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, 2017

by

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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:
`http://www.afsc.noaa.gov/refm/docs/2018/economic.pdf`

Time series of data for the tables presented in this report (in CSV format) are available at:
`http://www.afsc.noaa.gov/refm/Socioeconomics/SAFE/groundfish.php#data`

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Dear Reader,

This preliminary draft report of the "Economic Status of the Groundfish Fisheries Off Alaska" is compiled for the express purpose of the Nov. 2018 meeting of the Groundfish Plan Teams. Certain aspects of this report are incomplete. A final and complete version of this report will be available prior to the North Pacific Fisheries Management Council meeting in Feb. 2019 where this document is reviewed by Scientific Statistical Committee. The data contained within this report are the most recent data available. As we finalize and validate the data in this report, the Economic and Social Sciences Research Program welcomes any feedback from readers.

Thank you,
Alaska Fisheries Science Center,
Economic and Social Sciences Research Program

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1. EXECUTIVE SUMMARY

The commercial FMP groundfish fisheries off Alaska had a total catch of 2.3 million metric tons (mt) in 2017 (including catch in federal and state waters) (Fig. 3.1 and Table 1), a decrease of 0.14% from 2016. Groundfish accounted for 81% of Alaska's 2017 total catch, which was less than typical because of higher than average Pacific salmon catch in 2017 (Table 3). In Alaska total catch in 2017 increased for Alaska pollock, sablefish, and Atka mackerel, with pollock catch at a decadal high. Total catch decreased or was stable for Pacific cod, flatfish and rockfish, with flatfish catches at a decadal low.

The aggregate ex-vessel value of the FMP groundfish fisheries off Alaska was $947 million, which was 47% of the ex-vessel value of all commercial fisheries off Alaska in 2017 (Table 3).[1] After adjustment for inflation, real ex-vessel value of FMP groundfish increased $60 million (Table 3), largely due to an aggregate real ex-vessel price increase of 7.1% to $0.194 per pound in 2017. The increase in the aggregate ex-vessel price was attributable to a rise in ex-vessel prices for most species, with the notable exception of pollock. Notable price increases were observed for Atka mackerel (42%), flatfish (21%), and Pacific cod (18%). Pollock ex-vessel prices showed little change, fallling 2.9% in the Bering Sea and Aleutian Islands (BSAI), and rising 4.5% in the Gulf of Alaska (GOA), and after recent declines prices remain fairly low (Tables 11 and 27). Among the other species that are the focus of the shoreside ex-vessel fisheries: The GOA arrowtooth ex-vessel price rose 27%, GOA Pacific ocean perch prices fell 4%, GOA sablefish prices rose 16%. For Alaska FMP groundfish in aggregate the change in catch was small relative to the change in price, which was the larger factor in determining the increase in ex-vessel value (Figures 5.6 and 5.10). For other fisheries in Alaska, salmon and halibut ex-vessel revenues increase, while shellfish revenue decreased (Table 3).

The gross value of the 2017 groundfish catch after primary processing (first wholesale) was $2.52 billion (Table 4), a increase of 3.4% in real terms from 2016. This change was primarily the result of an increase in the real aggregate 2017 first-wholesale price, up 5.6% to $1.2 per pound while aggregate production volumes decreased 1.4% to 959 thousand mt (Table 4). In the BSAI, aggregate first-wholesale value increased 6.1% and value was increasing for all species with the exception of pollock where aggregate value, price, and volume showed little change (Table 15). In the Gulf of Alaska, aggregate first-wholesale value increased only slightly (1.5%) (Table 31). First-wholesale value in the GOA was increasing for flatfish and sablefish with increases in both first-wholesale prices and production volume. The decrease in GOA cod value was the result of decreased production volume. The decrease in the value of GOA pollock was largely the result of a decrease in the average price of products.

The first-wholesale value of Alaska's FMP groundfish fisheries accounted for 52% of Alaska's total first-wholesale value from commercial fisheries (Table 4). First-wholesale value of Alaska's non-FMP groundfish fisheries totaled $2.34 billion, most of which ($1.9 billion) came from Pacific salmon. Pacific salmon value increased 47% as a result of the typical increase in salmon production that happens in odd years. Pacific halibut fisheries, which are concentrated in the Gulf of Alaska, saw a

[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.

decrease in production in 2017 after steady declines over the last decade. First-wholesale value in the Pacific halibut fisheries decreased $3.7 million to $137 million in 2017.

The groundfish fisheries off Alaska are an important segment of the U.S. fishing industry. In 2016, it accounted for 51% 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, 2016). Alaska fisheries as a whole (including salmon, halibut, herring, and shellfish) accounted for 58% of the weight of total U.S. domestic landings and 33% 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 2017 crew weeks for both sectors totaled NA with the majority of them (NA) occurring in the BSAI groundfish fishery (Tables 23, 39, 24, and 40). 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 2016, annual crew weeks in Alaska decreased in 2017 by NA%, in part, as a result of a drop in catcher vessel crew weeks in the GOA.

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 2017.

Alaska pollock

Alaska pollock, the dominant species in terms of catch, accounted for 69% 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. Pollock catches increased throughout Alaska's regions and sectors and catch levels in both the BSAI and GOA were at the highest level seen in recent history. Retained catch of pollock for all Alaska increased 1% to 1.5 million mt in 2017 (Table 2). This was the combined effect of a 0.51% increase in the BSAI retained catch and a 4.7% increase in the GOA. The ex-vessel value of the BSAI pollock fishery decreased 5.9% to $353 million despite the increase in retained catch as ex-vessel prices fell 6.3% to $0.12 per pound (Table 12). A decrease in the price of fillet products was likely a contributing factor in the ex-vessel price decrease. The ex-vessel value of the GOA pollock fishery increased 10% to $70 million as ex-vessel prices rose 4.8% to $0.087 per pound (Table 28).

[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.

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. Pollock first-wholesale value in the BSAI increased 1% to $1.34 billion as the average at-sea first-wholesale price rose 5.6% to $1.33 and the average shoreside price fell 5% to $0.96 (Tables 15 and 16). In the GOA first-wholesale value decreased 9.1% to $96.7 million as the average first-wholesale price fell 12% to $0.56 (Tables 31 and 32). 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 share of pollock total first-wholesale value was 85.1% in the BSAI and 58.9% in the GOA (GOA processors produce a greater share of H&G products). In the BSAI at-sea sector prices were decreasing for most product forms except for roe and surimi and the increase in first-wholesale value was largely attributable to the increased price and production of surimi. In the BSAI shoreside sector prices were decreasing for most product forms except for roe (notably the surimi price decreased as well) which largely accounted for the decrease in first-wholesale value. Similarly, decreases in all product prices except for roe offset the increased production in the GOA resulting in a decrease in value. First-wholesale value in the pollock fishery remains above the 10 year average, though not at the peak in 2012 when prices were higher.

Pacific cod

The fisheries for Pacific cod are the second largest by volume in Alaska with a retained catch of 298 thousand mt in 2017, a decrease of 7.1% from 2016 (Table 2). Pacific cod is harvested in the BSAI and the GOA regions by the shoreside and at-sea sectors, 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 GOA Pacific cod is mostly 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. There was a prominent decrease in the GOA retained catch of 24% to 48 thousand mt as poor fishing conditions from low abundance resulted in roughly 75% of the TAC being harvested. The GOA Pacific cod TAC for 2018 was reduce approximately 80% as the level of the stock remains low following adverse environmental conditions and poor recruitment. In the BSAI catch levels of Pacific cod decreased 3% to 250 thousand mt, however catches remained strong relative to the TAC and were above their ten year average.

In the BSAI ex-vessel value of the Pacific cod fishery increased 14% to $178 million as ex-vessel prices rose 17% to $0.32 per pound (Tables 11 and 12). In the GOA, the decrease in catch resulted in a 13% decrease in ex-vessel value to $70 million despite an ex-vessel price rise of 14% to $0.33 per pound (Tables 28 and 27). The increase in ex-vessel prices in 2017 value mirrored similar increases the first-wholesale prices as global supplies of cod have become more constrained.

Pacific cod first-wholesale value in the BSAI increased 11.9% to $434.7 million with increased value in both the at-sea and shoreside sectors as the average at-sea first-wholesale price rose 19% to $1.56 and the average shoreside price rose 16% to $1.89 with rising prices for fillet and H&G products (Tables 15 and 16).

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. Cod products face staunch competition in global markets which is also supplied by sizable catches from the Barents Sea. In the GOA the first-wholesale price for cod fillets fell 11% while H&G prices increased 30% helping to buttress the reduction in value in the GOA from reduced catch. In the BSAI first-wholesale prices increased for fillets and H&G. Strong demand and continued constraints on supply in 2017 and 2018 have put upward pressure on 2017 cod prices, particularly starting in late 2017.

Sablefish

Sablefish is primarily harvested by the GOA shoreside sector which typically accounts for upwards of 90% of the annual catch. It is also caught by the BSAI shoreside and GOA at-sea sectors. 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 and catches are at or near the TAC. Since the mid-2000s, decreasing biomass has ratcheted down the TAC, however in 2016 this trend started to reverse. In 2017 sablefish retained catch increased 17% to 11.5 thousand mt (Table 2).

In the GOA retained catch increased 11% to 10 thousand mt. Sablefish ex-vessel value in the GOA increased 29% to $175 million with increases in both catch and ex-vessel price which rose 16% to $5.2 million (Tables 27 and 28). Ex-vessel value in the BSAI increased as well with an increase in retained catch even though prices fell (Tables 11 and 12). Persistent declines in catch through recent years may have been disruptive to revenue growth in the sablefish fishery, but strong prices have maintained value in the fishery as catches have declined. In 2017 ex-vessel prices increased with corresponding wholesale prices where strong demand and depleted inventories have pushed up prices.

Sablefish first-wholesale value in the GOA increased 18.3% to $111.3 million as the average first-wholesale price rose 12% to $8.95. In the BSAI first-wholesale value increased 56.2% to $12.5 million with increased value in the shoreside sectors as production increased with catch but the average at-sea first-wholesale price fell 7.5% to $7.16 (Tables 15 and 16). 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 strong demand for sablefish in the U.S. and foreign demand 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.

Flatfish species complex

The flatfish complex is comprised of a number of different species. The species targeted vary substantially by region. In the BSAI the primary target species are yellowfin sole, rock sole, flathead sole, and arrowtooth flounder, which are mostly fished by catcher/processors in the Amendment 80 fleet. In the BSAI the yellowfin sole fishery is the largest of the flatfish fisheries. In the BSAI retained catch across all species decreased 6%, to 199 thousand mt. Decreased catch occured for yellowfin sole (2%), rock sole (22%), flathead sole (10%), arrowtooth (38%), and Kamchatka flounder (8%), while catch increased for Greenland turbot (26%) and other flatfish (25%). Catches in 2017 were comparable to the average catch level since 2003. Decreases in the BSAI flatfish catch may be

associated with increases in the Atka mackerel TAC and catch as Amendment 80 vessels prioritize the more highly valued Atka mackerel over flatfish.

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 increased 18%. This change was the result of a 40% increase in arrowtooth catch, with catches of other flatfish species in the GOA decreasing. Arrowtooth, the largest flatfish fishery in the GOA, can show considerable year over year catch variability, in part because of regulatory changes.[3] However, 2017 catches were above to the average catch level since 2003.

Flatfish are primarily processed into the H&G and whole fish product forms and changes in production largely reflect changes in catch. Processed products are primarily exported to China and South Korea, though a significant share of this product is re-processed into fillets and re-exported to North American and European markets. First-wholesale value in the BSAI flatfish fisheries increased 15% with a 22% increase in price.[4] Yellowfin sole value rose 18% with a 19% increase in price. Increasing prices for other species in the BSAI flatfish fisheries resulted in increasing value despite decreases in production from reduced catch. First-wholesale value in the GOA flatfish fisheries increased 71% with a 24% increase in price. Arrowtooth value rose 139% with a 40% increase in price. Demand for flatfish in general through 2017 and 2018 has remained stable throughout European and North American markets and there are signs of growth in Asian markets. The strong demand and low inventories that have put upward pressure on flatfish prices.

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 (70%) 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% and 10% 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 shoreside and at-sea sectors. Rockfish retained catch in the BSAI increased 0.3% to 35.5 thousand mt with all species showing small increases in catch (Table 9). Rockfish retained catch in the GOA fell 12.4% to 27 thousand mt with a small decrease in Pacific ocean perch and moderate decreases for other rockfish species (Table 25). The decrease in GOA catch was concentrated in the shoreside sector. GOA ex-vessel prices fell 1% and ex-vessel value fell 13% (Tables 27 and 28).

First-wholesale value in the BSAI increased 21% to $42 million with a 22% increase in prices and stable production volumes. These changes were the result of price increases for both Pacific

[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.

ocean perch (23%) and northern rockfish (18%). First-wholesale value in the GOA decreased 6% to 35$ million with a 17% increase in prices as production volumes fell correspondingly with the decrease in catch. These changes were the result of the reduction in production volume associtaed with the decreased catch and which was offset by increases in prices for Pacific ocean perch (19%) and dusky rockfish (14%). The majority of rockfish produced are exported, primarily to Asian markets, some of which is re-processed (e.g., as fillets) and re-exported to domestic and international markets.

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 2017 increased 18% to 66 thousand t. This level of catch is the highest since 2010 after significant reductions in the TAC in 2013 and 2014. The lower catch was due to area closures for Steller sea lions and survey-based changes in the spatial apportionment of TAC. Recent increases in TAC reflect the continued health of the stock and expanded fishing opportunities in the Aleutian Islands.

First-wholesale value in 2017 increased 67% to $125 million with a 35% increase in prices and increased production volumes corresponding to the increase in catch. Approximately 95% of the Atka mackerel production volume is processed as H&G, while the remainder is mostly sold as whole fish. 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. Foreign demand for Atka mackerel as an input to secondary surimi processing abroad has been strong as catch from other sources such Japan has been declining inrecent years.

1.1. Report Card Metrics for the Alaska Commercial Groundfish Fisheries off Alaska 1993-2017

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 1993-2017 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 2017 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 2017 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.

[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.

[6]Metrics denoted as "real" indicate that they are adjusted for inflation using the GDP chain-type price index https://research.stlouisfed.org/fred2/series/GDPCTPI.

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

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.

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] This metric provides information about how exchange rates are impacting Alaska FMP 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.

Real First wholesale value remains relatively high due to catch and increases in production per-unit-catch while real prices remain low (panels 1,2, and 3). High global pollock and cod production and exchange rates have put downward pressure on prices in recent years (panels 4 and 5). Globally, Alaska has a significant effective share of pollock and cod (approximately 40%). The effective real exchange rate index peaked in 2015, and has remained high through 2017. The strength of the dollar has put downward pressure on Alaska fish product 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 in 2017 with stronger ex-vessel prices (panel 6). Revenue per-unit-effort remained fairly high through 2017 (panel 7). Share of shoreside revenue to AK residents is higher relative to the mid-2000s (panel 8), due to Alaska resident's share of revenue in Pacific cod, which increased from approximately 40% in 2003-2008 to approximately 53% in 2017; sablefish, which increased from 53% in 2003-2008 to approximately 63% in 2017; and pollock which increased from 5% in 2003-2008 to 10% in 2017.

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

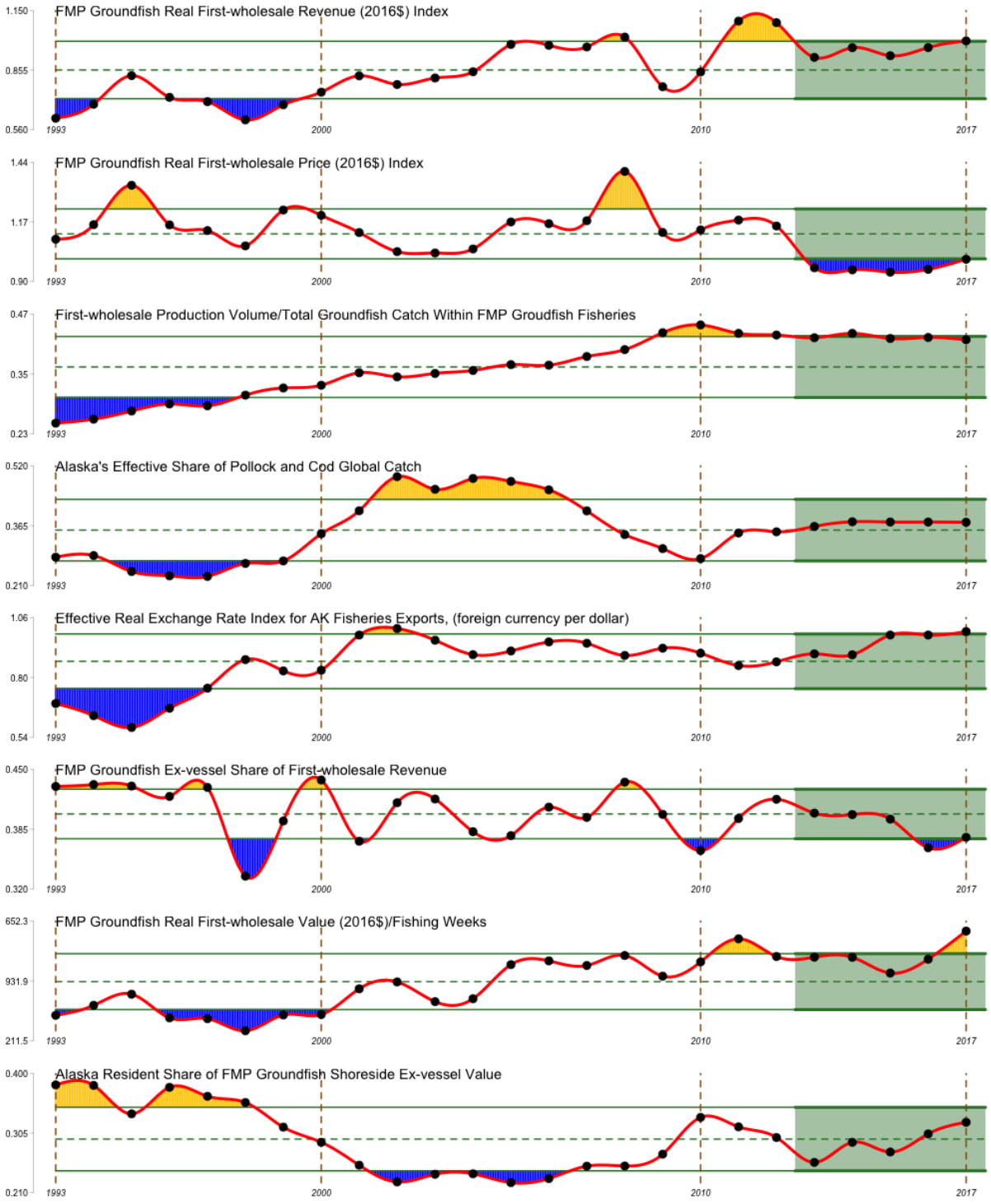

Figure 1.1: Economic Report Card Metrics.

1.1.1 Economic Summary of the BSAI commercial groundfish fisheries in 2016-17

These following summaries were prepared for the Groundfish Plan Team Meeting (Nov. 2018). The information below are excerpts from the introductions in the BSAI and GOA Groundfish Plan Team reports. Some values may differ slightly from those found in the rest of the report.

The ex-vessel value of all Alaska domestic fish and shellfish catch, which includes the amount paid to harvesters for fish caught, and the estimated value of pre-processed fish species that are caught by catcher/processors, increased from $1,752 million in 2016 to $2,007 million in 2017. The first wholesale value of 2017 groundfish catch after primary processing was $2,518 million. The 2017 total groundfish catch decreased by 0.2%, and the total first-wholesale value of groundfish catch increased by 3%, relative to 2016.

The groundfish fisheries accounted for the largest share (47%) of the ex-vessel value of all commercial fisheries off Alaska with a total value of $947 million, while the Pacific salmon (*Oncorhynchus spp.*) fishery was second with $744 million or 37% of the total Alaska ex-vessel value. The value of the shellfish fishery amounted to $183 million or 9% of the total for Alaska and exceeded the value of Pacific halibut (*Hippoglossus stenolepis*) with $117 million or 6% of the total for Alaska.

The Economic SAFE report (appendix bound separately) contains detailed information about economic aspects of the groundfish fisheries, including figures and tables, economic performance indices, catch share fishery indicators, product price projections and ex-vessel price projections, a summary of the Alaskan community participation in fisheries, an Amendment 80 fishery economic data report (EDR) summary, an updated Amendment 91 fishery economic data report (EDR) and vessel master survey summary, market profiles for the most commercially valuable species, a summary of the relevant research being undertaken by the Economic and Social Sciences Research Program (ESSRP) at the Alaska Fisheries Science Center (AFSC), and a list of recent publications by ESSRP analysts. Data tables are organized into four relatively distinct sections: (1) All Alaska, (2) BSAI, (3) GOA, and (4) Pacific halibut. Additionally, flatfish and rockfish data are incorporated into the main data tables (rather than in the appendices as was done prior to 2017). 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. Appendices contain fisheries export data from the Census Bureau, and employment data from the Alaska Dept. of Labor. Generally, the data presented in this report cover 2013 - 2017, 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 are available online at:

www.afsc.noaa.gov/refm/Socioeconomics/SAFE.

Summary of the ex-vessel and first wholesale changes in Bering Sea revenues

According to data reported in the 2018 Economic SAFE report, the total ex-vessel value of BSAI groundfish increased 6 percent from $695 million in 2016 to $738 million in 2017 (Figure 1.2), and first-wholesale revenues from the processing and production of groundfish in the Bering Sea and Aleutian Islands (BSAI) increased by 5% between 2016 ($2,066 million) and 2017 ($2,151 million)

(Figure 1.3). At the same time, the total quantity of groundfish products from the BSAI decreased from 838 thousand metric tons to 824 thousand metric tons, a 2% decrease. These changes in the BSAI differed from those in the GOA where wholesale revenue was constant; there was a 4% year-to-year increase in first-wholesale revenues from Alaska groundfish fisheries overall.

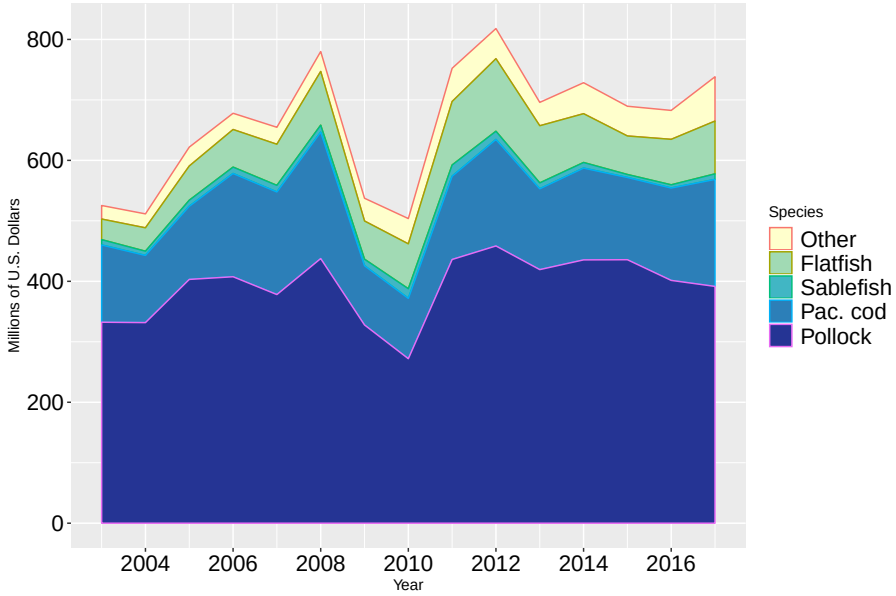

Figure 1.2: Real ex-vessel value of the groundfish catch in the domestic commercial fisheries in the BSAI area by species, 2003-2017 (base year = 2017).

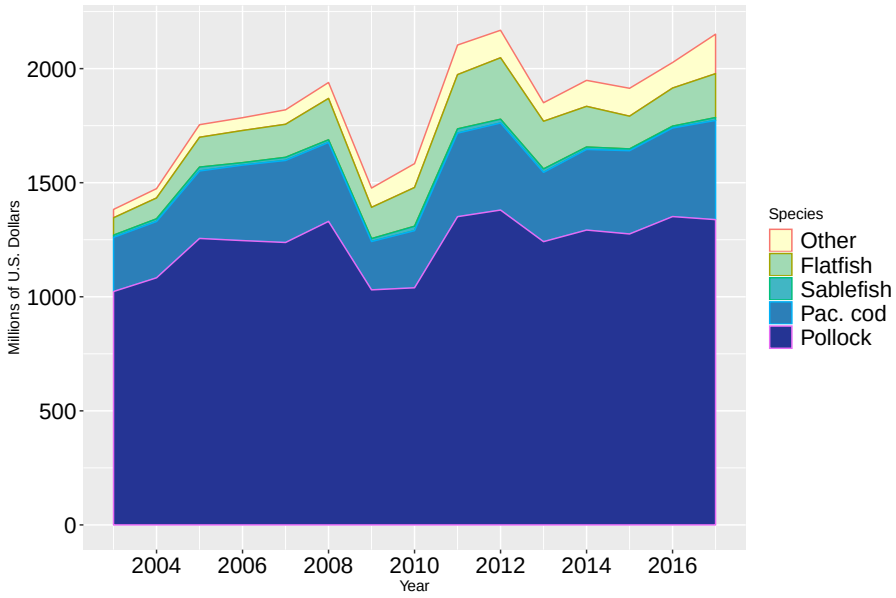

Figure 1.3: Real gross product value of the groundfish catch in the BSAI area by species, 2003-2017 (base year = 2017).

Decomposition of the change in first-wholesale revenues from 2016-17 in the BSAI

The following brief analysis summarizes the overall *nominal* revenue changes that occurred between 2016-17 in the quantity produced and revenue generated from BSAI groundfish and how revenues

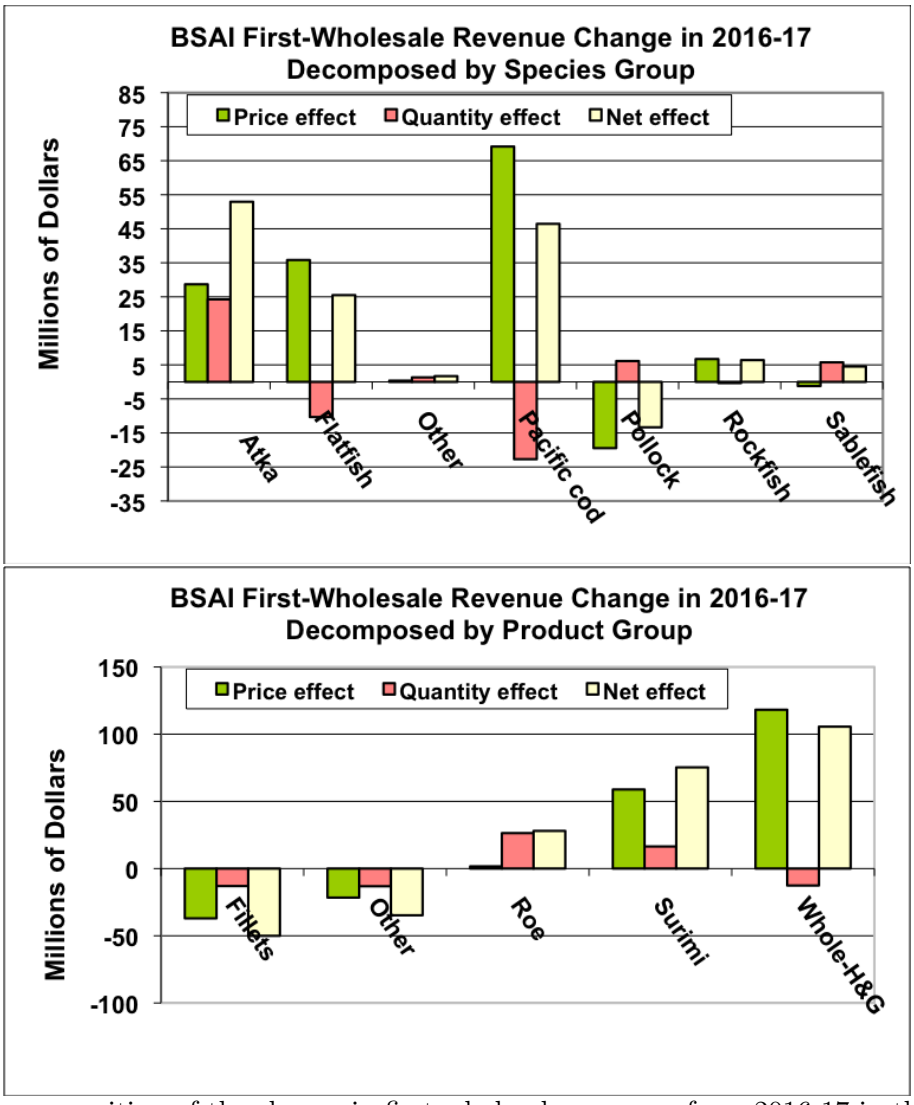

Figure 1.4: Decomposition of the change in first-wholesale revenues from 2016-17 in the BSAI area. **Notes:** The first decomposition is by the species groups used in the Economic SAFE report, and the second decomposition is by product group. The price effect refers to the change in revenues due to the 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).

have been impacted by changes in quantity or prices of each species and product group. These values are not adjusted for inflation, so enable a simple comparison of how changes in the price and quantity for each group combine to produce revenues.

By BSAI species group, negative price effects and smaller positive quantity effects resulted in a negative net effect of about $13 million for pollock. For Pacific cod, a large positive price effect combined with a smaller negative quantity effect, resulting in a $46 million net increase in first-wholesale revenues for Pacific cod from the BSAI for 2016-17 (Figure 1.4). There was a positive price effect and small negative quantity effect for rockfish, resulting in a net positive effect of $7 million. Atka mackerel had a positive price effect of $29 million and a positive quantity effect of $24

million, combining for a net positive effect of $53 million. Sablefish had a negative price effect of $1 million and a positive quantity effect of $6 million, combining for a net positive effect of $5 million. "Other" experienced a net revenue increase of $2 million.

By product group, large negative price effects coupled with smaller negative quantity effects in the fillets category resulted in a negative net effect of $50 million in the BSAI first-wholesale revenue decomposition for 2016-17. For surimi, large positive price effects coupled with smaller positive quantity effects resulted in a large positive net effect of $75 million. For roe, small positive price effects coupled with larger positive quantity effects to result in a positive net effect of $28 million. For whole fish and head & gut, a large positive price effect combined with a much smaller negative quantity effect to produce a net positive effect of $124 million while for 'other' products a negative price effect combined with a negative quantity effect for a net negative effect of $35 million.

In summary, the changes in first-wholesale revenues from the BSAI groundfish fisheries increased from 2016-17 due in large part to positive price effects for flatfish and pollock, and positive quantity effects for Pacific cod. In comparison, first-wholesale revenues decreased from 2016-17 in the GOA. The main drivers of this GOA decline was a negative net revenue effect for pollock and Pacific cod being offset by positive net effects for sablefish and flatfish.

Decomposition of the change in first-wholesale revenues from 2016-17 in the GOA

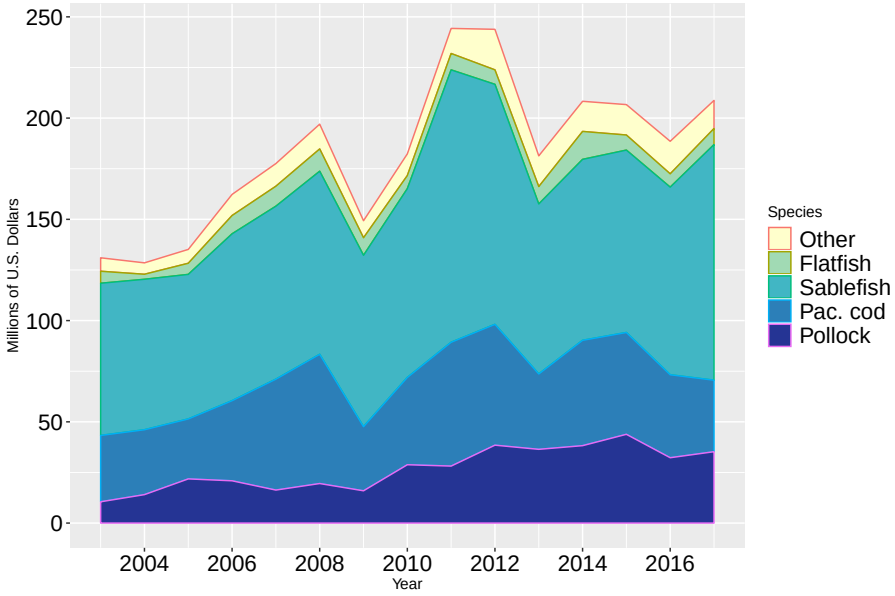

Figure 1.5: Real ex-vessel value of the groundfish catch in the domestic commercial fisheries in the GOA area by species, 2003-2017 (base year = 2017).

The following brief analysis summarizes the overall changes that occurred between 2016-17 in the quantity produced and revenue generated from GOA groundfish. According to data reported in the 2018 Economic SAFE report, the ex-vessel value of GOA groundfish increased from $192 million in 2016 to $209 million in 2017 (Figure 1.5), and first-wholesale revenues from the processing and production of groundfish in the Gulf of Alaska (GOA) were relatively flat between 2016 ($368 million) and 2017 ($367 million) (Figure 1.6). At the same time, the total quantity of groundfish products from the GOA slightly increased from 135 thousand metric tons to 137 thousand metric

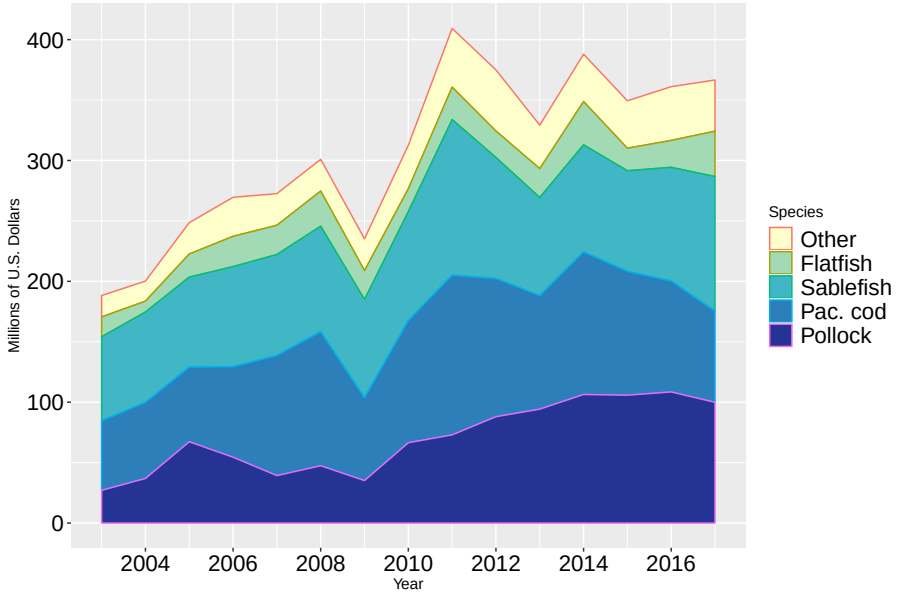

Figure 1.6: Real gross product value of the groundfish catch in the GOA area by species, 2003-2017 (base year = 2017).

tons, a 1% increase. The changes in first-wholesale revenues from processing and production in the GOA differ from those in the BSAI, which saw a 2% year-to-year increase in groundfish products and 4% decrease in first-wholesale value.

By species group, negative quantity effects were only slightly offset by small positive price effects for Pacific cod, resulting in a $16 million net decrease in first-wholesale revenues from the GOA for 2016-17 (Figure 1.7). Further, negative price effects and a small positive quantity effect resulted in a $9 million negative net effect for pollock. The Pacific cod and pollock net effects were countered by positive price and quantity effects for sablefish and flatfish resulting in positive net effects of $17 million and $15 million, respectively. For rockfish, negative price and positive quantity effects mostly canceled each other out, resulting in a small negative net effect of less than $1 million.

By product group, a very large positive price effect coupled with a small positive quantity effect in the whole and head and gut (whole-H&G) category resulted in a positive net effect of $35 million in the GOA first-wholesale revenue decomposition for 2016-17, while negative price and quantity effects in the fillets and surimi categories resulted in a negative net effect of $30 million combined.

In summary, first-wholesale revenues from the GOA groundfish fisheries increased by about $6 million from 2016-17. The main drivers of this was a positive net revenue effect for sablefish and flatfish being offset by negative net effects for Pacific cod and pollock. In comparison, first-wholesale revenues increased by $124 million from 2016-17 in the BSAI due in large part to positive price and quantity effects for Atka mackerel and a strong positive price effect for Pacific cod.

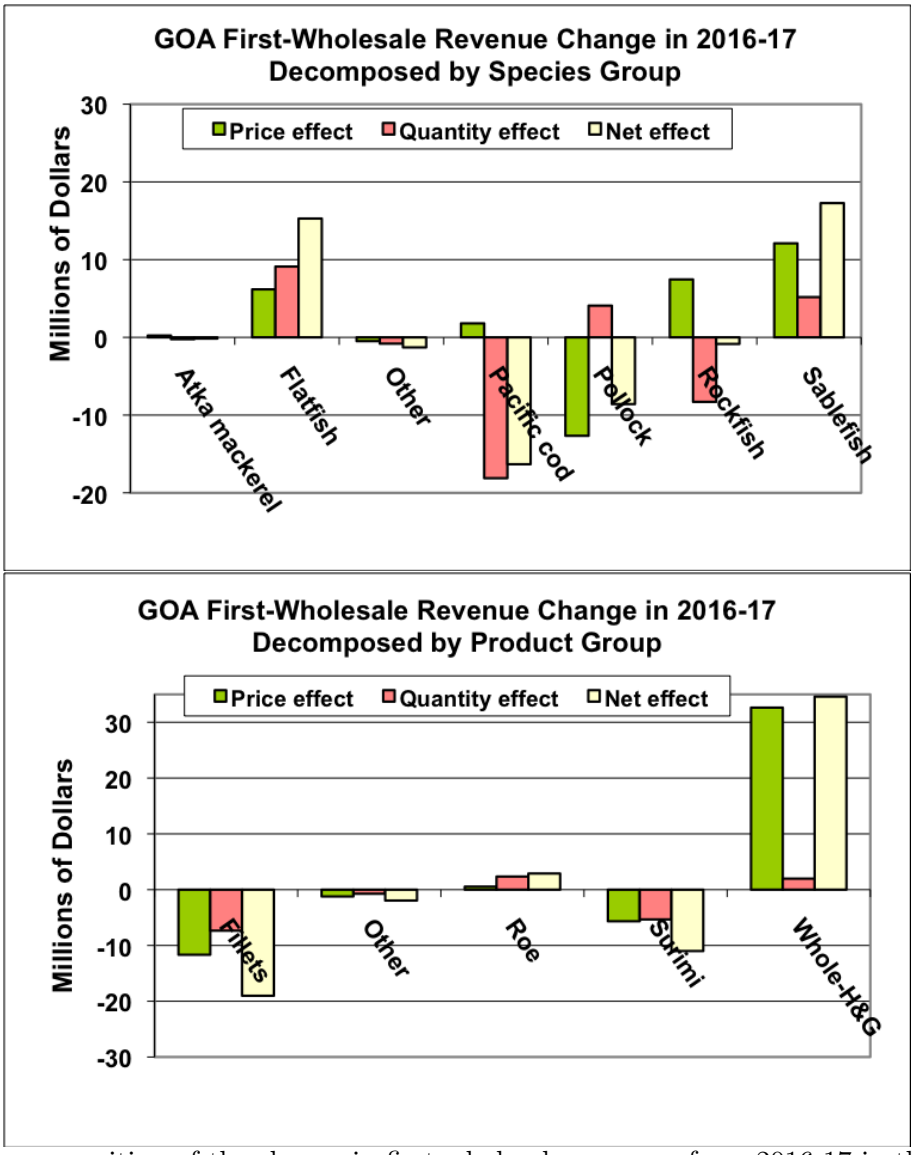

Figure 1.7: Decomposition of the change in first-wholesale revenues from 2016-17 in the GOA area. **Notes:** The first decomposition is by the species groups used in the Economic SAFE report, and the second decomposition is by product group. The price effect refers to the change in revenues due to the 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).

2. OVERVIEW OF ECONOMIC STATUS REPORT, 2017

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 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.* 2017) 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 occurring within state waters are managed under federal FMPs. It is not always possible, depending on the data source(s) from which a particular estimate is derived, to definitively identify a unit of catch, or associated units of measure, such as revenue or price, as being part of a federal FMP or otherwise. Users are encouraged to consult table footnotes for clarification on coverage in individual tables with respect to federally-managed and state-managed catch. Additionally, unless explicitly indicated, phrases such as "groundfish fisheries off Alaska" or "Alaska groundfish", as used in this report, should not be construed to precisely include or exclude 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 policies with respect to net benefits to either the participants in these fisheries or the Nation, such

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

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 gradually moved away from such management, as discussed by Holland (2000), and instituted catch share programs in many of its fisheries. Six of the sixteen catch-share programs currently in operation throughout 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., Feltlhoven 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 between 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 lat 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 harvest 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 NMFS Alaska Region Office Catch Accounting System (CAS). Catch for all Alaska including state and federal catches is displayed in Table 1. Retained catch for just FMP-managed groundfish are provided in Table 3 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 9 and 25 provide additional information for the BSAI and GOA, respectively, with aggregation of gear types and species specific catch data for flatfish and rockfish. Tables 10 and 26 provide estimates of total catch by species, gear, and target species for the BSAI and GOA, respectively. In general, the species or species group 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 legally able to target and retain. 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. In each target fishery the discard rates can be high for non-target species. For the most common species (e.g. pollock and cod) retention requirements can 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 5 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 2013-2017.

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 2013-2017 are summarized by area and gear in Table 6.

The at-sea observer program was developed for the 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 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

[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`

are calculated by applying COAR buying prices for the corresponding species (group), 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 a percentage (40%) of the estimated wholesale value per round weight. This percentage reflects the long-term average of the ratio 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 3 contains data on the real ex-vessel catch of groundfish and non-groundfish species in Alaska, adjusted to 2017 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 7 provides estimates of ex-vessel value by residency 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, 73% of the 2017 ex-vessel value was accounted for by vessels with primary owners who indicated that they were not residents of Alaska.

Tables 11 and 27 contains 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 12 and 28 for the BSAI and GOA, respectively. Table 13 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 13 provides these same data for the GOA.

2.2.3 First Wholesale Production, Prices and Value

The first wholesale market as 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 4 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 14 for the BSAI and Table 30 for the GOA. First-wholesale value (gross revenue) is presented in Tables 15 and 31 for the BSAI and

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

GOA, respectively. Product price-per-pound estimates are presented in Tables 16 and 32, and estimates of total first wholesale product value per round metric ton of retained catch are reported in Table 17 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 18 and 34 present number of processors, gross product value and value per processor, and percent value of BSAI FMP groundfish of processed groundfish by processing fleet 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 catch accounting 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. 3.6 by gear type. Vessel participation by area, vessel type, and target are shown in Tables 8. 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 19 and 35.

Tables 21 and 37 provide estimates of vessel weeks for catcher vessels in the BSAI and GOA, respectively, stratified by length class, area, gear, and target fishery. Tables 22 and 38 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 23 and 39, in the BSAI and GOA, respectively. At-sea production reports provide these information for motherships and catcher/processors shown in Tables 24 and 40 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. Future versions of this report may include reporting of harvest crew employment in the catcher vessel sector, data which are now collected in groundfish landing reports.

2.2.5 Economic Data Tables for the Commercial Pacific Halibut Fishery

Pacific halibut fisheries in Alaska is managed jointly by the NMFS, the NPFMC, the state of Alaska and the International Pacific Halibut Commission (IPHC). The IPHC was established through a Convention between the United States and Canada to research the biology of Pacific halibut and conduct stock assessments which are used to establish catch levels in each country.[4] Under the authority of NMFS, the NPFMC allocates the halibut resource among the user groups (commercial,

[4] `www.iphc.int/home.html`.

recreational, and subsistence fisheries) and sets bycatch limits for fisheries with incidental halibut catch, while NMFS enforces U.S. regulations. The state of Alaska permits fishermen and assists in monitoring and reporting, particularly of recreational and subsistence harvests.[5] Since 1995 the commercial halibut fisheries off Alaska have been managed as a catch share fishery through the Individual Fisheries Quota (IFQ) program and the Community Development Quota (CDQ) program.

Prior to 2014 this report included only limited data on halibut because it is not an FMP managed species and the Alaska Fisheries Science Center does not conduct the Pacific halibut stock assessment. Beginning in 2014, economic data tables for Pacific halibut are included in this report to provide management and the public a consolidated source for economic information of fisheries activity for species harvested in the federal waters off Alaska. Economic data tables in Section 4 for Pacific halibut are provided separate from the FMP managed groundfish because of its unique management status. Moreover, halibut management units (e.g., areas) do not match the definitions used for FMP Groundfish making it infeasible to append halibut data directly to the economic data tables for the FMP groundfish.

The economic data in Tables H1-H10 are only for the commercial fishing sector. Tables H1-H2 display Pacific halibut commercial landings (net weight retained catch). Table H3 displays prohibited species catch (of non-halibut species) on commercial trips where was the halibut target species. Ex-vessel value and price are displayed by various management areas, vessel length and ports in Tables H4A-H6. First-wholesale production, value and prices by product type is displayed in Table H7. Fishing effort as measured by: vessel counts are displayed in Tables H8; days fishing are displayed in Table H9; crew weeks are displayed in Table H10.

2.2.6 Description of the Category "Other" in Data Tables

- TABLE 4: "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).
- TABLE 10, 26: "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 6: "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.
- TABLE 14, 15, 16, 30, 31, 32: "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).
- TABLE 17, 33: "Other" species are primarily skate, squid, octopus, shark, and sculpin.

[5] `http://www.adfg.alaska.gov/index.cfm?adfg=halibut.management`.

2.2.7 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 11, 12 14, 14, 16, 27, 28 30, 30, and 32. 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 Tables 3. The PCE is used to adjust to 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 Tables 4. 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 was used 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 2017 FUS is available at: `https://www.st.nmfs.noaa.gov/commercial-fisheries/fus/index`.

- Annual and monthly U.S. economic indicators (producer and consumer price indices), published in past years in Tables 57 and 58 are available from the U.S. Department of Labor Statistics at: `http://www.bls.gov/data/sa.htm`.

- Foreign exchange rates, which we've previously published in Tables 59 and 60, are available from the U.S. Federal Reserve Board (for all currencies except the Icelandic kronur) at: `www.federalreserve.gov`. Exchange rates for Iceland's kronur are available at: `www.oanda.com`.

- 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 the industry 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 successful 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 SAFEs.

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

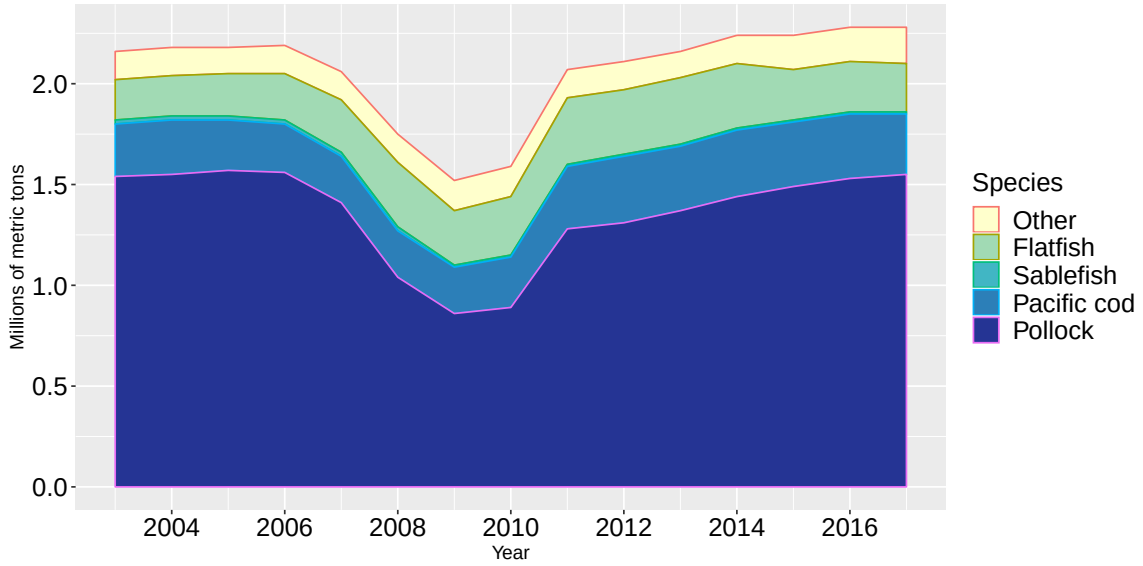

Figure 3.1: Groundfish catch in the commercial fisheries off Alaska by species, 2003-2017.

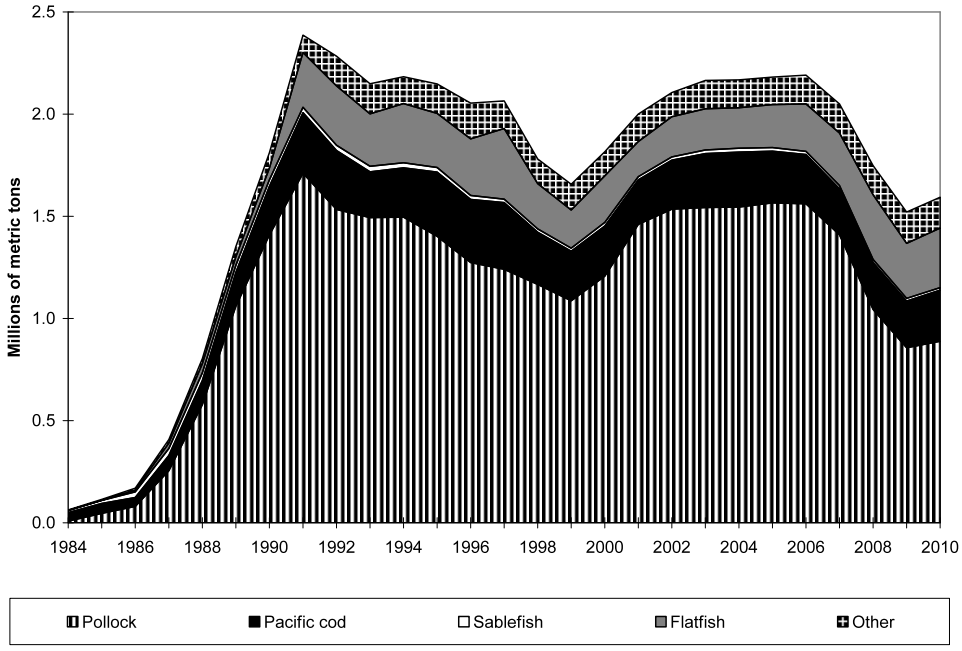

Figure 3.2: Groundfish catch in the commercial fisheries off Alaska by species, (1984-2010).
Notes: Catch for 2011 and onward are displayed in Figure 3.1.

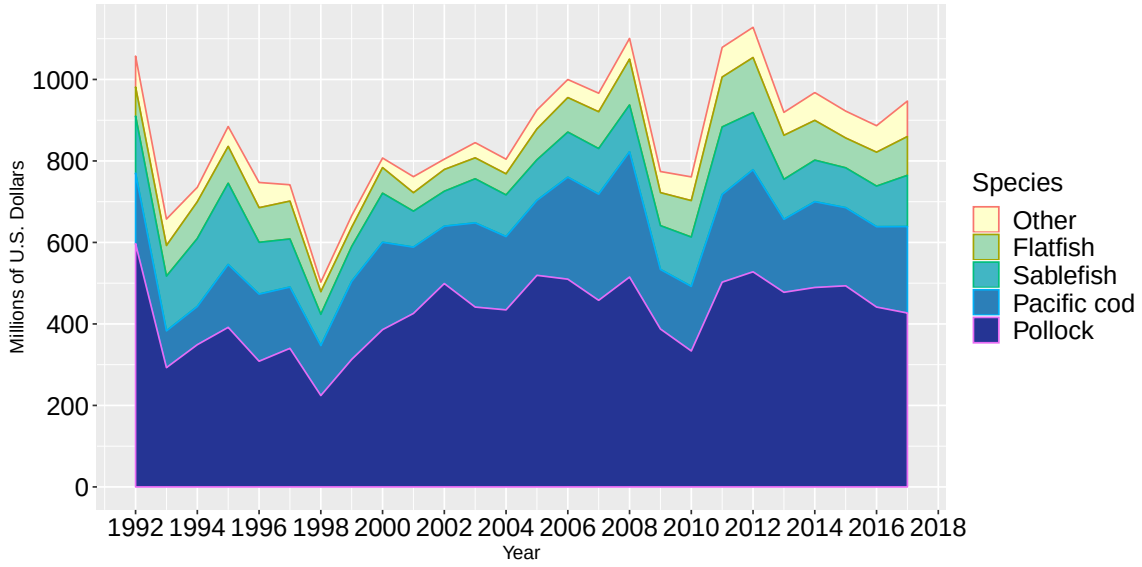

Figure 3.3: Real ex-vessel value of the groundfish catch in the commercial fisheries off Alaska by species, 1992-2017 (base year = 2017).

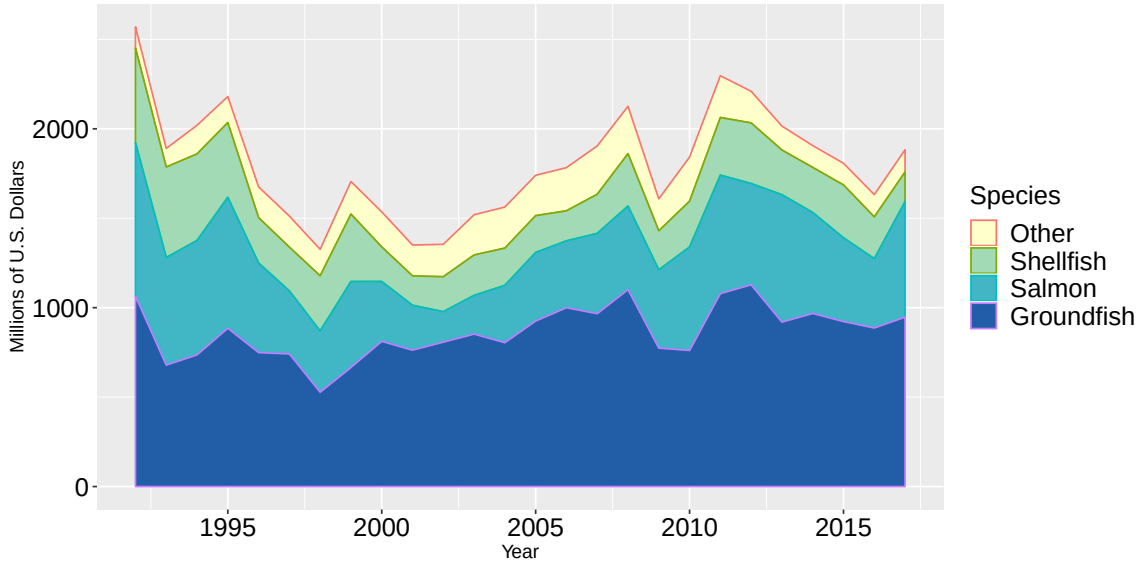

Figure 3.4: Real ex-vessel value of the domestic fish and shellfish catch off Alaska by species group, 1992-2017 (base year = 2017).

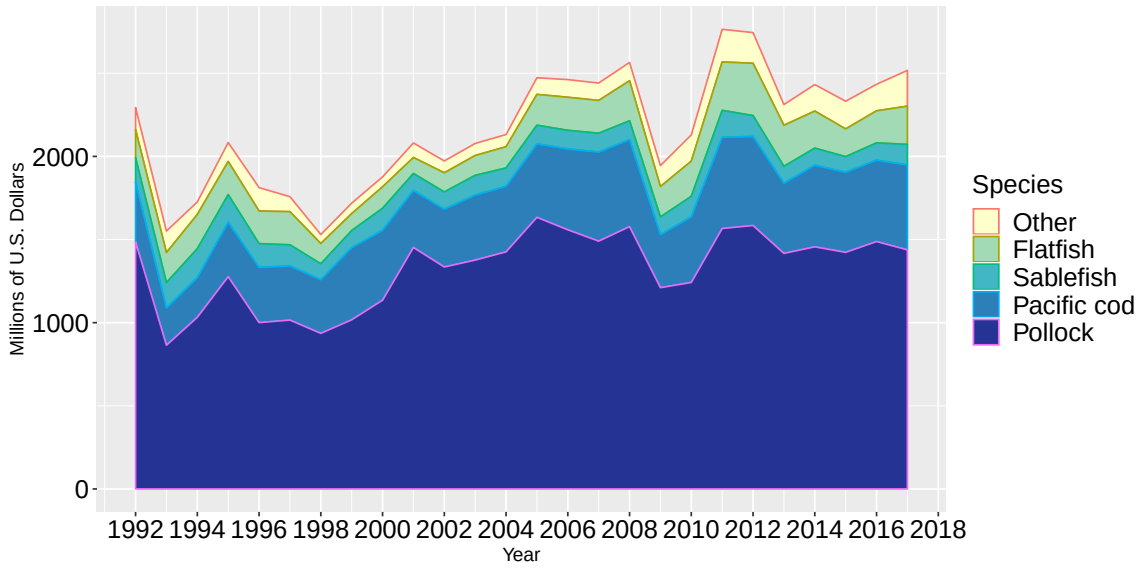

Figure 3.5: Real gross product value of the groundfish catch off Alaska by species, 1992-2017 (base year = 2017).

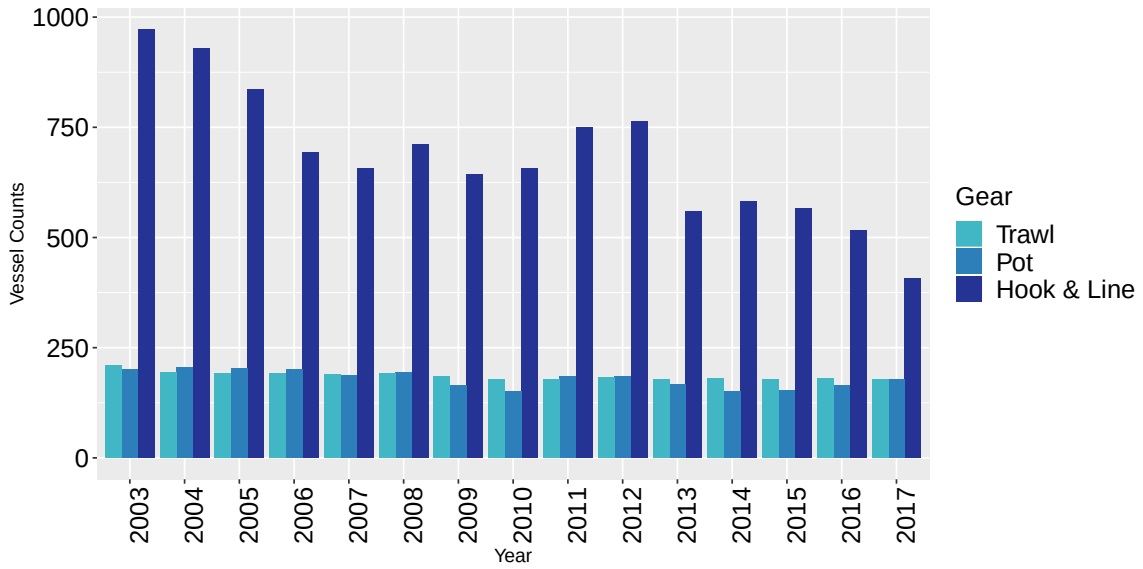

Figure 3.6: Number of vessels in the domestic fishery off Alaska by gear type, 2003-2017.

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, 2008-2017 (1,000 metric tons, round weight).

	Year	Pollock	Sablefish	Pacific Cod	Flatfish	Rockfish	Atka Mackerel	Total
Bering Sea and Aleutian Islands	2008	991.9	2.0	171.0	270.0	21.7	58.1	1,545.7
	2009	812.5	2.0	175.8	226.3	19.5	72.8	1,337.1
	2010	811.7	1.8	171.9	253.3	23.5	68.6	1,354.6
	2011	1,200.4	1.7	220.1	285.9	28.2	51.8	1,818.4
	2012	1,206.3	1.9	251.0	291.2	28.1	47.8	1,857.9
	2013	1,273.8	1.7	250.3	297.2	34.9	23.2	1,914.6
	2014	1,300.2	1.1	249.3	276.1	36.1	31.0	1,928.5
	2015	1,323.2	0.6	242.1	219.2	39.6	53.3	1,914.2
	2016	1,354.9	0.9	260.9	225.2	36.9	54.5	1,969.3
	2017	1,361.0	1.7	253.1	211.1	38.4	64.4	1,969.4
Gulf of Alaska	2008	52.6	13.6	59.0	45.7	23.1	2.1	202.6
	2009	44.2	12.0	53.2	42.3	22.8	2.2	185.6
	2010	76.7	11.0	78.3	37.6	25.5	2.4	238.8
	2011	81.5	12.1	85.4	41.0	23.1	1.6	252.1
	2012	104.0	12.7	77.9	29.4	27.4	1.2	258.7
	2013	96.4	12.8	68.6	33.9	24.9	1.3	250.1
	2014	142.6	11.1	84.8	47.6	28.9	1.0	326.3
	2015	167.6	11.1	79.5	26.7	29.0	1.2	324.6
	2016	177.1	10.0	64.1	28.1	34.0	1.1	324.3
	2017	186.2	11.3	48.7	33.3	31.8	1.1	321.1
All Alaska	2008	1,044.4	15.7	230.0	315.7	44.8	60.2	1,748.3
	2009	856.8	14.0	229.0	268.6	42.3	75.0	1,522.7
	2010	888.4	12.8	250.2	290.9	49.0	71.1	1,593.3
	2011	1,281.9	13.8	305.5	327.0	51.3	53.4	2,070.5
	2012	1,310.2	14.7	328.9	320.6	55.5	49.0	2,116.6
	2013	1,370.2	14.5	318.9	331.0	59.9	24.5	2,164.7
	2014	1,442.9	12.3	334.2	323.6	64.9	32.0	2,254.8
	2015	1,490.8	11.7	321.5	245.9	68.7	54.5	2,238.8
	2016	1,532.1	10.9	325.0	253.3	70.9	55.6	2,293.7
	2017	1,547.1	13.0	301.8	244.4	70.2	65.5	2,290.5

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.

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, 2013-2017 (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	2013	660.83	606.22	1,267.05	92.76	1.04	93.80	753.59	607.25	1,360.85
	2014	668.49	616.20	1,284.69	139.45	1.52	140.97	807.94	617.72	1,425.66
	2015	687.14	626.45	1,313.59	165.08	1.08	166.16	852.22	627.53	1,479.75
	2016	703.95	641.77	1,345.71	175.49	0.57	176.06	879.44	642.33	1,521.77
	2017	710.38	642.24	1,352.62	183.26	1.07	184.33	893.64	643.31	1,536.95
Sablefish	2013	1.01	0.65	1.65	10.95	1.08	12.03	11.96	1.73	13.68
	2014	0.84	0.25	1.09	9.55	0.96	10.51	10.39	1.21	11.61
	2015	0.48	0.14	0.62	9.23	0.94	10.17	9.71	1.08	10.79
	2016	0.40	0.39	0.79	8.28	0.78	9.06	8.68	1.17	9.85
	2017	0.69	0.76	1.45	9.05	1.02	10.08	9.74	1.79	11.52
Pacific Cod	2013	71.12	172.39	243.51	59.05	4.73	63.78	130.17	177.12	307.30
	2014	79.00	165.39	244.38	72.27	7.15	79.43	151.27	172.54	323.81
	2015	68.34	170.58	238.92	71.06	6.36	77.41	139.40	176.93	316.33
	2016	85.95	171.64	257.59	57.87	5.20	63.08	143.82	176.84	320.66
	2017	87.74	162.10	249.84	41.84	6.10	47.94	129.57	168.20	297.77
Flatfish	2013	2.47	255.93	258.40	17.45	8.53	25.99	19.92	264.46	284.39
	2014	3.23	247.78	251.00	17.71	22.89	40.60	20.93	270.67	291.60
	2015	11.79	195.96	207.74	11.05	10.51	21.56	22.84	206.47	229.31
	2016	14.63	196.76	211.39	17.71	5.85	23.56	32.34	202.61	234.95
	2017	21.13	177.44	198.58	14.50	14.79	29.29	35.64	192.23	227.87

Continued on next page.

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	2013	0.27	31.43	31.70	10.66	11.35	22.01	10.93	42.78	53.71
	2014	0.46	31.85	32.31	11.80	13.99	25.79	12.25	45.85	58.10
	2015	3.11	34.40	37.52	12.28	14.41	26.69	15.39	48.82	64.21
	2016	2.54	32.79	35.33	15.12	15.64	30.75	17.65	48.43	66.08
	2017	2.52	32.97	35.49	11.28	15.61	26.89	13.80	48.58	62.38
Atka Mackerel	2013	0.06	20.75	20.81	0	0.77	0.77	0.06	21.52	21.59
	2014	0.10	27.77	27.87	0.01	0.92	0.92	0.11	28.69	28.79
	2015	3.21	49.26	52.47	0.03	0.84	0.87	3.25	50.10	53.34
	2016	3.68	50.38	54.06	0.35	0.39	0.75	4.04	50.77	54.81
	2017	4.57	59.48	64.05	0.13	0.52	0.65	4.70	60.00	64.70
All Groundfish	2013	736.13	1,095.03	1,831.16	193.60	27.68	221.28	929.73	1,122.71	2,052.44
	2014	753.02	1,097.43	1,850.45	252.70	47.66	300.36	1,005.72	1,145.09	2,150.81
	2015	775.67	1,084.56	1,860.22	270.61	34.36	304.98	1,046.28	1,118.92	2,165.20
	2016	811.59	1,100.54	1,912.13	276.29	28.63	304.93	1,087.89	1,129.17	2,217.06
	2017	827.92	1,084.37	1,912.29	261.05	39.40	300.44	1,088.97	1,123.77	2,212.73

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: Catch and real ex-vessel value of the commercial fisheries off Alaska by species group and area, 2013-2017; calculations based on COAR (1,000 metric tons and $ millions, base year = 2017).

