporting final 2020 prices and revenues. The data presented in this section are estimates, "nowcasts", of current 2021 year-to-date monthly ex-vessel revenues and landings for Alaska groundfish fisheries (methods are summarized below). These ex-vessel revenue estimates are the best estimates of 2021 North Pacific fisheries values currently available, but are likely to be different than the values that will be presented in the 2022 GFEconSAFE.

Harvest volumes in 2021 are up in Alaska approximately 1% compared with 2020 (≈16,000 MT) and 9% below (≈185,000 MT) the 5 year average baseline period (2015-2019; Figure 6.1) for January through September. Prices in 2021 were on average higher than 2020 although lower than the baseline average years. These trends are broadly consistent with the volume of U.S. exports of Alaska groundfish through September 2021. Estimated year-to-date 2021 revenues have risen by 4% compared to 2020 (-$25 million) but are 25% below the 2015-2019 average values (-$215 million) between January and September.

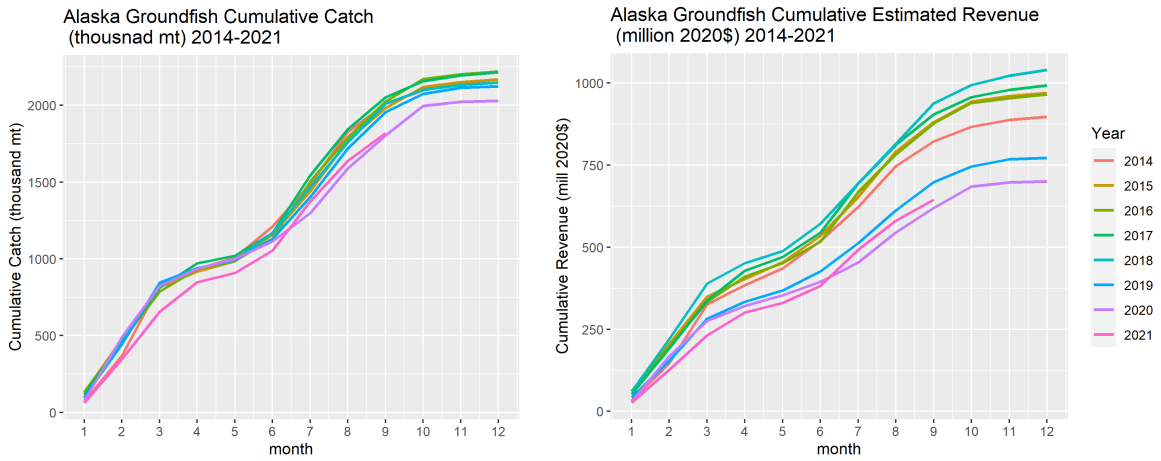

Figure 6.1: Alaska FMP Groundfish Cumulative Landings and Revenue by Year, 2014-2021.

On a percentage basis, BSAI harvest volumes rose by approximately 1% in 2021 compared with 2020 (≈19,000 MT), but fell 6% relative to 2015-2019 (≈113,000 MT). This change is larger in absolute terms, but smaller in percentage terms than the 2% and 3% decline in landings in the GOA (which corresponds to ≈3,000 MT decline from 2020 and ≈72,000 MT decline from 2015-2019 average) as shown in Figures 6.2 and 6.3.

The GOA also experienced the larger percentage decline in estimated revenues over the baseline periods at approximately 7% (-$5 million) and 59% (-$91 million) comparing 2021 with 2020 and the 2015-2019 average. 2021 BSAI revenues are expected to be up 5% ($30 million) from 2020 levels but 18% below (-$124 million) the 2015-2019 average.

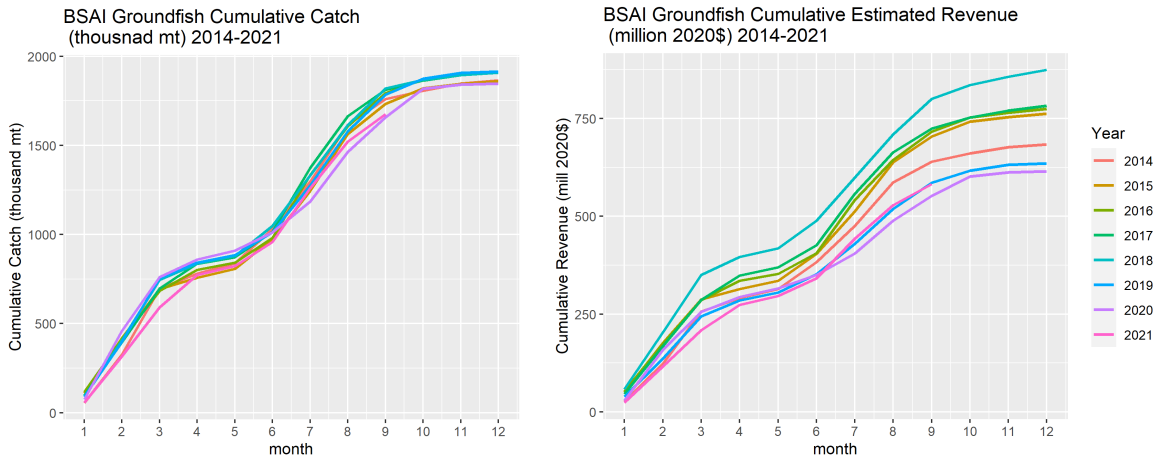

Figure 6.2: BSAI Groundfish Cumulative Landings and Ex-vessel Revenue by Year

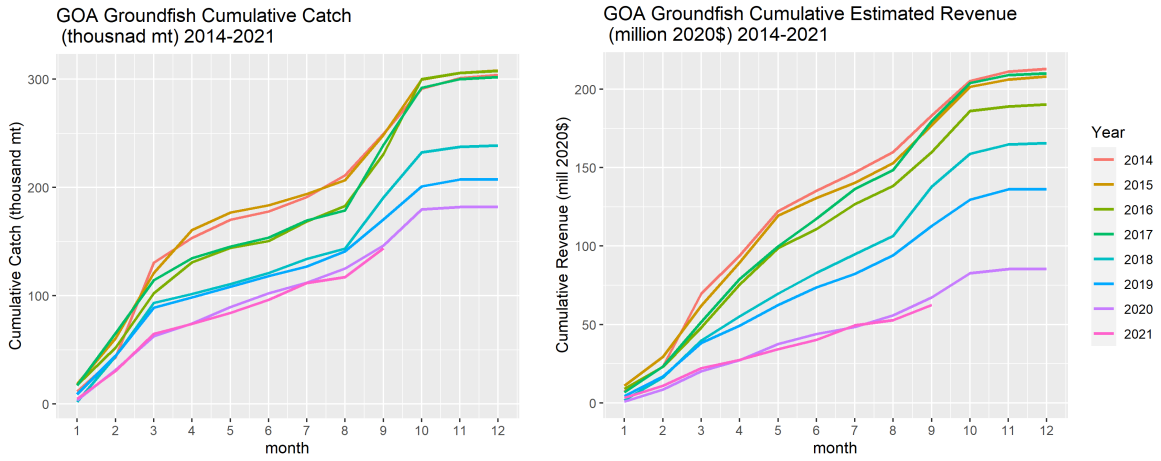

Figure 6.3: GOA Groundfish Cumulative Landings and Ex-vessel Revenue by Year

Alaska remains the region of the U.S. with the largest seafood export values over the January to July period (about $1.1 billion), but experienced a 6% decline in value in 2021 relative to 2020, and a 20% decline relative to the 2015-2019 baseline. China is the US's top export country for Jan-July seafood exports, and is a major importer of Alaska seafood. Exports to China (including cod, crab, pollock) decreased 41% from baseline average to $239m in 2021 Jan.-July (NMFS Foreign Trade Data[1]). The U.S. dollar weakened between 2020 and 2021 against the Euro (-4.3%), and Yuan (-3.3%) which should have helped U.S. and Alaska seafood export competitiveness. However, the dollar strengthened against the Yen (3.8%) which makes Alaska seafood more expensive to Japan.

6.2. Methods

The method of "nowcasting" year-to-date monthly 2020 ex-vessel prices is analogous to the methods described in Section 6 of the GFEconSAFE. Ex-vessel prices information for 2021 is available through e-landings reports (fishtickets) and serve as the basis for estimating current year monthly ex-vessel prices. These prices, which are preliminary and unadjusted for year-end adjustments (e.g., bonuses),

[1] https://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/

are reconciled with final ex-vessel prices from the Catch Accounting System.[2] Unadjusted monthly ex-vessel fish ticket prices are used to estimate final monthly ex-vessel prices in 2020 through linear regression accounting for species, area, gear, and harvest sector. These are highly significant with an R^2 of 0.95 or higher for flatfish, pollock, and Pacific cod; an R^2 of 0.75 or higher for rockfish and other species; and an R^2 of 0.65 for sablefish.

Ex-vessel prices were estimated for six groups of groundfish: flatfish, Pacific cod, pollock, rockfish, sablefish, and other. These groups are stratified by BSAI and GOA, and for BSAI pollock and Pacific cod, shoreside and at-sea harvest sectors. Realized prices are then multiplied by the groundfish landings from the Catch Accounting System for 2014-2020 and estimated prices are applied to landing from January 2021 through September 2021 to obtain revenue estimates. These 2021 landings data and revenue estimates are based on the best currently available data, but are still considered preliminary. Caution should be taken in interpreting or extrapolating from these estimates as they are preliminary and may change. The baseline period of comparison with 2021 values will be relative to 2020 as well as the five year average from January-September of 2015-2019. All revenues were adjusted for inflation using the GDP deflator using 2020 as the base year.[3]

A comparison of the 2020 estimated values to the realized value showed that for many species and regions the model performed fairly well with a difference in value between the estimate and realized of less than 10%. Exception include GOA flatfish, BSAI pollock, rockfish, and sablefish. Models have been updated to improve performance for 2021 estimates.

6.3. BSAI Groundfish Landings and Revenues through September 2021

Figures 6.1-6.3 display the cumulative landings and ex-vessel revenue of groundfish fisheries by month for Alaska, BSAI, and GOA, respectively. Figures 6.4 and 6.5 present the cumulative revenues by month and year for the BSAI in 2021 (the pink line), compared with each of the years 2014-2020.[4] The following section provides a brief summary of cumulative harvest and revenue trends of BSAI groundfish from January through September 2021.

Estimated BSAI revenue from January through September 2021 are 5% above 2020 levels (an increase of $30 million from $552 million to $82 million) but 18% below the 2015-2019 baseline period (a decline of $124 million from $707 million; Figures 6.4 and 6.5). This decline is a result of the combination of lower volumes and lower prices across many species. The largest components of the decrease in value over the 2015-2019 period include estimated $25 million decline in pollock at-sea revenues, $14 million decline in pollock shoreside revenues, $41 million reduction in Pacific cod at-sea revenues, $16 million in shoreside Pacific cod, $15 million decrease in flatfish revenues, $3 million reduction in rockfish revenues, $1 million reduction in sablefish revenues, and $7 million reduction in other species revenues. Compared with 2020, estimated revenue declines in 2021 include $21 million in flatfish revenues, $9 million in shoreside Pacific cod revenues, $3 million in Pacific cod at-sea revenues, and $1 million in rockfish revenues. Compared with 2020, estimated revenue increases in 2021 include $48 million in pollock at-sea revenues, $12 million in pollock shoreside revenues, $2 million in other species revenues, and $1million in sablefish revenues.

[2]Only landings volume coded as fit for human consumption are considered as other landings volume are largely unpriced in e-landings. Because of this, landings initially destined for fishmeal are not included. This constituted are relatively small portion of the total landed volume.

[3]BEA Table 1.1.9: https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=3&isuri=1&nipa_table_list=13

[4]Note that Atka mackerel is included in "other" grouping.

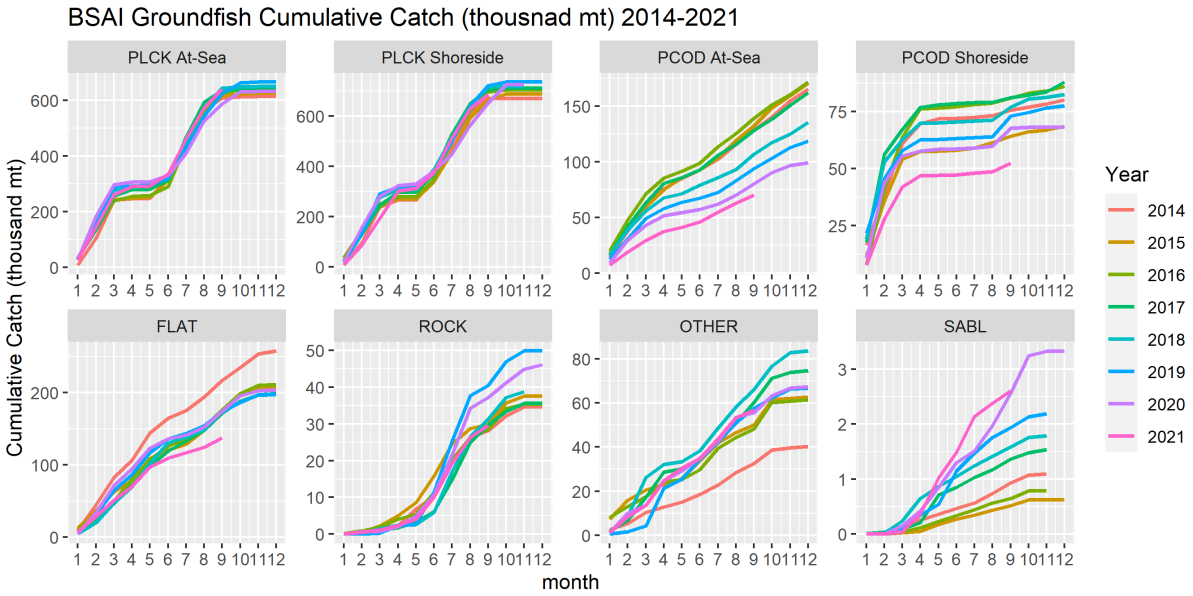

Figure 6.4: BSAI Cumulative Landings by Species and Year

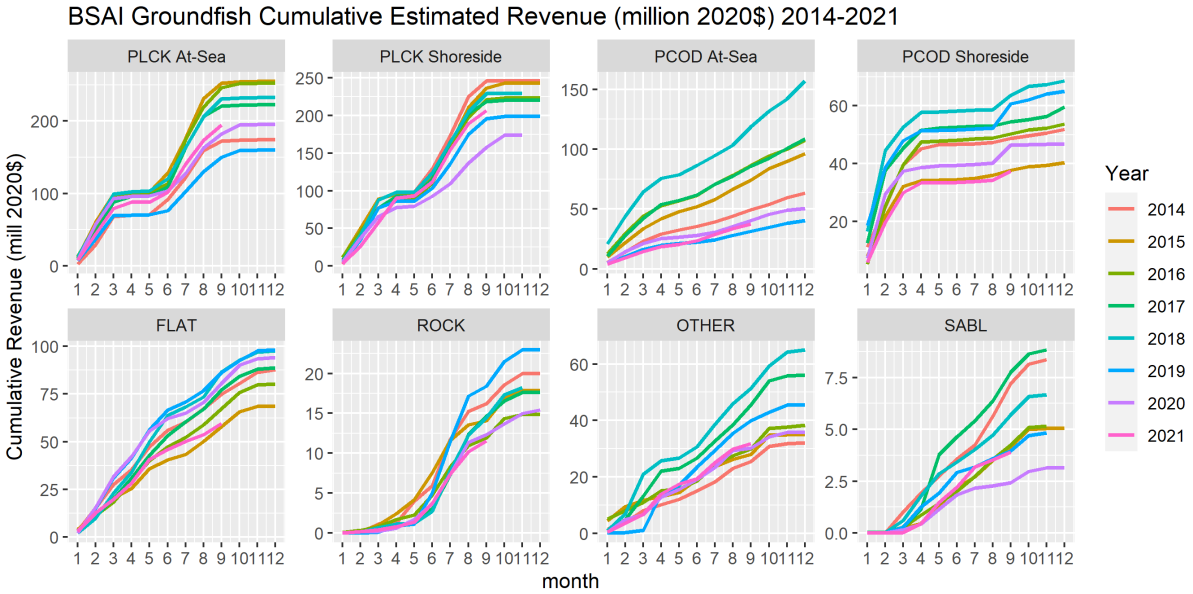

Figure 6.5: BSAI Cumulative Ex-vessel Revenue by Species and Year

BSAI Flatfish

Fishing through June was roughly consitent with previous years but began to slow down through September.Year-to-date revenues in 2021 were down with catch, and are below most other years except for 2015 when prices were lower. January to September BSAI flatfish catch in 2021 is down 21% from the 2020 level and 21% lower than the 2015-2019 average by volume. Revenues are down 26% compared with 2020 and 21% lower than the average over 2015-2019 (Figures 6.4 and 6.5).

BSAI Pacific cod

Ex-vessel prices in 2021 have increased slightly from 2019, and are above the 2015-2019 average. Consistent with TAC declines, BSAI shoreside catch of Pacific cod have declined by approximately 23% from January to September of 2021 relative to the same period in 2020, while shoreside catches are down 30% from the average January to September period from 2015-2019. Reduced catches combined with a slight increase in ex-vessel prices in 2021 has resulted in a reduction in shoreside BSAI Pacific cod revenue from the January to September period of approximately 19%, compared with 2020, and 30% for the January to September period in 2021, compared with the average over the same months from 2015-2019 (Figures 6.4 and 6.5).

Consistent with TAC declines in Pacific cod, at-sea catch of BSAI Pacific cod have declined by approximately 13% from January to September 2021 relative to the same period in 2020, while at-sea catches are down 42% from the average January to September from 2015-2019. Estimated ex-vessel revenue for at-sea Pacific cod are down 8% relative to the same period in 2020 and down 53% for the January to September period of 2021 relative to the average from the same period in 2015-2019 (Figures 6.4 and 6.5).

BSAI Pollock

In 2020 poor fishing conditions resulted in a lower than expected catch, and conditions were expected to improve in 2021. In 2021 shoreside pollock harvests through September are up 5% compared with 2020 and down 2% compared with the 2015-2019 average (Figure 6.4). Shoreside pollock prices increased to $0.14 per pound and are approximately equal to the 2015-2019 average. 2021 BSAI pollock shoreside revenues are estimated to be 31% higher than 2020 through September and 6% below the average over 2015-2019.

2021 BSAI at-sea pollock harvests are slightly above recent periods (2% greater than the 2015-2019 average and 9% higher than 2020), and the revenues through September are estimated to be lower than the 2015-2019 average by approximately 12% while the at-sea pollock revenues are up nearly 7% in 2021 compared with the same period in 2020 (Figures 6.4 and 6.5).

BSAI Rockfish

Rockfish ex-vessel prices are estimated to be up from 2020 but below the 2015-2019 average. BSAI Rockfish harvests through September 2021 are down 21% from 2020 levels, and 7% lower than the average January to September period of 2015-2019. Similarly, ex-vessel revenues through September of 2021 are estimated to be down 6% from the same period in 2020 and down by 22% from the 2015-2019 period (Figures 6.4 and 6.5).

BSAI Sablefish

There was a large increase in BSAI sablefish harvested over the summers of 2020 and 2021 as shown in Figure 6.4. BSAI Sablefish landings through September 2021 were up 1% from 2020 levels and 115% above the 2015-2019 average (Figure 6.4). Revenue through September is up by 61% in 2021 compared to 2020 as 2020 prices reached a low. Revenuew are down 24% relative to the 2015-2019 average over the same period when prices were higher (Figure 6.5).

6.4. GOA Groundfish Landings and Revenues through September 2021

Figures 6.6 and 6.7 present the cumulative revenues by month and year for GOA groundfish in 2021 (the pink line), compared with each of the years 2014-2019.[5] The following section provides a brief summary of cumulative harvest and revenue trends for GOA groundfish from January through September.

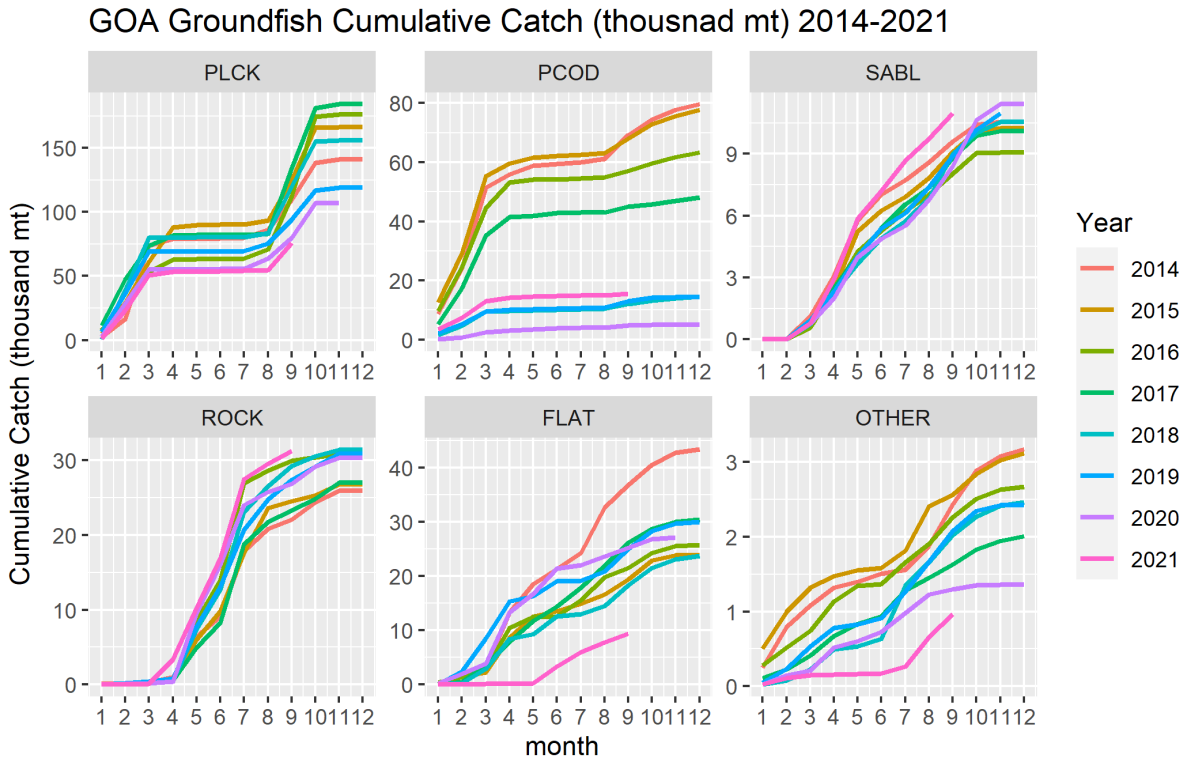

Figure 6.6: GOA Cumulative Landings by Species and Year

Due to a combination of lower volumes and lower prices in 2021, GOA groundfish exhibited declines in estimated ex-vessel revenues relative to 2020, and the 2015-2019 average, of approximately 7% (-$5 million) and 59% (-$91 million), respectively. The largest components of the decrease in value relative to 2015-2019 include estimated declines of $56 million in sablefish, $16 million in Pacific cod, and $12 million in pollock ex-vessel revenues. Compared with 2020, estimated revenue declines in 2021 include $3 million in pollock, $2 million in flatfish, and $11 million in sablefish. Compared with 2020, estimated revenue increases in 2021 include $8 million in Pacific cod and $4 million in rockfish.

GOA Flatfish

January to September GOA flatfish catch in 2021 is down 63% from the 2020 level and 57% from the 2015-2019 average of volume. Markets for GOA flatfish dried up early in the year and there was almost know fishing through May. GOA flatfish revenues are estimated to decrease by 60% compared with 2020, and 73% lower than the average over 2015-2019 (Figures 6.6 and 6.7).

GOA Pacific cod

[5]Note that Atka mackerel is included in "other" grouping.

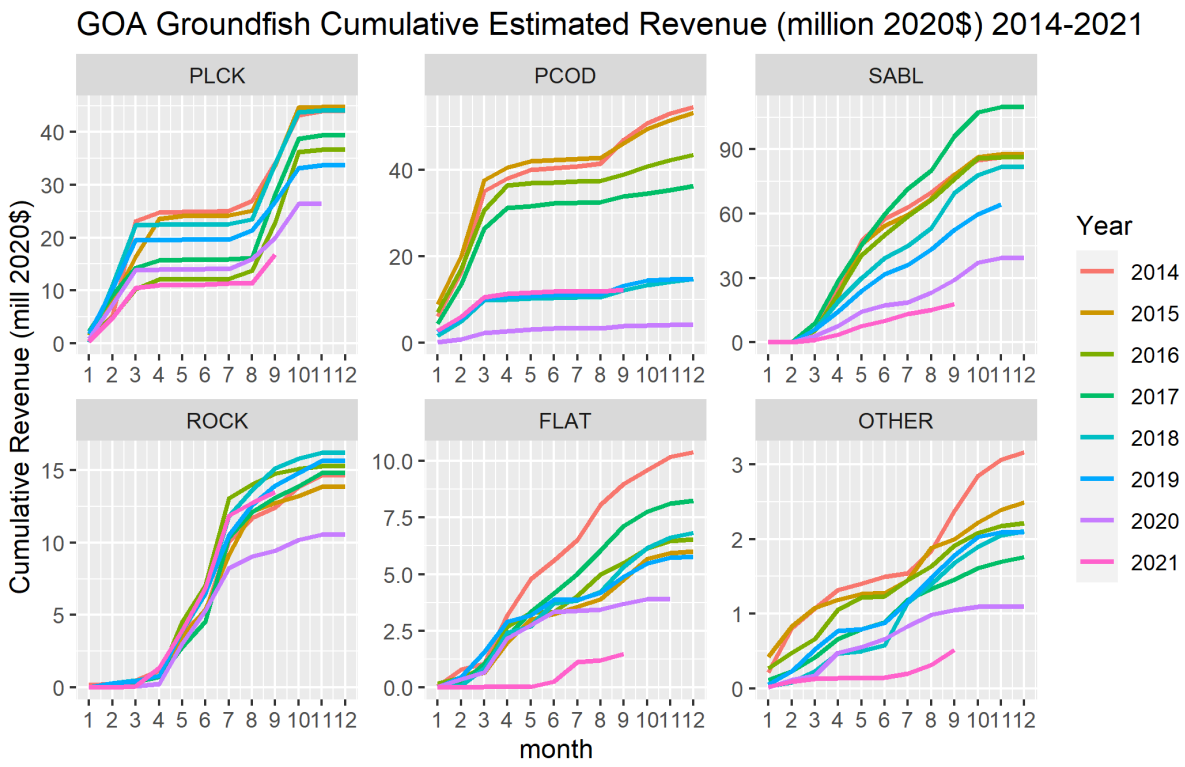

Figure 6.7: GOA Cumulative Ex-vessel Revenue by Species and Year

Ex-vessel prices in 2021 have decreased slightly from 2020. Consistent with limited reopening of the federal GOA Pacific cod fishery following the closure 2020, GOA landings of Pacific cod have increased by 228% in January to September of 2021 relative to the same period in 2020, while catches are down 60% from the average January to September period from 2015-2019. Consequently, GOA shoreside Pacific cod revenues increased 215% from January to September in 2021 compared with 2020, and but are 58% below the average over the same months from 2015-2019 (Figures 6.6 and 6.7).

GOA Pollock

2021 GOA pollock harvests through September are down 5% compared with 2020, and 35% compared with the 2015-2019 average (Figure 6.6). GOA pollock prices are down slightly relative to 2020 and the 2015-2019 average. GOA pollock ex-vessel revenues in 2021 are estimated to be 16% lower than 2020 through September, and 42% below the average over the January to September period from 2015-2019.

GOA Rockfish

Rockfish ex-vessel prices in 2021 are estimated to be above 2020 levels but below the 2015-2019 average. GOA Rockfish harvests through September 2021 are up 16% from 2020 levels, and 16% above than the average January to September period from 2015-2019. Ex-vessel revenues through September of 2021 are estimated to be up 43% compared to the January to September period in 2020, but down 3% relative to the same period from 2015-2019 (Figures 6.6 and 6.7).

GOA Sablefish

The size-based pricing structure for sablefish and the catch composition of small sablefish continues to be a drag on sablefish prices. It is possible that not all of the TAC is going to be landed for sablefish as a result, as was true in 2019 and 2020. GOA Sablefish landings through September 2021 were up 31% from 2020 levels and 25% above the 2015-2019 average (Figure 6.6), while revenue is down by 39% from 2020 levels, and 76% below the January to September 2015-2019 average (Figure 6.7).

7. ALASKA GROUNDFISH PRICE PROJECTIONS

7.1. Introduction

The most recent year for which ex-vessel and first-wholesale prices (Tables 12, 17, 28, and 33) are available is 2020. These prices are largely derived from the Commercial Operators Annual Report (COAR). Because of the report's submission deadline, processing and validation of the data from the report are not completed until July of the following year. Thus, at the time of this report's writing (November 2021), the most recent COAR data available was for the previous year, 2020. To provide recent information, current (i.e., 2021) prices are estimated ("nowcast") using related data that is reported at a higher frequency and provides more contemporaneous information on the likely state of prices for 2021. Ex-vessel prices estimates are based on unadjusted prices[1] on fish tickets through the month of Sept. 2021. First-wholesale price estimates are based on export prices through the month of Sept. 2021, estimated global catch, and exchange rates for 2021. In addition to the nowcasts, ex-vessel and first-wholesale prices are projected out over the next 2 years (2022-2023). These projections give a probabilistic characterization of the range of future prices.

The species and products for which price projections are made approximately correspond with the prices in Tables 12, 17, 28, and 33 in Section 4 of this document. With the notable exception that first-wholesale estimates are made for all of Alaska, and no distinction is made between at-sea and shoreside prices. This corresponds with the export data which make no distinction between sectors, only the customs district of origin. Ex-vessel price estimates are only for the shoreside sectors.

Tables 7.1 and 7.2 summarize the price projections for the six years spanning 2018-2023. Prices between 2018-2020 are realized (actual) prices. The summary data provided for the years 2021-2023 are the expected price (mean) and 90% confidence bounds. Confidence bounds give the estimated probability that the price will fall within the bound. Thus, for the 5% bound, 5% of the simulated prices were less than the given value. Similarly, for the 95% bound, 95% of the simulated prices were less (and 5% were greater). Hence, the region between the 5% and 95% bounds can be interpreted as the 90% confidence bound. Smaller confidence bounds indicate less uncertainty in the projections. In general, price projections for the current year, 2021, display a modest degree of volatility. As prices are projected past the current year the confidence bounds grow reflecting increased uncertainty further out in the future.

Methods are briefly outlined in Section 7.3. Sections 7.4 and 7.5 examines the individual ex-vessel and product price projections for 2021-2023. For these projections a more detailed characterization of the forecast distribution is given by the mean, median and 40%, 60%, 80%, and 90% confidence bounds. Figures plot the price projection results as well as historical realized prices.

7.2. Tabular Summary of Price Projection Results

[1] Unadjusted prices do not account for year-end bonuses

Species	Region	Gear	stat.	2018	2019	2020	2021	2022	2023
pollock	BSAI	trawl	mean	0.156	0.167	0.154	0.153	0.157	0.16
pollock	BSAI	trawl	conf.int.90				[0.15,0.16]	[0.12,0.2]	[0.11,0.22]
pollock	GOA	trawl	mean	0.123	0.138	0.118	0.106	0.11	0.113
pollock	GOA	trawl	conf.int.90				[0.1,0.11]	[0.08,0.15]	[0.07,0.17]
pacific cod	BSAI	trawl	mean	0.383	0.369	0.346	0.338	0.355	0.37
pacific cod	BSAI	trawl	conf.int.90				[0.33,0.34]	[0.26,0.48]	[0.23,0.56]
pacific cod	BSAI	fixed	mean	0.41	0.443	0.418	0.379	0.398	0.412
pacific cod	BSAI	fixed	conf.int.90				[0.37,0.39]	[0.27,0.56]	[0.25,0.65]
pacific cod	GOA	trawl	mean	0.411	0.456	0.358	0.357	0.398	0.415
pacific cod	GOA	trawl	conf.int.90				[0.35,0.36]	[0.29,0.54]	[0.26,0.64]
pacific cod	GOA	fixed	mean	0.457	0.504	0.424	0.389	0.415	0.444
pacific cod	GOA	fixed	conf.int.90				[0.38,0.4]	[0.32,0.53]	[0.29,0.64]
sablefish	GOA	fixed	mean	3.929	2.988	1.95	2.127	2.258	2.277
sablefish	GOA	fixed	conf.int.90				[1.96,2.29]	[1.53,3.18]	[1.32,3.72]

Table 7.1: Groundfish ex-vessel price projection summary

Species	Product	stat.	2018	2019	2020	2021	2022	2023
pollock	surimi	mean	1.257	1.363	1.256	1.356	1.302	1.353
pollock	surimi	conf.int.90				[1.32,1.39]	[0.97,1.75]	[0.97,1.89]
pollock	roe	mean	2.778	2.1	1.951	1.816	1.887	1.954
pollock	roe	conf.int.90				[1.47,2.16]	[1.26,2.75]	[1.14,3.24]
pollock	fillet	mean	1.288	1.481	1.476	1.438	1.465	1.486
pollock	fillet	conf.int.90				[1.38,1.5]	[1.16,1.84]	[1.07,2.03]
pollock	deep-skin fillet	mean	1.489	1.6	1.723	1.611	1.63	1.636
pollock	deep-skin fillet	conf.int.90				[1.57,1.66]	[1.41,1.87]	[1.32,2]
pollock	head and gut	mean	0.472	0.562	0.538	0.54	0.553	0.567
pollock	head and gut	conf.int.90				[0.47,0.61]	[0.42,0.72]	[0.41,0.76]
pacific cod	fillet	mean	4.159	3.961	3.804	3.933	3.965	4.096
pacific cod	fillet	conf.int.90				[3.74,4.13]	[3.16,4.94]	[3.07,5.39]
pacific cod	head and gut	mean	1.866	1.587	1.404	1.499	1.562	1.606
pacific cod	head and gut	conf.int.90				[1.45,1.55]	[1.19,2.04]	[1.11,2.29]
sablefish	head and gut	mean	6.482	4.765	3.67	4.482	4.82	4.828
sablefish	head and gut	conf.int.90				[4.09,4.87]	[3.47,6.6]	[2.9,7.82]
yellowfin (bsai)	head and gut	mean	0.817	0.786	0.622	0.633	0.653	0.669
yellowfin (bsai)	head and gut	conf.int.90				[0.6,0.66]	[0.51,0.82]	[0.48,0.92]
rock sole (bsai)	head and gut with roe	mean	1.503	1.321	1.283	1.139	1.168	1.188
rock sole (bsai)	head and gut with roe	conf.int.90				[1.11,1.17]	[0.87,1.56]	[0.8,1.72]
rock sole (bsai)	head and gut	mean	0.831	0.795	0.635	0.587	0.611	0.62
rock sole (bsai)	head and gut	conf.int.90				[0.53,0.65]	[0.43,0.86]	[0.4,0.94]
arrowtooth	head and gut	mean	0.738	0.667	0.583	0.628	0.835	0.867
arrowtooth	head and gut	conf.int.90				[0.56,0.69]	[0.54,1.29]	[0.55,1.34]
atka mackerel	head and gut	mean	1.412	1.162	1.055	0.983	1.019	1.041
atka mackerel	head and gut	conf.int.90				[0.84,1.12]	[0.66,1.53]	[0.58,1.79]
rockfish	head and gut	mean	1.141	0.835	0.738	0.86	0.899	0.901
rockfish	head and gut	conf.int.90				[0.75,0.96]	[0.66,1.2]	[0.57,1.38]

Table 7.2: Groundfish wholesale product price projection summary

7.3. Summary of Price Projection Methods

Prices are estimated using a two-step procedure. The same basic procedure is used for both ex-vessel and first wholesale nowcasts and projections The first step nowcasts the current year 2021 prices based on currently available (as of Oct. 2021) partial year information. The second step projects prices forward using model simulations to give a probabilistic characterization of the range of future prices.

Current year first-wholesale prices (2021) were nowcast using export prices which are available with a minimal time lag of up to three months. Export prices through September 2021 were available for the current nowcasts. Export prices were obtained from the NMFS Science and Technology trade database. Nowcast models also incorporate 2021 exchange rate data and global catch estimates when they were determined to increase predictability. Global catch estimates for 2021 were obtained from the 2021 International Groundfish Forum. The data were used in a regression to estimate 2021 annual unit value first-wholesale prices of major species and product forms calculated from the COAR and published in Tables 17 and 33 of this report. The statistical relationship between export prices and first-wholesale prices was fairly strong for most products. The relationship tends to be stronger for products where a large share of the production volume is exported.

Nowcasts of 2021 ex-vessel prices were made for shoreside pollock, pacific cod, and sablefish for the predominant gear types used to harvest these species. Nowcasts were made using available fish-ticket prices through October 2021. These data were obtained through the Alaska Fisheries Information Network (AKFIN) from the V_ELLR_SLOG_PRODUCT database. Data were filtered to the major delivered product forms fit for human consumption and stratified by gear types accordingly. Prices are calculated as the remunerations received at the time of landing divided by the delivered volume. Because of this, these prices do not account for end-of-year bonuses or other post-season adjustments to price. The data were used in a regression to estimate 2021 annual unit value ex-vessel prices calculated from the COAR and published in Tables 12 and 28 of this report. By contrast, COAR based ex-vessel prices do account for end of bonuses and other post-season adjustments to price. The statistical relationship between raw partial year fish-ticket prices and annual COAR based ex-vessel prices was strong for the species and gear types presented.

Price projections for the years 2022-2023 were made using a suite of canonical time series models to estimate returns (the percent change in price). The primary suite of models used were within the class of ARMA time series models (Hamilton, 1994). Two exponential smoothing models were also used, however, these tended to contribute little to the price projections (Hyndman & Athanasopoulos, 2013). Changes in price return volatility (a measure of the dispersion of the return distribution) over time were also modeled. Confidence bounds for the estimated models were constructed using residual resampling methods. Simulations created a probabilistic distribution of potential returns that are consistent with historical deviations from the models. Price projections from the suite of models were then combined using weights that were determined by model fit. Prices were calculated from returns and statistics such as the mean and percentiles for confidence bounds were calculated from the forecast distribution. Only a small component of the future prices (2022-2023) was forecastable by the time series models, a feature that is common in price forecasts for commodities, and projections largely reflect the long-run trends and mean reversion estimated by the models. The primary value of these projections is to provide a credible range of potential future prices based on historical variation.

7.4. Ex-vessel Price Projections

7.4.1 Alaska Pollock Ex-vessel Prices

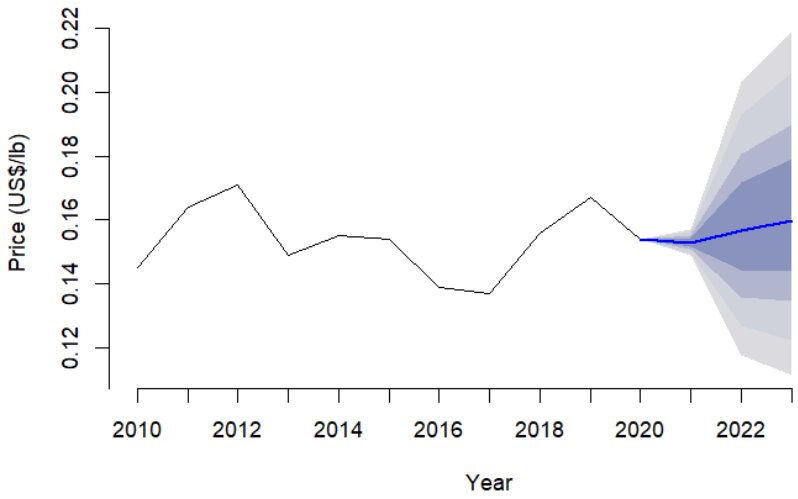

Figure 7.1: Pollock BSAI trawl ex-vessel price projections and confidence bounds

Table 7.3: Projected mean, probability bounds of pollock BSAI trawl ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.149	0.150	0.151	0.152	0.153	0.153	0.154	0.155	0.156	0.157
2022	0.118	0.127	0.136	0.145	0.157	0.159	0.172	0.181	0.193	0.203
2023	0.112	0.122	0.135	0.144	0.160	0.161	0.179	0.190	0.206	0.219

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock BSAI trawl ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
17.75	17.75	17.75	17.75

Pollock accounted for 76% of the ex-vessel value for the BSAI catcher vessels (CV) in 2020 and is targeted using trawl gear. BSAI trawl CV pollock retained catch increased 1.5% in 2020, correspondingly with the TAC. The realized ex-vessel price of BSAI trawl pollock decreased 8% to \$0.154/lb in 2020. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of \$0.153/lb to \$0.161/lb with a median of \$0.157/lb, placing the realized price within the projected range. This year's price projections for the 2021 BSAI trawl pollock ex-vessel price have a median of \$0.153/lb with 95% confidence bounds of \$0.148/lb to \$0.158/lb (Figure 7.1). These estimates imply that the 2021 price will likely remain stable with the potential for increases or decreases also within the projected range. Catch data through Oct. 2021 show stable year-over-year BSAI trawl CV pollock catches. BSAI trawl pollock ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly in 2022. Because of the substantial volatility a range of potential increases or decreases are plausible.

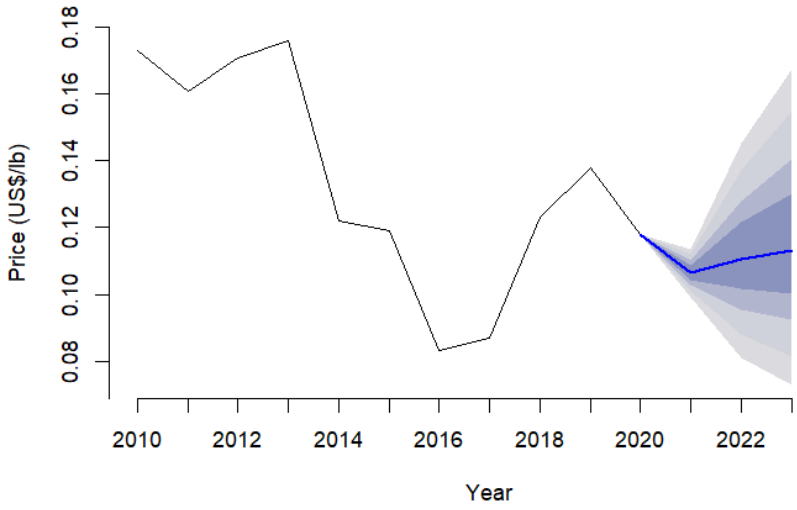

Figure 7.2: Pollock GOA trawl ex-vessel price projections and confidence bounds

Table 7.4: Projected mean, probability bounds of pollock GOA trawl ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.099	0.101	0.103	0.104	0.106	0.106	0.109	0.110	0.112	0.114
2022	0.081	0.088	0.096	0.102	0.110	0.112	0.121	0.128	0.137	0.145
2023	0.073	0.081	0.092	0.100	0.113	0.115	0.130	0.141	0.155	0.168

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock GOA trawl ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
18.24	18.20	18.20	18.14

Pollock accounted for 33% of the ex-vessel value for the GOA catcher vessels (CV) in 2020 and is targeted using trawl gear. GOA trawl CV pollock retained catch decreased 10% in 2020. The realized ex-vessel price of GOA trawl pollock decreased 17% to $0.118/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $0.112/lb to $0.124/lb with a median of $0.117/lb, placing the realized price within the projected range. This year's price projections for the 2021 GOA trawl pollock ex-vessel price have a median of $0.106/lb with 95% confidence bounds of $0.098/lb to $0.115/lb (Figure 7.2). These estimates imply that the 2021 price will likely decrease. Catch data through Oct. 2021 show a 6.5% decrease in the year-over-year GOA trawl CV pollock catch. GOA trawl pollock ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected price exhibit potential mean reversion with a slight upward trend. Because of the substantial volatility a range of potential increases or decreases are plausible.

7.4.2 Pacific Cod Ex-vessel Prices

Pacific cod accounted for 19% of the ex-vessel value for the BSAI catcher vessels in 2020 and catches from trawl gear accounted for 37% of the BSAI Pacific cod value. BSAI trawl CV Pacific

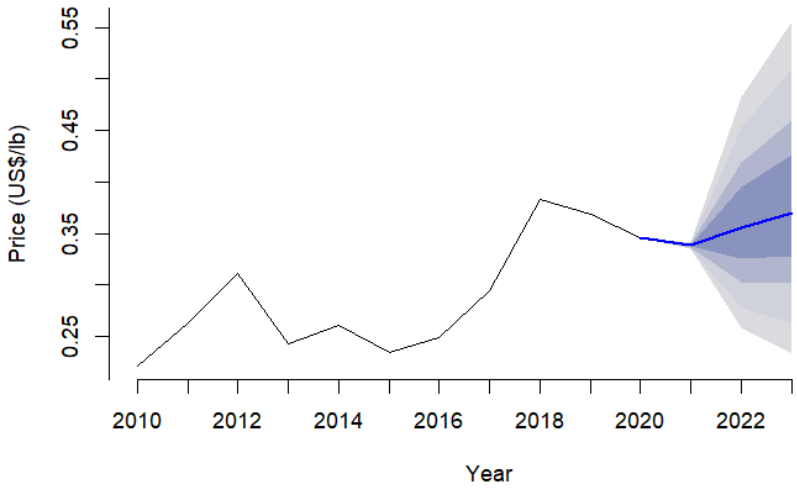

Figure 7.3: Pacific cod BSAI trawl ex-vessel price projections and confidence bounds

Table 7.5: Projected mean, probability bounds of pacific cod BSAI trawl ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.335	0.336	0.337	0.337	0.338	0.338	0.339	0.340	0.341	0.341
2022	0.258	0.278	0.303	0.325	0.355	0.361	0.395	0.419	0.453	0.483
2023	0.233	0.264	0.301	0.328	0.370	0.376	0.426	0.459	0.510	0.555

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod BSAI trawl ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
21.43	20.49	21.85	22.83

cod retained catch decreased 15% in 2020. The realized ex-vessel price of BSAI trawl Pacific cod decreased 7% to $0.346/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $0.334/lb to $0.348/lb with a median of $0.341/lb, placing the realized price within the projected range. This year's price projections for the 2021 BSAI trawl Pacific cod ex-vessel price have a median of $0.338/lb with 95% confidence bounds of $0.334/lb to $0.342/lb (Figure 7.3). These estimates imply that prices in 2021 will likely remain stable. Catch data through Oct. 2021 show a 28% decrease in the year-over-year BSAI trawl Pacific cod catch. BSAI trawl Pacific cod ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly. Because of the substantial volatility a range of potential increases or decreases are plausible.

Pacific cod accounted for 19% of the ex-vessel value for the BSAI catcher vessels in 2020 and catches from fixed gear accounted for 64% of the BSAI Pacific cod value. BSAI fixed gear Pacific cod retained catch decreased 3% in 2020. The realized ex-vessel price of BSAI fixed gear Pacific cod decreased 6% to $0.418/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $0.400/lb to $0.412/lb with a median of $0.406/lb, placing the realized price above the projected range. This year's price projections for the 2021 BSAI fixed gear

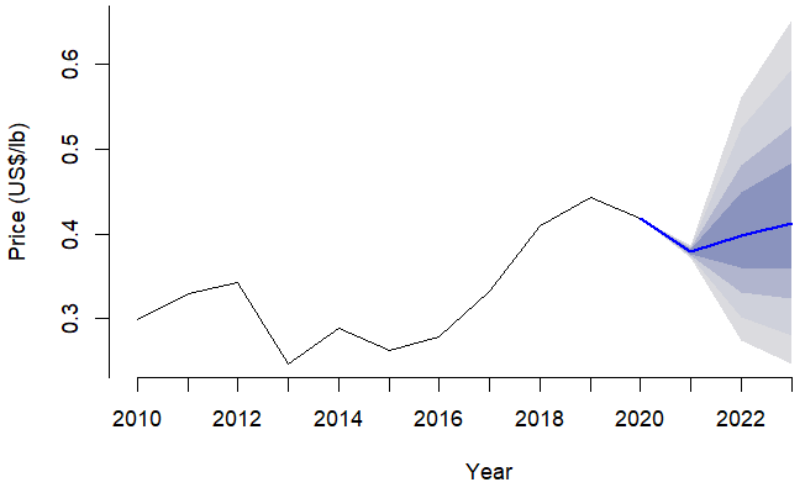

Figure 7.4: Pacific cod BSAI fixed gear ex-vessel price projections and confidence bounds

Table 7.6: Projected mean, probability bounds of pacific cod BSAI fixed gear ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.371	0.373	0.375	0.377	0.379	0.379	0.382	0.383	0.385	0.387
2022	0.275	0.301	0.330	0.360	0.398	0.405	0.449	0.481	0.524	0.561
2023	0.246	0.280	0.324	0.358	0.412	0.419	0.484	0.528	0.595	0.653

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod BSAI fixed gear ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
23.81	23.88	24.28	24.81

Pacific cod ex-vessel price have a median of $0.379/lb with 95% confidence bounds of $0.37/lb to $0.389/lb (Figure 7.4). These estimates imply that a price decrease in 2021 is likely. Catch data through Oct. 2021 show a 16% decrease in the year-over-year BSAI fixed gear Pacific cod catch. BSAI fixed gear Pacific cod ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly. Because of the substantial volatility a range of potential increases or decreases are plausible.