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Species.group	Quantity	Value	Quantity	Value	Quantity	Value
2013	Groundfish	1,851.3	$ 729.3	223.4	$ 190.1	2,074.6	$ 919.3
	Salmon	52.0	$ 173.6	406.2	$ 583.9	458.3	$ 757.5
	Halibut	1.8	$ 17.5	8.6	$ 100.3	10.4	$ 117.8
	Herring	27.8	$ 5.5	9.0	$ 11.6	36.8	$ 17.1
	Shellfish	39.2	$ 259.5	3.6	$ 33.0	42.8	$ 292.5
	Other	-	$ -	1.2	$ 7.8	1.2	$ 7.8
	All Species	1,972.1	$ 1,185.3	652.1	$ 926.6	2,624.2	$ 2,111.9
2014	Groundfish	1,864.4	$ 752.6	303.7	$ 215.2	2,168.1	$ 967.8
	Salmon	88.2	$ 253.0	219.4	$ 348.7	307.6	$ 601.7
	Halibut	1.3	$ 16.3	6.5	$ 92.5	7.9	$ 108.8
	Herring	24.7	$ 1.9	18.4	$ 9.8	43.1	$ 11.7
	Shellfish	36.5	$ 252.9	4.3	$ 35.8	40.8	$ 288.7
	Other	-	$ -	1.1	$ 5.8	1.1	$ 5.8
	All Species	2,015.1	$ 1,276.7	553.4	$ 707.9	2,568.6	$ 1,984.5
2015	Groundfish	1,860.3	$ 709.7	308.0	$ 212.7	2,168.4	$ 922.4
	Salmon	102.8	$ 146.7	368.1	$ 320.7	470.9	$ 467.4
	Halibut	1.4	$ 18.2	6.8	$ 97.1	8.2	$ 115.3
	Herring	21.3	$ 1.9	9.4	$ 5.2	30.7	$ 7.1
	Shellfish	41.6	$ 269.8	3.6	$ 25.4	45.2	$ 295.2
	Other	-	$ -	1.3	$ 6.9	1.3	$ 6.9
	All Species	2,027.4	$ 1,146.3	697.3	$ 668.0	2,724.7	$ 1,814.3
2016	Groundfish	1,912.3	$ 694.6	307.6	$ 191.8	2,219.9	$ 886.5
	Salmon	110.1	$ 222.6	134.6	$ 233.7	244.8	$ 456.3
	Halibut	1.5	$ 19.9	6.9	$ 101.1	8.4	$ 121.0
	Herring	13.8	$ 1.8	9.6	$ 4.8	23.3	$ 6.6
	Shellfish	29.2	$ 250.7	3.1	$ 23.6	32.3	$ 274.2
	Other	-	$ -	1.2	$ 7.0	1.2	$ 7.0
	All Species	2,066.9	$ 1,189.6	462.9	$ 562.1	2,529.8	$ 1,751.7
2017	Groundfish	1,912.7	$ 738.3	301.8	$ 208.7	2,214.6	$ 947.0
	Salmon	115.4	$ 308.5	330.0	$ 435.1	445.4	$ 743.6
	Halibut	1.7	$ 19.3	7.7	$ 97.8	9.3	$ 117.1
	Herring	17.6	$ 2.4	13.3	$ 5.6	30.9	$ 8.0
	Shellfish	16.0	$ 161.4	2.7	$ 21.9	18.8	$ 183.2
	Other	-	$ -	1.0	$ 8.1	1.0	$ 8.1
	All Species	2,063.4	$ 1,229.8	656.5	$ 777.2	2,720.0	$ 2,007.0

Notes: These estimates include the value of catch from both federal and state of Alaska fisheries. The data have been adjusted to 2017 dollars by applying the Personal Consumption Expenditure Index at https://research.stlouisfed.org/fred2/series/PCEPI to account for affects of inflation on fishermen's 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 4: Production and real gross value of groundfish and non-groundfish products in the commercial fisheries off Alaska by species group and area of processing, 2013-2017 (1,000 metric tons product weight and $ millions, base year = 2017).

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Species	Quantity	Value	Quantity	Value	Quantity	Value
2013	Groundfish	818.2	$ 1,962.5	99.4	$ 349.1	917.5	$ 2,311.6
	Salmon	34.7	$ 374.1	290.3	$ 1,539.0	325.1	$ 1,913.1
	Halibut	1.4	$ 18.6	7.5	$ 120.7	8.9	$ 139.3
	Herring	25.5	$ 26.5	11.6	$ 23.3	37.1	$ 49.8
	Crab	24.7	$ 345.7	3.0	$ 47.3	27.7	$ 393.0
	Other	0	$ 0.8	1.3	$ 27.1	1.3	$ 27.9
	All Species	904.6	$ 2,728.2	413.0	$ 2,106.5	1,317.6	$ 4,834.8
2014	Groundfish	843.8	$ 2,028.3	131.1	$ 403.8	974.9	$ 2,432.2
	Salmon	58.1	$ 468.3	176.8	$ 996.6	234.9	$ 1,465.0
	Halibut	0.6	$ 9.2	5.5	$ 105.2	6.2	$ 114.4
	Herring	19.5	$ 17.5	20.4	$ 25.3	39.9	$ 42.8
	Crab	23.2	$ 336.9	3.8	$ 60.6	27.0	$ 397.5
	Other	0	$ 0.5	1.2	$ 19.7	1.2	$ 20.2
	All Species	945.2	$ 2,860.8	338.9	$ 1,611.3	1,284.1	$ 4,472.1
2015	Groundfish	819.0	$ 1,971.7	126.0	$ 360.0	945.0	$ 2,331.7
	Salmon	70.9	$ 432.3	270.8	$ 1,067.2	341.7	$ 1,499.5
	Halibut	3.4	$ 22.2	6.1	$ 115.6	9.5	$ 137.8
	Herring	17.7	$ 19.1	10.1	$ 12.2	27.8	$ 31.4
	Crab	25.4	$ 331.3	3.9	$ 58.2	29.4	$ 389.5
	Other	0	$ 0.5	1.0	$ 18.1	1.0	$ 18.6
	All Species	936.5	$ 2,777.2	418.0	$ 1,631.3	1,354.4	$ 4,408.5
2016	Groundfish	838.2	$ 2,065.7	134.9	$ 368.0	973.1	$ 2,433.7
	Salmon	73.6	$ 531.1	130.3	$ 757.3	204.0	$ 1,288.4
	Halibut	2.4	$ 31.7	5.8	$ 109.9	8.2	$ 141.6
	Herring	10.2	$ 15.6	10.7	$ 13.3	20.9	$ 29.0
	Crab	18.0	$ 306.6	3.9	$ 63.0	22.0	$ 369.6
	Other	0	$ 0.3	1.1	$ 20.8	1.1	$ 21.1
	All Species	942.5	$ 2,951.0	286.7	$ 1,332.3	1,229.2	$ 4,283.3
2017	Groundfish	823.7	$ 2,150.9	136.8	$ 366.6	960.5	$ 2,517.5
	Salmon	74.6	$ 608.7	258.0	$ 1,282.8	332.7	$ 1,891.5
	Halibut	1.2	$ 22.5	6.3	$ 114.1	7.5	$ 136.6
	Herring	16.9	$ 14.6	14.2	$ 13.4	31.1	$ 28.0
	Crab	11.4	$ 223.0	1.7	$ 29.2	13.2	$ 252.2
	Other	*	$ *	2.1	$ 32.3	2.1	$ 32.3
	All Species	927.8	$ 3,019.7	419.1	$ 1,838.4	1,347.0	$ 4,858.1

Notes: These estimates include production resulting from catch in both federal and state of Alaska fisheries. The data have been adjusted to 2017 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 5: Discards and discard rates for groundfish catch off Alaska by gear, and species, 2013-2017 (1,000 metric tons, round weight).

		Fixed		Trawl		All Gear	
	Year	Total Discards	Discard Rate	Total Discards	Discard Rate	Total Discards	Discard Rate
Pollock	2013	0.7	13	7.2	1	7.9	1
	2014	0.7	11	15.3	1	16.0	1
	2015	0.8	10	10.2	1	10.9	1
	2016	0.8	12	9.4	1	10.2	1
	2017	0.8	11	9.3	1	10.1	1
Sablefish	2013	0.8	6	0	5	0.8	6
	2014	0.5	5	0.1	8	0.6	5
	2015	0.7	6	0.2	17	0.9	7
	2016	0.9	9	0.2	14	1.0	10
	2017	0.8	7	0.6	28	1.4	11
Pacific Cod	2013	6.0	3	3.8	3	9.8	3
	2014	5.0	2	4.2	4	9.1	3
	2015	3.6	2	1.2	1	4.9	2
	2016	3.6	2	0.6	1	4.2	1
	2017	2.9	1	1.1	1	3.9	1
Flatfish	2013	3.5	82	28.3	9	31.8	10
	2014	3.9	82	18.6	6	22.5	7
	2015	3.8	76	10.3	4	14.1	6
	2016	3.2	76	12.9	5	16.1	6
	2017	2.9	70	12.1	5	15.1	6
Rockfish	2013	1.4	50	2.7	5	4.0	7
	2014	1.0	46	3.5	6	4.5	7
	2015	0.9	42	3.4	5	4.3	6
	2016	0.8	42	3.8	6	4.7	7
	2017	0.9	46	6.7	10	7.6	11
Atka Mackerel	2013	0	93	1.1	5	1.1	5
	2014	0	96	0.4	1	0.5	1
	2015	0	100	1.1	2	1.1	2
	2016	0	97	0.5	1	0.6	1
	2017	0	70	0.7	1	0.8	1
All Groundfish	2013	36.7	13	53.3	3	90.0	4
	2014	35.9	12	50.7	3	86.6	4
	2015	36.3	12	34.2	2	70.4	3
	2016	38.6	13	35.2	2	73.8	3
	2017	36.6	13	39.1	2	75.8	3

Notes: All groundfish and all gear may include additional species or gear types. There were substantial changes to the observer program in 2013 that could affect the comparability of 2013 and later years, to previous years. 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 6: Prohibited species catch (PSC) by species, area and gear, 2013-2017 (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)
		2013	538	0	*	-	107	2	247	33
		2014	456	-	0	-	145	5	593	105
	Fixed	2015	326	0	0	0	182	32	633	138
		2016	225	*	0	0	27	16	315	43
		2017	193	0	0	0	35	77	357	168
Bering		2013	3,080	988	16	127	32	32	714	692
Sea and		2014	3,029	186	18	224	33	24	624	484
Aleutian	Trawl	2015	1,999	1,531	25	243	25	15	424	492
Islands		2016	1,910	1,494	33	347	41	15	221	167
		2017	1,179	1,023	36	471	60	11	353	160
		2013	3,618	988	16	127	140	35	961	725
		2014	3,485	186	18	224	178	29	1,217	590
	All Gear	2015	2,324	1,531	25	243	207	48	1,057	630
		2016	2,135	1,494	33	347	68	31	536	210
		2017	1,373	1,023	36	471	95	88	710	327
		2013	15	-	-	-	0	0	570	-
		2014	11	-	-	-	-	0	133	0
	Fixed	2015	22	-	-	-	0	0	128	-
		2016	44	-	-	-	0	0	63	0
		2017	15	-	-	-	-	0	4	0
		2013	1,230	11	23	5	-	0	255	-
Gulf of		2014	1,395	6	16	2	-	0	64	-
Alaska	Trawl	2015	1,411	80	19	1	-	0	76	-
		2016	1,333	148	22	3	-	1	92	0
		2017	1,215	6	25	6	-	0	124	-
		2013	1,245	11	23	5	0	0	824	-
		2014	1,405	6	16	2	-	0	198	0
	All Gear	2015	1,433	80	19	1	0	0	204	-
		2016	1,377	148	22	3	0	1	155	0
		2017	1,230	6	25	6	-	0	129	0

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 7: Percentage of ex-vessel value of the groundfish catch off Alaska by area, residency, and species, 2013-2017; calculations based on COAR.

		Bering Sea and Aleutian Islands		Gulf of Alaska		All Alaska	
	Year	Alaska	Other	Alaska	Other	Alaska	Other
Pollock	2013	0.18 %	0.82 %	0.34 %	0.66 %	0.20 %	0.80 %
	2014	0.18 %	0.82 %	0.42 %	0.58 %	0.20 %	0.80 %
	2015	0.16 %	0.84 %	0.41 %	0.59 %	0.18 %	0.82 %
	2016	0.17 %	0.83 %	0.45 %	0.55 %	0.19 %	0.81 %
	2017	0.14 %	0.86 %	0.49 %	0.51 %	0.17 %	0.83 %
Sablefish	2013	0.45 %	0.55 %	0.55 %	0.45 %	0.54 %	0.46 %
	2014	0.34 %	0.66 %	0.56 %	0.44 %	0.55 %	0.45 %
	2015	0.36 %	0.64 %	0.56 %	0.44 %	0.55 %	0.45 %
	2016	0.32 %	0.68 %	0.59 %	0.41 %	0.58 %	0.42 %
	2017	0.38 %	0.62 %	0.61 %	0.39 %	0.59 %	0.41 %
Pacific Cod	2013	0.25 %	0.75 %	0.68 %	0.32 %	0.34 %	0.66 %
	2014	0.26 %	0.74 %	0.72 %	0.28 %	0.38 %	0.62 %
	2015	0.29 %	0.71 %	0.81 %	0.19 %	0.43 %	0.57 %
	2016	0.30 %	0.70 %	0.80 %	0.20 %	0.41 %	0.59 %
	2017	0.29 %	0.71 %	0.73 %	0.27 %	0.37 %	0.63 %
Flatfish	2013	0.10 %	0.90 %	0.34 %	0.66 %	0.12 %	0.88 %
	2014	0.10 %	0.90 %	0.24 %	0.76 %	0.12 %	0.88 %
	2015	0.12 %	0.88 %	0.32 %	0.68 %	0.14 %	0.86 %
	2016	0.10 %	0.90 %	0.48 %	0.52 %	0.13 %	0.87 %
	2017	0.12 %	0.88 %	0.42 %	0.58 %	0.14 %	0.86 %
Rockfish	2013	0.02 %	0.98 %	0.32 %	0.68 %	0.14 %	0.86 %
	2014	0.03 %	0.97 %	0.27 %	0.73 %	0.13 %	0.87 %
	2015	0.03 %	0.97 %	0.26 %	0.74 %	0.13 %	0.87 %
	2016	0 %	0.99 %	0.28 %	0.72 %	0.14 %	0.86 %
	2017	0.06 %	0.94 %	0.41 %	0.59 %	0.20 %	0.80 %
Atka Mackerel	2013	0 %	1.00 %	0.03 %	0.97 %	0 %	1.00 %
	2014	0 %	1.00 %	0.04 %	0.96 %	0 %	1.00 %
	2015	0 %	1.00 %	0.04 %	0.96 %	0 %	1.00 %
	2016	0 %	1.00 %	0.30 %	0.70 %	0 %	0.99 %
	2017	0.12 %	0.88 %	0.29 %	0.71 %	0.12 %	0.88 %
All Groundfish	2013	0.18 %	0.82 %	0.51 %	0.49 %	0.25 %	0.75 %
	2014	0.18 %	0.82 %	0.54 %	0.46 %	0.26 %	0.74 %
	2015	0.17 %	0.83 %	0.56 %	0.44 %	0.26 %	0.74 %
	2016	0.18 %	0.82 %	0.59 %	0.41 %	0.27 %	0.73 %
	2017	0.17 %	0.83 %	0.59 %	0.41 %	0.27 %	0.73 %

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 8: Number of vessels that caught groundfish off Alaska by area, vessel category, gear, and target, 2013-2017.

		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	2013	87	34	121	68	3	71	136	35	171
	2014	87	34	121	70	2	72	138	34	172
	2015	87	33	120	64	1	65	131	33	164
	2016	88	33	121	70	-	70	137	33	170
	2017	88	31	119	67	-	67	134	31	165
Sablefish	2013	21	8	29	282	7	289	294	13	307
	2014	17	6	23	277	7	284	287	11	298
	2015	16	3	19	272	7	279	281	9	290
	2016	17	6	23	270	5	275	278	10	288
	2017	14	6	20	265	5	270	272	9	281
Pacific Cod	2013	125	50	175	344	6	350	431	51	482
	2014	109	47	156	331	10	341	422	49	471
	2015	100	49	149	371	11	382	451	52	503
	2016	110	52	162	347	11	358	435	53	488
	2017	125	45	170	237	9	246	328	45	373
Flatfish	2013	5	31	36	31	5	36	36	32	68
	2014	4	31	35	27	6	33	31	32	63
	2015	6	28	34	16	5	21	22	29	51
	2016	9	30	39	26	5	31	35	31	66
	2017	9	26	35	19	4	23	27	27	54

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Table 8: 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	2013	1	19	20	172	13	185	173	22	195
	2014	4	19	23	173	9	182	177	21	198
	2015	5	15	20	139	8	147	143	18	161
	2016	3	18	21	130	12	142	133	21	154
	2017	4	16	20	126	11	137	130	19	149
Atka Mackerel	2013	3	10	13	-	2	2	3	11	14
	2014	3	8	11	-	-	-	3	8	11
	2015	5	9	14	-	-	-	5	9	14
	2016	4	9	13	2	-	2	6	9	15
	2017	4	12	16	-	1	1	4	13	17
All Targets	2013	189	70	259	665	24	689	787	73	860
	2014	173	68	241	672	24	696	796	72	868
	2015	165	69	234	671	22	693	787	72	859
	2016	170	71	241	628	26	654	744	73	817
	2017	178	68	246	523	22	545	641	70	711

Notes: The target is determined based on vessel, week, catching mode, 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 9: Bering Sea & Aleutian Islands groundfish retained catch by vessel type, gear and species, 2013-2017 (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	2013	-	-	660.8	660.8	-	-	601.7	606.2	-	-	1,262.5	1,267.0
	2014	-	-	668.5	668.5	-	-	610.8	616.2	-	-	1,279.3	1,284.7
	2015	-	-	687.1	687.1	-	-	620.1	626.4	-	-	1,307.2	1,313.6
	2016	-	-	703.9	703.9	-	-	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
Pacific Cod	2013	1.0	27.0	43.0	71.1	122.0	6.8	43.6	172.4	123.1	33.8	86.6	243.5
	2014	2.2	34.8	42.0	79.0	122.4	7.6	35.4	165.4	124.6	42.4	77.4	244.4
	2015	0.8	29.9	37.7	68.3	127.9	8.0	34.7	170.5	128.7	37.8	72.4	238.9
	2016	0	39.4	46.5	85.9	126.9	7.6	37.1	171.6	126.9	47.0	83.6	257.5
	2017	0.1	43.1	44.5	87.7	124.3	5.8	31.9	162.1	124.4	49.0	76.5	249.8
Sablefish	2013	0.6	*	*	0.6	0.5	-	0.2	0.6	1.0	*	0.2	1.2
	2014	0.5	*	*	0.5	0.2	-	0.1	0.2	0.7	*	0.1	0.8
	2015	0.4	0.1	0	0.5	0.1	-	0	0.1	0.5	0.1	0	0.6
	2016	0.2	*	0	0.2	0.1	-	0.3	0.4	0.3	*	0.3	0.6
	2017	0.2	*	0	0.2	0.1	*	0.5	0.5	0.2	*	0.5	0.7
Atka Mackerel	2013	-	-	0.1	0.1	*	-	20.7	20.7	*	-	20.8	20.8
	2014	-	-	0.1	0.1	*	-	27.8	27.8	*	-	27.9	27.9
	2015	*	-	3.2	3.2	*	-	49.3	49.3	*	-	52.5	52.5
	2016	*	-	3.7	3.7	*	-	50.4	50.4	*	-	54.1	54.1
	2017	-	-	4.4	4.4	0	-	59.4	59.4	0	-	63.8	63.8
Yellowfin	2013	-	-	0.7	0.7	-	-	146.4	146.4	-	-	147.1	147.1
	2014	-	-	0.3	0.3	0	-	145.8	145.8	0	-	146.0	146.1
	2015	-	-	8.0	8.0	0	-	115.1	115.1	0	-	123.0	123.1
	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
Rock Sole	2013	-	-	0.7	0.7	*	-	55.4	55.4	*	-	56.2	56.2
	2014	-	-	1.1	1.1	*	-	48.3	48.3	*	-	49.5	49.5
	2015	-	-	1.1	1.1	*	-	43.2	43.2	*	-	44.3	44.3
	2016	-	-	2.3	2.3	*	-	40.9	40.9	*	-	43.2	43.2
	2017	-	-	3.1	3.1	0	-	30.8	30.8	0	-	33.9	33.9

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Table 9: 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	2013	-	-	0.7	0.7	0	-	14.8	14.8	0	-	15.5	15.5
	2014	*	-	0.9	0.9	0	-	14.1	14.1	0	-	15.0	15.0
	2015	-	-	0.8	0.8	0	-	9.2	9.2	0	-	10.1	10.1
	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
Arrowtooth	2013	-	-	0.2	0.2	0.1	-	16.6	16.7	0.1	-	16.8	16.9
	2014	*	-	0.2	0.2	0.1	-	16.4	16.5	0.1	-	16.6	16.7
	2015	*	-	0.3	0.3	0.1	-	9.1	9.2	0.1	-	9.3	9.4
	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	-	5.3	5.6
Kamchatka Flounder	2013	-	-	*	*	0	-	7.0	7.0	0	-	7.0	7.0
	2014	-	-	*	*	0	-	5.9	5.9	0	-	5.9	5.9
	2015	-	-	0	0	0	-	4.6	4.6	0	-	4.6	4.6
	2016	-	-	0	0	0	-	4.5	4.5	0	-	4.5	4.5
	2017	-	-	0.1	0.1	0	-	4.1	4.1	0	-	4.1	4.2
Turbot	2013	*	-	0	0	0.6	-	0.8	1.4	0.6	-	0.8	1.4
	2014	*	-	0	0	0.6	-	0.7	1.4	0.6	-	0.7	1.4
	2015	*	-	0	0	1.1	-	1.0	2.0	1.1	-	1.0	2.1
	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
Other Flatfish	2013	-	-	*	*	*	-	0	0	*	-	0	0
	2014	-	-	*	*	*	-	*	*	*	-	*	*
	2015	-	-	*	*	0	-	*	0	0	-	*	0
	2016	-	-	*	*	*	-	0	0	*	-	0	0
	2017	-	-	*	*	*	-	*	*	*	-	*	*
Pacific Ocean Perch	2013	-	-	0.2	0.2	0	-	28.6	28.6	0	-	28.9	28.9
	2014	*	-	0.4	0.4	0	-	29.0	29.0	0	-	29.4	29.4
	2015	*	-	2.8	2.8	0	-	27.2	27.2	0	-	30.0	30.0
	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

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Table 9: 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	2013	*	-	0	0	0	-	1.7	1.7	0	-	1.7	1.7
	2014	-	-	0	0	0	-	1.9	1.9	0	-	1.9	1.9
	2015	-	-	0.2	0.2	0	-	6.5	6.6	0	-	6.7	6.7
	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
Other Rockfish	2013	0	-	0	0	0.1	-	0.9	1.0	0.2	-	0.9	1.1
	2014	0	-	0	0	0.1	-	0.8	0.9	0.1	-	0.8	1.0
	2015	0	-	0.1	0.1	0.1	-	0.6	0.7	0.1	-	0.7	0.8
	2016	0	-	0	0.1	0	-	0.7	0.7	0.1	-	0.7	0.8
	2017	0	-	0	0	0	-	0.7	0.8	0.1	-	0.8	0.8
Other Groundfish	2013	0	-	0.3	0.4	5.7	-	1.9	7.7	5.7	-	2.2	8.0
	2014	0	-	0.8	0.9	6.6	-	1.6	8.2	6.6	-	2.5	9.1
	2015	0	-	1.5	1.6	6.6	-	1.1	7.8	6.6	-	2.7	9.4
	2016	0	-	0.4	0.4	5.1	-	1.7	6.8	5.1	-	2.0	7.3
	2017	*	-	0.8	0.9	7.7	-	1.7	9.4	7.7	-	2.5	10.3
All Groundfish	2013	1.7	-	707.0	735.7	133.6	-	954.6	1,094.9	135.2	-	1,661.5	1,830.6
	2014	2.7	-	714.7	752.3	135.4	-	954.4	1,097.4	138.1	-	1,669.0	1,849.7
	2015	1.2	-	744.5	775.7	142.3	-	934.2	1,084.5	143.4	-	1,678.7	1,860.1
	2016	0.3	-	771.6	811.4	138.9	-	953.9	1,100.4	139.2	-	1,725.5	1,911.8
	2017	0.3	-	783.8	827.3	139.6	-	938.4	1,083.9	139.9	-	1,722.2	1,911.2

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 10: Bering Sea & Aleutian Islands groundfish retained catch by species, gear, and target fishery, 2016-2017, (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	2016	Sablefish	*	0.1	*	-	-	-	-	*	-	-	*	-	-	0.1
			Pacific Cod	5.8	*	126.8	0	0	-	*	0.1	*	*	0	*	5.1	137.8
			Arrowtooth	-	*	-	*	*	-	-	-	-	-	*	-	-	*
			Turbot	0	0	0	*	*	-	-	0.9	-	-	0	-	*	1.0
			Rockfish	*	*	*	*	*	-	-	*	-	-	*	-	*	*
			Halibut	-	-	*	-	-	-	-	-	-	-	-	-	-	*
			All Targets	5.8	0.1	126.9	0	0	-	*	0.9	*	*	0	*	5.1	138.9
		2017	Sablefish	-	0.1	-	*	*	-	-	*	-	-	0	-	*	0.1
			Pacific Cod	6.4	0	124.3	0.2	0	0	0	0.1	0.1	*	0	0	7.7	138.8
			Turbot	*	*	*	*	*	-	-	0.8	-	-	*	-	*	0.8
			Halibut	-	-	*	-	-	-	-	-	-	-	-	-	-	*
			All Targets	6.4	0.1	124.3	0.2	0	0	0	0.9	0.1	*	0	0	7.7	139.6
	Catcher Vessels	2016	Sablefish	-	0.1	*	-	-	-	-	*	-	-	0	-	-	0.1
			Pacific Cod	-	-	*	*	-	-	-	-	-	-	*	*	*	*
			Halibut	*	0.1	0	*	-	-	-	*	-	-	0	-	0	0.1
			All Targets	*	0.2	0	*	-	-	-	*	-	-	0	*	0	0.3
		2017	Sablefish	-	0.1	*	-	-	-	-	-	-	-	0	-	-	0.1
			Pacific Cod	-	-	0.1	-	-	-	-	-	-	-	-	-	-	0.1
			Halibut	-	0.1	0	*	-	-	-	-	-	-	0	-	*	0.1
			All Targets	-	0.2	0.1	*	-	-	-	-	-	-	0	-	*	0.3
Pot	Catcher Processors	2016	Pacific Cod	0	-	7.6	-	-	-	-	-	*	-	-	-	0	7.6
			All Targets	0	-	7.6	-	-	-	-	-	*	-	-	-	0	7.6
		2017	Sablefish	-	*	*	*	*	-	-	*	-	-	*	-	-	*
			Pacific Cod	0	-	5.8	-	-	-	-	-	*	-	-	-	*	5.8
			All Targets	0	*	5.8	*	*	-	-	*	*	-	*	-	*	5.8
	Catcher Vessels	2016	Sablefish	-	*	-	-	-	-	-	-	-	-	-	-	-	*
			Pacific Cod	0	-	39.4	*	-	0	*	-	0	-	*	0	0.1	39.5
			All Targets	0	*	39.4	*	-	0	*	-	0	-	*	0	0.1	39.5
		2017	Sablefish	-	*	-	-	-	-	-	-	-	-	-	-	-	*
			Pacific Cod	0	*	43.1	*	-	0	0	-	0	*	0	0	0.1	43.2
			All Targets	0	*	43.1	*	-	0	0	-	0	*	0	0	0.1	43.2

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Table 10: 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	2016	Pollock, Bottom	19.4	0	0.5	0.1	0.1	0.3	0.3	0	0.3	0.1	1.1	0	0.1	22.3
			Pollock, Pelagic	584.3	0	1.9	0.1	0	0.7	0.3	0	0.4	0.1	1.1	0	0.4	589.4
			Sablefish	0	0	-	0	0	0	-	*	-	0	0	*	-	0.1
			Pacific Cod	1.2	*	6.8	0.1	0.1	0	1.7	*	0.3	0.1	0.1	0.4	0	10.8
			Arrowtooth	1.0	0.1	0.3	3.6	0.8	0.3	0	0.5	*	0.4	0.3	0.3	0	7.6
			Kamchatka Flounder	0.8	0	0.1	0.9	2.2	*	0	0.1	*	0	0.2	0	0	4.2
			Flathead Sole	1.2	0	0.8	0.4	0.1	2.3	0.6	0.1	2.4	0.5	*	-	*	8.4
			Rock Sole	9.4	0	13.0	0.2	0	1.0	30.9	-	20.1	3.3	*	*	0.1	78.0
			Turbot	0.1	0	0	0.3	0.1	0.1	-	0.5	-	0	0	-	*	1.2
			Yellowfin	17.4	0	10.8	2.4	0.2	3.8	6.9	0	96.7	6.3	*	-	0.6	145.1
			Other Flatfish	0.1	0	0.1	0.1	0	0	0.1	0	0.3	0.7	0	-	*	1.5
			Rockfish	0.7	0	0.6	0.3	0.4	0	0	0	0	0	19.6	4.7	0.1	26.5
			Atka Mackerel	0.4	0	2.3	0.2	0.4	0	0	0	*	0	10.2	44.9	0.4	58.9
			All Targets	636.0	0.3	37.1	8.8	4.5	8.6	40.9	1.2	120.4	11.4	32.7	50.4	1.7	953.9
		2017	Pollock, Bottom	19.7	0	0.3	0.1	0	0.1	0.2	0	0.2	0	1.4	0	0.1	22.1
			Pollock, Pelagic	590.0	0	2.0	0	0	0.4	0.8	0	0.2	0	1.1	0	0.4	595.1
			Sablefish	*	*	*	*	*	*	*	*	*	*	*	-	-	*
			Pacific Cod	0.6	*	4.2	0	0	0	0.8	*	0.2	0.1	0	*	0	5.9
			Arrowtooth	0.5	0.1	0.3	1.8	0.4	0.3	0.1	0.2	0	0.2	0.1	*	0	3.8
			Kamchatka Flounder	0.2	0.1	0	0.5	2.4	0	*	0.3	*	0	0.1	0	*	3.6
			Flathead Sole	1.6	*	0.8	0.4	0.1	2.9	1.1	0.1	2.8	0.7	*	*	0	10.5
			Rock Sole	4.8	0	7.9	0.1	0	0.8	17.6	-	15.2	2.1	*	-	0.1	48.7
			Turbot	0.2	0.1	0	0.6	0.3	0.1	0	1.1	*	0.1	0.1	-	0	2.5
			Yellowfin	16.7	*	12.0	1.0	0.1	2.8	10.1	0	94.6	9.7	*	*	0.6	147.5
			Other Flatfish	0.1	0.1	0.1	0.2	0.1	0.1	0	0	0.1	0.5	0	-	*	1.4
			Rockfish	1.2	0.1	0.7	0.3	0.3	0	0	0	0	0	20.5	5.1	0.1	28.4
			Atka Mackerel	0.4	0	3.6	0.1	0.3	0	0	0	0	0	9.7	54.2	0.4	68.8
			All Targets	635.9	0.5	31.9	5.2	4.1	7.5	30.8	1.8	113.3	13.4	32.9	59.4	1.7	938.4

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Table 10: 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	2016	Pollock, Bottom	1.8	*	0	0	-	0	*	-	*	*	*	*	*	1.8
			Pollock, Pelagic	700.6	0	2.5	0	*	0.2	0.2	0	0	0.1	0.6	0	0.3	704.6
			Pacific Cod	0.5	*	42.0	0	0	0	0.2	-	0	0	0	0	0	42.8
			Flathead Sole	*	-	*	*	*	*	*	-	*	*	-	-	-	*
			Rock Sole	0.3	-	0.6	0	*	0	1.1	-	1.6	0.2	-	-	*	3.8
			Yellowfin	0.8	-	1.1	0.1	0	0.1	0.8	-	9.2	0.6	-	-	0	12.7
			Rockfish	0	*	0.1	0	0	*	*	-	-	*	1.4	0.5	*	1.9
			Atka Mackerel	0	*	0.2	0	*	*	0	-	*	*	0.6	3.2	0	4.0
			All Targets	703.9	0	46.5	0.2	0	0.4	2.3	0	10.8	0.9	2.5	3.7	0.4	771.6
		2017	Pollock, Bottom	11.3	0	0.7	0	*	0	0	*	0	0	0.1	*	0	12.1
			Pollock, Pelagic	696.4	0	3.0	0	*	0.3	0.3	0	0	0.1	0.6	0	0.5	701.3
			Pacific Cod	0.3	*	38.0	0	0	0	0.3	-	0.1	0	0	*	0.1	38.7
			Flathead Sole	*	-	*	*	*	*	*	-	*	*	-	-	*	*
			Rock Sole	0.2	-	0.3	-	*	0	0.7	-	0.9	0.2	-	-	0	2.3
			Yellowfin	1.9	*	2.2	0.1	0	0.2	1.8	*	14.3	1.7	-	-	0.1	22.3
			Other Flatfish	-	-	*	-	-	-	*	-	*	*	-	-	-	*
			Rockfish	0.2	*	0.1	*	*	*	*	*	-	*	1.5	0.3	*	1.9
			Atka Mackerel	0.1	*	0.3	0	0.1	*	0	*	*	*	0.4	4.2	0.1	5.1
			All Targets	710.4	0	44.5	0.1	0.1	0.6	3.1	0	15.2	2.0	2.5	4.4	0.8	783.8
All Gear	Catch Proc.	2016	All Targets	641.8	0.4	171.6	8.8	4.5	8.6	40.9	2.1	120.4	11.4	32.8	50.4	6.8	1,100.4
		2017	All Targets	642.2	0.5	162.1	5.4	4.1	7.5	30.8	2.7	113.4	13.4	32.9	59.4	9.4	1,083.9
	Catch Vess.	2016	All Targets	703.9	0.2	85.9	0.2	0	0.4	2.3	0	10.8	0.9	2.5	3.7	0.4	811.4
		2017	All Targets	710.4	0.2	87.7	0.1	0.1	0.6	3.1	0	15.2	2.0	2.5	4.4	0.9	827.3

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 11: Bering Sea & Aleutian Islands ex-vessel prices in the groundfish fisheries by gear, and species, 2013-2017; 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	2013	0.092	0.149	0.149	0.092	0.155	0.154	0.092	0.152	0.152
	2014	0.097	0.155	0.155	0.097	0.148	0.148	0.097	0.151	0.151
	2015	0.170	0.154	0.154	0.170	0.134	0.134	0.170	0.142	0.143
	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
Pacific Cod	2013	0.247	0.242	0.244	0.291	0.224	0.273	0.283	0.232	0.265
	2014	0.288	0.260	0.274	0.297	0.271	0.291	0.295	0.266	0.286
	2015	0.263	0.234	0.248	0.297	0.232	0.282	0.290	0.233	0.273
	2016	0.278	0.249	0.264	0.292	0.246	0.280	0.289	0.247	0.275
	2017	0.332	0.296	0.316	0.340	0.283	0.326	0.338	0.288	0.323
Sablefish	2013	2.838	*	2.838	2.838	1.173	2.361	2.838	1.173	2.650
	2014	4.001	*	4.001	4.001	1.317	3.379	4.001	1.317	3.856
	2015	3.720	1.278	3.720	3.720	1.278	3.268	3.720	1.278	3.613
	2016	4.010	1.193	3.978	4.010	1.193	2.032	4.010	1.193	3.016
	2017	3.980	1.172	3.834	3.980	1.172	1.875	3.980	1.172	2.759
Atka Mackerel	2013	0.017	0.327	0.326	0.017	0.327	0.327	0.017	0.327	0.327
	2014	0.341	0.353	0.352	*	0.353	0.353	0.341	0.353	0.353
	2015	0.279	0.257	0.257	*	0.257	0.257	0.279	0.257	0.257
	2016	0.016	0.253	0.243	*	0.253	0.253	0.016	0.253	0.253
	2017	0.015	0.356	0.353	0.015	0.356	0.356	0.015	0.356	0.356
Yellowfin	2013	0.015	0.156	0.156	*	0.156	0.156	0.015	0.156	0.156
	2014	*	0.126	0.126	0.131	0.126	0.126	0.131	0.126	0.126
	2015	0.003	0.129	0.129	0.003	0.129	0.129	0.003	0.129	0.129
	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
Rock Sole	2013	*	0.150	0.150	*	0.150	0.150	*	0.150	0.150
	2014	*	0.153	0.153	*	0.153	0.153	*	0.153	0.153
	2015	*	0.146	0.146	*	0.146	0.146	*	0.146	0.146
	2016	*	0.167	0.167	*	0.167	0.167	*	0.167	0.167
	2017	0.015	0.194	0.194	0.015	0.194	0.194	0.015	0.194	0.194

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Table 11: Continued

		Shoreside			At Sea			All Sectors		
	Year	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear
Flathead Sole	2013	0.015	0.222	0.222	0.015	0.221	0.221	0.015	0.221	0.221
	2014	0.131	0.176	0.176	0.131	0.176	0.176	0.131	0.176	0.176
	2015	0.015	0.148	0.148	0.003	0.148	0.147	0.003	0.148	0.147
	2016	0.113	0.194	0.193	-	0.193	0.193	0.113	0.193	0.193
	2017	0.015	0.221	0.221	0.015	0.221	0.221	0.015	0.221	0.221
Arrowtooth	2013	*	0.154	0.154	0.015	0.154	0.153	0.015	0.154	0.153
	2014	*	0.201	0.201	0.131	0.201	0.201	0.131	0.201	0.201
	2015	*	0.182	0.182	0.003	0.182	0.181	0.003	0.182	0.181
	2016	0.113	0.213	0.212	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
Kamchatka Flounder	2013	-	-	-	0.015	0.137	0.137	0.015	0.137	0.137
	2014	-	-	-	0.131	0.183	0.183	0.131	0.183	0.183
	2015	-	*	*	0.003	0.165	0.165	0.003	0.165	0.165
	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
Turbot	2013	*	0.439	0.439	0.015	0.439	0.252	0.015	0.439	0.252
	2014	0.131	0.474	0.225	0.131	0.474	0.318	0.131	0.474	0.318
	2015	*	0.502	0.502	0.003	0.502	0.249	0.003	0.502	0.250
	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
Other Flatfish	2013	-	-	-	*	0.158	0.158	*	0.158	0.158
	2014	-	-	-	*	0.142	0.142	*	0.142	0.142
	2015	-	-	-	0.003	0.140	0.003	0.003	0.140	0.003
	2016	-	-	-	*	0.162	0.162	*	0.162	0.162
	2017	-	-	-	*	0.200	0.200	*	0.200	0.200
Pacific Ocean Perch	2013	-	0.211	0.211	0.975	0.211	0.211	0.975	0.211	0.211
	2014	*	0.238	0.238	0.630	0.238	0.238	0.630	0.238	0.238
	2015	*	0.209	0.209	0.833	0.209	0.209	0.833	0.209	0.209
	2016	*	0.180	0.180	*	0.180	0.180	*	0.180	0.180
	2017	*	0.218	0.218	1.001	0.218	0.218	1.001	0.218	0.218

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Table 11: Continued

		Shoreside			At Sea			All Sectors		
	Year	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear	Fixed	Trawl	All Gear
Northern Rockfish	2013	*	0.139	0.139	0.975	0.139	0.140	0.975	0.139	0.140
	2014	-	0.179	0.179	0.630	0.179	0.179	0.630	0.179	0.179
	2015	-	0.149	0.149	0.833	0.149	0.149	0.833	0.149	0.149
	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
Other Rockfish	2013	0.999	0.207	0.974	0.975	0.363	0.430	0.981	0.363	0.450
	2014	0.644	0.207	0.599	0.630	0.425	0.444	0.635	0.424	0.452
	2015	0.837	0.492	0.800	0.833	0.277	0.344	0.834	0.278	0.366
	2016	0.749	0.345	0.701	0.780	0.351	0.390	0.772	0.351	0.400
	2017	0.956	0.496	0.906	1.001	0.381	0.424	0.990	0.382	0.436
Other Groundfish	2013	0.500	0.023	0.081	0.500	0.050	0.375	0.500	0.047	0.363
	2014	0.568	0.151	0.193	0.568	0.151	0.477	0.568	0.151	0.451
	2015	0.154	0.122	0.123	0.154	0.049	0.136	0.154	0.086	0.134
	2016	0.280	0.150	0.175	0.280	0.017	0.213	0.280	0.037	0.211
	2017	0.306	0.207	0.220	0.306	0.015	0.246	0.306	0.056	0.244

Notes: Prices are for catch from both federal and state of 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 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; andADF&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 12: Bering Sea & Aleutian Islands ex-vessel value of the groundfish catch by vessel category, gear, and species, 2013-2017; 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	2013	-	-	218.65	218.65	-	-	205.63	206.54	-	-	424.28	425.19
	2014	-	-	226.54	226.54	-	-	200.28	201.43	-	-	426.82	427.97
	2015	-	-	227.41	227.42	-	-	182.91	185.30	-	-	410.33	412.72
	2016	-	-	209.36	209.36	-	-	165.24	165.50	-	-	374.61	374.86
	2017	-	-	205.54	205.54	-	-	147.13	147.35	-	-	352.67	352.89
Pacific Cod	2013	0.57	14.72	21.69	36.98	78.31	4.37	23.48	106.15	78.88	19.08	45.17	143.13
	2014	1.38	22.10	21.24	44.72	80.21	4.99	24.74	109.94	81.59	27.09	45.98	154.66
	2015	0.45	17.29	16.32	34.07	83.66	5.22	20.84	109.72	84.12	22.51	37.16	143.79
	2016	0.04	24.14	20.40	44.58	81.58	4.89	25.20	111.67	81.62	29.03	45.60	156.25
	2017	0.08	31.59	22.27	53.94	93.25	4.38	26.36	123.99	93.33	35.98	48.63	177.93
Sablefish	2013	3.57	*	*	3.57	2.94	-	0.49	3.43	6.51	*	0.49	7.00
	2014	4.54	*	*	4.54	1.73	-	0.17	1.90	6.27	*	0.17	6.45
	2015	2.92	0.98	0	3.90	0.98	-	0.08	1.06	3.90	0.98	0.08	4.96
	2016	1.95	*	0.01	1.97	1.04	-	0.73	1.76	2.99	*	0.74	3.73
	2017	1.41	*	0.09	1.51	0.73	*	1.61	2.34	2.14	*	1.71	3.85
Atka Mackerel	2013	-	-	0.04	0.04	-	-	16.15	16.15	-	-	16.19	16.19
	2014	-	-	0.08	0.08	-	-	23.67	23.67	-	-	23.75	23.75
	2015	-	-	0.02	0.02	-	-	29.67	29.67	-	-	29.69	29.69
	2016	-	-	0.01	0.01	-	-	30.13	30.13	-	-	30.14	30.14
	2017	-	-	0	0	-	-	50.24	50.24	-	-	50.25	50.25
Yellowfin	2013	-	-	0.06	0.06	-	-	54.54	54.54	-	-	54.60	54.60
	2014	-	-	0.07	0.07	0.01	-	42.04	42.05	0.01	-	42.11	42.12
	2015	-	-	0.03	0.03	0	-	35.07	35.07	0	-	35.10	35.10
	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
Rock Sole	2013	-	-	0.21	0.21	*	-	18.51	18.51	*	-	18.72	18.72
	2014	-	-	0.26	0.26	*	-	16.49	16.49	*	-	16.76	16.76
	2015	-	-	0.10	0.10	*	-	14.13	14.13	*	-	14.24	14.24
	2016	-	-	0.09	0.09	*	-	15.86	15.86	*	-	15.95	15.95
	2017	-	-	0.15	0.15	0	-	14.37	14.37	0	-	14.51	14.51

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Table 12: 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	2013	-	-	0.34	0.34	0	-	7.36	7.36	0	-	7.70	7.70
	2014	*	-	0.33	0.33	0	-	5.53	5.54	0	-	5.87	5.87
	2015	-	-	0.15	0.15	0	-	3.13	3.13	0	-	3.28	3.28
	2016	-	-	0.10	0.11	-	-	3.74	3.74	-	-	3.84	3.84
	2017	-	-	0.15	0.15	0	-	3.80	3.80	0	-	3.95	3.95
Arrowtooth	2013	-	-	0.08	0.08	0	-	5.62	5.62	0	-	5.70	5.70
	2014	*	-	0.09	0.09	0.03	-	7.31	7.34	0.03	-	7.40	7.43
	2015	*	-	0.03	0.03	0	-	3.73	3.73	0	-	3.76	3.76
	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
Kamchatka Flounder	2013	-	-	*	*	0	-	2.11	2.11	0	-	2.11	2.11
	2014	-	-	*	*	0	-	2.38	2.39	0	-	2.38	2.39
	2015	-	-	0	0	0	-	1.68	1.68	0	-	1.68	1.68
	2016	-	-	*	*	0	-	2.06	2.06	0	-	2.06	2.06
	2017	-	-	*	*	0	-	3.41	3.41	0	-	3.41	3.41
Turbot	2013	*	-	0	0	0.02	-	0.75	0.77	0.02	-	0.75	0.77
	2014	0	-	0	0	0.18	-	0.79	0.98	0.18	-	0.80	0.98
	2015	*	-	0.01	0.01	0.01	-	1.13	1.14	0.01	-	1.14	1.15
	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
Other Flatfish	2013	-	-	*	*	*	-	0	0	*	-	0	0
	2014	-	-	*	*	*	-	0	0	*	-	0	0
	2015	-	-	*	*	0	-	*	0	0	-	*	0
	2016	-	-	*	*	*	-	0	0	*	-	0	0
	2017	-	-	*	*	*	-	*	*	*	-	*	*
Pacific Ocean Perch	2013	-	-	0.10	0.10	0	-	14.20	14.20	0	-	14.30	14.30
	2014	*	-	0.20	0.20	0	-	16.30	16.30	0	-	16.50	16.50
	2015	*	-	0.33	0.33	0	-	13.50	13.50	0	-	13.84	13.84
	2016	*	-	0.25	0.25	*	-	11.78	11.78	*	-	12.03	12.03
	2017	-	-	0.31	0.31	0	-	14.24	14.24	0	-	14.56	14.56

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Table 12: 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	2013	*	-	0	0	0.01	-	0.55	0.56	0.01	-	0.56	0.56
	2014	-	-	0.01	0.01	0	-	0.85	0.85	0	-	0.86	0.86
	2015	-	-	0.01	0.01	0	-	2.21	2.21	0	-	2.22	2.22
	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
Other Rockfish	2013	0.09	-	0	0.09	0.26	-	0.78	1.04	0.34	-	0.78	1.12
	2014	0.06	-	0	0.07	0.12	-	0.81	0.92	0.18	-	0.81	0.99
	2015	0.06	-	0	0.07	0.17	-	0.41	0.57	0.23	-	0.41	0.64
	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
Other Groundfish	2013	0	-	0.02	0.06	6.32	-	0.24	6.56	6.32	-	0.26	6.63
	2014	0.01	-	0.26	0.37	8.23	-	0.61	8.83	8.24	-	0.87	9.20
	2015	0	-	0.36	0.38	2.25	-	0.14	2.39	2.25	-	0.51	2.78
	2016	0	-	0.11	0.15	3.16	-	0.07	3.23	3.16	-	0.17	3.39
	2017	*	-	0.25	0.30	5.19	-	0.07	5.25	5.19	-	0.31	5.55
All Species	2013	4.22	-	241.28	260.26	88.78	-	355.24	448.38	93.00	-	596.52	708.64
	2014	5.99	-	249.22	277.42	91.68	-	347.10	443.77	97.67	-	596.32	721.19
	2015	3.44	-	244.87	266.60	89.46	-	312.82	407.50	92.89	-	557.69	674.09
	2016	2.04	-	230.43	256.65	86.41	-	308.91	400.21	88.45	-	539.34	656.87
	2017	1.53	-	228.90	262.08	99.57	-	327.70	431.65	101.10	-	556.60	693.73

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; andADF&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 vessel and permit counts, ex-vessel value, value per vessel, and percent value of BSAI FMP groundfish and all BSAI fisheries by fleet, 2013-2017; 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	2013	88	15	2,690.04	236.72	33.32	20.70
	2014	88	14	2,787.99	245.34	33.92	20.00
	2015	86	15	2,812.02	241.83	35.91	22.06
	2016	89	18	2,594.21	230.88	35.08	20.22
	2017	86	16	2,650.16	227.91	32.60	19.21
AFA CP	2013	16	16	12,989.19	207.83	29.25	18.17
	2014	17	17	12,183.62	207.12	28.63	16.88
	2015	17	17	10,984.64	186.74	27.73	17.03
	2016	16	16	10,178.78	162.86	24.74	14.26
	2017	16	16	9,909.06	158.55	22.68	13.37
A80	2013	18	18	7,251.93	130.53	18.37	11.41
	2014	18	18	7,225.30	130.06	17.98	10.60
	2015	18	18	6,477.65	116.60	17.31	10.64
	2016	19	19	6,599.32	125.39	19.05	10.98
	2017	19	19	7,867.07	149.47	21.38	12.60
BSAI Trawl	2013	15	9	1,426.52	21.40	3.01	1.87
	2014	12	9	1,131.69	13.58	1.88	1.11
	2015	13	12	968.94	12.60	1.87	1.15
	2016	13	12	1,602.54	20.83	3.16	1.82
	2017	16	15	1,347.87	21.57	3.08	1.82

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Table 13: 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	2013	13	9	*	*	*	*
	2014	6	7	*	*	*	*
	2015	5	5	*	*	*	*
	2016	1	1	*	*	*	*
	2017	5	4	*	*	*	*
CP Hook and Line	2013	31	31	2,766.80	85.77	12.07	7.50
	2014	30	30	3,002.70	90.08	12.45	7.34
	2015	30	30	2,950.16	88.50	13.14	8.07
	2016	31	31	2,755.96	85.43	12.98	7.48
	2017	28	28	3,536.34	99.02	14.16	8.35
Sablefish IFQ	2013	26	10	326.48	8.49	1.19	0.74
	2014	22	10	391.62	8.62	1.19	0.70
	2015	18	8	231.84	4.17	0.62	0.38
	2016	20	7	185.93	3.72	0.56	0.33
	2017	17	10	382.19	6.50	0.93	0.55
Pot	2013	59	13	324.23	19.13	2.69	1.67
	2014	56	18	485.72	27.20	3.76	2.22
	2015	48	18	469.43	22.53	3.35	2.06
	2016	56	17	519.33	29.08	4.42	2.55
	2017	64	17	562.98	36.03	5.15	3.04

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"). 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 14: Bering Sea & Aleutian Islands production of groundfish products by species, 2013-2017, (1,000 metric tons product weight).

		2013			2014			2015			2016			2017		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Pollock	Whole Fish	0.16	1.65	1.81	0.31	1.09	1.40	1.11	0.68	1.80	0.10	0.69	0.79	0.04	0.25	0.30
	Head And Gut	37.28	3.69	40.97	34.77	2.77	37.54	25.38	*	25.38	28.61	0.04	28.65	24.21	-	24.21
	Roe	8.37	5.55	13.91	11.71	8.89	20.60	12.01	6.74	18.75	10.44	3.82	14.26	11.71	6.72	18.43
	Deep-Skin Fillets	36.83	14.76	51.59	32.68	11.01	43.69	34.56	9.22	43.77	38.24	8.55	46.79	45.10	13.03	58.13
	Other Fillets	59.63	59.66	119.28	63.68	68.41	132.09	57.44	65.80	123.24	49.61	64.89	114.50	42.13	56.69	98.82
	Surimi	80.85	80.81	161.66	87.81	83.52	171.33	95.94	91.80	187.74	100.51	90.31	190.82	102.60	94.13	196.73
	Minced Fish	23.47	7.27	30.74	19.98	6.09	26.06	19.71	5.47	25.19	22.38	11.69	34.07	17.05	9.44	26.49
	Fishmeal	20.98	32.89	53.87	23.25	33.60	56.85	26.45	34.59	61.03	27.15	36.25	63.40	27.94	34.69	62.63
	Other Products	12.21	20.78	33.00	13.57	22.40	35.97	12.60	21.44	34.04	14.52	27.09	41.61	13.32	24.88	38.20
	All Products	279.79	227.05	506.84	287.75	237.78	525.54	285.20	235.74	520.94	291.54	243.34	534.89	284.10	239.84	523.94
Pacific Cod	Whole Fish	1.99	0.41	2.40	0.19	0.79	0.98	0.12	0.39	0.51	1.36	0.43	1.79	0.22	*	0.22
	Head And Gut	82.45	15.31	97.76	81.36	19.20	100.56	84.84	15.98	100.82	84.44	14.24	98.68	80.10	12.28	92.38
	Roe	0.38	2.40	2.78	0.69	2.77	3.46	0.58	1.79	2.37	0.52	1.61	2.13	0.47	1.73	2.20
	Fillets	0.28	8.51	8.79	0.15	8.27	8.42	0.20	6.08	6.28	0.14	9.89	10.03	0.14	9.88	10.01
	Other Products	4.32	5.64	9.96	3.03	7.06	10.10	5.23	5.26	10.48	6.61	7.16	13.77	7.07	7.66	14.73
	All Products	89.43	32.27	121.70	85.42	38.09	123.51	90.97	29.49	120.47	93.06	33.34	126.40	87.99	31.55	119.54
Sablefish	Head And Gut	0.41	0.70	1.11	0.15	0.54	0.69	0.08	0.38	0.46	0.22	0.28	0.50	0.42	0.45	0.87
	Other Products	0.02	*	0.02	0.01	0.01	0.02	0.00	0.01	0.01	0.01	0.01	0.02	0.05	0.04	0.08
	All Products	0.43	0.70	1.13	0.16	0.55	0.71	0.09	0.39	0.47	0.23	0.29	0.52	0.46	0.49	0.95

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Table 14: Continued

	Product	2013			2014			2015			2016			2017		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Atka Mackerel	Whole Fish	2.91	*	2.91	3.17	0.08	3.25	3.31	*	3.31	2.13	0.01	2.14	6.40	*	6.40
	Head And Gut	11.14	-	11.14	17.12	-	17.12	29.09	-	29.09	30.53	-	30.53	35.45	-	35.45
	Other Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00
	All Products	14.05	0.00	14.05	20.29	0.08	20.38	32.40	0.00	32.40	32.66	0.01	32.67	41.85	0.00	41.86
Yellowfin	Whole Fish	8.43	*	8.43	16.72	*	16.72	7.18	-	7.18	9.76	-	9.76	9.23	-	9.23
	Head And Gut	85.76	-	85.76	76.69	-	76.69	66.73	-	66.73	68.36	-	68.36	67.77	-	67.77
	Fillets	-	-	-	-	-	-	-	-	-	-	-	-	*	-	*
	Other Products	0.37	0.02	0.40	0.36	0.02	0.38	0.08	0.01	0.09	0.16	0.01	0.16	0.09	0.00	0.10
	All Products	94.56	0.02	94.59	93.77	0.02	93.79	73.98	0.01	73.99	78.28	0.01	78.28	77.10	0.00	77.10
Rock Sole	Whole Fish	0.57	*	0.57	2.53	*	2.53	0.47	-	0.47	0.63	*	0.63	1.56	*	1.56
	Head And Gut	29.50	-	29.50	25.87	-	25.87	24.48	-	24.48	23.90	-	23.90	17.33	-	17.33
	Fillets	*	-	*	0.00	-	0.00	0.01	-	0.01	*	-	*	*	*	*
	Other Products	0.46	0.10	0.57	0.31	0.08	0.38	0.12	0.06	0.18	0.08	0.08	0.16	0.13	0.07	0.20
	All Products	30.53	0.10	30.64	28.71	0.08	28.79	25.08	0.06	25.13	24.61	0.08	24.69	19.02	0.07	19.09
Flathead Sole	Whole Fish	0.51	*	0.51	0.56	0.13	0.69	0.26	0.01	0.26	0.52	*	0.52	0.10	*	0.10
	Head And Gut	7.12	-	7.12	6.96	-	6.96	4.45	-	4.45	4.13	-	4.13	4.03	-	4.03
	Fillets	-	-	-	*	-	*	0.00	-	0.00	-	-	-	-	-	-
	Other Products	0.30	0.11	0.41	0.25	0.09	0.34	0.30	0.08	0.37	0.11	0.05	0.16	0.05	0.05	0.11
	All Products	7.93	0.11	8.04	7.77	0.21	7.99	5.00	0.09	5.09	4.75	0.05	4.81	4.19	0.05	4.25

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Table 14: Continued

	Product	2013			2014			2015			2016			2017		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Arrowtooth	Whole Fish	*	*	*	0.03	*	0.03	*	*	*	0.25	*	0.25	*	-	*
	Head And Gut	7.13	-	7.13	6.89	-	6.89	4.73	*	4.73	4.39	-	4.39	3.46	-	3.46
	Fillets	-	*	*	-	-	-	-	-	-	-	-	-	-	-	-
	Other Products	0.06	0.12	0.18	0.05	0.09	0.14	0.03	0.03	0.06	0.01	0.02	0.03	0.01	0.02	0.03
	All Products	7.19	0.12	7.31	6.98	0.09	7.06	4.75	0.03	4.79	4.64	0.02	4.67	3.46	0.02	3.48
Kamchatka Flounder	Whole Fish	*	-	*	-	-	-	-	-	-	*	-	*	-	-	-
	Head And Gut	6.08	-	6.08	5.33	-	5.33	2.79	-	2.79	2.72	-	2.72	2.05	-	2.05
	Fishmeal	0.01	-	0.01	0.01	-	0.01	0.01	-	0.01	0.00	-	0.00	0.00	-	0.00
	All Products	6.09	-	6.09	5.34	-	5.34	2.80	-	2.80	2.72	-	2.72	2.05	-	2.05
Turbot	Whole Fish	-	-	-	-	*	*	-	*	*	0.03	-	0.03	-	-	-
	Head And Gut	0.78	-	0.78	0.75	*	0.75	1.19	-	1.19	1.29	*	1.29	1.75	-	1.75
	Other Products	0.24	0.00	0.24	0.23	0.00	0.24	0.43	0.00	0.43	0.51	0.00	0.51	0.68	0.00	0.68
	All Products	1.02	0.00	1.02	0.99	0.00	0.99	1.63	0.00	1.63	1.83	0.00	1.83	2.43	0.00	2.43
Other Flatfish	Whole Fish	1.03	*	1.03	1.58	*	1.58	2.37	*	2.37	2.05	*	2.05	1.33	0.04	1.37
	Head And Gut	6.22	-	6.22	6.67	-	6.67	5.73	-	5.73	4.79	*	4.79	7.11	*	7.11
	Fillets	-	-	-	-	-	-	-	-	-	-	-	-	-	*	*
	Other Products	0.18	0.01	0.18	0.09	0.01	0.11	0.01	0.02	0.02	0.02	0.01	0.03	0.01	0.01	0.02
	All Products	7.42	0.01	7.42	8.34	0.01	8.36	8.11	0.02	8.13	6.87	0.01	6.87	8.45	0.04	8.49
Pacific Ocean Perch	Whole Fish	0.11	0.12	0.23	*	0.21	0.21	-	0.37	0.37	0.31	0.43	0.74	0.41	0.41	0.82
	Head And Gut	15.25	0.00	15.26	15.95	*	15.95	14.90	*	14.90	14.15	*	14.15	13.82	*	13.82
	Other Products	0.02	0.01	0.03	0.04	0.01	0.05	0.09	0.07	0.16	0.21	0.02	0.23	0.27	0.03	0.30
	All Products	15.38	0.13	15.51	15.98	0.23	16.21	14.99	0.44	15.42	14.67	0.45	15.12	14.50	0.44	14.94

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Table 14: Continued

		2013			2014			2015			2016			2017		
	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	-	0.01	0.01	-	0.00	0.00	-	*	*
	Head And Gut	0.75	*	0.75	1.22	-	1.22	3.59	-	3.59	1.96	-	1.96	2.03	-	2.03
	Other Products	0.00	*	0.00	0.01	0.00	0.01	0.01	*	0.01	0.01	0.00	0.01	0.00	*	0.00
	All Products	0.76	*	0.76	1.23	0.01	1.24	3.59	0.01	3.60	1.97	0.00	1.97	2.03	*	2.03
Other Rockfish	Whole Fish	0.25	-	0.25	0.24	0.02	0.26	0.10	*	0.10	0.15	*	0.15	0.17	0.00	0.18
	Head And Gut	0.32	0.02	0.34	0.31	0.02	0.33	0.25	0.02	0.27	0.29	0.02	0.30	0.27	0.01	0.28
	Other Products	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.01
	All Products	0.57	0.02	0.60	0.55	0.04	0.59	0.35	0.03	0.38	0.44	0.02	0.46	0.45	0.02	0.47
Other Groundfish	Whole Fish	*	0.09	0.09	*	0.34	0.34	*	0.38	0.38	0.00	0.15	0.16	*	0.26	0.26
	Head And Gut	0.00	-	0.00	0.01	*	0.01	0.01	*	0.01	0.01	-	0.01	0.01	*	0.01
	Fillets	-	-	-	-	-	-	-	-	-	*	-	*	-	-	-
	Fishmeal	0.11	0.05	0.16	0.10	0.17	0.27	0.05	0.48	0.53	0.05	0.15	0.19	0.06	0.17	0.23
	Other Products	1.86	0.03	1.89	2.26	0.12	2.38	2.06	0.31	2.37	1.79	0.02	1.81	2.40	*	2.40
	All Products	1.97	0.17	2.14	2.37	0.63	3.00	2.12	1.17	3.30	1.85	0.32	2.17	2.48	0.43	2.91

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Table 14: Continued

	Product	2013			2014			2015			2016			2017		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
All Species	Whole Fish	15.97	2.27	18.24	25.34	2.66	28.00	14.90	1.84	16.75	17.29	1.71	19.00	19.48	0.97	20.45
	Head And Gut	290.20	19.72	309.92	280.06	22.53	302.58	268.26	16.38	284.64	269.78	14.58	284.36	259.81	12.75	272.56
	Roe	8.75	7.94	16.70	12.40	11.66	24.06	12.59	8.52	21.12	10.96	5.43	16.39	12.17	8.46	20.63
	Fillets	0.28	8.51	8.79	0.15	8.27	8.42	0.21	6.08	6.28	0.14	9.89	10.03	0.14	9.88	10.01
	Deep-Skin Fillets	36.83	14.76	51.59	32.68	11.01	43.69	34.56	9.22	43.77	38.24	8.55	46.79	45.10	13.03	58.13
	Other Fillets	59.63	59.66	119.28	63.68	68.41	132.09	57.44	65.80	123.24	49.61	64.89	114.50	42.13	56.69	98.82
	Surimi	80.85	80.81	161.66	87.81	83.52	171.33	95.94	91.80	187.74	100.51	90.31	190.82	102.60	94.13	196.73
	Minced Fish	23.47	7.27	30.74	19.98	6.09	26.06	19.71	5.47	25.19	22.38	11.69	34.07	17.05	9.44	26.49
	Fishmeal	21.09	32.94	54.03	23.36	33.77	57.13	26.50	35.07	61.57	27.20	36.40	63.60	28.01	34.86	62.87
	Other Products	20.05	26.84	46.89	20.22	29.91	50.13	20.97	27.28	48.24	24.03	34.48	58.51	24.09	32.76	56.85
	All Products	557.13	260.72	817.84	565.67	277.82	843.49	551.07	267.46	818.53	560.13	277.94	838.06	550.58	272.96	823.54

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 15: Bering Sea & Aleutian Islands gross value of groundfish products by species, 2013-2017, ($ million).