Pacific cod accounted for 5% of the ex-vessel value for the GOA catcher vessels (CV) in 2020 and catches from trawl gear accounted for 42% of the GOA Pacific cod value. GOA trawl Pacific cod retained catch decreased 27% in 2020. The realized ex-vessel price of GOA trawl Pacific cod decreased 27% to $0.358/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $0.325/lb to $0.341/lb with a median of $0.333/lb, placing the realized price above the projected range. This year's price projections for the 2021 GOA trawl Pacific cod ex-vessel price have a median of $0.356/lb with 95% confidence bounds of $0.349/lb to $0.364/lb (Figure 7.5). These estimates imply that a prices in 2021 will likely remain stable. Catch data through Oct. 2021 show a 134% increase in the year-over-year GOA trawl CV Pacific cod

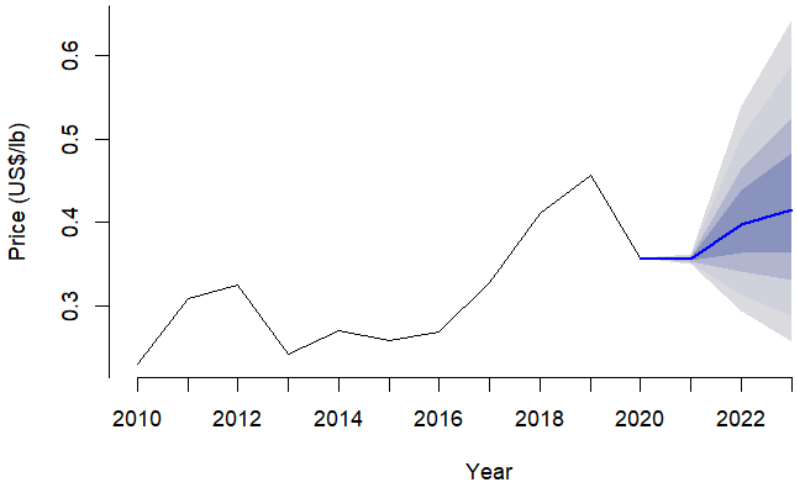

Figure 7.5: Pacific cod GOA trawl ex-vessel price projections and confidence bounds

Table 7.7: Projected mean, probability bounds of pacific cod GOA trawl ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.351	0.352	0.353	0.355	0.357	0.356	0.358	0.360	0.361	0.362
2022	0.295	0.314	0.342	0.364	0.398	0.401	0.440	0.465	0.502	0.539
2023	0.258	0.289	0.332	0.364	0.415	0.420	0.483	0.525	0.588	0.642

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod GOA trawl ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
19.65	19.44	19.35	19.88

catch. GOA trawl Pacific cod ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly. Because of the substantial volatility a range of potential increases or decreases are plausible.

Pacific cod accounted for 5% of the ex-vessel value for the GOA catcher vessels in 2020 and catches from fixed gear accounted for 59% of the GOA Pacific cod value. GOA fixed gear Pacific cod retained catch decreased 75% in 2020 relative to 2019. The realized ex-vessel price of GOA fixed gear Pacific cod decreased 19% to \$0.424/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of \$0.396/lb to \$0.415/lb with a median of \$0.406/lb, placing the realized price above the projected range. This year's price projections for the 2021 GOA fixed gear Pacific cod ex-vessel price have a median of \$0.389/lb with 95% confidence bounds of \$0.379/lb to \$0.4/lb (Figure 7.6). These estimates imply that a price decrease in 2021 is likely. Catch data through Oct. 2021 show a 351% increase in the year-over-year GOA fixed gear Pacific cod catch. GOA fixed gear Pacific cod ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly. Because of the substantial volatility a range of potential increases or decreases are plausible.

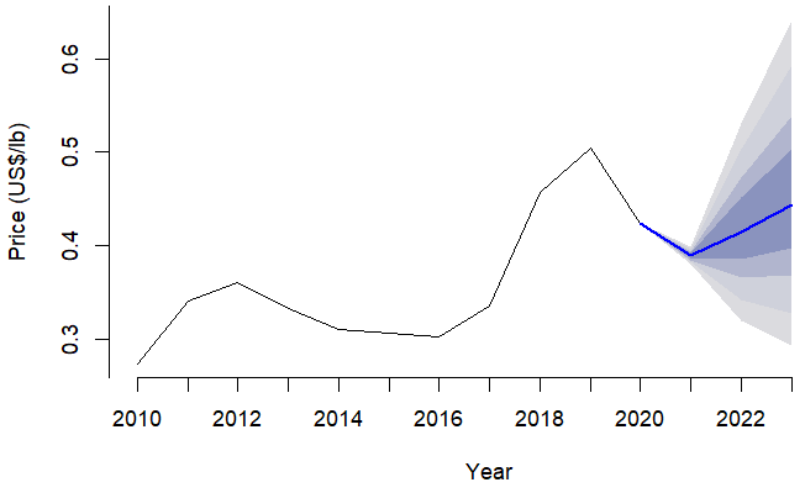

Figure 7.6: Pacific cod GOA fixed gear ex-vessel price projections and confidence bounds

Table 7.8: Projected mean, probability bounds of pacific cod GOA fixed gear ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.380	0.382	0.385	0.386	0.389	0.389	0.392	0.394	0.396	0.398
2022	0.320	0.341	0.365	0.386	0.415	0.419	0.452	0.473	0.503	0.531
2023	0.294	0.327	0.368	0.397	0.444	0.450	0.504	0.539	0.593	0.641

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod GOA fixed gear ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
17.09	16.62	17.17	17.65

7.4.3 Sablefish Ex-vessel Prices

Sablefish accounted for 51% of the ex-vessel value for the GOA catcher vessels in 2020 and is targeted primarily using fixed gear. GOA fixed gear sablefish retained catch increased 7% in 2020. The realized ex-vessel price of GOA fixed gear sablefish decreased 53% to $1.95/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $2.032/lb to $2.445/lb with a median of $2.233/lb, placing the realized price below the projected range. This year's price projections for the 2021 GOA fixed gear sablefish ex-vessel price have a median of $2.125/lb with 95% confidence bounds of $1.926/lb to $2.323/lb (Figure 7.7). These estimates imply that prices in 2021 will likely increase. Catch data through Oct. 2021 show a 33% increase in the year-over-year GOA fixed gear sablefish catch. GOA fixed gear sablefish ex-vessel price projections for 2022 and beyond based on historical trends indicate that expected prices may show mean reversion by increasing. Because of the substantial volatility a range of potential increases or decreases are plausible.

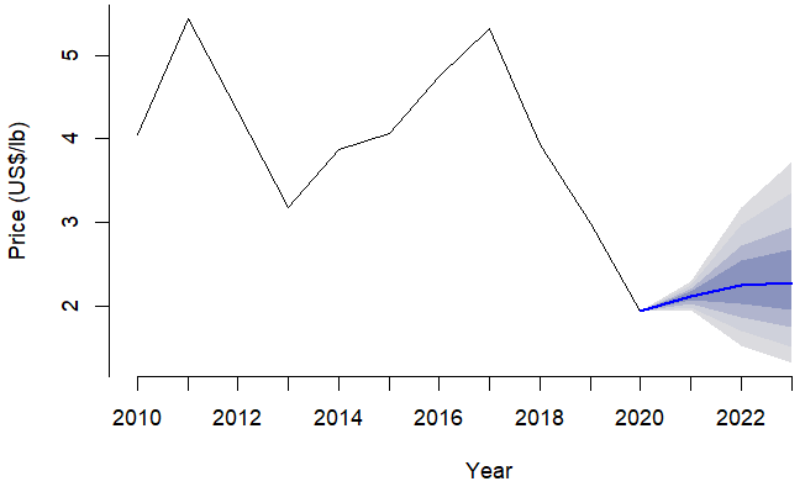

Figure 7.7: Sablefish GOA fixed gear ex-vessel price projections and confidence bounds

Table 7.9: Projected mean, probability bounds of sablefish GOA fixed gear ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.957	1.993	2.039	2.071	2.127	2.125	2.179	2.212	2.254	2.292
2022	1.529	1.705	1.877	2.027	2.258	2.285	2.553	2.725	2.979	3.177
2023	1.323	1.517	1.760	1.957	2.277	2.307	2.684	2.944	3.360	3.724

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Sablefish GOA fixed gear ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
21.00	22.96	22.68	21.97

7.5. First-Wholesale Product Price Projections

7.5.1 Alaska Pollock

In the North Pacific FMP groundfish fisheries 68% of the wholesale value came from Alaska pollock in 2020 (Tables 16 and 32). The primary products produced from pollock are surimi, fillets and roe. Fillets have been divided into deep-skin fillets and all other fillets (which are simply labeled fillets).

Pollock Surimi First-Wholesale Prices

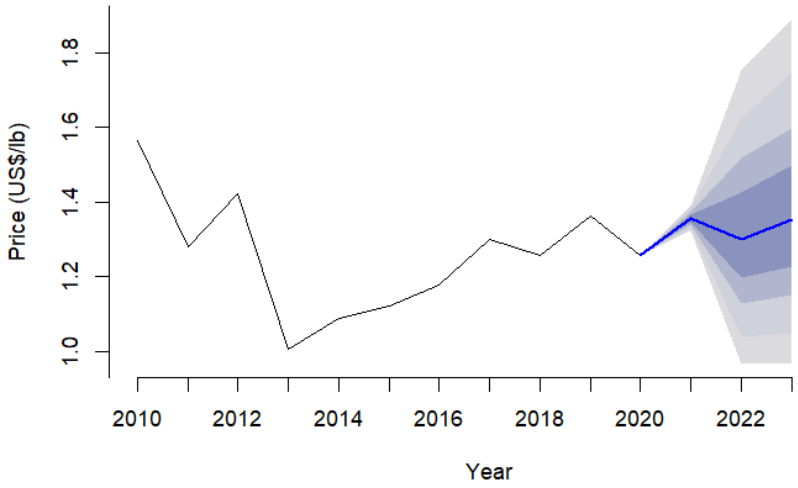

Figure 7.8: Pollock surimi wholesale price projections and confidence bounds

Table 7.10: Projected mean, probability bounds of pollock surimi wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.32	1.33	1.34	1.35	1.36	1.36	1.37	1.37	1.38	1.39
2022	0.97	1.04	1.13	1.20	1.30	1.30	1.43	1.52	1.62	1.75
2023	0.97	1.05	1.15	1.23	1.35	1.35	1.50	1.60	1.75	1.89

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock surimi wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
19.74	19.17	19.51	20.32

The production of pollock surimi increased 11% in 2020 and the first-wholesale price decreased 9% to \$1.256/lb. The price decrease was consistent with the decrease estimated last year but was below last year's estimated 95% confidence bounds for the 2020 price which were \$1.303/lb and \$1.411/lb with a median of \$1.358/lb. The current first-wholesale surimi 2021 price projection have a median of \$1.356/lb with 95% confidence bounds of \$1.317/lb to \$1.394/lb (Figure 7.8; Table 7.10). Surimi export prices tend to provide a reasonably good prediction of the state of surimi prices. These

estimates imply that a price increase in 2021 is likely. Production data through Oct. 17, 2021 show a 12% decrease in year-over-year surimi production. Projections of surimi prices for 2022 and beyond indicate that based on historical patterns prices may fluctuate with no expected trend up or down. Volatility projections suggest that the recent level of volatility may persist, increasing in the near-term and then reverting towards the historical average.

Pollock Fillet First-Wholesale Prices

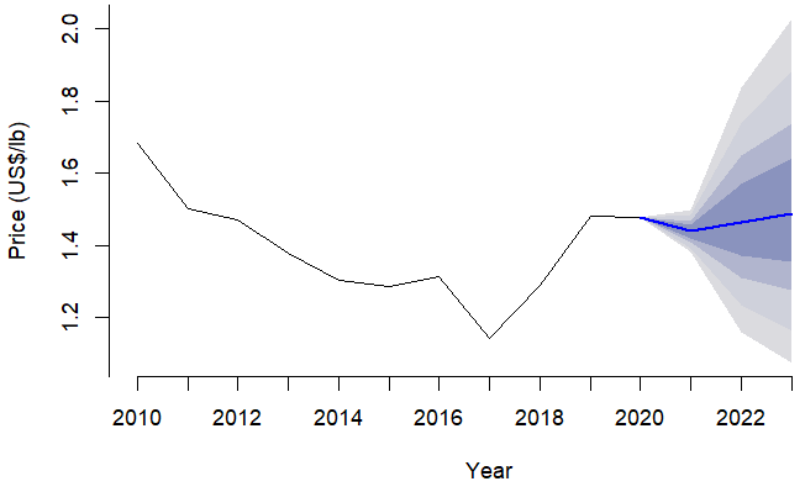

Figure 7.9: Pollock fillet wholesale price projections and confidence bounds

Table 7.11: Projected mean, probability bounds of pollock fillet wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.38	1.39	1.41	1.42	1.44	1.44	1.46	1.47	1.48	1.50
2022	1.16	1.23	1.31	1.37	1.46	1.47	1.57	1.65	1.74	1.84
2023	1.07	1.16	1.28	1.36	1.49	1.49	1.64	1.74	1.88	2.03

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock fillet wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
14.62	14.62	14.62	14.62

The production of pollock fillets decreased 22% in 2020 and prices were stable at $1.476/lb. The price was consistent with the projection from last year but was above last year's estimated confidence bounds which had a median of $1.384/lb and 95% confidence bounds of $1.312/lb to $1.456/lb. Current projections for the 2021 fillet price have a median of $1.439/lb with 95% confidence bounds of $1.369/lb to $1.507/lb (Figure 7.9). These estimates imply that prices are likely to decrease in 2021 though stable or slight increases are within the projected range. Production data through Oct. 17, 2021 show that year-over-year fillet production is down 13% in 2021. Projections of fillet prices for 2022 and beyond indicate that based on historical patterns expected prices do not exhibit a

significant trend. Volatility projections indicate that future volatility are constant. Because of the substantial volatility a range of potential increases or decreases are plausible.

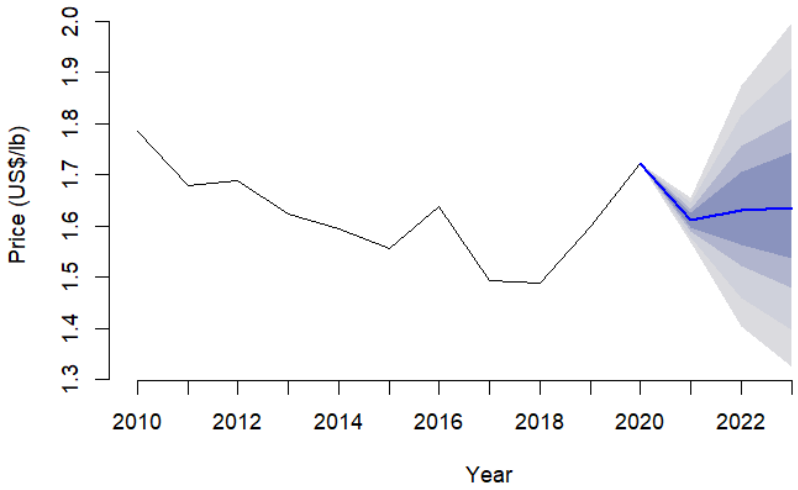

Figure 7.10: Pollock deep-skin fillet wholesale price projections and confidence bounds

Table 7.12: Projected mean, probability bounds of pollock deep-skin fillet wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.57	1.58	1.59	1.60	1.61	1.61	1.63	1.63	1.65	1.66
2022	1.41	1.46	1.52	1.56	1.63	1.63	1.71	1.76	1.82	1.87
2023	1.32	1.40	1.48	1.54	1.64	1.64	1.74	1.81	1.91	2.00

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock deep-skin fillet wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
9.22	9.14	9.61	12.39

The volume of deep-skin fillets produced increased 14% and prices increased 7% to $1.723/lb in 2020. The price increase was inconsistent with the projected decrease from last year and was above last year's estimated 95% confidence bounds of $1.524/lb to $1.636/lb with a median of $1.580/lb. Current estimates for the 2021 deep-skin fillet price have a median of $1.611/lb with 95% confidence bounds of $1.558/lb to $1.664/lb (Figure 7.10). These estimates imply that the 2021 price will likely decrease. Production data through Oct. 17 2021 indicate an 6% decrease in year-over-year production. Projections of deep-skin fillet prices for 2022 and beyond based on historical trends indicate that expected prices do not exhibit a significant trend or potential mean reversion. Because of the substantial volatility a range of potential increases or decreases are plausible. Volatility estimates indicate that expected return volatility may increase in the future.

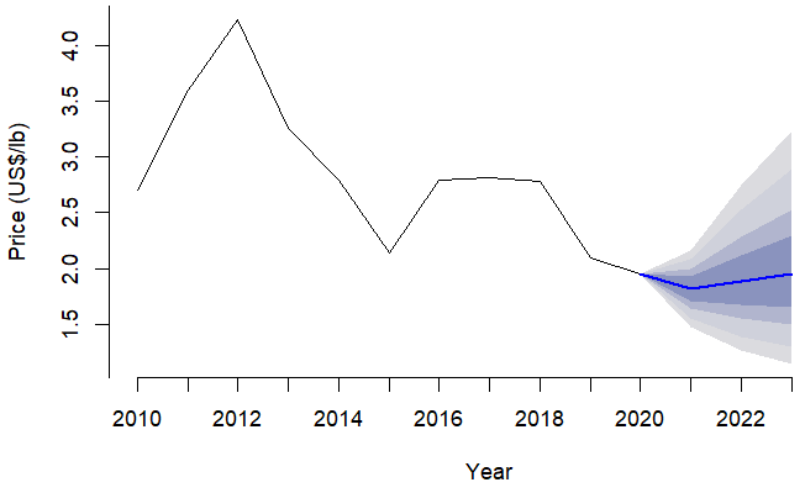

Figure 7.11: Pollock roe wholesale price projections and confidence bounds

Table 7.13: Projected mean, probability bounds of pollock roe wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.47	1.55	1.64	1.71	1.82	1.82	1.93	1.99	2.09	2.16
2022	1.26	1.39	1.55	1.67	1.89	1.88	2.12	2.28	2.52	2.75
2023	1.14	1.30	1.49	1.65	1.95	1.94	2.30	2.53	2.89	3.24

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock roe wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
21.88	21.37	22.28	22.79

Pollock Roe First-Wholesale Prices

Pollock roe production decreased 12% in 2020 and prices decreased 8% to $1.951/lb. The price decrease was consistent with the projected decrease from last year and was within last year's estimated 95% confidence bounds of $1.433/lb and $2.334/lb and a median of $1.888/lb. The projected first-wholesale pollock roe price for 2021 has a median of $1.816/lb with 95% confidence bounds of $1.406/lb to $2.226/lb (Figure 7.11). These estimates imply that a decrease in roe prices for 2021 is somewhat likely though stable or slight increases are within the projected range. Projections of roe prices for 2022 and beyond indicate that based on historical patterns prices may trend back up reverting back towards recent levels. Production data through Oct. 17, 2021 indicate that production is down 35% year-over-year. Because of the substantial volatility a range of potential increases or decreases are plausible. There is considerable volatility in pollock roe returns which is projected to increase in the long-run.

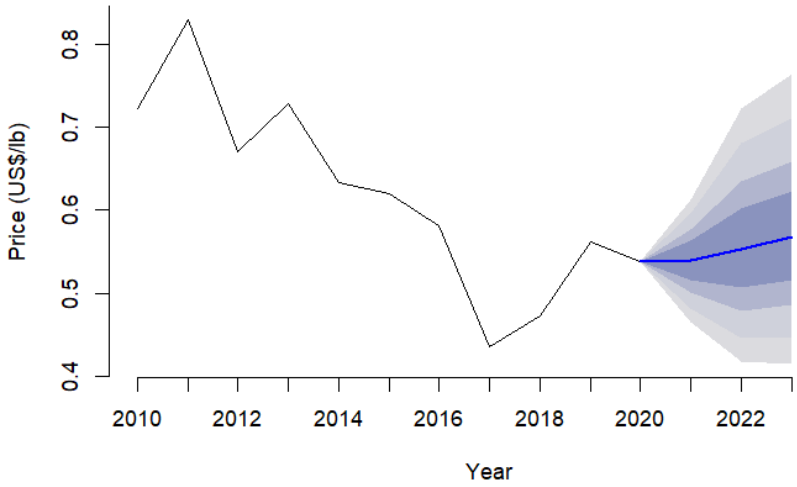

Figure 7.12: Pollock head and gut wholesale price projections and confidence bounds

Table 7.14: Projected mean, probability bounds of pollock head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.47	0.48	0.50	0.52	0.54	0.54	0.56	0.58	0.60	0.61
2022	0.42	0.45	0.48	0.51	0.55	0.55	0.60	0.63	0.68	0.72
2023	0.41	0.45	0.49	0.52	0.57	0.57	0.62	0.66	0.71	0.76

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pollock head and gut wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
15.07	14.99	15.01	14.95

Pollock H&G First-Wholesale Prices

Pollock head and gut production decreased 15% in 2020 and prices decreased 4% to $0.538/lb. The price decrease was consistent with the projected decrease from last year and was within last year's estimated 95% confidence bounds of $0.420/lb to $0.599/lb with a median of $0.510/lb. The projected first-wholesale pollock H&G price in 2021 has a median of $0.539/lb with 95% confidence bounds of $0.453/lb to $0.626/lb (Figure 7.12). These estimates imply that prices in 2021 will likely remain stable with the potential for increases or decreases also within the projected range. Production data through Oct. 17, 2020 indicate that 2021 H&G production is down 36% year-over-year. Export data on which projections are based do not have a distinct H&G code which contributes to the considerable volatility in H&G price projections. Because of the substantial volatility a range of potential increases or decreases are plausible in future years. Volatility projections indicate that future volatility may decrease marginally but remain fairly constant.

7.5.2 Pacific Cod First-Wholesale Prices

Pacific cod is mainly produced into the H&G product form, though fillets constitute a significant portion of the output, particularly for shoreside processors (Tables 16 and 32).

Pacific Cod H&G First-Wholesale Prices

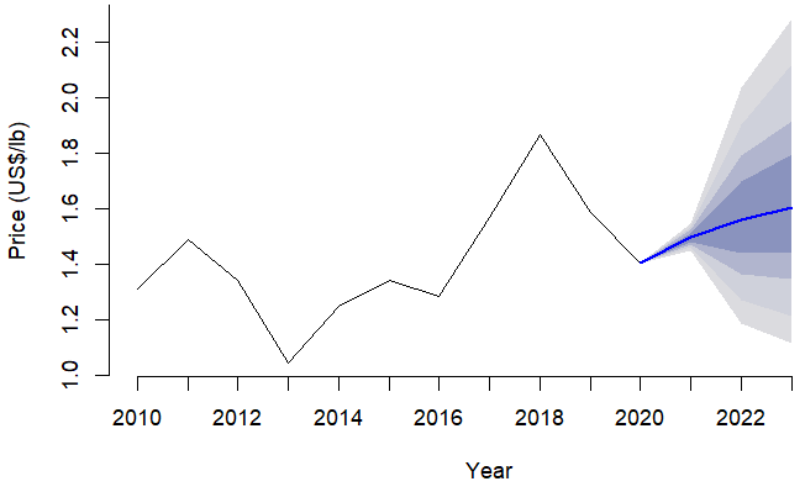

Figure 7.13: Pacific cod head and gut wholesale price projections and confidence bounds

Table 7.15: Projected mean, probability bounds of pacific cod head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.45	1.46	1.47	1.48	1.50	1.50	1.51	1.52	1.54	1.55
2022	1.19	1.27	1.37	1.44	1.56	1.57	1.70	1.79	1.90	2.04
2023	1.11	1.22	1.35	1.44	1.61	1.61	1.80	1.92	2.12	2.29

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod head and gut wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
17.39	17.29	17.44	17.42

Production of Pacific cod H&G decreased 23% in 2020 and realized prices decreased 13% to $1.404/lb. Price projections from last year's report indicated an decrease as well and had 95% confidence bounds of $1.368/lb to $1.523/lb with a median of $1.445/lb, placing the realized price within the projected range. The 2021 price projections 2021 H&G prices have an estimated median of $1.498/lb with 95% confidence bounds of $1.441/lb to $1.556/lb (Figure 7.13). These estimates indicate that prices will likely increase in 2021. Production data through Oct. 16, 2021 show a 9% reduction in the year-over-year production of H&G. Projections of cod H&G prices for 2022 and beyond indicate that based on historical patterns prices show an increasing trend, but also confidence bounds show a wide range of potential future prices. Volatility projections indicate that future volatility may increase.

Pacific Cod Fillet First-Wholesale Prices

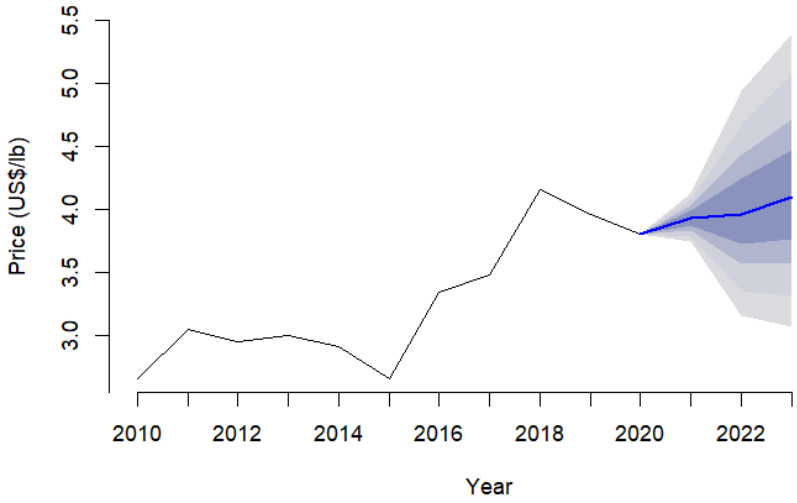

Figure 7.14: Pacific cod fillet wholesale price projections and confidence bounds

Table 7.16: Projected mean, probability bounds of pacific cod fillet wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	3.74	3.79	3.84	3.87	3.93	3.93	4.00	4.03	4.08	4.13
2022	3.16	3.35	3.57	3.72	3.96	3.97	4.24	4.43	4.67	4.94
2023	3.07	3.31	3.58	3.77	4.10	4.10	4.47	4.71	5.07	5.39

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Pacific cod fillet wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
15.82	13.93	15.15	20.46

Production of Pacific cod fillets decreased 17% in 2020 as prices rose 4% to $3.804/lb. Price projections from last year's report indicated a decrease as well and had 95% confidence bounds of $3.298/lb to $3.627/lb with a median of $3.464/lb, placing the realized price within the projected range. The current projections for 2021 first-wholesale cod fillets have median of $3.934/lb with 95% confidence bounds of $3.705/lb to $4.159/lb (Figure 7.14). These estimates indicate that an increase in 2021 cod fillet price is likely, though stable prices or decreases are also within the projected range. Production data through Oct. 16, 2021 show a 5% reduction in the year-over-year production of fillets. Fillet price projections for 2022 and beyond indicate future prices may to rise. Confidence bounds show a wide range of potential future prices reflecting the historical and projected volatility in the cod fillet price. Volatility projections indicate that future volatility may increase substantially.

7.5.3 Sablefish H&G First-Wholesale Prices

Sablefish is mostly produced into the head-and-gut product form at the first-wholesale level, comprising 93% of the value from sablefish products. Sablefish H&G production in 2020 increased

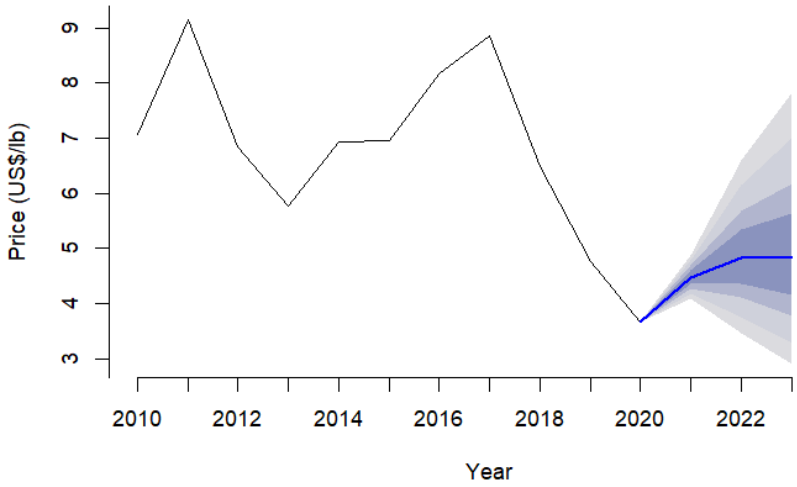

Figure 7.15: Sablefish head and gut ex-vessel price projections and confidence bounds

Table 7.17: Projected mean, probability bounds of sablefish head and gut ex-vessel prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	4.09	4.17	4.28	4.36	4.48	4.48	4.61	4.69	4.79	4.87
2022	3.47	3.76	4.11	4.37	4.82	4.83	5.34	5.68	6.15	6.60
2023	2.90	3.28	3.78	4.16	4.83	4.85	5.65	6.17	7.00	7.82

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Sablefish head and gut ex-vessel return volatility projections			
Hist. Avg.	2022	2023	Long-run
18.31	19.92	20.67	17.37

3%. The realized price of sablefish H&G in 2020 decreased 30% to $3.67/lb. Price projections from last year's report indicated a increase and had 95% confidence bounds of $4.680/lb to $5.424/lb with a median of $5.052/lb, placing the realized price below the projected range. This year's price projections for the 2021 first-wholesale sablefish H&G price have a median of $4.482/lb with 95% confidence bounds of $4.018/lb to $4.958/lb (Figure 7.15). These estimates imply that a price increase in 2021 is likely. Production data through Oct. 16, 2021 show 26% increase in the year-over-year production of sablefish H&G. Projections of sablefish H&G prices for 2022 and beyond indicate that based on historical patterns prices may trend back up reverting back towards recent levels, but also confidence bounds show a wide range of potential future prices. Volatility projections indicate a decrease in volatility in the long-run.

7.5.4 Atka Mackerel H&G First-Wholesale Prices

Greater than 90% of the Alaska caught Atka mackerel production volume is processed as head-and-gut. The Atka mackerel first-wholesale H&G production increased 0.4% in 2020 and price decreased 10% to $1.055/lb. Price projections from last year's report had 95% confidence bounds of

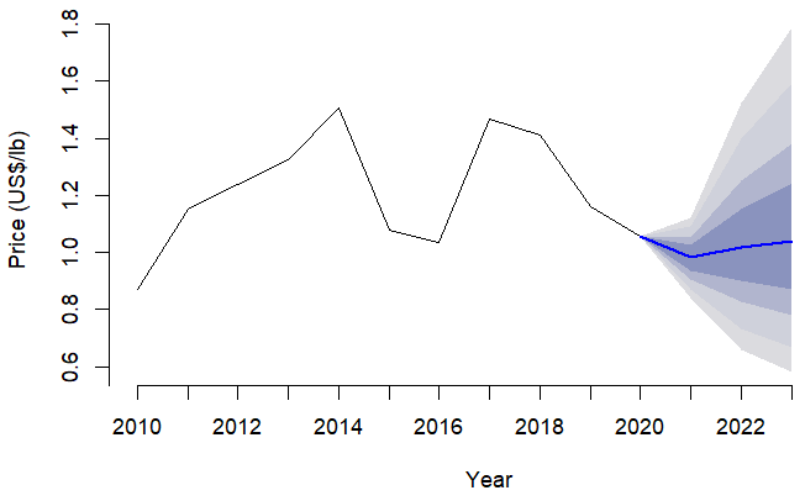

Figure 7.16: Atka mackerel head and gut wholesale price projections and confidence bounds

Table 7.18: Projected mean, probability bounds of atka mackerel head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.84	0.87	0.91	0.94	0.98	0.98	1.03	1.05	1.09	1.12
2022	0.66	0.73	0.83	0.90	1.02	1.02	1.15	1.25	1.40	1.53
2023	0.58	0.67	0.78	0.87	1.04	1.04	1.24	1.38	1.59	1.79

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Atka mackerel head and gut wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
25.56	25.56	25.56	25.56

$1.003/lb to $1.291/lb with a median of $1.146/lb, placing the realized price within the projected range. Current projections for the 2021 Atka mackerel H&G price have a median of $0.981/lb with 95% confidence bounds of $0.816/lb to $1.149/lb (Figure 7.15). These estimates imply that the 2021 Atka mackerel price will likely decrease, however marginal increases or stable prices are within the projected range. Production data through Oct. 16, 2021 show a 10% increase in the year-over-year production of H&G. Atka mackerel H&G price projections for 2022 and beyond based on historical trends indicate that expected prices may revert back to 2020 levels after which they do not exhibit a trend. Because of the substantial volatility a range of potential increases or decreases are plausible in the future. Volatility projections indicate future volatility levels will remain constant.

7.5.5 Flatfish First-Wholesale Prices

The two largest flatfish species in terms of market value and volume are yellowfin and rock sole in the BSAI. Arrowtooth flounder is the predominant species caught in the GOA and in also caught in

substantial quantities in the BSAI. The market shares for other flatfish fisheries are comparatively smaller. Flatfish are primarily processed into the head-and-gut product form.

Yellowfin Sole H&G First-Wholesale Prices

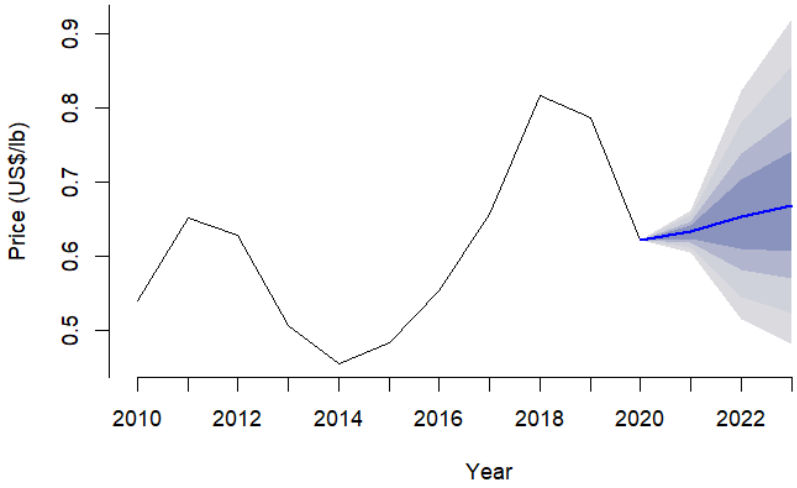

Figure 7.17: Yellowfin (BSAI) head and gut wholesale price projections and confidence bounds

Table 7.19: Projected mean, probability bounds of yellowfin (BSAI) head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.60	0.61	0.62	0.62	0.63	0.63	0.64	0.65	0.65	0.66
2022	0.51	0.54	0.58	0.61	0.65	0.65	0.70	0.74	0.78	0.82
2023	0.48	0.52	0.57	0.61	0.67	0.67	0.74	0.79	0.86	0.92

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Yellowfin (BSAI) head and gut wholesale return volatility projections

Hist. Avg.	2022	2023	Long-run
14.34	15.09	12.99	13.73

The yellowfin sole first-wholesale H&G production decreased 4% in 2020 and the first-wholesale price decreased 26% to $0.622/lb. This price was consistent with the price projection from last year's report that estimated that prices would decrease, but was below the estimated 95% confidence bounds of $0.692/lb and $0.788/lb and median of $0.740/lb. This year's projection for 2021 yellowfin sole H&G prices estimate a median of $0.633/lb with 95% confidence bounds of $0.599/lb to $0.666/lb (Figure 7.17). These estimates imply that a price increase in 2021 is somewhat likely, however the 2020 price falls within the projected bounds indicating the possibility that prices may remain stable. Production data through Oct. 16, 2021 show a 12% decrease in the year-over-year production of H&G. Yellowfin sole H&G price projections for 2022 and beyond based on historical trends indicate that expected prices may trend up slightly. Because of the substantial volatility a

range of potential increases or decreases are plausible. Volatility projections indicate a decrease in future volatility.

Rock Sole H&G First-Wholesale Prices

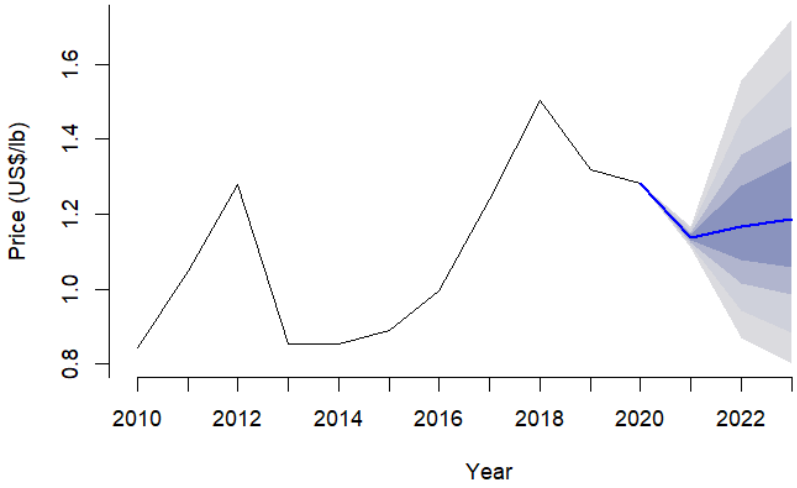

Figure 7.18: Rock sole (BSAI) head and gut with roe wholesale price projections and confidence bounds

Table 7.20: Projected mean, probability bounds of rock sole (BSAI) head and gut with roe wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	1.11	1.12	1.12	1.13	1.14	1.14	1.15	1.15	1.16	1.17
2022	0.87	0.94	1.02	1.08	1.17	1.17	1.27	1.36	1.45	1.56
2023	0.80	0.88	0.98	1.06	1.19	1.19	1.34	1.44	1.59	1.72

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Rock sole (BSAI) head and gut with roe wholesale return volatility projections

Hist. Avg.	2022	2023	Long-run
18.78	18.78	18.78	18.78

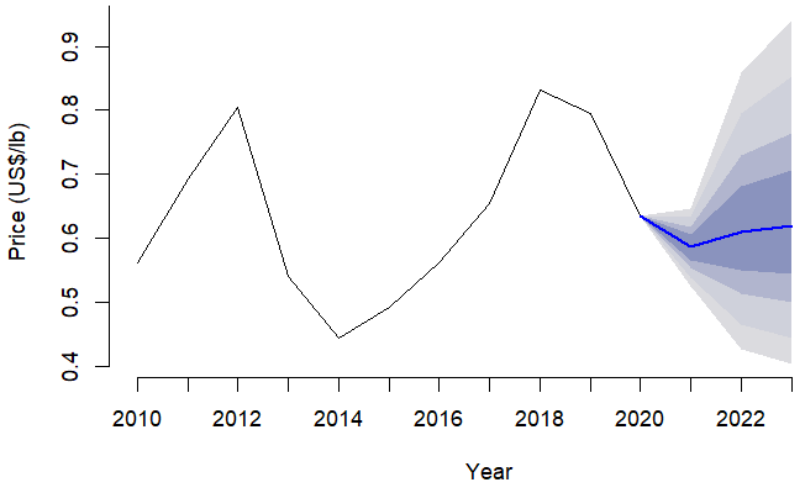

Figure 7.19: Rock sole (BSAI) head and gut wholesale price projections and confidence bounds

Table 7.21: Projected mean, probability bounds of rock sole (BSAI) head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.53	0.54	0.55	0.57	0.59	0.59	0.61	0.62	0.63	0.65
2022	0.43	0.47	0.51	0.55	0.61	0.61	0.68	0.73	0.80	0.86
2023	0.40	0.44	0.50	0.55	0.62	0.62	0.71	0.76	0.85	0.94

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Rock sole (BSAI) head and gut wholesale return volatility projections

Hist. Avg.	2022	2023	Long-run
22.35	21.59	22.76	22.87

The majority of rock sole is processed into two product forms; H&G with roe is a higher priced product with slightly different price dynamics than the other product form H&G (without roe) (Figures 7.18 and 7.19).

The first-wholesale production of rock sole H&G with roe increased 99% in 2020 and the price decreased 3% to $1.283/lb. Price projections from last year's report indicated a decrease which had 95% confidence bounds of $1.169/lb and $1.258/lb with a median of $1.214/lb, placing the realized price above the projected range. This year's projection for the 2021 rock sole H&G with roe price has a median of $1.138/lb with 95% confidence bounds of $1.106/lb to $1.172/lb (Figure 7.18) indicating that it is likely that prices will decrease. Production data through Oct. 16, 2021 show a 85% decrease in the year-over-year production of H&G with roe. The price projection for 2022 and beyond show that prices may rebound somewhat in 2022. Because of the substantial volatility a range of potential increases or decreases are plausible in future years.

The first-wholesale production of rock sole H&G (without roe) decreased 7% in 2020 and the price decreased 25% to $0.635/lb. Price projections from last year's report indicated a decrease which had 95% confidence bounds of $0.487/lb to $0.674/lb with a median of $0.580/lb, placing the realized

price within the projected range. This year's projections estimate the 2021 rock sole H&G (without roe) median price will decrease with a median of $0.586/lb with 95% confidence bounds of $0.514/lb to $0.658/lb (Figure 7.19). Production data through Oct. 16, 2021 show a 43% decrease in the year-over-year production of H&G for 2021. The price projection for 2022 and beyond indicate that prices may rebound in 2022.

Arrowtooth Flounder H&G First-Wholesale Prices

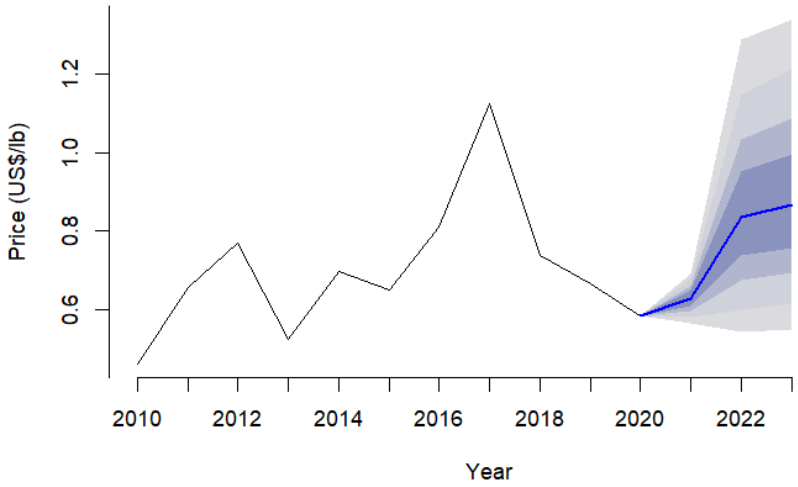

Figure 7.20: Arrowtooth head and gut wholesale price projections and confidence bounds

Table 7.22: Projected mean, probability bounds of arrowtooth head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.56	0.58	0.60	0.61	0.63	0.63	0.65	0.66	0.68	0.69
2022	0.54	0.60	0.68	0.74	0.84	0.84	0.95	1.03	1.15	1.29
2023	0.55	0.62	0.70	0.76	0.87	0.87	1.00	1.09	1.21	1.34

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Arrowtooth head and gut wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
26.17	26.35	27.69	25.80

Arrowtooth flounder are primarily produced into the head-and-gut product form. The first-wholesale production of arrowtooth H&G decreased 8% in 2020 and the price decreased 14% to $0.583/lb. This value was below last year's estimated 95% confidence bounds of $0.616/lb and $0.715/lb, and a median $0.666/lb. This year's price projections for the 2021 arrowtooth H&G price have a median of $0.628/lb with 95% confidence bounds of $0.551/lb to $0.705/lb (Figure 7.20). These estimates indicate that prices will likely increase with the potential for stable or a marginal price decrease falling within the projected range. Production data through Oct. 16, 2021 show a 35% increase in the year-over-year production of H&G for 2021. Projections for 2022 and beyond indicate

an increase with a return to the pre-2021 trend. Because of the substantial volatility a range of potential increases or decreases are plausible. Export data aggregate arrowtooth into a general flatfish category which can reduce the accuracy of the model depending on how well year-over-year changes in the arrowtooth price match changes for this general flatfish group.

7.5.6 Rockfish H&G First-Wholesale Prices

Rockfish fisheries have historically been aggregated into a species complex in this report. Species within the complex include northern rockfish, Pacific Ocean perch, rougheye rockfish, shortraker rockfish, dusky rockfish and thornyhead rockfish. The only rockfish species defined in the export data is Pacific Ocean perch (POP) which is used to nowcast current first-wholesale prices for the aggregate rockfish complex. Price projections are included here to provide the best available estimates of prices given the information available. Rockfish are primarily produced into the head-and-gut product form.

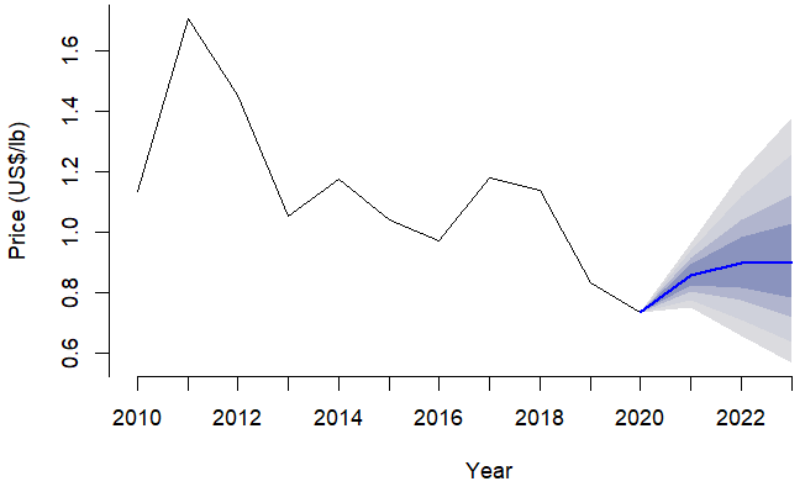

Figure 7.21: Rockfish head and gut wholesale price projections and confidence bounds

Table 7.23: Projected mean, probability bounds of rockfish head and gut wholesale prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2021	0.75	0.78	0.81	0.83	0.86	0.86	0.89	0.91	0.94	0.96
2022	0.66	0.71	0.78	0.82	0.90	0.90	0.98	1.04	1.12	1.20
2023	0.57	0.64	0.72	0.79	0.90	0.90	1.03	1.12	1.26	1.38

At the 'Lower' and 'Upper' bounds x% of the simulated prices were less. The confidence bounds are the regions between the 'Upper' and 'Lower' bounds.

Rockfish head and gut wholesale return volatility projections			
Hist. Avg.	2022	2023	Long-run
18.54	17.77	19.12	18.91

First-wholesale rockfish H&G prices decreased 13% to $0.738/lb in 2020 (Figure 7.21). This value was below the last year's 95% confidence bounds of $0.765/lb and $1.008/lb with a median of

$0.887/lb. Projections for the 2021 price have a median of $0.86/lb with 95% confidence bounds of $0.733/lb to $0.984/lb indicating that 2021 prices are likely to increase although stable prices are within the projected range.

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8. WHOLESALE MARKET PROFILES FOR ALASKA GROUNDFISH

The Alaska Groundfish Wholesale Market Profiles was prepared for Alaska Fisheries Science Center (AFSC) by McDowell Group in collaboration with AFSC and Pacific States Marine Fisheries Commission. This section is an extract from the full Profiles report.

Note: AKFIN and COAR data used in the Profiles report may not match other figures in the Economic SAFE exactly because different versions of the data sets were used independently in the analysis.

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This section of the *Economic Status Report of the Groundfish Fisheries off Alaska, 2019* is extracted from the content in the larger and more comprehensive Alaska Groundfish Wholesale Market Profiles (https://repository.library.noaa.gov/view/noaa/25242). The analysis was conducted during the winter of 2018 and spring of 2019, based primarily on 2017 harvest and market data. For data sourced from NMFS and AKFIN the reader should refer to the Economic Status Report of the Groundfish Fisheries Off Alaska, 2017. The following section of the report covers the primary wholesale products for the high valued FMP groundfish species Alaska pollock, Pacific cod, sablefish, yellowfin sole, rock sole, Atka mackerel, Pacific Ocean perch, and arrowtooth. The full Alaska Groundfish Wholesale Market Profiles report contains more extensive analysis and covers additional species and products not contained here, including Pacific halibut, king crab and snow crab.