		2013			2014			2015			2016			2017		
	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	1.8	1.9	0.3	0.8	1.1	1.1	0.8	1.9	0.1	0.5	0.6	0.0	0.2	0.3
	Head And Gut	58.3	5.2	63.5	49.4	3.9	53.3	35.6	*	35.6	48.9	0.0	48.9	29.0	-	29.0
	Roe	68.8	33.2	102.0	83.8	46.9	130.7	69.9	24.8	94.7	72.4	17.1	89.4	85.9	31.0	116.9
	Deep-Skin Fillets	138.8	45.7	184.5	116.6	36.4	153.0	120.3	29.9	150.2	142.7	26.3	169.0	150.1	41.3	191.4
	Other Fillets	169.5	189.6	359.0	181.1	195.5	376.6	176.1	172.6	348.7	141.9	191.3	333.2	107.8	145.8	253.5
	Surimi	192.4	164.9	357.2	228.4	186.5	414.9	268.4	204.4	472.8	291.9	210.2	502.1	370.2	207.2	577.4
	Minced Fish	35.3	10.4	45.7	26.1	7.9	33.9	29.1	7.9	37.1	39.7	19.2	58.9	26.1	13.1	39.2
	Fishmeal	40.7	52.2	92.9	47.2	47.0	94.2	53.7	47.8	101.5	50.3	53.4	103.7	45.7	50.7	96.4
	Other Products	15.2	19.5	34.7	14.0	20.6	34.6	14.4	18.1	32.5	20.4	25.2	45.6	16.1	17.9	34.0
	All Products	719.0	522.6	1,241.6	747.0	545.4	1,292.4	768.7	506.3	1,275.0	808.3	543.2	1,351.5	830.8	507.3	1,338.1
Pacific Cod	Whole Fish	2.2	0.4	2.6	0.1	1.7	1.8	0.1	0.5	0.6	2.1	0.7	2.8	0.4	*	0.4
	Head And Gut	200.0	26.1	226.1	237.0	41.4	278.4	266.8	36.3	303.1	250.6	30.7	281.4	287.9	32.5	320.4
	Roe	0.7	4.7	5.4	1.4	6.1	7.5	0.8	3.0	3.8	0.6	2.3	2.8	0.6	2.7	3.4
	Fillets	0.7	54.3	55.0	0.3	49.5	49.8	0.5	36.4	36.9	0.4	74.1	74.5	0.5	81.2	81.7
	Other Products	5.0	9.5	14.6	4.9	10.9	15.9	11.1	9.5	20.5	15.0	11.8	26.9	13.6	15.2	28.7
	All Products	208.6	95.0	303.6	243.8	109.6	353.4	279.2	85.7	365.0	268.8	119.5	388.3	303.1	131.6	434.7
Sablefish	Head And Gut	5.1	9.9	15.0	2.5	8.0	10.5	1.5	6.2	7.8	3.0	4.9	7.9	4.7	7.2	11.9
	Other Products	0.0	*	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.5	0.6
	All Products	5.1	9.9	15.0	2.5	8.0	10.5	1.6	6.3	7.8	3.0	5.0	8.0	4.8	7.7	12.5

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Table 15: Continued

		2013			2014			2015			2016			2017		
	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	5.3	*	5.3	4.6	0.1	4.7	3.9	*	3.9	4.1	0.0	4.1	11.9	*	11.9
	Head And Gut	32.4	-	32.4	56.9	-	56.9	69.1	-	69.1	69.6	-	69.6	114.8	-	114.8
	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	0.0
	All Products	37.7	0.0	37.7	61.5	0.1	61.6	73.0	0.0	73.0	73.7	0.0	73.7	126.6	0.0	126.6
Yellowfin	Whole Fish	24.9	*	24.9	17.0	*	17.0	7.0	-	7.0	10.6	-	10.6	12.4	-	12.4
	Head And Gut	95.7	-	95.7	76.9	-	76.9	71.2	-	71.2	83.3	-	83.3	98.2	-	98.2
	Fillets	-	-	-	-	-	-	-	-	-	-	-	-	*	-	*
	Other Products	1.1	0.1	1.1	0.7	0.0	0.8	0.2	0.0	0.2	0.3	0.0	0.3	0.2	0.0	0.2
	All Products	121.7	0.1	121.7	94.6	0.0	94.7	78.4	0.0	78.4	94.2	0.0	94.2	110.8	0.0	110.8
Rock Sole	Whole Fish	0.6	*	0.6	2.9	*	2.9	0.5	-	0.5	0.8	*	0.8	2.0	*	2.0
	Head And Gut	37.1	-	37.1	31.4	-	31.4	29.4	-	29.4	33.0	-	33.0	28.0	-	28.0
	Fillets	*	-	*	0.0	-	0.0	0.0	-	0.0	*	-	*	*	*	*
	Other Products	1.3	0.3	1.6	0.6	0.2	0.8	0.2	0.1	0.3	0.1	0.1	0.3	0.2	0.1	0.3
	All Products	39.1	0.3	39.4	35.0	0.2	35.2	30.2	0.1	30.3	33.9	0.1	34.0	30.2	0.1	30.3
Flathead Sole	Whole Fish	1.5	*	1.5	0.8	0.1	0.9	0.3	0.0	0.3	0.6	*	0.6	0.1	*	0.1
	Head And Gut	13.4	-	13.4	10.8	-	10.8	6.2	-	6.2	6.9	-	6.9	7.7	-	7.7
	Fillets	-	-	-	*	-	*	0.0	-	0.0	-	-	-	-	-	-
	Other Products	0.9	0.3	1.2	0.5	0.2	0.7	0.6	0.1	0.7	0.2	0.1	0.2	0.1	0.1	0.2
	All Products	15.8	0.3	16.1	12.1	0.3	12.3	7.0	0.2	7.2	7.7	0.1	7.8	7.9	0.1	8.0

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Table 15: Continued

		2013			2014			2015			2016			2017		
	Product	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
Arrowtooth	Whole Fish	*	*	*	0.0	*	0.0	*	*	*	0.3	*	0.3	*	-	*
	Head And Gut	9.9	-	9.9	12.5	-	12.5	7.7	*	7.7	8.3	-	8.3	9.9	-	9.9
	Fillets	-	*	*	-	-	-	-	-	-	-	-	-	-	-	-
	Other Products	0.2	0.4	0.5	0.1	0.2	0.3	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0
	All Products	10.0	0.4	10.4	12.7	0.2	12.8	7.8	0.1	7.8	8.6	0.0	8.7	9.9	0.0	9.9
Kamchatka Flounder	Whole Fish	*	-	*	-	-	-	-	-	-	*	-	*	-	-	-
	Head And Gut	7.4	-	7.4	8.7	-	8.7	4.1	-	4.1	5.0	-	5.0	6.7	-	6.7
	Fishmeal	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-	0.0
	All Products	7.4	-	7.4	8.7	-	8.7	4.1	-	4.1	5.0	-	5.0	6.7	-	6.7
Turbot	Whole Fish	-	-	-	-	*	*	-	*	*	0.1	-	0.1	-	-	-
	Head And Gut	3.3	-	3.3	3.5	*	3.5	5.3	-	5.3	7.2	*	7.2	9.3	-	9.3
	Other Products	0.8	0.0	0.8	1.0	0.0	1.0	1.6	0.0	1.6	2.0	0.0	2.0	2.2	0.0	2.2
	All Products	4.1	0.0	4.1	4.4	0.0	4.4	6.9	0.0	6.9	9.3	0.0	9.3	11.5	0.0	11.5
Other Flatfish	Whole Fish	2.0	*	2.0	2.3	*	2.3	2.7	*	2.7	2.7	*	2.7	2.3	0.1	2.4
	Head And Gut	6.8	-	6.8	7.2	-	7.2	5.8	-	5.8	5.0	*	5.0	12.7	*	12.7
	Fillets	-	-	-	-	-	-	-	-	-	-	-	-	-	*	*
	Other Products	0.5	0.0	0.5	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	All Products	9.3	0.0	9.3	9.7	0.0	9.8	8.4	0.0	8.5	7.7	0.0	7.7	15.0	0.1	15.2
Pacific Ocean Perch	Whole Fish	0.1	0.2	0.3	*	0.3	0.3	-	0.5	0.5	0.4	0.5	1.0	0.5	0.5	1.0
	Head And Gut	36.1	0.0	36.1	42.2	*	42.2	34.9	*	34.9	29.1	*	29.1	34.6	*	34.6
	Other Products	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.3	0.3	0.0	0.3	0.4	0.0	0.4
	All Products	36.3	0.2	36.4	42.3	0.3	42.6	35.1	0.6	35.7	29.8	0.6	30.3	35.5	0.5	36.1

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Table 15: Continued

	Product	2013			2014			2015			2016			2017		
		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	-	0.0	0.0	-	0.0	0.0	-	*	*
	Head And Gut	1.2	*	1.2	2.5	-	2.5	5.9	-	5.9	2.8	-	2.8	3.4	-	3.4
	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
	All Products	1.2	*	1.2	2.5	0.0	2.5	5.9	0.0	5.9	2.8	0.0	2.8	3.4	*	3.4
Other Rockfish	Whole Fish	0.8	-	0.8	1.1	0.0	1.1	0.4	*	0.4	0.7	*	0.7	0.9	0.0	0.9
	Head And Gut	1.0	0.2	1.2	0.8	0.1	0.9	0.6	0.2	0.8	0.7	0.1	0.8	0.7	0.1	0.7
	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	0.0
	All Products	1.9	0.2	2.1	1.9	0.1	2.0	1.0	0.2	1.2	1.4	0.1	1.5	1.6	0.1	1.6
Other Groundfish	Whole Fish	*	0.0	0.0	*	0.5	0.5	*	0.4	0.4	0.0	0.3	0.3	*	0.5	0.5
	Head And Gut	0.0	-	0.0	0.0	*	0.0	0.0	*	0.0	0.0	-	0.0	0.0	*	0.0
	Fillets	-	-	-	-	-	-	-	-	-	*	-	*	-	-	-
	Fishmeal	0.2	0.1	0.2	0.1	0.2	0.3	0.1	0.9	1.0	0.1	0.2	0.3	0.1	0.3	0.4
	Other Products	3.6	0.1	3.7	3.7	0.7	4.3	3.9	1.1	5.1	2.8	0.2	3.0	4.5	*	4.5
	All Products	3.8	0.1	4.0	3.8	1.4	5.2	4.1	2.5	6.6	2.9	0.7	3.7	4.6	0.8	5.3

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Table 15: Continued

	Product	2013			2014			2015			2016			2017		
		At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All	At Sea	Shoreside	All
All Species	Whole Fish	37.7	2.4	40.1	29.3	3.5	32.7	15.9	2.2	18.1	22.6	2.0	24.6	30.6	1.3	31.9
	Head And Gut	507.6	41.3	548.9	542.3	53.3	595.7	544.1	42.7	586.9	553.4	35.8	589.1	647.6	39.8	687.5
	Roe	69.4	37.9	107.4	85.2	53.1	138.2	70.7	27.8	98.5	72.9	19.3	92.3	86.6	33.7	120.3
	Fillets	0.7	54.3	55.0	0.4	49.5	49.8	0.6	36.4	37.0	0.4	74.1	74.5	0.5	81.2	81.7
	Deep-Skin Fillets	138.8	45.7	184.5	116.6	36.4	153.0	120.3	29.9	150.2	142.7	26.3	169.0	150.1	41.3	191.4
	Other Fillets	169.5	189.6	359.0	181.1	195.5	376.6	176.1	172.6	348.7	141.9	191.3	333.2	107.8	145.8	253.5
	Surimi	192.4	164.9	357.2	228.4	186.5	414.9	268.4	204.4	472.8	291.9	210.2	502.1	370.2	207.2	577.4
	Minced Fish	35.3	10.4	45.7	26.1	7.9	33.9	29.1	7.9	37.1	39.7	19.2	58.9	26.1	13.1	39.2
	Fishmeal	40.9	52.3	93.1	47.4	47.2	94.5	53.8	48.7	102.5	50.4	53.6	104.0	45.8	51.0	96.8
	Other Products	28.7	30.2	58.9	25.8	32.8	58.6	32.3	29.3	61.6	41.2	37.6	78.8	37.1	33.9	71.1
	All Products	1,220.9	629.1	1,849.9	1,282.5	665.7	1,948.2	1,311.3	601.9	1,913.3	1,357.1	669.4	2,026.5	1,502.4	648.4	2,150.7

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 16: Bering Sea & Aleutian Islands price per pound of groundfish products by species and processing mode, 2013-2017, ($/lb).

		2013		2014		2015		2016		2017	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Pollock	Whole Fish	0.40	0.49	0.46	0.32	0.45	0.51	0.35	0.34	0.29	0.42
	Head And Gut	0.71	0.64	0.64	0.64	0.64	*	0.78	0.41	0.54	-
	Roe	3.73	2.72	3.25	2.39	2.64	1.67	3.14	2.03	3.33	2.09
	Deep-Skin Fillets	1.71	1.41	1.62	1.50	1.58	1.47	1.69	1.39	1.51	1.44
	Other Fillets	1.29	1.44	1.29	1.30	1.39	1.19	1.30	1.34	1.16	1.17
	Surimi	1.08	0.93	1.18	1.01	1.27	1.01	1.32	1.06	1.64	1.00
	Minced Fish	0.68	0.65	0.59	0.59	0.67	0.66	0.80	0.74	0.69	0.63
	Fishmeal	0.88	0.72	0.92	0.63	0.92	0.63	0.84	0.67	0.74	0.66
	Other Products	0.57	0.43	0.47	0.42	0.52	0.38	0.64	0.42	0.55	0.33
	All Products	1.17	1.04	1.18	1.04	1.22	0.97	1.26	1.01	1.33	0.96
Pacific Cod	Whole Fish	0.50	0.45	0.36	0.97	0.34	0.57	0.71	0.69	0.87	*
	Head And Gut	1.10	0.77	1.32	0.98	1.43	1.03	1.35	0.98	1.63	1.20
	Roe	0.77	0.89	0.90	1.00	0.60	0.77	0.51	0.64	0.62	0.71
	Fillets	1.07	2.89	0.94	2.71	1.18	2.72	1.37	3.40	1.79	3.73
	Other Products	0.53	0.77	0.74	0.70	0.96	0.82	1.03	0.75	0.87	0.90
	All Products	1.06	1.34	1.29	1.31	1.39	1.32	1.31	1.63	1.56	1.89
Sablefish	Head And Gut	5.67	6.39	7.48	6.70	8.60	7.43	6.24	7.93	5.12	7.22
	Other Products	0.87	*	0.50	2.67	1.93	2.30	0.83	3.17	0.87	6.31
	All Products	5.40	6.39	7.01	6.64	8.34	7.37	6.02	7.74	4.68	7.16
Atka Mackerel	Whole Fish	0.83	*	0.66	0.60	0.53	*	0.86	0.62	0.84	*
	Head And Gut	1.32	-	1.51	-	1.08	-	1.03	-	1.47	-
	Other Products	1.00	1.10	1.15	0.51	0.87	0.88	0.73	0.74	0.55	0.81
	All Products	1.22	1.09	1.37	0.60	1.02	0.88	1.02	0.66	1.37	0.81

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Table 16: Continued

		2013		2014		2015		2016		2017	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Yellowfin	Whole Fish	1.34	*	0.46	*	0.45	-	0.49	-	0.61	-
	Head And Gut	0.51	-	0.45	-	0.48	-	0.55	-	0.66	-
	Fillets	-	-	-	-	-	-	-	-	*	-
	Other Products	1.30	1.30	0.90	0.92	1.02	0.87	0.86	0.73	0.74	0.80
	All Products	0.58	1.30	0.46	0.92	0.48	0.87	0.55	0.73	0.65	0.80
Rock Sole	Whole Fish	0.50	*	0.53	*	0.50	-	0.59	*	0.59	*
	Head And Gut	0.54	-	0.45	-	0.49	-	0.56	-	0.65	-
	Head And Gut With Roe	0.85	-	0.85	-	0.89	-	1.00	-	1.24	-
	Fillets	*	-	5.70	-	2.78	-	*	-	*	*
	Other Products	1.26	1.30	0.92	0.92	0.87	0.87	0.78	0.73	0.63	0.80
	All Products	0.58	1.30	0.55	0.92	0.55	0.87	0.62	0.73	0.72	0.80
Flathead Sole	Whole Fish	1.38	*	0.62	0.37	0.44	0.55	0.57	*	0.61	*
	Head And Gut	0.85	-	0.70	-	0.63	-	0.76	-	0.87	-
	Fillets	-	-	*	-	2.33	-	-	-	-	-
	Other Products	1.35	1.30	0.93	0.92	0.87	0.87	0.66	0.73	0.59	0.80
	All Products	0.90	1.30	0.70	0.59	0.64	0.84	0.74	0.73	0.86	0.80
Arrowtooth	Whole Fish	*	*	0.54	*	*	*	0.56	*	*	-
	Head And Gut	0.63	-	0.82	-	0.74	*	0.86	-	1.30	-
	Fillets	-	*	-	-	-	-	-	-	-	-
	Other Products	1.27	1.30	0.92	0.92	0.87	0.87	0.64	0.73	0.65	0.80
	All Products	0.63	1.30	0.82	0.92	0.74	0.87	0.84	0.73	1.30	0.80
Kamchatka Flounder	Whole Fish	*	-	-	-	-	-	*	-	-	-
	Head And Gut	0.55	-	0.74	-	0.67	-	0.83	-	1.48	-
	Fishmeal	1.29	-	0.92	-	0.94	-	0.86	-	0.67	-
	All Products	0.55	-	0.74	-	0.67	-	0.83	-	1.48	-

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Table 16: Continued

		2013		2014		2015		2016		2017	
	Product	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside	At-sea	Shoreside
Turbot	Whole Fish	-	-	-	*	-	*	1.97	-	-	-
	Head And Gut	1.92	-	2.09	*	2.01	-	2.52	*	2.41	-
	Other Products	1.53	1.33	1.84	0.93	1.69	0.88	1.76	0.73	1.45	0.80
	All Products	1.83	1.33	2.03	0.93	1.93	0.88	2.30	0.73	2.14	0.80
Other Flatfish	Whole Fish	0.90	*	0.67	*	0.51	*	0.59	*	0.78	1.62
	Head And Gut	0.49	-	0.49	-	0.46	-	0.47	*	0.81	*
	Fillets	-	-	-	-	-	-	-	-	-	*
	Other Products	1.26	1.30	0.90	0.92	0.88	0.87	0.76	0.73	0.65	0.80
	All Products	0.57	1.30	0.53	0.92	0.47	0.87	0.51	0.73	0.81	1.49
Pacific Ocean Perch	Whole Fish	0.59	0.59	*	0.55	-	0.56	0.65	0.58	0.57	0.54
	Head And Gut	1.07	0.60	1.20	*	1.06	*	0.93	*	1.14	*
	Other Products	0.92	1.01	0.80	0.80	0.87	0.87	0.60	0.73	0.60	0.80
	All Products	1.07	0.61	1.20	0.56	1.06	0.61	0.92	0.58	1.11	0.56
Northern Rockfish	Whole Fish	*	*	*	0.58	-	0.46	-	0.67	-	*
	Head And Gut	0.70	*	0.92	-	0.75	-	0.64	-	0.77	-
	Other Products	0.92	*	0.80	0.80	0.87	*	0.59	0.73	0.61	*
	All Products	0.70	*	0.92	0.74	0.75	0.46	0.64	0.71	0.77	*
Other Rockfish	Whole Fish	1.48	-	2.08	0.92	1.72	*	2.27	*	2.29	0.69
	Head And Gut	1.47	3.80	1.18	2.42	1.08	3.28	1.06	2.95	1.14	2.42
	Other Products	1.47	3.07	0.92	0.58	0.99	1.35	0.78	1.40	0.75	0.77
	All Products	1.47	3.68	1.57	1.49	1.26	3.08	1.47	2.83	1.58	1.93
Other Groundfish	Whole Fish	*	0.10	*	0.72	*	0.53	1.02	0.96	*	0.80
	Head And Gut	1.14	-	0.75	*	0.64	*	1.83	-	0.78	*
	Fillets	-	-	-	-	-	-	*	-	-	-
	Fishmeal	0.73	0.53	0.59	0.50	0.87	0.87	0.68	0.73	0.71	0.78
	Other Products	0.89	1.05	0.74	2.49	0.87	1.69	0.72	4.01	0.84	*
	All Products	0.88	0.40	0.73	1.00	0.87	0.97	0.72	1.03	0.84	0.79

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 17: Bering Sea & Aleutian Islands total product value per round metric ton of retained catch by processor type, species, and year, 2013-2017, ($/mt).

	Species	2013	2014	2015	2016	2017
Motherships	Pollock	808	1,035	971	909	*
	Pacific Cod	555	388	464	709	*
Catcher/processors	Pollock	1,036	1,023	1,047	1,090	1,128
	Sablefish	7,806	9,747	10,660	7,708	5,760
	Pacific Cod	1,180	1,421	1,579	1,484	1,756
	Flatfish	768	693	691	789	969
	Rockfish	1,173	1,369	1,141	977	1,162
	Atka Mackerel	1,681	2,019	1,391	1,363	1,977
	Other	482	457	509	426	473
Shoreside processors	Pollock	950	980	887	929	860
	Sablefish	9,901	9,563	13,156	12,327	11,282
	Pacific Cod	1,397	1,489	1,391	1,566	1,719
	Flatfish	1,102	553	564	1,024	709
	Rockfish	1,422	935	1,071	1,151	965
	Other	433	1,611	1,776	1,823	1,257

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 18: 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, 2013-2017 ($ millions).

	Year	Processors	Wholesale Value ($million)	Wholesale Value Per Processor ($1,000)	Percent Value, BSAI FMP Groundfish
AFA CP	2013	15	642.79	42,852.36	36.56
	2014	16	644.77	40,298.40	34.73
	2015	16	663.09	41,442.94	36.33
	2016	15	684.55	45,636.76	35.41
	2017	16	748.00	46,749.75	36.34
A80	2013	18	296.23	16,456.97	16.85
	2014	18	309.44	17,191.11	16.67
	2015	18	293.37	16,298.26	16.07
	2016	19	320.59	16,873.12	16.58
	2017	19	392.41	20,653.02	19.07
CP Hook and Line	2013	33	165.66	5,019.98	9.42
	2014	31	200.22	6,458.80	10.78
	2015	31	230.85	7,446.68	12.65
	2016	32	211.38	6,605.62	10.93
	2017	29	246.04	8,484.12	11.95
Sablefish IFQ	2013	7	4.11	587.12	0.23
	2014	8	2.14	267.57	0.12
	2015	5	1.44	287.33	0.08
	2016	7	1.40	200.13	0.07
	2017	6	1.68	280.06	0.08
Motherships & Inshore Floating Procs.	2013	3	89.54	29,845.92	5.09
	2014	3	115.13	38,376.24	6.20
	2015	3	111.49	37,162.50	6.11
	2016	4	106.69	26,673.75	5.52
	2017	2	*	*	*
BSAI Shoreside Processors	2013	9	537.29	59,699.10	30.56
	2014	8	573.97	71,746.19	30.92
	2015	6	513.67	85,611.13	28.15
	2016	7	576.25	82,321.86	29.81
	2017	7	555.74	79,391.83	27.00

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 19: 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, 2013-2017.

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
AFA CV	2013	88	127	124	163	134
	2014	88	128	124	163	133
	2015	86	127	124	162	134
	2016	89	126	123	158	133
	2017	86	125	123	156	133
AFA CP	2013	16	300	296	1,673	1,592
	2014	17	289	285	1,599	1,592
	2015	17	289	285	1,617	1,592
	2016	16	302	296	1,711	1,592
	2017	16	290	285	1,565	1,592
A80	2013	18	180	185	420	426
	2014	18	186	185	426	426
	2015	18	184	185	428	426
	2016	19	185	185	444	426
	2017	19	180	185	476	473
BSAI Trawl	2013	15	140	144	271	276
	2014	12	127	130	193	148
	2015	14	118	108	151	132
	2016	13	133	130	243	132
	2017	16	123	123	175	132
CV Hook and Line	2013	4	52	56	36	37
	2014	3	49	48	35	37
	2015	2	56	58	42	43
	2017	2	57	59	43	47
CP Hook and Line	2013	31	146	136	323	258
	2014	30	146	136	344	260
	2015	30	145	136	333	258
	2016	31	146	136	338	258
	2017	28	148	141	350	296
Sablefish IFQ	2013	31	87	94	96	111
	2014	23	91	98	105	111
	2015	19	77	58	89	98
	2016	21	88	98	105	111
	2017	19	87	72	114	97

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Table 19: Continued

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
Pot	2013	59	91	58	127	105
	2014	55	84	58	116	105
	2015	48	86	58	123	105
	2016	56	80	58	114	105
	2017	64	83	58	119	105
Jig	2013	6	36	38	14	15
	2014	3	31	32	19	18
	2015	4	32	33	15	14
	2016	2	42	42	25	26
	2017	1	42	42	26	26
No Fleet/ Other	2013	4	30	26	10	5
	2014	2	48	48	28	28
	2015	1	48	48	28	28
	2017	2	31	30	14	13

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 20: Bering Sea & Aleutian Islands number of vessels that caught groundfish by month, vessel type, and gear, 2014-2018.

		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Catcher Vessels	Hook & Line	2014	5	4	5	6	5	7	10	8	9	7	4	2	21
		2015	3	2	4	3	7	6	6	7	8	9	3	1	21
		2016	1	-	1	1	3	5	7	6	7	4	-	-	16
		2017	-	1	2	2	4	2	4	4	9	2	-	-	15
	Pot	2014	41	22	18	19	14	1	1	1	14	13	11	12	54
		2015	29	27	21	15	1	2	2	1	13	21	9	16	47
		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	-	-	-	-	-	-	-	-	-	-	-	1	1
	Trawl	2014	42	81	81	65	2	71	72	71	55	4	1	-	100
		2015	70	86	88	62	5	73	70	74	65	27	4	-	100
		2016	72	91	91	69	8	60	70	69	53	16	1	-	101
		2017	71	92	79	70	6	68	69	65	46	14	2	-	102
	All Gear	2014	88	107	104	90	21	79	83	80	78	24	14	14	173
		2015	102	115	113	79	13	81	78	82	86	57	16	17	165
		2016	101	120	125	101	14	66	78	76	70	41	18	18	170
		2017	119	114	106	97	17	74	74	69	66	29	17	33	178
		2018	-	-	-	-	-	-	-	-	-	-	-	1	1
Catcher Processors	Hook & Line	2014	26	26	28	25	18	20	26	25	25	27	27	24	31
		2015	26	27	28	24	22	18	22	25	28	27	27	28	31
		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
	Pot	2014	4	4	2	1	1	-	-	-	3	3	3	1	4
		2015	4	4	2	2	1	-	-	1	4	4	4	1	4
		2016	5	3	3	2	-	-	-	1	3	3	1	3	5
		2017	5	2	2	2	-	-	-	1	5	5	2	3	6
	Trawl	2014	30	34	34	21	19	31	29	30	28	18	14	4	34
		2015	34	34	33	21	19	30	27	28	28	20	14	3	34
		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
	All Gear	2014	60	64	64	47	38	51	55	55	56	48	44	29	68
		2015	64	65	63	47	42	48	49	54	60	51	45	32	69
		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

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 catcher vessel (excluding catcher/processors) weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2013-2017.

		Hook & Line		Pot			Trawl			All Gear		
	Year	<60ft	60-125ft	<60ft	60-125ft	>=125ft	<60ft	60-125ft	>=125ft	<60ft	60-125ft	>=125ft
Pollock	2013	-	-	-	-	-	-	902	608	-	902	608
	2014	-	-	-	-	-	-	838	551	-	838	551
	2015	-	-	-	-	-	-	904	612	-	904	612
	2016	-	-	-	-	-	-	863	568	-	863	568
	2017	-	-	-	-	-	-	862	498	-	862	498
Sablefish	2013	88	14	-	35	20	-	-	-	88	49	20
	2014	77	19	-	34	15	-	-	-	77	53	15
	2015	69	14	6	18	4	-	-	-	75	32	4
	2016	31	13	-	21	8	-	-	-	31	34	8
	2017	26	7	-	25	12	-	-	-	26	32	12
Pacific Cod	2013	72	-	221	124	31	8	264	40	301	388	71
	2014	103	-	345	115	29	13	247	35	461	362	64
	2015	48	-	312	117	15	-	265	32	360	382	47
	2016	13	-	423	149	15	-	278	38	436	427	53
	2017	18	-	393	172	39	-	214	30	411	386	69
Flatfish	2013	-	-	-	-	-	-	0	47	-	0	47
	2014	-	-	-	-	-	-	2	31	-	2	31
	2015	-	-	-	-	-	-	27	30	-	27	30
	2016	-	-	-	-	-	-	42	34	-	42	34
	2017	-	-	-	-	-	-	48	53	-	48	53
Rockfish	2013	-	-	-	-	-	-	-	9	-	-	9
	2014	1	-	-	-	-	-	-	11	1	-	11
	2015	1	-	-	-	-	-	4	9	1	4	9
	2016	-	-	-	-	-	-	2	4	-	2	4
	2017	-	-	-	-	-	-	3	4	-	3	4
Atka Mackerel	2013	-	-	-	-	-	-	-	7	-	-	7
	2014	-	-	-	-	-	-	-	12	-	-	12
	2015	-	-	-	-	-	-	5	10	-	5	10
	2016	-	-	-	-	-	-	6	13	-	6	13
	2017	-	-	-	-	-	-	5	15	-	5	15
All Groundfish	2013	160	14	-	-	-	8	1,166	710	389	1,340	761
	2014	181	19	-	-	-	13	1,086	640	539	1,254	684
	2015	117	14	-	-	-	-	1,205	692	435	1,354	711
	2016	43	13	-	-	-	-	1,191	657	466	1,373	680
	2017	44	7	-	-	-	-	1,132	600	437	1,335	651

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 22: Bering Sea & Aleutian Islands catcher/processor vessel weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2013-2017.

		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	2013	-	-	-	-	-	-	3	14	309	-	3	14	309
	2014	-	-	-	-	-	-	1	14	305	-	1	14	305
	2015	-	-	-	-	-	-	1	6	310	-	1	6	310
	2016	-	-	-	-	-	-	1	4	303	-	1	4	303
	2017	-	-	-	-	-	-	0	5	301	-	0	5	301
Sablefish	2013	-	84	3	-	-	-	0	0	-	-	84	3	-
	2014	-	41	2	-	-	-	-	0	-	-	41	2	-
	2015	-	38	0	-	-	-	-	-	-	-	38	0	-
	2016	11	26	0	-	-	-	-	0	-	11	26	0	-
	2017	19	-	1	-	9	-	1	0	-	19	10	1	-
Pacific Cod	2013	-	239	718	-	-	54	5	11	5	-	244	783	5
	2014	7	250	817	-	19	53	0	9	12	7	269	879	12
	2015	9	253	812	-	23	62	1	11	9	9	277	885	9
	2016	9	223	766	17	13	54	1	17	11	26	237	837	11
	2017	8	180	790	13	20	44	1	11	7	21	201	845	7
Flatfish	2013	-	1	15	-	-	-	105	401	87	-	106	416	87
	2014	-	5	12	-	-	-	92	415	81	-	97	427	81
	2015	-	2	26	-	-	-	105	395	51	-	107	421	51
	2016	-	-	25	-	-	-	100	427	60	-	100	452	60
	2017	-	-	26	-	-	-	88	406	52	-	88	432	52
Rockfish	2013	-	2	0	-	-	-	0	40	16	-	2	40	16
	2014	-	1	-	-	-	-	3	34	12	-	4	34	12
	2015	-	0	-	-	-	-	3	36	17	-	3	36	17
	2016	-	2	1	-	-	-	0	39	8	-	2	40	8
	2017	-	-	-	-	-	-	3	45	4	-	3	45	4
Atka Mackerel	2013	-	-	-	-	-	-	0	33	13	-	0	33	13
	2014	-	-	-	-	-	-	-	40	19	-	-	40	19
	2015	-	-	-	-	-	-	-	66	27	-	-	66	27
	2016	-	-	-	-	-	-	-	80	23	-	-	80	23
	2017	-	-	-	-	-	-	7	105	11	-	7	105	11
All Groundfish	2013	-	326	736	-	-	54	113	498	428	-	439	1,289	428
	2014	7	298	831	-	19	53	96	513	428	7	413	1,397	428
	2015	9	293	838	-	23	62	110	513	415	9	426	1,413	415
	2016	20	251	792	17	13	54	101	567	405	37	365	1,413	405
	2017	27	180	818	13	29	44	99	574	375	40	308	1,436	375

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 vessel crew weeks in the groundfish fisheries by month, 2013-2017.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2013	883	1,639	1,964	841	164	1,070	1,402	1,530	863	518	184	33	11,090
2014	790	1,519	1,968	858	293	907	1,290	1,602	972	374	218	106	10,896
2015	972	1,656	1,724	567	132	854	1,240	1,722	1,114	644	142	136	10,904
2016	948	1,901	1,796	1,271	138	692	1,529	1,254	850	521	187	157	11,245
2017	1,340	1,966	1,827	1,314	290	825	1,451	1,144	1,120	346	258	260	12,141

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 24: Bering Sea & Aleutian Islands at-sea processor vessel crew weeks in the groundfish fisheries by month, 2013-2017.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2013	4,694	13,341	16,032	4,875	3,756	8,744	9,974	13,745	8,716	5,773	4,581	2,506	96,737
2014	4,472	13,482	16,511	4,776	4,981	8,841	11,722	14,986	8,523	4,935	4,706	2,384	100,319
2015	7,843	13,467	12,837	5,523	5,003	7,875	10,938	14,849	9,239	6,836	3,458	2,228	100,096
2016	7,231	13,368	12,458	6,661	3,785	6,339	13,126	11,701	9,298	7,213	3,109	2,109	96,398
2017	6,262	12,766	12,818	7,720	3,454	6,229	14,396	11,861	9,409	4,968	3,641	2,055	95,579

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 25: Gulf of Alaska groundfish retained catch by vessel type, gear, and species, 2013-2017 (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	2013	0.1	-	80.6	80.7	*	-	7.6	7.6	0.1	-	93.7	93.8
	2014	0.1	-	124.1	124.2	0	-	13.1	13.2	0.2	-	140.9	141.1
	2015	0.1	-	132.7	132.9	0	-	25.8	25.8	0.2	-	162.8	163.0
	2016	0.1	-	110.9	111.1	0	-	61.0	61.0	0.2	-	175.8	176.0
	2017	0.1	-	133.1	133.2	0	-	49.2	49.2	0.1	-	184.2	184.3
Pacific Cod	2013	8.2	15.6	13.2	36.9	4.2	15.5	6.1	25.8	13.5	31.0	19.3	63.9
	2014	10.5	21.0	15.5	47.0	6.5	17.1	7.7	31.2	18.2	38.1	23.2	79.5
	2015	9.4	23.1	14.2	46.7	5.0	17.1	7.2	29.3	16.1	40.1	21.3	77.6
	2016	5.1	20.6	7.7	33.4	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	26.3	12.9	48.0
Sablefish	2013	4.3	-	0.6	4.9	1.3	-	*	1.3	11.2	-	0.6	11.9
	2014	3.8	-	0.7	4.5	1.1	-	0.1	1.2	9.6	-	0.9	10.5
	2015	3.6	-	0.6	4.3	0.9	-	0	1.0	9.3	-	0.8	10.1
	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
Atka Mackerel	2013	-	-	0.5	0.5	-	-	0.2	0.2	-	-	0.8	0.8
	2014	-	-	0.7	0.7	-	-	0.2	0.2	-	-	0.9	0.9
	2015	*	-	0.5	0.5	-	-	0.3	0.3	*	-	0.9	0.9
	2016	-	-	0.8	0.8	-	-	0.1	0.1	-	-	0.9	0.9
	2017	-	-	0.2	0.2	*	-	0.4	0.4	*	-	0.7	0.7
Arrowtooth	2013	0	-	15.8	15.8	0	-	0.1	0.1	0	-	16.0	16.0
	2014	0	-	31.3	31.3	0	-	0.6	0.6	0	-	31.9	31.9
	2015	0	-	16.7	16.7	*	-	0.3	0.3	0	-	16.9	16.9
	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
Flathead Sole	2013	*	-	1.9	1.9	-	-	0.1	0.1	*	-	2.0	2.0
	2014	-	-	2.1	2.1	-	-	0.1	0.1	-	-	2.2	2.2
	2015	-	-	1.6	1.6	-	-	0.1	0.1	-	-	1.7	1.7
	2016	-	-	2.2	2.2	-	-	0.1	0.1	-	-	2.2	2.2
	2017	-	-	1.9	1.9	-	-	0	0	-	-	1.9	1.9

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Table 25: 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	2013	-	-	3.5	3.5	-	-	0	0	-	-	3.5	3.5
	2014	-	-	3.4	3.4	-	-	0	0	-	-	3.4	3.4
	2015	-	-	1.9	1.9	-	-	0	0	-	-	1.9	1.9
	2016	-	-	1.5	1.5	-	-	0	0	-	-	1.5	1.5
	2017	-	-	1.2	1.2	-	-	0	0	-	-	1.2	1.2
Shallow-water Flatfish	2013	*	-	5.2	5.2	-	-	0	0	*	-	5.2	5.2
	2014	*	-	4.2	4.2	*	-	0	0	*	-	4.2	4.2
	2015	*	-	2.9	2.9	-	-	0	0	*	-	2.9	2.9
	2016	*	-	3.6	3.6	-	-	0	0	*	-	3.6	3.6
	2017	-	-	2.0	2.0	*	-	0	0	*	-	2.0	2.0
Deep-water Flatfish	2013	0	-	0.1	0.1	0	-	0	0	0	-	0.1	0.1
	2014	*	-	0.2	0.2	*	-	0	0	*	-	0.2	0.2
	2015	*	-	0.1	0.1	-	-	*	*	*	-	0.1	0.1
	2016	*	-	0.1	0.1	*	-	*	*	*	-	0.1	0.1
	2017	*	-	0.1	0.1	0	-	0	0	0	-	0.1	0.1
Pacific Ocean Perch	2013	*	-	10.4	10.4	*	-	0.2	0.2	*	-	10.7	10.7
	2014	*	-	12.1	12.1	*	-	2.0	2.0	*	-	14.2	14.2
	2015	*	-	14.1	14.1	-	-	1.9	1.9	*	-	16.0	16.0
	2016	-	-	16.1	16.1	*	-	2.4	2.4	*	-	18.5	18.5
	2017	0	-	14.9	14.9	*	-	2.6	2.6	0	-	17.5	17.5
Northern Rockfish	2013	*	-	2.5	2.5	*	-	2.2	2.2	*	-	4.7	4.7
	2014	0	-	3.3	3.3	*	-	0.8	0.8	0	-	4.1	4.1
	2015	*	-	2.8	2.8	*	-	0.9	0.9	*	-	3.8	3.8
	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

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Table 25: 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	2013	0	-	2.8	2.8	-	-	0.2	0.2	0	-	3.0	3.0
	2014	0	-	2.7	2.8	*	-	0.1	0.1	0	-	2.9	2.9
	2015	0	-	2.4	2.5	*	-	0.2	0.2	0	-	2.6	2.6
	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
Other Rockfish	2013	0.4	-	0.8	1.2	0.1	-	0	0.1	1.2	-	0.9	2.1
	2014	0.3	-	1.5	1.8	0.1	-	0.2	0.3	1.0	-	1.8	2.8
	2015	0.4	-	1.1	1.5	0.1	-	0.1	0.2	1.1	-	1.3	2.4
	2016	0.3	-	1.6	1.9	0.1	-	0.2	0.3	1.0	-	1.9	2.9
	2017	0.3	-	1.3	1.6	0.1	-	0.1	0.2	1.0	-	1.6	2.5
Other Groundfish	2013	0.5	-	2.0	2.6	0	-	0	0.2	0.7	-	2.0	2.9
	2014	0.5	-	0.9	1.8	0.1	-	0	0.2	0.6	-	1.0	2.1
	2015	0.6	-	0.9	1.8	0.1	-	*	0.1	0.8	-	1.0	2.1
	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

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 26: Gulf of Alaska groundfish retained catch by species, gear, and target fishery, 2016-2017, (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	2016	Pollock, Bottom	*	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	*	2.9	0	*	-	-	*	-	0.2	-	0	3.2
			Pacific Cod	0.1	*	5.1	*	-	-	-	*	0	-	0.1	5.4
			Rockfish	0	-	0	-	-	-	-	-	0	-	-	0
			All Targets	0.1	3.2	5.1	*	-	-	*	*	0.4	-	0.2	9.0
		2017	Sablefish	-	2.8	0	0	-	-	*	-	0.2	-	0	3.1
			Pacific Cod	0.1	0	3.8	-	-	-	-	-	0	-	0.1	3.9
			Rockfish	*	*	0	-	-	-	-	-	0	-	-	0
			All Targets	0.1	3.0	3.8	0	-	-	*	-	0.3	-	0.1	7.4
	Western Gulf	2016	Sablefish	*	0.9	0	*	-	-	*	-	0.1	-	*	1.0
			Pacific Cod	0	*	4.2	*	-	-	-	-	0	-	0.1	4.3
			All Targets	0	0.9	4.2	*	-	-	*	-	0.1	-	0.1	5.4
		2017	Sablefish	*	0.8	*	*	-	-	*	-	0.1	-	-	0.8
			Pacific Cod	0	*	4.4	0	-	-	0	*	0.1	*	0.2	4.7
			All Targets	0	0.8	4.4	0	-	-	0	*	0.1	*	0.2	5.5
	All Gulf	2016	Pollock, Bottom	*	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	*	7.6	0	*	-	-	*	-	0.6	-	0	8.3
			Pacific Cod	0.2	*	10.2	*	-	-	-	*	0.1	-	0.3	10.7
			Rockfish	0	-	0	-	-	-	-	-	0.1	-	-	0.1
			All Targets	0.2	8.2	10.3	0	-	-	*	*	1.0	-	0.3	20.0
		2017	Sablefish	*	7.7	0	0	-	-	*	-	0.6	-	0	8.3
			Pacific Cod	0.1	0	8.6	0	-	-	0	*	0.1	*	0.3	9.1
			Rockfish	*	0	0	-	-	-	-	-	0.1	-	-	0.1
			All Targets	0.1	8.2	8.7	0	-	-	0	*	1.0	*	0.3	18.3
Pot	Central Gulf	2016	Pacific Cod	0	-	20.6	-	-	-	-	*	*	*	0.1	20.8
			All Targets	0	-	20.6	-	-	-	-	*	*	*	0.1	20.8
		2017	Sablefish	-	0.4	*	*	-	-	-	-	0	-	-	0.4
			Pacific Cod	0	*	11.3	*	*	-	-	*	0	-	0.1	11.5
			All Targets	0	0.4	11.3	*	*	-	-	*	0	-	0.1	11.9

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Table 26: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Pot	Western Gulf	2016	Pacific Cod	*	-	17.0	*	*	-	-	*	*	*	0.1	17.0
			All Targets	*	-	17.0	*	*	-	-	*	*	*	0.1	17.0
		2017	Pollock, Bottom	-	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	-	0.2	-	-	-	-	-	-	*	-	-	0.2
			Pacific Cod	0	-	15.0	*	*	-	-	0	*	*	0.1	15.1
			All Targets	0	0.2	15.0	*	*	-	-	0	*	*	0.1	15.3
	All Gulf	2016	Sablefish	-	*	-	-	-	-	-	-	-	-	-	*
			Pacific Cod	0	-	37.6	*	*	-	-	*	*	*	0.2	37.8
			All Targets	0	*	37.6	*	*	-	-	*	*	*	0.2	37.8
		2017	Pollock, Bottom	-	-	*	-	-	-	-	-	-	-	-	*
			Sablefish	-	0.9	*	*	-	-	-	-	0	-	-	0.9
			Pacific Cod	0	*	26.3	*	*	-	-	0	0	*	0.2	26.6
			All Targets	0	0.9	26.3	*	*	-	-	0	0	*	0.2	27.5
Trawl	Central Gulf	2016	Pollock, Bottom	8.5	0.1	0.6	0.7	0.2	0.1	0	0.2	0.2	0.2	0.1	10.9
			Pollock, Pelagic	101.5	0	0.1	0.2	0	0	0	0	0.2	0	0.1	102.3
			Sablefish	-	0.1	0	0	*	0	0	*	0	-	*	0.2
			Pacific Cod	0.2	0	5.1	0.8	0.2	0.1	0	0.6	0	0	0.2	7.2
			Arrowtooth	0.5	0.1	1.3	14.1	1.2	0.9	0	0.4	0.9	0	0.5	20.0
			Flathead Sole	0	0	0	0.1	0.2	*	*	0	0	-	0	0.3
			Rex Sole	0	*	0	0	0	0.1	*	0	0	*	0	0.2
			Flatfish, Shallow	0	0	0.2	0.1	0.1	0	0	0.9	0	0	0.1	1.4
			Rockfish	0.1	0.3	0.3	1.1	0	0.1	0	0	22.4	0.4	0	24.8
			Atka Mackerel	-	*	*	*	*	*	*	*	*	*	*	*
			All Targets	110.9	0.6	7.6	17.0	2.0	1.4	0.1	2.2	23.8	0.6	1.1	167.3
		2017	Pollock, Bottom	6.8	0	0.5	1.0	0.2	0.1	0	0.3	0.1	0	0.1	9.0
			Pollock, Pelagic	124.7	0	0	0.1	0	0	*	0	0.4	*	0	125.2
			Sablefish	*	0.1	*	*	*	*	0	*	0	-	*	0.1
			Pacific Cod	0.4	0	3.3	0.2	0.1	0	*	0.6	0.1	0	0.1	4.8
			Arrowtooth	0.7	0.2	1.2	21.9	1.4	1.0	0.1	0.4	1.2	0.1	0.4	28.5
			Flathead Sole	-	-	-	-	*	-	-	-	-	-	-	*
			Rex Sole	*	*	*	*	*	*	*	*	*	*	*	*
			Flatfish, Shallow	0	0	0.1	0.1	0	0	*	0.3	0	*	0	0.6
			Rockfish	0.5	0.3	0.2	1.3	0.1	0.1	0	0	18.2	0.1	0.1	20.8
			All Targets	133.1	0.7	5.3	24.6	1.8	1.2	0.1	1.5	19.9	0.2	0.8	189.1

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Table 26: Continued

			Target	Pollock	Sablefish	Pacific Cod	Arrowtooth	Flathead Sole	Rex Sole	Flat Deep	Flat Shallow	Rockfish	Atka Mackerel	Other	All Species
Trawl	Western Gulf	2016	Pollock, Bottom	0.8	-	0	*	*	*	-	*	0	-	0	0.9
			Pollock, Pelagic	59.8	0	0.1	0.1	0	0	-	0	0	0	0	60.2
			Pacific Cod	*	*	7.2	0	0	*	-	*	*	*	0	7.2
			Arrowtooth	*	*	*	*	*	*	*	*	*	*	*	*
			Flathead Sole	*	*	*	*	*	*	-	*	*	-	-	*
			Rockfish	0.3	0	0	0	0	0	*	0	2.7	0.1	*	3.3
			All Targets	61.0	0	7.4	0.2	0.1	0	*	0	2.8	0.1	0	71.5
		2017	Pollock, Bottom	0.3	*	0	*	*	*	-	-	*	*	*	0.3
			Pollock, Pelagic	48.6	0	0	0.1	0	0	*	0	0	0	0	48.7
			Pacific Cod	0	*	7.5	0	0	*	-	*	*	*	0	7.5
			Arrowtooth	*	*	*	*	*	*	-	*	*	-	*	*
			Flathead Sole	*	-	*	*	*	*	-	-	*	-	*	*
			Rex Sole	*	*	*	*	*	*	-	-	*	-	*	*
			Rockfish	0.3	0.1	0.1	0	0	0	0	0	2.9	0.4	0	3.9
			Atka Mackerel	*	*	*	*	*	*	-	*	*	*	*	*
			All Targets	49.2	0.1	7.6	0.1	0	0	0	0	3.0	0.4	0	60.4
	All Gulf	2016	Pollock, Bottom	9.4	0.1	0.6	0.7	0.2	0.1	0	0.2	0.2	0.2	0.1	11.8
			Pollock, Pelagic	165.3	0	0.2	0.3	0.1	0	0	0	0.3	0	0.2	166.4
			Sablefish	-	0.1	0	0	*	0	0	*	0	-	*	0.2
			Pacific Cod	0.2	0	12.3	0.8	0.2	0.1	0	0.6	0	0	0.2	14.4
			Arrowtooth	0.5	0.1	1.3	14.1	1.2	0.9	0	0.4	0.9	0	0.5	20.0
			Flathead Sole	0	0	0	0.1	0.2	*	*	0	0	-	0	0.3
			Rex Sole	0	*	0	0	0	0.1	*	0	0	*	0	0.2
			Flatfish, Shallow	0	0	0.2	0.1	0.1	0	0	0.9	0	0	0.1	1.4
			Rockfish	0.4	0.3	0.3	1.1	0	0.1	0	0	25.2	0.5	0	28.1
			Atka Mackerel	-	*	*	*	*	*	*	*	*	*	*	*
			All Targets	175.8	0.7	14.9	17.2	2.0	1.4	0.1	2.2	26.6	0.7	1.1	242.8
		2017	Pollock, Bottom	7.1	0	0.6	1.0	0.2	0.1	0	0.3	0.1	0	0.1	9.3
			Pollock, Pelagic	175.2	0	0.1	0.1	0	0	*	0	0.4	0	0	175.9
			Sablefish	*	0.1	*	*	*	*	0	*	0	-	*	0.1
			Pacific Cod	0.4	0	10.8	0.2	0.1	0	*	0.6	0.1	0	0.1	12.3
			Arrowtooth	0.7	0.2	1.2	21.9	1.4	1.0	0.1	0.4	1.2	0.1	0.4	28.5
			Flathead Sole	*	-	*	*	*	*	-	-	*	-	*	*
			Rex Sole	*	*	*	*	*	*	*	*	*	*	*	*
			Flatfish, Shallow	0	0	0.1	0.1	0	0	*	0.3	0	*	0	0.6
			Rockfish	0.8	0.4	0.2	1.3	0.1	0.1	0	0	21.1	0.5	0.1	24.7
			Atka Mackerel	*	*	*	*	*	*	-	*	*	*	*	*
			All Targets	184.2	0.8	12.9	24.7	1.8	1.2	0.1	1.5	22.9	0.7	0.8	251.4

Table 27: Gulf of Alaska ex-vessel prices in the groundfish fisheries by gear, and species, 2013-2017; calculations based on COAR ($/lb, round weight).

	Year	Fixed	Trawl	All Gear
Pollock	2013	0.156	0.176	0.176
	2014	0.115	0.122	0.122
	2015	0.088	0.119	0.119
	2016	0.053	0.083	0.083
	2017	0.091	0.087	0.087
Pacific Cod	2013	0.273	0.244	0.264
	2014	0.307	0.271	0.297
	2015	0.306	0.260	0.293
	2016	0.302	0.270	0.294
	2017	0.336	0.329	0.334
Sablefish	2013	3.184	2.434	3.135
	2014	3.878	2.972	3.802
	2015	4.064	3.008	3.974
	2016	4.743	1.906	4.471
	2017	5.314	3.926	5.179
Atka Mackerel	2013	*	0.367	0.367
	2014	0.016	0.377	0.377
	2015	0.010	0.302	0.302
	2016	0.016	0.294	0.294
	2017	0.054	0.387	0.387
Arrowtooth	2013	0.019	0.084	0.084
	2014	0.241	0.115	0.115
	2015	0.337	0.113	0.113
	2016	0.105	0.085	0.085
	2017	0.096	0.108	0.108
Flathead Sole	2013	0.019	0.150	0.150
	2014	*	0.157	0.157
	2015	*	0.147	0.147
	2016	*	0.144	0.144
	2017	*	0.135	0.135
Rex Sole	2013	*	0.213	0.213
	2014	*	0.250	0.250
	2015	*	0.219	0.219
	2016	-	0.273	0.273
	2017	-	0.199	0.199
Shallow-water Flatfish	2013	0.045	0.207	0.207
	2014	0.278	0.209	0.209
	2015	0.133	0.198	0.198
	2016	0.105	0.142	0.142
	2017	0.096	0.158	0.158
Deep-water Flatfish	2013	0.019	0.104	0.103
	2014	0.241	0.113	0.113
	2015	0.336	0.102	0.102
	2016	0.105	0.098	0.098
	2017	0.096	0.110	0.110

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Table 27: Continued

	Year	Fixed	Trawl	All Gear
Pacific Ocean Perch	2013	0.360	0.208	0.208
	2014	0.637	0.182	0.182
	2015	0.193	0.187	0.187
	2016	*	0.186	0.186
	2017	0.441	0.178	0.178
Northern Rockfish	2013	0.363	0.202	0.202
	2014	0.258	0.176	0.176
	2015	*	0.177	0.177
	2016	0.627	0.171	0.171
	2017	0.748	0.172	0.172
Dusky Rockfish	2013	0.360	0.201	0.202
	2014	0.443	0.178	0.180
	2015	0.368	0.179	0.182
	2016	0.422	0.176	0.180
	2017	0.549	0.171	0.177
Other Rockfish	2013	0.879	0.240	0.589
	2014	0.818	0.229	0.438
	2015	0.775	0.216	0.466
	2016	0.788	0.200	0.398
	2017	0.850	0.195	0.443

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; andADF&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 28: Gulf of Alaska ex-vessel value of the groundfish catch by vessel category, gear, and species, 2013-2017; 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	2013	-	-	31.27	31.31	-	-	2.96	2.96	-	-	36.38	36.42
	2014	-	-	33.35	33.39	-	-	3.46	3.47	-	-	37.80	37.85
	2015	-	-	34.83	34.86	-	-	7.49	7.50	-	-	43.55	43.60
	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
Pacific Cod	2013	4.91	9.31	7.12	21.33	2.64	9.27	3.30	15.21	8.25	18.57	10.42	37.24
	2014	7.11	14.24	9.29	30.65	4.41	11.57	4.60	20.58	12.37	25.81	13.89	52.08
	2015	6.36	15.62	8.13	30.11	3.32	11.57	4.18	19.07	10.79	27.18	12.32	50.29
	2016	3.41	13.78	4.58	21.77	2.70	11.35	4.41	18.47	6.86	25.13	8.99	40.98
	2017	2.82	8.43	3.87	15.13	3.15	11.19	5.50	19.84	6.33	19.62	9.37	35.32
Sablefish	2013	30.18	-	3.48	33.65	9.12	-	0.07	9.19	78.63	-	4.29	83.19
	2014	32.29	-	4.55	36.84	9.37	-	0.39	9.76	82.36	-	5.82	88.18
	2015	32.41	-	4.29	36.70	8.25	-	0.23	8.47	83.27	-	5.78	89.04
	2016	33.21	-	3.55	36.76	9.48	-	0.05	9.53	85.48	-	3.66	89.13
	2017	35.51	5.18	6.28	46.97	9.29	2.63	0.56	12.47	95.74	10.98	8.49	115.20
Atka Mackerel	2013	-	-	0.49	0.49	-	-	0.20	0.20	-	-	0.68	0.68
	2014	-	-	0.57	0.57	-	-	0.24	0.24	-	-	0.80	0.80
	2015	-	-	0.37	0.37	-	-	0.23	0.23	-	-	0.60	0.60
	2016	-	-	0.53	0.53	-	-	0.09	0.09	-	-	0.62	0.62
	2017	-	-	0.18	0.18	-	-	0.41	0.41	-	-	0.59	0.59
Arrowtooth	2013	0	-	2.94	2.94	0	-	0.04	0.04	0	-	2.98	2.98
	2014	0	-	7.95	7.95	0.01	-	0.39	0.40	0.01	-	8.35	8.36
	2015	0.01	-	4.16	4.17	0.01	-	0.08	0.08	0.02	-	4.24	4.26
	2016	0	-	3.27	3.27	0	-	0.13	0.13	0	-	3.40	3.40
	2017	0	-	5.91	5.91	0.01	-	0.03	0.03	0.01	-	5.94	5.95
Flathead Sole	2013	*	-	0.71	0.71	-	-	0.11	0.11	*	-	0.82	0.82
	2014	-	-	0.79	0.79	-	-	0.04	0.04	-	-	0.83	0.83
	2015	-	-	0.56	0.56	-	-	0.04	0.04	-	-	0.60	0.60
	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

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Table 28: 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	2013	-	-	1.68	1.68	-	-	0.03	0.03	-	-	1.71	1.71
	2014	-	-	1.91	1.91	-	-	0.04	0.04	-	-	1.95	1.95
	2015	-	-	0.91	0.91	-	-	0.02	0.02	-	-	0.93	0.93
	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
Shallow-water Flatfish	2013	0	-	2.40	2.40	-	-	0.01	0.01	0	-	2.41	2.41
	2014	*	-	1.97	1.97	*	-	0.01	0.01	*	-	1.98	1.98
	2015	0	-	1.27	1.28	-	-	0.02	0.02	0	-	1.30	1.30
	2016	*	-	1.12	1.12	-	-	0	0	*	-	1.12	1.12
	2017	-	-	0.71	0.71	*	-	0	0	*	-	0.72	0.72
Deep-water Flatfish	2013	0	-	0.03	0.03	0	-	0	0	0	-	0.03	0.03
	2014	*	-	0.04	0.04	*	-	0.02	0.02	*	-	0.06	0.06
	2015	*	-	0.02	0.02	-	-	0.01	0.01	*	-	0.02	0.02
	2016	*	-	0.02	0.02	*	-	0	0	*	-	0.02	0.02
	2017	*	-	0.02	0.02	0	-	0	0	0	-	0.02	0.02
Pacific Ocean Perch	2013	*	-	4.79	4.79	*	-	0.09	0.09	*	-	5.58	5.58
	2014	*	-	4.86	4.86	*	-	0.83	0.83	*	-	6.42	6.42
	2015	*	-	5.82	5.82	-	-	0.80	0.80	*	-	7.43	7.43
	2016	-	-	6.61	6.61	*	-	1.01	1.01	*	-	8.77	8.77
	2017	0	-	5.88	5.88	*	-	1.03	1.03	0	-	7.99	7.99
Northern Rockfish	2013	0	-	1.10	1.10	*	-	0.99	0.99	0	-	2.09	2.09
	2014	0	-	1.27	1.27	*	-	0.33	0.33	0	-	1.60	1.60
	2015	*	-	1.08	1.08	*	-	0.39	0.39	*	-	1.47	1.47
	2016	*	-	1.19	1.19	0	-	0.04	0.04	0	-	1.22	1.23
	2017	0	-	0.57	0.57	0	-	0.08	0.08	0	-	0.64	0.64

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Table 28: 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
Dusky Rockfish	2013	0.01	-	1.22	1.23	-	-	0.09	0.09	0.02	-	1.31	1.33
	2014	0.02	-	1.07	1.09	*	-	0.05	0.05	0.02	-	1.12	1.14
	2015	0.02	-	0.96	0.98	0	-	0.07	0.07	0.02	-	1.03	1.05
	2016	0.04	-	1.18	1.23	0	-	0.03	0.03	0.05	-	1.21	1.27
	2017	0.02	-	0.86	0.88	0.02	-	0.03	0.05	0.04	-	0.89	0.94
Other Rockfish	2013	0.72	-	0.45	1.17	0.17	-	0.02	0.19	2.29	-	0.52	2.81
	2014	0.60	-	0.79	1.39	0.18	-	0.09	0.27	1.81	-	0.93	2.74
	2015	0.65	-	0.53	1.17	0.16	-	0.06	0.22	1.82	-	0.63	2.44
	2016	0.57	-	0.71	1.28	0.18	-	0.06	0.24	1.72	-	0.86	2.58
	2017	0.56	-	0.55	1.12	0.20	-	0.05	0.24	1.80	-	0.68	2.48
Other Groundfish	2013	0.51	-	1.86	2.46	0.05	-	0.01	0.17	0.67	-	1.91	2.79
	2014	0.49	-	0.89	1.81	0.06	-	0.03	0.19	0.64	-	0.99	2.16
	2015	0.54	-	0.93	1.80	0.12	-	0.01	0.15	0.79	-	1.02	2.16
	2016	0.17	-	1.05	1.36	0.08	-	0.01	0.16	0.30	-	1.08	1.58
	2017	0.10	-	0.81	1.04	0.14	-	0.02	0.22	0.27	-	0.83	1.29

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; andADF&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 vessel and permit counts, ex-vessel value, value per vessel, and percent value of GOA FMP groundfish and all GOA fisheries by processor group, 2013-2017; 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	2013	40	14	198.15	7.93	4.54	0.90
	2014	35	13	302.18	10.58	5.26	1.56
	2015	34	14	401.21	13.64	6.83	2.13
	2016	40	16	416.61	16.66	9.45	3.09
	2017	42	15	407.72	17.12	8.52	2.24
Central Gulf Trawl	2013	66	22	911.90	60.19	34.46	6.86
	2014	69	20	1,013.18	69.91	34.74	10.32
	2015	62	18	1,035.36	64.19	32.15	10.01
	2016	63	17	706.55	44.51	25.23	8.26
	2017	58	13	902.62	52.35	26.06	6.85
CV Hook and Line	2013	116	35	53.09	6.16	3.53	0.70
	2014	101	37	72.38	7.31	3.63	1.08
	2015	108	33	66.74	7.21	3.61	1.12
	2016	101	31	31.86	3.22	1.82	0.60
	2017	86	35	34.78	2.99	1.49	0.39
CP Hook and Line	2013	8	9	429.05	3.43	1.97	0.39
	2014	10	10	426.78	4.27	2.12	0.63
	2015	11	11	429.37	4.72	2.37	0.74
	2016	11	11	292.28	3.22	1.82	0.60
	2017	9	9	479.74	4.32	2.15	0.57
Sablefish IFQ	2013	287	42	255.57	73.35	42.00	8.36
	2014	277	37	278.27	77.08	38.31	11.37
	2015	267	37	287.23	76.69	38.41	11.96
	2016	269	35	297.78	80.10	45.41	14.86
	2017	264	40	382.36	100.94	50.25	13.22
Pot	2013	129	26	145.59	18.78	10.75	2.14
	2014	102	24	261.05	26.63	13.23	3.93
	2015	116	25	237.44	27.54	13.79	4.29
	2016	119	26	215.45	25.64	14.54	4.76
	2017	110	26	180.20	19.82	9.87	2.60
Jig	2013	219	37	5.12	1.12	0.64	0.13
	2014	259	38	10.32	2.67	1.33	0.39
	2015	242	41	9.21	2.23	1.12	0.35
	2016	208	41	7.11	1.48	0.84	0.27
	2017	108	32	1.40	0.15	0.08	0.02

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. 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 30: Gulf of Alaska production of groundfish products by species, 2013-2017, (1,000 metric tons product weight).

	Product	2013	2014	2015	2016	2017
Pollock	Whole Fish	0.67	0.27	2.30	14.49	9.34
	Head And Gut	21.28	29.68	30.34	27.81	37.39
	Roe	2.21	3.51	3.12	0.54	1.09
	Deep-Skin Fillets	*	*	-	*	0.63
	Other Fillets	5.79	8.19	9.10	14.32	15.09
	Surimi	8.60	12.33	14.65	13.41	10.61
	Minced Fish	0.20	0.19	*	1.25	1.44
	Fishmeal	*	*	*	1.39	*
	Other Products	0.81	0.49	0.27	1.92	2.46
	All Products	39.56	54.66	59.78	75.14	78.06
Pacific Cod	Whole Fish	1.24	0.45	0.69	0.25	0.14
	Head And Gut	6.63	13.95	19.05	8.43	6.11
	Salted/Split	*	-	-	-	-
	Roe	1.59	1.79	1.34	0.78	1.04
	Fillets	9.70	9.85	6.39	7.87	6.52
	Other Products	4.63	5.03	4.52	4.33	3.58
	All Products	23.80	31.07	32.00	21.65	17.39
Sablefish	Head And Gut	6.24	5.60	5.35	5.03	5.28
	Other Products	0.46	0.39	0.24	0.30	0.36
	All Products	6.70	5.99	5.59	5.34	5.64
Atka Mackerel	Whole Fish	-	*	*	*	*
	Head And Gut	0.53	0.51	0.47	0.45	0.37
	Other Products	*	-	*	*	*
	All Products	0.53	0.51	0.47	0.45	0.37
Arrowtooth	Whole Fish	0.05	0.16	0.17	1.09	3.22
	Head And Gut	6.44	15.58	7.59	7.05	11.28
	Kirimi	*	*	*	-	-
	Fillets	0.03	*	*	*	*
	Other Products	0.04	*	0.08	0.14	*
	All Products	6.56	15.75	7.84	8.28	14.50
Flathead Sole	Whole Fish	0.51	0.81	0.34	0.74	0.45
	Head And Gut	0.82	0.45	0.40	0.38	0.46
	Kirimi	*	0.13	0.15	*	*
	Fillets	0.01	0.04	*	*	*
	Other Products	*	*	-	*	*
	All Products	1.33	1.44	0.89	1.11	0.91

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Table 30: Continued

	Product	2013	2014	2015	2016	2017
Rex Sole	Whole Fish	3.30	3.18	1.73	1.43	1.27
	Head And Gut	0.09	0.09	0.08	0.07	0.01
	Kirimi	*	-	-	-	-
	Fillets	0.01	*	*	*	0.00
	Other Products	*	*	-	*	*
	All Products	3.39	3.27	1.81	1.51	1.28
Shallow-water Flatfish	Whole Fish	1.32	1.45	0.37	0.93	0.89
	Head And Gut	1.33	0.87	0.60	0.66	0.21
	Kirimi	*	*	0.51	*	*
	Fillets	0.16	0.10	0.04	0.02	*
	Other Products	*	*	-	*	*
	All Products	2.81	2.42	1.53	1.61	1.11
Deep-water Flatfish	Whole Fish	0.07	0.06	*	0.00	*
	Head And Gut	0.02	0.06	0.00	0.05	*
	Fillets	0.01	0.02	*	*	*
	Other Products	-	-	-	-	*
	All Products	0.09	0.14	0.00	0.05	*
Pacific Ocean Perch	Whole Fish	2.47	2.75	3.13	5.13	2.71
	Head And Gut	4.73	6.31	6.96	8.33	8.19
	Other Products	0.08	0.09	0.05	0.03	0.16
	All Products	7.27	9.15	10.14	13.49	11.06
Northern Rockfish	Whole Fish	0.08	0.32	*	0.02	0.00
	Head And Gut	2.19	1.84	1.75	1.42	0.83
	Other Products	0.07	0.03	0.02	0.08	0.01
	All Products	2.34	2.18	1.77	1.51	0.84
Dusky Rockfish	Whole Fish	0.33	0.26	0.27	0.22	0.28
	Head And Gut	1.15	1.15	1.02	1.36	0.97
	Other Products	0.12	0.15	0.12	0.07	0.07
	All Products	1.60	1.56	1.41	1.65	1.31

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Table 30: Continued

	Product	2013	2014	2015	2016	2017
Other Rockfish	Whole Fish	0.43	0.48	0.42	0.61	0.54
	Head And Gut	0.56	0.77	0.67	0.71	0.68
	Other Products	0.09	0.10	0.14	0.13	0.13
	All Products	1.08	1.34	1.23	1.45	1.34
Other Groundfish	Whole Fish	0.16	0.07	0.10	0.04	0.01
	Head And Gut	0.05	0.28	0.17	0.06	0.07
	Kirimi	-	*	*	-	*
	Roe	*	-	-	-	-
	Fillets	-	*	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	1.04	0.57	0.53	0.49	0.35
	All Products	1.24	0.93	0.80	0.59	0.43
All Species	Whole Fish	10.61	10.26	9.54	24.94	18.84
	Head And Gut	52.06	77.16	74.46	61.82	71.85
	Salted/Split	*	-	-	-	-
	Kirimi	*	0.13	0.66	*	*
	Roe	3.80	5.30	4.46	1.32	2.13
	Fillets	9.92	10.01	6.43	7.89	6.53
	Deep-Skin Fillets	*	*	-	*	0.63
	Other Fillets	5.79	8.19	9.10	14.32	15.09
	Surimi	8.60	12.33	14.65	13.41	10.61
	Minced Fish	0.20	0.19	*	1.25	1.44
	Fishmeal	*	*	*	1.39	*
	Other Products	7.34	6.85	5.97	7.49	7.11
	All Products	98.33	130.41	125.26	133.84	134.23

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 31: Gulf of Alaska gross value of groundfish products by species, 2013-2017, ($ million).

	Product	2013	2014	2015	2016	2017
Pollock	Whole Fish	0.9	0.4	2.2	7.0	5.7
	Head And Gut	36.5	40.7	40.6	23.3	30.1
	Roe	13.6	15.8	8.4	1.7	4.3
	Deep-Skin Fillets	*	*	-	*	2.1
	Other Fillets	20.5	24.4	26.1	39.8	32.9
	Surimi	20.3	24.0	27.6	28.7	17.7
	Minced Fish	0.3	0.2	*	1.5	1.5
	Fishmeal	*	*	*	2.2	*
	Other Products	1.0	0.3	0.2	2.2	2.5
	All Products	93.1	105.8	105.1	106.4	96.7
Pacific Cod	Whole Fish	1.3	0.7	0.8	0.5	0.2
	Head And Gut	14.4	38.4	52.2	22.7	20.3
	Salted/Split	*	-	-	-	-
	Roe	3.7	4.2	2.5	1.3	1.6
	Fillets	67.2	67.4	37.2	57.3	45.3
	Other Products	7.4	7.4	9.6	9.9	8.0
	All Products	93.9	118.0	102.5	91.8	75.5
Sablefish	Head And Gut	78.6	85.8	81.4	91.6	108.2
	Other Products	2.6	2.8	1.9	2.4	3.1
	All Products	81.2	88.6	83.2	94.1	111.3
Atka Mackerel	Whole Fish	-	*	*	*	*
	Head And Gut	1.8	1.7	1.3	1.2	1.2
	Other Products	*	-	*	*	*
	All Products	1.8	1.7	1.3	1.2	1.2
Arrowtooth	Whole Fish	0.1	0.2	0.1	1.1	4.9
	Head And Gut	5.8	22.0	9.9	12.1	26.7
	Kirimi	*	*	*	-	-
	Fillets	0.1	*	*	*	*
	Other Products	0.2	*	0.1	0.1	*
	All Products	6.1	22.2	10.2	13.3	31.5
Flathead Sole	Whole Fish	1.2	1.0	0.5	0.8	0.6
	Head And Gut	1.4	0.7	0.6	0.7	0.7
	Kirimi	*	0.4	0.4	*	*
	Fillets	0.0	0.1	*	*	*
	Other Products	*	*	-	*	*
	All Products	2.7	2.1	1.5	1.5	1.3

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Table 31: Continued

	Product	2013	2014	2015	2016	2017
Rex Sole	Whole Fish	7.9	6.7	3.2	3.2	2.8
	Head And Gut	0.3	0.3	0.2	0.2	0.0
	Kirimi	*	-	-	-	-
	Fillets	0.0	*	*	*	0.0
	Other Products	*	*	-	*	*
	All Products	8.2	7.0	3.4	3.4	2.8
Shallow-water Flatfish	Whole Fish	3.1	1.9	0.9	1.1	1.2
	Head And Gut	2.0	1.3	1.0	1.5	0.3
	Kirimi	*	*	1.2	*	*
	Fillets	0.6	0.3	0.2	0.1	*
	Other Products	*	*	-	*	*
	All Products	5.7	3.5	3.3	2.7	1.5
Deep-water Flatfish	Whole Fish	0.1	0.0	*	0.0	*
	Head And Gut	0.0	0.1	0.0	0.1	*
	Fillets	0.0	0.1	*	*	*
	Other Products	-	-	-	-	*
	All Products	0.1	0.2	0.0	0.1	*
Pacific Ocean Perch	Whole Fish	3.4	3.7	5.0	7.4	3.3
	Head And Gut	11.1	15.7	16.3	17.0	24.1
	Other Products	0.5	0.4	0.3	0.2	0.8
	All Products	15.0	19.7	21.5	24.6	28.1
Northern Rockfish	Whole Fish	0.1	0.4	*	0.0	0.0
	Head And Gut	3.9	4.5	3.7	4.1	1.8
	Other Products	0.4	0.1	0.1	0.5	0.1
	All Products	4.5	5.0	3.8	4.6	1.9
Dusky Rockfish	Whole Fish	0.9	0.4	0.6	0.4	0.4
	Head And Gut	1.7	2.8	2.6	3.9	2.1
	Other Products	0.6	0.5	0.5	0.5	0.5
	All Products	3.3	3.7	3.7	4.8	3.0

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Table 31: Continued

	Product	2013	2014	2015	2016	2017
Other Rockfish	Whole Fish	1.9	2.0	1.6	2.3	2.4
	Head And Gut	2.8	3.0	2.8	2.9	3.0
	Other Products	0.7	0.6	0.7	0.8	0.8
	All Products	5.4	5.7	5.2	6.0	6.2
Other Groundfish	Whole Fish	0.3	0.2	0.2	0.1	0.0
	Head And Gut	0.1	0.5	0.4	0.2	0.2
	Kirimi	-	*	*	-	*
	Roe	*	-	-	-	-
	Fillets	-	*	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	5.5	2.7	3.0	2.9	1.7
	All Products	6.0	3.4	3.6	3.2	1.9
All Species	Whole Fish	21.2	17.5	15.3	24.0	21.4
	Head And Gut	160.4	217.4	213.0	181.6	218.9
	Salted/Split	*	-	-	-	-
	Kirimi	*	0.4	1.5	*	*
	Roe	17.3	20.0	10.9	3.0	5.9
	Fillets	68.0	67.9	37.4	57.4	45.3
	Deep-Skin Fillets	*	*	-	*	2.1
	Other Fillets	20.5	24.4	26.1	39.8	32.9
	Surimi	20.3	24.0	27.6	28.7	17.7
	Minced Fish	0.3	0.2	*	1.5	1.5
	Fishmeal	*	*	*	2.2	*
	Other Products	18.8	14.9	16.5	19.5	17.4
	All Products	326.8	386.7	348.3	357.8	363.0

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 32: Gulf of Alaska price per pound of groundfish products by species, 2013-2017, ($/lb).

	Product	2013	2014	2015	2016	2017
Pollock	Whole Fish	0.60	0.67	0.43	0.22	0.28
	Head And Gut	0.78	0.62	0.61	0.38	0.36
	Roe	2.80	2.03	1.22	1.39	1.80
	Deep-Skin Fillets	*	*	-	*	1.49
	Other Fillets	1.61	1.35	1.30	1.26	0.99
	Surimi	1.07	0.89	0.85	0.97	0.76
	Minced Fish	0.61	0.56	*	0.53	0.46
	Fishmeal	*	*	*	0.71	*
	Other Products	0.53	0.31	0.39	0.51	0.45
	All Products	1.07	0.88	0.80	0.64	0.56
Pacific Cod	Whole Fish	0.47	0.66	0.56	0.95	0.81
	Head And Gut	0.98	1.25	1.24	1.22	1.51
	Salted/Split	*	-	-	-	-
	Roe	1.05	1.06	0.86	0.78	0.68
	Fillets	3.14	3.10	2.64	3.30	3.15
	Other Products	0.72	0.67	0.97	1.04	1.02
	All Products	1.79	1.72	1.45	1.92	1.97
Sablefish	Head And Gut	5.71	6.95	6.90	8.26	9.30
	Other Products	2.50	3.27	3.50	3.64	3.92
	All Products	5.49	6.71	6.75	7.99	8.95
Atka Mackerel	Whole Fish	-	*	*	*	*
	Head And Gut	1.50	1.54	1.24	1.21	1.47
	Other Products	*	-	*	*	*
	All Products	1.50	1.54	1.24	1.21	1.47
Arrowtooth	Whole Fish	0.63	0.53	0.27	0.46	0.69
	Head And Gut	0.41	0.64	0.59	0.78	1.07
	Fillets	1.74	*	*	*	*
	Other Products	1.70	*	0.63	0.45	*
	All Products	0.42	0.64	0.59	0.73	0.99
Flathead Sole	Whole Fish	1.10	0.54	0.71	0.49	0.59
	Head And Gut	0.77	0.69	0.63	0.86	0.74
	Fillets	1.56	1.36	*	*	*
	Other Products	*	*	-	*	*
	All Products	0.90	0.67	0.74	0.62	0.67
Rex Sole	Whole Fish	1.09	0.96	0.84	1.01	0.99
	Head And Gut	1.39	1.67	1.30	1.33	1.45
	Fillets	1.31	*	*	*	0.34
	Other Products	*	*	-	*	*
	All Products	1.10	0.98	0.86	1.02	0.99
Shallow-water Flatfish	Whole Fish	1.08	0.58	1.06	0.55	0.61
	Head And Gut	0.67	0.69	0.75	1.03	0.68
	Fillets	1.62	1.39	2.37	2.08	*
	Other Products	*	*	-	*	*
	All Products	0.91	0.65	0.97	0.77	0.63

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Table 32: Continued

	Product	2013	2014	2015	2016	2017
Deep-water Flatfish	Whole Fish	0.45	0.36	*	0.50	*
	Head And Gut	0.78	0.70	1.09	0.73	*
	Fillets	1.76	2.04	*	*	*
	Other Products	-	-	-	-	*
	All Products	0.61	0.73	1.09	0.72	*
Pacific Ocean Perch	Whole Fish	0.63	0.60	0.72	0.65	0.55
	Head And Gut	1.07	1.13	1.06	0.93	1.33
	Other Products	2.92	1.96	2.36	2.70	2.18
	All Products	0.94	0.98	0.96	0.83	1.15
Northern Rockfish	Whole Fish	0.71	0.59	*	0.72	0.76
	Head And Gut	0.81	1.10	0.97	1.32	1.01
	Other Products	2.60	2.03	1.73	2.82	2.11
	All Products	0.86	1.04	0.98	1.38	1.03
Dusky Rockfish	Whole Fish	1.25	0.66	1.07	0.87	0.62
	Head And Gut	0.68	1.09	1.14	1.30	1.00
	Other Products	2.41	1.62	1.97	3.08	2.98
	All Products	0.93	1.07	1.20	1.31	1.02
Other Rockfish	Whole Fish	1.98	1.92	1.74	1.72	1.98
	Head And Gut	2.27	1.77	1.92	1.85	2.01
	Other Products	3.63	3.01	2.46	2.87	2.91
	All Products	2.27	1.91	1.92	1.89	2.08
Other Groundfish	Whole Fish	0.98	1.13	1.08	1.26	2.19
	Head And Gut	0.81	0.75	0.93	1.61	1.41
	Roe	*	-	-	-	-
	Fillets	-	*	*	-	-
	Fishmeal	*	*	*	*	*
	Other Products	2.42	2.15	2.58	2.71	2.18
	All Products	2.18	1.65	2.03	2.50	2.06

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 33: Gulf of Alaska total product value per round metric ton of retained catch by species and year, 2013-2017, ($/mt).

Species	2013	2014	2015	2016	2017
Pollock	1,003	754	636	616	542
Sablefish	6,744	8,390	8,164	10,367	11,034
Pacific Cod	1,468	1,482	1,319	1,452	1,572
Flatfish	866	827	777	865	1,234
Rockfish	1,280	1,315	1,280	1,300	1,452
Atka Mackerel	2,068	1,813	1,474	1,258	1,744
Other	2,044	1,552	1,675	1,917	1,517

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 34: 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, 2013-2017, ($ millions).

	Year	Processors	Wholesale Value ($million)	Wholesale Value Per Processor ($1,000)	Percent Value, GOA FMP Groundfish
Central and Western Gulf Trawl	2013	14	27.74	1,981.73	6.58
	2014	11	49.15	4,468.29	10.24
	2015	9	34.98	3,886.93	7.98
	2016	15	33.46	2,230.55	7.36
	2017	11	50.35	4,577.04	10.96
CP Hook and Line	2013	9	5.33	592.20	1.26
	2014	13	8.25	634.83	1.72
	2015	11	9.53	866.01	2.17
	2016	12	7.47	622.12	1.64
	2017	11	10.22	929.27	2.22
Sablefish IFQ	2013	5	3.21	642.23	0.76
	2014	6	4.85	808.58	1.01
	2015	5	3.31	662.14	0.76
	2016	5	4.48	895.44	0.99
	2017	6	5.38	896.91	1.17
Motherships & Inshore Floating Procs.	2013	4	92.67	23,166.83	21.98
	2014	4	92.56	23,139.14	19.28
	2015	5	89.47	17,893.98	20.42
	2016	5	116.70	23,339.44	25.68
	2017	5	114.39	22,878.90	24.90
Kodiak Shoreside Procs.	2013	10	161.89	16,189.03	38.41
	2014	9	181.49	20,165.82	37.81
	2015	9	167.74	18,637.43	38.29
	2016	8	145.15	18,143.79	31.94
	2017	8	139.67	17,458.44	30.40
Southcentral Gulf Shoreside Procs.	2013	11	34.55	3,140.68	8.20
	2014	12	38.05	3,170.96	7.93
	2015	11	35.88	3,261.90	8.19
	2016	12	38.33	3,194.43	8.43
	2017	10	39.29	3,929.12	8.55
Southeastern Gulf Shoreside Procs.	2013	12	29.04	2,419.83	6.89
	2014	11	30.93	2,812.23	6.44
	2015	11	31.57	2,869.74	7.21
	2016	11	33.46	3,041.43	7.36
	2017	14	40.24	2,874.21	8.76
Western Gulf Shoreside Procs.	2013	3	67.10	22,365.43	15.92
	2014	3	74.72	24,905.56	15.57
	2015	3	65.63	21,876.77	14.98
	2016	3	75.43	25,144.97	16.60
	2017	3	59.88	19,959.23	13.03

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 35: 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, 2013-2017.

	Year	Vessels	Average Length (feet)	Median Length (feet)	Average Capacity (tons)	Median Capacity (tons)
Central and Western Gulf Trawl	2013	84	90	88.0	112	94
	2014	82	88	88.0	112	94
	2015	78	87	87.5	112	98
	2016	84	87	88.0	110	98
	2017	81	90	88.0	122	103
CV Hook and Line	2013	62	45	42.0	29	24
	2014	61	43	42.0	27	24
	2015	64	42	42.0	25	24
	2016	58	44	42.0	28	24
	2017	49	43	42.0	26	24
CP Hook and Line	2013	7	118	128.0	281	134
	2014	9	125	128.0	279	134
	2015	11	130	128.0	285	143
	2016	10	147	136.0	290	132
	2017	9	148	136.0	347	132
Sablefish IFQ	2013	275	57	58.0	46	36
	2014	280	57	57.0	49	36
	2015	261	57	57.0	46	39
	2016	265	57	57.0	48	37
	2017	258	56	57.0	48	36
Pot	2013	128	61	58.0	59	52
	2014	101	61	58.0	58	52
	2015	116	61	58.0	55	48
	2016	118	60	58.0	57	48
	2017	108	61	58.0	56	48
Jig	2013	216	40	41.0	15	14
	2014	247	39	39.0	16	14
	2015	265	40	40.0	16	14
	2016	307	41	41.0	17	16
	2017	189	39	40.0	14	14
No Fleet/ Other	2013	15	42	38.0	15	11
	2014	11	58	51.0	41	23
	2015	16	45	40.0	24	10
	2016	14	47	48.0	23	24
	2017	8	41	38.0	16	13

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 36: Gulf of Alaska number of vessels that caught groundfish by month, vessel type, and gear, 2013-2017.

		Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Catcher Vessels	Hook & Line	2013	61	90	167	248	231	197	109	116	97	117	69	40	506
		2014	58	96	192	234	286	136	103	121	128	97	74	46	538
		2015	78	122	207	259	298	132	94	107	133	109	57	49	521
		2016	76	115	187	260	243	119	84	108	118	103	42	13	479
		2017	52	81	120	164	168	126	81	72	121	102	53	19	369
	Pot	2013	75	73	102	23	-	-	-	-	14	16	13	12	128
		2014	57	40	87	7	2	-	-	3	38	39	22	11	102
		2015	78	77	100	51	-	-	-	-	13	17	19	24	116
		2016	80	86	78	66	-	-	-	-	15	24	29	32	118
		2017	74	86	89	91	16	11	9	5	11	18	15	8	127
	Trawl	2013	39	52	58	19	23	18	9	40	42	48	19	2	70
		2014	41	63	61	51	25	20	12	47	59	52	23	4	71
		2015	40	60	65	57	30	13	6	15	52	54	18	1	68
		2016	49	54	59	42	29	18	4	45	58	61	34	2	70
		2017	37	47	61	42	21	17	5	4	53	60	35	1	70
	All Gear	2013	173	212	317	288	254	215	118	156	153	180	101	54	665
		2014	147	199	327	291	313	156	115	171	219	185	119	61	672
		2015	192	254	360	363	328	145	100	122	198	179	94	74	671
		2016	199	246	312	365	272	137	88	152	191	187	102	47	628
		2017	163	210	254	293	203	152	93	80	184	175	102	28	523
Catcher Processors	Hook & Line	2013	1	2	3	4	3	6	4	2	1	-	2	1	10
		2014	1	6	8	5	3	2	1	1	3	3	3	1	13
		2015	3	5	6	4	6	3	2	1	3	3	2	1	12
		2016	1	2	4	5	4	4	1	2	4	4	2	4	12
		2017	-	3	7	7	3	2	3	1	6	3	1	1	11
	Trawl	2013	-	1	3	3	2	4	13	3	1	2	4	2	14
		2014	-	-	1	5	4	3	7	6	3	7	5	1	11
		2015	-	1	1	4	4	3	9	4	4	1	2	1	10
		2016	-	1	-	2	2	2	12	7	4	2	2	2	14
		2017	-	1	2	2	2	4	10	6	4	4	2	1	11
	All Gear	2013	1	3	6	7	5	10	17	5	2	2	6	3	24
		2014	1	6	9	10	7	5	8	7	6	10	8	2	24
		2015	3	6	7	8	10	6	11	5	7	4	4	2	22
		2016	1	3	4	7	6	6	13	9	8	6	4	6	26
		2017	-	4	9	9	5	6	13	7	10	7	3	2	22

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 catcher vessel (excluding catcher/processors) weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2013-2017.

		Hook & Line		Pot		Trawl		All Gear	
	Year	<60ft	60-125ft	<60ft	60-125ft	<60ft	60-125ft	<60ft	60-125ft
Pollock	2013	-	-	-	-	87	384	87	384
	2014	-	-	-	-	181	550	181	550
	2015	-	-	-	-	237	569	237	569
	2016	-	-	-	-	289	524	289	524
	2017	-	-	-	-	180	527	180	527
Sablefish	2013	1,265	338	-	-	4	21	1,269	359
	2014	1,162	307	-	-	2	7	1,164	314
	2015	1,242	342	-	-	3	17	1,245	359
	2016	1,270	361	-	-	1	10	1,271	371
	2017	1,302	273	130	45	-	9	1,432	327
Pacific Cod	2013	1,200	18	714	201	116	88	2,030	307
	2014	1,525	20	756	216	163	73	2,444	309
	2015	1,824	14	895	238	145	114	2,864	366
	2016	1,384	7	944	228	117	102	2,445	337
	2017	566	-	879	209	109	60	1,554	269
Flatfish	2013	-	-	-	-	8	170	8	170
	2014	-	-	-	-	9	151	9	151
	2015	-	-	-	-	0	76	0	76
	2016	-	-	-	-	2	159	2	159
	2017	-	-	-	-	-	103	-	103
Rockfish	2013	508	2	-	-	11	99	519	101
	2014	425	4	-	-	7	101	432	105
	2015	370	6	-	-	4	97	374	103
	2016	282	3	-	-	3	120	285	123
	2017	275	2	-	-	7	88	282	90
Atka Mackerel	2016	-	-	-	-	-	1	-	1
All Groundfish	2013	2,987	358	-	-	225	762	3,926	1,320
	2014	3,114	331	-	-	362	881	4,235	1,430
	2015	3,437	362	-	-	391	872	4,722	1,472
	2016	2,942	371	-	-	412	914	4,297	1,514
	2017	2,150	275	-	-	297	786	3,456	1,316

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 38: Gulf of Alaska catcher/processor vessel weeks of fishing groundfish by vessel-length class (feet), gear, and target, 2013-2017.

		Hook & Line			Trawl			All Gear			
	Year	<60ft	60-124ft	125-230ft	60-124ft	125-230ft	>230ft	<60ft	60-124ft	125-230ft	>230ft
Pollock	2013	-	-	-	1	0	-	-	1	0	-
	2014	-	-	-	0	0	-	-	0	0	-
	2015	-	-	-	-	1	-	-	-	1	-
Sablefish	2013	11	-	27	-	-	-	11	-	27	-
	2014	7	-	18	0	-	-	7	0	18	-
	2015	9	-	19	0	-	-	9	0	19	-
	2016	9	-	17	-	-	-	9	-	17	-
	2017	9	-	20	-	-	-	9	-	20	-
Pacific Cod	2013	-	23	13	-	0	-	-	23	13	-
	2014	2	22	29	-	-	-	2	22	29	-
	2015	4	30	30	0	-	-	4	30	30	-
	2016	0	-	45	2	-	-	0	2	45	-
	2017	-	4	43	1	-	-	-	5	43	-
Flatfish	2013	-	-	-	48	12	-	-	48	12	-
	2014	-	-	-	62	27	-	-	62	27	-
	2015	-	-	-	49	16	-	-	49	16	-
	2016	-	-	-	41	8	-	-	41	8	-
	2017	-	-	-	62	16	-	-	62	16	-
Rockfish	2013	-	-	-	3	27	1	-	3	27	1
	2014	-	-	-	2	29	3	-	2	29	3
	2015	-	-	-	8	30	2	-	8	30	2
	2016	-	-	-	4	33	2	-	4	33	2
	2017	-	-	0	5	32	0	-	5	32	0
Atka Mackerel	2013	-	-	-	0	0	-	-	0	0	-
	2017	-	-	-	1	-	-	-	1	-	-
All Groundfish	2013	11	23	41	52	39	1	11	75	79	1
	2014	9	22	48	65	56	3	9	87	104	3
	2015	13	30	49	58	47	2	13	88	96	2
	2016	9	-	62	48	41	2	9	48	103	2
	2017	9	4	63	69	48	0	9	73	111	0

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 vessel crew weeks in the groundfish fisheries by month, 2013-2017.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2013	1,220	1,994	3,066	1,798	1,872	1,605	614	1,090	1,477	1,534	746	390	17,406
2014	1,049	1,860	3,266	2,032	2,336	1,162	516	994	1,990	1,820	864	443	18,330
2015	1,843	2,316	3,257	2,313	2,755	1,048	524	784	1,798	2,124	664	503	19,928
2016	1,692	2,318	2,506	3,069	1,982	1,024	635	903	1,736	2,298	642	371	19,176
2017	1,500	2,195	2,270	2,594	1,486	1,191	619	616	1,690	1,858	648	228	16,896

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 40: Gulf of Alaska at-sea processor vessel crew weeks in the groundfish fisheries by month, 2013-2017.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
2013	*	98	214	326	204	433	951	341	*	*	283	96	2,946
2014	*	190	358	638	233	201	834	526	312	427	415	*	4,134
2015	155	280	270	499	348	188	846	689	302	247	192	*	4,016
2016	*	107	97	320	215	293	1,229	504	254	228	152	189	3,588
2017	-	112	462	261	135	317	1,130	615	591	295	156	*	4,074

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 FMP area, 2013-2017, (hundreds of metric tons).

Year	Gulf Of Alaska	Bering Sea And Aleutian Islands	All Alaska
2013	86.39	17.52	103.91
2014	65.15	13.40	78.56
2015	68.30	13.98	82.28
2016	68.76	15.09	83.85
2017	77.12	16.64	93.76

Notes: These estimates include catch from both federal and state of Alaska commercial fisheries. Net weight is dressed, head-off, slime and ice deducted.

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 FMP area catch in the commercial Pacific halibut fisheries off Alaska by vessel length (feet) and FMP area, 2013-2017, (hundreds of metric tons).

		Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
	Length	Net Tons	Percent	Net Tons	Percent	Net Tons	Percent
2013	<20	0.09	0	0.24	0.01	0.33	0
	20-29	1.79	0.02	2.17	0.12	3.95	0.04
	30-39	12.85	0.15	2.28	0.13	15.13	0.15
	40-49	30.42	0.35	2.61	0.15	33.03	0.32
	50-59	26.49	0.31	5.96	0.34	32.45	0.31
	>=60	14.50	0.17	4.26	0.24	18.76	0.18
2014	<20	0.10	0	0.19	0.01	0.29	0
	20-29	1.92	0.03	1.52	0.11	3.44	0.04
	30-39	10.44	0.16	1.96	0.15	12.40	0.16
	40-49	23.77	0.37	1.94	0.14	25.70	0.33
	50-59	19.46	0.30	4.68	0.35	24.14	0.31
	>=60	9.11	0.14	3.12	0.23	12.23	0.16
2015	<20	0.10	0	*	*	0.10	0
	20-29	1.78	0.03	1.25	0.09	3.04	0.04
	30-39	10.99	0.16	1.71	0.12	12.70	0.16
	40-49	24.34	0.36	2.68	0.19	27.02	0.33
	50-59	21.61	0.32	5.11	0.37	26.72	0.33
	>=60	9.18	0.14	3.18	0.23	12.36	0.15
2016	<20	0.11	0	*	*	0.11	0
	20-29	1.95	0.03	1.18	0.08	3.13	0.04
	30-39	11.43	0.17	1.75	0.12	13.19	0.16
	40-49	25.05	0.37	2.79	0.19	27.84	0.33
	50-59	21.02	0.31	5.76	0.38	26.78	0.32
	>=60	8.83	0.13	3.50	0.23	12.33	0.15
2017	<20	0.10	0	*	*	0.10	0
	20-29	1.93	0.03	1.05	0.06	2.97	0.03
	30-39	12.79	0.17	2.80	0.17	15.59	0.17
	40-49	28.91	0.38	3.27	0.20	32.17	0.35
	50-59	23.15	0.30	5.70	0.35	28.84	0.31
	>=60	9.84	0.13	3.66	0.22	13.51	0.14

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery. These estimates include catch from both federal and state of Alaska fisheries. Net weight is dressed, head-off, slime and ice deducted.

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, 2013-2017.

		Year	Bairdi Tanner Crab (Count, K)	Chinook Salmon (Count, K)	Halibut (Tons)	Herring (Tons)	Non-Chinook Salmon (Count, K)	Opilio Tanner (Snow) Crab (Count, K)	Other King Crab (Count, K)	Red King Crab (Count, K)
Gulf of Alaska	Fixed	2013	570	-	15	-	-	-	0	0
		2014	133	-	11	-	-	0	0	-
		2015	128	-	22	-	-	-	0	0
		2016	63	-	44	-	-	0	0	0
		2017	4	-	15	-	-	0	0	-
	Trawl	2013	255	23	1,230	11	5	-	0	-
		2014	64	16	1,395	6	2	-	0	-
		2015	76	19	1,411	80	1	-	0	-
		2016	92	22	1,333	148	3	0	1	-
		2017	124	25	1,215	6	6	-	0	-
	All Gear	2013	824	23	1,245	11	5	-	0	0
		2014	198	16	1,405	6	2	0	0	-
		2015	204	19	1,433	80	1	-	0	0
		2016	155	22	1,377	148	3	0	1	0
		2017	129	25	1,230	6	6	0	0	-
Bering Sea and Aleutian Islands	Fixed	2013	247	*	538	0	-	33	2	107
		2014	593	0	456	-	-	105	5	145
		2015	633	0	326	0	0	138	32	182
		2016	315	0	225	*	0	43	16	27
		2017	357	0	193	0	0	168	77	35
	Trawl	2013	714	16	3,080	988	127	692	32	32
		2014	624	18	3,029	186	224	484	24	33
		2015	424	25	1,999	1,531	243	492	15	25
		2016	221	33	1,910	1,494	347	167	15	41
		2017	353	36	1,179	1,023	471	160	11	60
	All Gear	2013	961	16	3,618	988	127	725	35	140
		2014	1,217	18	3,485	186	224	590	29	178
		2015	1,057	25	2,324	1,531	243	630	48	207
		2016	536	33	2,135	1,494	347	210	31	68
		2017	710	36	1,373	1,023	471	327	88	95

Notes: These estimates include trips from both federal and state of Alaska fisheries. 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 fsiheries off Alaska by FMP area, 2013-2017, ($ millions and $/lb net weight, respectively).

	Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
Year	Value	Price	Value	Price	Value	Price
2013	95.75	5.03	16.66	4.32	112.41	4.91
2014	89.54	6.23	15.77	5.34	105.31	6.08
2015	94.33	6.26	17.68	5.74	112.01	6.17
2016	99.37	6.55	19.59	5.89	118.96	6.44
2017	97.63	5.74	18.53	5.05	116.16	5.62

Notes: Values and prices are for catch from both federal and state of Alaska fisheries. 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.

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, 2013-2017, ($ millions and $/lb net weight, respectively).

	Variable	2013	2014	2015	2016	2017
2C	Value	15.67	21.55	23.57	27.36	2.76
	Price	5.16	6.22	6.30	6.61	5.80
3A	Value	58.05	48.58	50.75	50.31	5.36
	Price	5.09	6.31	6.31	6.60	5.86
3B	Value	20.20	17.83	16.67	17.83	0.89
	Price	4.82	6.10	6.13	6.43	5.55
4A	Value	5.32	4.79	7.94	8.34	0.93
	Price	4.41	5.76	6.00	6.22	5.15
4B	Value	5.14	5.89	6.03	6.30	0.58
	Price	4.21	5.41	5.69	5.76	5.15
4CDE	Value	8.02	6.65	6.93	8.82	0.35
	Price	4.34	5.09	5.62	5.83	5.13

Notes: Values and prices are for catch from both federal and state of Alaska fisheries. 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.

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 FMP area and vessel length (feet), 2013-2017, ($ 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
2013	<20	0.10	5.26	0.20	3.84	0.30	4.27
	20-29	2.00	16.98	2.09	13.40	4.09	15.00
	30-39	14.18	53.11	2.10	53.87	16.28	54.82
	40-49	33.60	107.34	2.42	151.31	36.02	112.91
	50-59	29.45	216.58	5.66	195.28	35.12	247.31
	>=60	16.16	336.65	4.18	199.28	20.34	383.85
2014	<20	0.14	6.01	0.19	12.00	0.33	8.69
	20-29	2.64	21.84	1.39	26.73	4.03	23.44
	30-39	14.24	52.34	2.17	65.86	16.41	55.62
	40-49	32.39	107.97	2.30	143.81	34.69	114.49
	50-59	26.92	197.96	5.74	249.69	32.67	233.32
	>=60	12.73	295.98	3.97	233.41	16.70	362.94
2015	<20	0.14	8.49	*	*	0.18	6.51
	20-29	2.49	23.48	1.43	47.73	3.92	29.04
	30-39	15.07	57.73	2.02	81.00	17.09	61.48
	40-49	33.48	118.29	3.36	186.52	36.83	128.34
	50-59	29.93	212.25	6.63	255.07	36.56	250.41
	>=60	12.82	320.60	4.19	220.73	17.02	386.77
2016	<20	0.15	8.00	*	*	0.28	10.03
	20-29	2.81	26.51	1.33	42.99	4.14	30.46
	30-39	16.45	65.79	2.16	83.01	18.61	69.17
	40-49	36.04	128.25	3.53	220.55	39.57	138.35
	50-59	30.38	215.50	7.67	283.89	38.05	264.24
	>=60	13.03	317.73	4.78	281.20	17.81	414.12
2017	<20	0.12	10.01	*	*	0.26	12.26
	20-29	2.47	26.82	1.15	39.65	3.62	30.14
	30-39	16.18	62.94	3.11	94.17	19.28	68.87
	40-49	36.30	131.52	3.65	228.24	39.95	143.20
	50-59	29.37	219.17	6.29	251.55	35.66	266.10
	>=60	12.65	324.31	4.13	243.21	16.78	399.59

Notes: Values are for catch from both federal and state of Alaska fisheries. Excludes vessels in the Annette Island commercial Pacific halibut fishery. Length is measured in feet. Values are not adjusted for inflation.

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 by port, 2013-2017, ($ millions and $/lb net weight).

	Port	2013	2014	2015	2016	2017
Ex-vessel Value	Homer	24.24	18.51	17.25	18.32	13.08
	Kodiak	16.60	15.94	17.28	16.95	19.59
	Seward	14.79	11.56	12.76	13.25	13.44
	Dutch Harbor	*	*	*	*	*
	Sitka	6.02	*	*	8.17	*
	Juneau	6.86	5.79	*	7.50	6.68
	St Paul Island	*	*	*	*	*
	Petersburg	5.56	7.62	7.01	9.93	9.97
	Sand Point	*	*	*	*	*
	Yakutat	*	*	4.07	4.33	*
Price	Homer	4.95	6.05	6.11	6.43	5.82
	Kodiak	4.88	6.32	6.23	6.60	5.59
	Seward	5.07	6.20	6.20	6.46	5.79
	Dutch Harbor	*	*	*	*	*
	Sitka	5.06	*	*	6.53	*
	Juneau	5.44	6.12	*	6.75	6.01
	St Paul Island	*	*	*	*	*
	Petersburg	5.18	6.24	6.52	6.72	5.93
	Sand Point	*	*	*	*	*
	Yakutat	*	*	6.48	6.52	*
Precent State Value	Homer	22 %	18 %	15 %	15 %	11 %
	Kodiak	15 %	15 %	15 %	14 %	17 %
	Seward	13 %	11 %	11 %	11 %	12 %
	Dutch Harbor	*	*	*	*	*
	Sitka	5 %	*	*	7 %	*
	Juneau	6 %	5 %	*	6 %	6 %
	St Paul Island	*	*	*	*	*
	Petersburg	5 %	7 %	6 %	8 %	9 %
	Sand Point	*	*	*	*	*
	Yakutat	*	*	4 %	4 %	*
Rank	Homer	1	1	2	1	3
	Kodiak	2	2	1	2	1
	Seward	3	3	3	3	2
	Dutch Harbor	5	6	4	5	6
	Sitka	6	5	6	6	5
	Juneau	4	7	5	7	7
	St Paul Island	9	13	11	11	10
	Petersburg	7	4	7	4	4
	Sand Point	14	12	13	16	17
	Yakutat	8	10	9	9	9

Notes: Displays only the 10 Alaska ports of landing with the highest average ex-vessel value. Values and prices are for catch from both federal and state of Alaska fisheries. 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, 2013-2017, (1000s of metric tons, $ millions and $/lb net weight, respectively).

	Year	Quantity	Value	Price
Head and Gut	2013	6.46	92.69	6.51
	2014	4.80	81.92	7.73
	2015	5.38	92.07	7.77
	2016	6.29	94.99	6.85
	2017	5.64	91.84	7.39
Fillet	2013	1.66	35.78	9.80
	2014	0.88	25.53	13.23
	2015	1.11	34.82	14.21
	2016	1.23	39.30	14.50
	2017	1.40	42.04	13.65
Other Products	2013	0.83	2.90	1.58
	2014	0.50	2.47	2.23
	2015	3.05	6.86	1.02
	2016	0.68	4.61	3.09
	2017	0.46	2.74	2.68
All Products	2013	8.94	131.37	6.66
	2014	6.18	109.92	8.06
	2015	9.54	133.76	6.36
	2016	8.19	138.91	7.69
	2017	7.50	136.62	8.27

Notes: Landings, values and prices include both federal and state of Alaska fisheries. 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.

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 FMP area and vessel length class, 2013-2017.

		Gulf of Alaska		Bering Sea and Aleutian Islands		All Alaska	
	Year	Vessels	Median Length	Vessels	Median Length	Vessels	Median Length
<20	2013	19	17	53	18	71	18
	2014	23	18	16	18	38	18
	2015	16	18	12	18	27	18
	2016	19	17	10	18	28	18
	2017	12	18	9	18	21	18
20-29	2013	118	25	156	24	273	24
	2014	121	25	52	26	172	26
	2015	106	25	30	28	135	26
	2016	106	25	31	28	136	26
	2017	92	25	29	28	120	26
30-39	2013	267	34	39	32	297	34
	2014	272	34	33	32	295	34
	2015	261	35	25	33	278	34
	2016	250	34	26	32	269	34
	2017	257	34	33	32	280	33
40-49	2013	313	45	16	49	319	45
	2014	300	45	16	48	303	45
	2015	283	45	18	48	287	45
	2016	281	45	16	48	286	45
	2017	276	45	16	48	279	45
50-59	2013	136	58	29	58	142	58
	2014	136	57	23	58	140	57
	2015	141	57	26	58	146	57
	2016	141	58	27	58	144	58
	2017	134	58	25	58	134	58
≥60	2013	48	71	21	76	53	73
	2014	43	72	17	76	46	72
	2015	40	72	19	76	44	73
	2016	41	72	17	76	43	73
	2017	39	72	17	76	42	73

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery. "-" 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, 2013-2017.

Year	Gulf Of Alaska	Bering Sea And Aleutian Islands	All Alaska
2013	14,633	4,339	18,754
2014	12,842	2,894	15,520
2015	12,549	2,744	15,059
2016	12,757	2,800	15,352
2017	13,400	2,795	15,801

Notes: Excludes vessels in the Annette Island commercial Pacific halibut fishery.

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, 2013-2017.

	Year	Mar-Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Gulf of Alaska	2013	8,546	10,247	7,777	4,859	7,350	6,589	5,928	1,300
	2014	9,918	9,426	5,754	3,601	6,301	5,476	4,179	499
	2015	9,274	10,725	4,904	3,028	5,018	6,386	4,433	733
	2016	10,309	10,111	4,964	3,566	5,887	5,078	3,358	627
	2017	10,399	9,558	5,883	3,704	5,677	6,564	4,941	814
Bering Sea and Aleutian Islands	2013	563	1,042	3,166	5,244	2,428	2,291	1,266	224
	2014	242	1,480	1,611	3,397	2,412	1,373	653	121
	2015	416	1,533	2,111	2,206	2,474	1,536	1,185	133
	2016	529	1,525	2,100	2,121	2,686	1,578	809	100
	2017	346	1,384	2,088	1,886	2,857	1,540	1,104	192
All Alaska	2013	9,109	11,207	10,807	10,011	9,632	8,670	7,029	1,460
	2014	10,160	10,670	7,224	6,904	8,497	6,775	4,754	620
	2015	9,618	12,126	6,894	5,139	7,252	7,787	5,459	866
	2016	10,741	11,397	6,845	5,642	8,417	6,584	4,098	695
	2017	10,672	10,775	7,845	5,450	7,996	7,814	5,736	1,006

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 to enusre confidentiality it is combined with April.

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, 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). 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 species by product type and product type by species, and in the ex-vessel market, they show species by gear type and gear type by 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 2013 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 $(year-on-year\ growth\ rate)*(share\ weight) = (I_t/I_{t-1}-1)*\tilde{w}(t)$ where I_t is the level of the index and $\tilde{w}(t) = \frac{p_t*q_t}{\sum_i p_t*q_t}$ is the year t value share. 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.

5.2. Economic Indices of the Groundfish Fisheries off Alaska

[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.

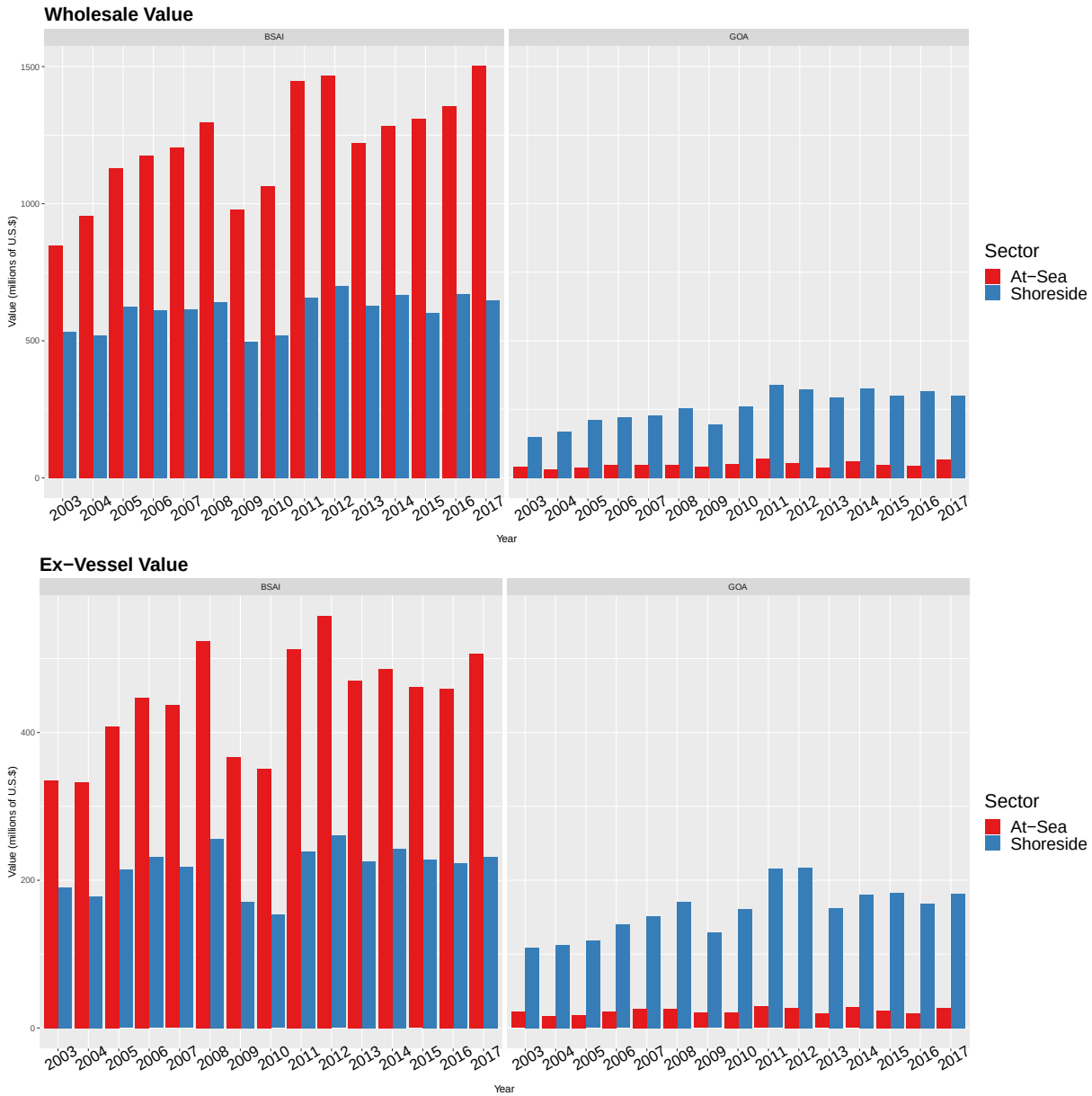

Figure 5.1: Wholesale and ex-vessel value by region and sector 2003-2017.
Source: NMFS Alaska Region's Catch-accounting system (CAS) and Weekly Production Report (WPR) estimates; Alaska Department of Fish and Game (ADF&G) Commercial Operator's Annual Report (COAR), National Marine Fisheries Service. P.O. Box 15700, Seattle, WA 98115-0070.

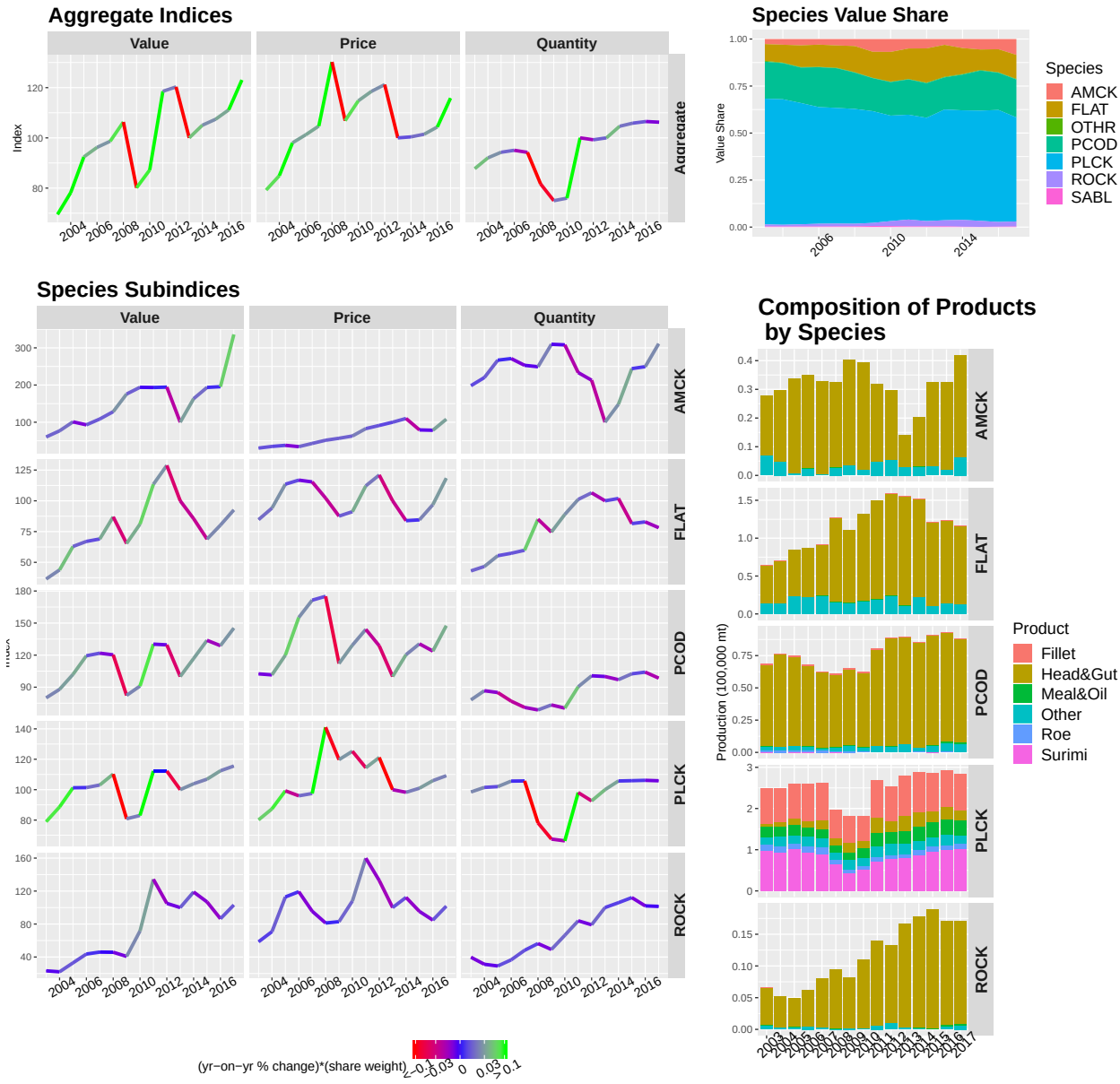

Figure 5.2: BSAI at-sea wholesale market: species decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.1. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

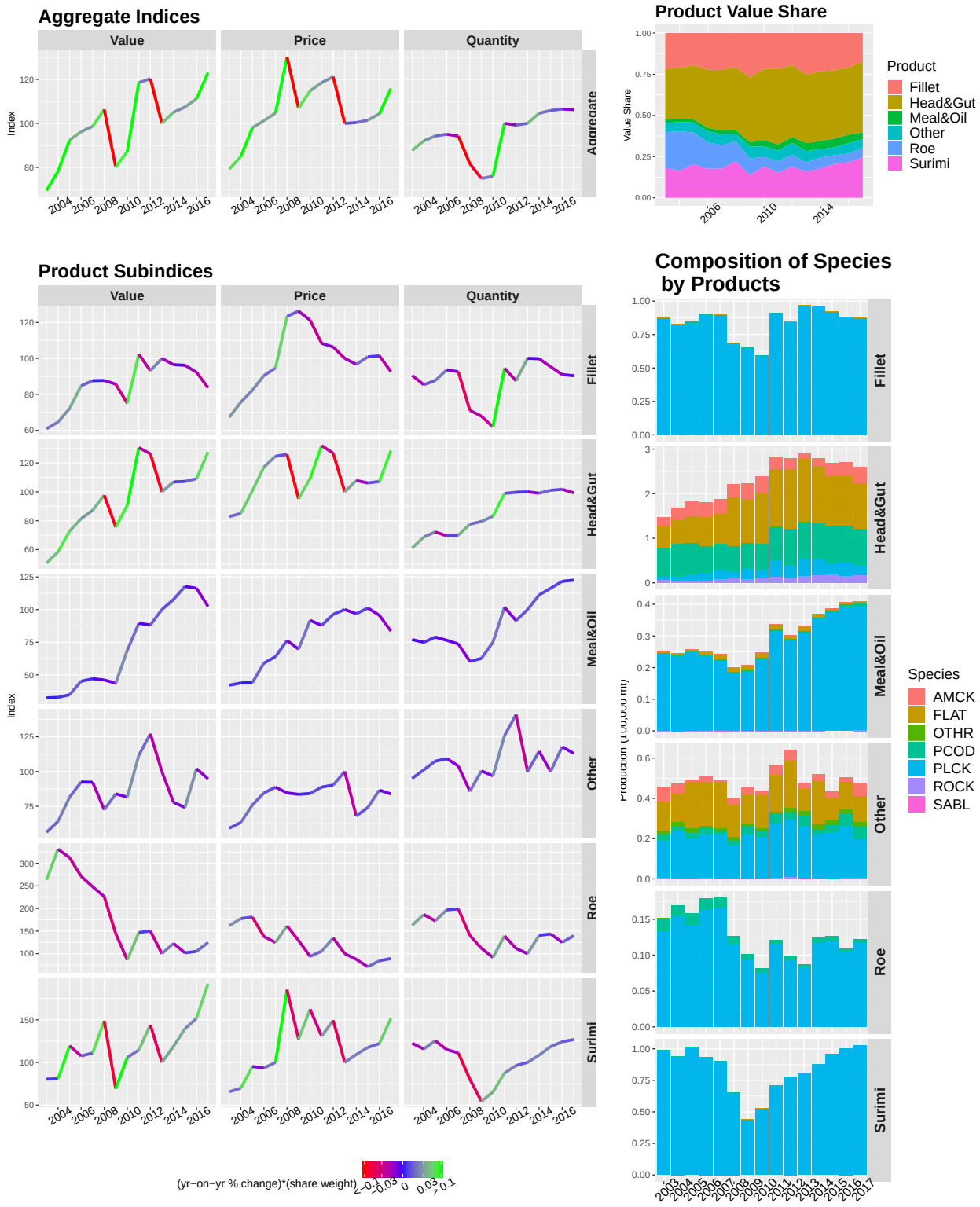

Figure 5.3: BSAI at-sea wholesale market: product decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.2. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Figure 5.4: BSAI shoreside wholesale market: species decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, 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.

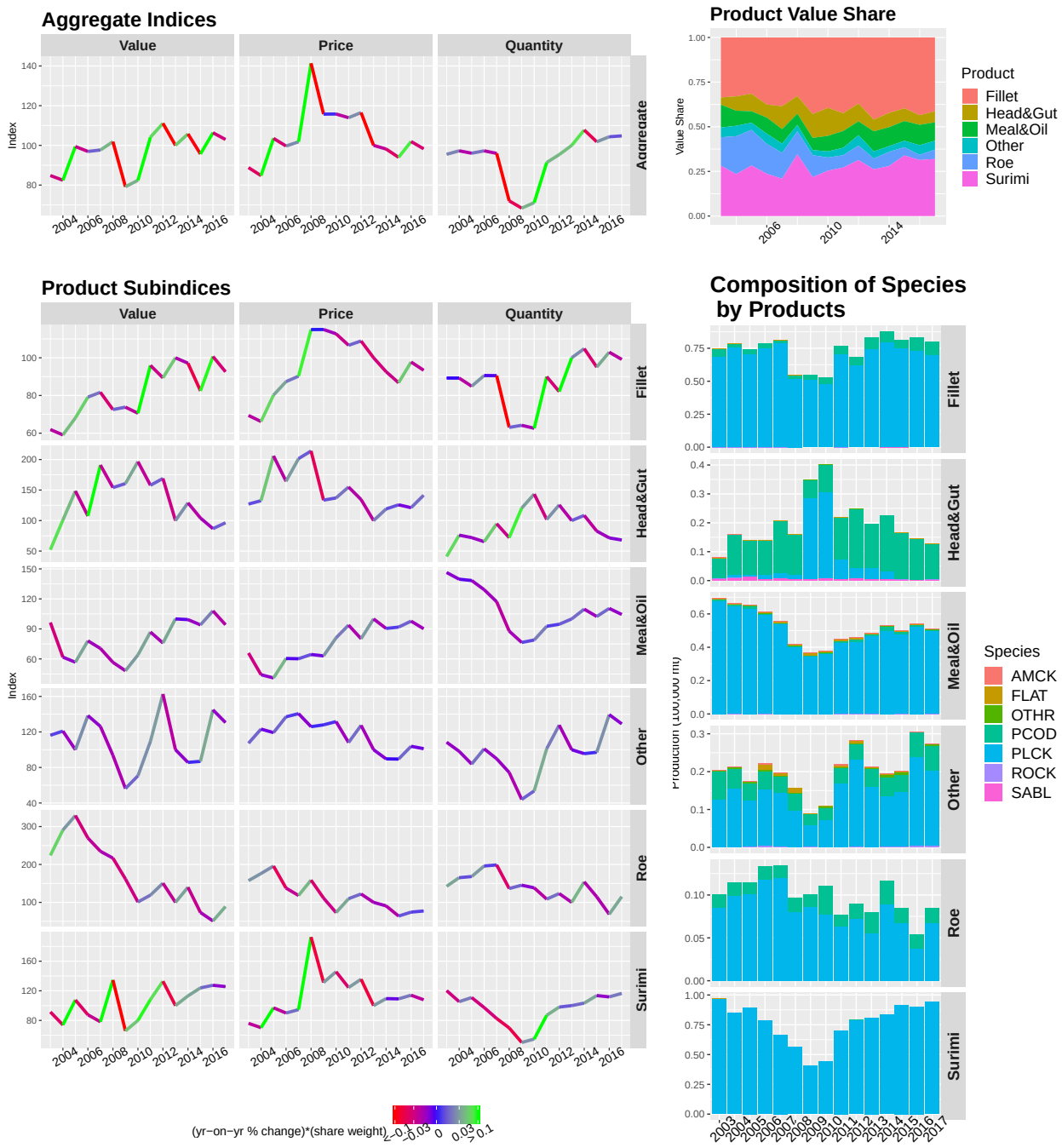

Figure 5.5: BSAI shoreside wholesale market: product decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.4. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

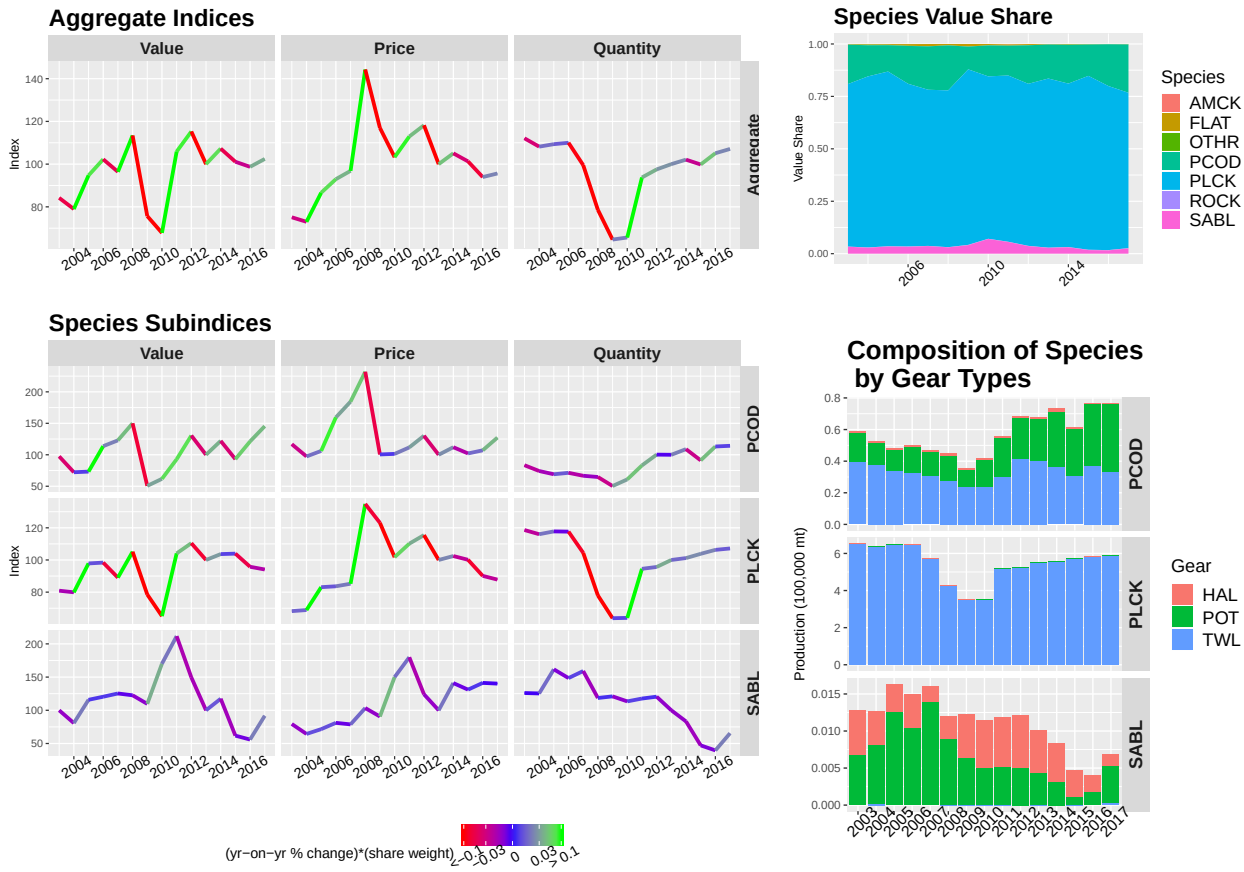

Figure 5.6: BSAI shoreside ex-vessel market: species decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.5. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Figure 5.7: BSAI shoreside ex-vessel market: gear decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, 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.

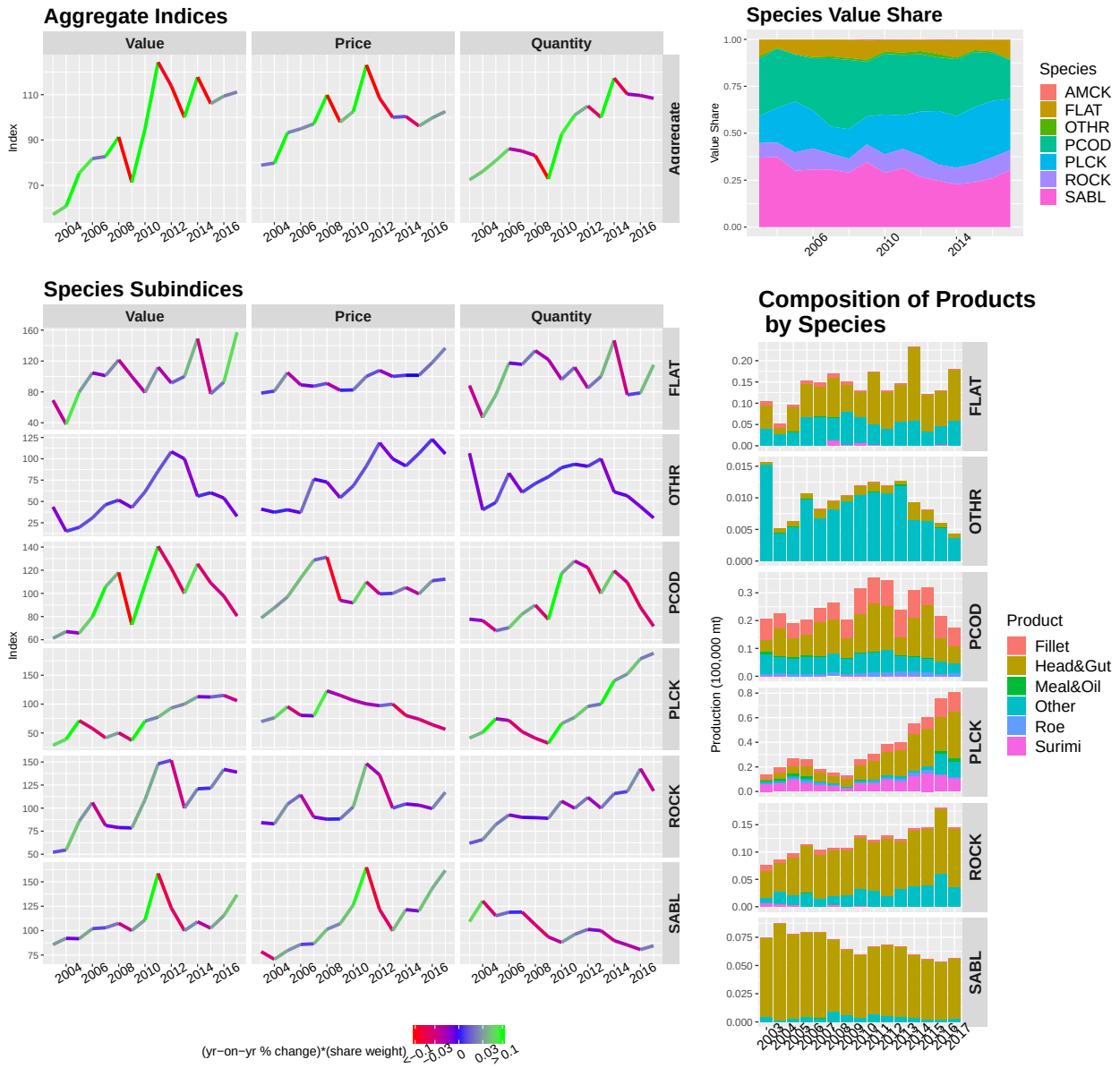

Figure 5.8: GOA wholesale market: species decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.7. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

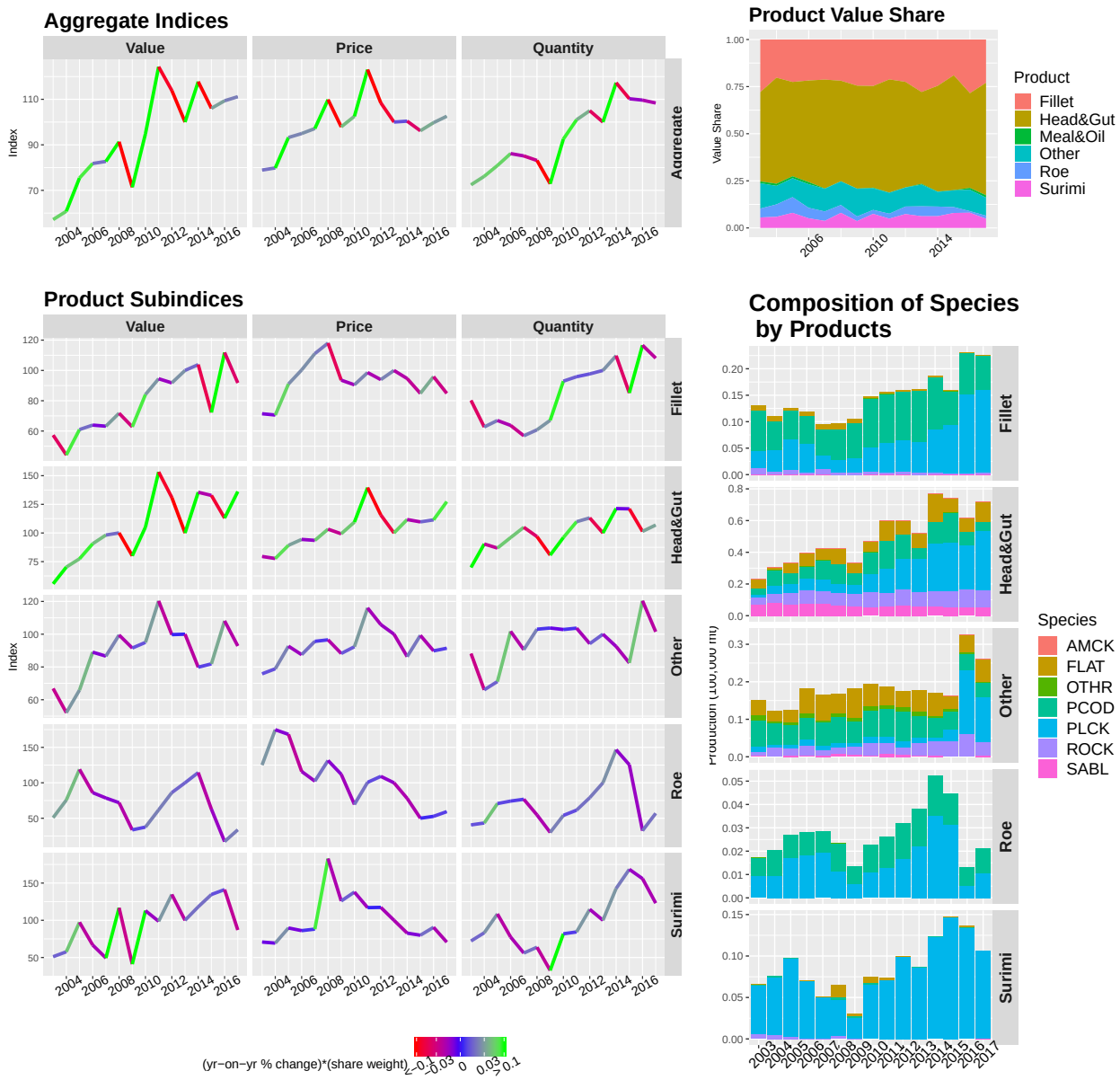

Figure 5.9: GOA wholesale market: product decomposition 2003-2017 (Index 2013 = 100).
Notes: Index values for 2012-2017, notes and source information for the indices are on Table 5.8. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

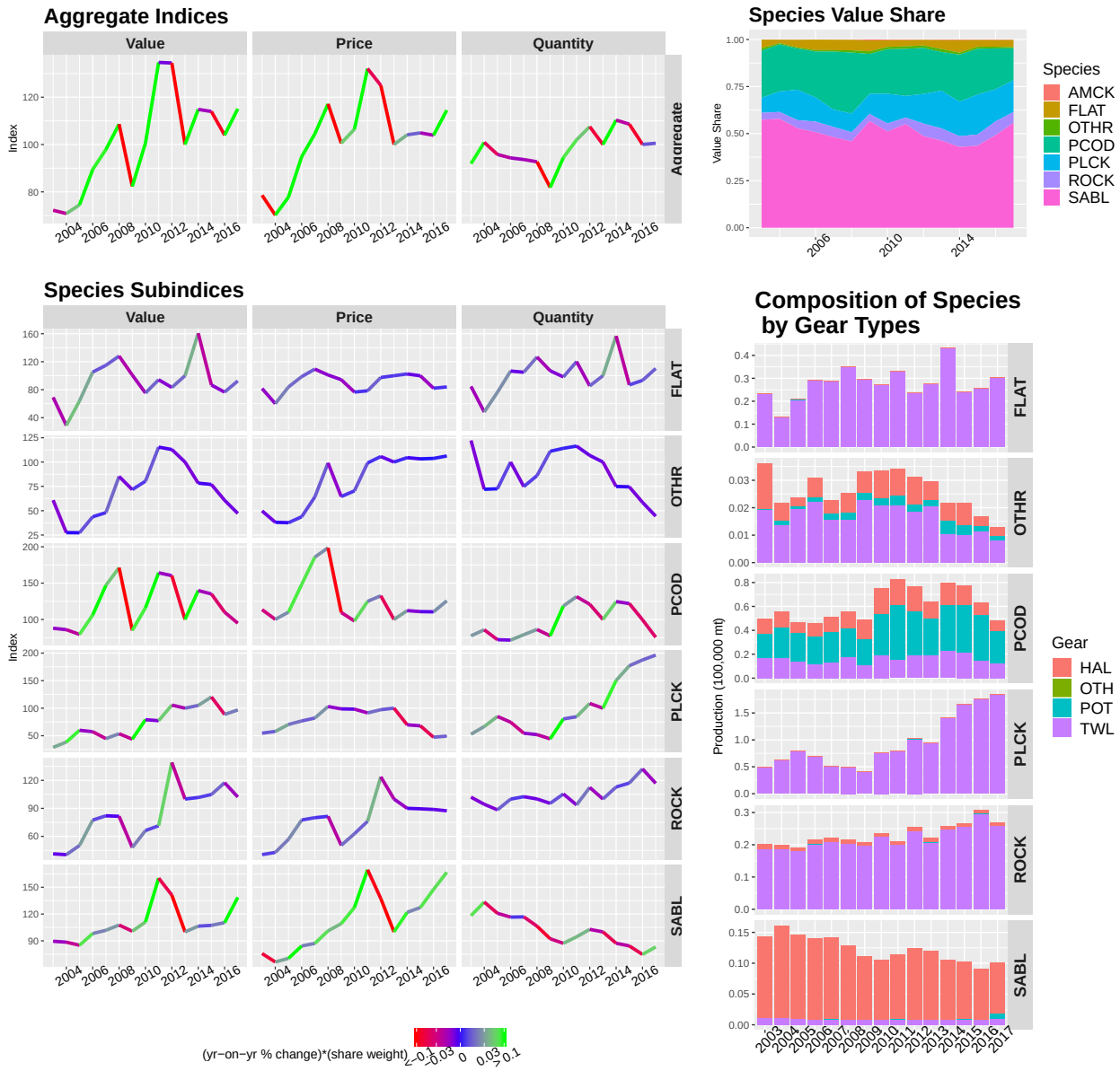

Figure 5.10: GOA ex-vessel market: species decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.9. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

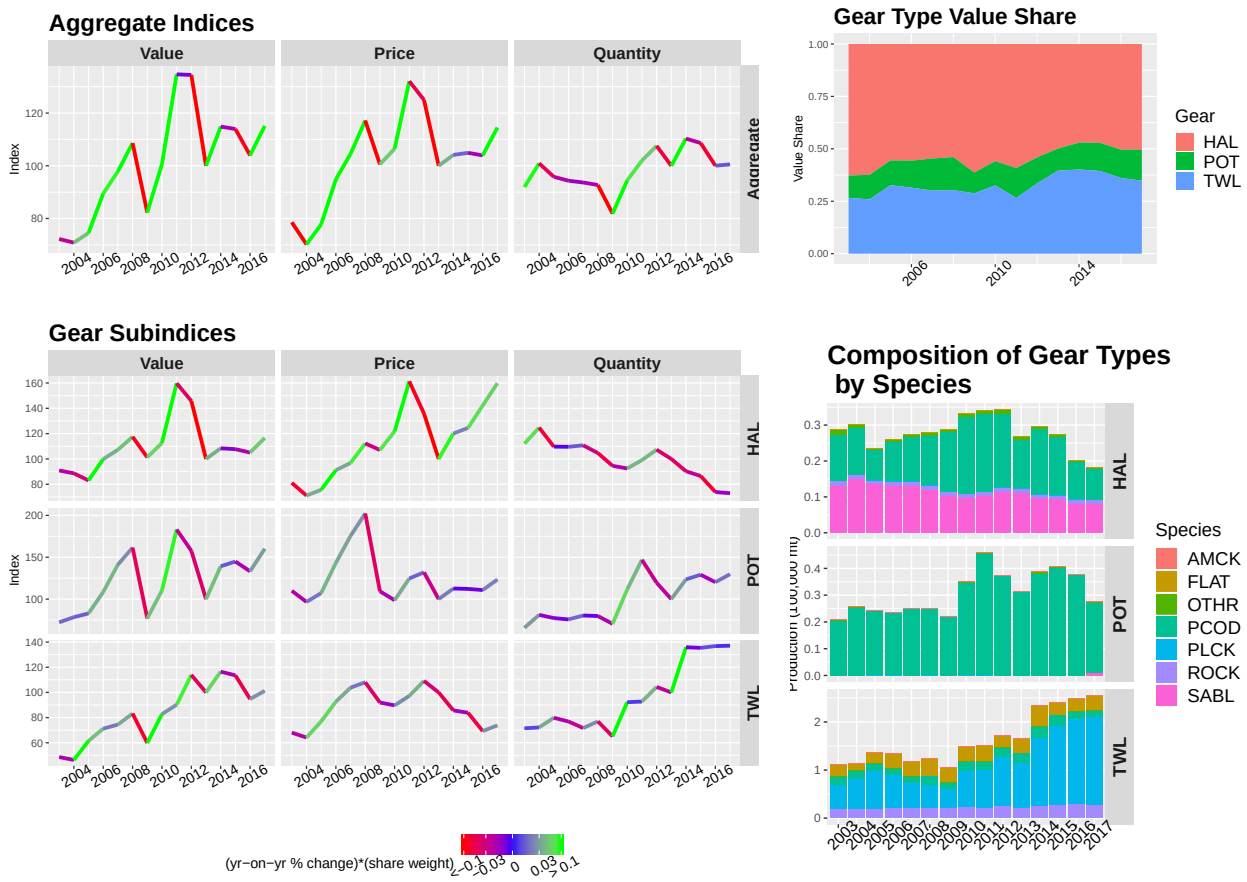

Figure 5.11: GOA ex-vessel market: gear decomposition 2003-2017 (Index 2013 = 100). **Notes:** Index values for 2012-2017, notes and source information for the indices are on Table 5.10. Index coloring indicates its influence on aggregate index movements, see Section 5.1 for details.