The profiles provide an overview of the wholesale markets related to primary Alaska groundfish species and/or products. Most of the wholesale data and analysis outside of this section pertains to first wholesale markets. This section and the Market Profiles report provide a broader analysis on wholesale markets from production to consumers. Each profile in this series contains detailed information about key markets and competing supply for individual species or products, while this chapter contextualizes Alaska groundfish production versus the rest of the world. Each profile characterizes wholesale production volume and value, product mix, supply chain, competing supply, and key markets. Values and prices throughout this section are nominal unless stated otherwise.

Data Sources:

In general: Alaska groundfish and crab production were sourced from the NMFS Alaska Region At-sea and Shoreside Production Report which was combined with prices derived from the ADF&G Commercial Operators Annual Reports (COAR) to produce data on value (Data provided by the Alaska Fisheries Information Network (AKFIN)). Alaska groundfish harvest data for recent years are sourced from NMFS Alaska Region Blend and Catch-accounting System estimates and crab harvest from ADFG/CFEC Fish Tickets (Data provided by the Alaska Fisheries Information Network (AKFIN)). Historical harvest data for U.S. fisheries were sourced from NMFS Office of Science and Technology, Annual Commercial Fisheries Statistics Database. Global harvest data were sourced from FAO Fisheries and Aquaculture Department. Fisheries statistics and information. U.S. export and import trade data were sourced from NMFS Office of Science and Technology, Foreign Fishery Trade Data. Global export and import trade data were sourced from IHS Markit. Global Trade Atlas: International Import and Export Commodity Trade Data. Exchange rate data were sourced from Board of Governors of the Federal Reserve System (US), FRED, Federal Reserve Bank of St. Louis. For details on specific tables, figures or values see information in the notes, sources or contact authors.

8.1. Global Groundfish Production & Key Markets

8.1.1 Global Whitefish and Other Marine Fish Production

Alaska's groundfish fisheries are of particular global importance thanks to their production of whitefish; Alaska produces approximately 21 percent of global marine wild-harvest whitefish annually. Whitefish generally refers to non-oily species like cod, pollock, haddock, hake, whiting, and benthic flatfish species, such as sole, plaice, flounder, and halibut (Table 8.1). These species - primarily caught in wild fisheries - also compete in global seafood markets with notable aquaculture species such as tilapia and pangasius. Though there are different perceptions of quality and price premiums

within this range of species, they are all competitors and may be substituted depending on price and availability.

Table 8.1: Global whitefish production, in metric tons, 2016

Species	2016 Harvest Volume (mt)	Alaska Pct. Of Global Production (2016)	Primary Uses
Pollock	3,476,149	44%	Meat, Surimi, Meal/Oil
Hakes, Hoki, Lings, and Whiting	2,813,434	0%	Meat, Surimi, Meal/Oil
Cod[1] and Haddock	2,106,327	15%	Meat
Sole, Flounder, and Plaice	715,493	33%	Meat
Saithe	298,086	0%	Meat
Other Whitefish (Whitefish and Cod Varieties)	84,085	0%	Meat
Halibuts and Turbots	212,433	5%	Meat
Total Wild Whitefish (Capture Fisheries)	**9,706,007**	**21%**	
Tilapias and Cichlids (Farmed and Capture)	6,685,921	0%	Meat
Pangasius (Farmed)	1,757,843	0%	Meat
Total - Tilapias and Pangasius	**8,443,764**	**-**	
Total Wild Whitefish, Tilapia, and Pangasius	**18,149,771**	**11%**	

Notes: Global harvest/production data for 2017 is not yet available.
1. Pacific and Atlantic cod only.

Source: FAO, compiled by McDowell Group.

Globally, 9.7 million metric tons of whitefish were harvested in 2016, with Alaska pollock being the largest component of this group at 3.5 million metric tons (Table 8.1). Following Alaska pollock, 2.8 million metric tons of hakes, hoki, lings, and whitings were harvested. While the majority of production of these high-volume species is used for meat, surimi production is also a crfitically important product. Roe, fish meal, fish oil, and other ancillary products are also produced in significant volumes from these wild marine fish species.

After pollock and hakes/hoki/lings/whiting, the next most important whitefish species group is cod/haddock, with a total global harvest of 2.1 million metric tons. The vast majority of these fish are used to produce fillets that could represent a substitute for key Alaska groundfish species on a general level, especially in European and North American markets. While consumers generally will not substitute imported whitefish species for less expensive and traditionally palatable domestic species, frozen seafood manufacturers increasingly develop products and packaging that allows them to use multiple species for the same product, permitting them greater sourcing options and the ability to lower costs. Flatfish are another key whitefish species and Alaska produces an estiamted 33% of the global supply. Most Alaska flatfish exports are reporecessed as fillets in China. Important markets for flatfish include Japan, U.S., and Europe.

In addition to whitefish, Alaska's groundfish fisheries produce significant volumes of rockfish, Pacific Ocean perch, sablefish, and Atka mackerel (Table 8.2). Though these species also have white flesh, they are treated separately due to their oil content and where they compete within the overall seafood hierarchy; rockfish would most closely compete with "snappers" while sablefish compete directly with the ultra-premium Antarctic and Patagonia toothfish. Alaska harvested more than 18 percent of the world's snappers, rockfish, sablefish, and Antarctic/Patagonia toothfish in 2016.

Table 8.2: Global production of snappers/rockfish and sablefish/toothfish, in metric tons, 2016

Species	2016 Harvest Volume (mt)	Alaska Pct. Of Global Production (2016)	Primary Uses
Snappers and Rockfish (Includes Pacific Ocean Perch)	360,757	18%	Meat
Sablefish and Antarctic/Patagonia Toothfish	46,886	21%	Meat
Total Wild Snappers, Rockfish, and Toothfish	**119,965**	**20%**	

Source: FAO, compiled by McDowell Group.

8.1.2 Alaska's Position in the Global Whitefish Market

Alaska produces a fraction of global whitefish production and is thus highly impacted by global macroeconomic trends, trade policies, and competing whitefish supply. In terms of supply, Russia (cod/pollock/flatfish), China (tilapia), Norway (cod), Japan (pollock/cod), New Zealand (hoki), and Vietnam (pangasius) are the biggest competitors for Alaska's high-volume whitefish species. Other species like POP and Atka mackerel have both defined export markets and limited competition where Alaska is the primary export supplier and generally accounts for a larger percent of global supply. As a result, species substitution is less common in markets for these species with price driven by local demand dynamics, currency fluctuations, and Alaska harvest volume. Once almost exclusively dependent on the Japanese market, sablefish markets have expanded around the world, and is now well-known and sought-after by chefs and discerning consumers.

8.1.3 Alaska Groundfish Production and Market Summary

In 2016, 2.2 million mt of groundfish were harvested off Alaska, with roughly two-thirds of this volume made up of pollock. Table 8.3 summarizes production volume, value, key markets, and the percentage of global production for Alaska groundfish species and products. Alaska accounts for a significant share of global whitefish production. The U.S. domestic market has grown in importance for Alaska's groundfish fisheries, with Europe, Japan, China, and South Korea remaining key export markets for Alaska groundfish.

Export markets buy about 69 percent of Alaska's total groundfish production, and an even larger percentage of surimi, roe, fish meal, and other groundfish products. China is the largest wholesale market for groundfish, accounting for 24 percent of estimated sales volume in 2017, with the largest single export product being flatfish. However, the vast majority of Alaska groundfish exported to China is re-exported to Europe, the U.S., and Japan. Japan is the second largest overall market for

Table 8.3: Alaska groundfish production and market summary, 2017.

Species/Product	First Wholesale Value ($millions)	Alaska Production (mt)	Key Markets
Pollock – Fillets	$480	173,000	Europe
Pollock – Surimi	595	207,000	Japan/Korea
Pollock – Roe	121	19,500	Japan
Pollock – Other	242	205,000	China*
Pacific Cod	510	137,000	U.S.
Soles, Flounders, and Plaice	230	135,000	China*
Pacific Halibut	117	9,300	U.S.
Sablefish	124	6,600	Japan
Rockfish	16	6,000	U.S.
Pacific Ocean Perch[1]	64	26,000	China*
Atka Mackerel	128	42,200	Japan
Other	7	3,300	Korea

Notes: *Denotes re-export market. Alaska production figures are rounded.
1. While Pacific Ocean perch is also considered a rockfish, it is separated here due to its volume and that it is almost exclusively exported.

Source: AKFIN, ADF&G (COAR), and McDowell Group estimates.

Alaska groundfish due to the high volume of pollock roe, surimi, and cod which enter the market. Europe is particularly important for pollock fillets, surimi, and H/G Pacific cod production, though its importance has been somewhat diminished due to the recent abundance of its own whitefish harvests.

With an estimated 31 percent of Alaska groundfish production remaining in the U.S. – and a great deal more processed in China and re-exported back the U.S. – the U.S. is the largest consumer of Alaska groundfish. This position could remain steady or increase in coming years due to tariffs and technical trade barriers imposed on China and Vietnam, and the persistent strength of the U.S. dollar.

8.2. Alaska Pollock Product Market Profiles

Pollock or walleye pollock (*Gadus chalcogrammus*) is currently the largest single-species fishery in the world, with stocks concentrated in the North Pacific Ocean.[1] Pollock are commercially harvested by several countries, but U.S. (Alaska) and Russia are the largest producers by a wide margin. Pollock harvests in Alaska are significant on a national scale, accounting for 28 percent of total U.S. commercial fishery in 2017. Alaskan pollock accounted for 63 percent of Alaska's groundfish production volume and 57 percent of first wholesale value in 2017 (Table 8.4). Alaskan pollock is processed into fillets, surimi, roe, head/gut (H&G), fish meal, fish oil, and other products. Europe, Japan, and U.S. are the primary consumer markets.

[1]Note: Differentiating pollock by its place of origin, primarily Russia or Alaska, can be confusing due to the widespread use of the name Alaska pollock. To avoid confusion, we use the term "pollock" to refer to Gadus chalcogrammus from any country/place. References to pollock from a specific place are called out by name (e.g. "Alaskan pollock" or "Russian pollock").

Table 8.4: Summary profile of Alaska pollock wholesale production and markets, 2017.

Value and Volume		Key Products	Fillets	Surimi	Roe	Meal	Other
First Wholesale Production (mt)	604,426	Pct. of Value	33%	41%	8%	7%	11%
Pct. of Global Pollock Harvest	45%	Key Markets	Japan	Europe	US	Korea	China
First Wholesale Value ($millions)	$1,438	Pct. of 1st Sales	18%	24%	23%	17%	14%
Pct. Change in Value from 2013-2017	3.2%	YoY Change	13%	-6%	-9%	-14%	16%
Pct. of Alaska Groundfish Value	57%	Competing Species: Russian pollock, hake, hoki, tropical surimi, & cod.					

Alaskan Pollock Production

Wholesale Production and Value Summary

Pollock is one of the most valuable fisheries in Alaska, and even the world, due to its tremendous volume, production versatility, and white, mild-flavored flesh. Virtually all edible pollock products are frozen before being sold into wholesale markets. Alaska pollock harvests yielded 604,426 mt of processed product in 2017, with a first wholesale value of $1.44 billion (Figure 8.1).

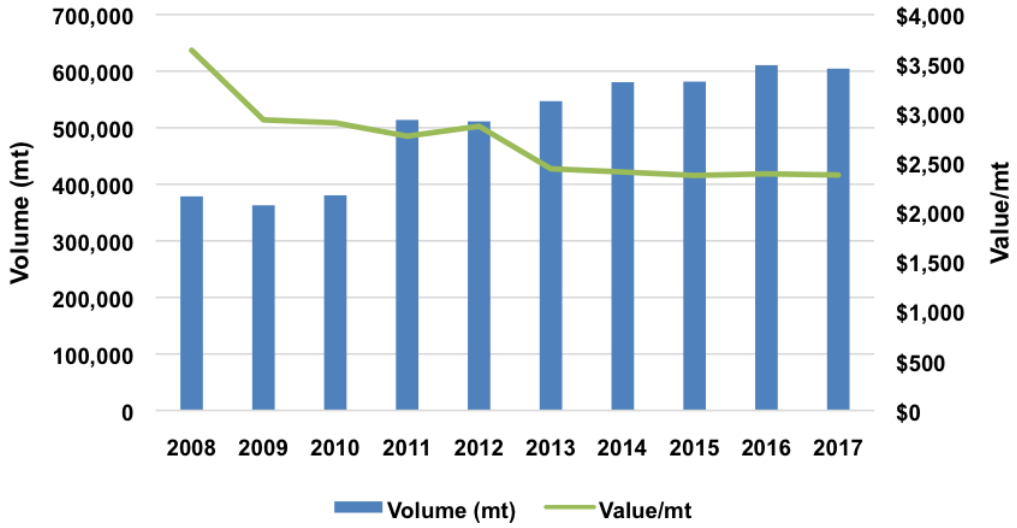


Figure 8.1: First wholesale volume and value for Alaska pollock, 2008-2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$1,378	$1,065	$1,106	$1,424	$1,468	$1,336	$1,399	$1,381	$1,460	$1,438

Source: AKFIN.

Alaskan pollock yield five primary product types: surimi, fillets, head/gut, roe, and fish meal/oil (Figure 8.2). In 2017 34 percent of that volume was surimi, followed by 29 percent fillet, 11 percent fish meal, 10 percent H&G, 3 percent roe, and the remainder in other products such as minced meat, fish oil, and organs.

Fillets typically provide the most revenue of any product type, though surimi topped the list in 2017. Together fillets and surimi accounted for 75 percent of Alaskan pollock's first wholesale value

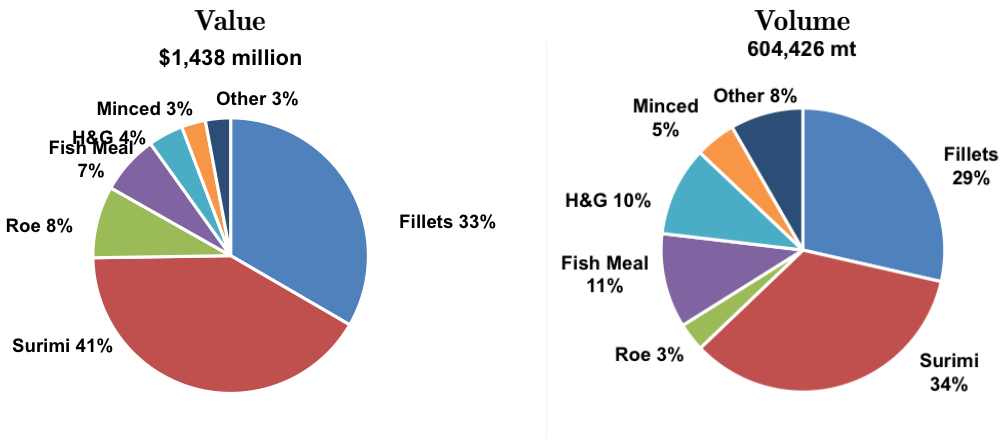


Figure 8.2: Alaska pollock first wholesale production volume and value, by product type, 2017
Notes: Percentages may not sum to 100 percent due to rounding.
Source: AKFIN.

in 2017. Although roe is only 3 percent of the production volume, it accounts for 8 percent of the fish's value and typically has the highest profit margin per unit of production. Fish meal/oil, minced meat, and other ancillary products account for 10 percent of the value, while head/gut production is 7 percent.

8.2.1 Alaskan Pollock Fillets

Pollock fillets function as a whitefish commodity for production of fish sticks/fingers, breaded fillets, and other value-added frozen whitefish fillet products. The majority of Alaskan pollock fillets are processed into frozen blocks of skinless or deep-skinned fillets. Pollock fillets are also produced at secondary processing facilities in China and Europe using imported H&G product. However, the fish must be thawed and re-frozen after processing, creating what is known as twice-frozen fillets. Once-frozen and twice-frozen Alaska pollock fillets compete in most of the same markets, but once-frozen product sells at a premium due to its higher quality and purity. Whether the fish is processed in Alaska or abroad, the primary product forms are skinless/boneless fillets (PBO) and deep-skinned fillets.

The two primary markets for fillets are the U.S. and Europe. Pollock fillets are primarily used in frozen, generic whitefish products, such as fish sticks/fingers, breaded fish fillets/patties, and other value-added frozen products. They are popular in quick service restaurants such as McDonald's and Long John Silver's. Frozen products made from pollock fillets are widely available in most European and North American grocery stores.

Supply Chain

When pollock is landed in Alaska, it enters one of the most complex supply chains of any groundfish species. Landed fish are first headed and gutted. Heads and other offal are turned into fish meal/oil or retained for other niche markets. Pollock meat is generally used to make either surimi or fillets. The majority of Alaska's once-frozen fillet production is exported to secondary processing companies in Europe, while a lesser amount goes to similar companies in the U.S. Most H&G production is

exported to China for twice-frozen fillet production. European and Brazilian processors import significant volumes of twice-frozen fillets from China and other countries. Secondary processors manufacture a range of breaded, coated, salted, and other products, mostly for high-volume retail, foodservice, or distribution companies.

Fillet Production Analysis

Fillets accounted for 29 percent of all Alaskan pollock production volume in 2017. Fillets were the second most valuable pollock product form in 2017 in terms of total revenue, after surimi. Fillet production declined slightly in 2017, due to an increasing emphasis on surimi (and despite increased harvest levels). The average wholesale value per mt decreased more or less steadily from 2013 to 2017, declining 13 percent over the period (Figure 8.3). This decline was, in part, influenced by competition from Russian pollock and other market factors. The price decline was greater for skinless/boneless fillets (-17 percent) compared to deep skin fillets (-8 percent) – helping explain deep skin's relative increase in production over this period. Skinless/boneless fillet production decreased 9 percent between 2013 and 2017, while deep-skinned fillet production increased 14 percent to a record high.

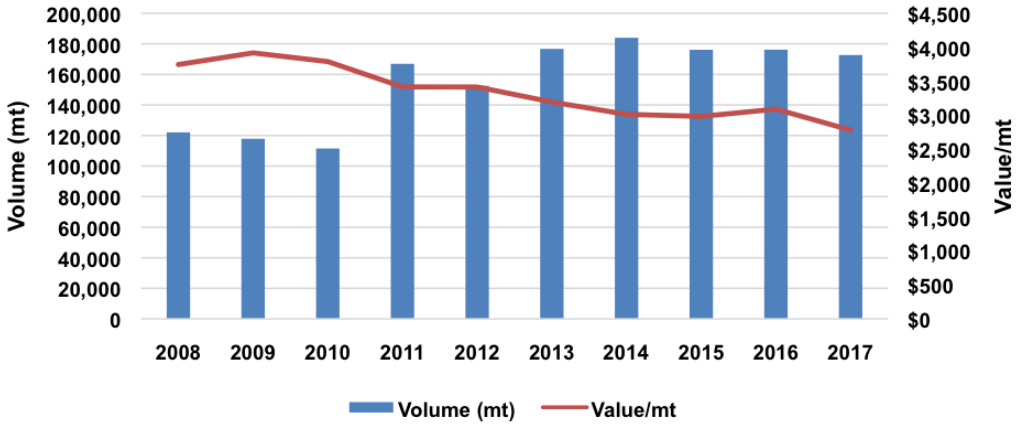


Figure 8.3: First wholesale volume and value for Alaska pollock fillets, 2008-2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$457	$462	$422	$570	$521	$564	$554	$525	$544	$480

Source: AKFIN.

Due mostly to lower fillet prices, the total value of Alaska pollock fillet production decreased 15 percent from 2013 through 2017. Export data for 2018 show a rebound in fillet prices to close to $3,000 per mt. Similarly, trade press reports 2018 A-season prices for once-frozen PBO blocks at $3,000/mt with contracts for 2019 A-season starting at $3,500/mt.[2] While these prices represent a sharp increase, from a long-term perspective they can be seen as a return to the norm.

[2]https://www.undercurrentnews.com/2018/11/19/only-way-is-up-for-pollock-prices-in-2019/

Fillet Market Analysis

Export markets are critically important to Alaska's pollock industry. It is estimated that export markets buy nearly three-quarters of all Alaskan pollock fillet production (Table 8.5). Almost two-thirds of all Alaskan pollock fillets go directly to European markets. In addition, the majority of Alaskan pollock fillets exported to China are eventually re-exported to Europe. The pollock industry has avoided U.S. tariffs that would have a significant negative impact on them in the U.S.-China trade war. However, Chinese tariffs on U.S. products could inhibit growth in that market.

Table 8.5: Sales of Alaska pollock fillets to key markets (mt), 2013-2017

Market	2013	2014	2015	2016	2017	Pct. of Total (5-yr. Avg.)
Europe[1]	103,787	119,972	109,487	107,465	97,897	61%
China*	4,632	4,526	5,615	9,021	18,474	5%
South Korea*	848	839	2,726	5,828	1,351	1%
Canada	1,689	1,164	760	551	6,482	1%
Japan	903	277	1,131	980	2,643	1%
Australia	929	1,096	1,158	1,100	1,213	1%
Other Countries	2,064	3,943	3,276	2,763	2,635	2%
Total Exports	**114,852**	**131,819**	**124,153**	**127,708**	**130,694**	**71%**
U.S. (Estimated)[2]	61,865	52,151	51,956	48,469	41,981	29%
Total Production	**176,717**	**183,970**	**176,109**	**176,177**	**172,675**	**100%**
Percent Exported	65%	72%	70%	72%	76%	

Notes: Data pertains to primary exports only, does not portray product which may be re-exported to other markets. * Denotes countries which primarily re-process and/or re-export product to other markets.
[1] Includes all countries in the European Single Market.
[2] Estimated based on annual production less calendar year exports.

Source: ASMI Export Database, AKFIN, and McDowell Group estimates.

Estimates indicate that domestic market purchases decreased steadily over the 2013 to 2017 period – both in volume (61,865 mt to 41,981 mt) and as a percent of Alaska's total fillet production (from 35 percent to 24 percent). This indicates comparatively strong export markets, primarily in Europe where demand could be increasing in part due to high cod prices driving substitution, among other factors.

Europe Europe is the world's largest market for pollock fillets. European countries account for 80 to 90 percent of all U.S. pollock fillet export value. European markets imported 97,897 mt of Alaskan pollock fillets in 2017, worth $257 million (Figure 8.4). Alaskan pollock fillets are primarily exported to Europe via Germany and the Netherlands. Most secondary processing into finished products occurs in Germany, France, and Poland. Germany is the largest consumer of pollock fillets, although France and the U.K. are also major consumer markets in Europe. Europe has a long history of whitefish consumption, so the presence of pollock as an affordable substitute to cod is common in most countries. Overall consumption of finished product is mostly a function of population, the prevalence of modern grocery stores, and median household incomes.

The total volume of exports to Europe have remained more or less steady in recent years, though export value/mt has continued a steady, long-term decline as export prices declined 24 percent from $3,455 to $2,630 from 2010 to 2017.

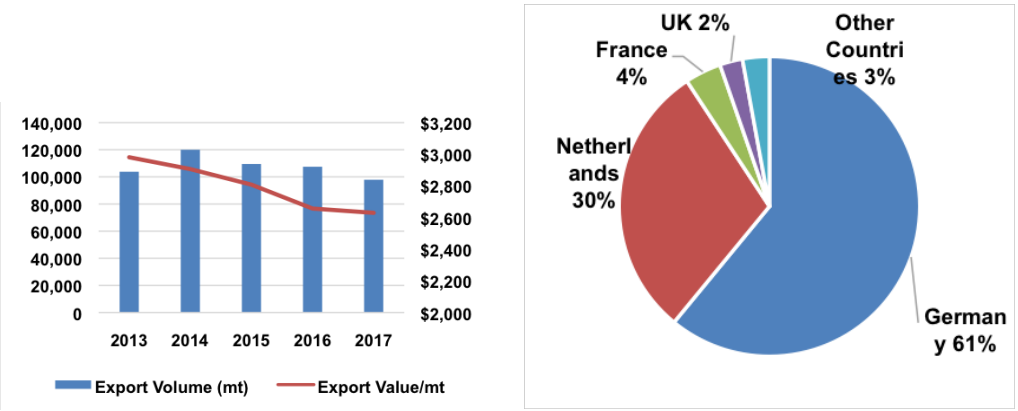


Figure 8.4: Exports of Alaska pollock fillets to major european markets, 2013-2017.

	2013	2014	2015	2016	2017
Export Volume (mt)	103,787	119,972	109,487	107,465	97,897
Export Value ($000s)	$309,385	$348,675	$307,437	$285,547	$257,466
Average Export Value per Metric Ton ($US)	**$2,981**	**$2,906**	**$2,808**	**$2,657**	**$2,630**

Source: ASMI Export database, compiled by McDowell Group.

Europe imports between 270,000 and 310,000 metric tons of pollock fillets per year from China, Alaska, and Russia. Alaskan once-frozen pollock fillets accounted for more than a third (37 percent) of all pollock fillets imported into Europe over the past five years. The balance comes from China - mostly re-processed, twice-frozen fillet block made from Russian pollock - or directly from Russia as single-frozen fillet blocks.

Several major European retailers have committed to only selling certain seafood products from sustainable fisheries, certified by the Marine Stewardship Council (MSC). Until Russia's Sea of Okhotsk pollock fishery was certified in 2013, Alaska's pollock fisheries were the only source for certified pollock fillets. MSC certification of Russia's Sea of Okhotsk fishery led to increased competition in key European markets, a slump in wholesale prices, and a declining premium for once-frozen Alaska's pollock fillets. While fillet prices have increased in 2018, Russia's increasing production of once-frozen fillet blocks is an important trend with significant potential to impact the value of Alaska's pollock fillet production going forward.

United States The U.S. domestic market is the second-largest consumer of Alaska pollock fillets in the world. In contrast to Europe, Americans consume more pollock through foodservice channels than retail outlets. Pollock is the primary whitefish species used in most generic fried fish sandwiches, although it is becoming more common to see the species name identified in product messaging.

The U.S. market consumed an average of 93 thousand mt of pollock fillets per year from 2013-2017, with domestic supply decreasing over this period to 68 thousand mt consumed in 2017 (Table 8.6). The main factor behind declining U.S. pollock supply is a steady decrease in pollock imports.

Imports declined 52 percent from more than 55 thousand mt in 2013 to 26 thousand mt in 2017. As a result of declining imports, the share of domestic pollock fillet consumption originating from Alaska has increased, from an estimated 53 percent in 2013 to 61 percent in 2017.

Table 8.6: Estimated U.S. pollock fillet market supply (mt), 2013-2017

Year	Alaskan Pollock Fillet Production	Imports	Exports	Est. U.S. Supply	Est. Once-Frozen Product from Alaska	Pct. Alaskan
2013	176,717	55,105	114,852	116,970	61,865	53%
2014	183,970	49,833	131,819	101,984	52,151	51%
2015	176,109	44,532	124,153	96,488	51,956	54%
2016	176,177	32,000	127,708	80,469	48,469	60%
2017	172,675	26,361	130,694	68,342	41,981	61%
2013-2017 Avg.	**177,130**	**41,566**	**125,845**	**92,851**	**51,284**	**55%**

Notes: Figures may not sum due to rounding.

Source: NMFS OST, AKFIN, ASMI Export Database, and McDowell Group estimates.

Pollock fillets are usually put through a secondary manufacturing process before reaching American consumers. Most fillets are bought by companies unaffiliated with harvesting companies in Alaska or Russia. However, there is some integration in the U.S. market. Alaska's largest pollock producer, Trident Seafoods, owns 29 percent of the pollock quota in Alaska. Trident sells a variety of finished products to retailers, including pollock fillets, burgers, and fish sticks through a variety of stores including Costco.

Competing Supply

Alaskan pollock's primary competition comes from Russian-origin twice-frozen pollock fillets. The vast majority of Russian pollock production is exported as a frozen H&G product to China, where it is thawed, filleted, then re-frozen and exported to other countries. Once-frozen fillet production in Russia is limited by minimal processing capacity, though such production is expected to grow due to a major government-backed initiative.

Roughly half of Russia's pollock harvests occur in the Sea of Okhotsk. MSC certification of the Sea of Okhotsk fishery in 2013 significantly increased the impact of Russian production on Alaska by opening up Russian-origin products to key European fillet markets that require MSC certification. Russian production is expected to decline slightly in the coming years, while Alaska production is expected to increase slightly (Figure 8.5). However, a variety of other efforts are underway to increase the value of Russian pollock production and exports. Fillet production increased 34 percent from 2015 to 2016 (from 40,200 mt to 53,700 mt) and is projected by some to triple from 2016 to

2025 with the construction of more than 20 fish processing facilities and 33 fishing vessels, as well as the launch of a new marketing and supply chain organization known as "The Russian Fish."[3]

Other whitefish species such as cod, haddock, saithe, hake, hoki, sole, tilapia, and pangasius also impact the market for Alaska pollock fillets as potential substitutes in the global fillet market.

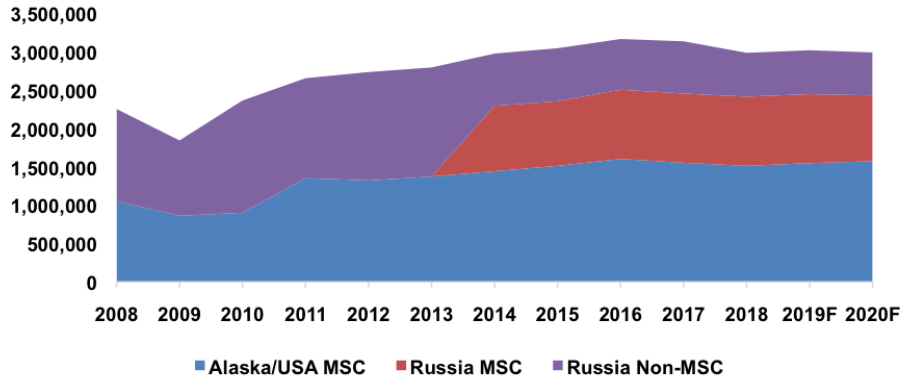


Figure 8.5: Russian and Alaska pollock harvests, 2008-2018 and 2019-2020 forecasts
Source: FAO, NOAA OST, AKFIN, Groundfish Forum, NPFMC TACs, and McDowell Group estimates.

8.2.2 Alaska Pollock Surimi

Surimi accounted for 34 percent of Alaska's pollock wholesale production volume and 41 percent of wholesale production value in 2017. More than 207,000 mt of pollock surimi, worth $595 million, was produced in Alaska in 2017. Japan, Europe, South Korea, and the U.S. are key surimi markets. Surimi can be made from a variety of fish, but Alaska pollock surimi is sought after for its white color, binding ability, abundance, and mild flavor.

The term surimi refers to the intermediate product used in the production of surimi seafood products. Surimi is an odorless, protein-rich, wet paste that is an intermediate product used in the production of a variety of surimi seafood products (such as imitation crab meat). Pollock surimi is made using finely minced meat that has been repeatedly rinsed and mixed with additives such as salt, starch, and sugar, and then frozen and packaged. The quality of surimi is determined by its gel strength, color (the whiter, the better), and purity. Surimi technology has improved over the years, with the yield increasing from 12 percent to over 30 percent. Surimi production is standard in nearly all of the Alaska's major shoreside and at-sea processing facilities that focus on pollock. Grades of surimi commonly available from Alaska processors include (in descending order of quality) SA, FA, AA, KA, KB, KC, and RA. Demand for surimi made with only "natural" additives has been increasing in recent years, due to shifting consumer preferences and an increasing focus on product development.

There are hundreds of surimi seafood product varieties produced by secondary processors. The broad categories include kamakobo (steamed), chikuma (broiled), satsuma-age (fried), and seafood analogs (e.g. imitation crab sticks).

[3]https://www.intrafish.com/marketplace/1659121/russia-planning-aggressive-expansion-of-value-added-exports https://www.seafoodsource.com/news/supply-trade/new-campaign-to-refresh-marketing-supply-chain-efforts-in-russia

Supply Chain

Alaskan pollock surimi blocks are produced by catcher-processors with onboard surimi processing capacity and by shoreside processors that take deliveries of unprocessed pollock from catcher vessels. Alaska processors sell frozen surimi blocks to secondary processors (some of which may be affiliated with the primary processing company) and distribution companies in Asia, the U.S., and Europe. Secondary processors use surimi blocks from Alaska to create surimi seafood products tailored to various end markets.

Surimi Production Analysis

In 2017, surimi accounted for 34 percent of Alaskan pollock production volume and 41 percent of first wholesale value. Surimi production reached 207,300 mt last year and had a value of $595 million (Figure 8.6). Production volume has typically ranged from 150,000 to 200,000 mt annually (except for a drop in 2008-2010), driven primarily by harvest volumes. Surimi production volume is also driven by the relative demand for surimi versus fillets, though surimi production as percentage of total pollock production has been relatively steady. From 2008 through 2017, this percentage has ranged from 24 to 35 percent. In recent years, surimi production has grown steadily as harvests levels and surimi prices increased.

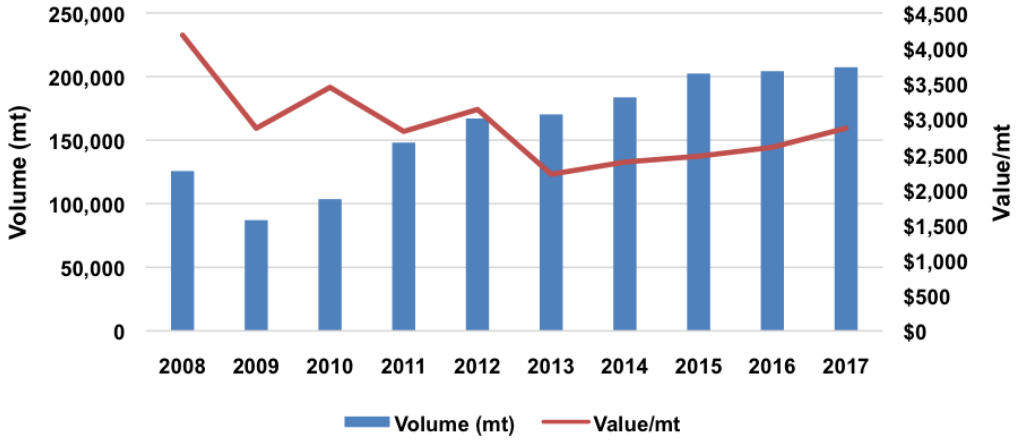


Figure 8.6: Wholesale production volume and value for Alaska pollock surimi, 2008-2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$526	$250	$357	$418	$524	$378	$439	$500	$531	$595

Source: AKFIN.

Wholesale value is more variable, as the price of Alaskan pollock surimi can vary from year to year depending on global surimi market conditions. Average surimi material prices were $2.87 per kilo in 2017, up 10 percent from the previous year. Preliminary data from 2018 indicates that the trend of increasing surimi wholesale prices has continued, with export prices in the first nine months of 2018 up 10 percent over the same period in 2017.

Key Market Analysis

Approximately 90 percent of Alaskan pollock surimi is sold to export markets (Table 8.7). In 2017, Japan and South Korea imported 70 percent of all Alaskan pollock surimi production. The remaining markets included Europe, U.S., China, and Thailand. Europe is a larger market than the export data below suggests, importing significant volumes of surimi from South Korea (containing Alaskan pollock as well as surimi made from other species). U.S. surimi exports in 2017 were 10 percent above the previous four-year average.

Table 8.7: U.S. exports of Alaska pollock surimi by country (mt), 2013-2017

Country	2013	2014	2015	2016	2017	% Change over 2013-2016 Avg.	% of Total (2013-2017)
Japan	56,292	71,889	81,830	69,184	74,554	7%	37%
South Korea	61,448	56,847	60,407	71,113	71,570	15%	33%
Europe	35,626	25,324	22,697	27,832	26,419	-5%	14%
Thailand	530	1,198	2,395	4,831	7,746	246%	2%
China	1,466	1,281	2,008	2,194	3,280	89%	1%
Other Countries	5,546	4,366	2,176	2,862	1,712	-54%	2%
Total Exports	**160,907**	**160,906**	**171,513**	**178,016**	**185,281**	**10%**	**89%**
U.S. (Estimated)	9,352	22,750	30,870	26,215	22,060	-1%	11%
Total Production	**170,259**	**183,656**	**202,383**	**204,230**	**207,341**	**9%**	**100%**
Percent Exported	**95%**	**88%**	**85%**	**87%**	**89%**	**-**	**-**

Notes: Reflects direct exports only. Does not reflect final market destination.

Source: ASMI Export Database and AKFIN.

The global production of raw surimi material totaled approximately 820,000 metric tons in 2017, down from the 850,000 mt produced in 2016.[4] The decline is attributed primarily to declining tropical fish harvests – the source of nearly two-thirds of global surimi production. Alaska's pollock fishery accounts for roughly a quarter of global surimi production. Japan is the largest market for surimi, though other Asian countries such as China and Korea are important and growing surimi consumers.

The 820,000 mt of raw surimi produced in 2017 was converted into an estimated 3 million metric tons of surimi seafood products. China was the largest producer of end products – despite consuming less surimi raw material than Japan – due to a lower average percentage of seafood in their surimi seafood products.

Japan Japan is the world's largest end market for surimi seafood products, consuming a third of global surimi production. Large companies and artisanal shops in Japan process over 1,000 different

[4]Future Seafood Group (via Undercurrent News).

surimi products. Consumption has declined since the mid-1970s, but has stabilized since 2010 at roughly 570,000 mt of surimi seafood products per year.[5]

Japan directly imported 37 percent of Alaskan pollock surimi produced from 2013 to 2017, averaging 70,750 mt of direct imports worth $156 million per year (Table 23). Including product routed through Korea and other countries, more than half of Alaska's total pollock surimi production is estimated to go to the Japanese market.

Alaska accounted for 47 percent of Japan's imported surimi volume between 2013 and 2017 (Table 8.8). Competing suppliers include Thailand, India, China, and Vietnam. Thailand's tropical surimi production has declined in recent years and India has increased market share as a lower cost producer with access to substantial resources.

Table 8.8: Japan surimi imports from major producers (mt), 2013-2017

Exporter	2013	2014	2015	2016	2017	Pct. of Total (5-yr. Avg.)
U.S. (Alaska)	99,525	117,827	124,018	110,320	137,681	47%
India	28,083	33,969	38,177	33,323	38,407	14%
Thailand	36,661	34,159	30,342	29,296	22,412	12%
China	13,459	19,078	17,898	19,303	17,416	7%
Vietnam	12,122	16,753	16,327	15,883	15,356	6%
All Others	34,875	37,599	35,096	33,369	31,287	14%
Total	**224,725**	**259,386**	**261,857**	**241,496**	**262,560**	**-**
Pct. from Alaska	**44%**	**45%**	**47%**	**46%**	**52%**	**-**

Source: Japan Trade Statistics (Ministry of Finance), compiled by McDowell Group.

South Korea The U.S. exported 71,570 mt (worth $177 million) of Alaskan pollock surimi to South Korea in 2017, which accounted for 39 percent of Alaskan pollock surimi exports (Table 23). Some of the exports to Korea are likely held in bonded, duty-free cold storage warehouses before being shipped to other markets (primarily Japan, Europe, and Russia). Despite the prevalent re-export trade, South Korea is the second-largest buyer of Alaska surimi in terms of a single country (in most years). The 2012 Korea-U.S. Free Trade Agreement has deepened the economic ties between Korea and the U.S. and increased consumption of U.S. pollock surimi.

South Korea imported roughly 130,000 mt of all surimi varieties in 2017, or about half as much import volume as Japan. Vietnam and China are the country's top surimi suppliers, while Alaska accounted for 19 percent of total surimi imports.[6] Korea is one of the largest manufacturers of surimi seafood products after China and Japan, supplying its own domestic market and other international markets.

Europe Europe is a large market for Alaskan pollock surimi. Alaska producers exported 26,419 mt of surimi worth $58 million to Europe in 2017 (Table 23). Direct exports of Alaskan pollock

[5](Park, 2014)

[6]https://www.undercurrentnews.com/2018/12/10/pollock-surimi-cant-meet-global-demand-as-tropical-supply-continues-to-drop/

surimi accounts for approximately half of the market's total surimi base consumption (˜50,000 mt annually). Processors in France, Spain, Lithuania, and Poland produce surimi seafood products for the European market, with relatively little importation of foreign surimi seafood products.[7] Spain and France are Europe's largest surimi consumers, accounting for more than 70 percent of the region's total consumption.

United States The United States market for surimi is dominated by imitation crab products. Seven surimi processors operate in North America, consuming roughly 35,000 mt of surimi raw material (mostly Alaska pollock but also whiting/hake and other species) to produce an estimated 100,000 mt of surimi seafood products. American surimi producers have focused on product innovation in recent years. An example of a recent product developed is Trident Seafoods' surimi noodles. The U.S. also imports surimi seafood products from Japan and other countries, though trade data do not allow for a detailed analysis of these product flows.

Competing Supply

Pollock surimi accounted for about a quarter of global surimi production in 2017 (Figure 8.7). Virtually all pollock surimi is produced in Alaska or comes from Alaskan fisheries, though Russian processors plan to start producing pollock surimi in significant quantities in the coming years. Tropical surimi dominates global surimi production, accounting for about two-thirds of total production. China, Vietnam, Thailand, and India are the largest tropical surimi producers.

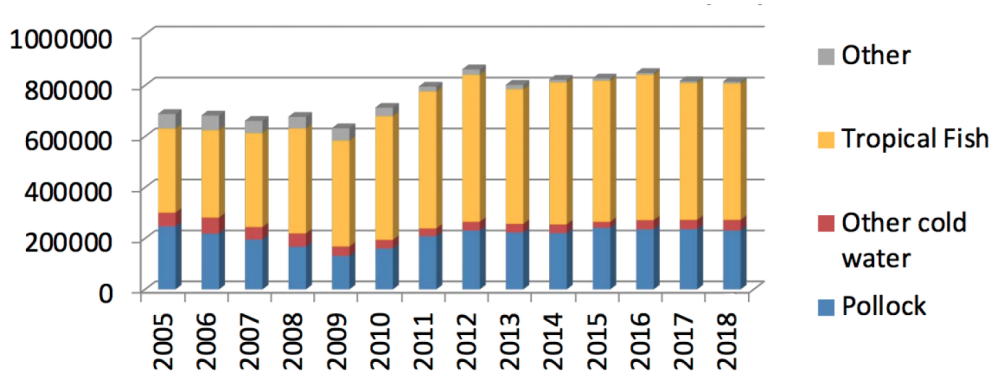


Figure 8.7: Global surimi production (mt), by source species, 2005-2018
Source: Future Seafood Group (via Undercurrent News). 2018 is an estimate.

Surimi is made from a variety of fish species. Alaskan pollock is the most widely used species accounting for 25 percent of global surimi supply, but other types of surimi utilize a range of other fish. Tropical fish species account for 68 percent of surimi production, with threadfin bream (*Nemipterus japonicus*) is the most common of these species .

Many countries have active fisheries that support surimi production. In terms of a single country, the U.S. is the second-largest surimi producer in the world. China, India, and Southeast Asia (including Thailand and Vietnam) are key tropical surimi producers. After a decade of steady growth, Vietnam has overtaken China as the largest tropical surimi producer, with more than

[7] https://www.eumofa.eu/documents/20178/114144/MH+3+2018.pdf/04031fe1-af72-4ce0-9890-a4a15a41ec8f

150,000 mt of production each of the last five years. Production in India has also grown steadily, while Chinese and Thai production has declined in recent years (likely due to overfishing).[8]

It should be noted that surimi production statistics are not universally tracked. Although FAO compiles data on minced fish and surimi production, the manner in which data is categorized do not allow for comprehensive production accounting. As a result, industry estimates (which are based on public and private data) are a more reliable source of information.

8.2.3 Alaska Pollock Roe

Pollock roe commands the highest price of all major pollock products at $6.21 per kilo and was worth $121 million (wholesale value) in 2017. It accounted for 8 percent of Alaskan pollock's total wholesale value but only 3 percent of production volume (19,517 mt). Pollock roe is consumed as a condiment/flavoring and during holidays in Japan. South Korea is the world's only other sizeable market.

Pollock roe production occurs when the fish are spawning, typically during the late winter and early spring. Roe is extracted during the gutting process and rapidly frozen before deterioration occurs. Roe prices are tied to the quality of the roe, which varies greatly. Lower grade roe might have defects such as discoloring, broken skeins, or roe maturity (eggs are too young or too old). Product processed at sea tends to command higher prices. Pollock roe is traditionally sold to wholesale buyers in frozen block form, packed into 49.5-lb. cases each containing three blocks of roe.

Supply Chain

Pollock roe is an export product. Frozen Alaskan pollock roe is sold at auctions in Seattle, WA, while Russian pollock roe is often sold at auctions held in Busan, South Korea. However, larger volumes of Alaska product is also sold directly to buyers through negotiated contracts. "Direct sales" have become more common in recent years, based on pricing discovered through the auction process. The pollock roe supply chain is vertically integrated for large companies that maintain a pipeline from the raw material all the way to distribution in markets in Japan and South Korea. After frozen pollock roe is exported to Asia, it eventually undergoes secondary processing. Japan, Korea, China, and Thailand are common destinations, where it is processed by defrosting and brining the roe in spices or salt.[9]

Alaska Production Analysis

Alaska pollock roe is an important element of the pollock product mix. Although it is a low-volume product, roe assumes the highest unit price of any pollock product. In 2017, 19,517 metric tons was produced (roughly in line with the ten-year average) worth $121.2 million and was 8 percent of the species' wholesale value (Figure 8.8). Pollock roe production is primarily a function of overall harvest volume; however, it can fluctuate significantly based on roe recovery/maturity and harvest distribution.

[8] https://www.undercurrentnews.com/2018/12/10/pollock-surimi-cant-meet-global-demand-as-tropical-supply-continues-to-drop/

[9] Industry interview

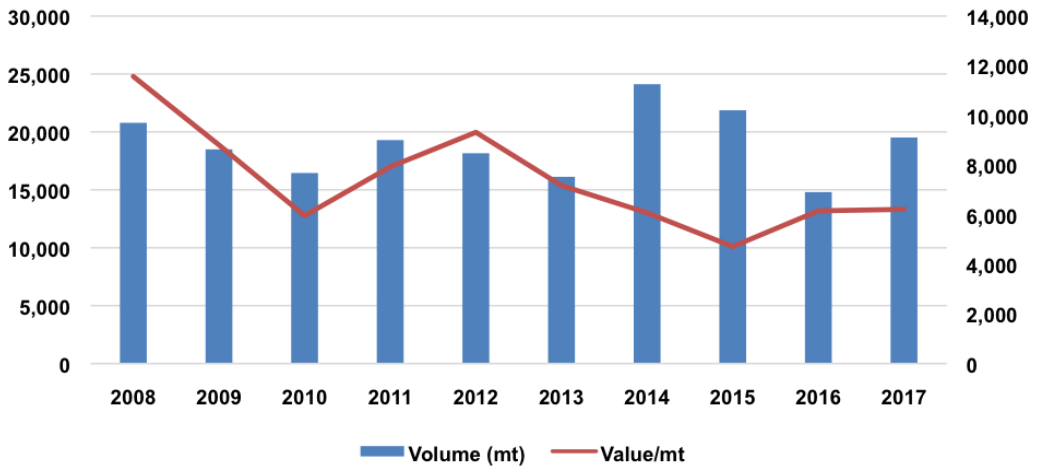


Figure 8.8: Wholesale production volume and value/mt for Alaska pollock roe, 2008-2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$240	$163	$98	$153	$169	$116	$146	$103	$91	$121

Source: AKFIN.

Historically (prior to 2007), roe often accounted for one-third to one-fifth of Alaska pollock's total first wholesale value. However, the percentage of roe value compared to all Alaskan pollock products has declined significantly in recent years. Since 2013, roe has only generated 6 to 9 percent of total first wholesale value. Pollock roe prices have decreased steadily over the last decade due to weakening traditional markets and a lack of new markets. Roe market development is a top priority of the Alaska pollock industry.

Key Roe Market Analysis

Virtually all Alaskan pollock roe is exported to Japan or South Korea. In 2017, exports totaled 18,471 mt worth $112 million (Table 8.9). Japan is the dominant market, absorbing more than 80 percent of finished Alaskan pollock roe exports. South Korea is the only other sizeable market, but the majority of frozen pollock roe sold to Korea is held in cold storage and exported on to the Japanese market. Exports to Europe jumped in 2017; the product entered the market through the Netherlands, though the final market is unclear. Efforts to develop other pollock roe markets outside of Japan have been largely unsuccessful, but given stagnant Japanese consumption patterns, finding additional roe markets is extremely important to the long-term health of Alaska's pollock industry.

Japan Japan is the world's primary pollock roe market with imports of 42,051 mt in 2017, worth $285 million (Table 8.10). Alaskan product accounted for 42 percent of the import volume between 2013 and 2017. Russia is the country's largest pollock roe supplier. Imports of Alaskan product fluctuate from year to year but 2017 saw shipments matching the prior four-year average. Total Japanese pollock roe imports increased 9 percent versus the prior four-year average.

The value of roe is function of production volume in Russia and Alaska, as well as the strength or weakness of the yen. However, due to static demand, an aging population in Japan, and a

Table 8.9: Exports of Alaska pollock roe by country (mt), 2013-2017

Export Destination	2013	2014	2015	2016	2017	Pct. Change from 4 Yr. Avg.
Japan	6,544	11,212	10,460	5,457	8,426	0%
South Korea	7,414	9,792	9,281	8,295	9,260	6%
China	901	754	505	258	148	-76%
Other	108	20	33	50	637	1109%
Export Volume	**14,967**	**21,778**	**20,279**	**14,060**	**18,471**	**4%**
Export Value ($Million)	**$114**	**$153**	**$152**	**$111**	**$112**	**-16%**
Avg. Export Price/Kilo	**$7.63**	**$7.02**	**$7.50**	**$7.90**	**$6.05**	**-19%**

Source: ASMI Export database, compiled by McDowell Group.

Table 8.10: Japan pollock roe imports (mt), 2013-2017

Exporter	2013	2014	2015	2016	2017	Pct. of Total (5-yr. Avg.)
Russia	21,008	24,916	21,958	20,367	24,434	57%
U.S. (Alaska)	13,158	19,720	18,440	14,400	17,357	42%
Others	237	163	185	154	259	1%
Total	**34,403**	**44,800**	**40,582**	**34,921**	**42,051**	**-**
Pct. from Alaska	**38%**	**44%**	**45%**	**41%**	**41%**	**-**

Notes: Includes minor amounts of cod roe and roe from other related species.

Source: Japan Trade Statistics (Ministry of Finance), compiled by McDowell Group.

lack of market diversification, the long-term value of pollock roe is an area of concern and market development is a top priority for the Alaska pollock industry.

South Korea South Korea is the second largest consumer of pollock roe, but it also is an intermediary buyer. Russia and Alaska sent 49,745 mt of pollock roe to South Korea per year during this period (Table 8.11). Korean import statistics suggest the Korean market consumes approximately a quarter to a third of total pollock roe imports (with most of the rest ending up in Japan). Alaska supplies an estimated 19 percent of the Korean domestic market. Korea is known for having less traditional tastes than Japan, and the market will accept small sized roe that is less marketable in Japan.

8.2.4 Alaska Pollock Headed and Gutted

In 2017, headed and gutted (H&G) products accounted for 10 percent of total pollock production volume and 4 percent of the species' total first wholesale value. H&G production averaged $80 million in value over the last five years (2013-2017). H&G pollock is frozen in blocks and the majority is exported to China for secondary processing into twice-frozen fillets.

H&G pollock is produced primarily by Alaska processors that handle pollock as part of a large mix of species and do not have the space or volume needed to invest in fillet and/or surimi processing

Table 8.11: South Korean pollock roe trade (mt), 2013-2017

	2013	2014	2015	2016	2017	5-yr. Average
Exports Reported by Major Producers						
Russia	39,972	39,488	42,118	35,991	47,116	40,937
Alaska	7,414	9,792	9,281	8,295	9,260	8,808
Total	**47,386**	**49,280**	**51,399**	**44,286**	**56,376**	**49,745**
Actual Imports by Major Producer						
Russia	11,838	12,008	12,202	12,271	12,334	12,131
Alaska	3,425	3,061	2,955	2,334	2,368	2,829
Total	**15,263**	**15,069**	**15,157**	**14,605**	**14,702**	**14,959**
Export/Import Difference	**32,123**	**34,211**	**36,242**	**29,681**	**41,674**	**34,786**

Source: Global Trade Atlas, compiled by McDowell Group.

lines. H&G production is also a way to handle smaller pollock (these are also sometime diverted to fish meal or sold as frozen blocks of whole fish).

Product Description and Supply Chain

Virtually all H&G Alaskan pollock is sent abroad for further processing. The primary destination is China, where it is a raw material used to produce frozen fillet blocks and salted fillets for markets in Europe, the U.S., and Brazil. Secondary processors in Europe (fillet products) and Korea/Japan (likely surimi) also import significant volumes. Finally, there are anecdotal reports that some dressed and whole/round product is routed through China to markets in Africa.

Production Analysis

In 2017, H&G pollock production totaled 61,605 mt – in line with average volumes since 2009 (Figure 8.9). Over the last decade, H&G production has generally represented around 10 percent of total Alaskan pollock production volume (with the exception of big years in 2009 and 2010). H&G production value, though, was down 31 percent since 2009 due to a steady drop in prices. In 2017, H&G pollock value per mt dropped below $1,000 – an unprecedented low in recent times.

Key H&G Market Analysis

Headed and gutted Alaskan pollock is primarily exported to China for reprocessing: the country bought 72 percent of exported Alaskan product between 2015 and 2017 (Table 8.12). South Korea and Ukraine also import substantial volumes of H&G Alaskan pollock. Virtually all of Alaska's H&G pollock production is sold to export markets, primarily to countries that perform secondary processing to produce whitefish fillets or surimi.

China The majority of Alaskan H&G pollock is sent to China for secondary processing, due to lower production costs. In 2017, China reported imports of 54,489 mt of Alaskan H&G/whole pollock (Table 8.13). This product, along with Russian H&G pollock is processed into fillets and

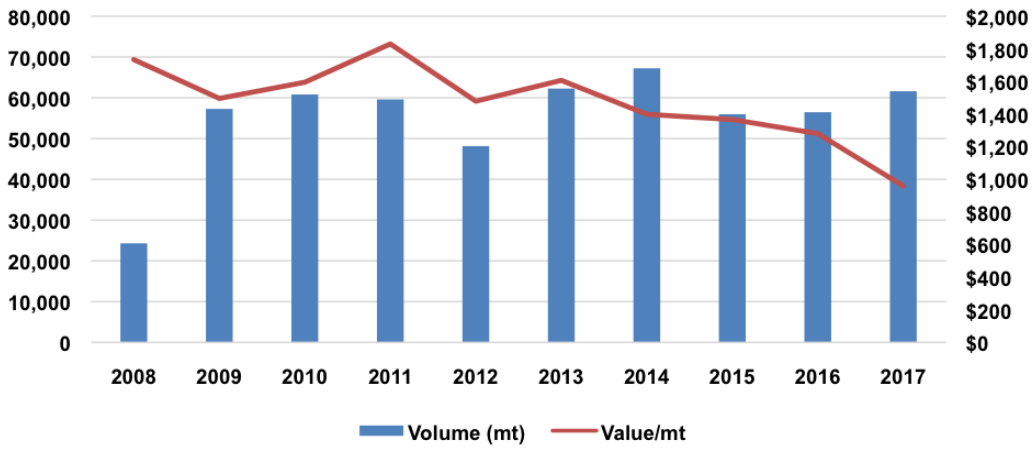


Figure 8.9: Wholesale production volume and value for H&G Alaska pollock, 2008-2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$42	$86	$97	$109	$71	$100	$94	$76	$72	$59

Source: AKFIN.

Table 8.12: Alaska pollock H&G exports (mt), by country, 2015-2017

Exporter	2015	2016	2017	Pct. of Total (2015-2017)
China	44,729	51,757	54,489	72%
Ukraine	664	3,296	10,029	7%
South Korea	5,885	10,748	6,886	11%
Thailand	3,291	3,842	2,543	5%
Other Countries	4,077	4,342	2,140	5%
Total Exports	**58,646**	**73,985**	**76,087**	

Source: Global Trade Atlas

other salted or breaded products for re-export to Europe, the U.S., and Brazil. At this point, most product joins the global pollock fillet supply as a twice frozen product.

Table 8.13: China imports of frozen H&G pollock by country (mt), 2015-2017

Country	2015	2016	2017
Russia	560,516	556,927	595,097
U.S.	44,729	51,757	54,489
Japan	18,064	9,275	4,598
Other	2,025	7,104	12,147
Total	**625,334**	**625,063**	**666,331**

Source: Global Trade Atlas.

More than half of China's frozen pollock fillets are re-exported to Europe. The U.S. is the next largest market, accounting for 10 percent of re-exports while South Korea and Brazil are also important.

Competing Supply

The largest pollock harvests come from Alaska and Russia, with combined TACs over three million metric tons. The vast majority of Russian pollock is exported or sold to domestic buyers as an H&G product, while most Alaskan pollock is filleted directly or used in surimi production. Alaskan H&G pollock supply is somewhat dictated by relative value of once-frozen pollock fillets over twice-frozen pollock and other whitefish fillets, as well as processing production costs in Alaska relative to other areas.

8.3. Pacific Cod Market Profile

Pacific cod (*Gadus macrocephalus*) is a whitefish found in the coastal Pacific Ocean from Alaska to California, with the largest concentrations found in the Gulf of Alaska and Bering Sea. One of the largest of the Alaska groundfish species, Pacific cod are highly valued for their mild, white flesh and are primarily processed into fillet and H&G products. Final cod products include fillets and fish sticks destined for international and domestic markets. In 2016, Alaska's Pacific cod accounted for 18 percent of the total global cod harvest. In 2017, Alaska cod harvest and production volumes declined slightly over the previous year but increased prices driven by global supply constraints pushed the first wholesale value up to a 12-year peak of $510 million (Table 8.14).

Table 8.14: Summary profile of Alaska Pacific cod wholesale production and markets, 2017

Value and Volume		Key Products	H&G	Fillet	Other	
First Wholesale Production (mt)	136,990	Pct. of Value	67%	25%	8%	
Pct. of Global Cod Harvest (2016)	18%	Key Markets	China	Europe	U.S.	Other
First Wholesale Value ($millions)	$510	Pct. of 1st Sales	28%	10%	44%	17%
Pct. of Alaska Groundfish Value	20%	YoY Value Change	-6%	-14%	25%	-6%
Production Volume Exported	65%	Competing Species: Russian Pacific cod and Atlantic cod				

Alaska Pacific Cod Production Summary

In 2017, Alaska's processors produced 136,990 mt of Pacific cod products, valued at $510.2 million (Figure 8.10). Production volume in 2017 was the lowest since 2010, closely tracking lower TACs and harvests. Despite lower volumes, 2017 production value rose to a 12-year high of $510 million due to an exceptionally strong market. Price increases are generally understood to be the result of strong demand combined with a reduction in Pacific and Atlantic cod harvest volume, as well as a reduction in the haddock quota in the Barents Sea. Strong cod pricing continued throughout 2018 and enters 2019 near peak 2008 levels.

H&G product accounted for 72 percent of production volume (98,489 mt) in 2017, and 67 percent of first wholesale value ($341 million) (Figure 8.11). Fillets accounted for 12 percent by wholesale volume (16,538 mt) and 25 percent of first wholesale value ($127 million). Other products (e.g., roe, milt, fish meal) collectively made up 16 percent of wholesale volume with 21,963 mt valued at $42.5 million.

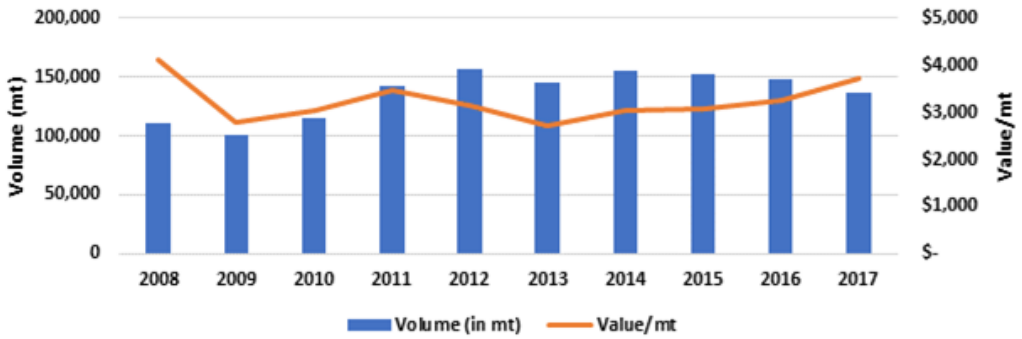


Figure 8.10: First wholesale volume and value/mt for Alaska Pacific cod, 2008-2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$457	$280	$351	$498	$496	$398	$471	$467	$480	$510

Source: AKFIN.

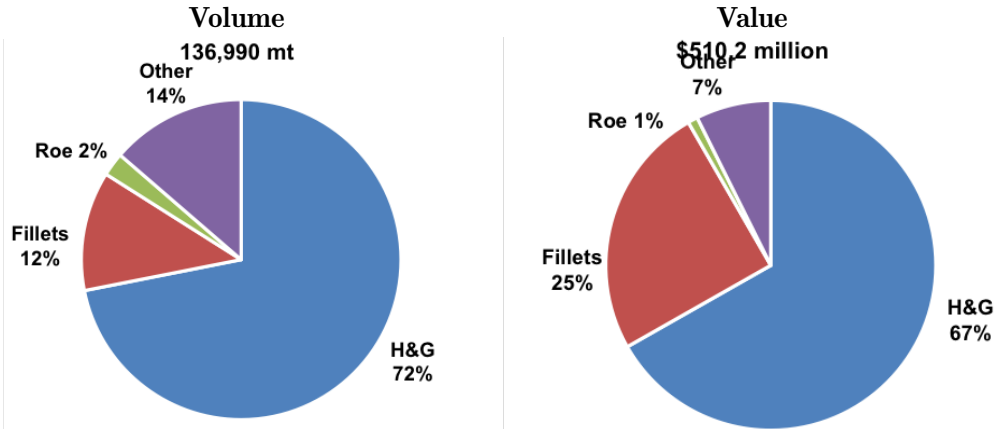


Figure 8.11: Volume and value of Pacific cod wholesale production in Alaska, by product type, 2017.
Source: AKFIN.

Product Analysis and Supply Chain: Head and Gut and Fillets

Alaska's Pacific cod harvest is primarily processed as H&G, with a significant shore-based production focus on fillets. Most H&G cod is frozen and exported for secondary processing in China, Europe, and Japan. Single-frozen Alaska cod fillets are a high-value product destined primarily for domestic markets. Fillet product forms include frozen shatterpacks, blocks, IQF (individually-quick frozen), and a small amount of fresh.

Final products (after secondary processing) include fillets, frozen portions, salted cod, and value-added products sold in restaurants, grocery stores, and in food service. The largest final markets for Alaska's cod are in Europe and the U.S. In many end markets, cod is not differentiated at the consumer level between Pacific cod or Atlantic cod.

Headed and Gutted (H&G)

H&G products – which make up nearly three-quarters of Alaska's cod production – follow complex supply chains spread across numerous markets. Most frozen H&G product is exported, and the largest reprocessing market is China, which re-exports the bulk of their cod imports to the U.S. and Europe. Cod sent to Japan and Europe is reprocessed and consumed in those regions. Some H&G product distributed to domestic U.S. market is thawed and filleted and sold thawed without refreezing, known as the refresh market. Other U.S. processors create fillet blocks to produce breaded or coated sticks and portions.

Fillets

Alaska processors produced 16,538 mt of cod fillets in 2017, worth $127 million. Most Alaska cod fillets are packaged as shatterpacks, consisting of frozen fillet blocks with individual fillets separated by plastic sheets, making them easier to separate without the need for the entire block to be thawed.

Key Market Analysis

Head and Gut

In 2017, Alaska Pacific cod H&G exports totaled 86,043 mt, representing 96 percent of Alaska's cod exports (Table 8.15).[10] H&G exports have been relatively stable in recent years, though 2017 saw a decrease of 12 percent over 2016, primarily due to reduced harvest levels. China is the largest importer of Alaska's Pacific cod, most of which is reprocessed for export to the U.S. and Europe. In 2017, China imported 47,975 mt of cod from Alaska. The next largest export markets are Japan, Europe, and South Korea.

Fillet

In 2017, Alaska processors produced 16,538 mt of Alaska Pacific cod fillets (single-frozen) worth $127 million (Table 8.16). The vast majority of this production is sold into the U.S. domestic market. The rest is exported, with China the largest single export market in recent years. In 2017, cod fillets made up 4 percent of the value of Alaska's cod exports, down from 12 percent in 2010. The period 2010 to 2013 saw South Korea and Japan shift fillet demand to H&G and substantial declines in demand from Portugal and Spain.

United States The U.S. is by far the most important market for Alaska's single-frozen Pacific cod fillets, purchasing 74 to 88 percent of Alaska production over the last five years and absorbed 13,362 mt in 2017 (Table 8.17). The U.S. also imported 74,022 mt of cod in 2017 (Pacific and Atlantic cod combined), valued at $513.7 million. Of this, frozen fillets accounted for 75 percent of import

[10] ASMI Export Database. Some cod exports are comingled with other fish and not distinguishable by species in export data, including fish meal, organs, and other ancillary products. H&G represent 96 percent of distinguishable cod exports.

Table 8.15: Sales of H&G Alaska Pacific cod to key markets (mt), 2013-2017

Market	2013	2014	2015	2016	2017	Pct. of Total (2013-2017)
China*	45,841	55,181	56,419	55,428	46,483	48%
Europe[1]	20,922	17,973	18,619	15,894	13,903	16%
Japan*	10,908	16,338	13,995	13,865	13,914	13%
South Korea*	7,686	5,388	8,939	8,951	7,404	7%
Canada	1,347	1,038	1,237	1,208	1,701	1%
Other Countries	3,473	1,792	2,948	2,595	2,636	2%
Total Exports	**90,178**	**97,711**	**102,157**	**97,940**	**86,043**	**88%**
U.S. (Estimated)[2]	12,760	15,714	17,496	9,169	12,446	12%
Alaska Production	**102,938**	**113,425**	**119,653**	**107,109**	**98,489**	

Notes: Data pertains to primary exports only, does not portray product which may be re-exported to other markets.
* Denotes countries which primarily re-process and/or re-export product to other markets.
[1] Europe refers to the major European export destinations: France, Denmark, Spain, Netherlands, Germany, Italy, and Portugal.
[2] Estimated based on annual production less calendar year exports.
Source: AKFIN, NOAA OST, ASMI Export Database, and McDowell Group estimates.

Table 8.16: Sales of Alaska Pacific cod fillets to key markets (mt), 2013-2017

Market	2013	2014	2015	2016	2017	Pct. of Total (5-yr. Avg.)
China*	852	759	1,489	1,017	1,491	7%
Canada	1,004	588	796	731	595	5%
Portugal	201	80	507	188	586	2%
Spain	25	63	117	114	289	1%
South Korea	0	66	42	58	57	0%
Other	439	576	313	289	158	2%
Total Exports	**2,521**	**2,132**	**3,264**	**2,397**	**3,176**	**16%**
U.S. (Estimated)[1]	15,975	16,136	9,403	15,502	13,362	84%
Alaska Production	**18,496**	**18,268**	**12,667**	**17,900**	**16,538**	

Notes: Data pertains to primary exports only, does not portray product which may be re-exported to other markets.
* Denotes countries which primarily re-process and/or re-export product to other markets.
[1] Estimated based on annual production less calendar year exports.
Source: AKFIN, NOAA OST, ASMI Export Database, and McDowell Group estimates.

volume. China comprises the majority import market with 79 percent of U.S. cod fillet import volume (2017), much of the remainder are Atlantic fillets from Iceland.

China China imports H&G cod (both Pacific and Atlantic) as raw material for reprocessing into twice-frozen fillet blocks, frozen portions, and value-added products such as battered or breaded

Table 8.17: Total cod imports into U.S. market, volume and value, 2013-2017

	2013	2014	2015	2016	2017	Pct. Change YoY 2017
Volume (mt)	59,850	66,495	67,757	70,670	74,022	4.7%
Value ($millions)	$341.46	$393.02	$430.70	$465.97	$513.73	10.2%
Value/kilo ($)	$5.71	$5.91	$6.36	$6.59	$6.94	5.3%

Source: NOAA OST.

portions. In 2017, Alaska exported 47,975 mt of cod to China, representing 35 percent of Alaska cod production volume and 24 percent of China's total cod imports (Atlantic and Pacific cod) (Table 8.18).

Double-frozen Chinese-produced cod fillets (Pacific and Atlantic cod) are reexported to the rest of the world, with the U.S., Europe, and Canada being the largest markets. Other markets for Chinese cod include countries like Japan and Brazil. The trade disputes with China and the risk of escalating tariffs on cod products reprocessed in China poses risks to cod supply chains.

Table 8.18: Primary export markets for Chinese twice-frozen cod fillets (mt), 2013-2017.

	2013	2014	2015	2016	2017	Percent Change, 2013-2017
U.S.	38,899	44,756	43,369	44,384	46,985	21%
U.K.	20,705	24,634	20,767	20,218	20,769	0%
Germany	12,220	16,232	15,269	15,711	15,038	23%
Spain	8,223	11,710	11,081	11,462	10,732	31%
France	5,643	5,943	6,085	7,230	8,378	48%
Canada	4,568	4,918	4,654	6,945	8,001	75%
Sweden	4,691	6,831	6,393	5,908	5,949	27%
Japan	3,735	3,579	3,182	3,234	3,168	-15%
Netherlands	4,083	3,183	2,430	2,816	2,512	-38%
Other	15,525	16,833	13,644	13,923	11,257	-27%
Total	**188,292**	**138,619**	**126,874**	**131,831**	**132,789**	**-29%**

Notes: Figures may not sum due to rounding.

Source: Global Trade Atlas.

Japan & South Korea Japan and South Korea are also important markets for Alaska H&G cod. In 2017, 14,247 mt of Alaska cod products were exported to Japan and 7,460 mt were exported to South Korea (Table 8.19). Due to its role in warehousing and reprocessing, it is unclear how much H&G cod exported to South Korea remains in the country for domestic consumption. Both Japan and Korea are consumers of cod byproducts, including roe and cod milt.

Europe In 2017, approximately 18 percent of Pacific cod exports from Alaska were directly exported to the European market, down from 23 percent in 2013 and 40 percent in 2010 (Table 8.20).[11] This

[11] ASMI Seafood Export Database

Table 8.19: Alaska Pacific cod export volume to major Asian markets (mt), 2013-2017.

Export Market	2013	2014	2015	2016	2017
		Japan			
Fillet	59	46	50	15	36
H&G	10,751	16,289	13,995	13,853	13,866
Other	311	236	69	219	345
		South Korea			
Fillet	0	66	42	58	57
H&G	7,686	5,343	8,916	8,951	7,404
Other	275	82	2,143	0	0
Grand Total	**19,083**	**22,061**	**25,216**	**23,097**	**21,707**
Pct. of Alaska Cod Exports	**20%**	**21%**	**23%**	**23%**	**24%**

Source: ASMI Export Database.

is due largely to the decline in exports to Portugal, Norway, and the Netherlands resulting from the dramatic increase in Atlantic cod harvests during this period. Nevertheless, Europe is still an important end-market for Alaska's cod and while direct exports may represent a modest percentage of the total, a great deal of Alaska's cod is routed through China or South Korea before being sold into Europe.

The EU protects its domestic cod producers by maintaining higher duties on imported cod fillets, whereas frozen H&G cod can generally be imported into the EU with no tariff. Therefore, Alaska exports relatively little fillet production to the EU.

Table 8.20: European imports of cod fillets from major producers (mt), 2015-2017.

Exporter	2015	2016	2017
China*	70,312	72,257	70,485
U.S. (Alaska)	721	513	959
Russia	26,652	25,503	42,567
Iceland	25,762	36,344	32,475
Norway	10,024	9,178	9,251
Total	**133,471**	**143,795**	**155,737**

Notes: Totals may not sum due to rounding. * Denotes re-exporter.

Source: Global Trade Atlas and ASMI Export Database.

Competing Supply

The two main species of cod, Pacific cod (*Gadus macrocephalus*) and Atlantic cod (*Gadus morhua*), are found in the northern hemispheres of the Atlantic and Pacific Oceans. While there are some slight differences, as *Gadus* whitefishes, they are considered almost identical substitutes for each other. In 2016, it is estimated that 477,387 mt of Pacific cod and 1,329,450 mt of Atlantic cod were harvested globally, with some of the largest Atlantic cod harvests coming from the Barents Sea (Figure 8.12). After years of supply increases, quotas in Alaska and Europe are below their peaks and projected to decline further in coming years, buoying prices. This trend is also reinforced by

decreases in the haddock quota, which competes with cod as a lower-priced alternative. As cod prices have increased due to growing demand and/or supply constraints, pollock, the largest single species fishery in the world, has also served as a substitute for cod.

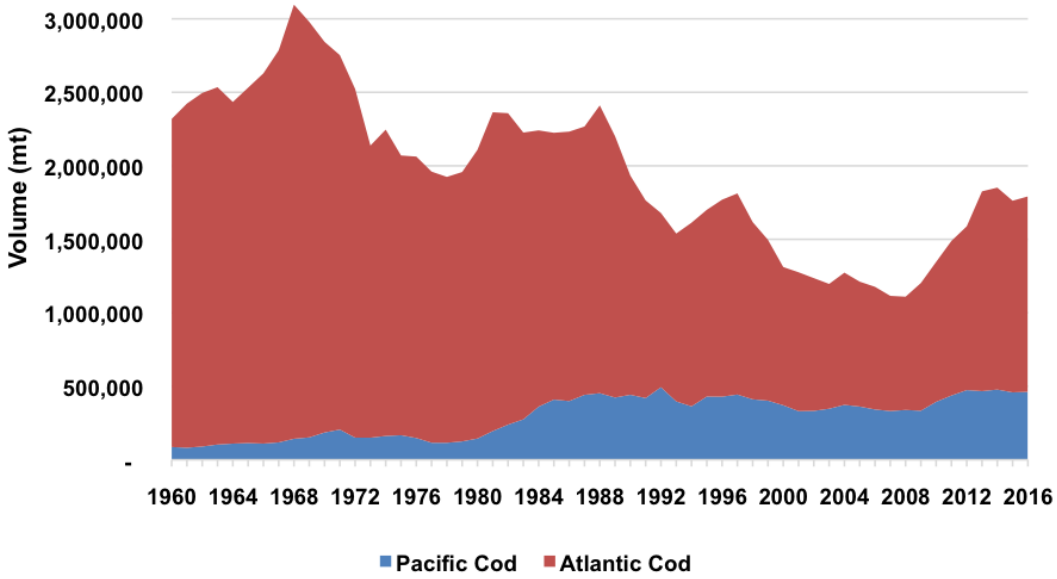


Figure 8.12: Global supply of Pacific and Atlantic cod (mt), 1960-2016

Source: FAO.

8.4. Sablefish Market Profile

Sablefish (*Anoplopoma fimbria*), also known as black cod, is a premium whitefish with a high oil content and delicate texture. Sablefish are among the most valuable species harvested in Alaska, accounting for 4.9 percent of Alaska groundfish first wholesale value in 2017 and just 0.7 percent of first wholesale production volume. In 2017, Alaska processors produced 6,593 million mt in wholesale sablefish products (nearly all H&G), valued at $123.8 million (Table 8.21). Sablefish has long been prized by Japan, which today remains its primary market. Sablefish has also developed important markets in the U.S., China, Hong Kong, Europe, and the United Arab Emirates, among others.

Table 8.21: Summary profile of sablefish wholesale production and markets, 2017

Value and Volume		Key Products	H&G	Other	
First Wholesale Production (mt)	6,593	Pct. of Value	97%	3%	
Pct. of Global Sablefish Harvest (2016)	57%	Key Markets	Japan	Hong Kong	Others
First Wholesale Value ($millions)	$123.8	Pct. of 1st Sales	65%	10%	25%
Pct. Change in Value from 2013-2016	27.5%	YoY Change	21%	-25%	0%
Pct. of Alaska Groundfish Value	4.9%	Competing Species: Patagonia toothfish (Chilean Seabass)			

Product Description

The dominant sablefish wholesale product is IQF frozen H&G (Eastern cut) fish, often sold in 50-pound boxes. Relatively small amounts of heads, collars, fillets, and other products are also produced. Combined, non-H&G production made up just 7 percent of production volume in 2017.

Following harvesting and primary processing, the majority of product is sold as frozen H&G fish to high-volume distributors in Japan and other Asian countries. Product sold into the U.S. domestic market is filleted by primary processors in Alaska or by secondary processors/distributors. Regardless of whether sablefish is exported or sold domestically, it typically passes through one or two distributors before being sold to consumers at the retail level.

Sablefish prices and markets are sensitive to the size of the fish, with larger sablefish worth much more than smaller fish. Wholesale price per pound for the largest fish can be more than double those for smaller fish. Unfortunately, smaller sablefish have become a larger portion of the harvest in recent years – a trend that is expected to continue due to significant recruitment in recent age classes and other factors affecting fish size. Small sablefish are difficult to sell into higher-end export markets, like Japan, but there is a market in China as well as a growing domestic market.

Alaska Sablefish Production

Between 2008 and 2013, first wholesale volume of sablefish products averaged just under 8,000 mt annually (Figure 8.13). Subsequently, production has fallen further due to lower harvest levels, hitting a low of less than 6,000 mt in 2016 followed by a modest rebound in 2017. The value of Alaska sablefish production peaked in 2011 ($147 million) due to exceptionally strong prices and large harvest volumes. After dropping substantially from 2011 levels, the average first wholesale value per mt of sablefish products climbed more than 50 percent from 2013 to 2017, reaching an average value/mt of $18,784 (based on production of 6,593 mt worth $123.8 million).

Market Profile and Analysis

Japan is the primary market for Alaska's sablefish, generally accounting for 70 to 80 percent of total exports by volume (Table 8.22). China was the second-largest international market by volume in 2017, following several years of growth. However, when measured by value, Hong Kong was the second-most important international market after Japan, a position the country has held for several years. In contrast to Mainland China, which imports a greater volume of lower-value small sablefish for reprocessing, Hong Kong imports a greater percentage of larger fish; these imports serve both Hong Kong foodservice and retail markets as well as re-export markets in Southern China and other SE Asia countries. As a free port, exports to Hong Kong are not subject to Chinese tariffs (though presumably they would be if re-exported to China).

While exports to the Netherlands and the United Arab Emirates are modest, the volume and value of sablefish exports to these countries more than doubled over the 2013 to 2017 period. Other niche export markets exist in similarly wealthy, seafood-eating countries such as Singapore, the U.K., and South Korea.

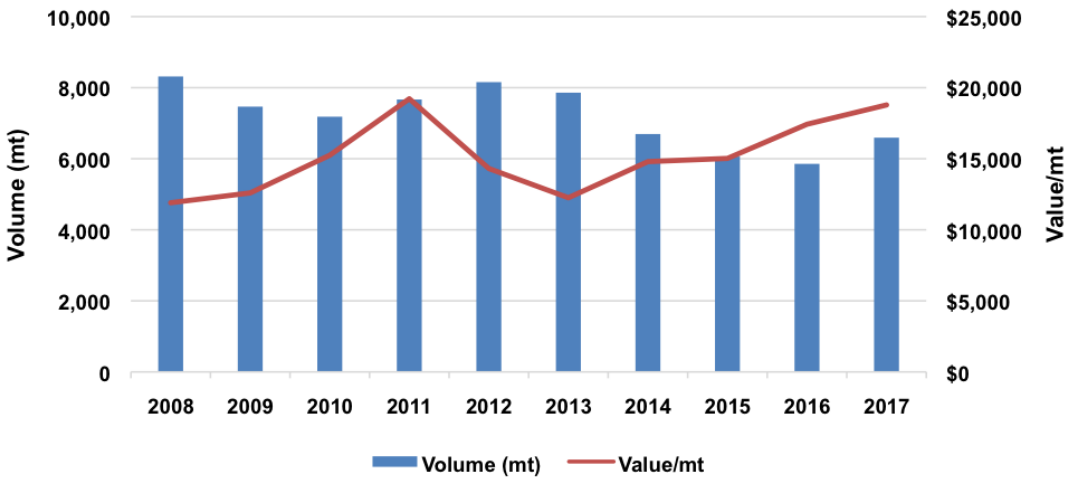


Figure 8.13: First wholesale volume and value of Alaska sablefish, 2008-2017.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Value ($millions)	$99.0	$94.0	$109.5	$147.4	$116.7	$96.3	$99.1	$91.1	$102.1	$123.8
Volume (mt)	8,315	7,467	7,183	7,667	8,156	7,859	6,696	6,062	5,856	6,593

Source: AKFIN.

Table 8.22: Estimated export volume and value of Alaska-harvested sablefish, 2013-2017.

Country	2013	2014	2015	2016	2017
Export Value ($millions)					
Japan	$62.0	$52.4	$45.8	$44.5	$54.1
Hong Kong	$4.7	$5.1	$7.4	$10.5	$7.9
China	$2.2	$2.4	$5.5	$6.1	$7.6
Netherlands	$0.5	$0.8	$0.7	$1.3	$2.8
United Arab Emirates	$0.8	$1.1	$2.4	$1.5	$2.5
Other	$11.4	$9.8	$12.0	$12.0	$8.0
Total	**$81.6**	**$71.5**	**$73.8**	**$76.0**	**$82.9**
Export Volume (mt)					
Japan	5,893	4,477	4,137	3,374	3,787
China	194	187	353	441	563
Hong Kong	340	282	397	490	333
Netherlands	71	68	54	70	151
United Arab Emirates	57	57	117	68	112
Other	837	637	840	731	486
Total	**7,391**	**5,710**	**5,898**	**5,174**	**5,432**

Source: ASMI Export Database.

Japan The primary market for sablefish is Japan, a country that pioneered the commercial harvest of the species in Alaska. The Tokyo Central Wholesale Market plays an important role in sablefish markets.[12] Between 1987 and 2013, an estimated 37 percent of Japan sablefish imports (from all countries) were sold at this market. Prices observed at the Tokyo Central Wholesale Market function

[12] https://www.st.nmfs.noaa.gov/Assets/commercial/market-news/sablefishSupplyMarket2014.pdf

as a price index, impacting sablefish values globally. The United States is the primary supplier of sablefish to the Japanese market, accounting for 91 percent of imports between 2012 and 2017; Canadian supply accounted for the remainder (Table 8.23). Currency rates are an important factor impacting sablefish markets. When the yen is relatively strong against the dollar, Japanese buyers are able to purchase more U.S.-sourced sablefish.

Table 8.23: Japan frozen H&G sablefish imports, by major trade partner, 2012-2017.

	2012	2013	2014	2015	2016	2017
			Import Value ($millions)			
U.S.	$106.9	$90.3	$87.6	$74.8	$83.8	$86.9
Canada	$11.4	$9.0	$8.9	$11.4	$8.4	$8.9
Total	**$118.2**	**$99.3**	**$96.6**	**$86.2**	**$92.2**	**$95.7**
			Import Volume (mt)			
U.S.	8,324	7,655	6,514	5,749	5,691	5,258
Canada	789	725	668	841	544	481
Total	**9,113**	**8,380**	**7,182**	**6,590**	**6,235**	**5,739**
Import Value/mt	**$12,973**	**$11,850**	**$13,443**	**$13,078**	**$14,793**	**$16,681**
Avg. Yen/USD Exchange Rate	**¥80**	**¥98**	**¥106**	**¥121**	**¥109**	**¥112**

Notes: Volume is in product-weight terms.

Source: Global Trade Atlas and St. Louis Federal Reserve Bank (currency rates).

United States The estimated size of the U.S. market for sablefish increased from about 3,200 MT to 7,200 MT between 2013 and 2017, due to increased imports and reduced exports (Table 8.24). Imports grew from 269 MT in 2013 to 1,756 MT in 2017, due to increased supply from Canada. Concurrently, export volume of U.S. sablefish declined as a result of reduced landings, high prices, and a relatively weak yen which affected shipments to Japan.[13]

Table 8.24: Estimated U.S. sablefish market size, in metric tons, 2013-2017

Year	Est. U.S. Wholesale Production	U.S. Imports	U.S. Exports	Est. U.S. Market Size
2013	11,609	269	8,670	3,208
2014	10,411	696	6,665	4,442
2015	10,385	1,406	6,664	5,127
2016	9,899	1,747	5,577	6,069
2017	11,140	1,756	5,733	7,163
Five-year Average	**10,689**	**1,175**	**6,662**	**5,202**

Notes: An average recovery rate of 65 percent is used in this analysis to make volumes comparable.

Source: McDowell Group estimates, based on data from NMFS and AKFIN.

[13] https://www.seafoodnews.com/Story/971116/Near-Record-Prices-for-Sablefish-May-Mean-Much-Lower-Consumption-in-Japan

Global Production and Competing Supply

The United States and Canada account for nearly all global production of sablefish.[14] Alaska is the primary supplier, contributing an annual average of 63 percent between 2012 and 2016 (Figure 8.14). Harvest from other West Coast states accounted for 26 percent of global supply. Of these, Oregon was the most important, followed by California and Washington. Canada (British Columbia) contributed 11 percent to global supply between 2012 and 2016.

Patagonia toothfish (*Dissostichus eleginoides)* is the primary competitor with sablefish. The whitefish has a high oil content and is also known as Chilean seabass or *mero* in Japan. Between 2012 and 2016, the global supply of Patagonia toothfish ranged from about 21,700 MT to 25,600 MT. These figures do not include illegal, unreported, or unregulated (IUU) harvests. In the early 2000s, up to half of Patagonia toothfish harvests were estimated to be IUU landings. Although fisheries management has improved, IUU harvests are likely happening today, though at a smaller scale.

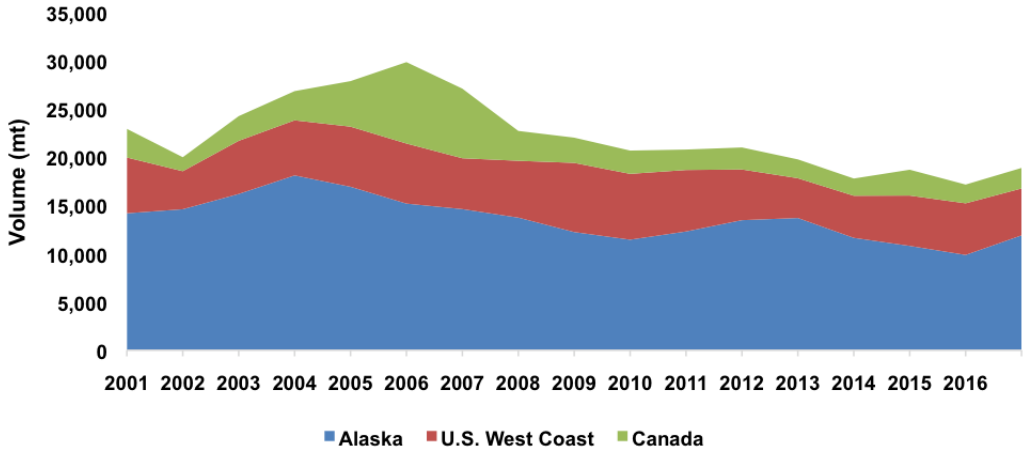


Figure 8.14: Global supply of Sablefish, in metric tons, 2001-2016.
Source: FAO; NMFS OST; AKFIN Production Database.

8.5. Yellowfin Sole, Rock Sole, Atka Mackerel, and Pacific Ocean Perch Market Profiles

Alaska's flatfish fisheries for soles and plaice in the BSAI and GOA, while comprised of more than 10 different species, are dominated by three species of sole (yellowfin, rock, and flathead) and plaice; other species harvested in smaller volumes include Greenland turbot, rex sole, butter sole, Dover sole, and starry flounder. Due to the many harvest and market similarities across this group, this section will treat many species with similar market aspects collectively while including additional detail for the four key species. Alaska's flatfish harvests include considerable volumes of Arrowtooth flounder; this species is covered in separate profile and not discussed in detail here.

Yellowfin sole (Limanda aspera) is the most abundant commercial flatfish in the eastern Bering Sea and the world's largest single flatfish fishery by volume, representing 14 percent of the global flatfish harvest. Overall, the species represented 48 percent of the first wholesale value of all Alaska

[14]Between 2000 and 2016, Russia periodically produced small volumes of sablefish. The highest annual volume for this period was 50 MT harvested in 2002; average annual harvest was 15 MT.

flatfish in 2017 with a first wholesale value of $110.8 million (Table 8.25).[15] The vast majority of this production is frozen H&G product destined for export to China for reprocessing or export to South Korea for reprocessing and domestic consumption.

Table 8.25: Summary profile of yellowfin sole wholesale production and markets, 2017.

Value and Volume		Key Products	H&G	Whole Round	Other
First Wholesale Production (mt)	77,102	Pct. of Value	89%	11%	0%
Pct. of Global Flatfish Harvest (2016)	14%	Key Markets	China	South Korea	Other
First Wholesale Value ($millions)	$110.8	Pct. of 1st Sales	65%	13%	22%
Pct. of Alaska Groundfish Value	4.4%	YoY Change	-20%	-2%	22%
Pct. of Alaska Flatfish Volume	57%	Competing Species: Other flatfish, tilapia, whitefish			

Rock sole (Lepidopsetta polyxystra), the second most abundant BSAI/GOA flatfish by wholesale volume (after yellowfin sole), accounted for 14 percent of the total first wholesale value of Alaska flatfish. Alaska is responsible for the vast majority of the global rock sole harvest, producing 20,200 mt in 2017, valued at $31.9 million (Table 8.26). Like yellowfin sole, most of Alaska's rock sole production is exported to China and South Korea, though Japan is also an important export market for females with roe. Rock sole generates a higher unit value per metric ton than yellowfin sole due to export markets for rock sole with roe.

Table 8.26: Summary profile of rock sole wholesale production and markets, 2017

Value and Volume		Key Products	H&G	H&G with Roe	Whole Round
First Wholesale Production (mt)	20,200	Pct. of Value	89%	10%	1%
Pct. of Global Flatfish Harvest (2016)	4%	Key Markets	China	South Korea	Other
First Wholesale Value ($millions)	$31.9	Pct. of 1st Sales	70%	5%	25%
Pct. of Alaska Groundfish Value	1.3%	YoY Change	-1%	-4%	5%
Pct. of Alaska Flatfish Volume	15%	Competing species: Other flatfish, tilapia, whitefish			

Atka mackerel production was valued at $127.8 million in 2017, accounting for 5 percent of the first wholesale value of all Alaska groundfish (Table 8.27). Production value in 2017 was double that of the previous four-year average thanks to a 27 percent increase in harvest volume over 2016 combined with high value/mt nearly equal to the all-time high in 2015. Alaska produced 54 percent of global Atka mackerel harvests in 2017, and nearly all production was exported to Japan, China, or South Korea as a frozen H&G product. Final consumer products include split/salted and surimi and is largely consumed in Japan, Korea, and China. This market profile summarizes production and markets for Alaska's Atka mackerel fisheries.

Atka mackerel is a key species for Alaska's Amendment 80 fleet, which also targets high volume flatfish (sole/flounder) and rockfish (including Pacific Ocean perch). Atka mackerel accounted for 29 percent of the combined wholesale production value of these target species in 2017.

Pacific Ocean perch (*Sebastes alutus* – also known by the acronym POP) is the most abundant rockfish species in Alaska, comprising 81 percent of all Alaska rockfish production in 2017. Overall,

[15] "Flatfish" includes all comparable BSAI/GOA flatfish species, including arrowtooth flounder and turbot. It does not include Pacific halibut or skate.

Table 8.27: Summary profile of Atka mackerel wholesale production and markets, 2017.

Value and Volume		Key Products	H&G	Other	
First Wholesale Production (mt)	42,231	Pct. of Value	91%	9%	
Pct. of Global Harvest (2016)	54%	Key Markets	Japan	China	Korea
First Wholesale Value ($millions)	$127.8	Pct. of Final Sales	58%	14%	9%
Pct. Change in Value from Prior 4-yr Avg.	100%	YoY Change	-16%	-3%	0%
Pct. of Alaska Groundfish Value	5%	Competing Species: Okhotsk Atka mackerel			

POP represented 2.6 percent of the first wholesale value of all Alaska groundfish in 2017 (Table 8.28). About eighty percent of Alaska's POP is exported to two countries – China (for processing) and Japan (the species' largest consumer market). Alaska POP accounted for 21 percent of global rockfish harvests in 2016. This market profile summarizes production and markets for POP fisheries in Alaska.

Table 8.28: Summary profile of Pacific ocean perch wholesale production and markets, 2017.

Value and Volume		Key Products	H&G	Whole	
First Wholesale Production (mt)	26,000	Pct. of Value	91%	9%	
Pct. of Global Rockfish Harvest (2016)	21%	Key Markets	China	Japan	South Korea
First Wholesale Value ($millions)	$64.2	Pct. of Final Sales	53%	30%	5%
Pct. Change in Value from Prior 4-yr Avg.	11.3%	YoY Change	-26%	25%	-20%
Pct. of Alaska Groundfish Value	2.6%	Competing Species: Redfish and other rockfish species.			

POP is a key species for the Amendment 80 fleet, which also harvests high volume flatfish (sole/flounder), Atka mackerel, and other rockfish species. POP accounted for 11 percent of the combined wholesale value of production by the Amendment 80 fleet in 2017.

Key Market Analysis

China Alaska soles and plaice require hand processing, which is labor-intensive. Due to lower labor costs, China is responsible for reprocessing most Alaska-caught flatfish, with yellowfin and rock sole providing the largest volume. Approximately 80 percent of all China's flatfish exports go to Europe, Japan, and the United States. As China's economy has grown, an increasing number of sole has remained in the domestic market.

Though not reflected in 2017 trade statistics, 2018 has brought a great deal of uncertainty to Alaska's flatfish industry due to its dependence on China and the tariffs and trade disputes between China and the U.S. At this time, the uncertainty surrounding tariffs or other intensifications in a U.S.-China trade dispute has already caused supply chain disruptions, with more U.S. flatfish being processed in the U.S., Poland, and other parts of Southeast Asia. As approximately 25-35 percent of Alaska flatfish product that is exported to China returns to the U.S., many custom-processors of flatfish for the U.S. have been actively looking for new markets and switching to Russian or other non-Alaska product.[16]

[16]Per seafood industry representative, 2018.

From 2015 to 2017, exports to China accounted for 53 percent of all POP production. This includes a strong 2016 when 60 percent of production went to the Chinese wholesale market. Virtually all POP and other rockfish exported to China consists of frozen whole or H&G fish, which is filleted, and re-exported.

Japan Though most Alaska flatfish exports are directed at China, Japan is an important export market, importing 5 percent of Alaska's rock sole production volume in 2017, primarily females with roe intact. Japan, as the largest flatfish export market for China, also imports a great deal of Alaska flatfish reprocessed in China, particularly rock sole roe and flatfish kirimis.

Japan is the largest consumer market for POP. Depending on the product form demanded, importers buy frozen fish from Chinese (fillets) or Alaska (H&G/whole) processors and distribute the product to retailers or food service establishments. Direct exports from Alaska to Japan generally represent a quarter to a third of all Alaska production. Alaska is Japan's largest rockfish/redfish supplier, both in direct terms and product routed through China. Europe is the second largest supplier, followed by domestic production and Russian imports.

The majority of Alaska's Atka mackerel is exported to Japanese markets. Retail wholesale Atka mackerel prices have risen due to declining harvests in Japan. While declining harvest trends in Japan put Alaska in a better market position, Japanese consumers are extremely flexible when it comes to substituting seafood species. For surimi producers – which historically have used both Atka and horse mackerel[17] for Japan's domestic surimi production – declining harvests and rising prices have already prompted Japanese surimi producers to substitute Atka mackerel with other species for surimi production.

US & Europe The U.S. and Europe consume a large amount of flatfish, much of it processed in China. Both end markets consume sole, plaice, and flounder (often commingled and sold as "flounder" or "sole") in fast food restaurants as well as in grocery stores in the frozen aisle. The U.S. remains China's second largest export market for flatfish, receiving 17,976 mt of flatfish valued at $92.5 million in 2017, an increase of 11 percent over 2015 value.[18]

In Europe, key export markets include the Netherlands, France, Spain, Poland, and Germany, all of which have a seafood processing sector that could further transform and distribute flatfish products across Europe. While Alaska is very dependent on China for reprocessing its flatfish harvest, both the U.S. and Europe have access to other sources of flatfish from across the globe and are thus not fully dependent on China for flatfish products. The EU produces large volumes of competitor species of flatfish that are consumed domestically and exported to the U.S. The U.S. also imports a large volume of flatfish from Canada.

[17]"Horse mackerel" is a generic name given to a range of species, predominantly from the Carangidae (jack mackerels and scads) family. Fish included in the *Trachurus* (including Atlantic horse mackerel) and *Caranx* genera encompass most of the horse mackerel category.

[18]Global Trade Atlas

Competing Supply

Global flatfish supply has remained fairly constant over the past two decades after declining significantly from harvest levels attained in the 1980s that exceeded 1.2 million mt annually. In contrast, Alaska's contribution to global production of flatfish has grown steadily from tiny volumes in the 1980s. Alaska flatfish continue to compete with species such as European plaice and dabs, and have remained popular for use in frozen meals and as frozen fillets/kirimis in the U.S., Japan, and Europe. Competition comes from fresh flatfish as well as from fresh/frozen whitefish like tilapia, pangasius, pollock, and cod, among others.