Table 5.1: Species Indices and Value Share for the BSAI At-Sea First-Wholesale Market 2012-2017.

Species	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	120.30	100.00	105.05	107.41	111.16	123.05
Aggregate	Price	121.21	100.00	100.40	101.46	104.36	115.82
Aggregate	Quantity	99.25	100.00	104.63	105.86	106.52	106.25
AMCK	Value	194.41	100.00	163.21	193.66	195.54	336.04
AMCK	Price	91.30	100.00	110.08	79.30	78.40	108.04
AMCK	Quantity	212.94	100.00	148.26	244.21	249.40	311.04
AMCK	Value Share	0.05	0.03	0.05	0.06	0.05	0.08
FLAT	Value	128.79	100.00	85.46	68.88	80.26	92.57
FLAT	Price	120.96	100.00	83.87	84.53	96.85	118.40
FLAT	Quantity	106.48	100.00	101.90	81.49	82.87	78.18
FLAT	Value Share	0.18	0.17	0.14	0.11	0.12	0.13
PCOD	Value	129.60	100.00	116.86	133.87	128.85	145.29
PCOD	Price	128.75	100.00	120.43	130.58	123.79	147.52
PCOD	Quantity	100.66	100.00	97.04	102.52	104.09	98.49
PCOD	Value Share	0.18	0.17	0.19	0.21	0.20	0.20
PLCK	Value	112.22	100.00	103.89	106.91	112.42	115.55
PLCK	Price	121.16	100.00	98.28	100.95	105.92	109.17
PLCK	Quantity	92.62	100.00	105.72	105.91	106.13	105.85
PLCK	Value Share	0.55	0.59	0.58	0.59	0.60	0.55
ROCK	Value	105.08	100.00	118.89	106.84	86.47	103.11
ROCK	Price	132.85	100.00	112.30	95.32	84.77	101.67
ROCK	Quantity	79.10	100.00	105.87	112.08	102.01	101.41
ROCK	Value Share	0.03	0.03	0.04	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 2012-2017.

Product	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	120.30	100.00	105.05	107.41	111.16	123.05
Aggregate	Price	121.21	100.00	100.40	101.46	104.36	115.82
Aggregate	Quantity	99.25	100.00	104.63	105.86	106.52	106.25
Fillet	Value	93.13	100.00	96.50	96.15	92.28	83.66
Fillet	Price	106.34	100.00	96.69	100.84	101.42	92.59
Fillet	Quantity	87.58	100.00	99.81	95.34	90.98	90.35
Fillet	Value Share	0.20	0.25	0.23	0.23	0.21	0.17
Head&Gut	Value	126.31	100.00	106.84	107.19	109.02	127.59
Head&Gut	Price	126.69	100.00	107.86	106.09	107.15	128.49
Head&Gut	Quantity	99.70	100.00	99.06	101.04	101.74	99.30
Head&Gut	Value Share	0.44	0.42	0.42	0.41	0.41	0.43
Meal&Oil	Value	88.26	100.00	107.68	117.67	116.31	102.37
Meal&Oil	Price	96.39	100.00	96.85	101.15	95.66	83.55
Meal&Oil	Quantity	91.57	100.00	111.18	116.33	121.60	122.53
Meal&Oil	Value Share	0.04	0.05	0.05	0.05	0.05	0.04
Other	Value	127.12	100.00	77.89	74.14	102.04	94.74
Other	Price	90.23	100.00	67.98	74.12	86.59	83.85
Other	Quantity	140.88	100.00	114.57	100.03	117.84	112.99
Other	Value Share	0.07	0.07	0.05	0.05	0.06	0.05
Roe	Value	150.16	100.00	122.67	101.79	105.05	124.70
Roe	Price	134.64	100.00	87.37	70.88	84.12	89.22
Roe	Quantity	111.52	100.00	140.39	143.61	124.87	139.76
Roe	Value Share	0.07	0.06	0.07	0.05	0.05	0.06
Surimi	Value	144.01	100.00	118.76	139.52	151.74	192.41
Surimi	Price	149.40	100.00	109.34	117.61	122.09	151.66
Surimi	Quantity	96.39	100.00	108.61	118.63	124.28	126.87
Surimi	Value Share	0.19	0.16	0.18	0.20	0.22	0.25

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 2012-2017.

Species	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	111.10	100.00	105.78	95.68	106.36	102.98
Aggregate	Price	116.52	100.00	98.17	93.98	101.94	98.28
Aggregate	Quantity	95.34	100.00	107.75	101.81	104.33	104.78
PCOD	Value	117.00	100.00	115.33	90.19	125.79	138.57
PCOD	Price	124.42	100.00	105.16	107.05	116.64	132.99
PCOD	Quantity	94.04	100.00	109.67	84.26	107.84	104.20
PCOD	Value Share	0.16	0.15	0.16	0.14	0.18	0.20
PLCK	Value	109.69	100.00	104.38	96.94	103.94	97.08
PLCK	Price	115.82	100.00	96.76	91.35	99.00	91.76
PLCK	Quantity	94.71	100.00	107.87	106.11	104.99	105.81
PLCK	Value Share	0.82	0.83	0.82	0.84	0.81	0.78
SABL	Value	111.31	100.00	80.42	62.72	49.71	74.78
SABL	Price	95.71	100.00	105.97	117.46	125.61	115.88
SABL	Quantity	116.29	100.00	75.89	53.40	39.57	64.53
SABL	Value Share	0.02	0.02	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 2012-2017.

Product	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	111.10	100.00	105.78	95.68	106.36	102.98
Aggregate	Price	116.52	100.00	98.17	93.98	101.94	98.28
Aggregate	Quantity	95.34	100.00	107.75	101.81	104.33	104.78
Fillet	Value	89.37	100.00	97.13	82.47	100.67	92.59
Fillet	Price	108.91	100.00	92.63	86.76	97.76	93.39
Fillet	Quantity	82.06	100.00	104.86	95.05	102.98	99.15
Fillet	Value Share	0.37	0.46	0.42	0.40	0.44	0.41
Head&Gut	Value	168.99	100.00	129.08	104.16	86.73	96.40
Head&Gut	Price	134.47	100.00	119.02	125.82	121.14	141.49
Head&Gut	Quantity	125.68	100.00	108.45	82.79	71.60	68.13
Head&Gut	Value Share	0.10	0.07	0.08	0.07	0.05	0.06
Meal&Oil	Value	75.90	100.00	99.32	94.04	108.04	94.19
Meal&Oil	Price	80.19	100.00	90.48	91.81	97.78	90.18
Meal&Oil	Quantity	94.65	100.00	109.77	102.43	110.49	104.44
Meal&Oil	Value Share	0.08	0.11	0.11	0.11	0.11	0.10
Other	Value	162.68	100.00	85.69	86.87	144.85	130.60
Other	Price	127.41	100.00	89.66	89.46	103.85	101.15
Other	Quantity	127.68	100.00	95.57	97.10	139.48	129.12
Other	Value Share	0.06	0.04	0.03	0.04	0.05	0.05
Roe	Value	150.54	100.00	139.93	73.27	50.96	88.90
Roe	Price	122.13	100.00	90.78	63.88	74.28	77.28
Roe	Quantity	123.26	100.00	154.14	114.70	68.61	115.05
Roe	Value Share	0.08	0.06	0.08	0.05	0.03	0.05
Surimi	Value	132.94	100.00	113.12	123.96	127.46	125.69
Surimi	Price	135.62	100.00	109.45	109.12	114.05	107.89
Surimi	Quantity	98.03	100.00	103.35	113.60	111.76	116.49
Surimi	Value Share	0.31	0.26	0.28	0.34	0.31	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 2012-2017.

Species	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	115.27	100.00	107.26	101.11	98.74	102.43
Aggregate	Price	118.20	100.00	105.06	101.28	93.94	95.63
Aggregate	Quantity	97.52	100.00	102.10	99.83	105.10	107.11
PCOD	Value	130.54	100.00	122.06	93.06	121.17	145.46
PCOD	Price	130.22	100.00	112.02	102.12	107.06	127.29
PCOD	Quantity	100.25	100.00	108.96	91.13	113.17	114.27
PCOD	Value Share	0.18	0.16	0.18	0.15	0.20	0.23
PLCK	Value	110.45	100.00	103.66	103.95	95.78	94.08
PLCK	Price	115.47	100.00	102.45	100.12	90.12	87.79
PLCK	Quantity	95.65	100.00	101.18	103.83	106.28	107.16
PLCK	Value Share	0.77	0.81	0.78	0.83	0.78	0.74
SABL	Value	149.53	100.00	117.39	61.87	55.95	91.73
SABL	Price	124.09	100.00	140.98	131.07	141.25	140.18
SABL	Quantity	120.50	100.00	83.26	47.20	39.61	65.44
SABL	Value Share	0.04	0.03	0.03	0.02	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 2012-2017.

Gear	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	115.27	100.00	107.26	101.11	98.74	102.43
Aggregate	Price	118.20	100.00	105.06	101.28	93.94	95.63
Aggregate	Quantity	97.52	100.00	102.10	99.83	105.10	107.11
HAL	Value	147.75	100.00	141.81	81.44	48.23	36.29
HAL	Price	123.58	100.00	134.08	125.17	134.20	134.92
HAL	Quantity	119.56	100.00	105.76	65.06	35.94	26.90
HAL	Value Share	0.02	0.02	0.02	0.02	0.01	0.01
POT	Value	127.13	100.00	141.47	105.18	145.47	202.87
POT	Price	128.70	100.00	118.12	109.56	114.14	134.12
POT	Quantity	98.77	100.00	119.78	96.00	127.44	151.26
POT	Value Share	0.09	0.08	0.10	0.08	0.12	0.16
TWL	Value	113.56	100.00	103.57	101.16	95.71	95.05
TWL	Price	117.15	100.00	103.19	99.95	91.35	90.92
TWL	Quantity	96.94	100.00	100.36	101.20	104.78	104.54
TWL	Value Share	0.89	0.90	0.87	0.90	0.87	0.84

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 2012-2017.

Species	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	113.86	100.00	117.75	106.04	109.36	111.15
Aggregate	Price	108.45	100.00	100.40	96.18	99.74	102.55
Aggregate	Quantity	104.99	100.00	117.28	110.25	109.64	108.38
FLAT	Value	91.53	100.00	149.00	77.46	92.68	157.19
FLAT	Price	107.78	100.00	101.55	101.55	117.78	136.72
FLAT	Quantity	84.92	100.00	146.72	76.27	78.70	114.97
FLAT	Value Share	0.06	0.07	0.09	0.05	0.06	0.10
OTHR	Value	108.35	100.00	56.13	60.23	54.02	32.52
OTHR	Price	118.81	100.00	91.60	106.33	122.86	105.83
OTHR	Quantity	91.19	100.00	61.28	56.64	43.97	30.73
OTHR	Value Share	0.02	0.02	0.01	0.01	0.01	0.01
PCOD	Value	121.73	100.00	125.52	109.02	97.61	80.48
PCOD	Price	99.55	100.00	105.06	99.56	110.94	112.27
PCOD	Quantity	122.28	100.00	119.47	109.50	87.98	71.68
PCOD	Value Share	0.31	0.29	0.30	0.29	0.25	0.21
PLCK	Value	93.38	100.00	112.88	112.26	115.12	106.01
PLCK	Price	97.19	100.00	80.33	73.87	64.51	56.39
PLCK	Quantity	96.08	100.00	140.52	151.97	178.45	187.98
PLCK	Value Share	0.23	0.29	0.27	0.30	0.30	0.27
ROCK	Value	151.84	100.00	120.94	121.68	142.01	139.01
ROCK	Price	136.06	100.00	104.52	103.17	99.53	117.20
ROCK	Quantity	111.60	100.00	115.71	117.94	142.69	118.60
ROCK	Value Share	0.11	0.09	0.09	0.10	0.11	0.11
SABL	Value	123.25	100.00	109.08	102.53	115.44	136.64
SABL	Price	121.67	100.00	121.50	120.20	143.22	161.67
SABL	Quantity	101.29	100.00	89.78	85.30	80.60	84.52
SABL	Value Share	0.27	0.25	0.23	0.24	0.26	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 2012-2017.

Product	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	113.86	100.00	117.75	106.04	109.36	111.15
Aggregate	Price	108.45	100.00	100.40	96.18	99.74	102.55
Aggregate	Quantity	104.99	100.00	117.28	110.25	109.64	108.38
Fillet	Value	91.78	100.00	103.84	72.26	111.84	91.78
Fillet	Price	93.94	100.00	94.63	84.84	95.89	84.88
Fillet	Quantity	97.70	100.00	109.73	85.17	116.64	108.13
Fillet	Value Share	0.22	0.28	0.25	0.19	0.28	0.23
Head&Gut	Value	130.95	100.00	135.53	132.78	112.98	136.15
Head&Gut	Price	115.72	100.00	111.73	109.68	111.45	127.32
Head&Gut	Quantity	113.16	100.00	121.30	121.06	101.37	106.93
Head&Gut	Value Share	0.56	0.49	0.56	0.61	0.50	0.60
Other	Value	99.74	100.00	79.86	81.88	108.13	92.82
Other	Price	105.87	100.00	86.32	99.29	89.83	91.43
Other	Quantity	94.21	100.00	92.52	82.47	120.37	101.52
Other	Value Share	0.10	0.12	0.08	0.09	0.11	0.10
Roe	Value	86.19	100.00	114.42	62.79	17.14	33.73
Roe	Price	109.07	100.00	77.99	50.04	52.69	59.31
Roe	Quantity	79.02	100.00	146.72	125.48	32.52	56.87
Roe	Value Share	0.04	0.05	0.05	0.03	0.01	0.02
Surimi	Value	134.65	100.00	118.10	134.66	141.23	86.99
Surimi	Price	117.35	100.00	82.73	79.94	90.56	70.67
Surimi	Quantity	114.74	100.00	142.75	168.46	155.96	123.08
Surimi	Value Share	0.07	0.06	0.06	0.08	0.08	0.05

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 2012-2017.

Species	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	134.45	100.00	114.86	113.96	103.97	115.10
Aggregate	Price	125.01	100.00	104.12	104.92	103.93	114.49
Aggregate	Quantity	107.55	100.00	110.32	108.62	100.03	100.53
FLAT	Value	83.20	100.00	160.71	86.69	76.55	92.50
FLAT	Price	97.43	100.00	102.48	99.84	82.07	83.91
FLAT	Quantity	85.40	100.00	156.82	86.82	93.28	110.25
FLAT	Value Share	0.03	0.05	0.07	0.04	0.03	0.04
OTHR	Value	112.88	100.00	78.32	76.94	60.73	47.19
OTHR	Price	105.68	100.00	104.53	103.27	103.74	106.24
OTHR	Quantity	106.81	100.00	74.93	74.50	58.54	44.42
OTHR	Value Share	0.01	0.02	0.01	0.01	0.01	0.01
PCOD	Value	160.25	100.00	139.78	135.09	110.08	94.87
PCOD	Price	132.57	100.00	112.19	110.80	110.52	125.63
PCOD	Quantity	120.88	100.00	124.59	121.92	99.60	75.52
PCOD	Value Share	0.24	0.21	0.25	0.24	0.22	0.17
PLCK	Value	105.64	100.00	104.97	120.37	88.63	96.77
PLCK	Price	97.27	100.00	69.84	67.99	47.26	49.30
PLCK	Quantity	108.61	100.00	150.29	177.04	187.52	196.31
PLCK	Value Share	0.16	0.20	0.18	0.21	0.17	0.17
ROCK	Value	139.22	100.00	101.64	104.84	117.47	102.18
ROCK	Price	123.83	100.00	90.02	89.52	88.83	87.44
ROCK	Quantity	112.42	100.00	112.90	117.11	132.24	116.86
ROCK	Value Share	0.07	0.06	0.06	0.06	0.07	0.06
SABL	Value	141.20	100.00	106.44	107.31	110.37	138.61
SABL	Price	137.29	100.00	121.93	127.29	147.57	166.72
SABL	Quantity	102.85	100.00	87.30	84.30	74.79	83.14
SABL	Value Share	0.49	0.46	0.43	0.44	0.49	0.56

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 2012-2017.

Gear	Index Type	2012	2013	2014	2015	2016	2017
Aggregate	Value	134.45	100.00	114.86	113.96	103.97	115.10
Aggregate	Price	125.01	100.00	104.12	104.92	103.93	114.49
Aggregate	Quantity	107.55	100.00	110.32	108.62	100.03	100.53
HAL	Value	145.83	100.00	108.41	107.73	105.07	116.58
HAL	Price	135.87	100.00	120.09	124.50	142.21	159.83
HAL	Quantity	107.33	100.00	90.27	86.53	73.88	72.94
HAL	Value Share	0.54	0.50	0.47	0.47	0.50	0.51
POT	Value	157.78	100.00	139.19	144.85	133.23	160.09
POT	Price	131.98	100.00	112.64	112.19	110.80	123.40
POT	Quantity	119.55	100.00	123.57	129.11	120.24	129.74
POT	Value Share	0.12	0.11	0.13	0.13	0.14	0.15
TWL	Value	113.90	100.00	116.49	113.56	94.78	101.23
TWL	Price	109.15	100.00	85.73	83.86	69.27	73.83
TWL	Quantity	104.36	100.00	135.89	135.42	136.82	137.11
TWL	Value Share	0.34	0.40	0.40	0.39	0.36	0.35

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. ALASKA GROUNDFISH PRICE PROJECTIONS

6.1. Introduction

The most recent year for which ex-vessel and first-wholesale prices (Tables 11, 16, 27, and 32) are available is 2017. 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 2018), the most recent COAR data available was for the previous year, 2017. To provide recent information, current (i.e., 2018) 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 2018. Ex-vessel prices estimates are based on unadjusted prices[1] on fish ticket through the month of Sept. 2018. First-wholesale price estimates are based on export prices through the month of Aug. 2018, estimated global catch, and exchanges rates for 2018. In addition to the nowcasts, Furthermore,ex-vessel and first-wholesale prices are projected out over the next 4 years (2019-2022). 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 11, 16, 27, and 32 in Section 4 of this document. With the notable exception that first-wholesale estimates are made for all 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 custom district of origin. Export data were constrained to exports originating from states Washington and Alaska which tended to provide a better estimate of first-wholesale prices. Ex-vessel prices estimates are only for the shoreside sectors.

Tables 6.1 and 6.2 summarize the price projections for the six years spanning 2015-2020. Prices between 2015-2017 are realized (actual) prices. The summary data provided for the years 2018-2020 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, 2018, 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 6.3. Section 6.4 examines the individual product price projections for 2018-2022. 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.

6.2. Tabular Summary of Price Projection Results

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

Species	Product	stat.	2015	2016	2017	2018	2019	2020
pollock	surimi	mean	1.115	1.178	1.317	1.296	1.38	1.35
pollock	surimi	conf.int.90				[1.24,1.35]	[0.99,1.89]	[0.94,1.89]
pollock	roe	mean	2.148	2.789	2.837	3.119	3.148	3.041
pollock	roe	conf.int.90				[2.82,3.42]	[2.2,4.4]	[1.83,4.88]
pollock	fillet	mean	1.285	1.295	1.141	1.224	1.27	1.244
pollock	fillet	conf.int.90				[1.19,1.26]	[1.01,1.58]	[0.89,1.69]
pollock	deep-skin fillet	mean	1.557	1.646	1.492	1.543	1.543	1.556
pollock	deep-skin fillet	conf.int.90				[1.51,1.58]	[1.3,1.8]	[1.24,1.93]
pollock	head and gut	mean	0.622	0.604	0.459	0.543	0.485	0.503
pollock	head and gut	conf.int.90				[0.46,0.63]	[0.36,0.63]	[0.37,0.67]
pacific cod	fillet	mean	2.654	3.318	3.445	3.81	3.85	3.885
pacific cod	fillet	conf.int.90				[3.66,3.96]	[3.1,4.71]	[2.91,5.09]
pacific cod	head and gut	mean	1.347	1.279	1.57	1.639	1.663	1.692
pacific cod	head and gut	conf.int.90				[1.58,1.7]	[1.22,2.18]	[1.15,2.42]
sablefish	head and gut	mean	6.945	8.015	8.856	7.81	8.194	8.832
sablefish	head and gut	conf.int.90				[7.41,8.21]	[6.65,9.95]	[6.84,11.3]
yellowfin (bsai)	head and gut	mean	0.484	0.553	0.657	0.64	0.643	0.649
yellowfin (bsai)	head and gut	conf.int.90				[0.61,0.67]	[0.5,0.81]	[0.47,0.88]
rock sole (bsai)	head and gut with roe	mean	0.891	0.995	1.241	1.189	1.135	1.111
rock sole (bsai)	head and gut with roe	conf.int.90				[1.14,1.24]	[0.85,1.49]	[0.77,1.57]
rock sole (bsai)	head and gut	mean	0.493	0.561	0.655	0.552	0.575	0.573
rock sole (bsai)	head and gut	conf.int.90				[0.5,0.6]	[0.4,0.81]	[0.38,0.85]
arrowtooth	head and gut	mean	0.65	0.82	1.148	0.793	0.943	0.992
arrowtooth	head and gut	conf.int.90				[0.7,0.89]	[0.67,1.29]	[0.7,1.36]
atka mackerel	head and gut	mean	1.08	1.036	1.49	1.336	1.328	1.355
atka mackerel	head and gut	conf.int.90				[1.16,1.51]	[0.9,1.9]	[0.81,2.16]
rockfish	head and gut	mean	1.042	0.926	1.125	1.049	1.05	1.075
rockfish	head and gut	conf.int.90				[0.95,1.14]	[0.74,1.45]	[0.67,1.67]

Table 6.1: Groundfish Product Price Projection Summary

Species	Region	Gear	stat.	2015	2016	2017	2018	2019	2020
pollock	BSAI	trawl	mean	0.154	0.139	0.137	0.15	0.151	0.149
pollock	BSAI	trawl	conf.int.90				[0.15,0.15]	[0.11,0.2]	[0.1,0.21]
pollock	GOA	trawl	mean	0.119	0.083	0.087	0.116	0.115	0.116
pollock	GOA	trawl	conf.int.90				[0.11,0.12]	[0.08,0.15]	[0.07,0.18]
pacific cod	BSAI	trawl	mean	0.234	0.249	0.296	0.37	0.369	0.37
pacific cod	BSAI	trawl	conf.int.90				[0.37,0.37]	[0.22,0.55]	[0.21,0.62]
pacific cod	BSAI	fixed	mean	0.263	0.278	0.332	0.406	0.395	0.394
pacific cod	BSAI	fixed	conf.int.90				[0.4,0.41]	[0.26,0.58]	[0.22,0.65]
pacific cod	GOA	trawl	mean	0.26	0.27	0.329	0.393	0.406	0.385
pacific cod	GOA	trawl	conf.int.90				[0.39,0.4]	[0.29,0.55]	[0.23,0.62]
pacific cod	GOA	fixed	mean	0.306	0.302	0.336	0.447	0.458	0.438
pacific cod	GOA	fixed	conf.int.90				[0.44,0.45]	[0.34,0.6]	[0.27,0.66]
sablefish	GOA	fixed	mean	4.064	4.743	5.314	4.005	4.379	4.824
sablefish	GOA	fixed	conf.int.90				[3.92,4.09]	[3.19,5.65]	[3.41,6.54]

Table 6.2: Groundfish Ex-vessel Price Projection Summary

6.3. 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 2018 prices based on currently available (as of Oct. 2018) 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 (2018) were nowcast using export prices which are available with a minimal time lag of up to three months. Export prices through August 2018 were available for the current nowcasts. Export prices were obtained from the NMFS Science and Technology trade database. Nowcast models also incorporate 2018 exchange rate data and global catch estimates when they were determined to increase predictability. Global catch estimates for 2018 were obtained from the 2018 International Groundfish Forum. The data were used in a regression to estimate 2018 annual unit value first-wholesale prices of major species and product forms calculated from the COAR and published in Tables 16 and 32 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 product where a large share of the production volume is exported.

Ex-vessel prices (2018) were nowcasts 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 September 2018. These data were obtained through the Alaska Fisheries Information Network (AKFIN) from the V_ELLR_SLOG_PRODUCT data base. 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 2018 annual unit value ex-vessel prices calculated from the COAR and published in Tables 11 and 27 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 annal COAR based ex-vessel prices was strong for the species and gear types presented.

Price projections for the years 2019-2022 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. A detailed description of the price projection methods is available in the NOAA Technical Memorandum (Fissel, 2014). Only a small component of the future prices (2019-2022) 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.

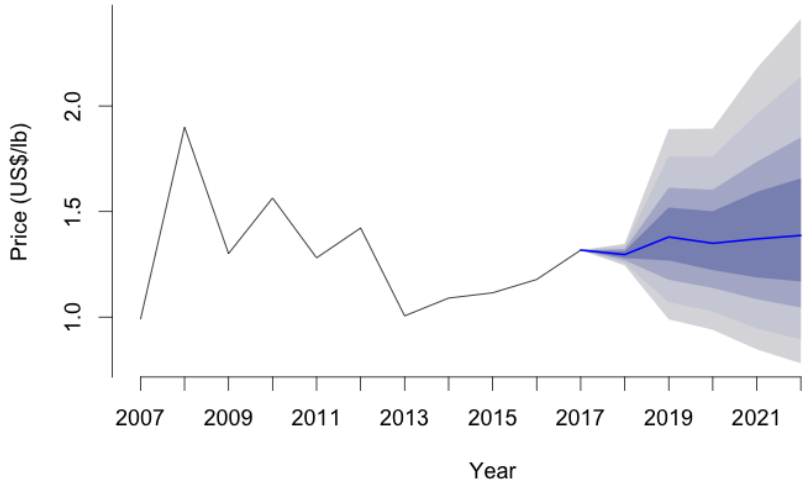

Figure 6.1: Pollock Surimi Price Projections and Confidence Bounds

Table 6.3: Projected Mean, Probability Bounds of Pollock Surimi Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.24	1.26	1.27	1.28	1.30	1.30	1.31	1.32	1.34	1.35
2019	0.99	1.07	1.18	1.27	1.38	1.39	1.52	1.61	1.76	1.89
2020	0.94	1.03	1.14	1.22	1.35	1.36	1.50	1.60	1.76	1.89
2021	0.85	0.95	1.09	1.19	1.37	1.38	1.59	1.74	1.96	2.18
2022	0.78	0.90	1.05	1.17	1.39	1.40	1.66	1.85	2.14	2.41

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
19.88	20.31	20.38	20.42	20.44	20.67

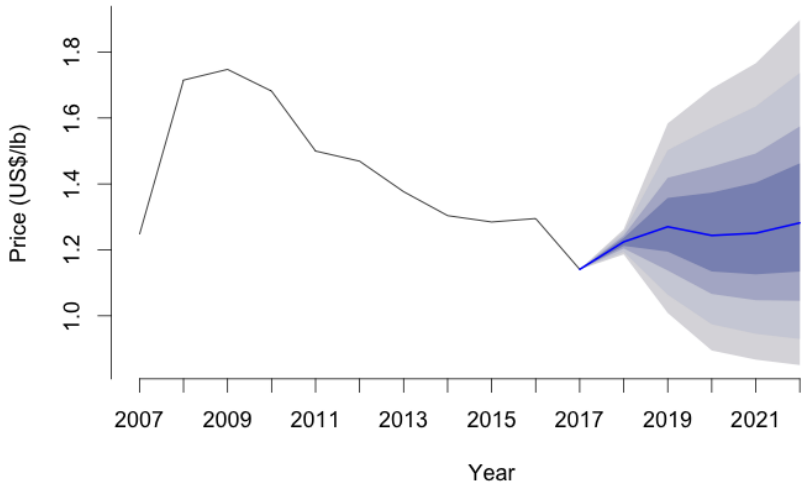

Figure 6.2: Pollock Fillet Price Projections and Confidence Bounds

Table 6.4: Projected Mean, Probability Bounds of Pollock Fillet Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.19	1.19	1.20	1.21	1.22	1.22	1.24	1.24	1.25	1.26
2019	1.01	1.06	1.14	1.19	1.27	1.28	1.36	1.42	1.50	1.58
2020	0.89	0.97	1.07	1.13	1.24	1.25	1.37	1.45	1.57	1.69
2021	0.87	0.95	1.05	1.13	1.25	1.26	1.40	1.49	1.63	1.77
2022	0.85	0.93	1.05	1.13	1.28	1.29	1.46	1.57	1.74	1.90

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run
14.42	14.42	14.42	14.42	14.42	14.42

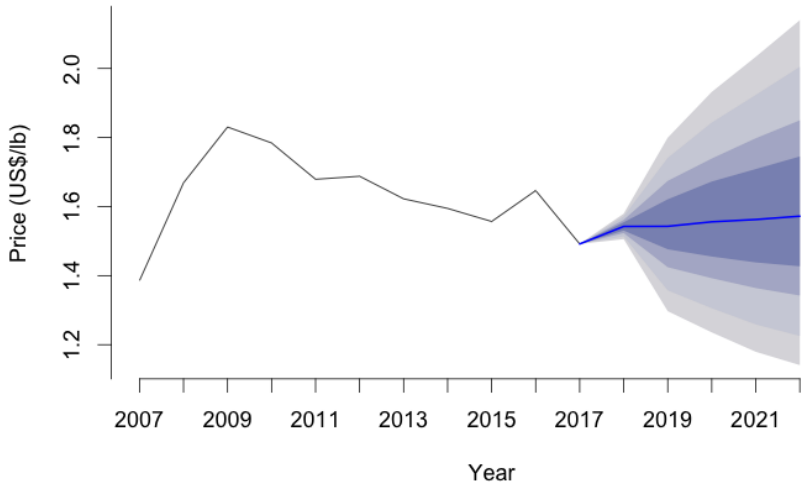

Figure 6.3: Pollock Deep-skin-fillet Price Projections and Confidence Bounds

Table 6.5: Projected Mean, Probability Bounds of Pollock Deep-skin-fillet Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.51	1.51	1.52	1.53	1.54	1.54	1.55	1.56	1.57	1.58
2019	1.30	1.36	1.42	1.48	1.54	1.55	1.62	1.67	1.74	1.80
2020	1.24	1.31	1.39	1.46	1.56	1.56	1.67	1.74	1.84	1.93
2021	1.18	1.26	1.36	1.44	1.56	1.57	1.71	1.80	1.92	2.03
2022	1.14	1.23	1.34	1.43	1.57	1.58	1.75	1.85	2.00	2.14

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
10.39	10.39	10.39	10.39	10.39	10.39

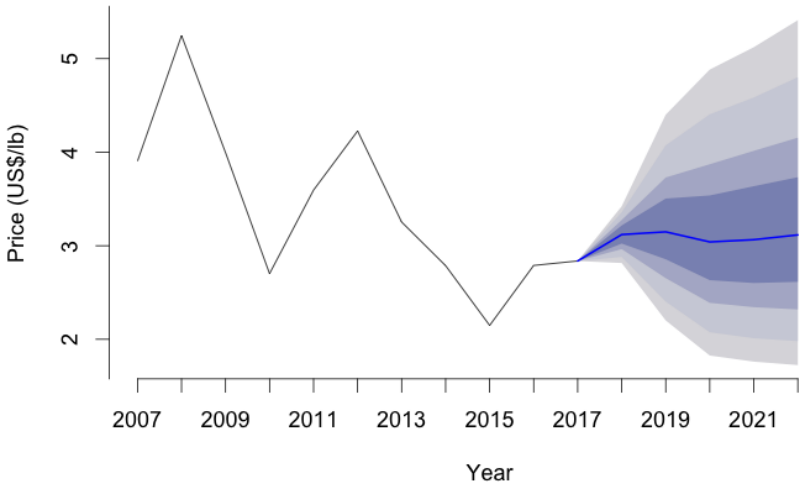

Figure 6.4: Pollock Roe Price Projections and Confidence Bounds

Table 6.6: Projected Mean, Probability Bounds of Pollock Roe Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	2.82	2.88	2.96	3.02	3.12	3.12	3.22	3.27	3.36	3.42
2019	2.20	2.40	2.65	2.86	3.15	3.16	3.50	3.73	4.07	4.40
2020	1.83	2.08	2.39	2.63	3.04	3.06	3.54	3.87	4.40	4.88
2021	1.76	2.01	2.34	2.60	3.06	3.09	3.64	4.01	4.58	5.12
2022	1.72	1.98	2.32	2.61	3.12	3.14	3.73	4.15	4.80	5.41

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
21.91	21.34	21.82	22.00	22.06	22.11

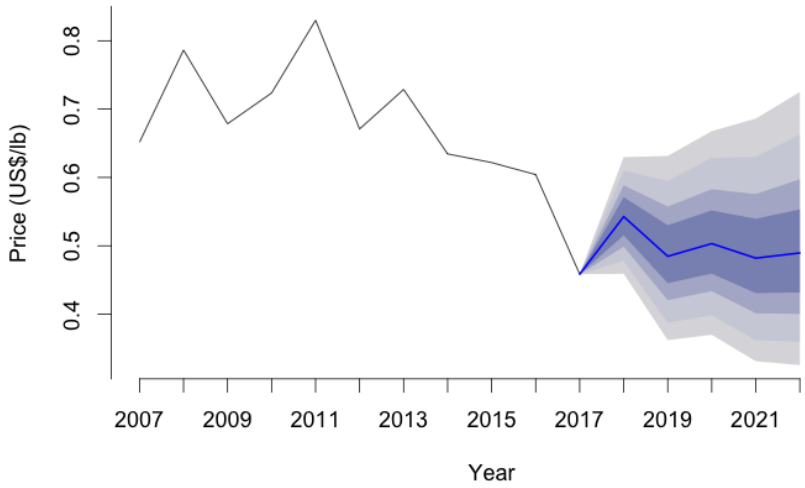

Figure 6.5: Pollock Head-and-gut Price Projections and Confidence Bounds

Table 6.7: Projected Mean, Probability Bounds of Pollock Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.46	0.48	0.50	0.52	0.54	0.54	0.57	0.59	0.61	0.63
2019	0.36	0.39	0.42	0.45	0.48	0.49	0.53	0.56	0.59	0.63
2020	0.37	0.40	0.43	0.46	0.50	0.51	0.55	0.58	0.63	0.67
2021	0.33	0.36	0.40	0.43	0.48	0.48	0.54	0.58	0.63	0.69
2022	0.33	0.36	0.40	0.43	0.49	0.49	0.55	0.60	0.66	0.72

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.

Pollock Head-and-gut Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run
14.73	14.65	14.32	14.36	14.18	16.54

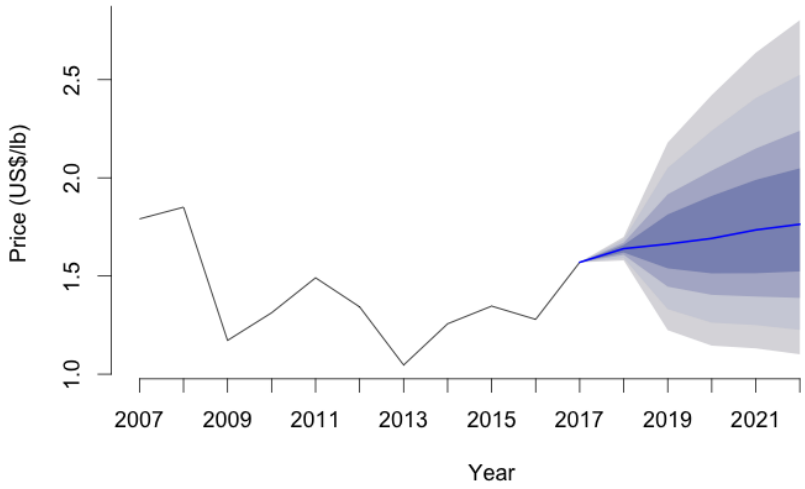

Figure 6.6: Pacific-cod Head-and-gut Price Projections and Confidence Bounds

Table 6.8: Projected Mean, Probability Bounds of Pacific-cod Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.58	1.59	1.61	1.62	1.64	1.64	1.66	1.67	1.69	1.70
2019	1.22	1.33	1.45	1.54	1.66	1.68	1.81	1.92	2.05	2.18
2020	1.15	1.26	1.40	1.51	1.69	1.70	1.91	2.04	2.24	2.42
2021	1.13	1.25	1.40	1.51	1.73	1.74	1.99	2.15	2.41	2.64
2022	1.10	1.23	1.39	1.52	1.76	1.77	2.05	2.24	2.52	2.80

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
17.36	17.86	17.79	17.74	17.71	17.65

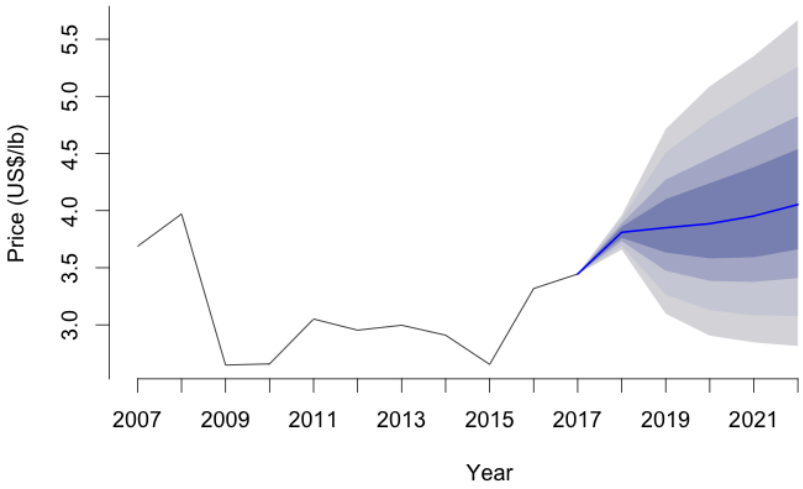

Figure 6.7: Pacific-cod Fillet Price Projections and Confidence Bounds

Table 6.9: Projected Mean, Probability Bounds of Pacific-cod Fillet Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	3.66	3.69	3.73	3.76	3.81	3.81	3.86	3.89	3.93	3.96
2019	3.10	3.27	3.47	3.63	3.85	3.87	4.10	4.27	4.51	4.71
2020	2.91	3.13	3.39	3.58	3.89	3.91	4.24	4.46	4.79	5.09
2021	2.85	3.09	3.38	3.59	3.95	3.97	4.38	4.64	5.03	5.35
2022	2.82	3.08	3.41	3.66	4.05	4.08	4.54	4.83	5.26	5.67

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
13.63	13.24	13.88	14.43	14.46	14.85

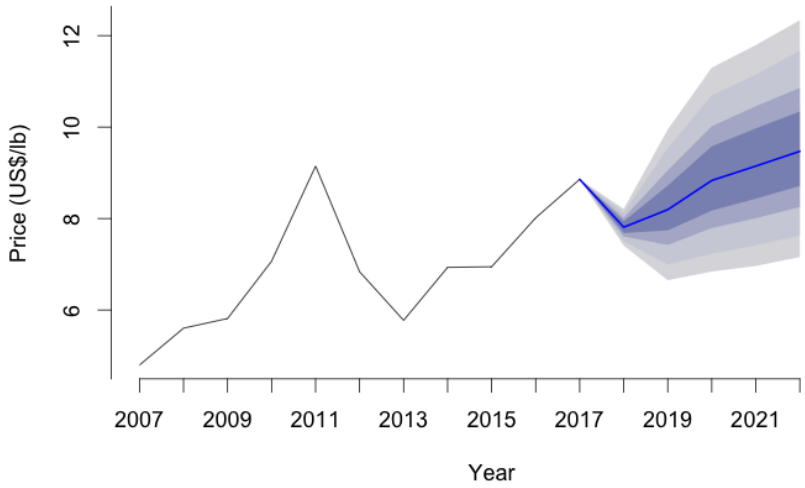

Figure 6.8: Sablefish Head-and-gut Price Projections and Confidence Bounds

Table 6.10: Projected Mean, Probability Bounds of Sablefish Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	7.41	7.51	7.61	7.68	7.81	7.81	7.94	8.01	8.12	8.21
2019	6.65	7.00	7.42	7.74	8.19	8.22	8.72	9.05	9.54	9.95
2020	6.84	7.24	7.79	8.18	8.83	8.88	9.58	10.02	10.69	11.30
2021	6.96	7.42	8.01	8.44	9.15	9.18	9.97	10.46	11.14	11.79
2022	7.16	7.63	8.25	8.71	9.47	9.52	10.34	10.85	11.67	12.34

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.

Sablefish Head-and-gut Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run
12.06	12.40	12.47	12.50	12.52	12.30

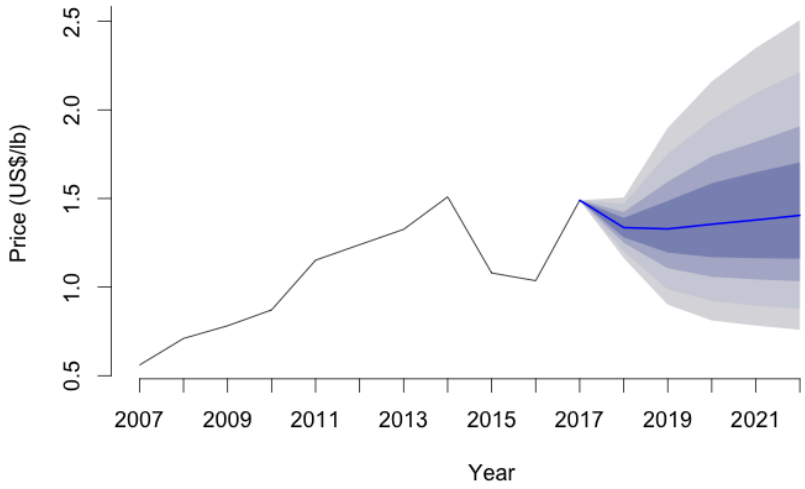

Figure 6.9: Atka-mackerel Head-and-gut Price Projections and Confidence Bounds

Table 6.11: Projected Mean, Probability Bounds of Atka-mackerel Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.16	1.20	1.25	1.28	1.34	1.34	1.39	1.42	1.47	1.51
2019	0.90	0.99	1.11	1.19	1.33	1.34	1.49	1.59	1.75	1.90
2020	0.81	0.92	1.06	1.17	1.35	1.36	1.59	1.74	1.94	2.16
2021	0.78	0.90	1.04	1.16	1.38	1.39	1.65	1.82	2.09	2.35
2022	0.76	0.88	1.03	1.16	1.40	1.41	1.70	1.91	2.21	2.51

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
23.32	22.22	21.88	21.50	21.07	27.56

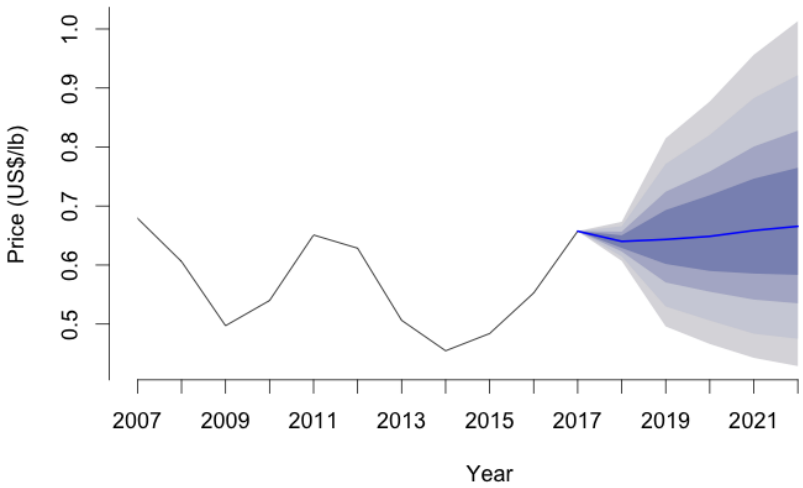

Figure 6.10: Yellowfin-(BSAI) Head-and-gut Price Projections and Confidence Bounds

Table 6.12: Projected Mean, Probability Bounds of Yellowfin-(BSAI) Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.61	0.61	0.62	0.63	0.64	0.64	0.65	0.66	0.67	0.67
2019	0.50	0.53	0.57	0.60	0.64	0.65	0.69	0.72	0.77	0.81
2020	0.47	0.51	0.55	0.59	0.65	0.65	0.72	0.76	0.82	0.88
2021	0.44	0.48	0.54	0.59	0.66	0.66	0.75	0.80	0.88	0.96
2022	0.43	0.48	0.54	0.58	0.67	0.67	0.76	0.83	0.92	1.01

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
13.72	15.15	12.45	14.68	12.85	13.71

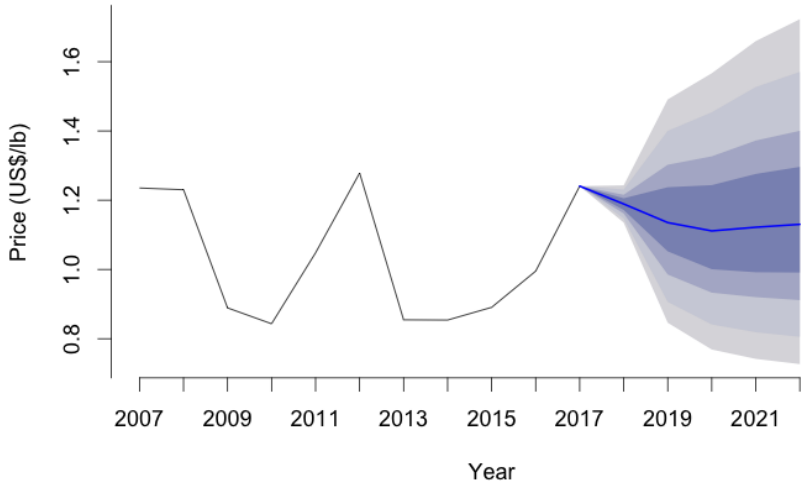

Figure 6.11: Rock-sole-(BSAI) Head-and-gut-with-roe Price Projections and Confidence Bounds

Table 6.13: Projected Mean, Probability Bounds of Rock-sole-(BSAI) Head-and-gut-with-roe Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	1.14	1.15	1.16	1.17	1.19	1.19	1.21	1.22	1.23	1.24
2019	0.85	0.91	0.99	1.05	1.14	1.15	1.24	1.30	1.40	1.49
2020	0.77	0.84	0.93	1.00	1.11	1.12	1.24	1.33	1.45	1.57
2021	0.74	0.82	0.92	0.99	1.12	1.13	1.28	1.37	1.53	1.66
2022	0.73	0.81	0.91	0.99	1.13	1.13	1.30	1.40	1.57	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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run
17.91	17.88	17.85	17.84	17.84	17.81

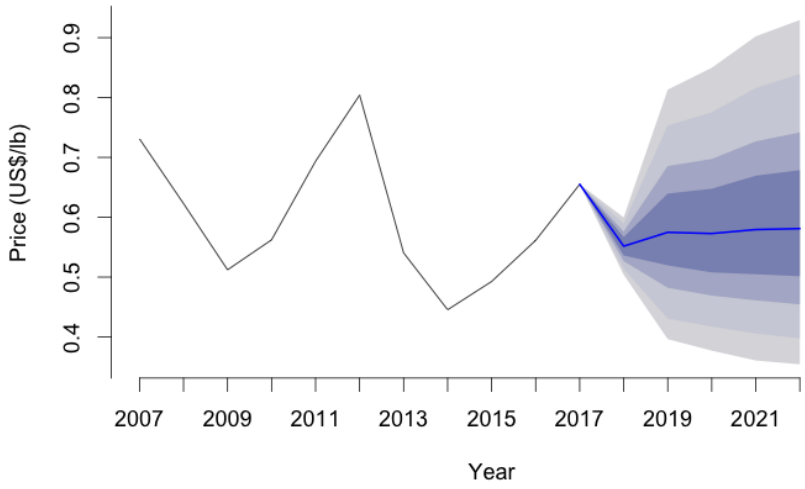

Figure 6.12: Rock-sole-(BSAI) Head-and-gut Price Projections and Confidence Bounds

Table 6.14: Projected Mean, Probability Bounds of Rock-sole-(BSAI) Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.50	0.51	0.53	0.54	0.55	0.55	0.57	0.58	0.59	0.60
2019	0.40	0.43	0.48	0.52	0.57	0.58	0.64	0.69	0.75	0.81
2020	0.38	0.42	0.47	0.51	0.57	0.58	0.65	0.70	0.78	0.85
2021	0.36	0.41	0.46	0.50	0.58	0.58	0.67	0.73	0.82	0.90
2022	0.35	0.40	0.45	0.50	0.58	0.58	0.68	0.74	0.84	0.93

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
22.21	22.11	22.32	22.39	22.41	22.42

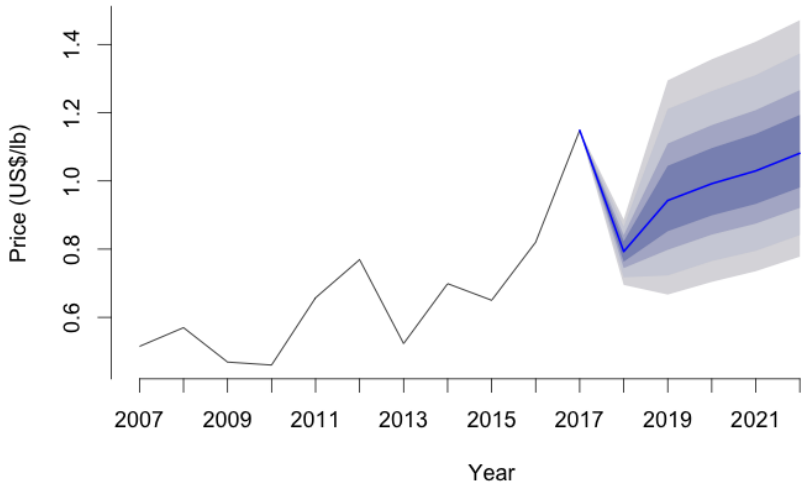

Figure 6.13: Arrowtooth Head-and-gut Price Projections and Confidence Bounds

Table 6.15: Projected Mean, Probability Bounds of Arrowtooth Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.70	0.72	0.74	0.76	0.79	0.79	0.82	0.84	0.87	0.89
2019	0.67	0.72	0.80	0.85	0.94	0.95	1.04	1.11	1.21	1.29
2020	0.70	0.77	0.84	0.90	0.99	1.00	1.10	1.16	1.26	1.36
2021	0.74	0.80	0.87	0.93	1.03	1.03	1.14	1.21	1.31	1.41
2022	0.78	0.84	0.92	0.98	1.08	1.08	1.19	1.27	1.37	1.47

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 Return Volatility Projections					
Hist. Avg.	2019	2020	2021	2022	Long-run
21.82	19.93	19.25	18.26	16.65	30.13

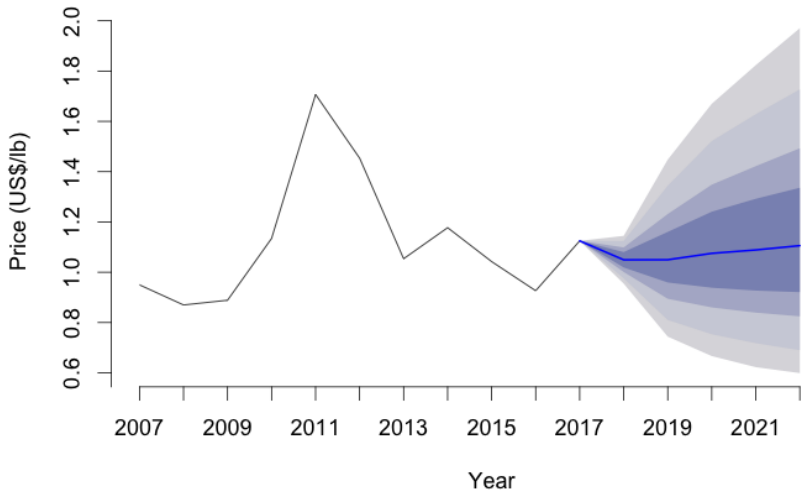

Figure 6.14: Rockfish Head-and-gut Price Projections and Confidence Bounds

Table 6.16: Projected Mean, Probability Bounds of Rockfish Head-and-gut Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.95	0.98	1.00	1.02	1.05	1.05	1.08	1.10	1.12	1.14
2019	0.74	0.81	0.89	0.96	1.05	1.06	1.16	1.23	1.34	1.45
2020	0.67	0.75	0.86	0.94	1.08	1.08	1.24	1.35	1.52	1.67
2021	0.62	0.72	0.84	0.93	1.09	1.10	1.29	1.42	1.63	1.82
2022	0.60	0.69	0.82	0.92	1.11	1.11	1.34	1.49	1.73	1.97

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run
19.22	20.36	17.72	20.11	17.99	19.07

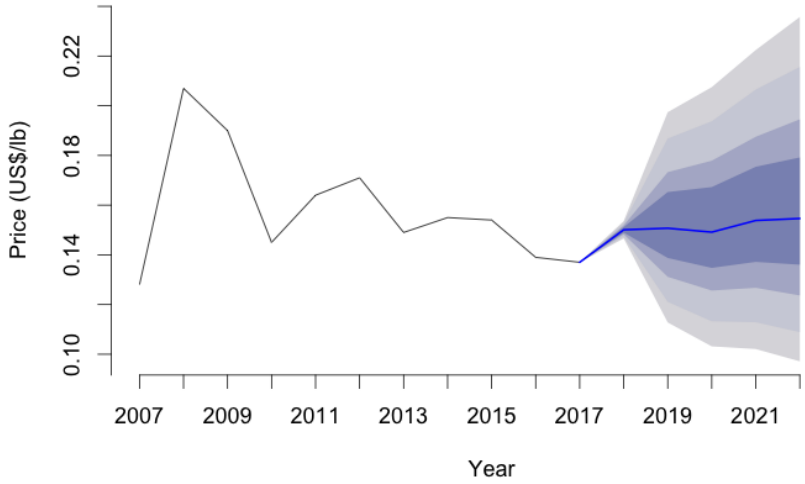

Figure 6.15: Pollock BSAI Trawl Price Projections and Confidence Bounds

Table 6.17: Projected Mean, Probability Bounds of Pollock BSAI Trawl Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2019	0.11	0.12	0.13	0.14	0.15	0.15	0.17	0.17	0.19	0.20
2020	0.10	0.11	0.13	0.13	0.15	0.15	0.17	0.18	0.19	0.21
2021	0.10	0.11	0.13	0.14	0.15	0.16	0.18	0.19	0.21	0.22
2022	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.19	0.22	0.24

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 BSAI Trawl Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
trawl	18.36	18.36	18.36	18.36	18.36	18.36

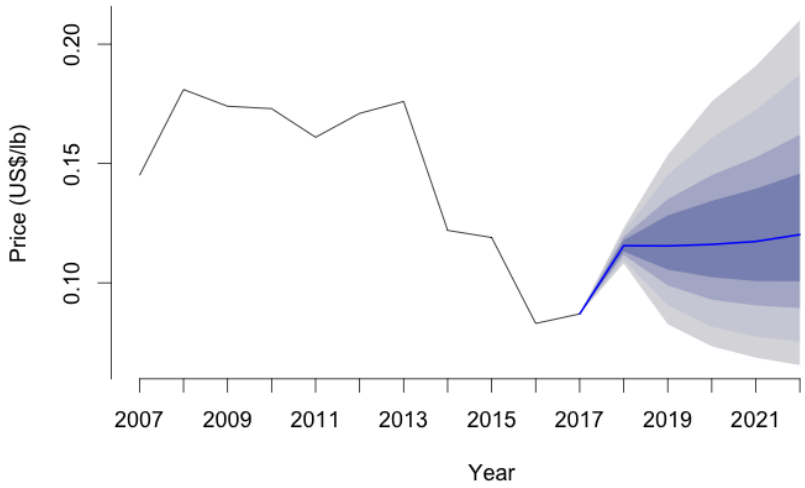

Figure 6.16: Pollock GOA Trawl Price Projections and Confidence Bounds

Table 6.18: Projected Mean, Probability Bounds of Pollock GOA Trawl Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.12	0.12	0.12
2019	0.08	0.09	0.10	0.11	0.12	0.12	0.13	0.13	0.15	0.15
2020	0.07	0.08	0.09	0.10	0.12	0.12	0.13	0.15	0.16	0.18
2021	0.07	0.08	0.09	0.10	0.12	0.12	0.14	0.15	0.17	0.19
2022	0.07	0.08	0.09	0.10	0.12	0.12	0.15	0.16	0.19	0.21

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
trawl	18.71	19.43	19.92	20.58	21.45	18.29

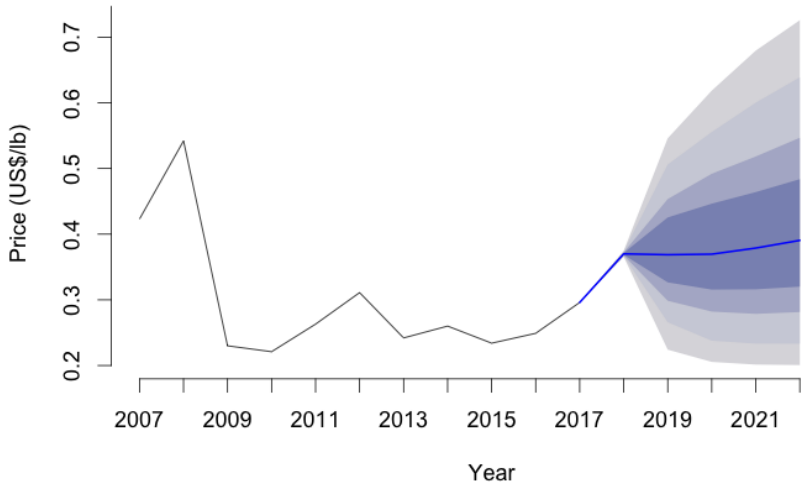

Figure 6.17: Pacific-cod BSAI Trawl Price Projections and Confidence Bounds

Table 6.19: Projected Mean, Probability Bounds of Pacific-cod BSAI Trawl Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
2019	0.22	0.27	0.30	0.33	0.37	0.38	0.43	0.45	0.51	0.55
2020	0.21	0.24	0.28	0.32	0.37	0.38	0.45	0.49	0.56	0.62
2021	0.20	0.23	0.28	0.32	0.38	0.38	0.46	0.52	0.60	0.68
2022	0.20	0.23	0.28	0.32	0.39	0.40	0.48	0.55	0.64	0.73

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
trawl	22.44	27.33	26.30	25.52	25.02	24.40

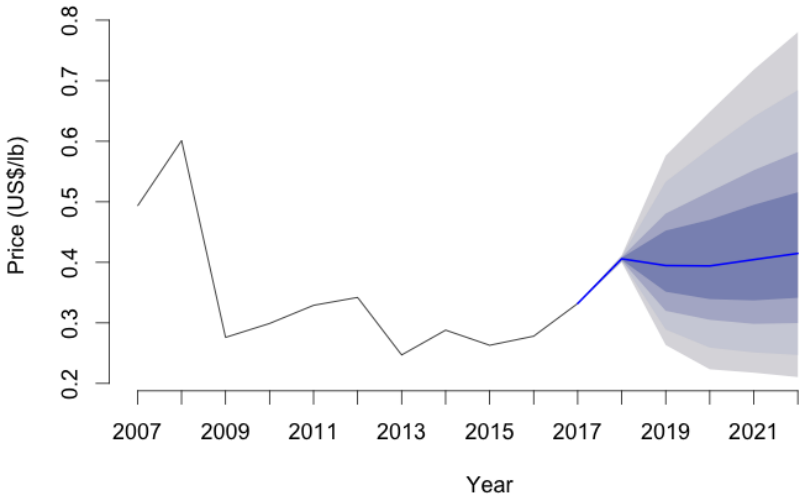

Figure 6.18: Pacific-cod BSAI Fixed Price Projections and Confidence Bounds

Table 6.20: Projected Mean, Probability Bounds of Pacific-cod BSAI Fixed Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.40	0.40	0.40	0.40	0.41	0.41	0.41	0.41	0.41	0.41
2019	0.26	0.29	0.32	0.35	0.39	0.40	0.45	0.48	0.53	0.58
2020	0.22	0.26	0.31	0.34	0.39	0.40	0.47	0.52	0.59	0.65
2021	0.22	0.25	0.30	0.34	0.40	0.41	0.49	0.55	0.64	0.72
2022	0.21	0.25	0.30	0.34	0.41	0.42	0.52	0.58	0.68	0.78

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
fixed	25.93	26.11	26.15	26.19	26.21	26.28

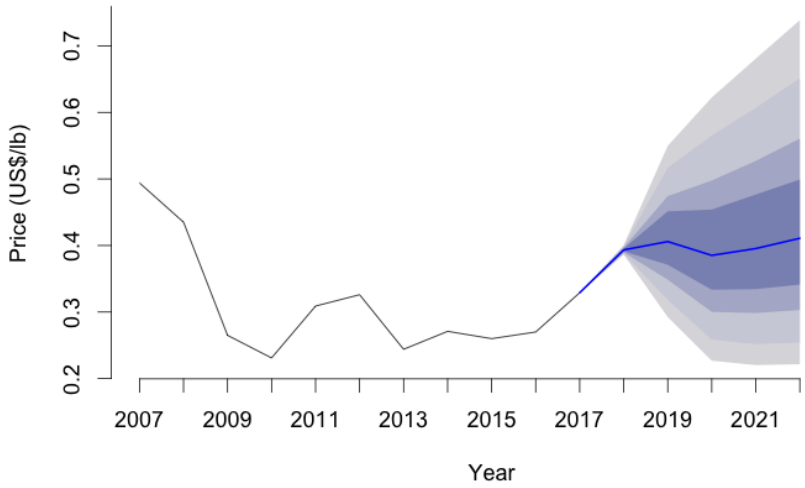

Figure 6.19: Pacific-cod GOA Trawl Price Projections and Confidence Bounds

Table 6.21: Projected Mean, Probability Bounds of Pacific-cod GOA Trawl Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.39	0.39	0.39	0.39	0.39	0.39	0.40	0.40	0.40	0.40
2019	0.29	0.32	0.35	0.37	0.41	0.41	0.45	0.47	0.52	0.55
2020	0.23	0.26	0.30	0.33	0.39	0.39	0.45	0.50	0.56	0.62
2021	0.22	0.25	0.30	0.33	0.40	0.40	0.48	0.53	0.61	0.68
2022	0.22	0.25	0.30	0.34	0.41	0.42	0.50	0.56	0.65	0.74

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
trawl	20.58	20.59	20.51	20.60	20.54	20.58

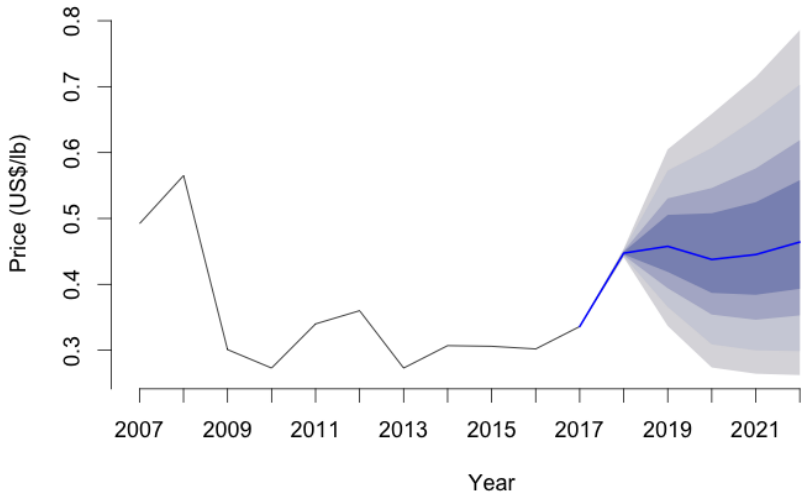

Figure 6.20: Pacific-cod GOA Fixed Price Projections and Confidence Bounds

Table 6.22: Projected Mean, Probability Bounds of Pacific-cod GOA Fixed Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	0.44	0.44	0.44	0.45	0.45	0.45	0.45	0.45	0.45	0.45
2019	0.34	0.37	0.39	0.42	0.46	0.46	0.51	0.53	0.57	0.60
2020	0.27	0.31	0.35	0.39	0.44	0.45	0.51	0.55	0.61	0.66
2021	0.26	0.30	0.35	0.38	0.45	0.45	0.52	0.58	0.65	0.71
2022	0.26	0.30	0.35	0.39	0.46	0.47	0.56	0.62	0.70	0.79

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.