Alaska accounted for 42 percent of global Atka mackerel production between 2014 and 2016, the most recent three years with complete data for global harvest. Historically, Japan is the largest producer but its harvests have declined significantly since 2008 - down 90 percent through 2016.

Global rockfish (including POP and other *Sebastes* species) harvests averaged 218,372 mt from 2012 to 2016 and increased roughly 20 percent over the period. Europe is the largest redfish/rockfish producer, accounting for just over half (52 percent) of total production in 2016. Alaska POP accounted for one-fifth (21 percent) of global rockfish production in 2016, and 88 percent of all rockfish production in the United States.

9. BERING SEA/ALEUTIAN ISLANDS NON-POLLOCK TRAWL CATCHER-PROCESSOR GROUNDFISH COOPERATIVES (AMENDMENT 80) PROGRAM: SUMMARY OF ECONOMIC STATUS OF THE FISHERY

This report summarizes the economic status of the Bering Sea and Aleutian Islands (BSAI) non-pollock groundfish trawl catcher-processor fleet (referred to in the following as the Amendment 80 fleet) over the period 2008 through 2020, following implementation of the rationalization program in 2008 under Amendment 80 (Amendment 80) to the Fishery Management Plan for Groundfish of the BSAI Management Area (FMP). This report provides additional detail to supplement information provided elsewhere in the Groundfish SAFE Economic Status Report; details regarding catch, production, and value of BSAI and Gulf of Alaska groundfish species allocated to Amendment 80 fleet are provided in Section 4 of the Annual Fishery Statistics section.

As a requirement of the Amendment 80 program designed by the North Pacific Fishery Management Council (Council), annual economic reports are submitted to NMFS by Amendment 80 vessel owners and Quota Share (QS) permit holders, providing detailed data on vessel and QS-entity earnings, employment, QS lease transfers, operating costs and expenses, and capital improvements. The Economic Data Report (EDR) program is a mandatory annual reporting requirement for Amendment 80 entities, and supplements data provided by in-season monitoring and data collection programs, including eLandings, catch accounting, and the North Pacific Groundfish Observer program. Beginning with implementation of the Amendment 80 program in 2008, the EDR data collection program has collected annual economic census data, with the most recent available data representing results from the 2020 calendar year of operations.[1]

Among the goals of Amendment 80 is improving economic incentives to increase retention and utilization, and reduce bycatch by the commercial catcher-processor (CP) fleet using trawl gear in the non-pollock groundfish fisheries. The structure of the program was developed to encourage fishing practices and use of vessel capital with lower discard rates and to mitigate the costs of increased retention requirements[2] by improving the opportunity to increase the value of harvest species while improving operational efficiency and lowering costs.

The BSAI non-pollock groundfish trawl CP sector is composed of vessel-entities representing the 24 CPs with history of harvesting groundfish in the BSAI, but that did not qualify for inclusion in the rationalization of the CP pollock fishery under the American Fisheries Act. Of the original 24 CPs electing to enroll in the Amendment 80 catch share program, 22 remained operational as of implementation of the program in 2008, and 21 CPs participated in the program that year. Over

[1]The EDR program is managed collaboratively by Alaska Fisheries Science Center (AFSC) and Pacific States Marine Fisheries Commission (PSMFC), with guidance and oversight from the North Pacific Fishery Management Council. Further information regarding the data collection program, including protocols and results of data quality assessment and controls, is provided in database documentation available from the AFSC's Economic and Social Sciences Research Program (ESSR).

[2]Concurrent with passage of Amendment 80, the Council also developed a groundfish retention standard (GRS) program for Amendment 80 catcher-processors by establishing a minimum retention schedule for the sector, beginning at 65% roundweight retention for 2008, and increasing by 5% increments to 85% for 2011 and subsequent years. Due to high compliance costs for the GRS program, Amendment 80 vessels and cooperatives were granted exemptions to the standard under emergency rule beginning in 2010, and the GRS program requirements were permanently rescinded under Amendment 93 to the FMP (77 FR 59852, October 1, 2012), effective March, 2013.

the first 13 years of the program, four new vessels have entered to replace an original vessel, one each in 2009, 2016, 2017, and 2019, and of the 19 vessels participating in the program during 2020, 16 vessels remain of the original fleet.

Species allocated to the Amendment 80 fleet include: Aleutian Islands Pacific ocean perch, BSAI Atka mackerel, BSAI flathead sole, BSAI Pacific cod, BSAI rock sole, and BSAI yellowfin sole. In addition, the Amendment 80 cooperatives and vessels receive allocations of Pacific halibut and crab prohibited species catch (PSC) for use while fishing in the BSAI, and groundfish sideboard limits and halibut PSC for use in the Gulf of Alaska. Amendment 80 allocates the six target species and five prohibited species in the BSAI to the CP sector and allows qualified vessels to form cooperatives. These voluntary harvest cooperatives coordinate use of the target allocations, incidental catch allowances and prohibited species allocations among active member vessels. In the initial year of the program, 16 vessels/LLP licenses formed a single cooperative (identified as the Best Use Cooperative, renamed Alaska Seafood Cooperative in 2010), with an additional seven vessels operating in the limited-access fishery. The Alaska Groundfish Cooperative formed in 2011 from the eight vessels that operated in the limited-access fishery during 2009-2010, increasing to nine member vessels in 2013-2014, and six during 2016-2017. In 2018, the Amendment 80 cooperatives consolidated into the Alaska Seafood Cooperative, with a membership of 20 vessels/LLP licenses.

To describe the economic condition and performance of the fleet under the rationalization program and subsequent changes in fishery management, statistics reported below are intended to indicate the status and trends in a variety of economic indicators and metrics. The reported statistics provide a general overview of economic conditions and performance over time, and are not intended as a rigorous statistical analysis of specific hypotheses regarding economic efficiency or other performance metrics. These generally include changes in the physical characteristics of the participating vessel stock, including productive capacity of vessel physical plant (freezer and processing line capacity and maximum potential throughput) and fuel consumption rates, efficiency and diversification of processing output, investment in vessel capital improvements, operational costs incurred for fishing and processing in the Amendment 80 fisheries and elsewhere, general metrics of financial performance of the fleet as a whole and on an average vessel basis, employment and compensation of vessel fishing crew and processing employees, and the geographic distribution of crew employment and wages. The reader is referred to the Council's Five-Year Review of the program for a more detailed and comprehensive analysis of economic effects of Amendment 80 (Northern Economics, 2014).

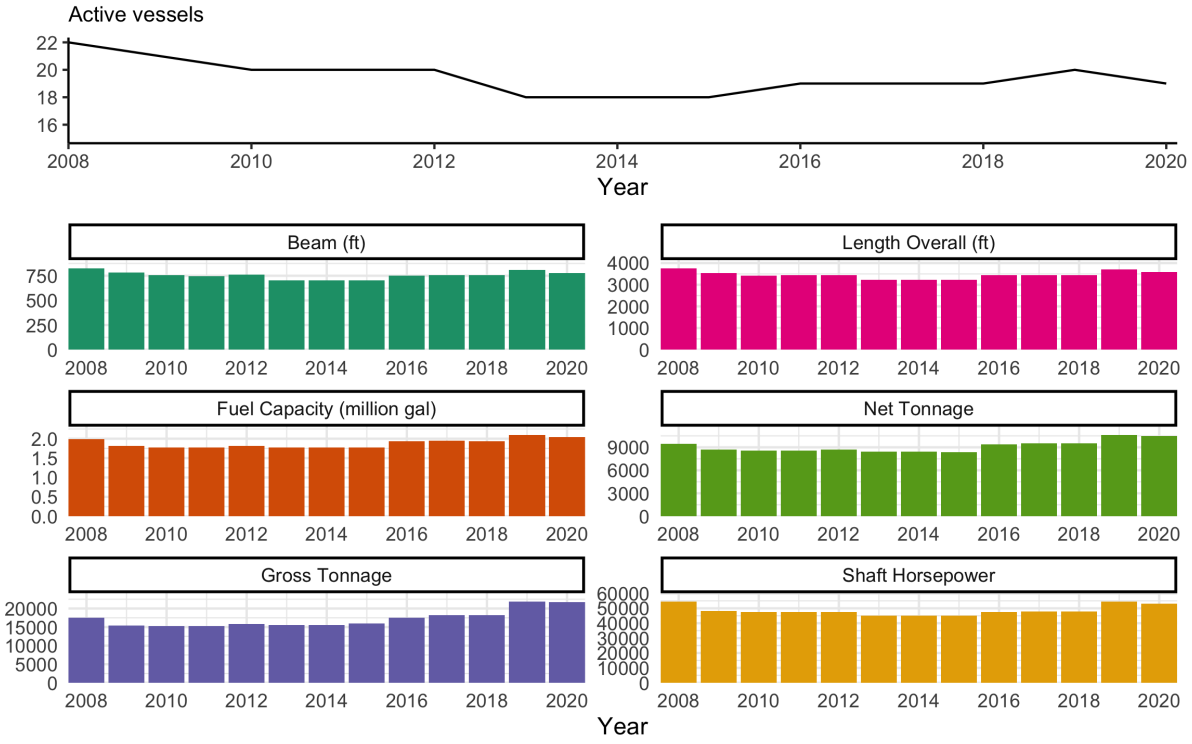
In the following tables, annual statistics are reported for Amendment 80 fleet or fishery aggregate total values and median vessel-level values. All monetary values in the report are presented as inflation-adjusted 2020 equivalent U.S. dollars, consistent with inflation-adjusted data presented in other sections of the Groundfish Economic Status Report. Due to the small number of reporting entities comprising the Amendment 80 sector, some statistical results are suppressed to protect the confidentiality of proprietary information, as indicated in tables by the symbol "*", and "-" indicates that no data are available for the tabular value. The total count of non-zero reported values are shown in the tables (under the heading "Obs" or "Vessels"). As a general convention, fleet- or sector-level aggregate values are calculated as the sum total over all vessel- or entity-level reported values for a given data item. Vessel-level median values (calculated over reported non-zero values) are reported to represent the "average" vessel; arithmetic means for the reported indicators can be derived as needed by users of this report by dividing the aggregate total value shown by either the associated number of non-zero observations, or alternately by the total count of vessels

(where different). It should be noted, however, that most statistical values reported in the following tables are derived from fewer than 20 observations for a given statistical value, and the underlying data may be highly variable and/or irregularly distributed, such that the arithmetic mean may be a poor representation of the population average value.

9.1. Fleet Characteristics - Size, Production Capacity, and Fuel Consumption

Figure 9.1 and Table 9.1 show fleet aggregate and median vessel values for physical size and capacity of the vessel stock within the active fleet from 2008-2020. With the exit of the F/V Vaerdal as of 2020, the active fleet fell to 19 vessels, with as relatively marginal effect on aggregate physical capacity, with aggregate gross tonnage declining by 1%. In contrast, with the entry of F/V America's Finest during 2019, the fleet increased from 19 in 2018 to 20 Amendment 80-qualified vessels active in EEZ fisheries in the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA). With this entry, the physical size of the fleet (as shown in metrics reported in Table 9.1) exhibited the largest one-year increase to-date, with aggregate gross tonnage increasing 20% from the previous peak, to 21,792 tons, and other metrics increasing from 7% to 13%.

Figure 9.1: Amendment 80 fleet aggregate vessel capacity



Tabular data available in Table 9.1; see table notes for data source and other details.

With the exception of 2018 and the three years from 2013 to 2015, overall fleet composition has been in constant flux since 2008, with entry and/or exit of one or two vessels from the active fleet each year. The initial reduction from 22 active vessels the first year of the program (2008) to 20 in 2012 was due to loss of one vessel at sea (the Alaska Ranger) and the inactivity of the Tremont, which last fished in 2008. In total, five vessels permanently exited the Amendment 80 fleet between 2008 and 2012, all of which were built between 1970 and 1980. Regulations implementing Amendment

97 to the BSAI Groundfish FMP were published and became effective in October of 2012 (77 FR 59852), lifting prohibitions on replacement of Amendment 80 vessels and establishing regulatory requirements and processes for qualifying a replacement for an Amendment 80 vessel and transfer of associated fishing privileges. The first such vessels qualified for entry to the Amendment 80 program during 2016: the Seafreeze America and the Cape Flattery, both owned by United States Seafood, replaced the company's vessels Alliance and Ocean Alaska, which last operated in 2012. The Seafreeze American began active operations during 2016, increasing the active fleet from 18 to 19 vessels, however, the Alaska Juris, owned by Fishing Company of Alaska (FCA), sank while underway on the Bering Sea in July of 2016;[3] statistics in Table 9.1 showing increased aggregate and median physical capacity reported for 2016 are inclusive of both vessels and do not reflect the loss of the Alaska Juris. FCA ceased business operations during 2017 and the company's three remaining vessels and all quota share holdings were acquired by other Amendment 80 entities (vessels Alaska Victory and Alaska Warrior were acquired by Ocean Peace, Inc., and the Alaska Spirit was acquired by O'Hara, Inc.). With entry of F/V Araho (owned by O'Hara, Inc.) in 2017, maintaining the count of vessels at 19, aggregate fleet gross tonnage increased from the previous year to 18,152 tons (+4.6%)[4], while fleet aggregate length overall (LOA) decreased slightly to 3,443 feet. As noted above, entry of F/V America's Finest in 2019 increased aggregate fleet size metrics substantially, with LOA increasing by 8% to 3,705 feet, aggregate shaft horsepower increasing by 13% to 54.5 thousand, and aggregate fuel capacity increasing by 20% to 2.8 million gallons.

By most available metrics, physical production capacity of processing plants in the Amendment 80 fleet exhibited a marked increase beginning in the 2013 to 2015 period, leveling in the most recent years (Figures 9.2 and 9.3). Consistent with significant capital improvement in the existing fleet over the last 8 years and entry of new and replacement vessels beginning in 2016 (see subsection 9.4.4 below), production throughput capacity and onboard frozen storage indicators reported in Tables 9.2 and 9.3 for the recent period confirm substantial expansion of aggregate production capacity of the fleet.

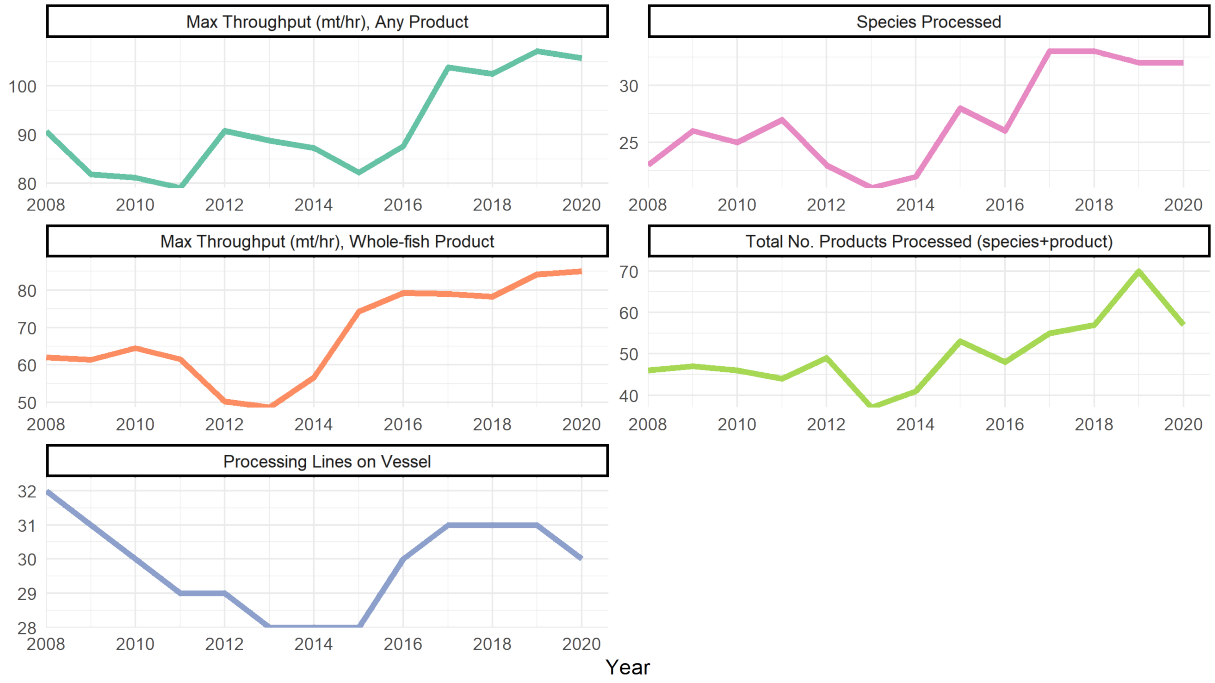
Total processing lines across the active fleet during 2017 through 2019 remained at 31 despite the entry of an additional vessel in 2019, but declined to 30 with the reduced fleet operating in 2020. This maintained an average of approximately 1.6 lines per vessel, although most vessels continue to have only one processing line (as indicated by the median value Table 9.2, which has been constant since 2008). Fleet aggregate processing line throughput capacity for whole-fish product increased to 84.1 metric tons per hour (t/hr) in 2019, and 85.1 t/hr in 2020, compared to an annual average of 59 t/hr over the 2008-2014 period. More recently, line throughput over all head and gut product types types[5] showed a marked increase beginning in 2015, to a fleet aggregate of 107 t/hr (median 4.9 t/hr) in 2019, compared to a range of 80 - 90 t/hr prior to 2017; the aggregate rate declined slightly in 2020, while the median reached a peak of 5 t/hr. Notably, although not as directly indicative of physical production capacity, the number of distinct species and product types

[3]NTSB, 2017. https://www.ntsb.gov/investigations/AccidentReports/Reports/MAB1726.pdf

[4]Note that all annual fleet-aggregate physical capacity and production throughput statistics in the following discussion (and referenced tables) represent the summed value over all reported vessel-level physical measurements and production volume-per-hour values for the year.

[5]Head and gut (H&G) product types include the following product code and descriptions, as defined by the State of Alaska (SOA) in eLandings and Commercial Operators Annual Report (COAR) specifications: 06 - H&G with roe, 07 - H&G western cut, 08 - H&G eastern cut, and 10 - H&G tail removed. Production capacity in the EDR is reported by species and product type use according to SOA standard codes. In a addition to code 01 - Whole fish, small quantities of other product types are produced by A80 vessels, including 11 - Kirimi, and various ancillary product types, but do not appear in EDR processing capacity records.

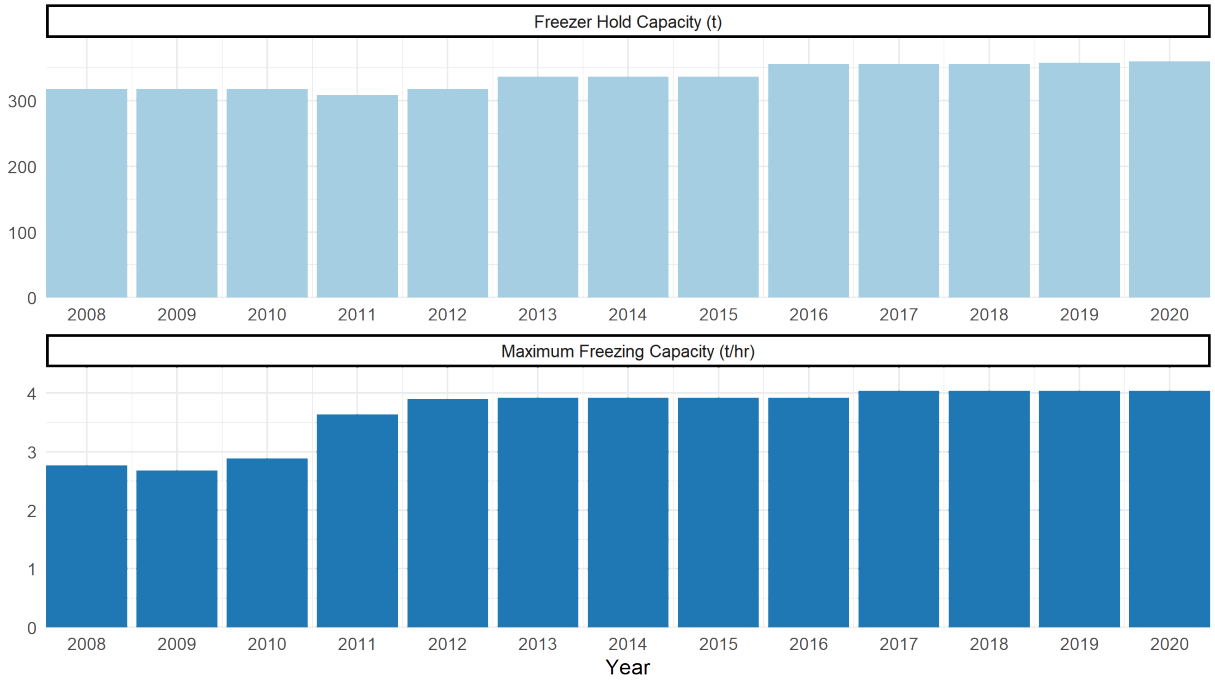
Figure 9.2: Amendment 80 fleet aggregate production capacity



Tabular data available in Table 9.2; see table notes for data source and other details.

reported by active vessels have followed a similar trend, generally increasing since 2013, with 33 distinct species processed and 57 distinct species-product types produced across the fleet in 2018; this increased to 70 distinct products in 2019, representing the highest variety of outputs reported since the program began. This was likely a transitional increase, however, as reported output in 2020 returned to 57 distinct product-types from 32 species. Cold-handling capacity is commonly cited as principal limiting factor in overall production capacity on Amendment 80 CP's, and the recent increasing trend in associated metrics is similar to that shown in processing line capacity. Product chilling (i.e. plate freezer) throughput and on-board frozen storage metrics are reported in Table 9.3. Fleet-aggregate freezer throughput capacity, which ranged between 59 and 67 t/hr on an annual basis prior to 2016, increased to 72.8 t/hr in 2017, and reached a peak of 77.2 t/hr in 2019, declining 73.7 t/hr in 2020. Fleet-aggregate cold storage capacity, which ranged between 7,100 and 7,700 t over the 2009 to 2015 period, increased by 13% in 2019, to 9,466 t, with median cold storage capacity increasing slightly to 358 t, declining by 2% to 9270 t in 2020.

Figure 9.3: Amendment 80 fleet aggregate freezer hold and throughput capacity



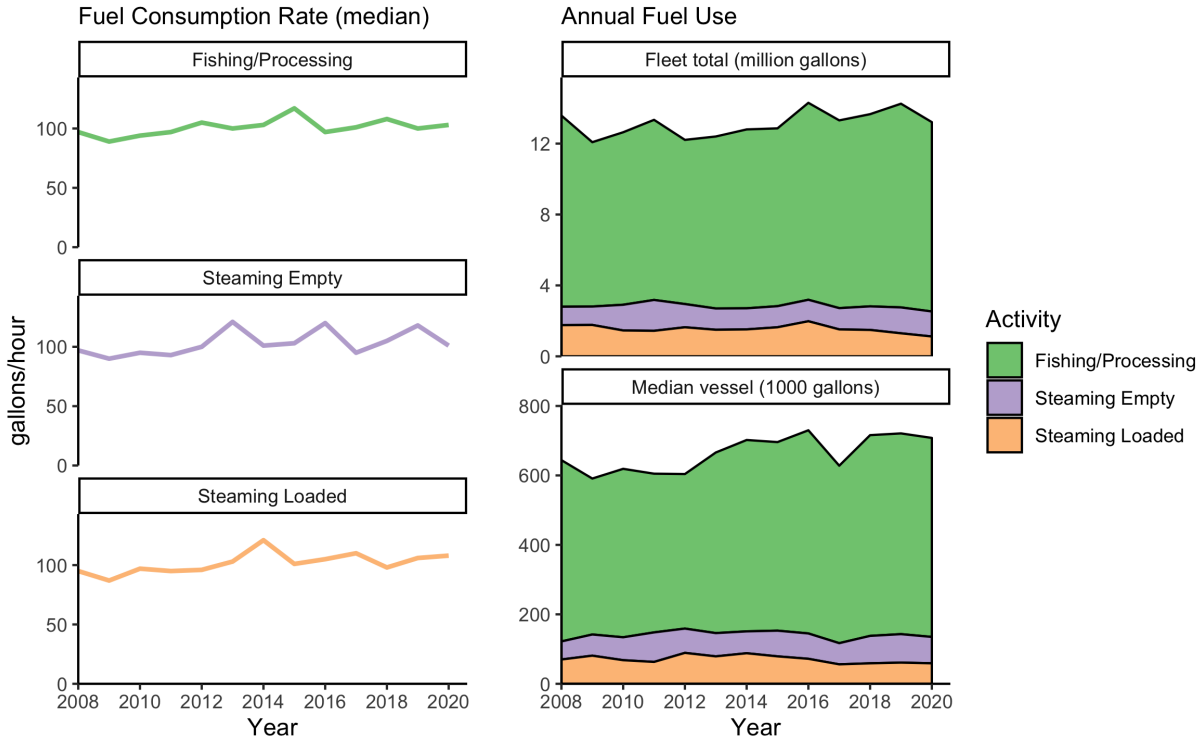
Tabular data available in Table 9.3; see table notes for data source and other details.

Fuel consumption statistics for the Amendment 80 fleet show some indications of increasing fuel efficiency associated with recent entry of replacement Amendment 80 vessels and capital improvement in existing vessel capital stock discussed above. Figure 9.4 shows median values for reported estimates of average hourly fuel consumption rate, in gallons per hour (gph), of Amendment 80 vessels in primary at-sea operational activities, comprised of fishing and processing, steaming loaded, and steaming empty. Median reported hourly fuel use rates vary by activity (highest during steaming loaded and lowest while steaming empty) and generally trended upward over the 2008 - 2013 period, reflecting the increase in median and aggregate vessel size within the active fleet (Table 9.4). Although metrics of fleet size maintained an increasing trend from 2014 to 2019, median fuel consumption rates have not maintained a discernible trend, and for each respective operational activity, rates during 2020 were at or below peak rates reached during the 2014 to 2016 period. Similarly, total fuel consumption in aggregate for the fleet, across all operations, averaged 12.6 million gallons per year over the 2008 to 2016 period, increased to an average of 13.75 million gallons over the most recent five years, but did not maintain a consistent trend over the recent period (Table 9.5). More statistical analysis is required to evaluate net changes in fuel efficiency across the fleet over time, controlling for compositional and operational changes (see Section 9.2 below); nonetheless, the most recent investments in the fleet appear to correspond with substantial net improvements in fuel efficiency indicated in the metrics described above.

9.2. Fishing Effort - Vessel Days at Sea

Figure 9.5 reports aggregate fleet vessel activity days for Amendment 80 vessels operating in Amendment 80 fisheries, and days operating in all other fisheries, showing both fishing and processing activity, and days transiting and offloading, and inactive in port. Total days at sea in Amendment 80

Figure 9.4: Amendment 80 fleet fuel use by vessel activity



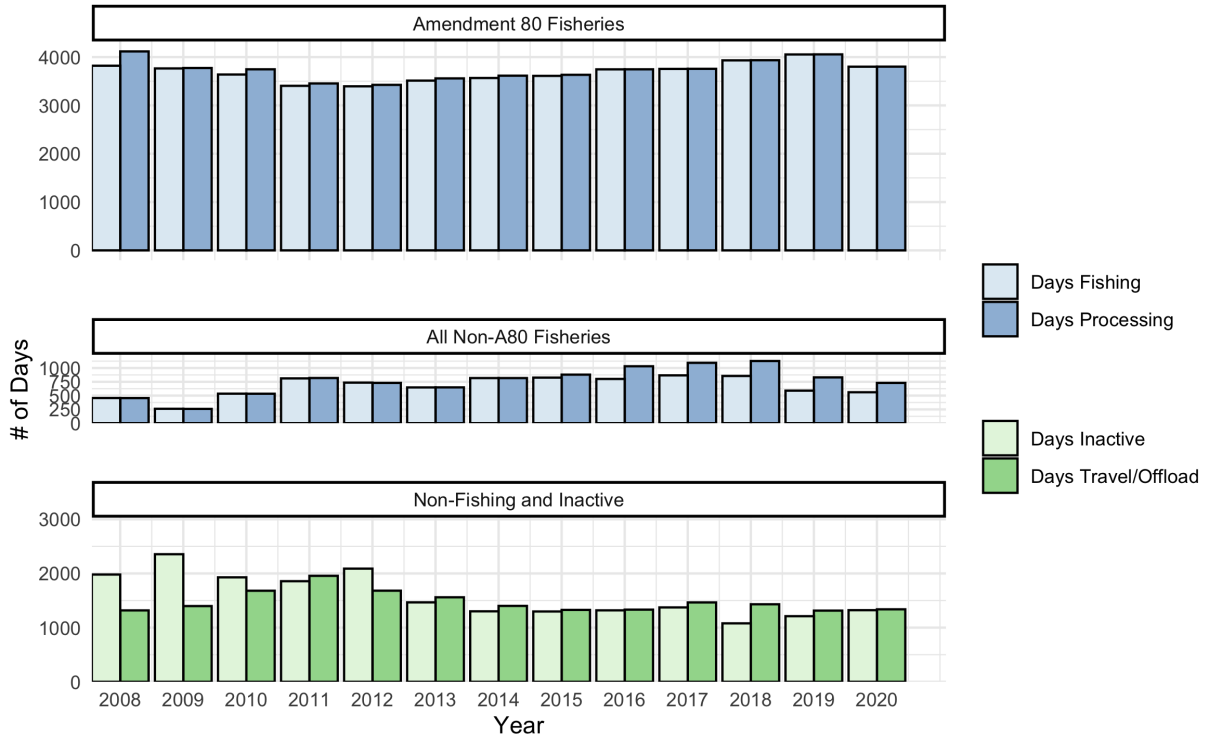
Tabular data available in Tables 9.4 and 9.5; see table notes for data source and other details.

program fisheries exhibited a consistent downward trend from 2008 until 2012, when fleet aggregate vessel-days processing declined to a low of 3,425 across 19 active vessels. Aggregate days in the Amendment 80 program increased each subsequent year up to 2019, to 4,056 vessel-days processing across 20 vessels, the most intensive year of fishing and processing activity reported in A80 fisheries to-date, declining by 6.3% in 2020, to 3,802 days. A smaller segment of the fleet is active in fisheries outside of Amendment 80 program targets, including both Bering Sea/Aleutian Islands and Gulf of Alaska fisheries, and participation is somewhat more variable from year to year (Table 9.6), declining from 17 vessels in 2011-2012, to 10 in both 2017 and 2020. The period from 2016 to 2018 represented the most intensive fleet-level activity in non-A80 fisheries reported to date, with fleet total days processing averaging nearly 1,100 days over those years, compared to less than 650 days per year averaged over the previous period and declining to 730 in 2020. Fishing and processing activity tends to track closely across all years in Amendment 80 fisheries, with slightly more days processing; this was the case in non-Amendment 80 fisheries as well until 2016, when a segment of the fleet (between 4 to 6 vessels began operating as motherships in the BSAI [6]. Reflecting the peak in fishing and processing activity across the active fleet during 2018 to 2019, days inactive (in-port or inactive at sea) fell to a low of 1,079 in 2018.

Table 9.6 reports additional fleet aggregate and median statistics for vessel activity days reported in EDR data from 2008-2020, representing counts of days during which the vessel undertook fishing

[6]Note that statistics reported for 2018 do not include F/T America's Finest, which operated as a mothership during 2018, but was not yet approved for a federal fishing permit or other regulatory requirements for entry to the Amendment 80 sector. Statistics reported for raw fish purchasing costs reported in Tables 9.9 and 9.10 provide an additional metric of this trend.

Figure 9.5: Amendment 80 fleet aggregate days at sea - fishing and processing, by fishery, and days transiting/offloading and inactive in port



Tabular data available in Table 9.6; see table notes for data source and other details.

and processing operations in 1) Amendment 80 program fisheries in the Bering Sea/Aleutian Islands management area (including mothership operations in the BSAI processing Amendment 80 program catch), 2) all fisheries other than Amendment 80 program fisheries (inclusive of catch and processing of Open Access (OA), CDQ allocation, and/or landings on experimental or exempted fishing permits in any management area, as well as catch and processing of Rockfish Pilot Program (RPP) catch in the GOA and/or Amendment 80 sideboard allowances in the GOA), 3) days on which the vessel was in transit (not fishing or processing) or offloading in port, and 4) inactive in shipyard. Beginning in 2015, EDR reporting broke out vessel activity in the GOA from Amendment 80 and all other fisheries, respectively; to provide consistent metrics over time, Table 9.6 reports active vessels and vessel days in all non-A80 fisheries inclusive of GOA activity for the full 2008-2020 period, with metrics for the GOA beginning in 2015 (as included in the non-A80 metrics). Note that counts of days by activity, area, and/or fishery for a given vessel are not mutually exclusive and represent days during which the vessel reported activity by fishery management program in eLandings; a given calendar day may be counted both as a day fishing and as a day processing (counts of days processing are generally inclusive of days fishing), in one or more program fisheries, as well as a day transiting/offloading. As such, the results as reported in Table 9.6 and Figure 9.5 give a relative account of the distribution of fleet activity among different activities and as a upper-bound approximation of the cumulative duration of vessel use in a given activity.

9.3. Catch, Production, and Value

Low levels of catch and finished production volume across all fisheries targeted by Amendment 80 vessels in 2020, combined with historically low market values, resulted in the lowest level of wholesale market value produced by the fleet since 2009. Wholesale price information for species and groundfish products produced by the Amendment 80 fleet, and market conditions, including effects of the COVID-19 pandemic, are reported and examined in detail elsewhere in the Economic SAFE.[7] Production and value information displayed in Figure 9.6 and Table 9.7 indicate that aggregate finished volume of the fleet over all Alaska fisheries during 2020 declined slightly from 2019 to 200 thousand t while aggregate gross wholesale value declined by 18% to $330 million, reflecting a similar proportional decline in weighted average price to $1,652 per t, which reached the lowest value to date since 2008. For Amendment 80 program fisheries, representing approximately 75% of aggregate finished volume and value for the fleet in 2020, finished volume of 150 thousand t declined 3% from 2019), and while value declined by 18% to $308 million, reflecting a historically low average first wholesale value of $1,686 per t. On a median basis, production volume over all fisheries increased by 20% to 11 thousand t in 2020, while first wholesale value declined by 6% to $16.6 million.

Figure 9.6 and Table 9.7 report annual fleet aggregate and median vessel-level values for retained and discarded catch, volume of processed product in finished weight terms (in t), and estimated wholesale value of finished processed volume (aggregate and per-t values in $US adjusted to 2020-equivalent value using the GDP deflator). Statistics for these metrics are shown aggregated over all Alaska fisheries, and stratified by Amendment 80 target species (as a group), all other species caught in fisheries in the BSAI, and all species caught in fisheries in the Gulf of Alaska. In 2019, aggregating over all Alaska fisheries, total retained catch in the Amendment 80 fleet declined by 7% compared to 2019, to 321 thousand t, with discard volume of 23.4 thousand t and discard rate (discard as percentage of total catch) of 7.29%, both increased from the historically low bycatch levels of 2015 - 2017. Total retained catch aggregated over the six targeted Amendment 80 species (Atka mackerel, flathead sole, rock sole, yellowfin sole, Pacific cod, and Pacific Ocean perch) declined by 4% to 227 thousand t in 2020, while discards within Amendment 80 program fisheries declined to 3.4 thousand t, 1.48% of total catch. Total retained catch of all other species in the BSAI in 2020 increased to 72 thousand t (up 7% from 2019), with total discards increasing to 18.4 thousand t, a rate of 25.6% of total catch. Total retained catch in GOA fisheries declined by 10% to 21.4 thousand t in 2020, with discard volume and rate declining to 1.6 thousand t and 1.6%.

[7] Note that Table 9.8 below also reports aggregate first wholesale statistics for the Amendment 80 sector, which are differentiated from statistics reported in Table 9.7 in that the former represent volume and value of product sales completed during the calendar year as reported in Amendment 80 Economic Data Reports. In contrast, statistics shown in Table 9.7 report volume of physical production by active vessels in the Amendment 80 sector during the calendar year, with first wholesale value estimated based on ADF&G Commercial Operators Annual Reports (COAR) price data. Discrepancies between values reported in the respective tables (and comparable tables presented elsewhere in the SAFE report) are attributable to differences in timing between production output, sales, and fluctuating inventories, as well as other sources of variation.

Figure 9.6: Amendment 80 fleet aggregate production and value

Tabular data available in Table 9.7; see table notes for data source and other details.

9.4. Operating Income, Costs, and Capital Expenditures

The following section provides a brief summary of the economic performance of the Amendment 80 sector over the 13-year period since implementation of Amendment 80 in 2008, in terms of sector/fleet and median vessel-level statistics for annual gross revenues, annual operating expenses, net operating income calculations, and capital investment expenditures. 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.

9.4.1 Revenues

Table 9.8 presents a summary of annual revenues for the Amendment 80 sector (including all Amendment 80 LLP holders and QS entities), by revenue source, as reported in Economic Data Reports. Fishery product sales clearly represent the principal source of revenue for the sector, with annual sales ranging from $285 million to $465 million in aggregate, and from $12.7 million to $24.7 million on a median-vessel basis. Total reported volume of finished product sales for the sector during 2020 was 192 thousand *t*, a slight increase from 2019, producing gross first wholesale revenue of $307 million, a 21% decline from 2019. At the median vessel-level, total sales volume increased by 24% to 8.6 thousand *t* sold, and revenue increased 3% to $18 million.

In comparison, fee-for-services revenue earned by vessels (e.g., charters, tendering, cargo transport) and royalties received from leasing QS and other fishery allocations both represent minor sources of revenue, and revenue from fishery permit sales reported in EDR data has been negligible.[8] Royalty revenues represent a small proportion of annual operating revenue for the sector due to the relatively inactive QS lease market compared to other catch shares programs.[9] The volume of QS lease activity during 2018 and 2019 was markedly reduced compared to most years, with five of the 20 reporting entities reporting lease royalties in 2019 totaling $400 thousand from leases of 3,680 *t* of Amendment 80 QS allocation transferred, totaling over all QS types (species); data reported by four vessels for 2020 in suppressed for confidentiality.[10]

[8] As of 2020, only one Amendment 80 entity has reported revenue from permanent sale of LLP license assets in an annual EDR (not shown in Table 9.8); other LLP sale transfers have occurred, but were associated with exit of the entity from the Amendment 80 sector and thus are not captured in EDR submissions that apply only to current sector entities.

[9] Fleet consolidation was not a management objective in developing Amendment 80 given the limited number of CPs comprising the fleet historically, most of which continue to be active in the fishery to-date. As a result, leasing activity of QS and other transferable allocations within the fishery has been limited compared to other catch-shares management programs in Alaska fisheries (e.g., BSAI Crab Rationalization, Halibut IFQ) where consolidation was a prominent management outcome facilitated by introduction of transferable quota. In addition, most of the companies that hold A80 QS operate multiple vessels and primarily effect QS transfers internally. The number of QS permit holders (lessors) reporting revenue from leasing QS for a given Amendment 80 target species has ranged from zero (0) to as many as 9, while the number of vessels reporting costs (lessees) for QS allocation from Amendment 80 QS permit holders ranges from 0 to 8; due to the small number of entities reporting lease activity, little useful information regarding quota lease markets for individual species can be reported. The most active lease market to-date has occurred in yellowfin sole QS beginning in 2011, however, non-confidential data can only be published for 2014, a total of 18 thousand *t* of yellowfin sole QS was transferred between QS holders and harvesting vessels, for a total of $1.3 million, or approximately $70 per *t* (nominal 2014 value).

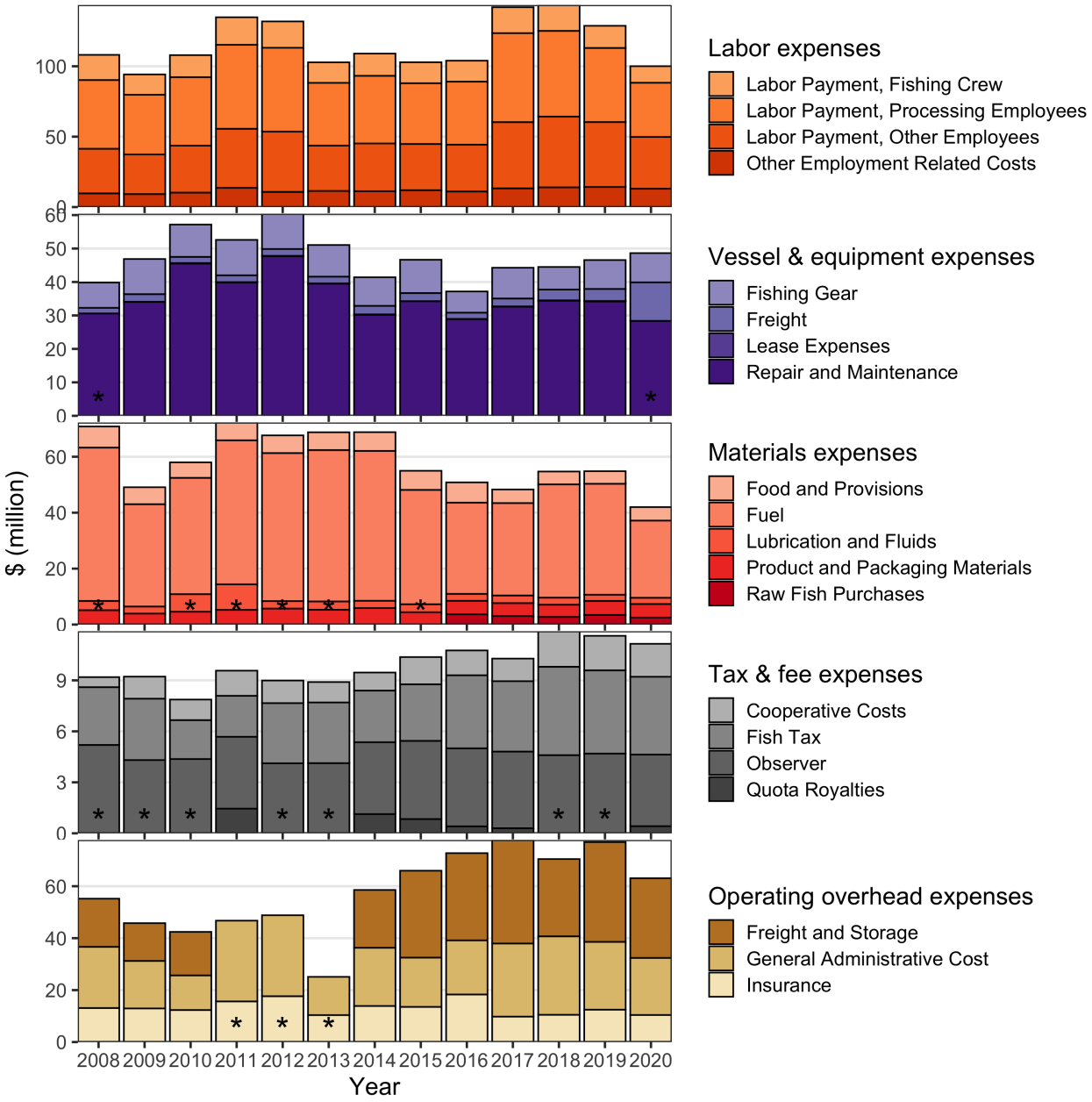
[10] Annual revenue and quantities are aggregated over all species QS allocation and PSC lease data reported, and composition of the aggregate varies from year-to-year; as such, the aggregate value of royalty revenue shown for different years may not track closely with aggregate lease volume. The decline of quota lease volume and revenue

9.4.2 Operating expenses

Figures 9.7 and 9.8, respectively, summarize sector-level aggregate annual expenses incurred by Amendment 80 CPs from 2008 to 2020 as operating costs for all fishing and processing activity, by expense item, and pro-rata indices by category of expense item in terms of 1) cost per day of vessel operation, 2) cost per thousand t of finished product output, 3) item cost as a proportion of total vessel expenses, and 4) as a proportion of total vessel gross revenue. The figures summarize statistics reported in Table 9.9 representing aggregated results for the fleet as a whole, while Table 9.10 provides results on a median per-vessel basis. Operating 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 the categorized expenses 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, 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) annual expenses. The cost per day and cost per thousand t pro-rata indices shown in Figure 9.7 and Tables 9.9 and 9.10 provide relative indices of cost per unit of vessel effort and production output, respectively, and are most relevant for those input costs that vary most directly with production level, particularly fishing crew and processing labor costs, material expenses, and (somewhat less directly) vessel costs.

during 2020 is largely the result of sale transfers of QS assets associated with the exit of Fishing Company of Alaska from the Amendment 80 sector completed during the year.

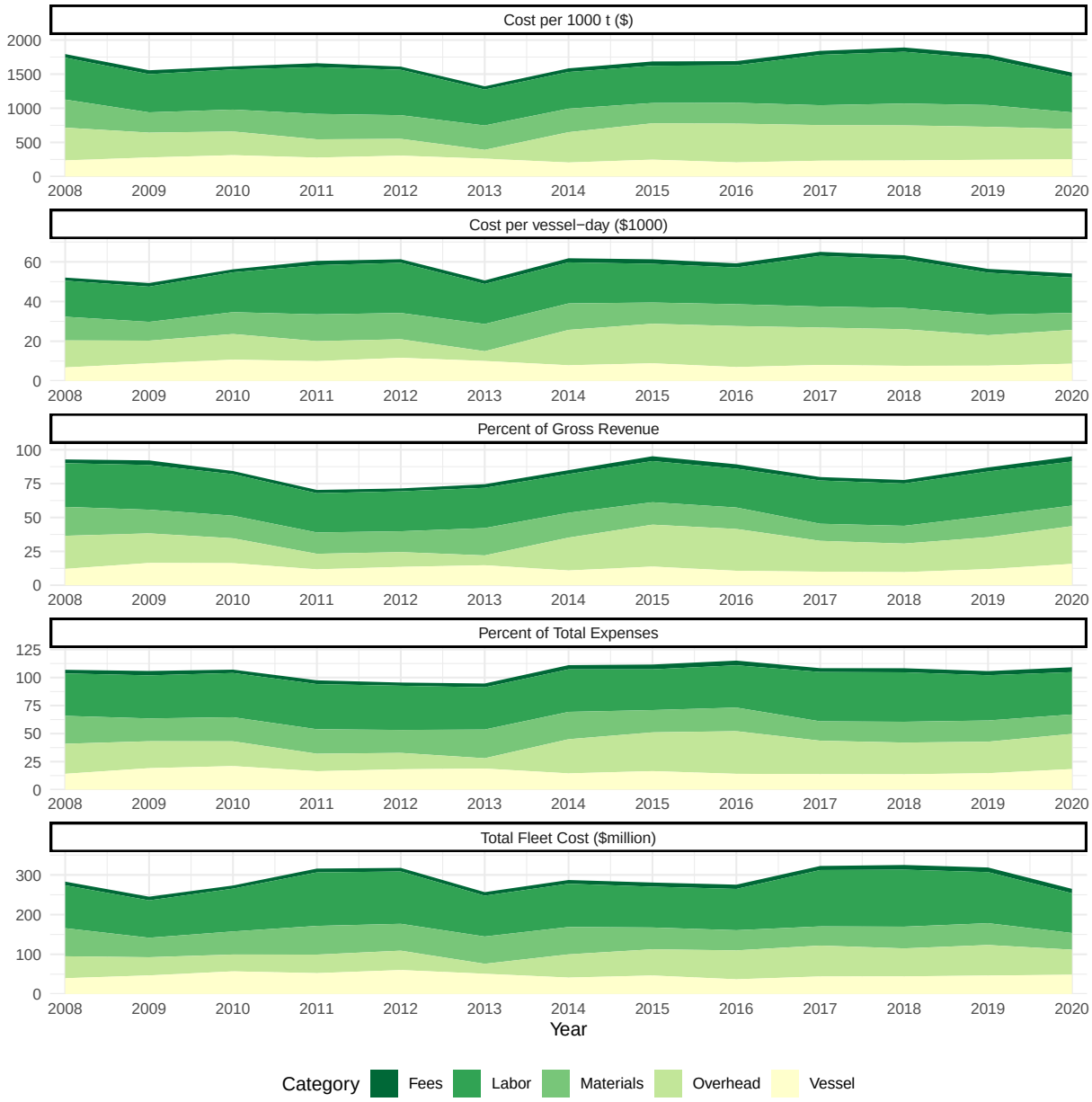
Figure 9.7: Amendment 80 sector aggregate operating costs, by expense category and item



Tabular data shown in figure for A80 sector aggregate values are reported in Table 9.9, and median vessel-level values (not shown in figure) are reported in 9.10. See table notes for data sources and other details.