Pacific-cod GOA Fixed Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
fixed	19.70	19.27	19.40	19.50	19.57	19.94

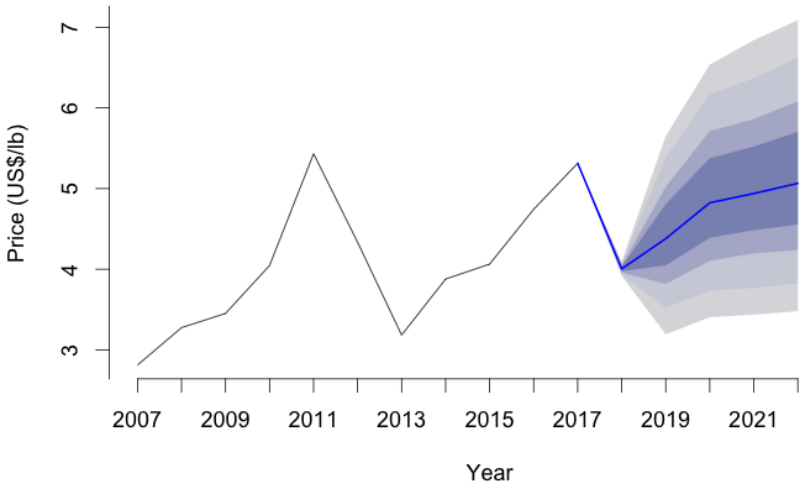

Figure 6.21: Sablefish GOA Fixed Price Projections and Confidence Bounds

Table 6.23: Projected Mean, Probability Bounds of Sablefish GOA Fixed Prices (US$/lb)

	Lower						Upper			
	5%	10%	20%	30%	mean	Median	70%	80%	90%	95%
2018	3.92	3.94	3.96	3.98	4.00	4.00	4.03	4.05	4.07	4.09
2019	3.19	3.53	3.82	4.05	4.38	4.44	4.81	5.02	5.38	5.65
2020	3.41	3.73	4.10	4.39	4.82	4.87	5.37	5.71	6.17	6.54
2021	3.44	3.77	4.20	4.48	4.94	4.98	5.52	5.86	6.37	6.84
2022	3.48	3.83	4.24	4.55	5.06	5.12	5.70	6.08	6.62	7.09

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 Return Volatility Projections

Hist. Avg.	2019	2020	2021	2022	Long-run	NA
fixed	17.61	17.46	17.34	17.24	17.13	17.75

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7. AMENDMENT 91 CHINOOK BYCATCH ECONOMIC DATA REPORT (EDR) SUMMARY AND ANALYSIS

7.1. Introduction

Amendment 91 (A91) to the BSAI Groundfish Fishery Management Plan was developed by the North Pacific Fisheries Management Council (NPFMC or Council) as a suite of measures intended to promote a system of incentives to minimize bycatch of Chinook salmon in the Bering Sea/Aleutian Islands (BSAI) pollock trawl fishery, primarily established through private contractual arrangements between industry entities participating in the American Fisheries Act (AFA) management program. The Council finalized A91 in 2009, and the final rule was issued by NMFS in 2010 (75 FR 53026 and became effective in September, 2010.[1] The Council subsequently passed a trailing amendment identifying several new recordkeeping and reporting requirements for AFA participants specifically intended to support monitoring and assessment of incentive measures under A91 and industry costs associated with its implementation.

The purpose of this Section of the Economic SAFE is to report detailed results from data collected for the 2012-2016 fishing seasons. The following is intended to contribute information to enable the public, the Council, industry, and other stakeholders to better understand and analyze the impacts of Amendment 91. A general report on A91 implementation is beyond the scope of this report, however, which is limited primarily to summary and synthesis of data collected to-date in the A91 EDR. This information should be viewed in the context of recent Council analyses and other relevant resources, including Chinook catch information and the AFA Cooperative and Incentive Plan Agreement (IPA) reports, and the Council's recent AFA Program Review (Northern Economics, 2017).[2]

7.2. Amendment 91 Economic Data Report (EDR) Background

In developing Amendment 91, the Council determined that fisheries data available through existing sources would be insufficient to adequately monitor the implementation of management measures under the amendment. The Council subsequently recommended a data collection program to supplement existing data and support analysis of the effectiveness of Amendment 91 in reducing Chinook salmon PSC and to assess any changes in operational costs and/or the yield of pollock. The Council's December 2009 purpose and need statement recommended that these data be used to address four components of Amendment 91:

- Understand the effects and impacts of the Amendment 91 IPAs, the higher and lower PSC hard caps, and the performance standard;

[1] An overview of Amendment 91 and other recent and ongoing Council initiatives related to salmon bycatch management in BSAI groundfish fisheries is accessible at https://www.npfmc.org/bsai-salmon-bycatch/.

[2] Council analyses of salmon bycatch in BSAI fisheries are available on the Council's website at `https://www.npfmc.org/bsai-salmon-bycatch/`. Current and historical Chinook salmon catch information can be found at `https://alaskafisheries.noaa.gov/fisheries-catch-landings`. AFA Cooperative and IPA Reports are available at `https://alaskafisheries.noaa.gov/fisheries-data-reports`.

- Evaluate the effectiveness of the IPA incentives in times of high and low levels of salmon PSC, and the effectiveness of the performance standard to reduce salmon PSC;
- Evaluate how Amendment 91 affects where, when, and how pollock fishing and salmon PSC occur; and
- Study and evaluate conclusions drawn by industry in the IPA annual reports.

In its final motion on the trailing amendment on new data collection measures under Amendment 91, the Council recommended new or modified reporting requirements to collect the following:

1. Transaction data for salmon and pollock, including:
    a. IPA and AFA Cooperative reports, summarizing the assignment of Chinook PSC and pollock quota to each participating vessel at the start of each fishing season, and all in-season transfers of Chinook and pollock PSC;
    b. Compensated Transfer Form, to collect the quantity and price of Chinook PSC and quantity of pollock, in all PSC transfers in which there is a monetary exchange for PSC transferred from one party to another;
2. A logbook checkbox, incorporated into exiting AFA vessel logbooks, to collect data at the tow-level regarding movement of the vessel for the primary purpose of Chinook PSC avoidance;
3. A vessel fuel usage survey, to collect average hourly fuel use rates for fishing and transiting as well as quantity and cost of annual fuel purchases to be used to estimate costs of vessels moving to avoid salmon PSC; and
4. A vessel master survey, to determine rationale for decision making during the pollock season (fishing location choices and salmon PSC reduction measures).

Daily Fishing Logbook and AFA Cooperative Report requirements predate Amendment 91, and annual submission of IPAs and IPA Annual Reports were required under the final rule implementing the amendment, in effect since September, 2010. In the Council's final action on the EDR program in 2009, modifications of these (items 1.a and 2 above) were included in addition to the new data collections that comprise the A91 EDR itself (items 1.b, 3, and 4). Modification of the Daily Fishing Logbook (DFL) for BSAI pollock trawl CVs and CPs was intended to identify instances when a vessel fishing for pollock in the BSAI changed fishing locations for the primary purpose of avoiding Chinook salmon PSC. However, vessel movement data collected to-date from CV's is not captured in an electronic database available to analysts, and data reported by CPs has varied greatly in coverage; as such, vessel movement data is not included in this report.[3]

The final rule to implement the above measures went into effect March 3, 2012, and administration of the A91 EDR began in 2013, with a June 1 due date for submission of annual EDR forms reporting data for 2012 operations.[4] The EDR program is comprised of three separate survey forms; submission requirements for the respective forms are contingent on the entity's role and activity in

[3]See this section of the 2017 edition of the Economic SAFE for further details regarding implementation and data quality concerns regarding the A91 EDR and associated reporting requirements.

[4]See **77 FR 5389** (February 3, 2012) for details.

the AFA pollock fishery in a given year, as defined under Amendment 91, and include conditions for certification-only submission with exemption from data reporting portions of respective EDR forms. Requirements are as follows:

- Compensated Transfer Report
  - Certification: An owner or leaseholder of an AFA-permitted vessel and the representative of any entity[5] that received an allocation of Chinook salmon PSC from NMFS must submit a CTR, Part 1, each calendar year, for the previous calendar year.
  - Fully completed CTR: Any person who transferred Chinook salmon PSC allocation after January 20, and paid or received money for the transfer, must submit a completed CTR (Part 1 and Part 2) for the previous calendar year.

- Vessel Fuel Survey
  - An owner or leaseholder of an AFA-permitted vessel must submit all completed Vessel Fuel Surveys for each vessel used to harvest pollock in the Bering Sea in a given year.

- Vessel Master Survey
  - For any AFA-permitted vessel used to harvest pollock in the Bering Sea in the previous year:
    * The vessel master must complete the Vessel Master Survey and the Vessel Master certification following the instructions on the form, and
    * An owner or leaseholder must submit all Vessel Master Surveys and each Vessel owner certification following the instructions on the form.

7.3. Overview of the Annual Amendment 91 EDR Data Submission Process

The Amendment 91 EDR program is managed primarily by the Alaska Fisheries Science Center (AFSC), with support from NMFS Alaska Region, and is administered in collaboration with Pacific States Marine Fisheries Commission (PSMFC). In consultation with NMFS staff, PSMFC annually identifies current contact information for all AFA entities determined to be subject to A91 EDR reporting requirements for the prior year, and distributes notices by certified mail describing the requirements for EDR submission and instructions for accessing the online survey forms using secure login credentials enclosed. Notices are mailed for delivery by April 1 when PSMFC's EDR web portal goes online,[6] with a final submission deadline of June 1. During the EDR submission period, PSMFC staff provides phone support to submitters and monitors form completion and data quality;

[5] In addition to AFA vessel owners, entities potentially receiving allocations of Chinook salmon prohibited species catch (PSC) include AFA Sector entities and Inshore harvest cooperatives, Incentive Plan Agreement (IPA) entities, and CDQ groups. For the sake of clearer exposition, "vessel owners or leaseholders" as a group are referred to collectively as "vessel owners" hereafter in this report, except where a relevant distinction pertains.

[6] A91 EDR forms are required under implementing regulations to be submitted in electronic form. PSMFC has developed an EDR Web portal to facilitate password-secured access to EDR webforms for completion and submission online. Printable EDR forms and instructions for online submission can be accessed at `http://www.psmfc.org/chinookedr/`. Copies of all mailings distributed to EDR submitters by AFSC or PSMFC are available on request from the AFSC Economics and Social Science Research Program.

where data anomalies are identified, PSMFC contacts the submitter to confirm data corrections as appropriate. All A91 EDR data collection procedures for the 2012-2016 fishing years have been completed. Table 7.1 below shows counts of EDR submissions by year, reported separately for vessel owners and AFA entities (which include AFA Incentive Plan Agreement entities, AFA Sector Entities and Harvest Cooperatives, and CDQ groups)), and Table 7.2 reports the number of completed fuel survey and vessel master survey records collected to date, by vessel sector. Note that counts of *EDRs - data submitted* shown for vessel owners in Table 7.1 are substantially fewer than the counts of completed fuel and vessel master surveys shown in Table 7.2; this is due to the flexibility vessel owners have in using PSMFCs EDR web portal to consolidate reporting for one or more vessels onto a single EDR 'package', and the decline in number of *EDRs - data submitted* from 2012 to 2016 reflects increased use of this functionality by individuals that complete and submit EDR forms for multiple vessels. Note that the fuel survey counts shown in Table 7.2 indicate the number of vessels for which fuel survey data was reported each year (i.e., one record per vessel); the higher counts of vessel master surveys reflect cases where two or more individual skippers submitted a vessel master survey for the same vessel, with the number of surveys per vessel declining over time (also note that *Master Survey Count* includes all vessel master surveys submitted, including those that did not provide complete responses to all questions in the survey.)

7.4. Vessel Master Survey Overview and Key Findings

The vessel master survey is comprised of a series of qualitative response questions regarding fishing and bycatch conditions observed by vessel masters during the BSAI pollock fishery, and factors in effect that motivated Chinook bycatch avoidance (survey questions are listed below):[7]

1. *If the vessel participated in an Incentive Plan Agreement, did the IPA affect your fishing strategy? If yes, please describe and discuss what incentives had the largest impact on your strategy.*
2. *Did the amount and/or cost of Chinook PSC allocation available to the vessel lead you to make changes in pollock fishing operations? If yes, please describe.*
3. *How would you compare the Chinook salmon bycatch and pollock conditions during the A and B seasons this year relative to the last two years? Please describe any unique aspects of the season.*
4. *Did Chinook salmon bycatch conditions cause you to delay the start of your pollock fishing or otherwise alter the timing of your pollock fishing for some period during the past A and/or B season? If yes, please describe the Chinook salmon bycatch condition, when it occurred, and any change in your pollock fishing as a result.*
5. *In the past year, did you end a trip and return to port early because of Chinook salmon bycatch conditions? [ ] YES [ ] NO. If YES, please indicate the number of trips that this occurred in each season (use a checkmark to indicate appropriate answer for each season).*
6. *Please describe how any area closures or restrictions for the purpose of reducing Chinook salmon bycatch affected where and how you fished.*

[7]The vessel master survey was designed under Council direction and approval after being requested as a data element by a principle pollock industry trade group, and survey questions were designed with extensive input from the pollock industry.

7. *Please describe how any regulatory or other area closures or restrictions for a purpose other than reducing Chinook salmon bycatch affected where and how you fished.*
8. *Compared to a typical year, did weather or sea ice conditions have more, less or about the same impact on fishing as in a typical year? Please describe especially if there were particularly uncommon conditions at any point this year. If these conditions had an impact on your ability to avoid Chinook salmon bycatch, please describe.*
9. *Were there exceptional factors that affected your pollock fishing this year? For example, were there unusual market or stock conditions, unusual pollock fishing conditions, or maintenance problems? Please describe.*
10. *Separate from an Incentive Plan Agreement, were there other incentives for you to reduce Chinook salmon bycatch? If yes, please describe.*
11. *Did actual or potential bycatch of species other than Chinook salmon cause you to change your harvesting decisions during the pollock season? If yes, please describe.*

An extensive, formal qualitative analysis of survey response data for the years 2012 through 2016 was reported in the 2017 edition of the Economic SAFE Report, survey responses are summarized for the 2012-2016 fishing years. Survey data were analyzed with a grounded theory approach, meaning codes were created based on verbatim statements of respondents (Glaser and Strauss 1967), and frequency statistics were calculated using coded responses for each question. Resource requirements for performing the formal qualitative analysis prohibit annual application, and has not been completed to fully update results to include vessel master survey data for the 2017 fishing year. An informal review of 2017 survey data was performed to identify notable responses that characterized the 2017 pollock fishery distinct from pervious years. These are summarized below, followed by key findings from the formal analysis of survey responses for 2012 to 2016.

Notable findings from the vessel master survey for 2017 include:

- There were few notable differences in reported experiences from last year's SAFE report for the 2016 fishing year.
- Skippers mentioned Steller sea lion rookery closures more frequently than in previous years.
- As in recent years, many skippers noted that Chinook were more difficult to avoid in the A Season.

Key findings from the vessel master survey for 2012-2016, include:

- The Chinook salmon hard cap, rather than IPA, is viewed as the biggest incentive for avoiding salmon bycatch. For the inshore and mothership sectors, salmon saving credits were initially reported as an important incentive in 2012, but reporting of the importance of this incentive declined over the 2012-2016 period.
- Respondents identified many other incentives other than the IPA plan. The most common response was that operators felt a personal or moral obligation to avoid salmon bycatch. Many respondents stated that this was simply the right thing to do and that they took pride in ensuring their bycatch was minimal.

- Operators are reporting that they are increasingly risk adverse in regards to catching salmon. Many of the strategies for avoiding salmon are associated with increased operating costs such as traveling further and fishing in less productive or lower-value areas.
- Respondents increasingly emphasize the role of information sharing and communication as a primary means of reducing salmon bycatch.
- Operators typically are cautious in starting the A season to avoid Chinook in a period when bycatch can be very high, and start the B season as soon as possible to complete their fishing before the fall when more Chinook are present on the fishing grounds.
- Closures (rolling hotspot and other fixed closures) are often associated with increased travel and operating costs; many vessels report avoiding hotspot closures even if they do not apply to them in order to avoid those identified high-salmon areas.
- Other than Chinook, chum salmon is the most likely species that vessels report alters their fishing strategy.
- Most vessel operators stated that they did not experience any exceptional factors that affected their fishing season for any given year (2012-2016) when they were prompted to explain any unusual circumstances. The exceptional factors that were reported had to do with fishing and/or stock conditions. For example, several respondents complained that there were greater populations of smaller pollock on the fishing grounds; this seemed to be particularly problematic for the CV sector in 2015. Also, squid closures, and to a lesser extent herring closures, emerged as a significant factor impacting fishing in the 2015 B season in the CV sector.

7.5. Vessel Fuel Survey: Summary and Results

Vessel operators are required to report the total annual quantity of fuel loaded onto the vessel, the total cost of that fuel, and the average annual rates of fuel consumption while fishing and transiting while engaged in the pollock fishery. Fuel survey data reported for all catcher vessels and catcher-processors active in the 2012-2016 Bering Sea AFA pollock fishery are summarized in Table 7.3 below.

The fuel use results indicate a slight decline in average hourly fuel consumption rates among catcher vessels during 2016, to 74 gallons per hour (gph) while fishing and 50 gph while transiting (both within the range of variation observed in previous years of reporting). Average fuel consumption rates among catcher/processors have been much more variable over the 2012 to 2016 period, with consumption rates for fishing and transiting activity reported for 2016, 297 gph and 282 gph, respectively, both rising to the highest levels observed over the previous four years. During 2016, the CP sector's average rate for fishing activity declined to 285 gph (approximately equal to the average over the sector's rates reported for 2012 through 2015), while CP average fuel rate for vessel transiting increased for a third year, to 288 gph, the highest value reported to-date, and exceeding the average fuel rate reported for 2016 fishing activity. Average annual fuel use and cost for both sectors increased substantially during 2016. In the CP sector, the average quantity of fuel purchased during 2016 increased by 13% to 1.57 million gallons per vessel, the highest quantity reported to-date, while average fuel cost reported for the year increased by 30% from 2015, to $3.3 million. Annual fuel quantities and costs during 2016 saw smaller relative increases in the CV sector,

with average gallons per vessel increasing from 2015 by 3% to 120 thousand, and cost per vessel increasing by 16% to $264 thousand. Note that average fuel cost per gallon in each sector can be calculated from fuel survey data (not shown in table), and indicate that average fuel price paid by the CV sector is consistently higher than that paid by the CP sector, with annual average price difference ranging from 10 to 50 cents per gallon, with fuel price paid in the CV sector 17% higher averaging over results reported for 2012 to 2016.

7.6. References

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North Pacific Fishery Management Council (NPFMC). 2014 "D3: Council Update on the Amendment 91 Chinook Salmon Economic Data Report Program." January 2014. Presentation to the Council, presented by Alaska Fisheries Science Center. Available online: `https://npfmc.legistar.com/LegislationDetail.aspx?ID=1616126&GUID=4609D1DE-BAD7-42CC-A6AD-91FF8AD62AE7&FullText=1`.

Table 7.1: Amendment 91 - EDR Submissions (consolidated)

Year	EDRs certified		Certification-only EDRs		EDRs - data submitted		CTR forms completed	
	AFA Entities	Vessel Owners	AFA Entities	Vessel Owners	AFA Entities	Vessel Owners	AFA Entities	Vessel Owners
2012	16	118	16	33	0	85	0	0
2013	16	109	16	24	0	85	0	0
2014	17	103	17	28	0	75	0	0
2015	13	85	13	23	0	62	0	0
2016	13	84	13	19	0	65	0	0
2017	14	82	14	21	0	61	0	0

Notes: The A91 EDR "certification" requirement specified in 50 CFR 679.65(b)(1) encompasses all AFA vessel owners and the designated representatives of all Amendment 91 Incentive Plan Agreements, AFA Sectors, AFA Inshore Harvest Cooperatives, and CDQ groups that receive BSAI pollock allocation: "An owner or leaseholder of an AFA permitted vessel and the representative of any entity that received an allocation of Chinook salmon PSC from NMFS must submit a CTR, Part 1, each calendar year, for the previous calendar year". Using contact information maintained by NMFS Alaska Region, Pacific State Marine Fisheries Commission (PSMFC, acting as NMFS EDR Data Collection Agent) annually distributes notices to all persons subject to the certification requirement, with instructions for submitting an A91 EDR online using an assigned EDR userid and password. Counts of 'EDRs certified' represent the number of EDR userids assigned to vessel owners and AFA entities that were used to complete the A91 EDR certification requirement for each year. Counts of 'Certification-only EDRs' represent the subset of certified EDR submissions for which no completed EDR data forms were required, and 'EDRs - data submitted' reports the number of assigned EDR userids for which one or more EDR data forms were completed. As shown under 'CTR Forms Completed', no compensated transfers of Chinook salmon PSC as defined under 50 CFR 679.65(b)(2) have been reported in the Compensated Transfer Report portion of the A91 EDR data collection.

The general decline in EDR submissions from 2012 to 2017, and in particular, between 2014 and 2015, is primarily the result of changes in administrative procedures implemented by PSMFC to reduce duplication and improve efficiency for EDR submitters, and as information on vessel ownership and management roles has improved. While timely submission of all required A91 EDR forms has varied, overall compliance with A91 EDR requirements has not declined over time, and instances of non-compliance encountered have been incidental and generally resolved with clarified communication. See Fuel Survey counts below for the number vessels for which Vessel Fuel Survey forms have been completed, which been relatively constant from 2012 to current.

The decline in 'EDRs - data submitted' counts over time largely reflects an increase in consolidated vessel owner EDR submissions, in which data forms for multiple vessels are submitted using a single EDR userid. For each AFA vessel, PSMFC assigns a unique EDR userid that is mailed to the vessel owner, such that multi-vessel owners receive notifications and EDR userids for each vessel that they own. For the sake of convenience, the EDR web portal allows a vessel owner to consolidate and submit Vessel Fuel Survey and Vessel Master Survey form data for one or more vessels using one EDR userid. Unused EDR userids associated with consolidated vessel-owner EDR submissions are excluded in counts of 'EDRs-certified' shown in the table. Note that certification-only submissions cannot be consolidated, as reflected by the relative consistency in 'Certification-only EDRs' counts over time.

From the initial implementation of the A91 EDR for calendar year 2012 through 2014, PSMFC assigned and delivered unique EDR userids to all AFA vessel owners identified in AKRO's vessel owner registry, including the primary managing owner and in some cases one or more secondary, non-managerial owner. As information has improved regarding primary versus secondary owners, PSMFC has limited distribution of EDR notifications to primary owners, and the decline from 118 EDRs certified by vessel owners for 2012 to 85 for 2015 reflects this change. Also note that AFA Mothership owners are subject to A91 EDR requirements under 50 CFR 679.65(b), but are exempt from fuel and vessel master data reporting requirements that are limited to pollock harvesting vessels; voluntary submission of fuel and vessel master surveys by owners of AFA motherships for 2012 to 2014 are included in 'EDRs - data submitted' counts for those years.

Source: Amendment 91 Chinook salmon Economic Data Reports.

Table 7.2: A91 EDR Vessel Fuel Survey and Vessel Master Survey Submissions

	Fuel Survey Count		Master Survey Count	
Year	CP	CV+MS	CP	CV+MS
2012	14	92	17	117
2013	15	89	18	115
2014	15	87	18	107
2015	14	83	17	104
2016	14	87	17	100
2017	14	84	17	99

Notes: Combined counts shown under "CV+MS" in the table includes EDR forms submitted on a voluntary basis for AFA Mothership vessels during 2012 through 2014.

Source: Amendment 91 Chinook salmon Economic Data Reports.

Table 7.3: Vessel Fuel Survey Summary Results

		Vessels	Annual average fuel consumption rate (gallons per hour), mean (sd)		Annual Fuel Use, mean (sd)	
	Year		Fishing	Transiting	Gallons (1,000)	Cost ($1,000)
CP	2012	14	284 (40)	255 (59)	1,168 (181)	$4,481 (634)
	2013	15	290 (70)	249 (83)	1,171 (318)	$4,394 (1,114)
	2014	15	277 (61)	249 (79)	1,396 (395)	$4,911 (1,251)
	2015	14	284 (40)	270 (82)	1,438 (368)	$3,348 (727)
	2016	14	297 (32)	282 (85)	1,393 (378)	$2,587 (734)
	2017	14	285 (29)	288 (65)	1,569 (375)	$3,298 (729)
CV	2012	90	75 (38)	51 (30)	160 (99)	$679 (416)
	2013	87	73 (33)	50 (28)	149 (87)	$615 (357)
	2014	85	74 (34)	51 (27)	143 (74)	$562 (291)
	2015	83	76 (36)	52 (29)	131 (52)	$375 (155)
	2016	87	75 (34)	51 (27)	116 (45)	$232 (87)
	2017	84	74 (34)	50 (27)	120 (53)	$264 (111)

Notes: All dollar values are inflation-adjusted to 2016-equivalent value. Data reported for mothership vessels is excluded from the statistics reported in the table above.

Source: Amendment 91 Chinook salmon Economic Data Reports.

8. 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 2016, 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; a general overview of the program and results of a set of economic performance metrics calculated for the fishery for the period 2005-2007 (the pre-program reference period) and annually for 2008-2016 are provided in the Economic Performance Metrics for North Pacific Groundfish Catch Share Programs section of the report (see especially Figures **??-??** and accompanying text). In addition, 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 vessel owners and QS permit holders, providing detailed data on vessel costs, earnings, employment, quota transfers, 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, EDR data collection program has collected annual economic census data, with the most recent available data representing results from the 2016 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

[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 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 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 the first 9 years of the program, three new vessels have entered to replace an original vessel, one each in 2009, 2016, and 2017, and of the 19 vessels participating in the program during 2016, 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. From 2008-2010, 16 vessels formed a single cooperative (identified as the Best Use Cooperative, renamed Alaska Seafood Cooperative in 2010), with the remainder operating in the limited-access fishery. Since 2011, all vessels are in one of two cooperatives, with the Alaska Groundfish Cooperative being formed with nine member vessels/LLP licenses.

To assess the performance of the fleet under the rationalization program and subsequent changes in fishery management, statistics reported below are intended to indicate trends in a variety of economic indicators and metrics. The reported statistics provide a general overview of fishery 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, and employment and compensation of vessel crews and processing employees. As noted above, these results complement the analysis presented in the catch share metrics section of the Groundfish Economic Status Report for the Amendment 80 program for the period 2007-2016. The reader is referred thereto for a comparative presentation of trends in the following: aggregate quota allocations, catch, and quota utilization rates; season length; QS ownership and vessel participation; and earnings concentration among participating vessels. The reader is also 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 2016 equivalent U.S. dollars, consistent with data presented in other sections of the Groundfish Economic Status Report. Due to the small number of reporting entities, some 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"); vessel-level median statistics (calculated over reported non-zero values) is reported to represent the average; 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 for many of the reported statistics, the underlying data is highly variable and/or irregularly distributed, such that the arithmetic mean may be a poor representation of the population average value.

8.1. Fleet Characteristics and Production Capacity

Table 8.1 shows fleet aggregate and median vessel values for physical size and capacity of the vessel stock within the active fleet as of 2008-2016. The number of Amendment 80-qualified vessels active in EEZ fisheries in the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA) days increased by one to 19 vessels during 2016 and 2016, having declined to 18 vessels during the three previous years. 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 and replacing 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 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 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 2015 to 18,152 tons (+4.6%), while fleet aggregate length overall (LOA) decreased slightly to 3,443 feet.

Table 8.2 displays aggregate and median vessel statistics for physical processing capacity of the active Amendment 80 fleet, including total aggregate and median number of processing lines, number of species and product-types produced, and estimated vessel maximum processing throughput capacity for a) whole-fish product and b) maximum over all product categories produced.[4] With 33 distinct species processed and 55 distinct species-product types produced across the fleet, production variety during 2016 increased to the highest levels of over the 10-year period. These indicators are somewhat indirect measures of physical production capacity as both reflect operational responses to fishery management (e.g., catch allocations), product markets, and other dynamics. More direct physical measures indicate increasing processing capacity in the fleet during the most recent years, both in aggregate and to a lesser degree, at the median vessel level. In the active fleet of 19 vessels during 2016, most had one (1) processing line, as indicated by the median value which has been

[3] NTSB, 2017. `https://www.ntsb.gov/investigations/AccidentReports/Reports/MAB1726.pdf`

[4] Production capacity in the EDR is reported by species and delivery codes as defined in eLandings and Commercial Operators Annual Report (COAR) specifications; a) corresponds to delivery code 01- Whole Fish and b) includes all delivery codes reported in the EDR, primarily head-and gut product types (06 - H&G with roe, 07 - H&G western cut, 08 - H&G eastern cut, and 10 - H&G tail removed) and small quantities of other product types reported (including 11 - Kirimi, and various ancillary product types).

constant since 2008; over the fleet in aggregate, however, total processing lines increased to 31 in 2016. Median processing line throughput capacity for whole-fish product increased to the highest level of the 10-year period, to 4.53 metric tons per hour (t/hr), but declined slightly in aggregate to 78.9 (t/hr); processing line throughput of all product types increased to a greater degree during 2016, to a median 4.8 t/hr and 103.9 t/hr in aggregate, indicating recent investment in greater production capacity in both new vessel entrants and improvements to original vessels in the Amendment 80 fleet. Similarly, freezer capacity in the fleet, commonly cited as the principal limiting factor in the overall processing production rate on Amendment 80 CP's and enabling longer trips between onshore deliveries, increased to the highest levels to-date during 2016 (Table 8.3). Cold storage capacity aggregated over all C/Ps in the active fleet increased by 9% in 2016 to a total of 8,932 t, and freezer throughput capacity increased in aggregate by 4% to 72.8 t/hr.

Table 8.1: 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		Median	Total	Median	Total	Median	Total	Median	Total	Median	Total	Median	Total
2008	22	806	17,483	403	9,449	177	3,760	39	826	2,385	54,650	77,920	1.99
2009	21	560	15,482	380	8,723	169	3,546	38	784	2,250	48,300	76,840	1.82
2010	20	775	15,285	403	8,589	177	3,424	39	758	2,385	47,475	77,920	1.78
2011	20	775	15,285	403	8,568	177	3,434	39	748	2,385	47,400	77,920	1.77
2012	20	775	15,880	403	8,712	177	3,434	40	761	2,385	47,400	77,920	1.82
2013	18	1,008	15,495	506	8,451	185	3,218	40	706	2,560	45,075	89,077	1.77
2014	18	1,008	15,495	506	8,451	185	3,218	40	706	2,560	45,075	89,077	1.77
2015	18	1,026	15,897	506	8,403	185	3,218	40	706	2,560	45,075	89,077	1.77
2016	19	1,027	17,362	586	9,399	185	3,449	40	751	2,550	47,625	99,154	1.93
2017	19	1,027	18,152	586	9,543	185	3,443	40	758	2,550	48,025	99,154	1.95

Source: Amendment 80 Economic Data Reports.

Table 8.2: 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	Median	Total	Median	Total	Median	Total	Median	Total	Median	Total
2008	22	1	32	12	23	18	46	3.33	62.06	3.63	90.72
2009	21	1	31	12	26	17	47	3.33	61.37	3.63	81.86
2010	20	1	30	12	25	18	46	3.32	64.55	3.85	81.21
2011	19	1	29	12	27	17	44	3.31	61.59	3.92	79.07
2012	19	1	29	12	23	16	49	3.22	50.27	4.43	90.82
2013	18	1	28	12	21	16	37	3.32	48.64	4.62	88.83
2014	18	1	28	12	22	16	41	3.88	56.69	4.30	87.31
2015	18	1	28	13	28	18	53	4.04	74.21	4.18	82.20
2016	19	1	30	13	26	19	48	4.16	79.19	4.20	87.63
2017	19	1	31	13	33	18	55	4.53	78.94	4.81	103.85

Notes:

Source: Amendment 80 Economic Data Reports.

Table 8.3: Amendment 80 Fleet - Aggregate and Median Vessel Freezer Capacity

	Vessels	Freezer Hold Capacity (t)		Maximum Freezing Capacity (t/hr)	
Year		Median	Total	Median	Total
2008	22	317.51	8,227.42	2.89	99.29
2009	21	317.51	7,693.25	2.68	58.83
2010	20	317.51	7,576.07	2.89	60.01
2011	20	308.76	7,076.30	3.64	64.21
2012	20	317.51	7,558.92	3.90	67.08
2013	18	336.57	7,345.19	3.92	64.28
2014	18	336.57	7,345.19	3.92	64.28
2015	18	336.57	7,345.07	3.92	64.06
2016	19	355.62	8,171.14	3.92	69.94
2017	19	359.99	8,932.12	4.04	72.81

Source: Amendment 80 Economic Data Reports.

Table 8.4: 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	Count	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

Source: Amendment 80 Economic Data Reports.

Table 8.4 shows median values for reported estimates of average hourly fuel consumption rate, in gallons per hour (gph), of Amendment 80 vessels during fishing and processing, steaming loaded, and steaming empty operational modes, and Table 8.5 shows aggregate and vessel median annual fuel consumption (gallons) by operational mode and annual total. Median reported hourly fuel use rates vary by activity (highest during steaming loaded and lowest while steaming empty) and have generally increased over the 2008 - 2016 period, reflecting the increase in median and aggregate vessel size within the active fleet. Although changes in the composition of the fleet during 2016 and 2017 resulted in net increases in all metrics of aggregate fleet size while maintaining a total of 19 vessels for both years, median fuel consumption rates for 2016 declined across all operational modes for the first time since 2009; median fuel consumption rate dropped to 101 gph while fishing and processing (-4%), 110 gph while steaming loaded (-8%), and 95 gph steaming empty (-2%). Similarly, total annual fleet fuel consumption during 2016 declined from 2015 across all vessel activity. Total aggregate fleet fuel consumption over all vessel activities, including fuel used in fishing and processing and vessel transiting, declined by 7% to 13.5 million gallons during 2016; fuel used in fishing and processing (typically representing 70-80% of total fuel use) declined from

Table 8.5: Amendment 80 Fleet - Aggregate and Median Vessel Annual Fuel Use, by Vessel Activity

	Vessels	Fishing/Processing		Steaming Empty		Steaming Loaded		All Fuel Use	
Year	Count	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)	Total (million Gal)	Median (1000 Gal)	Total (million Gal)
2008	22	522	10.78	52	1.04	70	1.76	644	13.57
2009	21	449	9.27	61	1.04	81	1.77	591	12.09
2010	20	485	9.73	66	1.45	68	1.46	619	12.65
2011	20	457	10.16	85	1.74	63	1.44	606	13.34
2012	20	445	9.26	70	1.31	89	1.64	603	12.21
2013	18	520	9.70	67	1.20	79	1.50	667	12.40
2014	18	551	10.09	63	1.19	88	1.52	702	12.79
2015	18	543	10.03	74	1.19	79	1.64	695	12.86
2016	19	585	11.11	73	1.21	72	1.98	730	14.30
2017	19	511	10.58	61	1.20	56	1.52	629	13.31

Source: Amendment 80 Economic Data Reports.

2015 to 10.6 million gallons (-4.8%) and 511 thousand gallons (-12.6%) in total and median terms, respectively. More statistical analysis is required to evaluate net changes in fuel efficiency across the fleet over time, controlling for compositional and operational changes as well as improvements to existing vessel stock; nonetheless, the most recent investments in the fleet appear to correspond with substantial net improvements in fuel efficiency indicated in the metrics described above.

8.2. Fishing Effort - Vessel Days at Sea

Table 8.6 reports fleet aggregate and median statistics for vessel activity days reported in EDR data from 2008-2016, representing counts of days during which the vessel undertook fishing 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 8.6 reports active vessels and vessel days in all non-A80 fisheries inclusive of GOA activity for the full 2008-2016 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 8.6 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.[5]

Aggregate fleet total and median vessel activity days in the Amendment 80 program fisheries exhibited a general downward trend from 2008 until 2012, when fleet aggregate vessel-days processing declined to a low of 3,425 across 19 active vessels, with 173 days over 20 vessels during 2011 the lowest median vessel value to-date. Aggregate fleet-level fishing and processing days in the Amendment 80 program have increased each subsequent year, to 3,757 vessel-days processing across 19 vessels during 2016. From 2013 to 2016, median vessel-days processing has varied from 200 to 213, most recently increasing both days fishing and days processing from 202 in 2015 to 208 in 2016. Participation in fisheries other than those included in the Amendment 80 program is more variable from year to year, declining from 17 in 2011-2012 to 10 in 2016. In non-A80 fisheries during 2016, the highest aggregate vessel-days were reported to date, with fleet-total days fishing increasing by 65 days to 867, and processing days increasing by 62 days to 1,094. In median terms, non-A80 days days processing during 2016 reached the highest number to-date at 115, compared to 35 days on average from 2008 to 2015 and 78 days in 2015, while median days fishing declined from 2015 by 11 days to 47. The greater relative increase in processing days in 2016 and 2017 is primarily the result of some Amendment 80 vessels operating as motherships (processing catch delivered by catcher vessels) in the BSAI. The largest proportion of vessel counts and activity days shown for all non-A80 fisheries represent participation in GOA fisheries, as reported explicitly for 2015 to 2016. Of the 10 Amendment 80 C/Ps active outside of Amendment 80 fisheries during 2016, 9 fished and processed in the GOA, accounting for a small proportion of fleet total non-A80 days processing (31 of 115), but nearly half of days fishing (422 of 867 days), and two-thirds of median vessel days fishing (31 of 47). Across the active fleet of 19 vessels during 2016, 1,465 vessel-days included transiting and/or offloading and 68 days on a median basis. Days inactive (in-port or inactive at sea) during 2016 totaled 1,373 across the fleet and 69 days at median, implying active vessel days-at-sea of approximately 5,562 total, and 296 days for the median vessel.

[5]Vessel days at sea (including days offloading) can be calculated using days inactive values shown above in Table 8.6 as follows: median days at sea = 365-days inactive, and fleet total days at sea = (Vessel count x 365) - fleet total days inactive.

Table 8.6: 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
Amendment 80 Fisheries		Active vessels	22	21	20	20	19	18	18	18	19	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
		Median vessel	185	181	182	175	178	200	209	210	202	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
		Median vessel	196	181	189	173	185	200	213	210	202	208
All Non-A80 Fisheries		Active vessels	11	11	14	17	17	12	12	11	11	10
	Days Fishing	Fleet total	456	261	535	812	735	648	818	826	802	867
		Median vessel	25	20	30	32	30	28	27	41	58	47
	Days Processing	Fleet total	455	259	534	819	730	649	818	880	1,032	1,094
		Median vessel	26	20	30	32	30	28	27	41	78	115
GOA Fisheries		Active vessels	-	-	-	-	-	-	-	7	8	9
	Days Fishing	Fleet total	-	-	-	-	-	-	-	402	339	422
		Median vessel	-	-	-	-	-	-	-	41	32	31
	Days Processing	Fleet total	-	-	-	-	-	-	-	402	339	422
		Median vessel	-	-	-	-	-	-	-	41	32	31
Non-Fishing and Inactive		Vessels	22	21	20	20	20	18	18	18	19	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
		Median vessel	58	72	77	80	69	80	65	69	69	68
	Days Inactive	Fleet total	1,980	2,355	1,928	1,857	2,089	1,466	1,301	1,298	1,319	1,373
		Median vessel	94	100	81	78	98	74	73	75	61	69

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 2016 are inclusive of days when vessels were active fishing or processing in the GOA and all other non-Amendment 80 fisheries.

Source: Amendment 80 Economic Data Reports.

8.3. Catch, Production, and Value

Table 8.7 reports annual fleet aggregate and median vessel-level values for retained and discarded catch, volume of processed product in finished weight terms (in t), estimated wholesale value of finished processed volume (aggregate and per-t values in $US adjusted to 2016-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. Aggregating over all Alaska fisheries, the Amendment 80 fleet had a decline in total retained catch of 321 thousand t (down 4.5%) compared to 2015, with discard volume of 18.5 thousand t and discard rate (discard as percentage of total catch) of 5.76% both at the lowest levels of any year since the management program started in 2008. 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 in 2016 to 238 thousand t (15% less than in 2015), while discard within Amendment 80 program fisheries declined to 2.9 thousand t, 1.23% of total catch (declining by 26% and 23% from 2015, respectively). Total retained catch of all other species in the BSAI also declined in 2016, to 53 thousand t (down 12% from 2015), with total discard of 12.9 thousand t, at a rate if 24.3% of total catch, also declining from 2015 (down 13% and 1.5%, respectively). Total retained catch in GOA fisheries increased by nearly one-third to 29.4 thousand t in 2016, with discard volume and rate both substantially increased as well, up 68% to 2.7 thousand t and a discard rate of 9.2% (up 27%).

Production and value information displayed in Table 8.7 indicate that, from 2008 to 2016, the total volume of finished production of the Amendment 80 fleet, aggregated over all Alaska fisheries, has varied between 181 thousand t and 218 thousand t per year, with gross wholesale revenue value varying between $296 million and $465 million over the period. While aggregate finished volume of the fleet over all Alaska fisheries during 2016 was nearly equal to 2015 at 203 thousand t, aggregate gross wholesale value increased by 22% to $436 million. On a median vessel basis, production volume over all Alaska fisheries increased by 12% from 2015, to 2.3 thousand t, and by 36% in gross wholesale value, to $5.32 million. For Amendment 80 program fisheries, finished volume and value for the fleet in 2016 were 157 thousand t (down 1.3% from 2015) and $334 million (up 25%), representing 77% of both production volume and gross revenue value over all Alaska production for the fleet. On a median basis, production volume in Amendment 80 program fisheries declined 11% to 8.3 thousand t in 2016, while first wholesale value increased by 12% to $13.3 million.

GOA fisheries typically contribute a relatively small proportion of total production and value for the Amendment 80 fleet, averaging approximately 6% of finished volume and 8% of wholesale value for the fleet in aggregate in most years. During 2014, total aggregate production volume and value from GOA fisheries reached the highest levels reported to-date over the 9-year period, with finished volume increasing to 21.3 thousand t, accounting for nearly 10% of aggregate finished volume for the fleet, and $46.4 million accounting for 12.6% of fleet-aggregate wholesale value. Fleet-aggregate volume and value of GOA production declined during the next two years, but finished product 16.9 thousand t and $45 million in first wholesale value during 2016 represented year-on-year increases of 33% and 50%, respectively, and accounted for 8% and 10% of the fleet's 2016 Alaska production and value. Fleet production volume from non-Amendment 80 species in the BSAI (varying between 12% and 18% of both total volume and total value of fleet production over the 9-year period) declined by 8% to 29 thousand t for 2016 and first wholesale value declined by 5% to $57 million; on a median basis, production volumed similarly declined, to 1,530 tm while median wholesale value in 2016 increased slightly, to $2.11 million.

Price indices, i.e., weighted average value per t calculated over all finished production by species-area group in Table 8.7 indicate that market conditions improved for 2016, with average price values increasing from 2015 and approaching peak price levels of 2011-2012. Averaging over all Alaska production, value per t increased by 22% from 2015 to $2,146, with the largest price increases attributable to Amendment 80 species as a group, which increased by 27% to $2,130 per t on average. Production from GOA catch represented the highest average product values per t, at $2,662 (up 13% from 2015 price levels), while average first wholesale value per t from non-Amendment 80 species in the BSAI increased by 2.7% to $1,934. Further analysis of production, prices, and market conditions for individual species, Amendment 80 target species and others, are provided elsewhere in the Economic SAFE Report.

Table 8.7: 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	$ 279.80	$ 1,837	13.01	0.30	3.06 %	6.89	$ 12.11
	2009	21	239.66	12.80	5.34 %	140.54	$ 226.38	$ 1,611	12.22	0.51	4.95 %	7.52	$ 11.18
	2010	20	257.57	12.68	4.92 %	154.95	$ 275.45	$ 1,778	13.96	0.44	3.40 %	8.43	$ 13.63
	2011	20	262.29	6.51	2.48 %	163.61	$ 355.28	$ 2,172	14.34	0.17	1.91 %	8.56	$ 16.80
	2012	20	265.04	6.82	2.57 %	167.18	$ 355.42	$ 2,126	14.55	0.23	2.35 %	8.96	$ 16.94
	2013	18	260.43	6.79	2.61 %	159.85	$ 256.59	$ 1,605	15.03	0.31	2.27 %	8.32	$ 12.72
	2014	18	254.97	3.17	1.24 %	158.17	$ 262.59	$ 1,660	13.94	0.15	1.19 %	8.53	$ 11.58
	2015	18	248.00	3.08	1.24 %	153.65	$ 255.99	$ 1,666	12.84	0.18	1.19 %	7.57	$ 10.62
	2016	19	253.93	3.98	1.57 %	158.99	$ 266.90	$ 1,679	13.68	0.15	1.13 %	8.15	$ 11.89
	2017	19	238.78	2.93	1.23 %	156.92	$ 334.28	$ 2,130	12.25	0.13	0.87 %	7.29	$ 13.31
BSAI - All other species	2008	22	44.81	25.83	57.63 %	22.28	$ 39.83	$ 1,788	1.82	1.27	69.47 %	0.92	$ 1.57
	2009	21	55.43	20.94	37.78 %	29.67	$ 46.79	$ 1,577	2.30	1.00	49.87 %	1.23	$ 1.56
	2010	20	63.18	20.49	32.43 %	34.29	$ 50.85	$ 1,483	2.38	0.96	45.38 %	1.27	$ 1.72
	2011	20	62.11	17.45	28.10 %	34.77	$ 66.25	$ 1,905	3.16	0.80	26.97 %	1.71	$ 3.01
	2012	20	60.34	13.51	22.39 %	34.05	$ 70.65	$ 2,075	3.17	0.63	22.70 %	1.82	$ 3.21
	2013	18	70.85	20.27	28.61 %	37.90	$ 57.57	$ 1,519	3.97	1.17	29.80 %	2.18	$ 3.42
	2014	18	73.94	23.83	32.22 %	38.75	$ 59.52	$ 1,536	3.94	1.22	31.23 %	2.12	$ 3.19
	2015	18	59.78	14.88	24.90 %	32.96	$ 46.42	$ 1,408	3.66	0.79	25.53 %	1.96	$ 2.54
	2016	19	60.12	14.84	24.68 %	31.77	$ 59.84	$ 1,884	3.33	0.77	27.29 %	1.64	$ 2.09
	2017	19	53.02	12.89	24.32 %	29.35	$ 56.75	$ 1,934	3.09	0.60	23.21 %	1.53	$ 2.11
GOA - All species	2008	12	20.54	3.76	18.29 %	11.10	$ 24.46	$ 2,204	1.88	0.29	15.04 %	0.93	$ 2.00
	2009	17	20.19	6.09	30.15 %	10.95	$ 22.88	$ 2,089	0.99	0.17	24.20 %	0.42	$ 0.97
	2010	16	21.36	5.25	24.60 %	12.15	$ 29.98	$ 2,467	0.91	0.24	17.80 %	0.49	$ 1.26
	2011	16	24.34	4.42	18.17 %	13.85	$ 43.79	$ 3,162	0.75	0.19	15.52 %	0.39	$ 1.49
	2012	16	24.20	3.40	14.06 %	13.21	$ 36.75	$ 2,782	0.67	0.07	12.87 %	0.38	$ 1.21
	2013	13	20.46	3.61	17.64 %	11.71	$ 24.36	$ 2,080	0.98	0.15	10.27 %	0.54	$ 1.38
	2014	10	39.19	2.96	7.56 %	21.34	$ 46.38	$ 2,173	2.11	0.13	5.79 %	1.13	$ 3.31
	2015	9	27.05	2.53	9.36 %	15.29	$ 31.90	$ 2,086	2.14	0.23	5.65 %	1.88	$ 4.41
	2016	13	22.29	1.61	7.24 %	12.74	$ 30.09	$ 2,362	0.70	0.02	2.21 %	0.37	$ 0.71
	2017	10	29.43	2.70	9.17 %	16.90	$ 44.99	$ 2,662	2.58	0.06	2.83 %	1.38	$ 4.00

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Table 8.7: 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	$ 344.09	$ 1,853	2.62	0.64	15.04 %	1.35	$ 2.67
	2009	21	315.29	39.83	12.63 %	181.15	$ 296.06	$ 1,634	2.37	0.65	18.73 %	1.29	$ 2.16
	2010	20	342.11	38.43	11.23 %	201.39	$ 356.28	$ 1,769	2.87	0.58	12.64 %	1.44	$ 2.80
	2011	20	348.74	28.39	8.14 %	212.23	$ 465.32	$ 2,193	3.37	0.40	14.69 %	1.94	$ 4.54
	2012	20	349.58	23.74	6.79 %	214.44	$ 462.81	$ 2,158	3.39	0.37	12.21 %	1.98	$ 4.26
	2013	18	351.74	30.67	8.72 %	209.46	$ 338.51	$ 1,616	4.55	0.49	9.87 %	2.62	$ 4.00
	2014	18	368.11	29.96	8.14 %	218.25	$ 368.48	$ 1,688	5.83	0.31	5.79 %	2.98	$ 4.94
	2015	18	334.83	20.49	6.12 %	201.90	$ 334.31	$ 1,656	4.52	0.28	5.65 %	2.60	$ 4.59
	2016	19	336.34	20.44	6.08 %	203.50	$ 356.83	$ 1,753	3.81	0.35	3.45 %	2.02	$ 3.90
	2017	19	321.23	18.52	5.76 %	203.18	$ 436.03	$ 2,146	3.71	0.26	3.42 %	2.27	$ 5.32

Notes: All dollar values are inflation-adjusted to 2016-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).

8.4. Operating Income, Costs, and Capital Expenditures

The following section provides a brief summary of the economic performance of the Amendment 80 sector over the 9-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 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.

8.4.1 Revenues

Table 8.8 presents a summary of annual gross sales units and revenues for the Amendment 80 sector, including revenue and volume of fishery product sales, royalty revenue received for QS and other fishery allocations leased to active vessels, and revenue from fee services provided by the vessel.[6] Revenue from fishery permit asset sales are not shown; as of 2016, only one Amendment 80 entity has reported revenue from permanent sale of fishery permits, and only one vessel has reported revenue derived from vessel use other than fishing and processing in each of 2010, 2012, and 2013 (revenue values suppressed for confidentiality). Total reported volume of finished product sales for the sector during 2016 was 207 thousand t (a 9.5% increase from 2015), producing gross first wholesale revenue of $418 million (a 21.5% increase from 2015 as a result of increasing value per-t for 2016). At the median vessel-level, total sales revenue increased by 12% to $19.95 million, with sales volume reduced 7% to 9.5 thousand t.

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.[7] The volume of QS lease activity during 2016 was markedly reduced compared to recent years, with a total of 11.6 thousand t of allocation transferred, compared to a previous high of 18.3 t in 2014, and an average of 14.9 t over the 2012-2016 period; at the median (within the 5 entities reporting QS royalties),

[6] Quantity and revenue values shown in Table 8.8 represent product sales completed during the calendar year as reported in Amendment 80 Economic Data Reports, including product sold from inventory held from the prior year, and excluding production completed but not sold during the year. In contrast, volume and value statistics shown in Table 8.7 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 between production output, sales, and fluctuating inventories, as well as other sources of variation.

[7] 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 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).

lease volume declined to 1,560 t, compared to 5,100 t in 2015, with royalty revenue decreased by $88 thousand to $100 thousand.[8]

8.4.2 Operating expenses

Tables 8.9 and 8.10 summarize the annual expenses incurred by Amendment 80 CPs from 2008 to 2016 as operating costs for all fishing and processing activity, by expense item, and provide results of pro-rata indexing for each 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. Table 8.9 reports aggregated results for the fleet as a whole, and Table 8.10 provides results on a per-vessel basis, calculated as the median value over vessel-level observations. 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, 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 expenses, notably excluding cost-recovery fees, and financial expenses (interest and principal payments). The cost per day and cost per thousand t pro-rata indices shown in Tables 8.9 and 8.10 provide relative indices of cost per unit of vessel effort and production output, respectively, and are most relevant for those input costs that vary with production level.

Aggregate operating and overhead expenses for the active fleet during 2016 totaled $305 million, substantially higher than the average of $274 million over 2008-2015 and 16% higher than total 2015 expenses. As a category of expenses, 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) typically represent the largest component of expenses, consistently ranging between 38% to 40% of total annual operating costs at the fleet level prior to 2016. Fleet aggregate combined vessel labor costs increased substantially during 2016, increasing by $32 million from the previous year to $131 million (+33%), and growing to an unprecedented 43% of total fleet operating costs for the year. The largest increases from 2015 fleet-level labor costs were in direct wage costs for processing labor, increasing by $13.5 million to $56 million (18% of 2016 fleet-total operating costs), and for senior vessel staff (labeled "Other employees" in Tables 8.9 and 8.10; includes captains and other vessel officers, engineers, plant-managers and others), which grew by $12 million to $43.6 million (14% of 2016 fleet-total operating costs); fishing (deck) crew labor costs and other employment-related expenses also increased from 2015, but to a lesser degree. In addition, other pro-rata indices of operating costs shown in Tables 8.9 and 8.10 indicate that all components of labor costs during 2016 approached or exceeded the highest levels observed to-date on cost per-day and per-t-produced bases, as well as cost-to-gross revenue terms.

[8] 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 during 2016 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.

Table 8.8: Amendment 80 Sector Annual Revenue from All Sources, including Volume and Value of Total Fishery Product Sales, Other Vessel Income, and Quota Royalties

		Revenue ($million)			Volume (1,000t)		
	Year	LLPs	Median	Total	LLPs	Median	Total
Total Fishery Product Sales	2008	22	$ 14.24	$ 319.22	22	7.47	176.85
	2009	21	$ 12.11	$ 270.95	21	8.45	168.31
	2010	20	$ 15.36	$ 334.63	20	9.76	183.48
	2011	20	$ 21.59	$ 441.46	20	10.17	196.97
	2012	20	$ 20.33	$ 423.70	20	9.39	198.31
	2013	18	$ 16.56	$ 327.69	18	10.38	195.42
	2014	18	$ 18.68	$ 360.83	18	10.65	202.93
	2015	18	$ 16.35	$ 321.42	18	10.58	188.63
	2016	19	$ 16.86	$ 344.00	19	9.96	188.98
	2017	19	$ 19.95	$ 417.86	19	9.50	206.84
Quota Lease Royalties	2008	6	$ 0.02	$ 0.46	6	0.17	2.38
	2009	3	$ *	$ *	3	*	*
	2010	6	$ 0.02	$ 0.11	6	0.10	0.66
	2011	10	$ 0.04	$ 0.97	10	0.32	8.70
	2012	10	$ 0.08	$ 1.36	10	0.65	11.18
	2013	7	$ 0.22	$ 1.27	7	2.00	11.40
	2014	8	$ 0.21	$ 1.44	8	2.85	18.28
	2015	4	$ *	$ *	4	*	*
	2016	5	$ 0.19	$ 0.76	5	5.07	20.32
	2017	5	$ 0.10	$ 0.45	5	1.56	11.59
Other Income from Vessel Operations	2008	-	$ -	$ -	-	-	-
	2009	-	$ -	$ -	-	-	-
	2010	1	$ *	$ *	-	-	-
	2011	-	$ -	$ -	-	-	-
	2012	1	$ *	$ *	-	-	-
	2013	1	$ *	$ *	-	-	-
	2014	-	$ -	$ -	-	-	-
	2015	-	$ -	$ -	-	-	-
	2016	-	$ -	$ -	-	-	-
	2017	-	$ -	$ -	-	-	-

Notes: All dollar values are inflation-adjusted to 2016-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.

As itemized in Tables 8.9 and 8.10 and the underlying data, processing labor costs represent the single largest expense item in most years, ranging from 15% to 18% of total expenses, followed by fuel costs, ranging more variably from 10% to 20% of aggregate fleet-level expenses. After a period of declining fuel prices since 2013, fuel costs for the fleet during 2016 increased slightly from 2015, totaling $31.4 million, 10% as a proportion of total expenses, and increased by 4% to $1.54 million

on a median vessel basis. Repair and maintenance expenses for 2016 increased by 13% to $31 million across the fleet, representing 10% of overall costs, and increased by 44% to $1.5 million on a median basis. Product freight and storage costs have varied widely over the 2008 to 2015 period, from $14 million to $32 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[9], and increasing by 19% to $38 million at the fleet-level during 2016. General administrative costs also grew substantially in 2016, increasing by 35% to $27 million during 2016, while declining somewhat on most pro-rata bases. 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.

Ownership restructuring among vessels and firms within the Amendment 80 sector during 2017, as noted above, are likely to have generated substantial transitional costs, as reflected in annual expense statistics reported for the year at both the fleet- and vessel-level. As a result of ongoing adjustment to 2017 events within the Amendment 80 sector, notwithstanding any further changes in ownership structure and/or fleet composition, these elevated transitional costs may continue to taper off over the next few years. It should be noted, however, that some of the transitional variation in annual expenses shown in Tables 8.9 and 8.10 reflects redistribution of costs between expense categories as reported in EDR data, and likely result in part from changing business structures and/or accounting practices associated with shifting ownership.

[9]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 8.9), and reported values in successive years for a given vessel ranging from $0 to more than $1 million.