"" indicates value for one or more cost categories is suppressed for confidentiality.*

Figure 9.8: Amendment 80 sector operating cost indices, by expense category



Tabular data shown in figure for A80 sector aggregate values are reported in Table 9.9, and median vessel-level values (not shown in figure) are reported in 9.10. See table notes for data sources and other details.

Aggregate operating and overhead expenses for the active fleet during 2020 totaled $256 million, a 20% decline from 2019 and the lowest level since 2009. As depicted in Figure 9.8, combined labor costs (including direct wages and bonuses, payroll taxes, benefits, and travel and recruitment expenses incurred for all members of the vessel's paid fishing and processing crew and other on-vessel labor) consistently represent the largest component of annual expenses in total direct value and pro-rata terms, with taxes and fees, as a category, representing the smallest component. As categories of expenses, vessel-, materials-, and overhead expenses have alternated in relative ordering over the 2008 to 2020 period. Beginning in 2013, however, overhead costs, as measured across all

calculated indices, have generally trended upward, while vessel and materials expenses generally trended downward over the same period.

Combined labor costs increased substantially during 2017-2018, to $142 million and $144 million, respectively, representing 44% of total fleet operating costs for both years, before declining in 2019 to $129 million and $100 million in 2020 (40% of total operating expenses). The largest increases in 2017-2018 fleet-level labor costs were in direct wage costs for processing labor and for senior vessel crew (including captains, other vessel officers, and engineers (labeled "Other employees" in Figure 9.7 and Tables 9.9 and 9.10). Fishing (deck) crew labor costs and other employment-related expenses also showed significant increases in 2017-2018, but did not substantially increase as a proportion of total operating costs compared to the pre-2017 period. Labor expenses declined in both subsequent years, with fishing crew and processing employee wages declining by 25% from 2019 to 2020, and senior vessel crew wages declining 20%.

As reported in Tables 9.9 and 9.10, processing labor costs proportionally represent the single largest expense item in most years, ranging from 15% to 20% of total operating cost, followed by fuel costs, ranging more variably from 10% to 20% of aggregate fleet-level expenses. After a period of declining fuel costs between 2014 to 2017, fuel costs for the fleet increased to $40 million in 2018 and $39 million in 2019, 12% of total annual expenses for both years, . Repair and maintenance expenses of $34 million aggregated across the fleet represented approximately 11% of overall costs. Product freight and storage costs have varied widely over the 2008 to 2020 period, from $14 million to $39 million at the aggregate fleet level (11% to 20% of fleet total costs), comprising one of the largest single expense items at both the fleet- and median vessel-level in recent years, and declining by 26% to $29 million at the fleet-level during 2020.[11] General administrative costs also grew substantially in 2019, increasing by 35% to $27 million, and by an additional 7% in 2020 to $29 million. With successive annual growth in product freight/storage and general administrative costs beginning in 2014, concurrent with declining fuel costs, overhead expenses as a category have displaced material expenses as the second largest category of annual expenditures at both the fleet and median vessel levels, behind labor costs.

Of particular note regarding potential effects of the COVID-19 on operating costs during 2020, non-wage labor costs, which include travel and lodging for vessel crew, personal safety equipment and related materials and other costs, as well as general administrative overhead costs, are likely to have disproportionately increased as a result of the pandemic, and somewhat less directly, associated shipping and supply-chain constraints may have contributed to increased product freight and storage costs. In gross terms, fleet aggregate labor costs overall substantially declined in 2020, and marginally declined as a proportion of total aggregate annual expenses (from 40% to 39%), however, non-wage labor costs declined by a comparatively modest 8% in 2020, and marginally increased relative to total annual operating costs (from 4.5% to 5%) and from 3.6% to 4.2% of gross annual revenue. On a median vessel basis, total labor costs declined by 14% in 2020, from $6.2 to $5.2 million, while non-wage costs increased by $20 thousand to $761 thousand (+ 2.5%), or by approximately $100 per vessel day at sea compared to 2019. General administrative overhead costs during 2020 declined by 16% to $22 million in aggregate, but do not appear to have changed in pro-rata terms from recent years. In direct terms, fleet aggregate product freight and storage costs declined by 20% during 2020, to $30.7 million, but in pro-rata terms, represented the single largest operating

[11] Note that EDR data on product freight and storage costs are somewhat irregular, with fewer than one-half of the active vessels in the fleet reporting a value for this expense item during years 2008 to 2014 (as indicated in Table 9.9), and reported values in successive years for a given vessel ranging from $0 to more than $1 million.

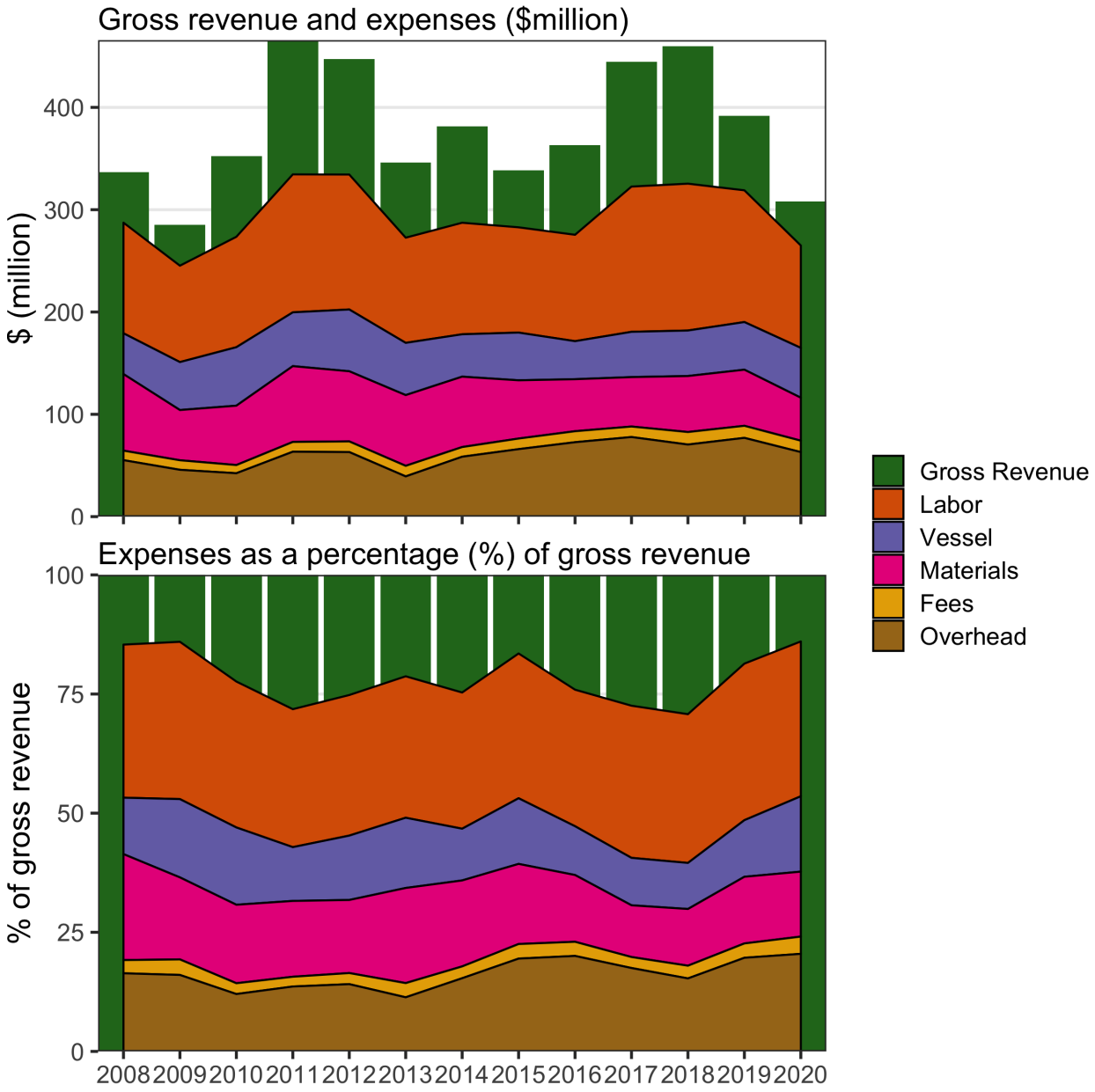
expense item at 19% of fleet aggregate total annual costs. Indexing aggregate product freight and storage costs relative to aggregate finished production volume results in a value of $\$0.27/t$ for 2020, which declined compared to 2019 and is substantially below the average value of this index for most previous years. These results suggest that vessel operating and overhead expenses may have been marginally affected by changes in operational demands and factor markets induced by the pandemic during 2020, however, the above discussion is purely speculative, and more definitive conclusions would require more rigorous statistical analysis. It is notable that the comprehensive itemized annual expense data collected in the Amendment 80 EDR is not available for other sectors of the Alaska fishing industry, and the Amendment 80 sector is the only one for which such an analysis could potentially be undertaken.

9.4.3 Operating returns

Table 9.11 provides an overview of economic and financial performance of the Amendment 80 sector at the fleet and median vessel level over the 13-year period in terms of a high-level income analysis, summarizing and synthesizing operating revenue and operating cost information presented in the previous two subsections. *Gross revenue* values in the table report aggregate fleet- and median vessel-level gross operating revenues, itemized by revenue category in Table 9.8. Operating and overhead cost values shown in Table 9.11 summarize itemized expenses detailed in Tables 9.9 and 9.10, aggregating over total labor costs, non-labor operating costs (inclusive of all vessel, materials, and fee expense items), and overhead costs, respectively. *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, this approximates the sector aggregate and median vessel-level annual operating return to vessel owners from the primary production activities of vessels and associated assets in the Amendment 80 fleet. These results provide a measure of profitability of vessel operations on an annual cash-flow basis, with residual percentage values (income as percentage of gross revenue) shown as well.[12] However, the results shown do not provide a complete accounting of all relevant variable operating costs, exclude non-payroll income and other taxes, 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 Table 9.11 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.

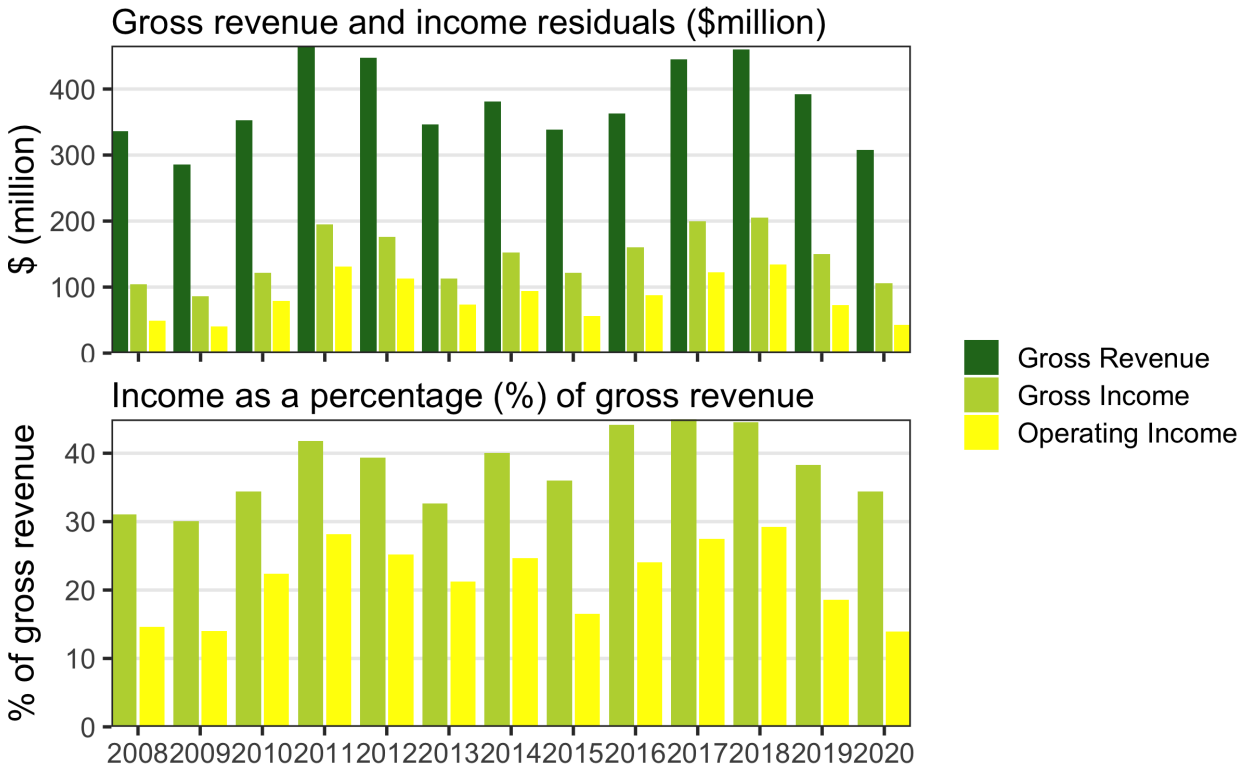
[12]Monetary cost, revenue and income values presented in this section are adjusted for inflation, as described above, to provide comparability of value over time; note, however, that the specific adjustment method may result in a different relative ranking of high/low values over time than an alternative method, e.g., using a Producer Price Index. Residual percentages provide normalized measures of financial performance that are directly comparable over time without requiring inflation adjustment.

Figure 9.9: Amendment 80 sector gross revenue and operating costs



Tabular data for A80 sector aggregate values shown in figure, and median vessel-level values, are reported in Table 9.11; see table notes for data sources and other information.

Figure 9.10: Amendment 80 sector gross revenue and net operating income residuals



Tabular data for A80 sector aggregate values shown in figure, and median vessel-level values, are reported in Table 9.11; see table notes for data sources and other information.

From a fleet aggregate gross revenue of $330 million during 2020, declining 21% from 2019, $115 million remained as estimated gross income after deducting aggregate labor and non-labor operating costs, declining 23.5% from 2019. Operating income (after deducting overhead expenses) for 2020 declined 29% to $52 million in aggregate, the lowest level since 2009; at a percentage return on gross revenue of 17% of gross revenue, performance during 2020 was on par with 2015. As Figure 9.10 indicates, economic performance of the Amendment 80 sector is relatively volatile. While the sector has undergone substantial structural changes in recent years, as measured by these metrics, the pattern of year-on-year changes in economic performance observed over the most recent five years mirrors that observed between 2008 and 2015, both of which are broadly consistent with the pattern of wholesale price trends shown in Figure 9.6.

9.4.4 Capital investment

Table 9.12 reports aggregate sector-level and median vessel-level annual expenditures for new investment and improvements in fishing gear (e.g., net electronics and hydraulic equipment), processing plant and equipment, vessel and other on-board equipment (e.g., hull improvements, propulsion), and other capital expenditures associated with operations of the vessel.[13] Data reported exclude any expenditures for onshore equipment or facilities, and reflect the full initial purchase cost (including sales tax) for capitalized assets and improvements purchased during the year. Expensed

[13]While EDR reporting includes capital expenditures for purchase of LLP licenses, no data has been reported to date; as LLP transfers are infrequent, data on such expenditures would likely be confidential.

payments for principal and debt servicing on financed assets previously purchased are not included. Also, the EDR only captures capital investment costs for vessels once they have entered the sector and become subject to EDR reporting requirements, such that investment in new vessels occurring over a period of years prior to entering the sector is not captured in EDR data. Capital purchase costs reported by vessel owners typically reflect moderate expenditures associated with routine capital maintenance and improvement (e.g., during 3-year overhauls), but in some cases includes expenditures of a larger scale associated with major vessel refitting, new vessel construction, or ownership restructuring (i.e., investments associated with substantially longer amortization and depreciation schedules than more routine expenditures). EDR data collection does not explicitly distinguish between routine versus "major" capital expenditures, such that the distributions of values within a given capital asset category reported in EDRs, and in some cases in summarized values shown in Table 9.12, tend to be highly asymmetric (i.e., "lumpy"). As a result, fleet aggregate and vessel-median statistics reflect high variability over differences in scale and direction of year-on-year variation between metrics and/or asset categories, and statistics are suppressed in Table 9.12 to avoid potential disclosure of confidential information where the annual value reported for an individual vessel represents a disproportionately large fraction of the associated summary value.[14]

Combined capital expenditures in total for the fleet have varied between $9 million and $20 million prior to 2017, but investment has increased substantially over the the last three years, largely driven by large expenditures associated with entry of three new vessels to the sector starting in 2017 (annual values for 2017 to 2020 suppressed for confidentiality). Fleet aggregate capital expenditures on fishing equipment declined by 35% during 2020, to $2.9 million. Summary values for other capital investment categories cannot be reported for 2020 due to confidentiality.

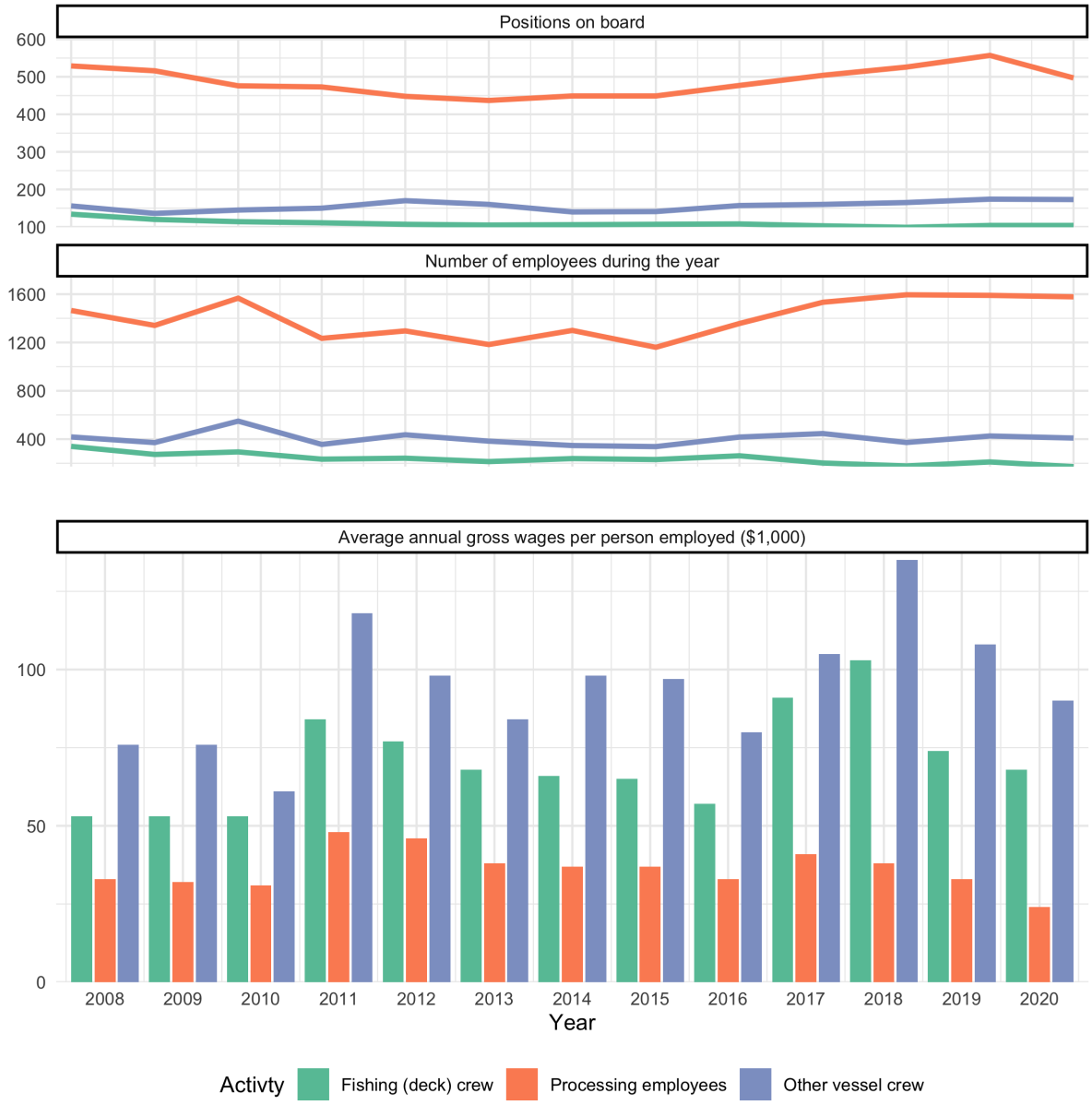
9.5. Employment

Figure 9.11 and Table 9.13 report aggregate and median statistics for employment in the fleet, in terms of total number of individuals employed during all or part of the year and the number of positions on-board vessels at a given time, and average gross wages per employee, by labor category. Total fishing crew positions for the fleet in aggregate was 104 during both 2019 and 2020, while the total number of individuals participating as crew declined by 18% to 172. Median crew positions per vessel has remained constant at 6, while the median number of distinct crew members declined from 11 to 10 in 2020. Average annual gross wages per deck crew member employed during 2020 declined 8% to $68 thousand. Processing employment in 2020 declined by 11% to 497 positions on board, while the number of distinct persons employed declined by only 12 to 1,578. Median number of processing positions per vessel and distinct persons employed both increased by 1 in 2020, to 28 and 76, respectively. Average annual gross wages earned by processing employees in 2020 declined by 27% to $24 thousand per employee. 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 declined by 1 to 173 during 2020, while the number of distinct persons employed in such

[14]Note that median statistics for individual expenditure categories are calculated over vessels reporting non-zero values in the respective category, and for combined (total annual) capital expenditures, are calculated over all vessels reporting non-zero values for one or more capital expenditure category in a given year; i.e., the distribution of combined cost observations is more asymmetric (right-skewed) than for individual capital categories. In contrast to fleet-level statistics, which represent the active fleet in a given year as a whole, median statistics reported for individual expenditure categories in a given year represent distinct sets of reporting vessels rather than a consistent, representative "median vessel". See table footnotes for Table 9.12 for additional detail.

positions declined by 4% to 409, while average gross wages declined by 17% to $90 thousand per crew member employed.

Figure 9.11: Amendment 80 Fleet Employment and Average Gross Wages, by Labor Category



Tabular data for A80 sector aggregate values shown in figure, and median vessel-level values, are reported in Table 9.13; see table notes for data sources and other information.

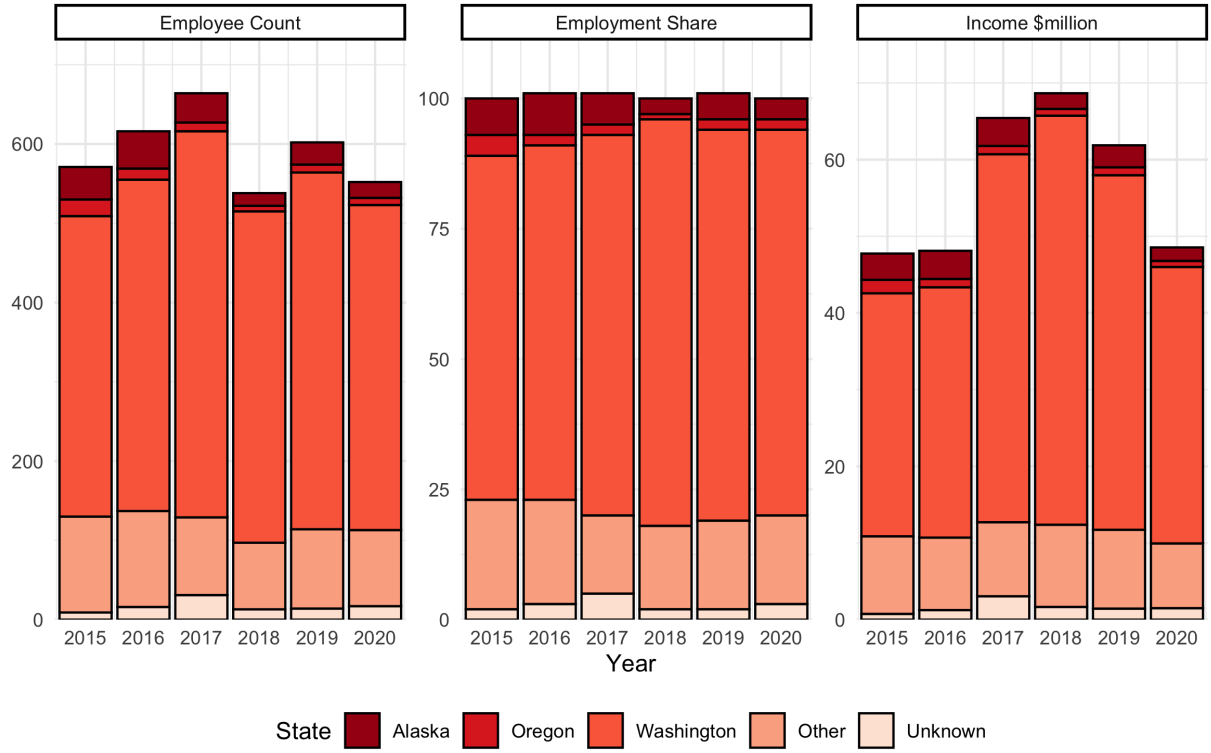
Figure 9.12 reports the spatial distribution of Amendment 80 crew employment and wages by state of crew residence for the years 2016 to 2020, and Table 9.14 reports additional information at the level of individual community.[15] Over the 2015 to 2020 period, the Seattle Metropolitan Statistical

[15]Crew member state and community of residence are derived from reporting of commercial crew license and CFEC gear operator permit numbers reported for all non-processing crew members by each vessel in the Amendment 80 EDR beginning in 2015, using residence information captured in ADF&G's crew license registry database. While a small number of processing employees are secondarily employed as deck crew, and are thus included in the counts of licensed crew members, Amendment 80 fleet processing employee residence is not systematically captured in available data sources.

Area (MSA) has consistently been the predominant location of residence for Amendment 80 vessel crew members.[16]. During 2020, 347 of the total 552 licensed crew members (63%) 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 2020 is $30.5 million, and $36 million to the state of Washington overall, which accounted for 410 (74%) of all crew members for the year. Alaska residents have accounted for between 3% and 8% of Amendment 80 crew employment over the 6-year period, declining from 28 to 20, 4% of total crew members in 2020, and accounting for an estimated $1.8 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 3% 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 $2.3 million in estimated wage income paid to residents of the community during 2015; 4 residents of that community were employed in the fleet during 2020 (estimated gross wage earnings suppressed for confidentiality).

[16]The Seattle-Tacoma-Bellevue MSA is defined by Office of Management and Budget as the geographic area comprised of King, Pierce, and Snohomish counties of Washington state; https://www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf

Figure 9.12: Amendment 80 fleet - estimated crew employment and income, by state of residence



Tabular data for A80 sector aggregate values shown in figure, and median vessel-level values, are reported in Table 9.14; see table notes for data sources and other information.

Table 9.1: Amendment 80 Fleet - Aggregate and Median Vessel Size Statistics

	Vessels	Gross Tonnage		Net Tonnage		Length Overall (ft)		Beam (ft)		Shaft Horsepower		Fuel Capacity (million gal)	
Year		Total	Median	Total	Median	Total	Median	Total	Median	Total	Median	Total	Median
2008	22	17,483	806	9,449	403	3,760	177	826	39	54,650	2,385	1.99	77,920
2009	21	15,482	560	8,723	380	3,546	169	784	38	48,300	2,250	1.82	76,840
2010	20	15,285	775	8,589	403	3,424	177	758	39	47,475	2,385	1.78	77,920
2011	20	15,285	775	8,568	403	3,434	177	748	39	47,400	2,385	1.77	77,920
2012	20	15,880	775	8,712	403	3,434	177	761	40	47,400	2,385	1.82	77,920
2013	18	15,495	1,008	8,451	506	3,218	185	706	40	45,075	2,560	1.77	89,077
2014	18	15,495	1,008	8,451	506	3,218	185	706	40	45,075	2,560	1.77	89,077
2015	18	16,028	1,026	8,403	506	3,218	185	706	40	45,075	2,560	1.77	89,077
2016	19	17,493	1,027	9,399	586	3,449	185	751	40	47,625	2,550	1.93	99,154
2017	19	18,283	1,027	9,543	586	3,443	185	758	40	48,025	2,550	1.95	99,154
2018	19	18,283	1,027	9,543	586	3,443	185	758	40	48,025	2,550	1.94	99,154
2019	20	21,923	1,055	10,636	630	3,705	186	808	40	54,475	2,575	2.10	105,017
2020	19	21,724	1,082	10,501	674	3,581	186	776	40	52,975	2,600	2.04	110,880

Source: Amendment 80 Economic Data Reports.

Table 9.2: Amendment 80 Fleet - Aggregate and Median Vessel Processing Capacity Statistics

	Vessels	Processing Lines on Vessel		Species Processed		Total No. Products Processed (species+product)		Max Throughput (mt/hr), Whole-fish Product		Max Throughput (mt/hr), Any Product	
Year	Count	Total	Median	Total	Median	Total	Median	Total	Median	Total	Median
2008	22	32	1	23	12	46	18	62.06	3.33	90.72	3.63
2009	21	31	1	26	12	47	17	61.37	3.33	81.86	3.63
2010	20	30	1	25	12	46	18	64.55	3.32	81.21	3.85
2011	19	29	1	27	12	44	17	61.59	3.31	79.07	3.92
2012	19	29	1	23	12	49	16	50.27	3.22	90.82	4.43
2013	18	28	1	21	12	37	16	48.64	3.32	88.83	4.62
2014	18	28	1	22	12	41	16	56.69	3.88	87.31	4.30
2015	18	28	1	28	13	53	18	74.21	4.04	82.20	4.18
2016	19	30	1	26	13	48	19	79.19	4.16	87.63	4.20
2017	19	31	1	33	13	55	18	78.94	4.53	103.85	4.81
2018	19	31	1	33	13	57	18	78.17	4.33	102.49	4.67
2019	20	31	1	32	15	70	19	84.14	4.67	107.14	4.90
2020	19	30	1	32	12	57	18	85.06	4.67	105.78	4.99

Notes:

Source: Amendment 80 Economic Data Reports.

Table 9.3: Amendment 80 Fleet - Aggregate and Median Vessel Freezer Capacity

	Vessels	Freezer Hold Capacity (t)		Maximum Freezing Capacity (t/hr)	
Year		Total	Median	Total	Median
2008	22	8,227.42	317.51	62.98	2.77
2009	21	7,693.25	317.51	58.83	2.68
2010	20	7,576.07	317.51	60.01	2.89
2011	20	7,076.30	308.76	64.21	3.64
2012	20	7,558.92	317.51	67.08	3.90
2013	18	7,345.19	336.57	64.28	3.92
2014	18	7,345.19	336.57	64.28	3.92
2015	18	7,345.07	336.57	64.06	3.92
2016	19	8,171.14	355.62	69.94	3.92
2017	19	8,438.92	355.62	72.81	4.04
2018	19	8,400.12	355.62	70.31	4.04
2019	20	9,466.74	357.82	77.19	4.04
2020	19	9,269.98	360.02	73.66	4.04

Source: Amendment 80 Economic Data Reports.

Table 9.4: Amendment 80 Fleet - Median Vessel Fuel Consumption Rates by Vessel Activity

	Vessels	Fishing/ Processing (gal/hr)	Steaming Loaded (gal/hr)	Steaming Empty (gal/hr)
Year		Median	Median	Median
2008	22	97	95	97
2009	21	90	89	87
2010	20	97	95	94
2011	20	97	95	93
2012	20	100	105	96
2013	18	103	121	100
2014	18	103	121	101
2015	18	103	117	101
2016	19	105	120	97
2017	19	101	110	95
2018	19	105	108	98
2019	20	106	118	100
2020	19	103	108	101

Source: Amendment 80 Economic Data Reports.

Table 9.5: Amendment 80 Fleet - Aggregate and Median Vessel Annual Fuel Use, by Vessel Activity

	Vessels	Fishing/Processing		Steaming Empty		Steaming Loaded		All Fuel Use	
Year		Total (million Gal)	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)
2008	22	10.78	522	1.04	52	1.76	70	13.57	644
2009	21	9.27	449	1.04	61	1.77	81	12.09	591
2010	20	9.73	485	1.45	66	1.46	68	12.65	619
2011	20	10.16	457	1.74	85	1.44	63	13.34	606
2012	20	9.26	445	1.31	70	1.64	89	12.21	603
2013	18	9.70	520	1.20	67	1.50	79	12.40	667
2014	18	10.09	551	1.19	63	1.52	88	12.79	702
2015	18	10.03	543	1.19	74	1.64	79	12.86	695
2016	19	11.11	585	1.21	73	1.98	72	14.30	730
2017	19	10.59	511	1.20	61	1.52	56	13.31	629
2018	19	10.84	578	1.33	79	1.49	59	13.65	717
2019	20	11.49	578	1.46	82	1.30	61	14.25	721
2020	19	10.68	573	1.41	76	1.12	59	13.21	709

Source: Amendment 80 Economic Data Reports.

Table 9.6: Amendment 80 Fleet Activity - Days Fishing and Processing by Fishery, and Days in Transit/Offloading and Inactive in Port, Fleet Total and Median Vessel Values

		Stat	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Amendment 80 Fisheries		Active vessels	22	21	20	20	19	18	18	18	19	19	19	20	19
	Days Fishing	Fleet total	3,821	3,765	3,639	3,405	3,395	3,513	3,567	3,611	3,746	3,755	3,932	4,054	3,801
		Median vessel	185	181	182	175	178	200	209	210	202	208	203	211	208
	Days Processing	Fleet total	4,117	3,774	3,747	3,454	3,425	3,559	3,615	3,633	3,747	3,757	3,935	4,056	3,802
		Median vessel	196	181	189	173	185	200	213	210	202	208	203	211	208
All Non-A80 Fisheries		Active vessels	11	11	14	17	17	12	12	11	11	10	12	11	10
	Days Fishing	Fleet total	456	261	535	812	735	648	818	826	802	867	856	590	561
		Median vessel	25	20	30	32	30	28	27	41	58	47	65	44	40
	Days Processing	Fleet total	455	259	534	819	730	649	818	880	1,032	1,094	1,127	830	730
		Median vessel	26	20	30	32	30	28	27	41	78	115	70	58	49
GOA Fisheries		Active vessels	-	-	-	-	-	-	-	7	8	9	8	9	8
	Days Fishing	Fleet total	-	-	-	-	-	-	-	402	339	422	291	325	281
		Median vessel	-	-	-	-	-	-	-	41	32	31	32	23	33
	Days Processing	Fleet total	-	-	-	-	-	-	-	402	339	422	291	326	280
		Median vessel	-	-	-	-	-	-	-	41	32	31	32	23	33
Non-Fishing and Inactive		Vessels	22	21	20	20	20	18	18	18	19	19	19	20	19
	Days Travel/Offload	Fleet total	1,318	1,398	1,681	1,956	1,682	1,560	1,401	1,327	1,332	1,465	1,431	1,314	1,338
		Median vessel	58	72	77	80	69	80	65	69	69	68	59	58	61
	Days Inactive	Fleet total	1,980	2,355	1,928	1,857	2,089	1,466	1,301	1,298	1,319	1,373	1,079	1,211	1,322
		Median vessel	94	100	81	78	98	74	73	75	61	69	55	63	63

Notes: Vessel activity days as reported in Economic Data Reports are not mutually exclusive with respect to fishery or activity type, and summing number of days over activity and/or fishery categories may total to more than 365 for a given vessel. Vessel days at sea (including days offloading) can be calculated using days inactive values shown above as follows: median days at sea = 365-days inactive, and fleet total days at sea = (Vessel count x 365) - fleet toal days inactive.

Prior to 2015, fishing and processing activity days reported im the Economic Data Report were broken out by Amendment 80 fisheries and all other fisheries, with separate reporting of activity days in Gulf of Alaska fisheries beginning in 2015; vessel activity statistics shown above for 'All Non-A80 Fisheries' for 2008 through 2020 are inclusive of days when vessels were active fishing or processing in the GOA and all other non-Amendment 80 fisheries.

Vessel days at sea (including days transiting and offloading) can be calculated using days inactive values shown above as follows: median days at sea = 365-days inactive, and fleet total days at sea = (Vessel count x 365) - fleet total days inactive.

Source: Amendment 80 Economic Data Reports.

Table 9.7: Amendment 80 Fleet - Aggregate and Median Vessel Catch, Discard, and Finished Production Volume and Value

		Fleet Aggregate							Median Vessel				
	Year	Vessels	Retained Catch (1000t)	Discard (1000t)	Discard Rate	Finished Weight (1000t)	Wholesale Value ($million)	Weighted Average Price ($/t)	Retained Catch (1000t)	Discard (1000t)	Discard Rate	Finished Weight (1000t)	Wholesale Value ($million)
BSAI - Amendment 80 target species	2008	22	270.64	11.42	4.22 %	152.31	$ 294.56	$ 1,934	13.01	0.30	3.06 %	6.89	$ 12.75
	2009	21	239.66	12.80	5.34 %	140.54	$ 238.32	$ 1,696	12.22	0.51	4.95 %	7.52	$ 11.77
	2010	20	257.57	12.68	4.92 %	154.95	$ 289.97	$ 1,871	13.96	0.44	3.40 %	8.43	$ 14.35
	2011	20	262.29	6.50	2.48 %	163.61	$ 374.01	$ 2,286	14.34	0.17	1.91 %	8.56	$ 17.68
	2012	20	265.04	6.82	2.57 %	167.18	$ 374.15	$ 2,238	14.55	0.23	2.35 %	8.96	$ 17.83
	2013	18	260.43	6.79	2.61 %	159.85	$ 270.12	$ 1,690	15.03	0.31	2.27 %	8.32	$ 13.39
	2014	18	254.97	3.17	1.24 %	158.16	$ 276.44	$ 1,748	13.94	0.15	1.19 %	8.53	$ 12.19
	2015	18	248.00	3.08	1.24 %	153.65	$ 269.48	$ 1,754	12.84	0.18	1.19 %	7.57	$ 11.18
	2016	19	253.93	3.98	1.57 %	158.99	$ 280.98	$ 1,767	13.68	0.15	1.13 %	8.15	$ 12.52
	2017	19	238.78	2.93	1.23 %	158.31	$ 353.55	$ 2,233	12.25	0.13	0.87 %	7.29	$ 14.02
	2018	19	241.76	3.12	1.29 %	154.99	$ 383.27	$ 2,473	12.05	0.16	1.46 %	7.33	$ 17.93
	2019	20	236.27	3.80	1.61 %	150.28	$ 311.64	$ 2,074	10.76	0.18	1.54 %	6.34	$ 12.45
	2020	19	227.27	3.36	1.48 %	148.41	$ 250.17	$ 1,686	9.65	0.16	1.53 %	7.16	$ 11.08
BSAI - All other species	2008	22	44.81	25.83	57.63 %	22.28	$ 41.93	$ 1,882	1.82	1.27	69.47 %	0.92	$ 1.66
	2009	21	55.43	20.94	37.78 %	29.67	$ 49.26	$ 1,660	2.30	1.00	49.87 %	1.23	$ 1.65
	2010	20	63.18	20.49	32.43 %	34.29	$ 53.54	$ 1,561	2.38	0.96	45.38 %	1.27	$ 1.81
	2011	20	62.11	17.45	28.09 %	34.77	$ 69.81	$ 2,008	3.16	0.80	26.97 %	1.71	$ 3.17
	2012	20	60.34	13.51	22.39 %	34.05	$ 74.37	$ 2,184	3.17	0.63	22.70 %	1.82	$ 3.38
	2013	18	70.85	20.27	28.61 %	37.90	$ 60.60	$ 1,599	3.97	1.17	29.80 %	2.18	$ 3.61
	2014	18	73.94	23.83	32.22 %	38.74	$ 62.65	$ 1,617	3.94	1.22	31.23 %	2.12	$ 3.36
	2015	18	59.78	14.88	24.90 %	32.96	$ 48.71	$ 1,478	3.66	0.79	25.53 %	1.96	$ 2.67
	2016	19	60.12	14.84	24.68 %	31.77	$ 62.99	$ 1,983	3.33	0.77	27.29 %	1.64	$ 2.20
	2017	19	53.02	12.89	24.32 %	29.36	$ 59.54	$ 2,028	3.09	0.60	23.21 %	1.53	$ 2.22
	2018	19	63.04	18.51	29.37 %	33.10	$ 55.61	$ 1,680	3.41	0.87	27.65 %	1.88	$ 2.88
	2019	20	67.31	17.45	25.93 %	36.79	$ 65.77	$ 1,788	3.30	0.86	26.72 %	1.81	$ 2.82
	2020	19	72.03	18.42	25.58 %	39.53	$ 61.09	$ 1,545	3.96	1.01	23.12 %	2.11	$ 2.77
GOA - All species	2008	12	20.54	3.76	18.29 %	11.10	$ 25.75	$ 2,320	1.88	0.29	15.04 %	0.93	$ 2.11
	2009	17	20.19	6.09	30.15 %	10.95	$ 24.09	$ 2,200	0.99	0.17	24.20 %	0.42	$ 1.02
	2010	16	21.36	5.25	24.60 %	12.15	$ 31.56	$ 2,598	0.91	0.24	17.80 %	0.49	$ 1.32
	2011	16	24.34	4.42	18.17 %	13.85	$ 46.10	$ 3,329	0.75	0.19	15.52 %	0.39	$ 1.57
	2012	16	24.20	3.40	14.06 %	13.21	$ 38.68	$ 2,928	0.67	0.07	12.87 %	0.38	$ 1.28
	2013	13	20.46	3.61	17.64 %	11.71	$ 25.64	$ 2,190	0.98	0.15	10.27 %	0.54	$ 1.45
	2014	10	39.19	2.96	7.56 %	21.34	$ 48.82	$ 2,288	2.11	0.13	5.79 %	1.13	$ 3.49
	2015	9	27.05	2.53	9.36 %	15.29	$ 33.58	$ 2,196	2.14	0.23	5.65 %	1.88	$ 4.64
	2016	13	22.29	1.61	7.24 %	12.74	$ 31.67	$ 2,486	0.70	0.02	2.21 %	0.37	$ 0.75
	2017	10	29.43	2.70	9.17 %	16.90	$ 47.36	$ 2,802	2.58	0.06	2.83 %	1.38	$ 4.21
	2018	8	22.82	1.29	5.66 %	12.64	$ 32.01	$ 2,532	2.61	0.09	4.81 %	1.49	$ 4.01
	2019	10	23.76	2.39	10.05 %	13.59	$ 25.20	$ 1,854	2.15	0.05	10.16 %	1.10	$ 2.38
	2020	8	21.39	1.61	7.52 %	11.91	$ 18.85	$ 1,583	2.80	0.13	8.66 %	1.58	$ 2.80

Continued on next page.

Table 9.7: Continued

		Fleet Aggregate							Median Vessel				
	Year	Vessels	Retained Catch (1000t)	Discard (1000t)	Discard Rate	Finished Weight (1000t)	Wholesale Value ($million)	Weighted Average Price ($/t)	Retained Catch (1000t)	Discard (1000t)	Discard Rate	Finished Weight (1000t)	Wholesale Value ($million)
All Alaska Fisheries	2008	22	335.99	41.00	12.20 %	185.69	$ 362.24	$ 1,951	15.76	1.63	12.22 %	8.26	$ 15.60
	2009	21	315.29	39.83	12.63 %	181.15	$ 311.67	$ 1,721	16.12	1.70	11.31 %	9.18	$ 14.40
	2010	20	342.11	38.43	11.23 %	201.38	$ 375.07	$ 1,862	18.58	1.69	12.21 %	10.66	$ 17.79
	2011	20	348.74	28.37	8.13 %	212.23	$ 489.92	$ 2,308	18.88	1.43	8.02 %	10.96	$ 24.42
	2012	20	349.58	23.74	6.79 %	214.44	$ 487.21	$ 2,272	18.57	1.21	7.78 %	10.55	$ 23.16
	2013	18	351.74	30.67	8.72 %	209.45	$ 356.36	$ 1,701	19.65	1.66	9.14 %	10.75	$ 17.64
	2014	18	368.11	29.96	8.14 %	218.25	$ 387.91	$ 1,777	20.07	1.38	7.58 %	11.79	$ 20.25
	2015	18	334.83	20.49	6.12 %	201.90	$ 351.78	$ 1,742	19.39	1.13	6.39 %	11.44	$ 17.86
	2016	19	336.34	20.44	6.08 %	203.50	$ 375.64	$ 1,846	19.40	1.07	6.41 %	10.80	$ 19.32
	2017	19	321.23	18.52	5.76 %	204.58	$ 460.46	$ 2,251	15.27	0.88	6.08 %	10.09	$ 23.52
	2018	19	327.62	22.92	7.00 %	200.73	$ 470.89	$ 2,346	16.97	1.13	5.80 %	10.76	$ 23.47
	2019	20	327.35	23.64	7.22 %	200.66	$ 402.62	$ 2,006	15.54	1.07	7.27 %	9.21	$ 17.74
	2020	19	320.68	23.39	7.29 %	199.86	$ 330.11	$ 1,652	16.99	1.17	6.88 %	11.03	$ 16.64

Notes: All dollar values are inflation-adjusted to 2020-equivalent value. Fleet aggregate discard rate represents total discarded catch as a percentage of total retained catch. Amendment 80 target species are: Atka mackerel, yellowfin sole, flathead sole, rock sole, Pacific Ocean perch, and Pacific cod.

Source: Catch and discard statistics sourced from NMFS Alaska Region Catch Accounting System data, and production volume statistics are sourced from NMFS Alaska Region At-Sea Production Reporting system data, with production value estimated using average species/product per-unit prices sourced from ADF&G Commercial Operators Annual Report (COAR) data; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

Table 9.8: Amendment 80 Sector Annual Revenue from All Sources, including Volume and Value of Total Fishery Product Sales, Other Vessel Income, and Quota Royalties

		LLPs	Total		Median	
	Year		Revenue ($million)	Volume (1,000t)	Revenue ($million)	Volume (1,000t)
Total Fishery Product Sales	2008	22	$ 336.06	176.85	$ 15.00	7.47
	2009	21	$ 285.24	168.31	$ 12.74	8.45
	2010	20	$ 352.28	183.48	$ 16.17	9.76
	2011	20	$ 464.74	196.97	$ 22.73	10.17
	2012	20	$ 446.04	198.31	$ 21.40	9.39
	2013	18	$ 344.97	195.42	$ 17.44	10.38
	2014	18	$ 379.86	202.93	$ 19.67	10.65
	2015	18	$ 338.37	188.63	$ 17.21	10.58
	2016	19	$ 362.14	188.98	$ 17.75	9.96
	2017	19	$ 444.19	192.33	$ 21.00	9.50
	2018	19	$ 459.48	189.32	$ 24.74	10.29
	2019	20	$ 391.48	190.11	$ 17.48	8.55
	2020	19	$ 307.64	191.59	$ 18.02	10.60
Quota Lease Royalties	2008	6	$ 0.48	2.38	$ 0.02	0.17
	2009	3	$ *	*	$ *	*
	2010	6	$ 0.12	0.66	$ 0.02	0.10
	2011	10	$ 1.02	8.70	$ 0.04	0.32
	2012	10	$ 1.44	11.18	$ 0.08	0.65
	2013	7	$ 1.34	11.40	$ 0.23	2.00
	2014	8	$ 1.51	18.28	$ 0.22	2.85
	2015	4	$ *	*	$ *	*
	2016	5	$ 0.80	20.32	$ 0.20	5.07
	2017	5	$ 0.47	11.59	$ 0.11	1.56
	2018	6	$ 0.37	3.16	$ 0.01	0.60
	2019	5	$ 0.40	3.68	$ 0.09	0.36
	2020	4	$ *	*	$ *	*
Other Income from Vessel Operations	2008	-	$ -	-	$ -	-
	2009	-	$ -	-	$ -	-
	2010	1	$ *	-	$ *	-
	2011	-	$ -	-	$ -	-
	2012	1	$ *	-	$ *	-
	2013	1	$ *	-	$ *	-
	2014	-	$ -	-	$ -	-
	2015	-	$ -	-	$ -	-
	2016	-	$ -	-	$ -	-
	2017	-	$ -	-	$ -	-
	2018	-	$ -	-	$ -	-
	2019	-	$ -	-	$ -	-
	2020	-	$ -	-	$ -	-

Notes: All dollar values are inflation-adjusted to 2020-equivalent value. Fleet aggregate catch and production volumes are shown in 1000s of metric tons(t), and fleet aggregate and median revenue values are shown in $million. "*" indicates value is suppressed for confidentiality.
Revenue statistics include all Amendment 80 entities that reported revenue from the respective sources, including Amendment 80 LLP holders that did not actively fish or process on the associated vessel during the reporting year but received revenue from QS lease royalties, vessel services, and/or sales of inventory produced during a prior year. Revenue from sale of LLP licenses is not shown due to confidential data restrictions.

Source: Amendment 80 Economic Data Reports.