Table 8.9: Fleet Aggregate Operating Expenses, by Category and Year

		Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Labor	Labor Payment, Fishing Crew	2008	22	$ 16.98	$ 2.81	$ 0.10	6.22 %	5.31 %
		2009	21	$ 13.65	$ 2.57	$ 0.08	5.86 %	5.03 %
		2010	20	$ 14.84	$ 2.76	$ 0.08	5.71 %	4.43 %
		2011	20	$ 18.60	$ 3.42	$ 0.09	5.85 %	4.20 %
		2012	20	$ 17.78	$ 3.41	$ 0.09	5.60 %	4.19 %
		2013	18	$ 13.85	$ 2.71	$ 0.07	5.35 %	4.21 %
		2014	18	$ 14.99	$ 2.85	$ 0.07	5.49 %	4.14 %
		2015	18	$ 13.00	$ 2.47	$ 0.07	4.86 %	4.04 %
		2016	19	$ 14.12	$ 2.51	$ 0.07	5.40 %	4.10 %
		2017	19	$ 18.93	$ 3.40	$ 0.09	6.21 %	4.53 %
	Labor Payment, Other Employees	2008	21	$ 30.11	$ 5.28	$ 0.17	11.25 %	9.53 %
		2009	21	$ 26.74	$ 5.04	$ 0.16	11.48 %	9.86 %
		2010	20	$ 31.66	$ 5.89	$ 0.17	12.19 %	9.46 %
		2011	20	$ 39.82	$ 7.32	$ 0.20	12.53 %	9.00 %
		2012	20	$ 40.71	$ 7.81	$ 0.21	12.82 %	9.59 %
		2013	18	$ 30.60	$ 5.99	$ 0.16	11.81 %	9.30 %
		2014	18	$ 32.20	$ 6.11	$ 0.16	11.80 %	8.89 %
		2015	18	$ 31.21	$ 5.92	$ 0.17	11.67 %	9.70 %
		2016	19	$ 31.59	$ 5.62	$ 0.17	12.07 %	9.16 %
		2017	19	$ 43.57	$ 7.83	$ 0.21	14.30 %	10.42 %
	Labor Payment, Processing Employees	2008	22	$ 46.36	$ 7.66	$ 0.26	16.98 %	14.50 %
		2009	21	$ 40.34	$ 7.60	$ 0.24	17.32 %	14.88 %
		2010	20	$ 46.25	$ 8.61	$ 0.25	17.80 %	13.82 %
		2011	20	$ 56.64	$ 10.41	$ 0.29	17.83 %	12.80 %
		2012	20	$ 56.52	$ 10.85	$ 0.29	17.80 %	13.31 %
		2013	18	$ 42.32	$ 8.29	$ 0.22	16.34 %	12.86 %
		2014	18	$ 45.64	$ 8.66	$ 0.22	16.73 %	12.60 %
		2015	18	$ 40.98	$ 7.77	$ 0.22	15.32 %	12.74 %
		2016	19	$ 42.55	$ 7.58	$ 0.23	16.26 %	12.34 %
		2017	19	$ 56.09	$ 10.08	$ 0.27	18.40 %	13.41 %
	Other Employment Related Costs	2008	22	$ 9.25	$ 1.53	$ 0.05	3.39 %	2.89 %
		2009	21	$ 8.76	$ 1.65	$ 0.05	3.76 %	3.23 %
		2010	20	$ 9.76	$ 1.82	$ 0.05	3.76 %	2.92 %
		2011	20	$ 13.01	$ 2.39	$ 0.07	4.09 %	2.94 %
		2012	20	$ 10.25	$ 1.97	$ 0.05	3.23 %	2.41 %
		2013	18	$ 10.89	$ 2.13	$ 0.06	4.20 %	3.31 %
		2014	18	$ 10.72	$ 2.04	$ 0.05	3.93 %	2.96 %
		2015	18	$ 11.37	$ 2.16	$ 0.06	4.25 %	3.54 %
		2016	19	$ 10.53	$ 1.87	$ 0.06	4.02 %	3.05 %
		2017	19	$ 12.65	$ 2.27	$ 0.06	4.15 %	3.02 %

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Table 8.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Vessel	Fishing Gear	2008	19	$ 7.18	$ 1.38	$ 0.05	2.90 %	2.52 %
		2009	21	$ 9.97	$ 1.88	$ 0.06	4.28 %	3.68 %
		2010	20	$ 9.17	$ 1.71	$ 0.05	3.53 %	2.74 %
		2011	20	$ 10.06	$ 1.85	$ 0.05	3.17 %	2.27 %
		2012	19	$ 10.01	$ 1.93	$ 0.05	3.17 %	2.36 %
		2013	18	$ 8.98	$ 1.76	$ 0.05	3.47 %	2.73 %
		2014	18	$ 8.12	$ 1.54	$ 0.04	2.98 %	2.24 %
		2015	18	$ 9.45	$ 1.79	$ 0.05	3.53 %	2.94 %
		2016	14	$ 6.02	$ 1.42	$ 0.04	2.84 %	2.14 %
		2017	19	$ 8.73	$ 1.57	$ 0.04	2.86 %	2.09 %
	Freight	2008	22	$ 1.59	$ 0.26	$ 0.01	0.58 %	0.50 %
		2009	21	$ 2.16	$ 0.41	$ 0.01	0.93 %	0.80 %
		2010	20	$ 1.75	$ 0.33	$ 0.01	0.67 %	0.52 %
		2011	20	$ 1.94	$ 0.36	$ 0.01	0.61 %	0.44 %
		2012	20	$ 1.94	$ 0.37	$ 0.01	0.61 %	0.46 %
		2013	18	$ 1.92	$ 0.38	$ 0.01	0.74 %	0.58 %
		2014	18	$ 2.42	$ 0.46	$ 0.01	0.89 %	0.67 %
		2015	18	$ 2.30	$ 0.44	$ 0.01	0.86 %	0.71 %
		2016	19	$ 1.76	$ 0.31	$ 0.01	0.67 %	0.51 %
		2017	17	$ 2.24	$ 0.45	$ 0.01	0.81 %	0.59 %
	Lease Expenses	2008	1	$ *	$ *	$ *	* %	* %
		2009	5	$ 0.06	$ 0.04	$ 0.00	0.08 %	0.06 %
		2010	6	$ 0.15	$ 0.08	$ 0.00	0.19 %	0.13 %
		2011	7	$ 0.10	$ 0.05	$ 0.00	0.13 %	0.08 %
		2012	8	$ 0.12	$ 0.06	$ 0.00	0.13 %	0.08 %
		2013	6	$ 0.08	$ 0.04	$ 0.00	0.11 %	0.07 %
		2014	5	$ 0.11	$ 0.07	$ 0.00	0.14 %	0.10 %
		2015	5	$ 0.03	$ 0.02	$ 0.00	0.05 %	0.04 %
		2016	7	$ 0.08	$ 0.04	$ 0.00	0.11 %	0.08 %
		2017	9	$ 0.09	$ 0.03	$ 0.00	0.07 %	0.05 %
	Repair and Maintenance	2008	22	$ 29.06	$ 4.80	$ 0.16	10.65 %	9.09 %
		2009	21	$ 32.33	$ 6.09	$ 0.19	13.88 %	11.93 %
		2010	20	$ 43.23	$ 8.05	$ 0.24	16.64 %	12.92 %
		2011	19	$ 37.86	$ 7.23	$ 0.20	12.53 %	8.99 %
		2012	20	$ 45.32	$ 8.70	$ 0.23	14.27 %	10.67 %
		2013	18	$ 37.52	$ 7.35	$ 0.19	14.49 %	11.40 %
		2014	18	$ 28.70	$ 5.45	$ 0.14	10.52 %	7.92 %
		2015	18	$ 32.53	$ 6.17	$ 0.17	12.16 %	10.11 %
		2016	19	$ 27.44	$ 4.89	$ 0.15	10.49 %	7.96 %
		2017	19	$ 30.98	$ 5.57	$ 0.15	10.16 %	7.41 %

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Table 8.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Materials	Food and Provisions	2008	19	$ 7.16	$ 1.37	$ 0.05	2.89 %	2.52 %
		2009	18	$ 5.76	$ 1.29	$ 0.04	2.78 %	2.38 %
		2010	17	$ 5.25	$ 1.16	$ 0.03	2.30 %	1.79 %
		2011	17	$ 6.05	$ 1.33	$ 0.04	2.13 %	1.57 %
		2012	17	$ 6.00	$ 1.39	$ 0.04	2.13 %	1.63 %
		2013	15	$ 6.04	$ 1.43	$ 0.04	2.69 %	2.15 %
		2014	15	$ 6.36	$ 1.47	$ 0.04	2.77 %	2.03 %
		2015	15	$ 6.48	$ 1.50	$ 0.04	2.82 %	2.30 %
		2016	16	$ 6.87	$ 1.45	$ 0.04	3.05 %	2.23 %
		2017	14	$ 4.62	$ 1.12	$ 0.03	2.03 %	1.45 %
	Fuel	2008	22	$ 52.09	$ 8.61	$ 0.29	19.08 %	16.29 %
		2009	21	$ 34.76	$ 6.55	$ 0.21	14.92 %	12.82 %
		2010	20	$ 39.51	$ 7.35	$ 0.22	15.21 %	11.80 %
		2011	20	$ 48.92	$ 8.99	$ 0.25	15.39 %	11.06 %
		2012	20	$ 50.28	$ 9.65	$ 0.25	15.83 %	11.84 %
		2013	18	$ 51.41	$ 10.07	$ 0.26	19.85 %	15.63 %
		2014	18	$ 50.92	$ 9.66	$ 0.25	18.66 %	14.05 %
		2015	18	$ 38.83	$ 7.37	$ 0.21	14.52 %	12.07 %
		2016	19	$ 31.01	$ 5.52	$ 0.16	11.85 %	8.99 %
		2017	19	$ 31.39	$ 5.64	$ 0.15	10.30 %	7.50 %
	Lubrication and Fluids	2008	22	$ 3.14	$ 0.52	$ 0.02	1.15 %	0.98 %
		2009	21	$ 2.40	$ 0.45	$ 0.01	1.03 %	0.89 %
		2010	20	$ 5.98	$ 1.11	$ 0.03	2.30 %	1.78 %
		2011	20	$ 8.68	$ 1.59	$ 0.04	2.73 %	1.96 %
		2012	19	$ 2.53	$ 0.49	$ 0.01	0.80 %	0.60 %
		2013	18	$ 2.82	$ 0.55	$ 0.01	1.09 %	0.86 %
		2014	18	$ 2.48	$ 0.47	$ 0.01	0.91 %	0.69 %
		2015	18	$ 2.70	$ 0.51	$ 0.01	1.01 %	0.84 %
		2016	19	$ 2.34	$ 0.42	$ 0.01	0.90 %	0.68 %
		2017	19	$ 2.60	$ 0.47	$ 0.01	0.85 %	0.62 %
	Product and Packaging Materials	2008	22	$ 4.88	$ 0.81	$ 0.03	1.79 %	1.53 %
		2009	21	$ 3.72	$ 0.70	$ 0.02	1.60 %	1.37 %
		2010	20	$ 4.35	$ 0.81	$ 0.02	1.67 %	1.30 %
		2011	20	$ 4.99	$ 0.92	$ 0.03	1.57 %	1.13 %
		2012	20	$ 5.43	$ 1.04	$ 0.03	1.71 %	1.28 %
		2013	18	$ 5.04	$ 0.99	$ 0.03	1.95 %	1.53 %
		2014	18	$ 5.60	$ 1.06	$ 0.03	2.05 %	1.54 %
		2015	18	$ 4.20	$ 0.80	$ 0.02	1.57 %	1.31 %
		2016	19	$ 4.53	$ 0.81	$ 0.02	1.73 %	1.31 %
		2017	19	$ 6.28	$ 1.13	$ 0.03	2.06 %	1.50 %

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Table 8.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Materials	Raw Fish Purchases	2008	2	$ *	$ *	$ *	* %	* %
		2010	1	$ *	$ *	$ *	* %	* %
		2011	1	$ *	$ *	$ *	* %	* %
		2012	1	$ *	$ *	$ *	* %	* %
		2013	1	$ *	$ *	$ *	* %	* %
		2015	4	$ *	$ *	$ *	* %	* %
		2016	5	$ 3.54	$ 2.26	$ 0.05	3.50 %	2.62 %
		2017	5	$ 2.93	$ 2.05	$ 0.05	2.85 %	2.10 %
Fees	Cooperative Costs	2008	16	$ 0.56	$ 0.12	$ 0.00	0.26 %	0.23 %
		2009	15	$ 1.23	$ 0.30	$ 0.01	0.69 %	0.61 %
		2010	14	$ 1.15	$ 0.28	$ 0.01	0.57 %	0.44 %
		2011	16	$ 1.41	$ 0.31	$ 0.01	0.56 %	0.41 %
		2012	16	$ 1.26	$ 0.30	$ 0.01	0.53 %	0.38 %
		2013	14	$ 1.14	$ 0.28	$ 0.01	0.55 %	0.44 %
		2014	14	$ 1.00	$ 0.24	$ 0.01	0.48 %	0.35 %
		2015	14	$ 1.52	$ 0.36	$ 0.01	0.74 %	0.62 %
		2016	15	$ 1.39	$ 0.31	$ 0.01	0.69 %	0.55 %
		2017	18	$ 1.26	$ 0.24	$ 0.01	0.44 %	0.33 %
	Fish Tax	2008	22	$ 3.23	$ 0.53	$ 0.02	1.18 %	1.01 %
		2009	21	$ 3.43	$ 0.65	$ 0.02	1.47 %	1.26 %
		2010	20	$ 2.17	$ 0.40	$ 0.01	0.84 %	0.65 %
		2011	20	$ 2.29	$ 0.42	$ 0.01	0.72 %	0.52 %
		2012	20	$ 3.36	$ 0.64	$ 0.02	1.06 %	0.79 %
		2013	18	$ 3.39	$ 0.66	$ 0.02	1.31 %	1.03 %
		2014	18	$ 2.89	$ 0.55	$ 0.01	1.06 %	0.80 %
		2015	18	$ 3.17	$ 0.60	$ 0.02	1.18 %	0.98 %
		2016	19	$ 4.08	$ 0.73	$ 0.02	1.56 %	1.18 %
		2017	19	$ 3.94	$ 0.71	$ 0.02	1.29 %	0.94 %
	Observer	2008	22	$ 4.94	$ 0.82	$ 0.03	1.81 %	1.54 %
		2009	21	$ 4.09	$ 0.77	$ 0.02	1.76 %	1.51 %
		2010	20	$ 4.15	$ 0.77	$ 0.02	1.60 %	1.24 %
		2011	20	$ 4.01	$ 0.74	$ 0.02	1.26 %	0.91 %
		2012	19	$ 3.92	$ 0.75	$ 0.02	1.24 %	0.92 %
		2013	18	$ 3.93	$ 0.77	$ 0.02	1.52 %	1.19 %
		2014	18	$ 4.02	$ 0.76	$ 0.02	1.47 %	1.11 %
		2015	18	$ 4.37	$ 0.83	$ 0.02	1.63 %	1.36 %
		2016	19	$ 4.36	$ 0.78	$ 0.02	1.67 %	1.26 %
		2017	19	$ 4.28	$ 0.77	$ 0.02	1.40 %	1.02 %

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Table 8.9: Continued

		Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Fees	Quota Royalties	2008	2	$ *	$ *	$ *	* %	* %
		2009	4	$ *	$ *	$ *	* %	* %
		2010	2	$ *	$ *	$ *	* %	* %
		2011	8	$ 1.37	$ 0.59	$ 0.01	0.82 %	0.61 %
		2012	4	$ *	$ *	$ *	* %	* %
		2013	3	$ *	$ *	$ *	* %	* %
		2014	8	$ 1.07	$ 0.43	$ 0.01	0.74 %	0.56 %
		2015	7	$ 0.79	$ 0.38	$ 0.01	0.73 %	0.61 %
		2016	9	$ 0.39	$ 0.14	$ 0.00	0.26 %	0.21 %
		2017	5	$ 0.31	$ 0.22	$ 0.00	0.32 %	0.28 %
Overhead	Freight and Storage	2008	9	$ 17.61	$ 7.19	$ 0.26	14.02 %	13.49 %
		2009	10	$ 13.82	$ 5.27	$ 0.17	11.28 %	10.86 %
		2010	8	$ 15.91	$ 7.10	$ 0.18	11.80 %	10.14 %
		2011	4	$ *	$ *	$ *	* %	* %
		2012	4	$ *	$ *	$ *	* %	* %
		2013	4	$ *	$ *	$ *	* %	* %
		2014	7	$ 21.14	$ 9.71	$ 0.24	17.05 %	14.13 %
		2015	10	$ 31.78	$ 10.75	$ 0.29	20.05 %	18.20 %
		2016	10	$ 31.88	$ 10.43	$ 0.28	20.46 %	17.19 %
		2017	13	$ 37.86	$ 10.07	$ 0.25	16.55 %	12.75 %
	General Administrative Cost	2008	22	$ 22.37	$ 3.70	$ 0.13	8.20 %	7.00 %
		2009	21	$ 17.37	$ 3.27	$ 0.10	7.46 %	6.41 %
		2010	16	$ 12.68	$ 3.01	$ 0.08	5.78 %	4.71 %
		2011	16	$ 29.53	$ 6.80	$ 0.18	10.92 %	8.09 %
		2012	20	$ 29.60	$ 5.68	$ 0.15	9.32 %	6.97 %
		2013	18	$ 13.99	$ 2.74	$ 0.07	5.40 %	4.25 %
		2014	16	$ 21.30	$ 4.56	$ 0.11	8.30 %	6.27 %
		2015	11	$ 18.01	$ 5.74	$ 0.15	9.95 %	8.72 %
		2016	11	$ 19.80	$ 6.08	$ 0.16	10.93 %	8.61 %
		2017	15	$ 26.73	$ 6.17	$ 0.16	10.42 %	8.07 %
	Insurance	2008	22	$ 12.45	$ 2.06	$ 0.07	4.56 %	3.90 %
		2009	21	$ 12.29	$ 2.32	$ 0.07	5.28 %	4.54 %
		2010	20	$ 11.71	$ 2.18	$ 0.06	4.51 %	3.50 %
		2011	20	$ 14.86	$ 2.73	$ 0.08	4.68 %	3.36 %
		2012	20	$ 16.76	$ 3.22	$ 0.08	5.28 %	3.95 %
		2013	18	$ 9.86	$ 1.93	$ 0.05	3.81 %	3.00 %
		2014	17	$ 13.19	$ 2.64	$ 0.07	5.10 %	3.84 %
		2015	18	$ 12.87	$ 2.44	$ 0.07	4.81 %	4.00 %
		2016	19	$ 17.40	$ 3.10	$ 0.09	6.65 %	5.05 %
		2017	19	$ 9.31	$ 1.67	$ 0.05	3.06 %	2.23 %

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Table 8.9: Continued

	Year	Vessels	Total Fleet Cost ($million)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
All Annual Expenses	2008	22	$ 272.93	$ 45.11	$ 1.54	100.00 %	85.38 %
	2009	21	$ 232.98	$ 43.88	$ 1.38	100.00 %	85.96 %
	2010	20	$ 259.83	$ 48.37	$ 1.42	100.00 %	77.62 %
	2011	20	$ 317.76	$ 58.38	$ 1.61	100.00 %	71.82 %
	2012	20	$ 317.60	$ 60.95	$ 1.60	100.00 %	74.79 %
	2013	18	$ 258.99	$ 50.74	$ 1.33	100.00 %	78.73 %
	2014	18	$ 272.87	$ 51.79	$ 1.34	100.00 %	75.32 %
	2015	18	$ 267.45	$ 50.73	$ 1.42	100.00 %	83.15 %
	2016	19	$ 261.69	$ 46.60	$ 1.38	100.00 %	75.91 %
	2017	19	$ 304.78	$ 54.80	$ 1.47	100.00 %	72.86 %

Notes: All dollar values are inflation-adjusted to 2016-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 8.10: Vessel Operating Expenses, Median, by Category and Year

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Labor	Labor Payment, Fishing Crew	2008	22	$ 760	$ 3.13	$ 0.10	6.20 %	5.07 %
		2009	21	$ 685	$ 3.01	$ 0.08	5.33 %	4.78 %
		2010	20	$ 693	$ 2.90	$ 0.08	5.53 %	4.10 %
		2011	20	$ 956	$ 3.29	$ 0.08	5.34 %	3.52 %
		2012	20	$ 831	$ 3.06	$ 0.08	5.62 %	3.64 %
		2013	18	$ 696	$ 2.54	$ 0.07	5.15 %	4.18 %
		2014	18	$ 824	$ 2.69	$ 0.07	5.05 %	4.00 %
		2015	18	$ 736	$ 2.52	$ 0.07	4.82 %	4.57 %
		2016	19	$ 720	$ 2.62	$ 0.08	5.37 %	4.21 %
		2017	19	$ 887	$ 3.37	$ 0.09	5.51 %	4.48 %
	Labor Payment, Other Employees	2008	21	$ 1,259	$ 4.46	$ 0.17	10.57 %	10.06 %
		2009	21	$ 1,135	$ 4.86	$ 0.17	12.28 %	11.64 %
		2010	20	$ 1,563	$ 5.72	$ 0.19	13.36 %	11.68 %
		2011	20	$ 2,093	$ 7.00	$ 0.21	14.04 %	10.64 %
		2012	20	$ 2,209	$ 7.58	$ 0.21	13.68 %	10.72 %
		2013	18	$ 1,734	$ 5.97	$ 0.17	11.84 %	10.28 %
		2014	18	$ 1,731	$ 5.88	$ 0.16	12.49 %	9.70 %
		2015	18	$ 1,553	$ 5.00	$ 0.17	11.77 %	10.50 %
		2016	19	$ 1,497	$ 5.28	$ 0.19	13.27 %	11.16 %
		2017	19	$ 1,942	$ 6.79	$ 0.23	13.92 %	10.71 %
	Labor Payment, Processing Employees	2008	22	$ 2,109	$ 8.72	$ 0.27	16.84 %	14.73 %
		2009	21	$ 1,938	$ 8.35	$ 0.23	16.16 %	15.08 %
		2010	20	$ 2,073	$ 8.74	$ 0.26	17.42 %	13.77 %
		2011	20	$ 2,818	$ 9.69	$ 0.30	18.09 %	13.06 %
		2012	20	$ 2,786	$ 9.75	$ 0.30	18.50 %	14.23 %
		2013	18	$ 2,078	$ 7.49	$ 0.22	15.46 %	13.12 %
		2014	18	$ 2,356	$ 7.78	$ 0.23	16.42 %	12.59 %
		2015	18	$ 2,075	$ 7.08	$ 0.21	14.74 %	12.86 %
		2016	19	$ 2,091	$ 7.56	$ 0.22	16.89 %	12.77 %
		2017	19	$ 2,751	$ 10.47	$ 0.30	18.80 %	14.74 %
	Other Employment Related Costs	2008	22	$ 290	$ 1.04	$ 0.05	3.46 %	2.64 %
		2009	21	$ 377	$ 1.29	$ 0.05	3.89 %	3.11 %
		2010	20	$ 448	$ 1.78	$ 0.05	3.72 %	2.89 %
		2011	20	$ 570	$ 1.83	$ 0.05	3.67 %	2.40 %
		2012	20	$ 542	$ 1.93	$ 0.05	3.24 %	2.22 %
		2013	18	$ 631	$ 2.16	$ 0.05	4.14 %	3.15 %
		2014	18	$ 580	$ 2.14	$ 0.05	4.07 %	2.94 %
		2015	18	$ 620	$ 2.17	$ 0.06	4.40 %	3.59 %
		2016	19	$ 577	$ 2.03	$ 0.05	4.43 %	3.15 %
		2017	19	$ 660	$ 2.25	$ 0.07	4.45 %	3.38 %

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Table 8.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Vessel	Fishing Gear	2008	19	$ 300	$ 1.11	$ 0.05	3.11 %	2.82 %
		2009	21	$ 431	$ 1.70	$ 0.06	3.89 %	3.30 %
		2010	20	$ 452	$ 1.70	$ 0.06	3.80 %	2.76 %
		2011	20	$ 382	$ 1.32	$ 0.04	2.42 %	1.64 %
		2012	19	$ 413	$ 1.55	$ 0.03	2.00 %	1.41 %
		2013	18	$ 499	$ 1.66	$ 0.04	3.51 %	2.61 %
		2014	18	$ 412	$ 1.35	$ 0.03	2.31 %	2.02 %
		2015	18	$ 415	$ 1.36	$ 0.04	2.95 %	2.86 %
		2016	14	$ 361	$ 1.22	$ 0.03	2.13 %	1.83 %
		2017	19	$ 409	$ 1.38	$ 0.03	2.03 %	1.48 %
	Freight	2008	22	$ 51	$ 0.19	$ 0.01	0.50 %	0.44 %
		2009	21	$ 59	$ 0.29	$ 0.01	0.67 %	0.69 %
		2010	20	$ 78	$ 0.31	$ 0.01	0.64 %	0.52 %
		2011	20	$ 68	$ 0.25	$ 0.01	0.64 %	0.44 %
		2012	20	$ 70	$ 0.27	$ 0.01	0.57 %	0.45 %
		2013	18	$ 90	$ 0.38	$ 0.01	0.69 %	0.54 %
		2014	18	$ 113	$ 0.37	$ 0.01	0.78 %	0.61 %
		2015	18	$ 114	$ 0.43	$ 0.01	0.82 %	0.56 %
		2016	19	$ 61	$ 0.24	$ 0.01	0.80 %	0.56 %
		2017	17	$ 112	$ 0.35	$ 0.01	0.65 %	0.40 %
	Lease Expenses	2008	1	$ *	$ *	$ *	* %	* %
		2009	5	$ 5	$ 0.02	$ 0.00	0.05 %	0.05 %
		2010	6	$ 6	$ 0.02	$ 0.00	0.05 %	0.04 %
		2011	7	$ 7	$ 0.03	$ 0.00	0.13 %	0.09 %
		2012	8	$ 11	$ 0.05	$ 0.00	0.13 %	0.09 %
		2013	6	$ 8	$ 0.03	$ 0.00	0.08 %	0.05 %
		2014	5	$ 18	$ 0.06	$ 0.00	0.13 %	0.11 %
		2015	5	$ 3	$ 0.01	$ 0.00	0.03 %	0.02 %
		2016	7	$ 6	$ 0.03	$ 0.00	0.08 %	0.07 %
		2017	9	$ 9	$ 0.03	$ 0.00	0.08 %	0.04 %
	Repair and Maintenance	2008	22	$ 1,029	$ 4.43	$ 0.17	10.46 %	9.54 %
		2009	21	$ 1,299	$ 4.51	$ 0.19	13.41 %	11.11 %
		2010	20	$ 1,881	$ 6.73	$ 0.18	14.50 %	10.37 %
		2011	19	$ 1,597	$ 5.98	$ 0.18	11.53 %	9.03 %
		2012	20	$ 1,857	$ 6.76	$ 0.24	16.63 %	10.91 %
		2013	18	$ 1,990	$ 7.32	$ 0.20	15.02 %	11.46 %
		2014	18	$ 1,573	$ 5.51	$ 0.15	10.91 %	8.17 %
		2015	18	$ 1,642	$ 5.49	$ 0.14	9.45 %	8.09 %
		2016	19	$ 1,040	$ 3.19	$ 0.13	8.64 %	6.66 %
		2017	19	$ 1,494	$ 4.97	$ 0.11	8.16 %	6.03 %

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Table 8.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Materials	Food and Provisions	2008	19	$ 301	$ 1.22	$ 0.06	2.69 %	2.63 %
		2009	18	$ 301	$ 1.16	$ 0.04	2.80 %	2.66 %
		2010	17	$ 311	$ 1.16	$ 0.03	2.59 %	2.00 %
		2011	17	$ 375	$ 1.28	$ 0.03	2.32 %	1.60 %
		2012	17	$ 363	$ 1.28	$ 0.03	1.99 %	1.63 %
		2013	15	$ 359	$ 1.29	$ 0.03	2.40 %	2.01 %
		2014	15	$ 303	$ 1.02	$ 0.03	2.51 %	1.79 %
		2015	15	$ 349	$ 1.21	$ 0.04	2.77 %	2.34 %
		2016	16	$ 342	$ 1.16	$ 0.04	3.03 %	2.10 %
		2017	14	$ 330	$ 1.13	$ 0.03	1.98 %	1.53 %
	Fuel	2008	22	$ 2,430	$ 8.87	$ 0.32	20.57 %	18.29 %
		2009	21	$ 1,667	$ 6.41	$ 0.22	15.90 %	14.23 %
		2010	20	$ 2,059	$ 7.61	$ 0.22	16.82 %	13.09 %
		2011	20	$ 2,332	$ 8.27	$ 0.23	17.45 %	11.47 %
		2012	20	$ 2,602	$ 8.76	$ 0.25	15.97 %	11.81 %
		2013	18	$ 2,898	$ 9.81	$ 0.27	19.36 %	17.10 %
		2014	18	$ 2,726	$ 9.60	$ 0.24	19.05 %	14.09 %
		2015	18	$ 1,913	$ 7.18	$ 0.19	13.78 %	12.14 %
		2016	19	$ 1,484	$ 4.70	$ 0.15	11.48 %	9.16 %
		2017	19	$ 1,540	$ 5.77	$ 0.15	10.07 %	7.63 %
	Lubrication and Fluids	2008	22	$ 96	$ 0.33	$ 0.02	0.91 %	0.84 %
		2009	21	$ 117	$ 0.42	$ 0.01	1.05 %	0.80 %
		2010	20	$ 106	$ 0.40	$ 0.01	0.90 %	0.69 %
		2011	20	$ 122	$ 0.46	$ 0.01	0.89 %	0.60 %
		2012	19	$ 122	$ 0.50	$ 0.01	0.67 %	0.60 %
		2013	18	$ 142	$ 0.50	$ 0.01	0.96 %	0.85 %
		2014	18	$ 113	$ 0.40	$ 0.01	0.85 %	0.58 %
		2015	18	$ 123	$ 0.46	$ 0.01	1.05 %	0.83 %
		2016	19	$ 116	$ 0.36	$ 0.01	0.87 %	0.67 %
		2017	19	$ 137	$ 0.47	$ 0.01	0.88 %	0.55 %
	Product and Packaging Materials	2008	22	$ 229	$ 0.87	$ 0.03	1.74 %	1.53 %
		2009	21	$ 166	$ 0.63	$ 0.02	1.43 %	1.32 %
		2010	20	$ 190	$ 0.79	$ 0.02	1.54 %	1.16 %
		2011	20	$ 274	$ 0.90	$ 0.02	1.51 %	1.12 %
		2012	20	$ 264	$ 0.89	$ 0.02	1.64 %	1.23 %
		2013	18	$ 233	$ 0.94	$ 0.02	1.68 %	1.36 %
		2014	18	$ 295	$ 0.93	$ 0.02	1.80 %	1.56 %
		2015	18	$ 205	$ 0.69	$ 0.02	1.50 %	1.30 %
		2016	19	$ 220	$ 0.75	$ 0.02	1.74 %	1.31 %
		2017	19	$ 230	$ 0.72	$ 0.02	1.46 %	1.12 %

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Table 8.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Materials	Raw Fish Purchases	2008	2	$ *	$ *	$ *	* %	* %
		2010	1	$ *	$ *	$ *	* %	* %
		2011	1	$ *	$ *	$ *	* %	* %
		2012	1	$ *	$ *	$ *	* %	* %
		2013	1	$ *	$ *	$ *	* %	* %
		2015	4	$ *	$ *	$ *	* %	* %
		2016	5	$ 439	$ 1.45	$ 0.03	2.02 %	1.74 %
		2017	5	$ 626	$ 2.12	$ 0.05	2.71 %	1.92 %
Fees	Cooperative Costs	2008	16	$ 30	$ 0.11	$ 0.00	0.34 %	0.25 %
		2009	15	$ 78	$ 0.27	$ 0.01	0.79 %	0.64 %
		2010	14	$ 81	$ 0.33	$ 0.01	0.66 %	0.51 %
		2011	16	$ 87	$ 0.29	$ 0.01	0.58 %	0.40 %
		2012	16	$ 87	$ 0.35	$ 0.01	0.58 %	0.44 %
		2013	14	$ 96	$ 0.30	$ 0.01	0.59 %	0.46 %
		2014	14	$ 70	$ 0.24	$ 0.01	0.59 %	0.43 %
		2015	14	$ 72	$ 0.23	$ 0.01	0.59 %	0.46 %
		2016	15	$ 76	$ 0.26	$ 0.01	0.71 %	0.53 %
		2017	18	$ 71	$ 0.26	$ 0.01	0.43 %	0.28 %
	Fish Tax	2008	22	$ 151	$ 0.58	$ 0.02	1.15 %	1.05 %
		2009	21	$ 157	$ 0.69	$ 0.02	1.42 %	1.28 %
		2010	20	$ 91	$ 0.32	$ 0.01	0.79 %	0.66 %
		2011	20	$ 109	$ 0.35	$ 0.01	0.79 %	0.55 %
		2012	20	$ 149	$ 0.63	$ 0.02	1.10 %	0.83 %
		2013	18	$ 168	$ 0.59	$ 0.02	1.36 %	1.04 %
		2014	18	$ 159	$ 0.55	$ 0.01	1.10 %	0.86 %
		2015	18	$ 159	$ 0.51	$ 0.02	1.20 %	1.02 %
		2016	19	$ 224	$ 0.79	$ 0.02	1.84 %	1.20 %
		2017	19	$ 160	$ 0.56	$ 0.02	1.31 %	1.04 %
	Observer	2008	22	$ 210	$ 0.79	$ 0.03	1.57 %	1.40 %
		2009	21	$ 195	$ 0.78	$ 0.02	1.90 %	1.60 %
		2010	20	$ 213	$ 0.78	$ 0.02	1.75 %	1.31 %
		2011	20	$ 213	$ 0.72	$ 0.02	1.33 %	0.90 %
		2012	19	$ 205	$ 0.75	$ 0.02	1.19 %	0.94 %
		2013	18	$ 218	$ 0.75	$ 0.02	1.46 %	1.23 %
		2014	18	$ 221	$ 0.77	$ 0.02	1.53 %	1.23 %
		2015	18	$ 233	$ 0.79	$ 0.02	1.57 %	1.40 %
		2016	19	$ 229	$ 0.76	$ 0.02	1.58 %	1.27 %
		2017	19	$ 227	$ 0.73	$ 0.02	1.51 %	1.05 %

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Table 8.10: Continued

		Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
Fees	Quota Royalties	2008	2	$ *	$ *	$ *	* %	* %
		2009	4	$ *	$ *	$ *	* %	* %
		2010	2	$ *	$ *	$ *	* %	* %
		2011	8	$ 78	$ 0.25	$ 0.01	0.39 %	0.29 %
		2012	4	$ *	$ *	$ *	* %	* %
		2013	3	$ *	$ *	$ *	* %	* %
		2014	8	$ 173	$ 0.56	$ 0.01	0.75 %	0.51 %
		2015	7	$ 12	$ 0.04	$ 0.00	0.10 %	0.09 %
		2016	9	$ 45	$ 0.14	$ 0.00	0.18 %	0.14 %
		2017	5	$ 36	$ 0.12	$ 0.00	0.27 %	0.23 %
Overhead	Freight and Storage	2008	9	$ 2,254	$ 8.02	$ 0.27	14.38 %	14.24 %
		2009	10	$ 280	$ 1.05	$ 0.07	4.34 %	4.66 %
		2010	8	$ 1,592	$ 5.02	$ 0.14	8.40 %	7.19 %
		2011	4	$ *	$ *	$ *	* %	* %
		2012	4	$ *	$ *	$ *	* %	* %
		2013	4	$ *	$ *	$ *	* %	* %
		2014	7	$ 3,083	$ 9.54	$ 0.29	18.28 %	16.53 %
		2015	10	$ 3,100	$ 10.53	$ 0.29	20.49 %	18.35 %
		2016	10	$ 2,916	$ 9.92	$ 0.29	20.60 %	17.02 %
		2017	13	$ 2,878	$ 9.28	$ 0.27	16.13 %	12.54 %
	General Administrative Cost	2008	22	$ 503	$ 2.00	$ 0.09	5.20 %	4.75 %
		2009	21	$ 790	$ 2.75	$ 0.12	8.78 %	7.72 %
		2010	16	$ 806	$ 3.37	$ 0.08	6.27 %	4.42 %
		2011	16	$ 1,264	$ 4.10	$ 0.09	5.90 %	4.46 %
		2012	20	$ 777	$ 3.14	$ 0.07	4.69 %	3.91 %
		2013	18	$ 579	$ 2.40	$ 0.06	4.68 %	4.15 %
		2014	16	$ 1,324	$ 4.34	$ 0.11	8.27 %	7.18 %
		2015	11	$ 1,410	$ 6.03	$ 0.13	9.62 %	8.08 %
		2016	11	$ 1,833	$ 6.62	$ 0.17	11.65 %	8.42 %
		2017	15	$ 1,776	$ 5.95	$ 0.17	10.34 %	8.10 %
	Insurance	2008	22	$ 519	$ 1.83	$ 0.07	3.95 %	3.87 %
		2009	21	$ 509	$ 1.73	$ 0.07	5.41 %	4.65 %
		2010	20	$ 547	$ 2.01	$ 0.06	4.55 %	3.34 %
		2011	20	$ 547	$ 1.78	$ 0.05	3.59 %	2.50 %
		2012	20	$ 622	$ 2.35	$ 0.06	4.12 %	3.05 %
		2013	18	$ 583	$ 1.87	$ 0.05	3.87 %	3.00 %
		2014	17	$ 732	$ 2.55	$ 0.07	5.67 %	3.62 %
		2015	18	$ 480	$ 1.58	$ 0.05	3.82 %	3.43 %
		2016	19	$ 447	$ 1.53	$ 0.06	4.17 %	3.31 %
		2017	19	$ 432	$ 1.39	$ 0.05	2.98 %	2.55 %

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Table 8.10: Continued

	Year	Vessels	Cost Per Vessel, Median ($1,000)	Cost Per Vessel-day ($1000)	Cost Per 1000 T ($1000)	Percent Of Total Expenses	Percent Of Gross Revenue
All Annual Expenses	2008	22	$ 11,832	$ 49.98	$ 1.67	100.00 %	87.28 %
	2009	21	$ 10,242	$ 41.30	$ 1.40	100.00 %	82.96 %
	2010	20	$ 11,657	$ 48.19	$ 1.38	100.00 %	76.09 %
	2011	20	$ 15,780	$ 61.23	$ 1.58	100.00 %	70.98 %
	2012	20	$ 17,828	$ 66.94	$ 1.58	100.00 %	79.82 %
	2013	18	$ 13,359	$ 52.38	$ 1.34	100.00 %	76.92 %
	2014	18	$ 14,871	$ 52.76	$ 1.34	100.00 %	75.93 %
	2015	18	$ 14,684	$ 51.77	$ 1.36	100.00 %	86.87 %
	2016	19	$ 12,948	$ 42.67	$ 1.41	100.00 %	77.01 %
	2017	19	$ 15,460	$ 57.55	$ 1.59	100.00 %	80.36 %

Notes: All dollar values are inflation-adjusted to 2016-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 statisitics 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.

8.4.3 Operating returns

Table 8.11 provides an overview of economic and financial performance of the Amendment 80 sector at the fleet and median vessel level over the 9-year period in terms of a high-level income statement analysis, summarizing and synthesizing the 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 8.8. Operating and overhead cost values shown in Table 8.11 summarize itemized expenses detailed in Tables 8.9 and 8.10, 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 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.[10] 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 8.11 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.

From a fleet aggregate gross revenue of $418 million during 2016, $187 million remained as estimated gross income after deducting aggregate operating costs, increasing 23% from $152 million gross income in 2015. While 2016 saw the third highest gross revenue in the 9-year period, gross income reached it's highest value to-date, both in direct cash value, as well as in residual percentage terms at 44.8% of gross revenue (compared to an average of 36.6% gross residual from 2008 to 2015). Despite substantially increased operating and overhead expenses reported for 2016 of $231 million and $74 million, aggregate fleet operating income in 2016 was the second highest value to-date in both cash value and residual percentage terms, at $113.5 million and 27.1% of gross revenue, respectively. Cumulatively since 2008, these results represent a total $3.569 billion in gross revenue for the sector, returning 22% over the period for a total of $802 million in operating income to owners of Amendment 80 vessels and QS permits.

At the median vessel-level, year-on-year trends in gross income, operating income, and residual return rate are similar to those at the aggregate fleet level. Median gross revenue increased by 18% from 2015 to $19.95 million during 2016, approaching the highest gross revenue to-date during 2011 and 2012. Median gross income has varied from $3.1 million to $8.7 million after deducting operating costs, with gross return rate varying from 24% in 2009 to 44% of gross revenue in 2016. With labor costs increased 35% from 2015 to $3.4 million, on-par with 2011-2012 peak values, but median non-labor operating costs in 2016 lower than average at $5 million median, gross income

[10] 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.

increased 31% in 2016 to $8.6 million. After deducting overhead expenses, which increased by 20% to $4.1 million, median operating income for 2016 increased by 9% to $3.5 million, 20% of gross revenue.

Table 8.11: 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	$ 319.68	100.00 %	$ 14,245	100.00 %
	2009	21	$ 271.05	100.00 %	$ 12,106	100.00 %
	2010	20	$ 334.75	100.00 %	$ 15,363	100.00 %
	2011	20	$ 442.43	100.00 %	$ 21,591	100.00 %
	2012	20	$ 424.67	100.00 %	$ 20,354	100.00 %
	2013	18	$ 328.96	100.00 %	$ 16,673	100.00 %
	2014	18	$ 362.27	100.00 %	$ 18,716	100.00 %
	2015	18	$ 321.64	100.00 %	$ 16,348	100.00 %
	2016	19	$ 344.76	100.00 %	$ 16,862	100.00 %
	2017	19	$ 418.31	100.00 %	$ 19,952	100.00 %
Labor - Total Costs	2008	22	$ 102.69	32.12 %	$ 4,363	32.20 %
	2009	21	$ 89.49	33.01 %	$ 3,957	36.62 %
	2010	20	$ 102.51	30.62 %	$ 4,642	34.56 %
	2011	20	$ 128.07	28.95 %	$ 6,388	33.31 %
	2012	20	$ 125.26	29.50 %	$ 6,288	33.08 %
	2013	18	$ 97.65	29.68 %	$ 4,877	30.72 %
	2014	18	$ 103.55	28.58 %	$ 5,169	29.87 %
	2015	18	$ 96.57	30.02 %	$ 4,870	33.02 %
	2016	19	$ 98.78	28.65 %	$ 4,732	34.61 %
	2017	19	$ 131.24	31.37 %	$ 6,385	35.67 %
Operating (Non-labor) - Total Costs	2008	22	$ 117.80	36.85 %	$ 5,160	35.86 %
	2009	21	$ 100.01	36.90 %	$ 4,797	38.44 %
	2010	20	$ 117.02	34.96 %	$ 5,407	34.15 %
	2011	20	$ 129.42	29.25 %	$ 6,442	28.94 %
	2012	20	$ 132.38	31.17 %	$ 6,514	29.66 %
	2013	18	$ 123.98	37.69 %	$ 6,507	38.26 %
	2014	18	$ 113.69	31.38 %	$ 5,664	30.75 %
	2015	18	$ 108.22	33.65 %	$ 5,275	31.72 %
	2016	19	$ 93.82	27.21 %	$ 3,807	27.40 %
	2017	19	$ 99.63	23.82 %	$ 5,001	22.69 %
Gross Income	2008	22	$ 99.18	31.03 %	$ 4,329	31.48 %
	2009	21	$ 81.55	30.09 %	$ 3,082	24.48 %
	2010	20	$ 115.21	34.42 %	$ 5,166	31.99 %
	2011	20	$ 184.94	41.80 %	$ 8,698	36.79 %
	2012	20	$ 167.03	39.33 %	$ 8,547	38.92 %
	2013	18	$ 107.33	32.63 %	$ 5,017	31.34 %
	2014	18	$ 145.03	40.03 %	$ 7,086	37.67 %
	2015	18	$ 116.85	36.33 %	$ 5,199	34.17 %
	2016	19	$ 152.15	44.13 %	$ 6,560	43.57 %
	2017	19	$ 187.43	44.81 %	$ 8,566	41.64 %

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Table 8.11: Continued

	Year	Fleet Total Vessels	Fleet Total $ Million	Fleet Total Percent Of Fleet Gross Revenue	Vessel Median $1,000	Vessel Median Percent Of Vessel Gross Revenue
Overhead - Total Costs	2008	22	$ 52.43	16.40 %	$ 2,013	14.00 %
	2009	21	$ 43.49	16.05 %	$ 1,147	15.22 %
	2010	20	$ 40.29	12.04 %	$ 1,020	8.70 %
	2011	20	$ 60.27	13.62 %	$ 1,244	5.91 %
	2012	20	$ 59.95	14.12 %	$ 1,521	7.80 %
	2013	18	$ 37.36	11.36 %	$ 1,294	8.52 %
	2014	18	$ 55.63	15.36 %	$ 2,306	11.35 %
	2015	18	$ 62.66	19.48 %	$ 3,059	21.34 %
	2016	19	$ 69.09	20.04 %	$ 3,433	20.36 %
	2017	19	$ 73.90	17.67 %	$ 4,128	20.22 %
Operating Income	2008	22	$ 46.75	14.62 %	$ 1,449	12.72 %
	2009	21	$ 38.06	14.04 %	$ 1,556	17.04 %
	2010	20	$ 74.92	22.38 %	$ 3,825	23.91 %
	2011	20	$ 124.67	28.18 %	$ 5,910	29.02 %
	2012	20	$ 107.07	25.21 %	$ 4,008	20.18 %
	2013	18	$ 69.97	21.27 %	$ 3,177	23.08 %
	2014	18	$ 89.40	24.68 %	$ 3,616	24.07 %
	2015	18	$ 54.18	16.85 %	$ 2,047	13.13 %
	2016	19	$ 83.07	24.09 %	$ 3,179	22.99 %
	2017	19	$ 113.53	27.14 %	$ 3,473	19.64 %

Notes: All dollar values are inflation-adjusted to 2016-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.

8.4.4 Capital investment

Table 8.12 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.[11] Data reported exclude any expenditures for onshore equipment or facilities, and reflect initial purchase cost (including sales tax) for fully capitalized assets and improvements purchased during the year. Expensed 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 costs reported by individual vessel owners typically reflect moderate expenditures incurred regularly in routine (e.g. every three to five years) maintenance overhauls, as well as a small number of "outlier" observations reflecting large expenditures associated with major vessel refitting or ownership restructuring. EDR data collection does not explicitly distinguish between routine versus "major" capital expenditures, such that the distributions of reported values within a given capital asset category tend to be highly asymmetric. All reported values are included in summary statistics of capital expenditures reported in Table 8.12, with no censoring or statistical treatment of outliers. As a result, the reported statistics reflect high variability over multiple dimensions, including differences in scale and direction of year-on-year variation between metrics (fleet aggregate or vessel-median) and/or asset categories.[12]

Combined capital expenditures in total for the fleet have varied between $9.1 million and $19.2 million prior to 2016, but more than tripled from 2015 to $38 million in 2016, and nearly twice the highest previous value reported in 2012. Fleet aggregate capital expenditures on fishing equipment increased modestly during 2016, to $3.1 million, while investment in processing plant and equipment declined by $680 thousand (19%) to $2.9 million. Major investments in vessel improvements and new equipment (other than fishing and processing equipment) totaled $22.6 million during 2016, nearly twice the previous high of $12 million reported in 2012, with additional capital investment related to vessel operations increasing by a similar degree, to $9.7 million. On a median vessel basis, combined capital expenditure costs have varied between $309 thousand and $467 thousand prior to 2016, and declined to $265 thousand in 2016 (in contrast to the large increase in fleet aggregate combined expenditures reported for 2016. Capital expenditures in vessel and other onboard equipment (including purchases and improvements in vessel capital exclusive of fishing and processing equipment) are the most frequently reported category of investment costs and comprise the largest proportion of combined capital expenditures). Major vessel refitting projects in 2009, 2013, and 2014 are indicated by spikes in aggregate expenditures for those years. Ten vessels reported such investment in 2016, totaling $3.3 million, with a median of $106 thousand.

8.5. Employment

Table 8.13 displays 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

[11] 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.

[12] 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 8.12 for additional detail.

Table 8.12: Amendment 80 Fleet Capital Expenditures by Category and Year, Fleet Total and Median Vessel Values

	Year	Vessels	Total Fleet Expenditure ($million)	Percent Of Fleet Total Capital Expenditures	Expenditure Per Vessel, Median ($1,000)	Percent Of Vessel Total Capital Expenditures, Median
Fishing gear	2008	12	$ 1.78	20 %	$ 106.83	40 %
	2009	8	$ 0.67	7 %	$ 58.31	37 %
	2010	8	$ *	* %	$ 41.51	36 %
	2011	9	$ 1.38	15 %	$ 110.38	13 %
	2012	10	$ 3.10	16 %	$ 292.93	41 %
	2013	9	$ 1.60	9 %	$ 79.54	18 %
	2014	9	$ 0.97	7 %	$ 73.25	32 %
	2015	11	$ 2.21	18 %	$ 221.31	24 %
	2016	13	$ 3.01	24 %	$ 151.86	35 %
	2017	13	$ 3.05	8 %	$ 68.50	38 %
Processing gear	2008	11	$ 2.02	22 %	$ 135.34	31 %
	2009	9	$ 1.09	12 %	$ 101.06	22 %
	2010	13	$ 3.21	28 %	$ 169.69	28 %
	2011	10	$ 2.62	28 %	$ 164.96	32 %
	2012	14	$ 3.27	17 %	$ 86.62	21 %
	2013	9	$ 5.26	28 %	$ 148.47	42 %
	2014	8	$ 2.28	15 %	$ 118.53	15 %
	2015	10	$ 1.78	14 %	$ 138.68	18 %
	2016	8	$ 3.57	28 %	$ 102.12	32 %
	2017	11	$ 2.89	8 %	$ 24.40	8 %
Vessel and other onboard equipment	2008	11	$ 2.03	22 %	$ 57.94	33 %
	2009	13	$ 7.02	74 %	$ 447.87	75 %
	2010	15	$ 5.91	52 %	$ 120.28	57 %
	2011	11	$ 3.30	36 %	$ 136.59	32 %
	2012	18	$ 11.96	62 %	$ 70.37	55 %
	2013	11	$ 11.04	59 %	$ 578.51	69 %
	2014	13	$ 6.94	47 %	$ 411.17	73 %
	2015	12	$ 4.14	33 %	$ 93.64	38 %
	2016	10	$ 3.35	27 %	$ 108.19	27 %
	2017	11	$ 22.59	59 %	$ 205.30	61 %

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vessels at a given time, by labor category. Total fishing crew positions for the fleet in aggregate was 103 during 2016, and the total number of individuals participating as crew was 202, both declining to the lowest level reported over the 9-year period. Median crew positions per vessel has remained constant at 6, while distinct crew members declined to 11 in 2016. In contrast, processing employment in aggregate across the fleet increased in terms of number of processing positions, up from 477 in 2015 to 504, and number of distinct persons employed increasing from 1,357 to 1,533. Median number of distinct persons employed in processing also increased, from 65 to 76, while the number of processing positions per vessel, at 24 in 2016, remained within the historic range of 23-25. Employment of other types of positions across the fleet, which include officers, engineers, and

Table 8.12: Continued

	Year	Vessels	Total Fleet Expenditure ($million)	Percent Of Fleet Total Capital Expenditures	Expenditure Per Vessel, Median ($1,000)	Percent Of Vessel Total Capital Expenditures, Median
Other capital expenditures	2008	9	$ 3.25	36 %	$ 97.21	17 %
	2009	5	$ 0.67	7 %	$ 46.93	7 %
	2010	4	$ *	* %	$ *	* %
	2011	8	$ 2.00	21 %	$ 151.83	63 %
	2012	7	$ 0.90	5 %	$ 104.69	5 %
	2013	8	$ 0.90	5 %	$ 117.30	44 %
	2014	10	$ 4.58	31 %	$ 178.47	47 %
	2015	10	$ 4.37	35 %	$ 155.37	51 %
	2016	6	$ 2.70	21 %	$ 209.51	81 %
	2017	8	$ 9.73	25 %	$ 408.05	95 %
Total Annual Capital Expenditures	2008	17	$ 9.08	100 %	$ 409.80	100 %
	2009	16	$ 9.45	100 %	$ 364.27	100 %
	2010	18	$ 11.38	100 %	$ 387.33	100 %
	2011	15	$ 9.30	100 %	$ 331.57	100 %
	2012	19	$ 19.23	100 %	$ 308.79	100 %
	2013	16	$ 18.79	100 %	$ 467.11	100 %
	2014	18	$ 14.76	100 %	$ 426.42	100 %
	2015	16	$ 12.51	100 %	$ 463.79	100 %
	2016	18	$ 12.63	100 %	$ 313.85	100 %
	2017	19	$ 38.26	100 %	$ 265.40	100 %

Notes: All dollar values are inflation-adjusted to 2016-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 statisitics 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.

others involved in onboard management and record-keeping, increased to 160 during 2016, while the number of distinct persons employed in such position also increased, from 417 to 446.

Table 8.13: Amendment 80 Fleet Employment, Fishing, Processing, and Other Positions On-Board, Fleet Total and Median Vessel Values

		Year	Vessels	Median	Total
Fishing	Number of Employees During the Year	2008	22	11	340
		2009	21	12	273
		2010	20	13	294
		2011	20	9	234
		2012	19	10	240
		2013	18	8	214
		2014	18	11	239
		2015	18	11	231
		2016	19	13	262
		2017	19	11	202
	Positions on Board	2008	22	6	134
		2009	21	6	120
		2010	20	6	114
		2011	20	6	111
		2012	19	6	106
		2013	18	6	105
		2014	18	6	106
		2015	18	6	107
		2016	19	6	108
		2017	19	6	103
Processing	Number of Employees During the Year	2008	22	56	1,465
		2009	21	56	1,341
		2010	20	67	1,567
		2011	20	61	1,234
		2012	19	52	1,286
		2013	18	59	1,183
		2014	18	75	1,300
		2015	18	62	1,160
		2016	19	65	1,357
		2017	19	76	1,533
	Positions on Board	2008	22	22	529
		2009	21	23	516
		2010	20	23	476
		2011	20	23	473
		2012	19	23	444
		2013	18	23	437
		2014	18	24	449
		2015	18	24	449
		2016	19	25	477
		2017	19	24	504

Continued on next page.

Table 8.13: Continued

		Year	Vessels	Median	Total
Other	Number of Employees During the Year	2008	22	18	418
		2009	21	16	371
		2010	20	19	549
		2011	20	18	356
		2012	19	20	424
		2013	18	19	383
		2014	18	18	347
		2015	18	18	338
		2016	19	18	417
		2017	19	20	446
	Positions on Board	2008	22	7	156
		2009	21	6	136
		2010	20	7	145
		2011	20	7	150
		2012	19	7	164
		2013	18	7	160
		2014	18	7	140
		2015	18	7	141
		2016	19	7	157
		2017	19	7	160

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.

Source: Amendment 80 Economic Data Reports.

8.6. Citations

Northern Economics, Inc., 2014. Five-Year Review of the Effects of Amendment 80. Prepared for the North Pacific Fishery Management Council. September, 2014.

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

9. COMMUNITY PARTICIPATION IN NORTH PACIFIC GROUNDFISH FISHERIES

Fishing involvement in Alaska communities is significant and contributes to local and State economies, cultural cohesion, and the social organization of Alaska. Commercial, recreational, and subsistence fisheries contribute to economic livelihoods and support meaningful ways of life for Alaskans. There are hundreds of communities in Alaska involved, to some extent, in commercial, recreational, and/or subsistence fishing. This section, *Community Participation in North Pacific Groundfish Fisheries*, provides a socio-economic background of Alaska communities relevant to groundfish fisheries in Alaska. During 2018 we made a number of changes to this section in response to comments provided by the SSC in February 2018. The most notable changes were an update to the existing database of communities to include communities outside Alaska in our analysis, and to focus only on FMP groundfish to be more consistent with the rest of the Groundfish Economic SAFE and NPFMC management concerns. For the purpose of this section, focus was placed on those communities most highly engaged in Groundfish fisheries. Quantitative selection criteria were used in order to select communities with the most involvement in commercial groundfish fisheries. The section will be updated annually and expanded to include more detailed information on the socio-economic status and trends of Alaska fishing communities.

This chapter is divided into three sections to provide a multi-scaled synopsis of groundfish fisheries engagement and the socio-economic well-being of the communities involved. The first section describes the Community Fisheries Participation Indices for Alaska Communities and identifies the top communities participating in Groundfish fisheries and along with associated trends. This section also details the method used to identify which communities are most heavily engaged. Section II presents the community sketches for the communities identified as highly engaged in Alaskan groundfish fisheries. Finally, Section III provides background information as well as a general overview of fisheries within Alaska in order to locate this analysis in historical and regulatory context.

9.1. Community Fisheries Participation Indices for Alaska Communities

The National Marine Fisheries Service (NMFS) has developed a framework to create quantitative indices to help understand community well-being and participation in marine fisheries[1]. The Alaska Fisheries Science Center's Economic and Social Sciences Research Program has adapted this framework to develop a set of performance metrics to track fisheries participation over time using pre-existing data for all Alaska communities participating in commercial fisheries. These performance metrics provide information to examine the degree to which Alaska communities participate in different aspects of commercial, recreational, and subsistence fisheries[2, 3]. The analysis

[1]Jepson, M., & Colburn, L. L. (2013). *Development of social indicators of fishing community vulnerability and resilience in the US southeast and northeast regions.* US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

[2]Kasperski, S., & Himes-Cornell, A. (2014). Indicators of fishing engagement and reliance of alaskan fishing communities. *Alaska Fisheries Science Center Quarterly Report feature (January-February-March 2014).*

[3]Himes-Cornell, A., & Kasperski, S. (2016). Using socioeconomic and fisheries involvement indices to understand Alaska fishing community well-being. *Coastal Management*, *44*(1), 36-70.

presented here examines community participation in the commercial sector of Alaska fisheries by Alaska communities. The purpose of this analysis is to explore the degree to which communities participate in Alaska fisheries and how their participation has changed over time.

9.1.1 The Importance of Human Communities

The 1996 revision of MSA recognized the importance of human communities and their relationship to fisheries. National Standard 8 states that management and conservation measures shall "take into account the importance of fishery resources to fishing communities in order to: (1) Provide for the sustained participation of such communities; and (2) To the extent practicable, minimize adverse economic impacts on such communities."[4]As defined in the MSFCMA, the term "fishing community" is a "community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community.[5]

While the MSA requires consideration of "fishing communities;" however what constitutes a fishing community is complex and has been long debated. In order to contextualize what is meant by communities highly engaged in groundfish fisheries, it is necessarily to provide some meaning behind the concept of fishing community. The National Marine Fisheries Service interprets the MSA definition to emphasize the relevance of geographic place, stating "A fishing community is a social or economic group whose members reside in a specific location..."[6] Pacific States Marine Fisheries Commission adheres to this definition as well, although it is recognized that taking social networks and shared interests into account "would result in a greater understanding of socioeconomic indicators."[7] While location may be relatively easy to determine, defining fishing community solely on geography risks excluding social complexity including social networks valuable to the flow of people, information, goods, and services. Some managers have turned to "multiple constructions of communities" to better understand fishing communities. [8]

By restricting the definition of fishing community to a geographic place—particularly in the marine environment—St. Martin and Hall-Arber argue that geographically restricted notions of community ignore the complexity of social landscapes.[9] The authors expand "community" to include those areas, resources, and social networks on which people depend.[10] In an effort to acknowledge women's role in fisheries, Calhoun, Conway, and Russel discuss fishing community in terms of participation in the broader industry.[11] Acknowledging power dynamics and the issue of scale when describing "fishing community," Clay and Olson complicate the MSA definition, bringing forward the importance of "political, social, and economic relationships."[12] Kevin St. Martin and others recognize the shift

[4]MSFCMA, § 600.345 National Standard 8—Communities.

[5]16 U.S.C. 1802 §3 (16).

[6]*50 CFR 600.345 - National Standard 8 – Communities.*

[7]Langdon-Pollock, J. (2004). West coast marine fishing community descriptions. *Pacific State Marine Fisheries Commission, Economic Fisheries Information Network*, Pp. 85. Portland Oregon

[8]Olson, J. (2005). Development in Theory: Re-Placing the Space of Community: A Story of Cultural Politics, Policies, and Fisheries Management. *Anthropological Quarterly*, 78(1), 247-268.

[9]St. Martin, K. S., & Hall-Arber, M. (2008). The missing layer: Geo-technologies, communities, and implications for marine spatial planning. *Marine Policy*, 32(5), 779-786.

[10]ibid

[11]Calhoun, S., Conway, F., & Russell, S. (2016). Acknowledging the voice of women: implications for fisheries management and policy. *Marine Policy*, 74, 292-299

[12]Clay, P. M., & Olson, J. (2008). Defining" fishing communities": vulnerability and the Magnuson-Stevens fishery conservation and management act. *Human Ecology Review*, 143-160

toward ecosystem-based management within fisheries and suggest a similar move in fisheries social science, "to emphasize community-level processes, practices, interactions and interdependencies as *starting points* for understanding the relationship between the rich and complex social practice of fishing and marine ecosystems."[13] As fisheries managers and policy makers continue to develop management strategies which directly affect fishing communities, it is essential to advance a greater understanding of the complexity of social systems. In order to capture the linkages among people engaged in groundfish fisheries as well as the social and economic impacts on communities of place, emphasis has been placed on level of participation within the industry as well as geographic location. The next section describes the methods used to identify the communities of analysis.

For the Economic SAFE, Alaska communities were examined in relation to geographic place, as well as historical and current fishing involvement in Alaska's groundfish fisheries. This analysis considers four performance metrics of community fisheries participation to understand the different ways that communities are invovled in Alaska fisheries: commercial processing engagement, commercial harvesting engagement, the processing regional quotient with measures the percentage of all Alaska landings occurring in each community, and the harvesting regional quotient that measures the percentage of all Alaska landings attributable to vessels owned by residents of each community. These indicators provide a quantitative measure of community participation in Alaska fisheries and how their participation has changed from 2008 through 2017.

9.1.2 Methods

During 2018 we made a number of changes to this section in response to comments provided by the SSC in February 2018. The most notable changes were an update to the existing database of communities to include communities outside Alaska and to focus only on FMP groundfish to be more consistent with the rest of the Groundfish Economic SAFE and NPFMC management concerns.

The Alaska Fisheries Information Network (AKFIN) and AFSC are working on developing a revised Community Profile database to improve the quality, quantity, and consistency of information provided to analysts working on economic and social science issues relevant to the North Pacific Fishery Management Council (NPFMC). The largest change to the data that will impact this section is expanding the set of communities beyond only Alaska communities, and now includes information on all U.S. communities, which are now grouped into 8 non-AK community groupings: the Seattle metropolitan statistical area (MSA), Bellingham, WA, Other Washington, Newport, OR, Other Oregon, All California, All Other States, and the At-Sea Processor grouping. The database was also updated to source data from the same sources as the rest of the Economic Groundfish SAFE to make this chapter as consistent with the rest of the SAFE report as possible. As a result, the dataset includes data on commercial fishing activities from 2008-2017 for all communities in the U.S. and we will be expanding it to include data on recreational and subsistence activities by community in the near future.

The analysis presented here remains restricted to only commercial participation and includes all communities with some commercial participation in Alaska fisheries, either by having landings in the community or having vessel owners residing in the community. In response to comments from the SSC, this section now only focuses on community harvesting and processing engagement in the

[13]Martin, K. S., McCay, B. J., Murray, G. D., Johnson, T. R., & Oles, B. (2007). Communities, knowledge and fisheries of the future. *International Journal of Global Environmental Issues,* 7(2-3), 221-239.

FMP groundfish fisheries in Alaska. For the most part, communities emerged were discrete entities; however Kodiak Island was analyzed both on the island borough For the most part, communities were discrete entities; however Kodiak Island was analyzed on the individual community level (e.g. Kodiak City and Ouzinkie) as well as on the Kodiak Island Borough (KIB) level to ensure accurate reporting of smaller communities affected by groundfish fisheries management policy.

9.1.3 Commercial Fisheries Engagement Indices

Communities were included in the study population if any shoreside FMP groundfish landings were made in the community or if the owner of a vessel that fished in the fisheries resided in the community for any year from 2008 through 2017.[14] Therefore, the engagement indices exclude the at-sea processing, inshore floating processor, and any landings where the landing port is unknown or missing. The analysis separates variables into two categories of fisheries involvement: commercial processing and commercial harvesting. Processing engagement is represented by the amount of landings and associated revenues from landings in the community, the number of vessels delivering any FMP groundfish in the community, and the number of processors in the community processing any FMP groundfish. Harvesting engagement is represented by the FMP groundfish landings and revenues associated with vessels owned by community residents, the number of vessels with FMP groundfish landings owned by residents in the community, and the number of distinct resident vessel owners whose vessels made FMP groundfish landings in any community. By separating commercial processing from commercial harvesting, the engagement indices highlight the importance of fisheries in communities that may not have a large amount of landings or processing in their community, but have a large number of fishermen and/or vessel owners that participate in commercial fisheries that are based in the community.

To examine the relative harvesting and processing engagement of each community, a separate principal components factor analysis (PCFA) was conducted each year for each category to determine a community's engagement relative to all other Alaska communities. There are 10 years in the study and two PCFAs are conducted each year (processing engagement and harvesting engagement) for a total of 20 different PCFAs.

PCFA is a variable reduction strategy that separates a large number of correlated variables into a set of fewer, linearly independent components. These components are used to create quantitative indices of engagement for each community by using the regression method of summing the standardized coefficient scores multiplied by the included variable values. A unique processing index and harvesting index value for each community in each year is created using the first un-rotated extracted factor from the PCFA, each of which resulted in single factor solutions with second factor eigenvalues below 1.00 for all 20 PCFAs. Each index is normalized to have a mean of zero and a standard deviation of one for each year. These indices are relative scores in that they represent each community's engagement in commercial fisheries within a single year relative to all other communities in that year. Indices are then combined across all years to create a time series of relative engagement in these two aspects of commercial fisheries over time.

Communities that scored above one (above one standard deviation from the mean of zero) for any year are classified as highly engaged for that particular year. These communities are used in additional analyses to explore the changes in their participation for communities that were highly

[14] The owner's community is determined from the CFEC vessel registration each year.

engaged for all 10 years from 2008-2017 for processing engagement or harvesting engagement. It is important to note that since these are relative indices, a large change in the total number of active vessels over time will only cause a change in an index if one community loses a larger share of their vessels (or other commercial fisheries activities) than another community. If the change in number of active vessels (or other commercial fishing activities) are directly proportional to the existing number of vessels across communities, there will not be a change in the indices over time.

9.1.4 Regional Quotient

The regional quotient is a measure of the importance of the community relative to all Alaska fisheries in terms of pounds landed or revenue generated from Alaska FMP groundfish fisheries. It is calculated as the landings or revenue attributable to a community divided by the total landings or revenue from all communities and community groupings. In contrast to the engagement indices above, the regional quotient does include at-sea processors (catcher processors and motherships) and inshore floating processors so that the regional quotient reflects each community's share of the total North Pacific FMP groundfish fisheries. The regional quotient is reported for both pounds and revenue from landings in a community (similar to processing engagement). New for this year, we are also calculating the regional quotient based on vessel owner residency (similar to harvesting engagement) since we now have non-Alaska community groupings included in our data. However, it should be noted that these values represent only North Pacific fisheries activities, as some residents (particularly those in other U.S. States) may participate in fisheries outside Alaska. The regional quotient uses the same criteria for inclusion as the processing and harvesting engagement indices and is presented for all communities that were highly engaged for all years from 2008-2017.

9.1.5 Results

This section will report performance metrics of community participation in Alaska fisheries from 2008-2017. Data were collected for 99 communities or community groupings throughout the U.S. that had either some commercial FMP groundfish fisheries landings or residents who owned vessels that were used in commercial FMP groundfish fishing during this period. There were 54 communities that had some FMP groundfish landings occurring in their community and were included in the commercial processing engagement analysis. In contrast, 92 of the 99 communities had a resident who owned a vessel that participated in commercial FMP groundfish fishing and therefore were included in the commercial harvesting engagement analysis.

9.1.6 FMP Groundfish Commercial Processing Engagement

The results of the commercial processing engagement PCFA analyses are shown in Table 9.1 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient (Armor, 1974) for all of the variables included in each PCFA. The results suggest somewhat strong relationships among variables and that a single index based on the first extracted factor explains over 70% of the variation in each of the variables in each year.

In addition to the goodness of fit statistics of the analyses provided in Table 9.1, each PCFA provides an index score for each of the 54 communities included in the analyses. These index scores are presented in Table 9.2 for the 6 communities that were highly engaged (index score above one, which

Table 9.1: Commercial processing engagement PCFA results.

	Eigenvalues				Factor Loadings					
Year	1	2	3	4	Ex-vessel value	Pounds landed in community	# of vessels delivering	# of processors	% variance explained	Armor's Theta
2008	2.99	0.83	0.18	0.00	0.923	0.871	0.823	0.836	75%	0.89
2009	2.93	0.85	0.22	0.00	0.926	0.867	0.788	0.835	73%	0.88
2010	3.08	0.74	0.18	0.01	0.938	0.867	0.844	0.856	77%	0.90
2011	3.03	0.78	0.18	0.01	0.936	0.859	0.842	0.841	76%	0.89
2012	2.92	0.85	0.23	0.00	0.931	0.858	0.826	0.798	73%	0.88
2013	3.02	0.82	0.15	0.00	0.926	0.868	0.810	0.869	76%	0.89
2014	3.09	0.69	0.22	0.00	0.940	0.900	0.791	0.877	77%	0.90
2015	2.97	0.80	0.23	0.00	0.922	0.886	0.838	0.794	74%	0.88
2016	2.89	0.89	0.21	0.00	0.913	0.870	0.822	0.792	72%	0.87
2017	2.83	0.92	0.24	0.01	0.929	0.862	0.854	0.702	71%	0.86

is one standard deviation above the mean of zero) for at least one year from 2008-2017, and these cells are shaded in Table 9.2. The index is an indicator of the degree of participation in a community relative to the participation of other communities. It is a measure of the presence of commercial fishing in the federal fisheries in Alaska through fishing activity including pounds landed, revenue, processors and the number of delivering vessels in the FMP groundfish fisheries.

Table 9.2: Communities highly engaged in commercial processing for one or more years from 2008-2017*.

Year	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Akutan	2.11	2.22	2.34	2.21	2.19	2.21	2.15	2.25	2.30	2.85
Homer	1.39	1.56	1.45	1.34	1.37	1.34	1.31	1.41	1.47	1.49
Kodiak	3.43	3.41	4.00	3.81	3.82	3.62	3.65	3.79	3.57	3.41
Seward	0.67	0.91	0.73	0.82	0.99	0.99	0.93	1.04	1.01	1.19
Sitka	1.35	1.16	1.28	1.32	1.20	1.24	1.11	1.21	1.34	1.65
Unalaska/ Dutch Harbor	4.93	4.85	4.32	4.63	4.63	4.79	4.91	4.63	4.67	4.27

Notes: *Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2008-2017.

Of the six communities found in Table 9.2, the five communities that were highly engaged in commercial processing all 10 years from 2008-2017 are shown in Figure 9.1 and includes Akutan, Homer, Kodiak, Sitka, and Unalaska/Dutch Harbor. Unalaska/Dutch Harbor has the highest engagement scores over time, followed closely by Kodiak.

Several of the communities with increasing processing engagement scores experienced fairly substantial increases of 29%, 8%, and 35% for Akutan, Homer, and Sitka, respectively, compared with their mean value for the previous 5 years (2012-2016) (Figure 9.2). Unalaska/Dutch Harbor and Kodiak

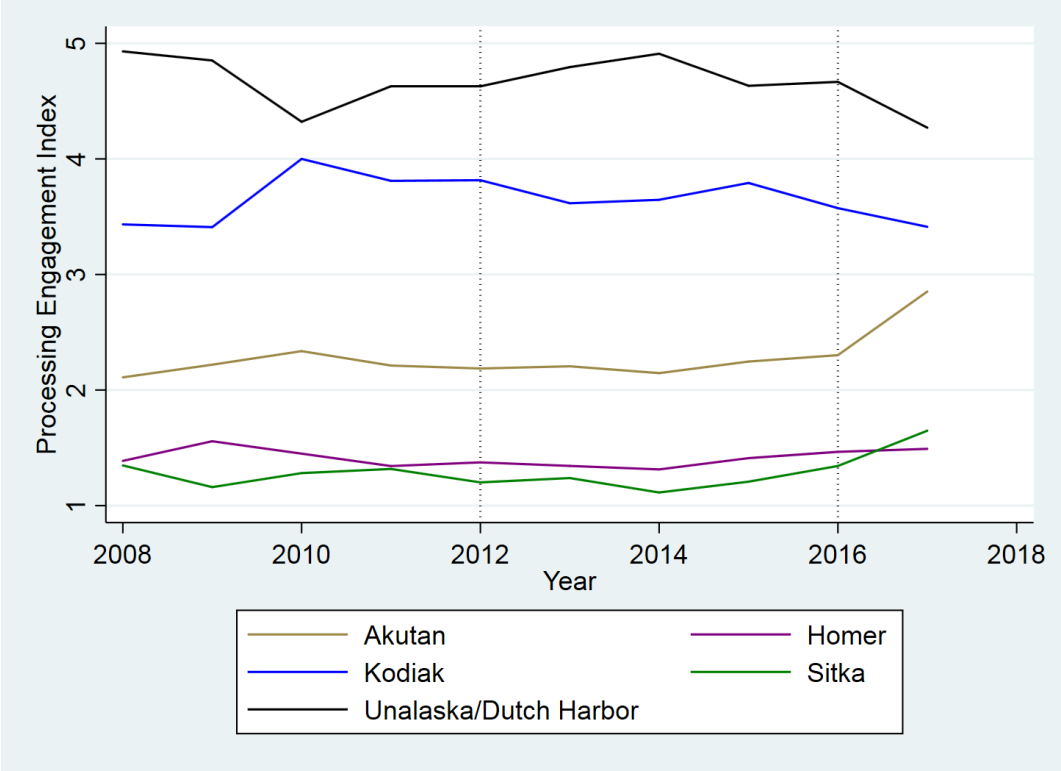


Figure 9.1: Index scores of communities highly engaged in commercial processing for all years from 2008-2017. Dotted lines indicate the previous 5 year period (2012-2016).

both experienced a moderate decline of 10% and 7% decrease in processing engagement score for 2017 compared with the previous five year average (Figure 9.3).

9.1.7 Processing Regional Quotient

Another measure of a community's participation in commercial FMP groundfish fisheries is its processing regional quotient, defined as the share of commercial landings/revenues within a community out of the total North Pacific FMP groundfish landings/revenues. It is an indicator of the percentage contribution in pounds or revenue landed in that community relative the total (shore-based and at-sea) landings or revenue from all communities throughout the U.S. Figures 9.4 and 9.5 show the processing regional quotient both in pounds and revenue from 2008-2017.

The most prominent communities for processing FMP groundfish in terms of landing weight have been the At-Sea Processing grouping that accounts for approximately 60% of the weight of FMP groundfish retained in the North Pacific. In terms of shoreside processing, Unalaska/Dutch Harbor accounts for approximately 18% of the regional pounds landed from 2008-2017 as a result of the high volume pollock and other groundfish fisheries in the Eastern Bering Sea. The next highest volume community was Kodiak whose processing regional quotient averaged 7% from 2008-2017. Akutan was the only other community with an appreciable amount of FMP groundfish landings, and combined with all non-highly engaged communities accounts for approximately 14% of FMP groundfish landings over this period.

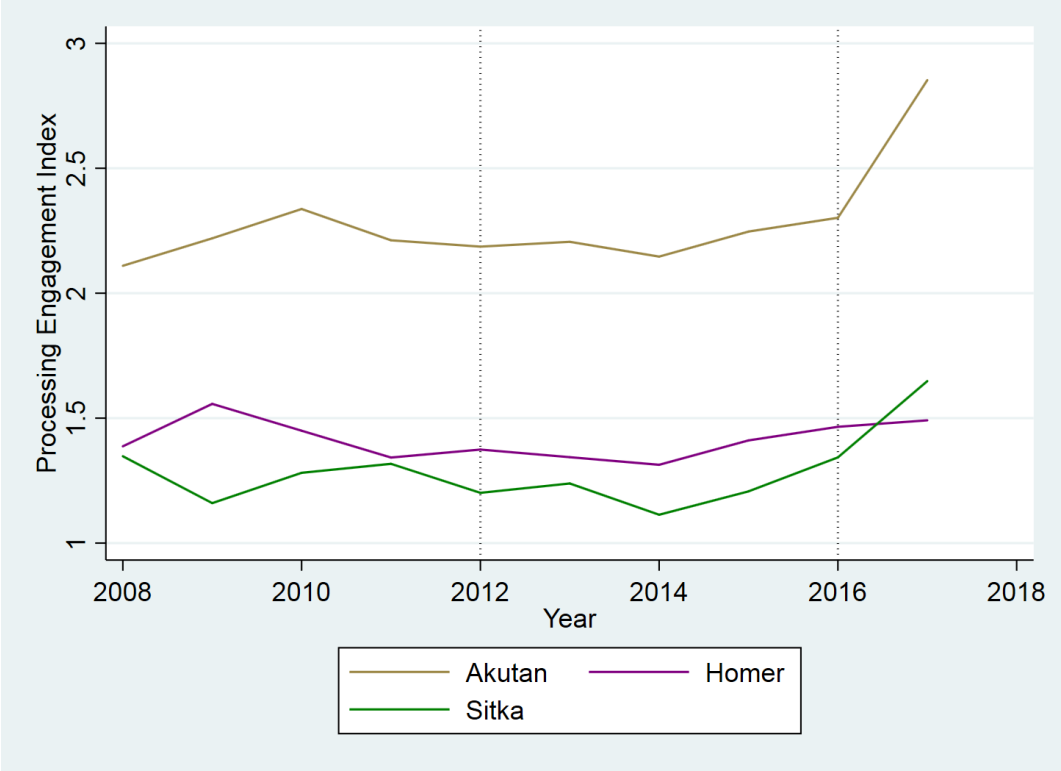


Figure 9.2: Index scores of communities highly engaged in commercial processing for all years with increasing engagement in 2017 relative to previous 5 year average (2012-2016).