Table 9.9: Fleet Aggregate Operating Expenses, by Category and Year

		Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Labor	Labor Payment, Fishing Crew	2008	22	$ 17.88	6.22 %	5.31 %	$ 2.95	$ 101.08
		2009	21	$ 14.37	5.86 %	5.03 %	$ 2.71	$ 85.35
		2010	20	$ 15.62	5.71 %	4.43 %	$ 2.91	$ 85.13
		2011	20	$ 19.58	5.85 %	4.20 %	$ 3.60	$ 99.39
		2012	20	$ 18.72	5.60 %	4.19 %	$ 3.59	$ 94.40
		2013	18	$ 14.58	5.35 %	4.21 %	$ 2.86	$ 74.61
		2014	18	$ 15.78	5.49 %	4.14 %	$ 3.00	$ 77.78
		2015	18	$ 14.90	5.27 %	4.40 %	$ 2.83	$ 79.01
		2016	19	$ 14.86	5.40 %	4.10 %	$ 2.65	$ 78.65
		2017	19	$ 18.40	5.70 %	4.14 %	$ 3.31	$ 95.67
		2018	19	$ 18.39	5.65 %	4.00 %	$ 3.14	$ 97.12
		2019	20	$ 15.72	4.93 %	4.01 %	$ 2.58	$ 82.67
		2020	19	$ 11.76	4.59 %	3.82 %	$ 2.09	$ 61.38
	Labor Payment, Other Employees	2008	21	$ 31.69	11.25 %	9.53 %	$ 5.56	$ 181.54
		2009	21	$ 28.15	11.48 %	9.86 %	$ 5.30	$ 167.23
		2010	20	$ 33.33	12.19 %	9.46 %	$ 6.20	$ 181.66
		2011	20	$ 41.92	12.53 %	9.00 %	$ 7.70	$ 212.84
		2012	20	$ 42.85	12.82 %	9.59 %	$ 8.22	$ 216.10
		2013	18	$ 32.21	11.81 %	9.30 %	$ 6.31	$ 164.82
		2014	18	$ 33.89	11.80 %	8.89 %	$ 6.43	$ 167.02
		2015	18	$ 32.85	11.62 %	9.70 %	$ 6.23	$ 174.17
		2016	19	$ 33.25	12.07 %	9.16 %	$ 5.92	$ 175.96
		2017	19	$ 47.03	14.58 %	10.58 %	$ 8.46	$ 244.55
		2018	19	$ 50.28	15.45 %	10.93 %	$ 8.59	$ 265.59
		2019	20	$ 46.14	14.47 %	11.77 %	$ 7.58	$ 242.69
		2020	19	$ 36.79	14.35 %	11.95 %	$ 6.55	$ 192.03
	Labor Payment, Processing Employees	2008	22	$ 48.80	16.98 %	14.50 %	$ 8.07	$ 275.95
		2009	21	$ 42.47	17.32 %	14.88 %	$ 8.00	$ 252.33
		2010	20	$ 48.69	17.80 %	13.82 %	$ 9.06	$ 265.38
		2011	20	$ 59.63	17.83 %	12.80 %	$ 10.96	$ 302.74
		2012	20	$ 59.50	17.80 %	13.31 %	$ 11.42	$ 300.04
		2013	18	$ 44.55	16.34 %	12.86 %	$ 8.73	$ 227.98
		2014	18	$ 48.05	16.73 %	12.60 %	$ 9.12	$ 236.76
		2015	18	$ 43.14	15.26 %	12.74 %	$ 8.18	$ 228.71
		2016	19	$ 44.79	16.26 %	12.34 %	$ 7.98	$ 237.02
		2017	19	$ 63.21	19.60 %	14.22 %	$ 11.37	$ 328.67
		2018	19	$ 60.85	18.70 %	13.23 %	$ 10.39	$ 321.43
		2019	20	$ 52.64	16.50 %	13.43 %	$ 8.65	$ 276.90
		2020	19	$ 38.49	15.02 %	12.50 %	$ 6.86	$ 200.89
	Other Employment Related Costs	2008	22	$ 9.74	3.39 %	2.89 %	$ 1.61	$ 55.06
		2009	21	$ 9.22	3.76 %	3.23 %	$ 1.74	$ 54.80
		2010	20	$ 10.28	3.76 %	2.92 %	$ 1.91	$ 56.01
		2011	20	$ 13.69	4.09 %	2.94 %	$ 2.52	$ 69.52
		2012	20	$ 10.79	3.23 %	2.41 %	$ 2.07	$ 54.43
		2013	18	$ 11.46	4.20 %	3.31 %	$ 2.25	$ 58.64
		2014	18	$ 11.29	3.93 %	2.96 %	$ 2.14	$ 55.63
		2015	18	$ 11.97	4.23 %	3.54 %	$ 2.27	$ 63.47
		2016	19	$ 11.08	4.02 %	3.05 %	$ 1.97	$ 58.66
		2017	19	$ 13.31	4.13 %	2.99 %	$ 2.39	$ 69.22
		2018	19	$ 14.01	4.30 %	3.05 %	$ 2.39	$ 74.00
		2019	20	$ 14.25	4.47 %	3.64 %	$ 2.34	$ 74.98
		2020	19	$ 13.02	5.08 %	4.23 %	$ 2.32	$ 67.98

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Table 9.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Vessel	Fishing Gear	2008	19	$ 7.56	2.90 %	2.52 %	$ 1.45	$ 54.12
		2009	21	$ 10.50	4.28 %	3.68 %	$ 1.98	$ 62.38
		2010	20	$ 9.65	3.53 %	2.74 %	$ 1.80	$ 52.60
		2011	20	$ 10.59	3.17 %	2.27 %	$ 1.95	$ 53.77
		2012	19	$ 10.54	3.17 %	2.36 %	$ 2.03	$ 53.16
		2013	18	$ 9.46	3.47 %	2.73 %	$ 1.85	$ 48.40
		2014	18	$ 8.55	2.98 %	2.24 %	$ 1.62	$ 42.14
		2015	18	$ 9.95	3.52 %	2.94 %	$ 1.89	$ 52.74
		2016	14	$ 6.34	2.84 %	2.14 %	$ 1.49	$ 42.98
		2017	19	$ 9.19	2.85 %	2.07 %	$ 1.65	$ 47.76
		2018	19	$ 6.76	2.08 %	1.47 %	$ 1.15	$ 35.70
		2019	20	$ 8.64	2.71 %	2.20 %	$ 1.42	$ 45.43
		2020	19	$ 8.73	3.41 %	2.84 %	$ 1.56	$ 45.59
	Freight	2008	22	$ 1.67	0.58 %	0.50 %	$ 0.28	$ 9.46
		2009	21	$ 2.28	0.93 %	0.80 %	$ 0.43	$ 13.53
		2010	20	$ 1.84	0.67 %	0.52 %	$ 0.34	$ 10.03
		2011	20	$ 2.04	0.61 %	0.44 %	$ 0.38	$ 10.38
		2012	20	$ 2.04	0.61 %	0.46 %	$ 0.39	$ 10.29
		2013	18	$ 2.02	0.74 %	0.58 %	$ 0.40	$ 10.35
		2014	18	$ 2.55	0.89 %	0.67 %	$ 0.48	$ 12.57
		2015	18	$ 2.42	0.85 %	0.71 %	$ 0.46	$ 12.81
		2016	19	$ 1.86	0.67 %	0.51 %	$ 0.33	$ 9.83
		2017	17	$ 2.36	0.81 %	0.58 %	$ 0.48	$ 13.52
		2018	19	$ 3.22	0.99 %	0.70 %	$ 0.55	$ 16.99
		2019	20	$ 3.60	1.13 %	0.92 %	$ 0.59	$ 18.94
		2020	19	$ 2.84	1.11 %	0.92 %	$ 0.51	$ 14.80
	Lease Expenses	2008	1	$ *	* %	* %	$ *	$ *
		2009	5	$ 0.06	0.08 %	0.06 %	$ 0.04	$ 1.07
		2010	6	$ 0.16	0.19 %	0.13 %	$ 0.09	$ 2.52
		2011	7	$ 0.10	0.13 %	0.08 %	$ 0.05	$ 1.96
		2012	8	$ 0.12	0.13 %	0.08 %	$ 0.06	$ 1.92
		2013	6	$ 0.09	0.11 %	0.07 %	$ 0.05	$ 1.35
		2014	5	$ 0.11	0.14 %	0.10 %	$ 0.07	$ 2.01
		2015	5	$ 0.03	0.05 %	0.04 %	$ 0.02	$ 0.67
		2016	7	$ 0.08	0.11 %	0.08 %	$ 0.04	$ 1.40
		2017	9	$ 0.10	0.07 %	0.05 %	$ 0.04	$ 1.19
		2018	9	$ 0.09	0.07 %	0.04 %	$ 0.03	$ 1.12
		2019	7	$ 0.13	0.11 %	0.08 %	$ 0.06	$ 1.81
		2020	4	$ *	* %	* %	$ *	$ *
	Repair and Maintenance	2008	22	$ 30.60	10.65 %	9.09 %	$ 5.06	$ 173.01
		2009	21	$ 34.03	13.88 %	11.93 %	$ 6.41	$ 202.20
		2010	20	$ 45.51	16.64 %	12.92 %	$ 8.47	$ 248.06
		2011	19	$ 39.86	12.53 %	8.99 %	$ 7.61	$ 211.57
		2012	20	$ 47.70	14.27 %	10.67 %	$ 9.15	$ 240.55
		2013	18	$ 39.49	14.49 %	11.40 %	$ 7.74	$ 202.10
		2014	18	$ 30.21	10.52 %	7.92 %	$ 5.73	$ 148.89
		2015	18	$ 34.25	12.11 %	10.11 %	$ 6.50	$ 181.56
		2016	19	$ 28.89	10.49 %	7.96 %	$ 5.14	$ 152.88
		2017	19	$ 32.61	10.11 %	7.33 %	$ 5.86	$ 169.55
		2018	19	$ 34.42	10.58 %	7.49 %	$ 5.88	$ 181.81
		2019	20	$ 34.19	10.72 %	8.73 %	$ 5.62	$ 179.86
		2020	19	$ 28.38	11.07 %	9.21 %	$ 5.06	$ 148.12

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Table 9.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Materials	Food and Provisions	2008	19	$ 7.54	2.89 %	2.52 %	$ 1.45	$ 53.95
		2009	18	$ 6.06	2.78 %	2.38 %	$ 1.36	$ 41.18
		2010	17	$ 5.53	2.30 %	1.79 %	$ 1.23	$ 35.11
		2011	17	$ 6.37	2.13 %	1.57 %	$ 1.40	$ 37.85
		2012	17	$ 6.32	2.13 %	1.63 %	$ 1.46	$ 37.16
		2013	15	$ 6.36	2.69 %	2.15 %	$ 1.51	$ 38.22
		2014	15	$ 6.69	2.77 %	2.03 %	$ 1.54	$ 38.55
		2015	15	$ 6.83	2.81 %	2.30 %	$ 1.57	$ 42.18
		2016	16	$ 7.23	3.05 %	2.23 %	$ 1.53	$ 44.11
		2017	14	$ 4.86	2.02 %	1.43 %	$ 1.18	$ 32.73
		2018	14	$ 4.59	1.96 %	1.33 %	$ 1.05	$ 32.23
		2019	17	$ 4.50	1.68 %	1.39 %	$ 0.87	$ 28.02
		2020	16	$ 4.82	2.27 %	1.92 %	$ 1.03	$ 30.99
	Fuel	2008	22	$ 54.83	19.08 %	16.29 %	$ 9.06	$ 310.07
		2009	21	$ 36.59	14.92 %	12.82 %	$ 6.89	$ 217.42
		2010	20	$ 41.59	15.21 %	11.80 %	$ 7.74	$ 226.69
		2011	20	$ 51.50	15.39 %	11.06 %	$ 9.46	$ 261.45
		2012	20	$ 52.93	15.83 %	11.84 %	$ 10.16	$ 266.89
		2013	18	$ 54.12	19.85 %	15.63 %	$ 10.60	$ 276.93
		2014	18	$ 53.60	18.66 %	14.05 %	$ 10.17	$ 264.14
		2015	18	$ 40.88	14.46 %	12.07 %	$ 7.75	$ 216.70
		2016	19	$ 32.64	11.85 %	8.99 %	$ 5.81	$ 172.74
		2017	19	$ 33.04	10.24 %	7.43 %	$ 5.94	$ 171.80
		2018	19	$ 40.50	12.45 %	8.81 %	$ 6.92	$ 213.95
		2019	20	$ 39.66	12.43 %	10.12 %	$ 6.51	$ 208.62
		2020	19	$ 27.60	10.77 %	8.96 %	$ 4.92	$ 144.06
	Lubrication and Fluids	2008	22	$ 3.31	1.15 %	0.98 %	$ 0.55	$ 18.69
		2009	21	$ 2.53	1.03 %	0.89 %	$ 0.48	$ 15.01
		2010	20	$ 6.29	2.30 %	1.78 %	$ 1.17	$ 34.28
		2011	20	$ 9.13	2.73 %	1.96 %	$ 1.68	$ 46.37
		2012	19	$ 2.67	0.80 %	0.60 %	$ 0.51	$ 13.45
		2013	18	$ 2.96	1.09 %	0.86 %	$ 0.58	$ 15.17
		2014	18	$ 2.61	0.91 %	0.69 %	$ 0.50	$ 12.88
		2015	18	$ 2.84	1.00 %	0.84 %	$ 0.54	$ 15.04
		2016	19	$ 2.47	0.90 %	0.68 %	$ 0.44	$ 13.06
		2017	19	$ 2.73	0.85 %	0.61 %	$ 0.49	$ 14.20
		2018	19	$ 2.53	0.78 %	0.55 %	$ 0.43	$ 13.38
		2019	20	$ 2.23	0.70 %	0.57 %	$ 0.37	$ 11.71
		2020	19	$ 2.24	0.87 %	0.73 %	$ 0.40	$ 11.67
	Product and Packaging Materials	2008	22	$ 5.14	1.79 %	1.53 %	$ 0.85	$ 29.04
		2009	21	$ 3.92	1.60 %	1.37 %	$ 0.74	$ 23.27
		2010	20	$ 4.58	1.67 %	1.30 %	$ 0.85	$ 24.95
		2011	20	$ 5.25	1.57 %	1.13 %	$ 0.96	$ 26.66
		2012	20	$ 5.72	1.71 %	1.28 %	$ 1.10	$ 28.83
		2013	18	$ 5.31	1.95 %	1.53 %	$ 1.04	$ 27.16
		2014	18	$ 5.89	2.05 %	1.54 %	$ 1.12	$ 29.03
		2015	18	$ 4.43	1.57 %	1.31 %	$ 0.84	$ 23.47
		2016	19	$ 4.77	1.73 %	1.31 %	$ 0.85	$ 25.22
		2017	19	$ 4.59	1.42 %	1.03 %	$ 0.83	$ 23.86
		2018	19	$ 4.38	1.34 %	0.95 %	$ 0.75	$ 23.12
		2019	20	$ 5.03	1.58 %	1.28 %	$ 0.83	$ 26.45
		2020	19	$ 4.86	1.90 %	1.58 %	$ 0.87	$ 25.37

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Table 9.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Materials	Raw Fish Purchases	2008	2	$ *	* %	* %	$ *	$ *
		2010	1	$ *	* %	* %	$ *	$ *
		2011	1	$ *	* %	* %	$ *	$ *
		2012	1	$ *	* %	* %	$ *	$ *
		2013	1	$ *	* %	* %	$ *	$ *
		2015	4	$ *	* %	* %	$ *	$ *
		2016	5	$ 3.72	3.50 %	2.62 %	$ 2.37	$ 49.78
		2017	5	$ 3.08	2.74 %	2.10 %	$ 2.16	$ 48.16
		2018	6	$ 2.72	2.03 %	1.48 %	$ 1.57	$ 36.42
		2019	7	$ 3.42	2.53 %	2.25 %	$ 1.78	$ 44.07
		2020	7	$ 2.48	2.08 %	1.96 %	$ 1.34	$ 31.17
Fees	Cooperative Costs	2008	16	$ 0.59	0.26 %	0.23 %	$ 0.13	$ 4.01
		2009	15	$ 1.30	0.69 %	0.61 %	$ 0.32	$ 10.17
		2010	14	$ 1.21	0.57 %	0.44 %	$ 0.29	$ 8.44
		2011	16	$ 1.48	0.56 %	0.41 %	$ 0.33	$ 9.38
		2012	16	$ 1.33	0.53 %	0.38 %	$ 0.31	$ 8.35
		2013	14	$ 1.20	0.55 %	0.44 %	$ 0.29	$ 7.67
		2014	14	$ 1.06	0.48 %	0.35 %	$ 0.25	$ 6.68
		2015	14	$ 1.60	0.73 %	0.62 %	$ 0.38	$ 10.73
		2016	15	$ 1.46	0.69 %	0.55 %	$ 0.33	$ 9.64
		2017	18	$ 1.33	0.45 %	0.33 %	$ 0.25	$ 7.53
		2018	19	$ 2.09	0.64 %	0.45 %	$ 0.36	$ 11.04
		2019	20	$ 2.03	0.64 %	0.52 %	$ 0.33	$ 10.68
		2020	19	$ 1.94	0.76 %	0.63 %	$ 0.35	$ 10.15
	Fish Tax	2008	22	$ 3.40	1.18 %	1.01 %	$ 0.56	$ 19.21
		2009	21	$ 3.61	1.47 %	1.26 %	$ 0.68	$ 21.43
		2010	20	$ 2.29	0.84 %	0.65 %	$ 0.43	$ 12.46
		2011	20	$ 2.41	0.72 %	0.52 %	$ 0.44	$ 12.24
		2012	20	$ 3.54	1.06 %	0.79 %	$ 0.68	$ 17.84
		2013	18	$ 3.57	1.31 %	1.03 %	$ 0.70	$ 18.25
		2014	18	$ 3.04	1.06 %	0.80 %	$ 0.58	$ 14.99
		2015	18	$ 3.33	1.18 %	0.98 %	$ 0.63	$ 17.68
		2016	19	$ 4.30	1.56 %	1.18 %	$ 0.77	$ 22.75
		2017	19	$ 4.14	1.28 %	0.93 %	$ 0.75	$ 21.55
		2018	19	$ 5.20	1.60 %	1.13 %	$ 0.89	$ 27.46
		2019	20	$ 4.90	1.54 %	1.25 %	$ 0.80	$ 25.78
		2020	19	$ 4.58	1.79 %	1.49 %	$ 0.82	$ 23.89
	Observer	2008	22	$ 5.20	1.81 %	1.54 %	$ 0.86	$ 29.38
		2009	21	$ 4.31	1.76 %	1.51 %	$ 0.81	$ 25.60
		2010	20	$ 4.37	1.60 %	1.24 %	$ 0.81	$ 23.80
		2011	20	$ 4.23	1.26 %	0.91 %	$ 0.78	$ 21.45
		2012	19	$ 4.12	1.24 %	0.92 %	$ 0.79	$ 20.80
		2013	18	$ 4.13	1.52 %	1.19 %	$ 0.81	$ 21.16
		2014	18	$ 4.23	1.47 %	1.11 %	$ 0.80	$ 20.85
		2015	18	$ 4.60	1.63 %	1.36 %	$ 0.87	$ 24.36
		2016	19	$ 4.59	1.67 %	1.26 %	$ 0.82	$ 24.28
		2017	19	$ 4.51	1.40 %	1.01 %	$ 0.81	$ 23.43
		2018	19	$ 4.60	1.41 %	1.00 %	$ 0.79	$ 24.31
		2019	20	$ 4.69	1.47 %	1.20 %	$ 0.77	$ 24.67
		2020	19	$ 4.21	1.64 %	1.37 %	$ 0.75	$ 21.98

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Table 9.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Fees	Quota Royalties	2008	2	$ *	* %	* %	$ *	$ *
		2009	4	$ *	* %	* %	$ *	$ *
		2010	2	$ *	* %	* %	$ *	$ *
		2011	8	$ *	* %	* %	$ *	$ *
		2012	4	$ *	* %	* %	$ *	$ *
		2013	3	$ *	* %	* %	$ *	$ *
		2014	8	$ 1.13	0.74 %	0.56 %	$ 0.45	$ 10.58
		2015	7	$ 0.84	0.73 %	0.61 %	$ 0.40	$ 10.67
		2016	9	$ 0.41	0.26 %	0.21 %	$ 0.15	$ 3.78
		2017	5	$ 0.30	0.30 %	0.25 %	$ 0.21	$ 5.75
		2018	4	$ *	* %	* %	$ *	$ *
		2019	2	$ *	* %	* %	$ *	$ *
		2020	9	$ 0.42	0.32 %	0.29 %	$ 0.15	$ 4.53
Overhead	Freight and Storage	2008	9	$ 18.54	14.02 %	13.49 %	$ 7.57	$ 271.91
		2009	10	$ 14.55	11.28 %	10.86 %	$ 5.55	$ 178.33
		2010	8	$ 16.75	11.80 %	10.14 %	$ 7.48	$ 191.58
		2011	4	$ *	* %	* %	$ *	$ *
		2012	4	$ *	* %	* %	$ *	$ *
		2013	4	$ *	* %	* %	$ *	$ *
		2014	7	$ 22.25	17.05 %	14.13 %	$ 10.23	$ 254.44
		2015	10	$ 33.46	19.91 %	18.20 %	$ 11.32	$ 303.25
		2016	10	$ 33.56	20.46 %	17.19 %	$ 10.98	$ 298.03
		2017	13	$ 39.86	16.43 %	12.57 %	$ 10.60	$ 287.73
		2018	10	$ 29.74	14.00 %	10.51 %	$ 10.13	$ 261.49
		2019	14	$ 38.41	16.02 %	13.72 %	$ 9.00	$ 279.82
		2020	10	$ 30.67	18.83 %	16.79 %	$ 11.05	$ 265.37
	General Administrative Cost	2008	22	$ 23.55	8.20 %	7.00 %	$ 3.89	$ 133.15
		2009	21	$ 18.29	7.46 %	6.41 %	$ 3.44	$ 108.65
		2010	16	$ 13.34	5.78 %	4.71 %	$ 3.17	$ 87.50
		2011	16	$ 31.09	10.92 %	8.09 %	$ 7.16	$ 187.93
		2012	20	$ 31.17	9.32 %	6.97 %	$ 5.98	$ 157.16
		2013	18	$ 14.72	5.40 %	4.25 %	$ 2.88	$ 75.34
		2014	16	$ 22.42	8.30 %	6.27 %	$ 4.80	$ 117.70
		2015	11	$ 18.96	9.89 %	8.72 %	$ 6.04	$ 156.85
		2016	11	$ 20.85	10.93 %	8.61 %	$ 6.40	$ 172.93
		2017	15	$ 28.14	10.35 %	7.97 %	$ 6.49	$ 183.02
		2018	15	$ 30.21	11.04 %	8.26 %	$ 6.52	$ 197.56
		2019	20	$ 26.10	8.18 %	6.66 %	$ 4.29	$ 137.31
		2020	18	$ 21.99	8.93 %	7.67 %	$ 4.11	$ 122.90
	Insurance	2008	22	$ 13.11	4.56 %	3.90 %	$ 2.17	$ 74.13
		2009	21	$ 12.94	5.28 %	4.54 %	$ 2.44	$ 76.90
		2010	20	$ 12.33	4.51 %	3.50 %	$ 2.29	$ 67.18
		2011	20	$ 15.65	4.68 %	3.36 %	$ 2.88	$ 79.45
		2012	20	$ 17.65	5.28 %	3.95 %	$ 3.39	$ 88.99
		2013	18	$ 10.38	3.81 %	3.00 %	$ 2.03	$ 53.13
		2014	17	$ 13.89	5.10 %	3.84 %	$ 2.78	$ 72.02
		2015	18	$ 13.55	4.79 %	4.00 %	$ 2.57	$ 71.82
		2016	19	$ 18.32	6.65 %	5.05 %	$ 3.26	$ 96.95
		2017	19	$ 9.80	3.04 %	2.20 %	$ 1.76	$ 50.97
		2018	19	$ 10.50	3.23 %	2.28 %	$ 1.79	$ 55.45
		2019	20	$ 12.47	3.91 %	3.18 %	$ 2.05	$ 65.62
		2020	19	$ 10.42	4.07 %	3.38 %	$ 1.86	$ 54.41

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Table 9.9: Continued

	Year	Vessels	Total Fleet Cost ($million)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
	2008	22	$ 287.32	100.00 %	85.38 %	$ 47.49	$ 1,624.68
	2009	21	$ 245.27	100.00 %	85.96 %	$ 46.19	$ 1,457.26
	2010	20	$ 273.53	100.00 %	77.62 %	$ 50.92	$ 1,490.81
	2011	20	$ 334.52	100.00 %	71.82 %	$ 61.46	$ 1,698.30
	2012	20	$ 334.35	100.00 %	74.79 %	$ 64.16	$ 1,685.96
All	2013	18	$ 272.65	100.00 %	78.73 %	$ 53.42	$ 1,395.19
Annual	2014	18	$ 287.26	100.00 %	75.32 %	$ 54.52	$ 1,415.55
Expenses	2015	18	$ 282.77	100.00 %	83.51 %	$ 53.64	$ 1,499.06
	2016	19	$ 275.49	100.00 %	75.91 %	$ 49.05	$ 1,457.79
	2017	19	$ 322.60	100.00 %	72.55 %	$ 58.00	$ 1,677.33
	2018	19	$ 325.45	100.00 %	70.77 %	$ 55.58	$ 1,719.06
	2019	20	$ 318.95	100.00 %	81.39 %	$ 52.38	$ 1,677.69
	2020	19	$ 256.32	100.00 %	83.22 %	$ 45.67	$ 1,337.88

Notes: All dollar values are inflation-adjusted to 2020-equivalent value; aggregate fleet cost per expense item are shown in $million; cost per vessel day and cost per thousand t are prorated by fleet total number of days and t produced, representing average pro-rata values for the fleet, and are shown in $1000 per pro-rata unit. "*" indicates value is suppressed for confidentiality.

Gross revenue values are inclusive of all reported fishery product sales, tendering and other for-hire vessel services, quota royalties and other permit/license leasing and sales realized during the year. Fleet-level pro-rata values by expense item are calculated using fleet aggregated cost values and pro-rata factors, respectively, and represent the weighted average (mean) for vessels within the fleet; cost per vessel-day is pro-rated over the number of days that each vessel was active (365 - days inactive), aggregated over all vessels; cost per thousand metric ton is pro-rated over aggregate fleet production output.

Source: Amendment 80 Economic Data Reports.

Table 9.10: Vessel Operating Expenses, Median, by Category and Year

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Labor	Labor Payment, Fishing Crew	2008	22	$ 801	6.20 %	5.07 %	$ 3.30	$ 106.03
		2009	21	$ 721	5.33 %	4.78 %	$ 3.16	$ 81.54
		2010	20	$ 729	5.53 %	4.10 %	$ 3.05	$ 84.20
		2011	20	$ 1,006	5.34 %	3.52 %	$ 3.47	$ 88.20
		2012	20	$ 875	5.62 %	3.64 %	$ 3.22	$ 86.93
		2013	18	$ 733	5.15 %	4.18 %	$ 2.68	$ 70.57
		2014	18	$ 868	5.05 %	4.00 %	$ 2.83	$ 71.89
		2015	18	$ 786	4.90 %	4.57 %	$ 2.70	$ 81.86
		2016	19	$ 758	5.37 %	4.21 %	$ 2.76	$ 80.23
		2017	19	$ 919	5.22 %	4.30 %	$ 3.16	$ 98.21
		2018	19	$ 1,062	5.38 %	4.00 %	$ 3.59	$ 100.20
		2019	20	$ 797	4.73 %	4.07 %	$ 2.97	$ 82.53
		2020	19	$ 693	4.21 %	3.89 %	$ 2.44	$ 66.62
	Labor Payment, Other Employees	2008	21	$ 1,326	10.57 %	10.06 %	$ 4.70	$ 177.26
		2009	21	$ 1,194	12.28 %	11.64 %	$ 5.11	$ 177.40
		2010	20	$ 1,645	13.36 %	11.68 %	$ 6.03	$ 199.12
		2011	20	$ 2,204	14.04 %	10.64 %	$ 7.37	$ 221.70
		2012	20	$ 2,325	13.68 %	10.72 %	$ 7.98	$ 223.99
		2013	18	$ 1,826	11.84 %	10.28 %	$ 6.29	$ 175.86
		2014	18	$ 1,823	12.49 %	9.70 %	$ 6.19	$ 170.05
		2015	18	$ 1,635	11.77 %	10.50 %	$ 5.27	$ 177.12
		2016	19	$ 1,576	13.27 %	11.16 %	$ 5.56	$ 200.84
		2017	19	$ 2,077	13.92 %	10.81 %	$ 7.15	$ 237.05
		2018	19	$ 2,373	15.65 %	11.38 %	$ 9.53	$ 260.43
		2019	20	$ 2,307	14.97 %	11.75 %	$ 7.46	$ 245.74
		2020	19	$ 1,740	14.17 %	12.58 %	$ 6.60	$ 195.53
	Labor Payment, Processing Employees	2008	22	$ 2,220	16.84 %	14.73 %	$ 9.18	$ 279.54
		2009	21	$ 2,040	16.16 %	15.08 %	$ 8.79	$ 247.38
		2010	20	$ 2,182	17.42 %	13.77 %	$ 9.20	$ 270.35
		2011	20	$ 2,966	18.09 %	13.06 %	$ 10.21	$ 314.19
		2012	20	$ 2,933	18.50 %	14.23 %	$ 10.26	$ 314.49
		2013	18	$ 2,188	15.46 %	13.12 %	$ 7.89	$ 229.30
		2014	18	$ 2,481	16.42 %	12.59 %	$ 8.19	$ 241.81
		2015	18	$ 2,185	14.74 %	12.86 %	$ 7.46	$ 220.45
		2016	19	$ 2,201	16.89 %	12.77 %	$ 7.96	$ 231.79
		2017	19	$ 3,385	18.86 %	14.74 %	$ 11.18	$ 327.86
		2018	19	$ 3,306	18.67 %	13.52 %	$ 10.16	$ 320.76
		2019	20	$ 2,696	16.12 %	12.78 %	$ 9.08	$ 265.70
		2020	19	$ 2,038	14.87 %	12.56 %	$ 6.75	$ 206.98
	Other Employment Related Costs	2008	22	$ 305	3.46 %	2.64 %	$ 1.10	$ 57.74
		2009	21	$ 397	3.89 %	3.11 %	$ 1.36	$ 55.71
		2010	20	$ 472	3.72 %	2.89 %	$ 1.88	$ 53.36
		2011	20	$ 600	3.67 %	2.40 %	$ 1.93	$ 55.51
		2012	20	$ 571	3.24 %	2.22 %	$ 2.03	$ 49.84
		2013	18	$ 665	4.14 %	3.15 %	$ 2.27	$ 53.51
		2014	18	$ 610	4.07 %	2.94 %	$ 2.25	$ 54.38
		2015	18	$ 653	4.40 %	3.59 %	$ 2.28	$ 59.06
		2016	19	$ 607	4.43 %	3.15 %	$ 2.14	$ 57.51
		2017	19	$ 695	4.52 %	3.15 %	$ 2.37	$ 73.65
		2018	19	$ 712	4.60 %	3.19 %	$ 2.37	$ 75.48
		2019	20	$ 743	4.62 %	3.42 %	$ 2.33	$ 71.61
		2020	19	$ 761	4.82 %	4.24 %	$ 2.43	$ 69.95

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Table 9.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Vessel	Fishing Gear	2008	19	$ 316	3.11 %	2.82 %	$ 1.17	$ 54.59
		2009	21	$ 454	3.89 %	3.30 %	$ 1.79	$ 61.50
		2010	20	$ 476	3.80 %	2.76 %	$ 1.79	$ 58.34
		2011	20	$ 402	2.42 %	1.64 %	$ 1.39	$ 37.10
		2012	19	$ 435	2.00 %	1.41 %	$ 1.64	$ 33.02
		2013	18	$ 526	3.51 %	2.61 %	$ 1.75	$ 45.01
		2014	18	$ 433	2.31 %	2.02 %	$ 1.42	$ 34.58
		2015	18	$ 436	2.95 %	2.86 %	$ 1.43	$ 41.96
		2016	14	$ 380	2.13 %	1.83 %	$ 1.28	$ 32.43
		2017	19	$ 430	2.03 %	1.48 %	$ 1.45	$ 33.45
		2018	19	$ 321	1.86 %	1.32 %	$ 1.12	$ 31.18
		2019	20	$ 487	2.92 %	2.29 %	$ 1.40	$ 49.04
		2020	19	$ 500	3.77 %	3.19 %	$ 1.43	$ 55.98
	Freight	2008	22	$ 54	0.50 %	0.44 %	$ 0.20	$ 10.86
		2009	21	$ 63	0.67 %	0.69 %	$ 0.31	$ 11.21
		2010	20	$ 82	0.64 %	0.52 %	$ 0.33	$ 10.39
		2011	20	$ 71	0.64 %	0.44 %	$ 0.26	$ 10.56
		2012	20	$ 74	0.57 %	0.45 %	$ 0.28	$ 10.05
		2013	18	$ 95	0.69 %	0.54 %	$ 0.40	$ 9.88
		2014	18	$ 119	0.78 %	0.61 %	$ 0.39	$ 11.11
		2015	18	$ 120	0.82 %	0.56 %	$ 0.46	$ 11.00
		2016	19	$ 64	0.80 %	0.56 %	$ 0.25	$ 11.19
		2017	17	$ 118	0.65 %	0.40 %	$ 0.37	$ 10.80
		2018	19	$ 138	0.78 %	0.48 %	$ 0.44	$ 11.06
		2019	20	$ 141	1.02 %	0.78 %	$ 0.46	$ 16.01
		2020	19	$ 86	0.81 %	0.86 %	$ 0.36	$ 11.53
	Lease Expenses	2008	1	$ *	* %	* %	$ *	$ *
		2009	5	$ 5	0.05 %	0.05 %	$ 0.02	$ 0.61
		2010	6	$ 6	0.05 %	0.04 %	$ 0.02	$ 0.65
		2011	7	$ 7	0.13 %	0.09 %	$ 0.03	$ 2.08
		2012	8	$ 11	0.13 %	0.09 %	$ 0.05	$ 2.15
		2013	6	$ 8	0.08 %	0.05 %	$ 0.03	$ 1.01
		2014	5	$ 19	0.13 %	0.11 %	$ 0.07	$ 2.21
		2015	5	$ 3	0.03 %	0.02 %	$ 0.01	$ 0.36
		2016	7	$ 7	0.08 %	0.07 %	$ 0.03	$ 1.20
		2017	9	$ 9	0.08 %	0.04 %	$ 0.03	$ 0.96
		2018	9	$ 7	0.04 %	0.03 %	$ 0.03	$ 0.68
		2019	7	$ 12	0.08 %	0.06 %	$ 0.04	$ 1.52
		2020	4	$ *	* %	* %	$ *	$ *
	Repair and Maintenance	2008	22	$ 1,083	10.46 %	9.54 %	$ 4.66	$ 175.84
		2009	21	$ 1,368	13.41 %	11.11 %	$ 4.75	$ 203.06
		2010	20	$ 1,980	14.50 %	10.37 %	$ 7.08	$ 187.34
		2011	19	$ 1,681	11.53 %	9.03 %	$ 6.30	$ 194.08
		2012	20	$ 1,955	16.63 %	10.91 %	$ 7.12	$ 255.76
		2013	18	$ 2,095	15.02 %	11.46 %	$ 7.71	$ 205.74
		2014	18	$ 1,656	10.91 %	8.17 %	$ 5.80	$ 159.61
		2015	18	$ 1,728	9.19 %	8.09 %	$ 5.78	$ 143.33
		2016	19	$ 1,095	8.64 %	6.66 %	$ 3.36	$ 133.92
		2017	19	$ 1,573	8.16 %	6.03 %	$ 5.23	$ 147.89
		2018	19	$ 1,713	9.86 %	6.94 %	$ 6.16	$ 176.57
		2019	20	$ 1,735	9.67 %	8.54 %	$ 6.46	$ 173.71
		2020	19	$ 1,428	9.38 %	8.40 %	$ 4.58	$ 127.22

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Table 9.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Materials	Food and Provisions	2008	19	$ 317	2.69 %	2.63 %	$ 1.29	$ 58.47
		2009	18	$ 317	2.80 %	2.66 %	$ 1.22	$ 41.26
		2010	17	$ 327	2.59 %	2.00 %	$ 1.23	$ 35.94
		2011	17	$ 395	2.32 %	1.60 %	$ 1.35	$ 36.31
		2012	17	$ 382	1.99 %	1.63 %	$ 1.35	$ 32.29
		2013	15	$ 378	2.40 %	2.01 %	$ 1.36	$ 32.70
		2014	15	$ 319	2.51 %	1.79 %	$ 1.08	$ 34.43
		2015	15	$ 367	2.77 %	2.34 %	$ 1.27	$ 37.03
		2016	16	$ 361	3.03 %	2.10 %	$ 1.22	$ 38.46
		2017	14	$ 347	1.98 %	1.53 %	$ 1.19	$ 34.60
		2018	14	$ 311	2.15 %	1.48 %	$ 1.06	$ 35.40
		2019	17	$ 292	1.98 %	1.76 %	$ 0.85	$ 33.52
		2020	16	$ 301	2.33 %	2.17 %	$ 1.01	$ 35.23
	Fuel	2008	22	$ 2,558	20.57 %	18.29 %	$ 9.34	$ 336.59
		2009	21	$ 1,755	15.90 %	14.23 %	$ 6.75	$ 229.79
		2010	20	$ 2,167	16.82 %	13.09 %	$ 8.01	$ 230.88
		2011	20	$ 2,455	17.45 %	11.47 %	$ 8.71	$ 246.65
		2012	20	$ 2,739	15.97 %	11.81 %	$ 9.22	$ 264.41
		2013	18	$ 3,051	19.36 %	17.10 %	$ 10.33	$ 281.48
		2014	18	$ 2,870	19.05 %	14.09 %	$ 10.11	$ 256.52
		2015	18	$ 2,014	13.78 %	12.14 %	$ 7.56	$ 200.45
		2016	19	$ 1,562	11.48 %	9.16 %	$ 4.95	$ 157.03
		2017	19	$ 1,621	10.07 %	7.63 %	$ 6.08	$ 165.29
		2018	19	$ 2,250	12.49 %	8.74 %	$ 6.47	$ 207.72
		2019	20	$ 1,912	12.24 %	10.59 %	$ 6.44	$ 213.18
		2020	19	$ 1,542	11.31 %	9.09 %	$ 5.39	$ 146.86
	Lubrication and Fluids	2008	22	$ 101	0.91 %	0.84 %	$ 0.34	$ 16.81
		2009	21	$ 123	1.05 %	0.80 %	$ 0.45	$ 14.63
		2010	20	$ 111	0.90 %	0.69 %	$ 0.42	$ 11.52
		2011	20	$ 128	0.89 %	0.60 %	$ 0.49	$ 13.72
		2012	19	$ 128	0.67 %	0.60 %	$ 0.52	$ 13.84
		2013	18	$ 149	0.96 %	0.85 %	$ 0.53	$ 14.65
		2014	18	$ 119	0.85 %	0.58 %	$ 0.42	$ 11.13
		2015	18	$ 129	1.05 %	0.83 %	$ 0.48	$ 14.56
		2016	19	$ 122	0.87 %	0.67 %	$ 0.38	$ 12.89
		2017	19	$ 144	0.89 %	0.55 %	$ 0.50	$ 14.78
		2018	19	$ 126	0.65 %	0.47 %	$ 0.44	$ 11.13
		2019	20	$ 83	0.55 %	0.43 %	$ 0.26	$ 9.13
		2020	19	$ 102	0.89 %	0.77 %	$ 0.31	$ 12.65
	Product and Packaging Materials	2008	22	$ 241	1.74 %	1.53 %	$ 0.92	$ 30.11
		2009	21	$ 175	1.43 %	1.32 %	$ 0.66	$ 22.55
		2010	20	$ 200	1.54 %	1.16 %	$ 0.84	$ 23.79
		2011	20	$ 289	1.51 %	1.12 %	$ 0.94	$ 23.74
		2012	20	$ 278	1.64 %	1.23 %	$ 0.93	$ 24.96
		2013	18	$ 246	1.68 %	1.36 %	$ 0.99	$ 23.36
		2014	18	$ 311	1.80 %	1.56 %	$ 0.98	$ 26.15
		2015	18	$ 215	1.50 %	1.30 %	$ 0.73	$ 20.66
		2016	19	$ 231	1.74 %	1.31 %	$ 0.79	$ 25.38
		2017	19	$ 237	1.39 %	1.08 %	$ 0.75	$ 23.30
		2018	19	$ 219	1.31 %	0.92 %	$ 0.72	$ 23.45
		2019	20	$ 260	1.60 %	1.28 %	$ 0.75	$ 25.21
		2020	19	$ 211	1.73 %	1.58 %	$ 0.68	$ 25.93

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Table 9.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Materials	Raw Fish Purchases	2008	2	$ *	* %	* %	$ *	$ *
		2010	1	$ *	* %	* %	$ *	$ *
		2011	1	$ *	* %	* %	$ *	$ *
		2012	1	$ *	* %	* %	$ *	$ *
		2013	1	$ *	* %	* %	$ *	$ *
		2015	4	$ *	* %	* %	$ *	$ *
		2016	5	$ 462	2.02 %	1.74 %	$ 1.53	$ 30.55
		2017	5	$ 659	2.71 %	1.92 %	$ 2.23	$ 47.87
		2018	6	$ 495	2.13 %	1.54 %	$ 1.73	$ 39.06
		2019	7	$ 425	2.08 %	1.71 %	$ 1.41	$ 35.29
		2020	7	$ 359	2.00 %	1.90 %	$ 1.33	$ 31.75
Fees	Cooperative Costs	2008	16	$ 31	0.34 %	0.25 %	$ 0.12	$ 4.44
		2009	15	$ 82	0.79 %	0.64 %	$ 0.28	$ 10.52
		2010	14	$ 85	0.66 %	0.51 %	$ 0.35	$ 9.42
		2011	16	$ 92	0.58 %	0.40 %	$ 0.30	$ 8.90
		2012	16	$ 91	0.58 %	0.44 %	$ 0.36	$ 9.31
		2013	14	$ 101	0.59 %	0.46 %	$ 0.32	$ 8.24
		2014	14	$ 74	0.59 %	0.43 %	$ 0.25	$ 8.29
		2015	14	$ 75	0.59 %	0.46 %	$ 0.24	$ 8.36
		2016	15	$ 80	0.71 %	0.53 %	$ 0.27	$ 9.67
		2017	18	$ 75	0.43 %	0.28 %	$ 0.27	$ 7.68
		2018	19	$ 117	0.66 %	0.45 %	$ 0.36	$ 11.44
		2019	20	$ 99	0.66 %	0.52 %	$ 0.29	$ 10.54
		2020	19	$ 119	0.82 %	0.70 %	$ 0.33	$ 11.85
	Fish Tax	2008	22	$ 159	1.15 %	1.05 %	$ 0.61	$ 21.64
		2009	21	$ 165	1.42 %	1.28 %	$ 0.73	$ 18.82
		2010	20	$ 96	0.79 %	0.66 %	$ 0.34	$ 12.20
		2011	20	$ 115	0.79 %	0.55 %	$ 0.37	$ 11.69
		2012	20	$ 157	1.10 %	0.83 %	$ 0.66	$ 18.14
		2013	18	$ 177	1.36 %	1.04 %	$ 0.62	$ 18.22
		2014	18	$ 167	1.10 %	0.86 %	$ 0.58	$ 15.40
		2015	18	$ 168	1.20 %	1.02 %	$ 0.54	$ 18.86
		2016	19	$ 236	1.84 %	1.20 %	$ 0.83	$ 24.18
		2017	19	$ 168	1.31 %	1.04 %	$ 0.59	$ 22.59
		2018	19	$ 213	1.66 %	1.17 %	$ 0.71	$ 27.88
		2019	20	$ 219	1.49 %	1.28 %	$ 0.83	$ 25.74
		2020	19	$ 213	1.77 %	1.55 %	$ 0.96	$ 25.38
	Observer	2008	22	$ 221	1.57 %	1.40 %	$ 0.83	$ 26.73
		2009	21	$ 205	1.90 %	1.60 %	$ 0.82	$ 26.05
		2010	20	$ 224	1.75 %	1.31 %	$ 0.82	$ 22.14
		2011	20	$ 224	1.33 %	0.90 %	$ 0.76	$ 22.18
		2012	19	$ 215	1.19 %	0.94 %	$ 0.79	$ 20.72
		2013	18	$ 230	1.46 %	1.23 %	$ 0.79	$ 21.89
		2014	18	$ 233	1.53 %	1.23 %	$ 0.81	$ 21.02
		2015	18	$ 246	1.57 %	1.40 %	$ 0.84	$ 22.68
		2016	19	$ 241	1.58 %	1.27 %	$ 0.80	$ 24.33
		2017	19	$ 239	1.51 %	1.05 %	$ 0.77	$ 23.03
		2018	19	$ 230	1.58 %	1.07 %	$ 0.78	$ 24.98
		2019	20	$ 227	1.47 %	1.22 %	$ 0.78	$ 25.71
		2020	19	$ 222	1.77 %	1.38 %	$ 0.75	$ 22.23

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Table 9.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
Fees	Quota Royalties	2008	2	$ *	* %	* %	$ *	$ *
		2009	4	$ *	* %	* %	$ *	$ *
		2010	2	$ *	* %	* %	$ *	$ *
		2011	8	$ 82	0.39 %	0.29 %	$ 0.26	$ 6.27
		2012	4	$ *	* %	* %	$ *	$ *
		2013	3	$ *	* %	* %	$ *	$ *
		2014	8	$ 182	0.75 %	0.51 %	$ 0.59	$ 10.91
		2015	7	$ 13	0.10 %	0.09 %	$ 0.04	$ 1.39
		2016	9	$ 47	0.18 %	0.14 %	$ 0.15	$ 2.82
		2017	5	$ 34	0.17 %	0.14 %	$ 0.12	$ 2.82
		2018	4	$ *	* %	* %	$ *	$ *
		2019	2	$ *	* %	* %	$ *	$ *
		2020	9	$ 14	0.14 %	0.12 %	$ 0.04	$ 1.75
Overhead	Freight and Storage	2008	9	$ 2,373	14.38 %	14.24 %	$ 8.44	$ 279.39
		2009	10	$ 295	4.34 %	4.66 %	$ 1.11	$ 76.98
		2010	8	$ 1,676	8.40 %	7.19 %	$ 5.29	$ 147.86
		2011	4	$ *	* %	* %	$ *	$ *
		2012	4	$ *	* %	* %	$ *	$ *
		2013	4	$ *	* %	* %	$ *	$ *
		2014	7	$ 3,245	18.28 %	16.53 %	$ 10.05	$ 303.85
		2015	10	$ 3,263	20.04 %	18.35 %	$ 11.09	$ 305.52
		2016	10	$ 3,070	20.60 %	17.02 %	$ 10.44	$ 300.92
		2017	13	$ 3,030	16.13 %	12.54 %	$ 9.77	$ 292.55
		2018	10	$ 3,294	14.95 %	11.56 %	$ 11.75	$ 278.66
		2019	14	$ 2,489	16.40 %	13.83 %	$ 9.63	$ 284.53
		2020	10	$ 3,516	19.43 %	16.52 %	$ 11.98	$ 278.68
	General Administrative Cost	2008	22	$ 529	5.20 %	4.75 %	$ 2.10	$ 90.70
		2009	21	$ 831	8.78 %	7.72 %	$ 2.89	$ 130.47
		2010	16	$ 849	6.27 %	4.42 %	$ 3.55	$ 82.88
		2011	16	$ 1,331	5.90 %	4.46 %	$ 4.32	$ 97.17
		2012	20	$ 818	4.69 %	3.91 %	$ 3.30	$ 77.92
		2013	18	$ 609	4.68 %	4.15 %	$ 2.52	$ 67.05
		2014	16	$ 1,394	8.27 %	7.18 %	$ 4.57	$ 117.67
		2015	11	$ 1,484	9.62 %	8.08 %	$ 6.35	$ 137.65
		2016	11	$ 1,930	11.65 %	8.42 %	$ 6.97	$ 176.42
		2017	15	$ 1,869	10.34 %	8.10 %	$ 6.26	$ 175.41
		2018	15	$ 1,892	9.24 %	7.12 %	$ 6.78	$ 180.47
		2019	20	$ 1,229	6.35 %	5.27 %	$ 4.02	$ 104.96
		2020	18	$ 839	6.31 %	6.23 %	$ 3.72	$ 86.10
	Insurance	2008	22	$ 546	3.95 %	3.87 %	$ 1.93	$ 73.93
		2009	21	$ 536	5.41 %	4.65 %	$ 1.82	$ 74.68
		2010	20	$ 576	4.55 %	3.34 %	$ 2.11	$ 60.68
		2011	20	$ 576	3.59 %	2.50 %	$ 1.88	$ 54.35
		2012	20	$ 655	4.12 %	3.05 %	$ 2.47	$ 63.94
		2013	18	$ 614	3.87 %	3.00 %	$ 1.97	$ 55.37
		2014	17	$ 770	5.67 %	3.62 %	$ 2.68	$ 75.65
		2015	18	$ 505	3.82 %	3.43 %	$ 1.66	$ 54.65
		2016	19	$ 470	4.17 %	3.31 %	$ 1.61	$ 59.09
		2017	19	$ 455	2.98 %	2.55 %	$ 1.46	$ 49.06
		2018	19	$ 464	3.44 %	2.71 %	$ 1.40	$ 58.85
		2019	20	$ 509	4.04 %	3.30 %	$ 1.66	$ 69.42
		2020	19	$ 507	4.42 %	3.97 %	$ 1.67	$ 58.54

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Table 9.10: Continued

	Year	Vessels	Cost Per Vessel, Median ($1,000)	Percent Of Total Expenses	Percent Of Gross Revenue	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($)
All Annual Expenses	2008	22	$ 12,455	100.00 %	87.28 %	$ 52.61	$ 1,756.97
	2009	21	$ 10,783	100.00 %	82.96 %	$ 43.48	$ 1,470.04
	2010	20	$ 12,271	100.00 %	76.09 %	$ 50.73	$ 1,452.09
	2011	20	$ 16,612	100.00 %	70.98 %	$ 64.45	$ 1,665.38
	2012	20	$ 18,768	100.00 %	79.82 %	$ 70.47	$ 1,661.72
	2013	18	$ 14,063	100.00 %	76.92 %	$ 55.14	$ 1,410.64
	2014	18	$ 15,655	100.00 %	75.93 %	$ 55.55	$ 1,409.50
	2015	18	$ 15,458	100.00 %	86.87 %	$ 54.50	$ 1,434.58
	2016	19	$ 13,631	100.00 %	77.01 %	$ 44.92	$ 1,485.07
	2017	19	$ 16,277	100.00 %	79.18 %	$ 60.58	$ 1,670.18
	2018	19	$ 19,484	100.00 %	73.38 %	$ 61.11	$ 1,722.11
	2019	20	$ 15,611	100.00 %	81.25 %	$ 50.41	$ 1,695.24
	2020	19	$ 12,293	100.00 %	89.09 %	$ 48.51	$ 1,413.41

Notes: All dollar values are inflation-adjusted to 2020-equivalent value; median cost per expense item, cost per vessel day, and cost per thousand t are shown in $1000. "*" indicates value is suppressed for confidentiality.

Gross revenue values are inclusive of all reported fishery product sales, tendering and other for-hire vessel services, quota royalties and other permit/license leasing and sales realized during the year. Median cost values and pro-rata indices are calculated over non-zero observations in individual vessel data for each expense item. Note that the set of vessels reporting non-zero values typically differs across expense items during a given year, and median values reported for respective expense items in a given year are calculated over distict sets of vessels. As such, the statistics reported in the above table should not be interpreted as directly comparable across respective expense items and/or years in terms of characterizing a consistent representative "median vessel".

Source: Amendment 80 Economic Data Reports.

Table 9.11: Amendment 80 Fleet Operating Costs and Income, Fleet Total and Vessel Median

		Fleet Total			Vessel Median	
	Year	Vessels	$ Million	Percent Of Fleet Gross Revenue	$1,000	Percent Of Vessel Gross Revenue
Gross Revenue	2008	22	$ 336.54	100.00 %	$ 14,996	100.00 %
	2009	21	$ 285.34	100.00 %	$ 12,744	100.00 %
	2010	20	$ 352.40	100.00 %	$ 16,173	100.00 %
	2011	20	$ 465.76	100.00 %	$ 22,729	100.00 %
	2012	20	$ 447.07	100.00 %	$ 21,427	100.00 %
	2013	18	$ 346.31	100.00 %	$ 17,552	100.00 %
	2014	18	$ 381.37	100.00 %	$ 19,703	100.00 %
	2015	18	$ 338.60	100.00 %	$ 17,210	100.00 %
	2016	19	$ 362.94	100.00 %	$ 17,751	100.00 %
	2017	19	$ 444.66	100.00 %	$ 21,004	100.00 %
	2018	19	$ 459.85	100.00 %	$ 24,749	100.00 %
	2019	20	$ 391.87	100.00 %	$ 17,572	100.00 %
	2020	19	$ 307.99	100.00 %	$ 18,024	100.00 %
Labor - Total Costs	2008	22	$ 108.11	32.12 %	$ 4,593	32.20 %
	2009	21	$ 94.20	33.01 %	$ 4,166	36.62 %
	2010	20	$ 107.92	30.62 %	$ 4,887	34.56 %
	2011	20	$ 134.83	28.95 %	$ 6,725	33.31 %
	2012	20	$ 131.87	29.50 %	$ 6,620	33.08 %
	2013	18	$ 102.80	29.68 %	$ 5,134	30.72 %
	2014	18	$ 109.01	28.58 %	$ 5,441	29.87 %
	2015	18	$ 102.87	30.38 %	$ 5,127	33.02 %
	2016	19	$ 103.99	28.65 %	$ 4,982	34.61 %
	2017	19	$ 141.96	31.93 %	$ 7,776	35.67 %
	2018	19	$ 143.53	31.21 %	$ 7,792	33.61 %
	2019	20	$ 128.75	32.85 %	$ 6,295	33.65 %
	2020	19	$ 100.06	32.49 %	$ 5,395	31.86 %
Operating (Non-labor) - Total Costs	2008	22	$ 124.02	36.85 %	$ 5,432	35.86 %
	2009	21	$ 105.28	36.90 %	$ 5,050	38.44 %
	2010	20	$ 123.20	34.96 %	$ 5,692	34.15 %
	2011	20	$ 136.24	29.25 %	$ 6,781	28.94 %
	2012	20	$ 139.36	31.17 %	$ 6,857	29.66 %
	2013	18	$ 130.52	37.69 %	$ 6,850	38.26 %
	2014	18	$ 119.68	31.38 %	$ 5,963	30.75 %
	2015	18	$ 113.93	33.65 %	$ 5,554	31.72 %
	2016	19	$ 98.77	27.21 %	$ 4,008	27.40 %
	2017	19	$ 102.84	23.13 %	$ 5,264	22.27 %
	2018	19	$ 111.47	24.24 %	$ 5,874	24.21 %
	2019	20	$ 113.21	28.89 %	$ 5,345	29.51 %
	2020	19	$ 93.17	30.25 %	$ 4,584	32.27 %
Gross Income	2008	22	$ 104.41	31.03 %	$ 4,557	31.48 %
	2009	21	$ 85.86	30.09 %	$ 3,244	24.48 %
	2010	20	$ 121.29	34.42 %	$ 5,439	31.99 %
	2011	20	$ 194.69	41.80 %	$ 9,157	36.79 %
	2012	20	$ 175.84	39.33 %	$ 8,997	38.92 %
	2013	18	$ 112.99	32.63 %	$ 5,281	31.34 %
	2014	18	$ 152.68	40.03 %	$ 7,460	37.67 %
	2015	18	$ 121.79	35.97 %	$ 5,473	34.17 %
	2016	19	$ 160.18	44.13 %	$ 6,906	43.57 %
	2017	19	$ 199.86	44.95 %	$ 9,018	42.15 %
	2018	19	$ 204.85	44.55 %	$ 10,249	41.99 %
	2019	20	$ 149.92	38.26 %	$ 6,847	38.04 %
	2020	19	$ 114.75	37.26 %	$ 5,571	34.20 %

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Table 9.11: Continued

	Year	Fleet Total			Vessel Median	
		Vessels	$ Million	Percent Of Fleet Gross Revenue	$1,000	Percent Of Vessel Gross Revenue
Overhead - Total Costs	2008	22	$ 55.20	16.40 %	$ 2,119	14.00 %
	2009	21	$ 45.78	16.05 %	$ 1,208	15.22 %
	2010	20	$ 42.42	12.04 %	$ 1,074	8.70 %
	2011	20	$ 63.45	13.62 %	$ 1,310	5.91 %
	2012	20	$ 63.12	14.12 %	$ 1,601	7.80 %
	2013	18	$ 39.33	11.36 %	$ 1,362	8.52 %
	2014	18	$ 58.56	15.36 %	$ 2,427	11.35 %
	2015	18	$ 65.97	19.48 %	$ 3,221	21.34 %
	2016	19	$ 72.73	20.04 %	$ 3,614	20.36 %
	2017	19	$ 77.80	17.50 %	$ 4,346	20.22 %
	2018	19	$ 70.45	15.32 %	$ 4,174	17.42 %
	2019	20	$ 76.99	19.65 %	$ 4,043	21.85 %
	2020	19	$ 63.08	20.48 %	$ 3,600	26.56 %
Operating Income	2008	22	$ 49.22	14.62 %	$ 1,526	12.72 %
	2009	21	$ 40.07	14.04 %	$ 1,638	17.04 %
	2010	20	$ 78.87	22.38 %	$ 4,027	23.91 %
	2011	20	$ 131.24	28.18 %	$ 6,222	29.02 %
	2012	20	$ 112.72	25.21 %	$ 4,219	20.18 %
	2013	18	$ 73.66	21.27 %	$ 3,345	23.08 %
	2014	18	$ 94.12	24.68 %	$ 3,806	24.07 %
	2015	18	$ 55.82	16.49 %	$ 2,155	13.13 %
	2016	19	$ 87.45	24.09 %	$ 3,346	22.99 %
	2017	19	$ 122.06	27.45 %	$ 3,656	20.82 %
	2018	19	$ 134.40	29.23 %	$ 5,194	26.62 %
	2019	20	$ 72.93	18.61 %	$ 3,602	18.75 %
	2020	19	$ 51.67	16.78 %	$ 1,570	10.91 %

Notes: All dollar values are inflation-adjusted to 2020-equivalent value; "*" indicates value is suppressed for confidentiality. Median and fleet aggregate operating expenses and income values shown above are approximations based on available data; annual expense reporting in Amendment 80 Economic Data Reports is relatively comprehensive, but does not include depreciation and debt payments (princicle or interest) on capital assets, and other financial and cash-flow accounting items relevant to some or all vessels. Gross revenue values are inclusive of all reported fishery product sales, tendering and other for-hire vessel services, quota royalties and other permit/license leasing and sales realized during the year. Gross Income is calculated as Gross Revenue less expenses for labor, vessel and equipment, materials, and fees; Operating Income is calculated as Gross Income less Overhead Expenses. Note that royalties paid and received for Amendment 80 QS and PSC allocations represent transfer payments between fishery participants and have net-zero value at the fleet-level in Gross Income, but may be of non-zero net value at the median vessel-level Fleet-level residual percentages are calculated using fleet aggregate values and represent the weighted average (mean) for vessels within the fleet. Median values for income residuals and percentages are calculated over non-zero observations in individual vessel data for each item; users should use caution in interpreting median statistics as characterizing a consistent representative "median vessel" across accounting categories and/or years.

Source: Amendment 80 Economic Data Reports.

Table 9.12: Amendment 80 Fleet Capital Expenditures by Category and Year, Fleet Total and Median Vessel Values

	Year	Vessels	Expenditure Per Vessel, Median ($1,000)	Percent Of Vessel Total Capital Expenditures, Median	Total Fleet Expenditure ($million)	Percent Of Fleet Total Capital Expenditures
Fishing gear	2008	12	$ 112	40 %	$ 1.87	20 %
	2009	8	$ *	* %	$ *	* %
	2010	8	$ *	* %	$ *	* %
	2011	9	$ *	* %	$ *	* %
	2012	10	$ 308	41 %	$ 3.26	16 %
	2013	9	$ *	* %	$ *	* %
	2014	9	$ *	* %	$ *	* %
	2015	11	$ 233	24 %	$ 2.32	18 %
	2016	13	$ 160	35 %	$ 3.16	24 %
	2017	13	$ *	* %	$ *	* %
	2018	18	$ 160	21 %	$ 4.41	12 %
	2019	18	$ 141	19 %	$ 4.46	14 %
	2020	15	$ 104	24 %	$ 2.91	9 %
Processing plant and equipment	2008	11	$ *	* %	$ *	* %
	2009	9	$ *	* %	$ *	* %
	2010	13	$ 179	28 %	$ 3.38	28 %
	2011	10	$ *	* %	$ *	* %
	2012	14	$ *	* %	$ *	* %
	2013	9	$ *	* %	$ *	* %
	2014	8	$ *	* %	$ *	* %
	2015	10	$ 146	18 %	$ 1.88	14 %
	2016	8	$ *	* %	$ *	* %
	2017	11	$ *	* %	$ *	* %
	2018	15	$ *	* %	$ *	* %
	2019	19	$ *	* %	$ *	* %
	2020	14	$ *	* %	$ *	* %
Vessel and other onboard equipment	2008	11	$ 61	33 %	$ 2.14	22 %
	2009	13	$ 471	75 %	$ 7.39	74 %
	2010	15	$ 127	57 %	$ 6.22	52 %
	2011	11	$ 144	32 %	$ 3.48	36 %
	2012	18	$ *	* %	$ *	* %
	2013	11	$ *	* %	$ *	* %
	2014	13	$ 433	73 %	$ 7.30	47 %
	2015	12	$ *	* %	$ *	* %
	2016	10	$ *	* %	$ *	* %
	2017	11	$ *	* %	$ *	* %
	2018	17	$ *	* %	$ *	* %
	2019	20	$ 228	33 %	$ 10.12	31 %
	2020	13	$ *	* %	$ *	* %

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Table 9.12: Continued

	Year	Vessels	Expenditure Per Vessel, Median ($1,000)	Percent Of Vessel Total Capital Expenditures, Median	Total Fleet Expenditure ($million)	Percent Of Fleet Total Capital Expenditures
Other capital expenditures	2008	9	$ *	* %	$ *	* %
	2009	5	$ *	* %	$ *	* %
	2010	4	$ *	* %	$ *	* %
	2011	8	$ *	* %	$ *	* %
	2012	7	$ *	* %	$ *	* %
	2013	8	$ 123	44 %	$ 0.94	5 %
	2014	10	$ *	* %	$ *	* %
	2015	10	$ *	* %	$ *	* %
	2016	6	$ *	* %	$ *	* %
	2017	9	$ *	* %	$ *	* %
	2018	11	$ *	* %	$ *	* %
	2019	14	$ *	* %	$ *	* %
	2020	14	$ *	* %	$ *	* %
Total Annual Capital Expenditures	2008	17	$ 431	100 %	$ 9.56	100 %
	2009	16	$ 383	100 %	$ 9.95	100 %
	2010	18	$ 408	100 %	$ 11.98	100 %
	2011	15	$ 349	100 %	$ 9.79	100 %
	2012	19	$ 325	100 %	$ 20.24	100 %
	2013	16	$ *	* %	$ *	* %
	2014	18	$ 449	100 %	$ 15.54	100 %
	2015	16	$ 488	100 %	$ 13.16	100 %
	2016	18	$ 330	100 %	$ 13.29	100 %
	2017	19	$ *	* %	$ *	* %
	2018	19	$ *	* %	$ *	* %
	2019	20	$ *	* %	$ *	* %
	2020	18	$ *	* %	$ *	* %

Notes: All dollar values are inflation-adjusted to 2020-equivalent value. Fleet average dollar values are shown in $1,000 and total aggregate values are shown in $millions. "*" indicates value is suppressed for confidentiality.

'Percentage of Fleet-Total Capital Expenditures' index values represent the weighted average (mean) for vessels within the fleet. Median statistics reported in the above table should not be interpreted as directly comparable across respective expenditure categories and/or years in terms of characterizing a consistent representative "median vessel". Median values are calculated over non-zero observations in individual vessel data for each capital expense category, noting that the set of vessels reporting non-zero values typically differs across expenditure categories during a given year, and therefore a) median values reported for respective categories are representative of distict sets of vessels, and b) median percent of total capital expenditure is not additive across categories in a given year.

Source: Amendment 80 Economic Data Reports.

Table 9.13: Amendment 80 Fleet Employment and Average Gross Wages, by Labor Category, Fleet Total and Median Vessel Values

		Positions on board			Number of employees during the year		Average annual gross wages ($1,000)
	Year	Vessels	Median	Total	Median	Total	Per Employee
Fishing (deck) crew	2008	22	6	134	11	340	$ 53
	2009	21	6	120	12	273	$ 53
	2010	20	6	114	13	294	$ 53
	2011	20	6	111	9	234	$ 84
	2012	20	6	107	10	242	$ 77
	2013	18	6	105	8	214	$ 68
	2014	18	6	106	11	239	$ 66
	2015	18	6	107	11	231	$ 65
	2016	19	6	108	13	262	$ 57
	2017	19	6	103	11	202	$ 91
	2018	19	6	99	8	178	$ 103
	2019	20	6	104	11	211	$ 74
	2020	19	6	104	10	172	$ 68
Processing employees	2008	22	22	529	56	1,465	$ 33
	2009	21	23	516	56	1,341	$ 32
	2010	20	23	476	67	1,567	$ 31
	2011	20	23	473	61	1,234	$ 48
	2012	20	23	448	52	1,296	$ 46
	2013	18	23	437	59	1,183	$ 38
	2014	18	24	449	75	1,300	$ 37
	2015	18	24	449	62	1,160	$ 37
	2016	19	25	477	65	1,357	$ 33
	2017	19	24	504	76	1,533	$ 41
	2018	19	25	526	74	1,595	$ 38
	2019	20	27	557	75	1,590	$ 33
	2020	19	28	497	76	1,578	$ 24
Other vessel crew	2008	22	7	156	18	418	$ 76
	2009	21	6	136	16	371	$ 76
	2010	20	7	145	19	549	$ 61
	2011	20	7	150	18	356	$ 118
	2012	20	7	170	20	436	$ 98
	2013	18	7	160	19	383	$ 84
	2014	18	7	140	18	347	$ 98
	2015	18	7	141	18	338	$ 97
	2016	19	7	157	18	417	$ 80
	2017	19	7	160	20	446	$ 105
	2018	19	7	165	19	372	$ 135
	2019	20	8	174	21	426	$ 108
	2020	19	8	173	20	409	$ 90

Notes: Average positions on-board reflects the number of individuals employed on-board at one time (i.e., the complement of crew employed to operate the vessel), by employment category; number of employees during the year counts each unique person employed over the course of the year. The higher numbers reported for the latter reflects turnover in employment when compared to the average number of positions on-board. Average annual gross wages per employee reflects the aggregate annual labor costs reported for active vessels by labor category, divided by the number of employees during the year, including any payroll taxes paid, and not accounting for the value of any non-wage benefits received.

Source: Amendment 80 Economic Data Reports.

Table 9.14: Amendment 80 Catcher/Processor Fleet - Estimated Crew Employment and Income, by Community of Residence

		2016			2017			2018			2019			2020		
	Community	Employ Count	Employ Share	Income $mil-lion	Employ Count	Employ Share	Income $mil-lion	Employ Count	Employ Share	Income $mil-lion	Employ Count	Employ Share	Income $mil-lion	Employ Count	Employ Share	Income $mil-lion
Alaska	Unalaska/Dutch Harbor	23	4 %	$ 1.80	11	2 %	$ 1.08	6	1 %	$ 0.77	11	2 %	$ 1.13	4	1 %	$ *
	Other Alaska	24	4 %	$ 1.87	26	4 %	$ 2.56	10	2 %	$ 1.28	17	3 %	$ 1.75	16	3 %	$ 1.41
	Alaska Total	47	8 %	$ 3.67	37	6 %	$ 3.65	16	3 %	$ 2.04	28	5 %	$ 2.88	20	4 %	$ 1.76
Oregon	Oregon Total	14	2 %	$ 1.09	11	2 %	$ 1.08	7	1 %	$ 0.89	10	2 %	$ 1.03	9	2 %	$ 0.79
Washington	Seattle MSA	351	57 %	$ 27.41	425	64 %	$ 41.88	371	69 %	$ 47.35	397	66 %	$ 40.79	347	63 %	$ 30.52
	Other Wash.	67	11 %	$ 5.23	61	9 %	$ 6.01	47	9 %	$ 6.00	53	9 %	$ 5.45	63	11 %	$ 5.54
	Wash. Total	418	68 %	$ 32.65	487	73 %	$ 47.99	418	78 %	$ 53.35	450	75 %	$ 46.24	410	74 %	$ 36.06
Other	-	121	20 %	$ 9.45	98	15 %	$ 9.66	84	16 %	$ 10.72	100	17 %	$ 10.28	96	17 %	$ 8.44
Unknown	-	16	3 %	$ 1.25	31	5 %	$ 3.05	13	2 %	$ 1.66	14	2 %	$ 1.44	17	3 %	$ 1.50
All Locations		616	100 %	$ 48.11	664	100 %	$ 65.43	538	100 %	$ 68.67	602	100 %	$ 61.86	552	100 %	$ 48.55

Notes: 'Employ count' reports the number of individual vessel crew members identified as resident of the listed community or location. 'Employ share' reports the proportion of the total vessel employment pool associated by residence with the listed community or location. Statistics are reported for individual communities or community groupings within states (incorporated cities, counties or boroughs, or metropolitan statistical areas (MSAs)) only for communities that represented 3% or greater of the total employment pool in at least one year of reporting; employment and income statistics for residence locations below that threshold are aggregated together as 'Other (state)'. Note that no Alaska city or borough other than Unalaska/Dutch Harbor (Aleutians West Census Area) represented at least 3% of total vessel employment in any year of reporting. 'Other' references residence locations other than the states of Alaska, Oregon and Washington, and 'Unknown' references crew identifier entries where a valid crew license permit number could not be identified from information reported in the EDR.

'Income' (reported in $million, inflation-adjusted to 2020-equivalent value) is the estimated amount of vessel labor income, by community/location of residence, that is distributed to vessel crew members in aggregate; the estimate is derived by multiplying aggregate direct labor payments to non-processing vessel crew (reported by year in Amendment 80 EDR data; includes total fleet cost values reported for 'Labor Payment, Fishing Crew' and 'Labor Payment - Other Employees' in Table 9.9 by the 'Employ share' percentage value for the respective community/location. This does not control for differentials in proportional residence associations among different crew labor types (i.e., deck crew, captain, fish master, etc.) and respective pay rates.

Source: Amendment 80 Economic Data Reports, ADF&G commercial crew license database, and CFEC gear operator permit database; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

9.6. Citations

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National Transportation Safety Board (NTSB), 2017. Marine Accident Brief: Flooding and Sinking of Fishing Vessel Alaska Juris. National Transportation Safety Board, Washington DC, MAB-17/26, July 24, 2017. 14pp. https://www.ntsb.gov/investigations/AccidentReports/Reports/MAB1726.pdf

10. GULF OF ALASKA GROUNDFISH TRAWL FISHERY - SOCIAL AND ECONOMIC INDICATORS FOR THE CATCHER VESSEL FLEET AND PROCESSING SECTOR

This section of the Groundfish Economic Status Report provides a brief summary of cost, employment, and earnings information associated with commercial fishing and processing industry operations in the groundfish trawl fisheries of the central and western Gulf of Alaska (GOA). Beginning in 2015, the GOA Groundfish Trawl Economic Data Report (EDR) data collection program has collected annual census data from trawl catcher vessels, catcher-processors, and share-based processors active in GOA groundfish fisheries. The EDR program was developed by the Council to collect baseline cost and employment data from vessels and processors in advance of FMP amendments intended to rationalize the GOA groundfish trawl fisheries and improve bycatch avoidance (79 FR 71313); although Council action on GOA rationalization was suspended in December 2016, the GOA Trawl EDR represents an effort to improve the quality of information describing baseline economic conditions that was not available in the implementation of earlier catch share programs. As with all EDR data collections developed by the Council, the program is implemented jointly by the Alaska Fisheries Science Center (AFSC) and Pacific States Marine Fisheries Commission (PSMFC).

The GOA Trawl EDR is comprised of data collections targeting the three respective sectors of the fishery. The Annual Trawl Catcher Vessel EDR and Annual Shoreside Processor EDR were designed by the Council to collect selected data elements from the respective populations that would capture key operating cost and employment conditions that were expected to be particularly susceptible to institutional changes associated with rationalization. As such, the GOA Trawl EDR does not collect comprehensive financial and employment data sufficient to support monitoring and assessment of general economic conditions in the respective industry sectors. In particular, the scope of data captured in the EDR is as follows:

The Trawl CV EDR form is required for all trawl catcher vessels that harvested groundfish in the GOA during the previous year, and collects the following data elements:

- Estimated market value and replacement value of vessel;
- Fishing gear costs - inclusive of direct capitalized expenditures and fully expensed costs for purchase, lease, installation and repair of a) salmon and halibut excluder gear, and b) trawl gear (including excluder gear other than salmon and halibut);
- Annual total fuel and lubrication cost and gallons purchased;
- Total labor payments to a) crew and b) captain (total of final settlement payments), and number of crew, for GOA groundfish only;
- ADF&G commercial crew license number or CFEC gear operator permit number, by individual crew member that worked on vessel during GOA groundfish trawl fishing.

The Annual Shoreside Processor EDR form is required from all shore-based processors that receive and process groundfish from GOA trawl fisheries. The form collects the following data elements:

- Estimated market value; borough assessed value or replacement value;
- Municipal water utility consumption, gallons and cost, by month, for Kodiak plants only;
- Municipal electrical utility consumption, kilowatt-hours and cost, by month, for Kodiak plants only;
- Processing labor gross wages and hours, by month and housing-status (housed, non-housed), for groundfish processing only;
- Number of processing employees, by month, for groundfish only;
- Non-processing employment, number employed, total wages and salaries, annual total.

In addition, trawl CPs active in GOA groundfish fisheries are required to submit the Annual Trawl CP EDR, which collects more comprehensive financial and other data; with the exception of one CP that operates exclusively in the GOA, all other trawl CPs active in the GOA are part of the Amendment 80 CP fleet that also operate in the Bering Sea. Section 9 of the Economic SAFE Report provides a more complete presentation of EDR data representing the trawl CP fleet, and this section of the Economic Status Report is limited to the GOA groundfish trawl catcher vessel and shore-based processing sectors. For the current edition, the analysis is limited to presentation of catcher vessel sector employment and wages, including regional and community-level detail, and annual vessel expenditures on fuel and trawl gear. In future editions, the authors intend to develop a more integrated analysis of economic and social indicators for all sectors of the fishery and affected communities.

NOTE: As of the completion of this report, **EDR forms reporting for the 2019 calendar year remain outstanding and have yet to be submitted for seven (7) catcher vessels and two (2) shoreside processors**. PSMFC has made consistent efforts to communicate with EDR submitters regarding the need for timely completion of EDR submissions, and entities with outstanding GOA Trawl EDR submissions have been contacted by NMFS Alaska Region. However, noncompliance with GOA Trawl EDR requirements during 2020 and prior years has not been resolved to-date, and may be subject to enforcement action by NMFS OLE. As such, **statistics reported for 2020 for the GOA catcher vessel sector in the following sections represent preliminary results based on incomplete data collection for the 2020 calendar year, and statistics for 2020 for the shore-based processing sector are suppressed for confidentiality pending submission of outstanding Trawl Processor EDR forms.**. For the purpose of timely reporting, pending resolution of outstanding EDR submissions for 2020 or prior years, sector total statistics reported for the catcher vessel sector in Sections 10.2 and 10.3 below are adjusted for nonresponse in order to estimate the total aggregate value for the full population of catcher vessels; other statistical values (mean, median) are calculated from EDR data without adjustment. Table 10.1 reports EDR response rate information and nonresponse adjustment factors.

Table 10.1: GOA Trawl EDR Nonresponse and Adjustment Factor

Year	Catcher vessels				Processors			
	EDRs Submitted	Nonresponses	Response Rate	Volume Ratio	EDRs Submitted	Nonresponses	Response Rate	Volume Ratio
2015	62	6	91 %	91 %	12	0	100 %	100 %
2016	66	4	94 %	97 %	12	2	86 %	100 %
2017	65	3	96 %	96 %	13	0	100 %	100 %
2018	63	6	91 %	95 %	10	1	91 %	99 %
2019	55	10	85 %	83 %	9	1	90 %	99 %
2020	54	7	89 %	92 %	7	2	78 %	95 %

Notes: Table reports EDR non-response information, current as of publication of this report. Volume ratio is used to adjust for non-response in tables reporting statistics for the catcher vessel sector as follows: 'Vessels' values are reported as the sum of EDRs Submitted and Nonresponses (i.e., the full population of active vessels for the year), 'Total' statistics are estimated as the aggregated sum of values reported in completed EDR fomrs divided by Volume ratio. Median and mean values are unadjusted, and Non-zero N values, where shown, report the number of submitted observations of the particular variable. Tables reporting data for the shore-based processing sector are not adjusted for non-response.

Source: GOA Trawl Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

10.1. Processing Sector Employment

Monthly and annual processing employment, labor hours, and wage costs for Gulf of Alaska trawl groundfish processing activity is reported in Table 10.2, with hours and wage costs shown separately for employees that are provided housing by the employer from employees that provide their own housing. During 2020, 8 processing plants received and processed trawl groundfish landings from the Gulf of Alaska, down from 13 in 2015. An estimated total of 2,815 persons were employed on processing lines during 2020, providing 2.76 million hours of processing labor, at a cost of $42.7 million. Annual employment and earnings for non-processing employees, including managerial and administrative personnel, in reported in Table 10.3. A total of 494 persons were employed in such positions during 2020, at a cost to processing firms of $23.4 million in gross wages and salary.

Table 10.2: Gulf of Alaska Trawl Groundfish Processing Labor - Monthly

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Active plants	2015	12	13	13	11	10	10	8	9	10	10	10	7	13
	2016	12	12	12	12	9	10	10	11	11	11	11	8	12
	2017	10	11	12	11	10	9	9	9	10	11	9	7	13
	2018	9	9	9	9	7	7	7	9	9	9	8	6	10
	2019	8	8	8	8	7	8	8	9	9	9	7	5	10
Processing employees	2015	2,312	2,846	2,872	2,584	1,312	1,623	1,007	1,020	2,143	2,169	1,344	407	3,243
	2016	2,628	3,189	3,182	2,556	1,434	1,817	1,249	2,025	2,404	2,193	1,363	623	3,418
	2017	2,274	2,562	2,665	2,265	1,407	1,508	963	911	2,326	2,304	1,502	438	3,334
	2018	1,962	2,399	2,320	1,799	1,293	1,511	818	1,931	2,130	2,302	1,161	176	2,964
	2019	1,758	1,929	1,955	1,601	1,241	1,219	851	1,093	1,898	1,947	1,029	123	2,454
Processing hours (housed) 1,000	2015	144	383	490	343	53	50	131	105	350	301	42	5	2,397
	2016	230	630	666	348	49	149	252	363	350	248	55	11	3,351
	2017	161	423	505	241	44	73	95	142	403	362	83	2	2,534
	2018	114	343	389	164	32	71	95	276	280	408	23	1	2,196
	2019	134	271	242	151	42	46	130	219	248	279	22	2	1,786
Processing hours (not housed) 1,000	2015	183	255	315	214	160	120	84	79	268	246	100	46	2,070
	2016	142	423	508	290	276	194	58	207	282	376	113	43	2,912
	2017	122	283	257	148	139	97	10	15	177	168	108	27	1,551
	2018	55	186	226	98	125	103	7	62	180	181	97	10	1,330
	2019	78	171	176	116	172	85	9	5	111	139	69	2	1,133

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Table 10.2: Continued

	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Processing labor cost (housed) $1,000	2015	1,685	4,500	6,300	4,398	659	669	1,798	1,473	4,521	3,871	552	75	30,501
	2016	3,058	8,497	9,080	4,909	653	2,045	3,655	5,105	4,902	3,305	777	187	46,173
	2017	2,222	5,831	7,110	3,471	630	1,053	1,506	2,188	5,771	5,070	1,247	40	36,139
	2018	1,598	4,765	5,359	2,356	475	1,054	1,484	3,943	4,025	5,779	335	13	31,186
	2019	1,921	3,885	3,470	2,258	630	675	2,018	3,127	3,564	4,028	394	46	26,016
Processing labor cost (not housed) $1,000	2015	2,348	2,887	4,296	3,022	2,034	1,605	1,112	1,033	3,739	3,451	1,395	629	27,551
	2016	1,891	4,634	6,850	3,948	3,758	2,625	768	2,726	3,829	5,122	1,595	606	38,352
	2017	1,662	3,858	3,480	1,987	1,839	1,292	129	217	2,440	2,266	1,461	366	20,997
	2018	784	2,549	3,084	1,283	1,640	1,396	96	899	2,601	2,524	1,355	111	18,322
	2019	1,124	2,441	2,497	1,574	2,399	1,211	133	76	1,619	2,054	1,021	23	16,172
Processing hours 1,000	2015	327	638	805	557	213	170	215	184	618	547	142	51	4,467
	2016	372	1,053	1,174	638	325	343	310	570	632	624	168	54	6,263
	2017	283	706	762	389	183	170	105	157	580	530	191	29	4,085
	2018	169	529	615	262	157	174	102	338	460	589	120	11	3,526
	2019	212	442	418	267	214	131	139	224	359	418	91	4	2,919
Processing labor cost $1,000	2015	4,033	7,387	10,596	7,420	2,693	2,274	2,910	2,506	8,260	7,322	1,947	704	58,052
	2016	4,949	13,131	15,930	8,857	4,411	4,670	4,423	7,831	8,731	8,427	2,372	793	84,525
	2017	3,884	9,689	10,590	5,458	2,469	2,345	1,635	2,405	8,211	7,336	2,708	406	57,136
	2018	2,382	7,314	8,443	3,639	2,115	2,450	1,580	4,842	6,626	8,303	1,690	124	49,508
	2019	3,045	6,326	5,967	3,832	3,029	1,886	2,151	3,203	5,183	6,082	1,415	69	42,188

Notes: To protect confidential data, statistics are not reported for 2020 pending resolution of EDR non-submissions for that year.
Table reports aggregate monthly and annual groundfish processing activity, employment, labor hours, and labor cost for landings of Gulf of Alaska trawl groundfish landings. Processing employees, hours and costs are limited to hourly processing line and factory labor, excluding non-processing administrative and managerial employees. Labor cost values are inflation-adjusted to 2020-equivalent value. Annual total processing employees is calculated as the sum over each plant's maximimum monthly employment for the year.

Source: GOA Trawl Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN)

Table 10.3: Gulf of Alaska Trawl Groundfish Processors, Non-Processing Employment and Wages

Year	Employees	Total Salary And Wages $1,000
2015	945	$ 20,514
2016	769	$ 26,179
2017	817	$ 28,295
2018	448	$ 15,334
2019	474	$ 19,357

Notes: To protect confidential data, statistics are not reported for 2020 pending resolution of EDR non-submissions for that year.

Table reports aggregate employment and total wages and salaries paid for non-processing employees, including hourly and salaried administrative and managerial personnel. Wage values are inflation-adjusted to 2020-equivalent value.

Source: GOA Trawl Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN)

10.2. Harvest Sector Employment

Trawl catcher vessel crew employment and revenue share earnings for 2015 to 2020 are shown in Table 10.4, noting that statistics reported for the 55 vessels for which 2019 EDR data are available reflect substantial outstanding EDR submissions for the year, and are incomplete pending completion of 2019 EDR forms for as many as nine additional catcher vessels.

The number of vessels operating in GOA groundfish fisheries over the period prior to 2020 ranged from 65 to 70, and declined 61 in 2020. Note that, for a given vessel, 'crew positions' is the typical number of crew members onboard the vessel at one time, i.e., the 'size' of the vessel's crew, whereas 'crew employed' is the (typically larger) number of distinct individuals employed by the vessel over the course of a year. Fleet aggregate crew positions ranged from 251 to 267 prior to 2020, but declined to 222 that year, while the number of individuals employed declined to 330, a 23% decline from 2018.[1]

The total value of annual share payments to crew and captains aggregated over the fleet declined consistently between 2015 to 2020, from a high of $16.03 million to $9.04 million in payments to crew members, and from $10.71 million to $6.18 million in payments to vessel captains in 2020.

[1]For each vessel, the number of 'crew employed' is derived from the number of non-captain crew members receiving crew share payments, as reported in Trawl CV EDRs. Also for each vessel, the number of 'crew positions' is estimated as the average over all 'crew size' entries on the vessel's fish ticket records for the year, adjusted (less one) to exclude the captain position. At both the vessel and fleet level, 'crew employed' is likely to be larger that 'crew positions' due to employment turnover during the year. However, if crew turnover includes individual crew members rotating between vessels in the fleet, there will be some double-counting in fleet aggregate 'crew employed' values reported in Table 10.4. Also note that the aggregate crew employment counts reported in Table 10.5 are derived from counts of distinct crew members (uniquely identified by crew license number) and aren't subject to double-counting, but are inclusive of vessel captains and are thus greater than the counts shown in Table 10.4.

Table 10.4: Gulf of Alaska Catcher Vessel Fleet - Aggregate and Median Vessel Crew and Captain Employment and Share Earnings

	N	Fleet aggregate				Median vessel				
Year	Vessels	Crew Employed	Crew Positions	Crew Share ($million)	Captain Share ($million)	Crew Employed	Crew Positions	Crew Share ($1000)	Captain Share ($1000)	Share Per Position ($1000)
2015	68	392	267	$ 16.03	$ 10.71	5	4	$ 217.07	$ 148.40	$ 54.27
2016	70	396	263	$ 15.40	$ 10.22	5	4	$ 196.97	$ 128.26	$ 49.24
2017	68	405	261	$ 14.70	$ 9.07	5	4	$ 175.08	$ 114.81	$ 43.77
2018	69	427	251	$ 14.32	$ 9.20	6	4	$ 173.31	$ 126.32	$ 43.33
2019	65	384	260	$ 12.99	$ 8.10	5	4	$ 145.64	$ 92.30	$ 36.41
2020	61	330	222	$ 9.04	$ 6.18	5	4	$ 114.02	$ 86.04	$ 28.50

Notes: 'Fleet aggregate' statistics reported in the table represent the annual aggregate value of reported variables summed over all vessel-level observations in EDR data reported for trawl catcher vessels active in Gulf of Alaska groundfish fisheries for the year; 'Vessels' reports the number of vessel-level observations. 'Median vessel' statistics represent the average vessel-level value of reported variables; if preferred, arithmetic mean average values can be derived by dividing fleet aggregate values by the number of vessels. 'Crew employed' reports the number of individual vessel crew members receiving crew share payments; 'Crew positions' reports the average number of fishing crew members aboard the vessel (calculated from crew size data captured in eLandings records) and is smaller than the total number of crew employed due to turnover of crew members on a given vessel during the fishing year. 'Crew share' represents the aggregate share settlement payment to all non-Captain crew members of a given vessel, and 'Share per position' reports the average amount of share payment paid per crew position. Share payment values are inflation-adjusted using the GDP deflator to 2020-equivalent value, and reported in $million for fleet aggregate and $1000 at the median vessel level.

Source: GOA Trawl Economic Data Reports and eLandings; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

The spatial distribution of GOA trawl catcher vessel crew employment and wages is reported in Table 10.5, showing the estimated number of individual crew members (including captains) employed by location of residence (as identified from ADF&G commercial crew licenses and CFEC gear permit numbers reported in the CV EDR form), and the relative share of total crew employment and estimated share of total crew and captain share income accruing to residents at the community and regional level. Only four Alaska communities (Anchorage, King Cove, Kodiak, and Sand Point) have accounted for at least 3%, respectively, of total crew employment in the trawl catcher vessel fleet in one or more year of the 2015 to 2020 period. Kodiak represents the largest concentration of crew employment in the fleet, accounting over the 2015 to 2019 period for between 25% and 32% of total employment, and between 98 and 146 individual crew members employed in the fleet. This local concentration shifted during 2020, with the share of employment represented by Alaska communities other than Kodiak and the other three listed above increasing from 4% in 2019 to 26%, while the state of Alaska collectively regained share relative to 2019, increasing from 40% to 48%, approaching the average of years prior to 2019. Estimated revenue share earnings paid to Kodiak-resident crew members in the fleet have previously ranged annually between $5.4 million and $7.9 million, but declined sharply to $2.3 million in 2020.[2] The state of Oregon has declined over time as a share of employment in Gulf of Alaska processing from 22% in 2015 to 11% in 2020, while Washington state have maintained a relatively constant 17% share over the last six years.

[2]See the table notes for Table 10.5 for qualifications regarding the estimation of crew income by location.

Table 10.5: Gulf of Alaska Catcher Vessel Fleet - Estimated Vessel Crew Employment and Income, by Community of Residence

		Year	Employ Count	Employ Share	Income $million
Alaska	Anchorage	2015	12	3 %	$ 0.79
		2016	13	3 %	$ 0.71
		2017	16	3 %	$ 0.83
		2018	8	2 %	$ 0.40
		2019	5	1 %	$ 0.27
		2020	14	4 %	$ 0.60
	King Cove	2015	10	2 %	$ 0.66
		2016	21	4 %	$ 1.14
		2017	23	5 %	$ 1.19
		2018	5	1 %	$ 0.25
		2019	2	1 %	$ 0.11
		2020	2	1 %	$ 0.09
	Kodiak	2015	99	25 %	$ 6.55
		2016	144	31 %	$ 7.85
		2017	121	26 %	$ 6.25
		2018	146	31 %	$ 7.32
		2019	98	25 %	$ 5.37
		2020	53	15 %	$ 2.29
	Sand Point	2015	50	12 %	$ 3.31
		2016	31	7 %	$ 1.69
		2017	29	6 %	$ 1.50
		2018	43	9 %	$ 2.16
		2019	31	8 %	$ 1.70
		2020	10	3 %	$ 0.43
	Other Alaska	2015	24	6 %	$ 1.59
		2016	33	7 %	$ 1.80
		2017	45	10 %	$ 2.33
		2018	34	7 %	$ 1.70
		2019	17	4 %	$ 0.93
		2020	92	26 %	$ 3.97
	Alaska Total	2015	195	48 %	$ 12.91
		2016	242	51 %	$ 13.19
		2017	234	51 %	$ 12.09
		2018	236	50 %	$ 11.83
		2019	153	40 %	$ 8.38
		2020	171	48 %	$ 7.37

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Table 10.5: Continued

		Year	Employ Count	Employ Share	Income $million
Oregon	Lincoln County	2015	57	14 %	$ 3.77
		2016	53	11 %	$ 2.89
		2017	48	10 %	$ 2.48
		2018	56	12 %	$ 2.81
		2019	28	7 %	$ 1.53
		2020	21	6 %	$ 0.91
	Other Oregon	2015	33	8 %	$ 2.18
		2016	28	6 %	$ 1.53
		2017	27	6 %	$ 1.40
		2018	35	7 %	$ 1.75
		2019	24	6 %	$ 1.31
		2020	18	5 %	$ 0.78
	Oregon Total	2015	90	22 %	$ 5.96
		2016	81	17 %	$ 4.41
		2017	75	16 %	$ 3.88
		2018	91	19 %	$ 4.56
		2019	52	14 %	$ 2.85
		2020	39	11 %	$ 1.68
Washington	Bellingham	2015	11	3 %	$ 0.73
		2016	6	1 %	$ 0.33
		2017	4	1 %	$ 0.21
		2018	8	2 %	$ 0.40
		2019	2	1 %	$ 0.11
		2020	5	1 %	$ 0.22
	Seattle MSA	2015	27	7 %	$ 1.79
		2016	44	9 %	$ 2.40
		2017	39	8 %	$ 2.02
		2018	35	7 %	$ 1.75
		2019	41	11 %	$ 2.25
		2020	28	8 %	$ 1.21
	Other Wash.	2015	31	8 %	$ 2.05
		2016	29	6 %	$ 1.58
		2017	37	8 %	$ 1.91
		2018	32	7 %	$ 1.60
		2019	17	4 %	$ 0.93
		2020	29	8 %	$ 1.25
	Wash. Total	2015	69	17 %	$ 4.57
		2016	79	17 %	$ 4.31
		2017	80	17 %	$ 4.13
		2018	75	16 %	$ 3.76
		2019	60	16 %	$ 3.29
		2020	62	18 %	$ 2.67

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Table 10.5: Continued

		Year	Employ Count	Employ Share	Income $million
Other	NA	2015	35	9 %	$ 2.32
		2016	49	10 %	$ 2.67
		2017	51	11 %	$ 2.64
		2018	42	9 %	$ 2.11
		2019	36	9 %	$ 1.97
		2020	54	15 %	$ 2.33
Unknown	NA	2015	15	4 %	$ 0.99
		2016	19	4 %	$ 1.04
		2017	20	4 %	$ 1.03
		2018	25	5 %	$ 1.25
		2019	84	22 %	$ 4.60
		2020	27	8 %	$ 1.16
All Locations		2015	404	100 %	$ 26.74
		2016	470	100 %	$ 25.61
		2017	460	100 %	$ 23.77
		2018	469	100 %	$ 23.52
		2019	385	100 %	$ 21.09
		2020	353	100 %	$ 15.22

Notes: 'Employ count' reports the number of individual vessel crew members identified as resident of the listed community or location. 'Employ share' reports the proportion of the total vessel employment pool associated by residence with the listed community or location. Statistics are reported for individual communities or community groupings within states (incorporated cities, counties or boroughs, or metropolitan statistical areas (MSAs)) only for communities that represented 3% or greater of the total employment pool in at least one year of reporting; employment and income statistics for residence locations below that threshold are aggregated together as 'Other (state)'. 'Other' references residence locations other than the states of Alaska, Oregon and Washington, and 'Unknown' references crew identifier entries where a valid crew license permit number could not be identified from information reported in the EDR. 'Income' (reported in $million, inflation-adjusted using the GDP deflator to 2020-equivalent value) is the estimated amount of vessel labor income, by community/location of residence, that is distributed to vessel crew members in aggregate; the estimate is derived by multiplying aggregate crew and captain labor payments (reported by year in GOA Trawl CV EDR data) by 'Employ share' percentage by community/location. This does not control for differentials in proportional residence associations among different crew labor types (i.e., deck crew, captain) and respective pay rates.

Source: GOA Trawl Economic Data Reports, ADF&G commercial crew license database, and CFEC gear operator permit database; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

10.3. Vessel fuel and trawl gear expenditures

Vessel fuel consumption and cost, and expenditures on trawl gear and salmon and halibut excluder gear are reported in Table 10.6. Aggregate fuel consumption in the fleet over the 2015 to 2019 period peaked at 5.47 million gallons in 2018, at a cost of $15.8 million in aggregate. The majority of vessels have reported some expenditure on trawl gear each year, with fleet aggregate expenditure ranging from $14.5 million to $6.2 million. In each year of EDR reporting, fewer than half of the fleet has reported expenditures on salmon and halibut excluder gear, and in 2018, only 14 of 63 vessels submitting EDRs reported excluder costs; in aggregate over the fleet, expenditures have ranged annually from $150 thousand to $287 thousand. As noted above, trawl and excluder gear expenditures as reported in the GOA Trawl CV EDR include the total over all direct capitalized expenditures during the year, as well as fully expensed costs for purchase, lease, installation and repair.

Table 10.6: Gulf of Alaska Catcher Vessel Fleet - Fuel and Gear Costs

	Vessels	Fuel gallons (1000)		Fuel cost ($1000)		Excluder gear ($1000)			Trawl gear ($1000)		
Year	N	Total	Median	Total	Median	Non-zero N	Total	Median	Non-zero N	Total	Median
2015	68	5,206	73.54	$ 15,164	$ 192.15	25	$ 239	$ 6.95	61	$ 6,214	$ 62.56
2016	70	5,199	63.20	$ 12,589	$ 182.99	27	$ 287	$ 7.51	63	$ 5,759	$ 46.69
2017	68	4,685	53.38	$ 12,321	$ 167.49	19	$ 210	$ 6.60	62	$ 4,495	$ 44.57
2018	69	5,472	88.46	$ 15,795	$ 261.46	14	$ 150	$ 8.91	60	$ 4,896	$ 49.61
2019	65	4,888	76.33	$ 14,207	$ 228.99	16	$ 222	$ 4.89	51	$ 4,613	$ 44.51
2020	61	3,990	61.43	$ 9,096	$ 145.14	17	$ 174	$ 5.99	47	$ 3,950	$ 42.62

Notes: 'Total' statistics reported in the table represent the annual aggregate value of reported variables summed over all vessel-level observations in EDR data reported for trawl catcher vessels active in Gulf of Alaska groundfish fisheries for the year; 'Vessels' reports the number of vessel-level observations. 'Median' statistics represent the average vessel-level value of reported variables; if preferred, arithmetic mean average values can be derived by dividing fleet aggregate values by the number of vessels or Non-zero observations for the variable. Fuel and gear cost values are inflation-adjusted us ing the GDP deflator to 2020-equivalent value, and reported in $1000 for both fleet aggregate total and vessel-median levels.

Source: GOA Trawl Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).