The processing revenue regional quotient is quite similar to the processing pounds regional quotient. However, in slight contrast the At-Sea Processor grouping only accounted for 53% of total FMP groundfish ex-vessel revenues, while Unalaska/Dutch Harbor and Kodiak presented 16 and 8%, respectively. Homer accounted for 1% on average of FMP groundfish ex-vessel revenue, while Sitka accounted for 2% and Akutan and all other communities represented 19%.

9.1.8 FMP Groundfish Commercial Harvesting Engagement

The results of the commercial harvesting engagement PCFA analyses are shown in Table 9.2 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient (Armor, 1974) for all of the variables included in each PCFA. The results suggest a strong relationship among variables and that a single index based on the first extracted factor explains approximately 80% of the variation in each of the variables in each year.

Index scores derived from the PCFA results are presented in Table 9.3 for the six communities that were highly engaged (index score above one, which is one standard deviation above the mean of zero) for any year from 2008-2017, and these cells are shaded in Table 9.4. The harvesting engagement index is an indicator of the degree of participation in a community relative to the participation of all other communities in Alaska. It is a measure of the presence of commercial fishing through residents who own commercial fishing vessels including pounds landed, revenue, the number of vessels, and the total number of owners in a community.

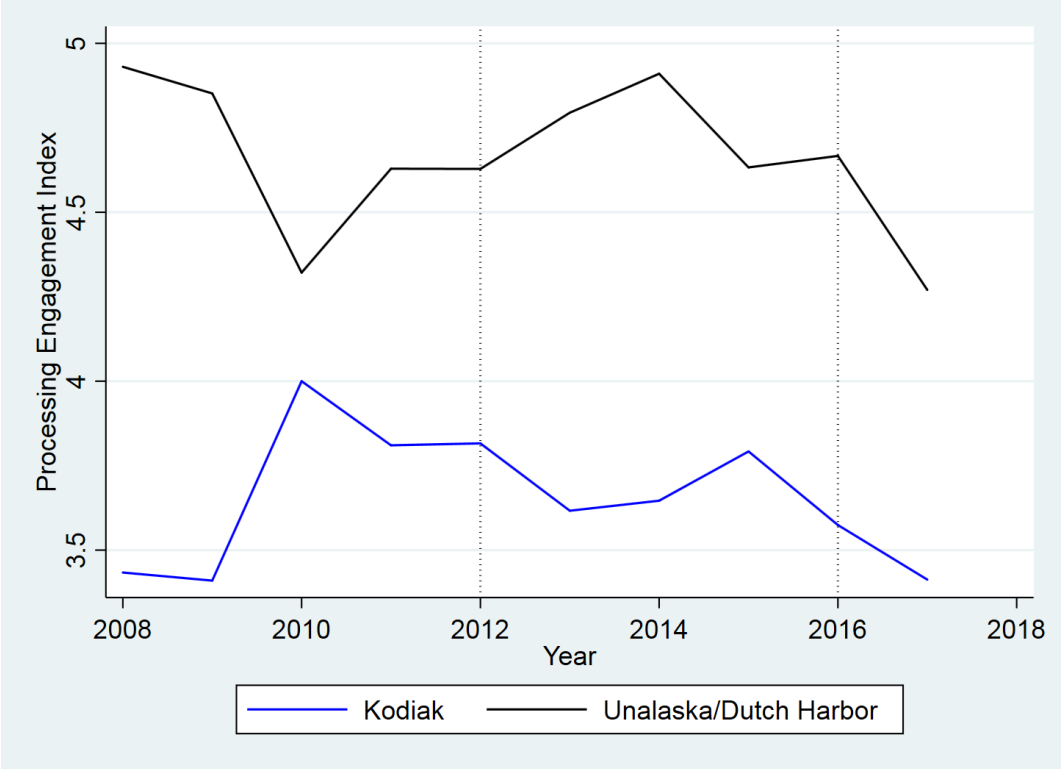


Figure 9.3: Index scores of communities highly engaged in commercial processing for all years with decreasing engagement in 2017 relative to previous 5 year average (2012-2016).

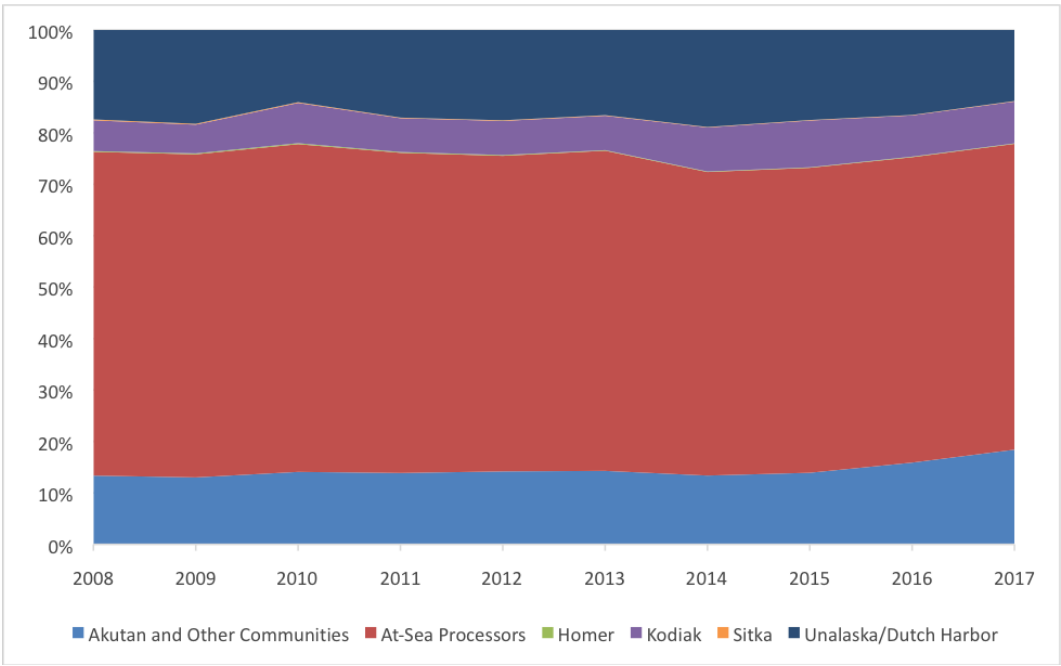


Figure 9.4: Processing regional quotient of pounds for communities highly engaged in commercial processing for all years from 2008-2017.

Of the 6 communities listed in Table 9.3, five communities were highly engaged in commercial harvesting for all years from 2008-2017 (Figure 6). They are Homer, Kodiak, Petersburg, Sitka,

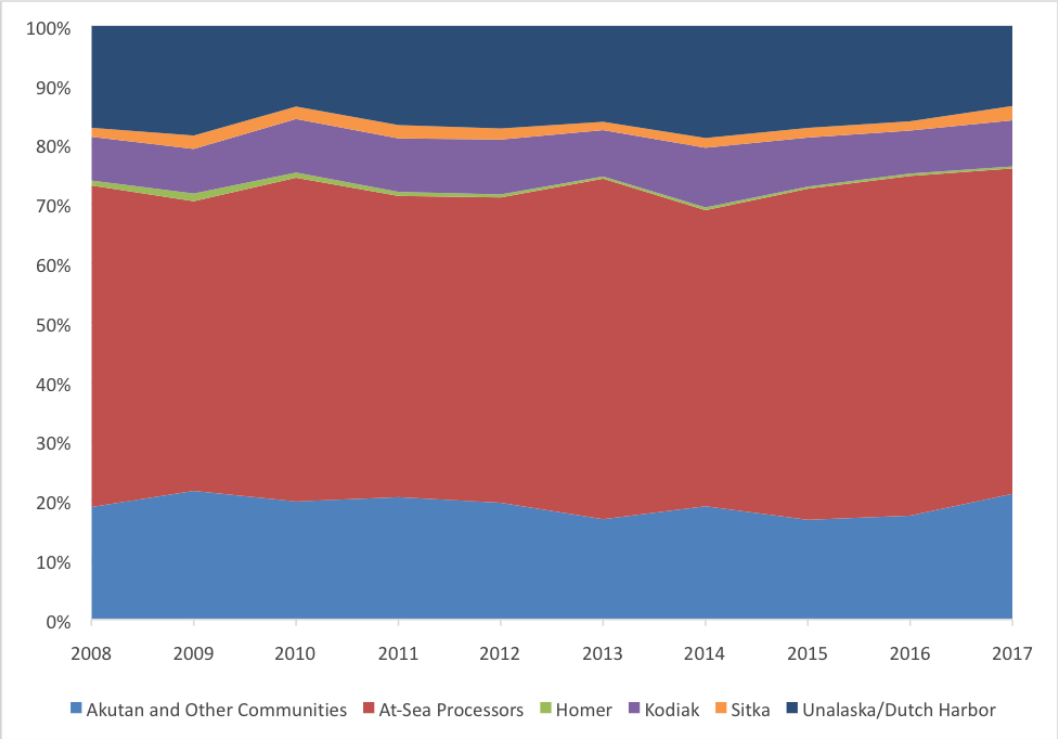


Figure 9.5: Processing regional quotient of revenue for communities highly engaged in commercial processing for all years from 2008-2017.

Table 9.3: Commercial Harvesting Engagement PCFA Results.

	Eigenvalues				Factor Loadings					
Year	1	2	3	4	Ex-vessel value	Pounds landed in community	# of vessels delivering	# of processors	% variance explained	Armor's Theta
2008	3.27	0.73	0.00	0.00	0.912	0.897	0.919	0.889	82%	0.93
2009	3.2	0.8	0.00	0.00	0.905	0.884	0.913	0.873	80%	0.92
2010	3.16	0.83	0.00	0.00	0.901	0.879	0.907	0.870	79%	0.91
2011	3.13	0.87	0.00	0.00	0.897	0.872	0.902	0.866	78%	0.91
2012	3.12	0.88	0.00	0.00	0.893	0.875	0.903	0.861	78%	0.91
2013	3.22	0.78	0.00	0.00	0.905	0.891	0.919	0.872	80%	0.92
2014	3.18	0.82	0.00	0.00	0.901	0.884	0.912	0.869	80%	0.91
2015	3.16	0.84	0.00	0.00	0.895	0.884	0.909	0.865	79%	0.91
2016	3.11	0.89	0.00	0.00	0.890	0.879	0.909	0.851	78%	0.91
2017	3.18	0.82	0.00	0.00	0.903	0.884	0.920	0.858	80%	0.91

and the Seattle Metropolitan Statistical Area (MSA – which includes King, Snohomish and Pierce Counties in Washington).

The Seattle MSA has by far the highest harvesting engagement scores over time, with fairly consistent index scores from 2008-2017 and remained flat in 2017 relative to the average of 2012-2016. Homer, Petersburg, and Sitka experienced moderate increases in harvesting engagement scores, which went

Table 9.4: Communities highly engaged in commercial harvesting for one or more years from 2008-2017.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Homer	1.10	1.23	1.34	1.29	1.38	1.41	1.33	1.45	1.49	1.53
Kodiak	2.50	2.60	2.69	3.16	2.98	2.33	2.52	2.78	2.65	2.03
Petersburg	1.39	1.30	1.47	1.23	1.28	1.36	1.43	1.39	1.36	1.45
Sitka	2.23	2.63	2.66	2.54	2.59	2.61	2.74	2.56	2.79	3.02
Seattle MSA	8.29	8.17	8.07	8.00	8.03	8.24	8.13	8.09	8.08	8.15
Other Washington	1.24	1.18	1.13	1.03	0.98	0.99	0.99	0.91	0.90	0.86

Notes: *Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2008-2017.

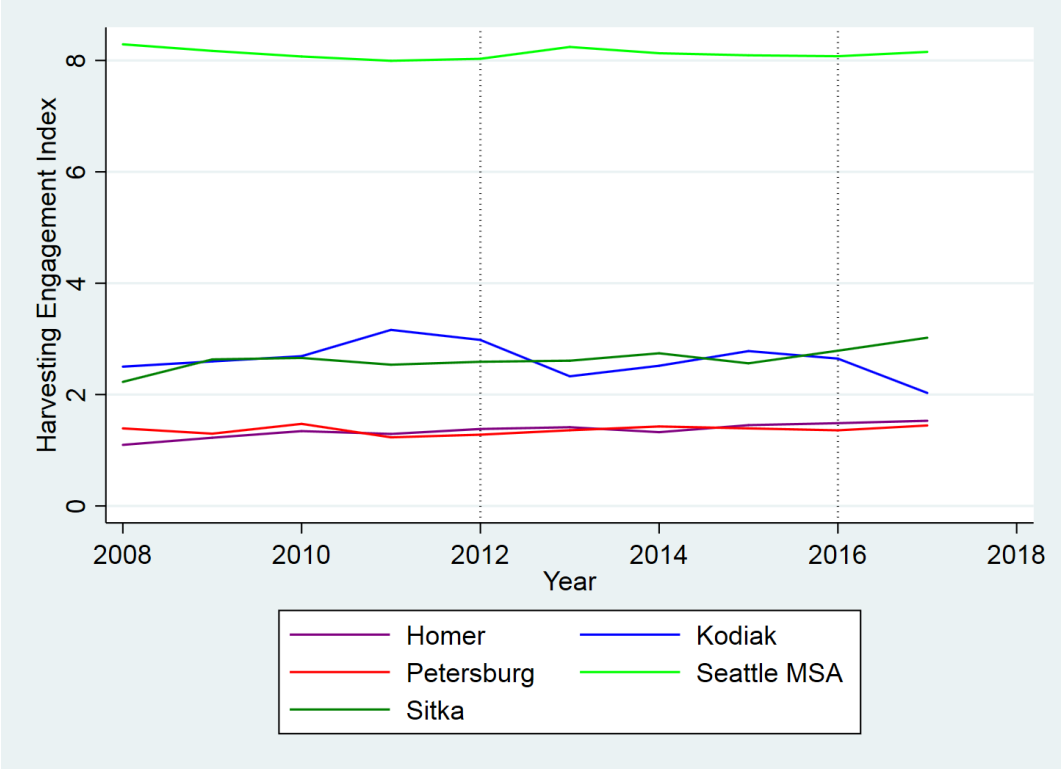


Figure 9.6: Index scores of communities highly engaged in commercial harvest for all years from 2008-2017. Dotted lines indicate the previous 5 year period (2012-2016).

up by 8%, 6%, and 14%, respectively, in 2017 compared with the average from 2012-2016 (Figure 9.7). Only Kodiak experienced a decrease in harvesting engagement in 2017 relative to the previous five year period, among those highly engaged all years, by 23% (Figure 9.8) as a result of a decline of approximately 50 FMP groundfish vessels and vessel owners in 2017 (or approximately 1/3rd) despite an increase in FMP groundfish pounds and revenues compared with 2016.

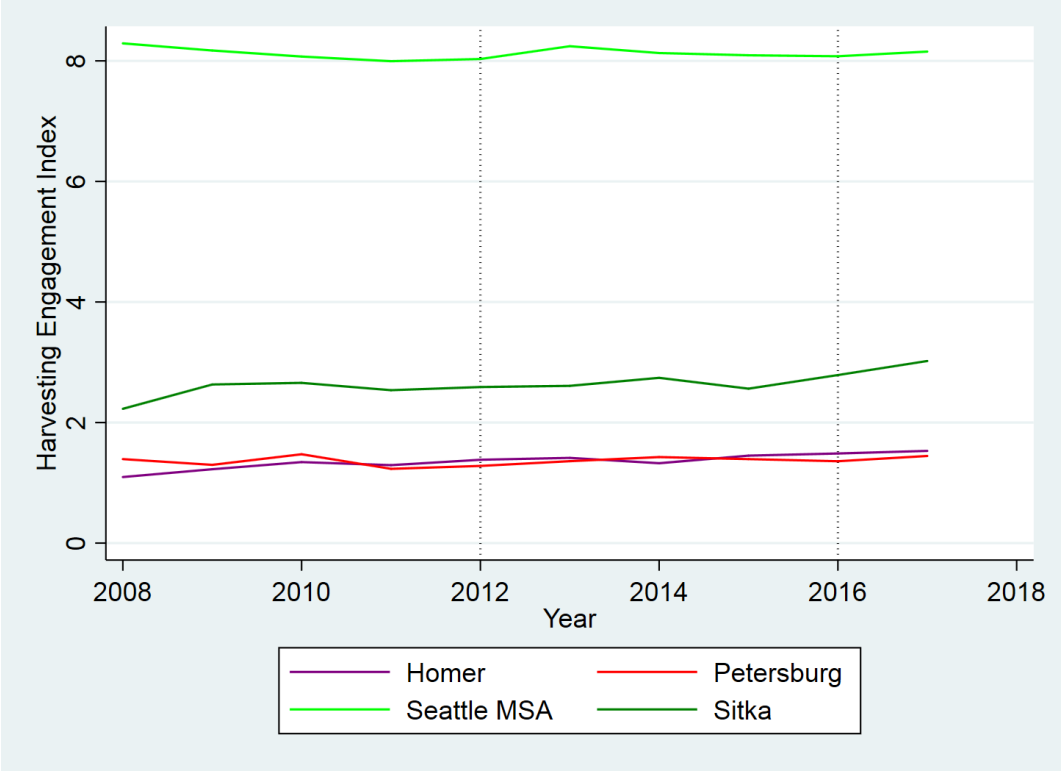


Figure 9.7: Index scores of communities highly engaged in commercial harvesting for all years with increasing engagement in 2017 relative to previous 5 year average from 2012-2016.

9.1.9 Harvesting Regional Quotient

This is a new metric reported this year as we have a full accounting of the communities with which vessel owners reside within the U.S. which summarizes where the owners of vessels participating in North Pacific FMP groundfish fisheries reside and therefore some share of fishing revenues will be entering the local economy. The harvesting regional quotient is defined as the share of North Pacific FMP groundfish commercial landings/revenues attributable to vessel owners residing in each community compared with the total North Pacific FMP groundfish landings/revenues. It is an indicator of the percentage contribution in pounds or revenue from resident vessel owners in a community relative the total (shore-based and at-sea) landings or revenue from all communities throughout the U.S. Figures 9.9 and 9.10 show the harvesting regional quotient both in pounds and revenue from 2008-2017.

The most prominent communities for harvesting FMP groundfish in terms of landing weight and ex-vessel revenues has been the Seattle MSA grouping that accounts for 78% of the weight of FMP groundfish retained in the North Pacific on average over this period. In terms of Alaska communities, Kodiak accounts for the next largest share of pounds attributable to its resident vessel owners at approximately 5% of the regional pounds landed from 2008-2017, followed by Petersburg at 1% and Sitka and Homer each at less than 1%.

The harvesting revenue regional quotient is quite similar to the harvesting pounds regional quotient. However, in slight contrast the Seattle MSA grouping only accounted for 70% of total FMP groundfish

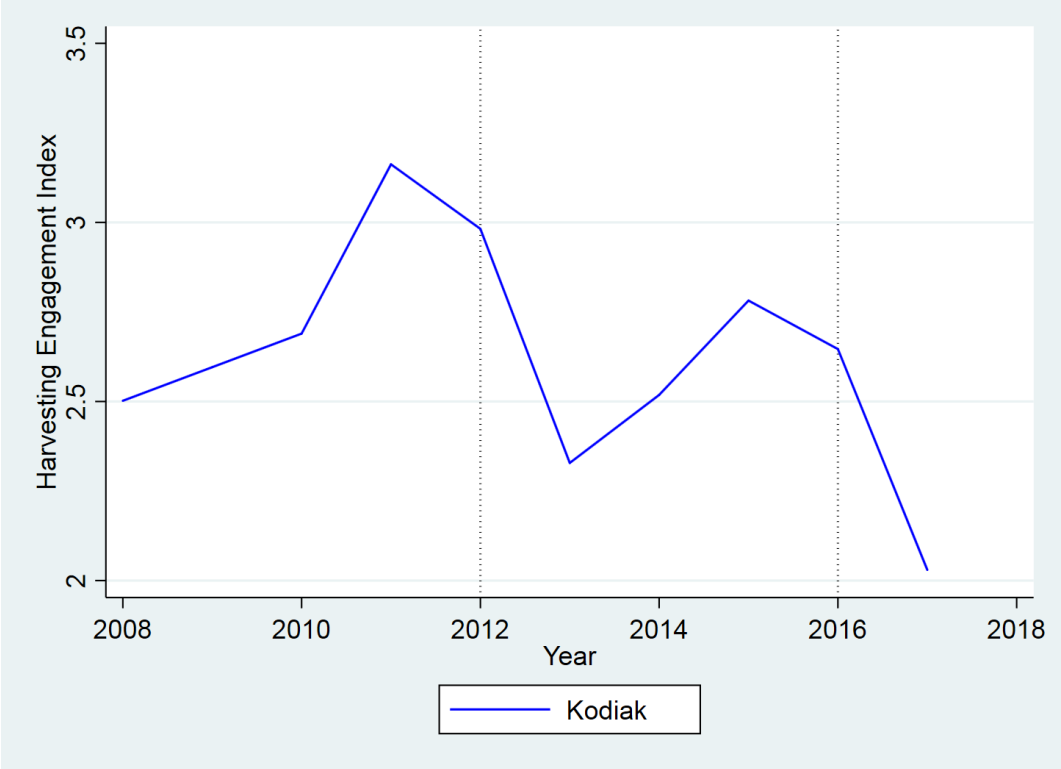


Figure 9.8: Index scores of communities highly engaged in commercial harvesting for all years with decreasing engagement in 2017 relative to previous 5 year average from 2012-2016.

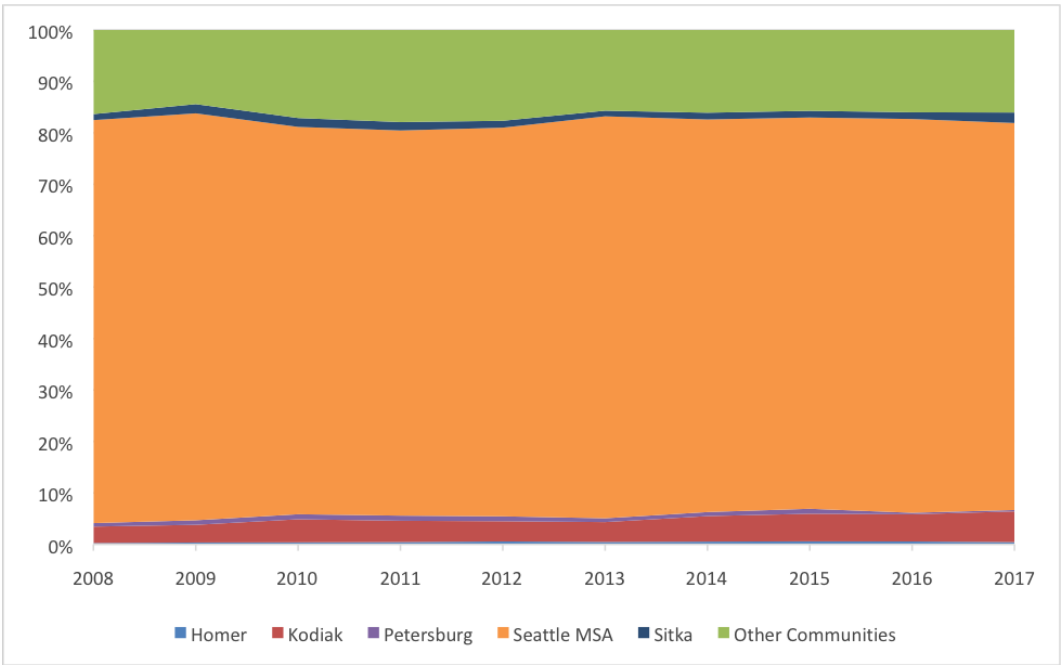


Figure 9.9: Harvesting regional quotient of pounds for communities highly engaged in commercial harvesting for all years from 2008-2017.

ex-vessel revenues, while Kodiak represented 6%. Petersburg vessel owners accounted for 2% on average of FMP groundfish ex-vessel revenue, while Sitka and Homer each represented 1%.

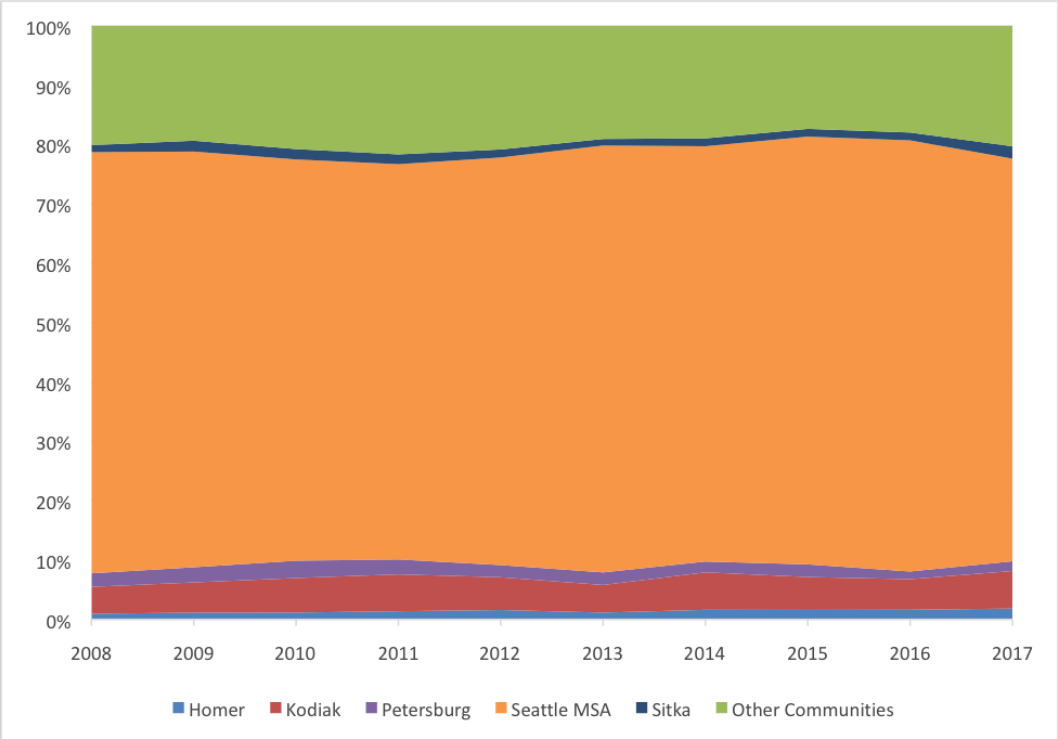


Figure 9.10: Harvesting regional quotient of revenue for communities highly engaged in commercial harvesting for all years from 2008-2017.

9.1.10 Participation Summary

Based on the community engagement index scores for both commercial processing and commercial harvesting engagement, communities were categorized into low (index scores below the mean of 0), medium (index scores between 0 and .5), medium-high (index scores between .50001 and 1), and high engagement (index scores above 1) for each year. The number of years a community is in each category for the processing and harvesting engagement indices is presented in Table 9.5. There are 24 communities or community groupings in Table 9.5 that had medium, medium-high, or high engagement in either harvesting or processing engagement and 9 communities were highly engaged in one aspect of commercial fisheries in any year from 2008-2017. There were 6 communities that were highly engaged in processing engagement and 6 that were highly engaged in harvesting engagement for at least one year from 2008-2017.

9.2. Community Sketches

Seven communities were identified as highly engaged in groundfish fisheries (in the harvesting or processing sector, or both) for all years from 2008-2017. These communities differ geographically, historically, culturally, economically, and demographic composition. These community sketches are presented as detailed views for six of the communities in order to increase socio-economic understanding and inform management processes regarding fishing communities relying on groundfish fisheries. A detailed community sketch was not created for the Seattle MSA due to the vastly different context in which Seattle MSA fisheries operate. A separate analysis of Seattle MSA will be conducted in the future in order to capture meaningful socio-economic trends relating to

Table 9.5: Number of years by processing and harvesting engagement level for all commercial fisheries. Alaska communities not listed had low processing and harvesting engagement in all years.

	Harvesting Engagement				Processing Engagement			
Community	Low	Medium	Medium-High	High	Low	Medium	Medium-High	High
Akutan	10	0	0	0	0	0	0	10
All Other States	0	10	0	0	0	0	0	0
Anchorage	0	10	0	0	10	0	0	0
Cordova	7	3	0	0	0	9	1	0
Craig	0	10	0	0	4	6	0	0
Haines	9	1	0	0	10	0	0	0
Homer	0	0	0	10	0	0	0	10
Hoonah	10	0	0	0	9	1	0	0
Juneau	0	0	10	0	0	10	0	0
Ketchikan	0	10	0	0	2	8	0	0
King Cove	10	0	0	0	0	9	1	0
Kodiak	0	0	0	10	0	0	0	10
Newport	1	9	0	0	0	0	0	0
Other Oregon	0	10	0	0	0	0	0	0
Other Washington	0	0	6	4	10	0	0	0
Petersburg	0	0	0	10	0	6	4	0
Sand Point	1	9	0	0	0	3	7	0
Seattle MSA	0	0	0	10	10	0	0	0
Seward	10	0	0	0	0	0	7	3
Sitka	0	0	0	10	0	0	0	10
Unalaska/Dutch Harbor	10	0	0	0	0	0	0	10
Wasilla	4	6	0	0	0	0	0	0
Wrangell	7	3	0	0	10	0	0	0
Yakutat	10	0	0	0	5	5	0	0

engagement with groundfish fisheries. Below are the Community Sketches for Akutan, Homer, Kodiak, Petersburg, Sitka, and Unalaska. The purpose of the sketches is to: 1) present a brief but detailed snapshot of the communities most highly engaged in groundfish fisheries; and 2) to shed light on linkages among social, economic, and policy processes to better inform management decisions. By identifying contemporary socio-economic trends, these sketches can inform assessments of groundfish fisheries and community health. The sketches will be updated yearly and additional communities of interest will be developed and presented according to council feedback and needs.

NOAA FISHERIES

Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Stock Assessment and Fishery Evaluation Report

Community Sketch — AKUTAN

Demographics (self-identified, 2010 census)

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
AKUTAN	1027	23.1% female 76.9% male	98.3%	$24, 644	23.3%	5.5%	17.9%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	15.1%	44	1.0%	76.6%	43.3%	1.5%	20.8%

Area Description

Akutan is located on Akutan Island, one of the Krenitzin Islands of the Fox Island group in the eastern Aleutians. Located 35 miles east of Unalaska and 766 miles southwest of Anchorage, the area occupies 14.0m^2 of land and 4.9m^2 of water. The Aleuts of the region were the first to be involved in North Pacific fisheries. Historically, salmon, cod, herring, and other fish were targeted throughout the Aleutian chain. After World War II, Akutan residents were evacuated and many original residents did not return. Akutan was incorporated as a Second-class city in 1979 and is under the jurisdiction of the Aleutians East Borough. According to the 2010 census, the average household size is 2.25 (a decrease from 2000), and there were a total of 44 housing units. Of the households surveyed between in 2010, 30% were owner-occupied, (74% in 2000), 61% were renter occupied (16% in 2000), 9% were vacant (11% in 2000), and zero houses were seasonally occupied. A total of 937 residents were living in group quarters (up from 638 in 2000). Between 2008-2017 the number of residents eligible for the PFD increased by 139.74% indicating a significant increase in sustained growth in long term residency.

Processing Engagement: HIGH

Harvesting Engagement: LOW

Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33% [cite]

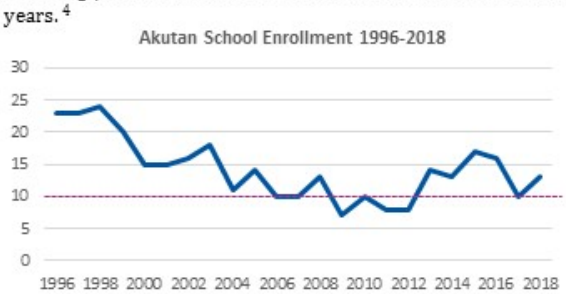
Coastal hazards: Erosion threat to community's water supply. Tsunamis, **EARTHQUAKES**, storm surges, **COASTAL EROSION**, coastal flooding, riverine erosion, and **VOLCANOES**.

**Bold indicates high hazard potential*

Native Tribes, Associations, & Corporations:
- Unangan (Aleuts)
- Aleut Corporation
- Akutan Corporation

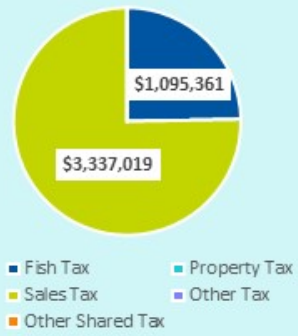
Infrastructure & Transportation

Akutan is only accessible by boat and amphibious aircraft. Akutan's airport opened in 2012 and is located seven miles east on Akun Island, servicing the community by helicopter. The state ferry serves Akutan biweekly from May to September. Akutan has a 100-foot public dock and a 58-vessel mooring basin. Trident Seafoods owns several commercial docks.[2] Water derives from a stream and dam constructed in 1927. A community septic tank treats sewage before discharge. Electricity depends on hydropower with diesel backup. Household heating relies on fuel oil and kerosene.[3] The Akutan School provides K-12 education. School enrollment has decreased to 13 students in 2018, hovering just above the state closure threshold for several years.[4]



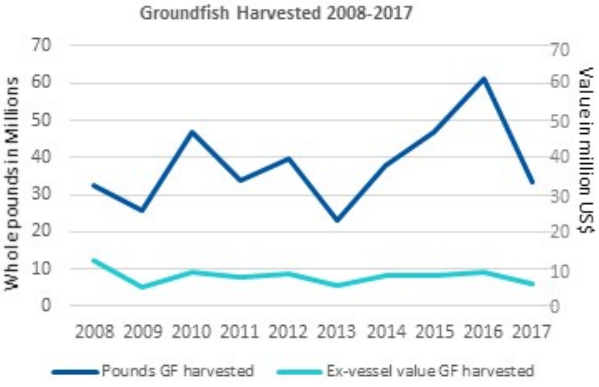
Current Economy

Akutan's cash economy is primarily based on commercial fishing; however the subsistence economy remains vitally important to the community. The main economic driver is the processing facility. Trident Seafoods' Akutan plant is the largest facility in North America, processing over three million pounds of product per day and capable of housing up to 825 employees.[3] In 2016, the median household income was estimated to be $40,067 and per capital income $28,335, up from $34,375 and $20,099 in 2010 respectively.[2] The unemployment rate was an estimated 3.6% in 2016, up from 2.7% in 2010. In 2017, fish related tax brought in $1.1 million (25%) of the total municipal tax revenue, funding needed services for the community.[5]



Fishing History and Regulatory Background

Historically, Aleuts harvested salmon, cod, herring, and other species around Akutan. Subsistence harvest continues to be important. Commercially fisheries began in the late 1800s, and today Akutan is one of the busiest fishing ports in the world.[3] Akutan is approximately 40 miles closer to fishing grounds than Unalaska offering savings in time and costs of fuel.[3] Crab fisheries began in 1930 and accelerated in size and scope in the 1950s, when king crab fisheries developed in the Bering Sea. King crab harvests peaked in the 1970s and early 1980s, today, crab harvests remain at comparatively low levels. Akutan's proximity to the Bering Sea brought the processing industry in the late 1940s, first through floating processors, followed by a shore-based processing plant in the 1980s by Trident Seafoods.[2] Akutan community fought for and gained participation in the Community Development Quota program and is represented by the Aleutian Pribilof Islands Community Development Association. The community is located in Federal Reporting Area 519, International Pacific Halibut Commission (IPHC) Regulatory Area 4B, and the Aleutian Islands Sablefish Regulatory Area.



Citations:

[1] United States Census (2010), Fact Finder, Retr'd 10/1/2018 https://factfinder.census.gov
[2] Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries* - Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1
[3] Fey, M. et. al (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries*. NPFMC.
[4] School enrollment statistics compiled from AK. Dept. of Education & Early Development. Retrieved 08/30/2018 at http://www.eed.state.ak.us/stats/
[5] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2018 https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/AlaskaTaxableDatabase.aspx
[6] Alaska Community Survey, Alaska Fisheries Science Center 2013
[7] Alaska Fisheries Information Network (AKFIN).(2018).Commercial Comp. AK [dataset]

Harvesting Engagement — *MEDIUM*

Due to the small number of participants, some data are considered confidential. For this reason, data were aggregated to include adjacent communities within the Eastern Aleutian Borough (EAB). Between 2008-2017, pounds groundfish harvested increased by just under 1 million pounds (an increase of 3%); however the ex-vessel value declined substantially during the same time period, falling from $12 million to $6 million (over 50%). Very few vessels are owned by Akutan residents. The small portion of vessels owned by Akutan residents has steadily decreased from six in 2008 to only one in 2017. There have been no groundfish fishing vessels owned by Akutan residents since 2014.

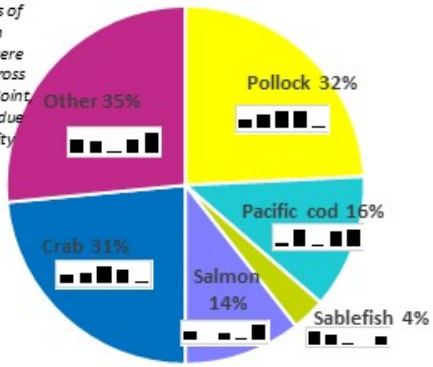
Processing Engagement — *HIGH*

Akutan has the largest seafood production facility in North America.[2] During peak seasons in the winter and summer, the plant can accommodate825 employees and the processing sector is the largest employer in the community. The top species landed are pollock, Pacific cod, crab, halibut, and sablefish. Due to the small number of participants, some data are considered confidential. The combined processing sectors of Akutan, Sand Point, and King Cove landed a total volume of 686 million pounds of groundfish in 2017, a 53% increase from 2008. The associated ex-vessel value of total landings decreased by $104 million, (down 16%) since 2008. Pollock value dropped most, declining 18%. In 2017, groundfish made up 15% of total landed volume and 48% ex-vessel value within the region's processing sector, which is a slight decrease from 41% in 2008.[7]

Share of revenue landed by species

Akutan, Sand Point, King Cove combined 2013-2017 average

Ex-vessel values of landings within communities were aggregated across Akutan, Sand Point, and King Cove due to confidentiality issues.



Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

NOAA FISHERIES

Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Stock Assessment and Fishery Evaluation Report

Community Sketch — HOMER

Demographics (self-identified)*

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
HOMER	5,003	50.5% female 49.5% male	78.1%	$57,471	89.3%	4.1%	0.4%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	9.8%	2,692	7.6%	95.1%	1.0%	0.1%	2.1%

Area Description

Homer is located on the north shore of Kachemak Bay on the southwestern edge of the Kenai Peninsula. The Homer Spit, a 4.5-mile long bar of gravel, extends from the Homer shoreline. It is 227 road miles south of Anchorage, at the southern-most point of the Sterling Highway. The area encompasses 10.6 square miles of land and 14.9 square miles of water. The City of Homer was incorporated in March 1964. As in many Alaskan communities, subsistence harvest is an important part of the local way of life. According to the 2010 census, the average household size is 2.21 (decreased from 2.4 in 2000), and there were a total of 2,692 housing units. An estimated 140 residents lived in group housing in 2016 (up from 71 in 2010). An additional 4,000 seasonal workers reside in Homer each year between April and October, mostly driven by employment in fishing sectors, with an annual population peak in July. Between 2008 and 2017 the number of residents eligible for the PFD increased by 5.28 % suggesting an increase in residential stability. Homer was not included under the Alaska Native Claims Settlement Act (ANCSA) and is not federally recognized as a Native village.

Harvesting Engagement Indicator
HIGH

Processing Engagement Indicator
HIGH

Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33% [cite]

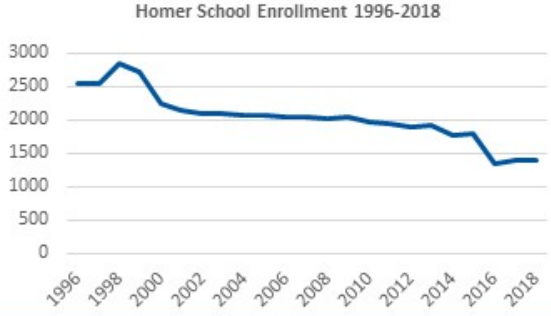
Coastal hazards:
- tsunamis, **EARTHQUAKES**, **COASTAL EROSION**, flooding, erosion, **VOLCANOES**, wildfires, snow and avalanches, severe weather

**Bold indicates high hazard potential*

Native Tribes, Associations, & Corporations:
- Seldovia Village Tribe
- Aleut Nanilchik Natives Association
- Seldovia Native Association

Infrastructure & Transportation

In addition to being on the road system, Homer is also accessible via an airport, which has an asphalt runway and a float plane basin, and a seaplane base at Beluga Lake. The community is served by scheduled and chartered aircraft services. The community is serviced by the state ferry three times a week in winter and three to four times per week in the summer, with service to Kodiak and Seldovia. The community's deep-water dock can accommodate 30-foot drafts and 340-foot vessels. There is a cruise ship dock, a boat harbor with moorage for 920 vessels, and a 4-lane boat launch ramp.[4] There are several medical facilities. There are nine schools in the Homer area servicing 1400 K-12 students. Overall enrollment has decreased nearly 45% since 1996. [5]

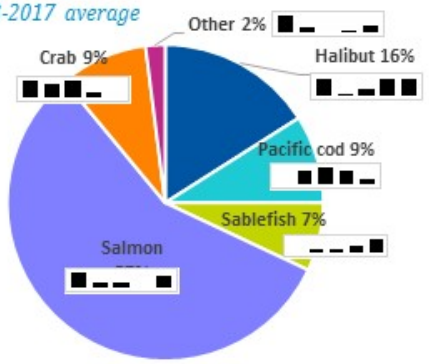


Current Economy

Important economic drivers in Homer include commercial fishing ecotourism, and sport hunting and fishing.[1] In 2017, the Kenai Peninsula Borough generated $775,640 in fishery related taxes, presumably some of which was spent in Homer. An estimated 50 residents are employees of shore-side processing plants.[3] In 2016, per capita income in Homer was estimated to be $31,899, and the median household income was estimated to be $52,057. This represents a significant increase reported in 2000 ($21,823 and $42,823, respectively).[1] During the same year, unemployment was estimated at 7.4%.[ibid] A full range of fisheries-related services are available in Homer, including fish processing plants, cold storage facilities, fishing gear manufacture, sales, repair, and storage, boat repair, haul-out facilities and tidal grids for boats.

Share of harvest revenue landed by species

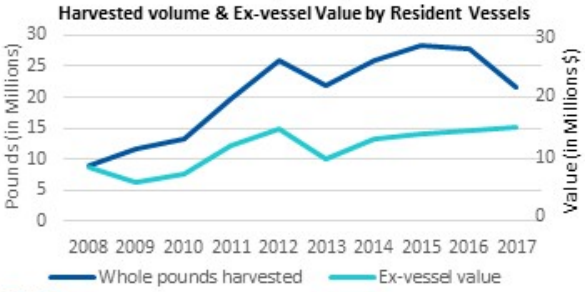
Homer 2013-2017 average



Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

Harvesting Engagement — HIGH

Homer residents are highly involved in a variety of State and federal commercial fisheries in Alaska, including salmon, halibut, crab, groundfish, herring, and "other shellfish". A wide range of fishing vessel sizes and types use Homer as a base of fishing operations.[3] On average from 2008-2017, the majority of harvest revenue came comes first from salmon (57%), then halibut (16%), and Groundfish. The number of fishing vessels owned by Homer residents increased from 306 vessels (2008) to 381 vessels (2017), an increase of 25%. During the same time, ownership of groundfish vessels among Homer residents increased by 10% from 90 (2008) to 99 (2017), peaking in 2012 at 109 vessels. The volume of groundfish harvested increased a notable 137%, from 9.09 (2008) to 21.6 million (2017) pounds. Meanwhile, the ex-vessel value increased from $8.7 to $15.1 million (31%).



Citations:

[1] Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries* - Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1

[2] United States Census (2010), Fact Finder, Retr'd 10/1/2018 https://factfinder.census.gov

[3] Alaska Community Survey, Alaska Fisheries Science Center 2013

[4] Fey, M. et. al (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries.* NPFMC.

[5] School enrollment statistics compiled from AK. Dept. of Education & Early Development. Retrieved 08/30/2018 at http://www.eed.state.ak.us/stats/

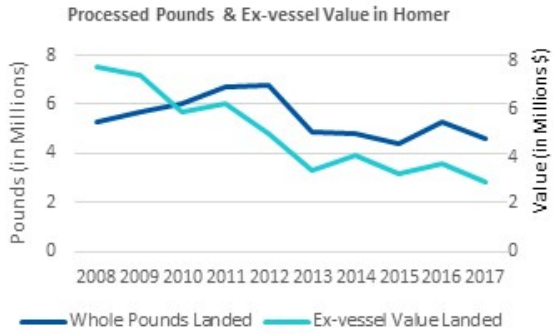
[6] Alaska Fisheries Information Network (AKFIN).(2018).Commercial Comp. AK. [dataset].

[7] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2018 https://www.commerce.alaska.gov/dcra/dcraresoext/Pages/AlaskaTaxableDatabase.aspx

Fishing History and Regulatory Background

Homer is located in the traditional territory of the Kenaitze people, a branch of Athabascan Native Americans. Historically, the Kenaitze had summer fish camps along the rivers and shores of Cook Inlet. Commercial fisheries began to develop in the Cook Inlet area in the mid 1800s. Salmon and herring were two of the earliest commercial fisheries in Alaska. Commercial exploitation of halibut and groundfish first extended into the Gulf of Alaska (GOA) in the 1920s. The first year-round processing facility in Homer in 1954 specializing in frozen king crab and shrimp. Until the early 1960s, Seldovia served as a regional center for seafood processing and fishing activity; however, after the Good Friday earthquake of 1964 destroyed Seldovia's waterfront, Homer began to take over this role. Homer is located in the Lower Cook Inlet state fishery management area, Federal Statistical and Reporting Area 630, Pacific Halibut Fishery Regulatory Area 3A, and the Central GOA federal Sablefish Regulatory Area.[1]

Processing Engagement — HIGH



Homer is one of the leading processing communities in Alaska. In 2017, Homer's processing sector landed a total volume of 136.9 million pounds, which is a 46% increase from 2008. The associated ex-vessel value of total landings also increased to $90.7 million, up 31% overall since 2008, despite a 48% drop in 2016. Between the years 2008-2017, groundfish decreased in volume from 5.3 to 4.6 million pounds (a 14% decrease), while the associated ex-vessel value decreased overall from $7.5 million to $2.8 million (a 63% decrease). All groundfish species showed declines in volume and associated value; however Pollock had the largest drop in value, falling 80% since 2008. The ratio of groundfish to total landings diminished slightly in the last decade, but still makes up the majority (84% in 2017) of total landings. In 2008, groundfish comprised 90% of total volume processed in Homer. Groundfish also makes up 83% of ex-vessel value within Homer's processing sector, which is a slight decrease from 88% in 2008.[6]

Community Sketch

KODIAK ISLAND

Demographics (self-identified, 2010 census) – *All Communities*

Kodiak Island

	Akhiok	Chiniak CDP	Karluk	Kodiak City	Larsen Bay	Old Harbor	Ouzinkie	Port Lions
Population	71	47	37	6,130	87	218	161	194
AK. Native	50.7%	43.0%	94.6%	9.9%	71.3%	87.6%	79.5%	58.8%
Housing Units	37	34	28	2133	70	121	1	1
Med. Income	$25,000	N/A	N/A	$67,571	$34,750	$37,667	$35,000	$54,375
Poverty	29.7%	N/A	9.2%	10.6%	21.3%	21.6%	15.9%	20.4%
Med. age	32.3	NA	35.2	36.0	43.5	38.0	36.8	53.8
High School Ed.	94.7%	N/A	70.8%	87.8%	73.0%	75.0%	73.3%	87.3%
High School Ed.	19	18	9	2,260	Closed (2018)	27	20	6

Harvest Engagement: HIGH

Processing Engagement: HIGH

Coastal hazards: TSUNAMIS, EARTHQUAKES, storm surges, EROSION, Flooding, VOLCANOES.

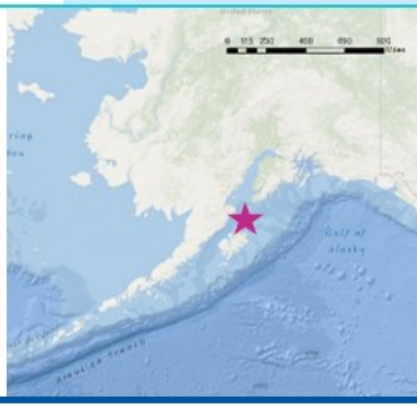
**Bold indicates high hazard potential*

Native Tribes, Associations & Corporations

- Shoonaq' Tribe of Kodiak
- Koniag, Incorporated
- Kodiak Area Native Association
- Natives of Kodiak, Inc.

Area Description

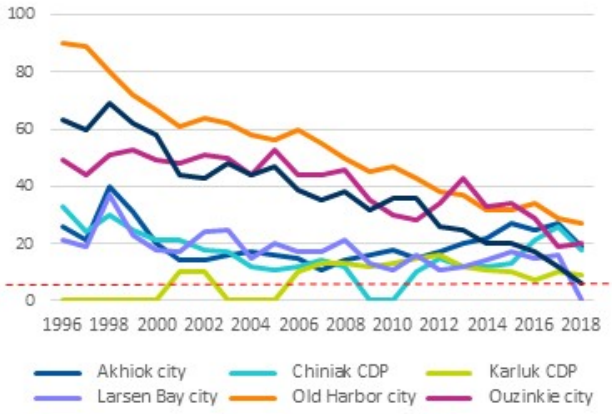
The largest island in the Gulf of Alaska, Kodiak Island (KI) is approximately 25 miles across the Shelikof Straight from the Katmai Coast and 90 miles southwest of the Kenai Peninsula. All of Kodiak Island communities are highly dependent on fisheries. The majority of commercial vessels and seafood processing plants are in Kodiak City; however other communities rely heavily on commercial, recreational, and subsistence fishing. There are two main harbors in Kodiak City: St. Paul Harbor and St. Herman Harbor which is the larger of the two. According to the US census, the population estimate is 13,448 with over half living in Kodiak City. The other seven island communities reported populations between 37 and 218. Native Alaskans represent the majority of residents of KI communities, except Kodiak City which has a more diverse population as the island's urban center. In 2016, the average household size for KI was estimated to be 3.06 (this increased to 3.52 for Kodiak City), up slightly from 2.94 (2010). Between 2008 and 2017, the number of residents eligible for the PFD decreased by -3.35% indicating a reduction in stable residency.[1]



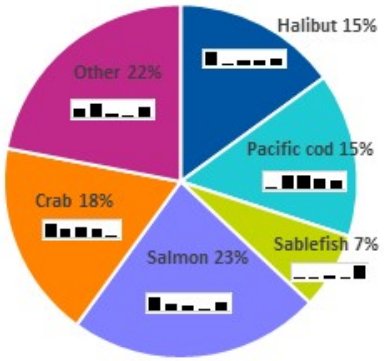
Infrastructure & Transportation

Kodiak Island is accessible by air and sea, however accessibly varies drastically among communities. Kodiak City has two airports which are served with several daily flights. Air taxi services provide flights to five remote villages. Weather conditions often restrict travel. City-owned seaplane bases at Trident Basin and Lilly Lake accommodate floatplane traffic. The state ferry operates three to four times a week between Kodiak and Homer, and in the summer months, includes other ports as far west as Unalaska. The Port of Kodiak has two boat harbors with 600 boat slips up to 160 feet in length. Three deep-draft piers accommodate ferries, cruise ships, container ships, military vessels, and a variety of large commercial fishing vessels. Boat launch ramps and 150 ton vessel lift are also available. Kodiak City opened a shipyard in 2010. Island communities have limited access to medical services and residents must travel to Kodiak City or Anchorage for treatment. Maintaining adequate school enrollment is a grave concern for Kodiak communities which have struggled to keep schools open with declining enrollment. Larsen bay School closed in 2018. Kodiak City enrollment decreased by 13% since 1996 while other communities declined from 7% (Akhiok) to 63% (Old Harbor). The exception was Karluk which maintained between 9-16 students since 1996.

School Enrollment for Kodiak Island 1996-2018



Kodiak Share of Revenue Landed by Species *2013-2017*



Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

Fishing History and Regulatory Background

The Alutiiq peoples have harvested fish, marine invertebrates, and marine mammals for thousands of years on Kodiak Island. Reliance on subsistence resources is vital within the seven island villages.[2] Commercial fisheries began in the early 1800s, and today Kodiak City is Alaska's second largest commercial fishing port in terms of the amount of seafood landed. Top species is salmon at 23%, followed closely by crab, halibut, and groundfish.[7] Kodiak is located in Federal Statistical and Reporting Area 630, Pacific Halibut Fishery Regulatory Area 3A, and the Central Gulf of Alaska Sablefish Regulatory Area. Kodiak City is not eligible for the Community Quota Entity program or the Community Development Quota program; however some of the villages are participants.

Harvesting Engagement — HIGH

The volume of groundfish harvest has dramatically increased over the last decade, from 1.19 (2008) to 2.98 million (2017) pounds, an increase of 151%. During the same time period, the ex-vessel value of landings increased $10.5 million (25%). Both pounds harvested and ex-vessel landings took a downturn in 2015 when the value of groundfish decreased by nearly $3 million (6%). Pacific cod appears to have driven the dip accounting for 14% of the decrease in poundage caught as well as 9% decrease of the value landed. Between 2008-2017, ownership of groundfish vessels in Kodiak decreased by 77 vessels or 42%. Small communities were severely impacted by the decline, particularly Ouzinkie (decreasing from 12 to 6 vessels) and Port Lions (decreasing from 9 to 5 vessels) since 2008. Kodiak City lost 15 vessels during that time.[2]

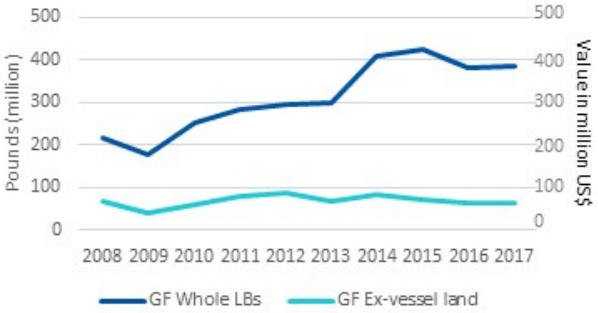
Current Economy

Commercial fishing, seafood processing, and commercial fishing support services are the major industries contributing to the local economy.[2] The U.S. Coast Guard station and hospital are also significant employers. Other industries include retail services and government. Tourism is growing, and recreational fishing, hiking, and kayaking are increasing in popularity. Kodiak's economy is reliant on logging, fishing, ecotourism, and sport hunting and fishing.[5] In 2017, Kodiak collected $2.34 million in fisheries-related taxes, compared to $5.27 in 2010 and $3.63 million in 2000. The bulk of tax revenue (85%) comes from property taxes, reported as $15.7 million in 2017. However, it should be noted that data related to port/dock usage fees are not available for 2017 or 2010. Since those fees accounted for a significant portion of fisheries-related revenue in previous years, it is likely that revenue figures are underrepresented.

Processing Engagement — High

Kodiak Island has several processing facilities in the City of Kodiak as well as additional plants in Larsen Bay and Alitak. Top species include salmon at 31%, followed by pollock at 20 of amount processed. In 2017, Kodiak facilities processed 387 million pounds of groundfish worth $63.8 million (99% of which is processed in Kodiak City). Groundfish poundage has increased steadily since 2008 (by 79.9%) while the value landed in Kodiak has decreased by 4.8% in the same time period.[1] This is likely driven by the low price of pollock. Groundfish have not been landed in Larsen Bay since 2011.

Groundfish Landings and Ex-Vessel Value 2008-2017



Citations:

[1] United States Census (2010), Fact Finder, Retr'd 10/1/2018 https://factfinder.census.gov
[2] Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries* - Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1
[3] Fey, M. et. al (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries.* NPFMC.
[4] School enrollment statistics compiled from AK. Dept. of Education & Early Development. Retrieved 08/30/2018 at http://www.eed.state.ak.us/stats/
[5] Alaska Community Survey, Alaska Fisheries Science Center 2013
[6] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2018 https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/AlaskaTaxableDatabase.aspx
[7] Alaska Fisheries Information Network (AKFIN).(2018).Commercial Comp. AK [dataset]

NOAA FISHERIES

Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Stock Assessment and Fishery Evaluation Report

Community Sketch — Petersburg

Demographics (self-identified)*

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Petersburg	3,815	46.4% female 53.6% male	76.6%	$63,940	71.1%	16.1%	0.4%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	9.3%	1,764	11.5%	92.4%	2.6%	0.2%	3.4%

Processing Engagement: MED-HIGH

Harvesting Engagement: HIGH

Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33% [cite]

Coastal hazards: **TSUNAMIS**, **EARTHQUAKES**, flooding, erosion, volcanoes, severe weather
**Bold indicates high hazard potential*

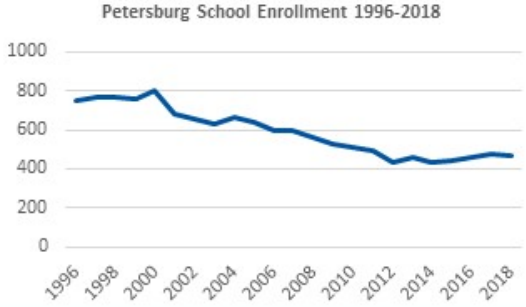
Native Tribes, Associations, & Corporations:
- Tlingit
- Petersburg Indian Association

Area Description

Historically utilized by Tlingits as a fish camp, Petersburg is located on the northwest end of Mitkof Island. In the 1800s Norwegian immigrants settled in the area and in 2013, the City and Borough of Petersburg was formed.[1] The community maintains a mixture of Tlingit and Scandinavian history. It is known as "Little Norway" for its history and annual Little Norway Festival during May. As in many Alaskan communities, subsistence harvest is an important part of the local way of life. Residents include salmon, halibut, shrimp, and crab in their diet.[ibid] The average household size in Petersburg has decreased over time from 2.56 per household (2000) to 2.36 (2010). During the same period, the number of households increased slightly, from 1,240 (2000), to 1,252 (2010).[2] The number of Petersburg City residents living in group quarters is approximately 46.[1] Between 2008 and 2017 the number of residents eligible for the PFD decreased by -9.06% indicating a reduction in stable residency.[2]

Infrastructure & Transportation

Petersburg is accessible by air and water. The community is serviced twice daily by Alaska Airlines with flights to Juneau and Seattle as well as charter services. A seaplane base is also available. The Alaska Marine Highway provides regular ferry service. Petersburg is on the mainline route which connects Bellingham to Southeast Alaska. The ferry operates five times a week most of the year. Harbor facilities include a petroleum wharf, barge terminals, three boat harbors with moorage for 700 boats, a boat launch, and a boat haul-out. Freight arrives by barge, ferry, or cargo plane. There is no deep-water dock for large ships such as cruise ships. Water in Petersburg is sourced from a 200-million gallon water reservoir.[2] There are three schools with a total enrollment of 467 students.[3]



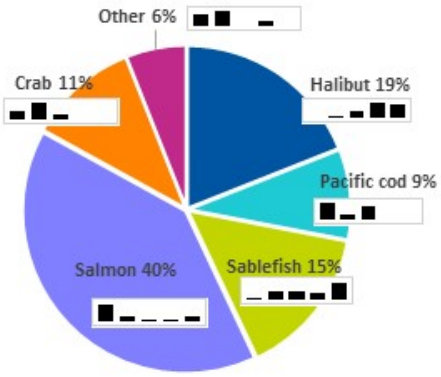
Current Economy

Historically, Petersburg's economy has been based on commercial fishing and timber harvests. Today, Petersburg is one of the top-ranking ports in the U.S. Between 100 to 250 residents work in shore-side processing plants. An estimated 600 to 800 seasonal workers reside in Petersburg between April and November for the fishing industry. A smaller number of seasonal employees also work in the tourism industry, for the Tongass National Forest, and in logging.[4] Although there is no deep-water dock for large ships such as cruise ships,[5] some small-ship cruise lines stop in Petersburg.[6] Local charter boats and fishing lodges are one draw for tourism in the community. Median per capita income (which is available only on the borough level) was estimated to be $36,307 in 2014, decreasing to $34,788 in 2016. The unemployment rate was estimated to be 4% in 2016.[2]

Petersburg 2017 Tax Revenue

Share of harvest revenue landed by species

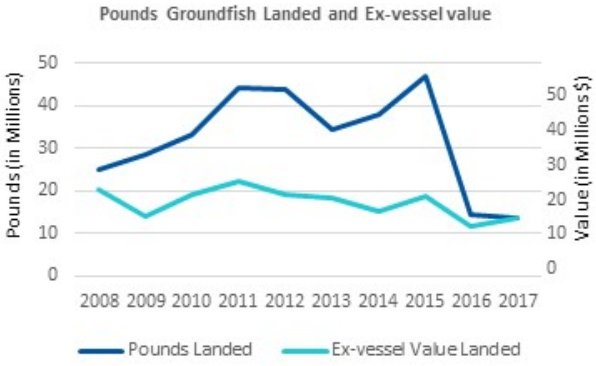
Petersburg 2013-2017 average



Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

Harvesting Engagement — HIGH

A portion of the Petersburg fishing fleet is involved in the fisheries management process in Alaska through an industry coalition, the Petersburg Vessel Owners Association.[4] They also noted challenges for Petersburg's fishing economy include the loss of, degradation, and aging of local commercial fishing infrastructure, high expenses for transportation and shipping to and from Petersburg, and difficulties for the younger generation to enter fisheries due to the high price of permits. [ibid] The ex-vessel value of groundfish landed dipped from $18.9 to $11.7 million (a 38% decrease) in 2016, and then increased to $13.5 million in 2017. The trend of whole pounds landed was more extreme, falling by 70% (from 47.1 to 14.3 million pounds) in 2016, and then continued downward to 13.6 million pounds in 2017. This dramatic decrease was driven primarily by the drop in Pacific cod harvest. Between 2008 and 2017, vessels owned by residents fluctuated, with an overall decrease from 107 vessels (2008) to 94 (2017), a 12% drop.



Fishing History and Regulatory Background

Petersburg participated in commercial fisheries since the late 1800s. Commercial harvest of salmon began in the late 1870s and soon after, a commercial fishery began for halibut, with sablefish targeted as a secondary fishery.[1] Today, Petersburg is one of Alaska's major fishing communities with a diversified fleet that participates across numerous State and federal fisheries including GOA trawl, halibut and sablefish, BSAI and State crab, dive fisheries, and herring. As in many Alaskan communities, subsistence harvest continues to be an important part of daily life. Pacific cod and lingcod are harvested under state regulations, independent of federal fisheries for these species. Halibut and Pacific cod fisheries utilize longline gear, while the Southeast Alaska lingcod fishery uses dinglebar troll gear, a salmon power troll gear modified with a heavy metal bar to fish for groundfish. Management of the Southeast Alaska lingcod fishery includes a winter closure for all users, except longliners, to protect nest-guarding males. Demersal rockfish are caught as bycatch in the halibut longline and trawl fisheries. Crab fisheries in Southeast Alaska target red, golden and blue king crab, Tanner crab, and Dungeness crab. Dive fisheries for sea cucumber and sea urchin have grown. Petersburg is located in Pacific Halibut Fishery Regulatory Area 2C and Federal Statistical and Reporting Area 659. The closest federal Sablefish Regulatory Area is "Southeast Outside."

Processing Engagement — HIGH

The Petersburg processing sector landed a total volume of 45.5 million pounds in 2017 which is a 151% increase overall from 2008. The associated ex-vessel value of total landings also increased to $44 million (an increase of 46%) since 2008; however it should be noted that both the volume and value fluctuated dramatically over the decade. During the same time period, groundfish decreased in volume from 1.95 to 1.26 million pounds (a 35% decrease), while the associated ex-vessel value increased overall from $5.46 million to $5.88 million (7.6%). The ratio of groundfish to total landings diminished in the last decade as well. In 2008, groundfish comprised 11% of total volume processed in Petersburg; this amount fell steeply to 3% of total landings in 2009, and has since remained low. In 2017, groundfish made up 2.8% of total landings (1.3 million pounds).

Citations:

Alaska Community Survey, Alaska Fisheries Science Center 2013
[2] United States Census (2010), Fact Finder, Retr'd 10/1/2018 https://factfinder.census.gov
[3] Alaska Fisheries Information Network (AKFIN).(2018).Commercial Comp. AK [dataset]
[4] Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries* - Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1
[5] Fey, M. et. al (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries*. NPFMC.
[6] School enrollment statistics compiled from AK. Dept. of Education & Early Development. Retrieved 08/30/2018 at http://www.eed.state.ak.us/stats/
[7] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2018 https://www.commerce.alaska.gov/dcra/rcpoext/Pages/AlaskaTaxableDatabase.aspx

NOAA FISHERIES
Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Stock Assessment and Fishery Evaluation Report

Community Sketch — SITKA

Demographics (self-identified)*

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Sitka	8,881	49.5% female 50.5% male	76.5%	$70,160	65.3%	16.8%	0.5%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	9.0%	4,102	11.4%	92.6%	6.0%	0.3%	4.9%

Area Description

The location of Sitka was settled by the Tlingit several thousand years ago, with the name deriving from the Tlingit Shee At'iká, meaning "People on the Outside of Shee (now Baranof Island)." Fur trading, gold mining and fish canning paved the way for the town's growth from the early 1800s. For the 2010 census, there were 8,881 residents[1]. Community leaders noted that Sitka has approximately 1,800 seasonal workers each year: this annual peak in population is mostly driven by fisheries and tourism. In 2010, the average household size in Sitka was 2.43, (increased from 2.8 in 1990 and 2.61 in 2000). The total number of housing units increased from 2,939 (1990) to 3,278 (2000) to 3,545 (2010), and estimated at 4,220 in 2017[2]. There were no reports of residents living in group quarters between 1990 and 2010. An estimated 224 are unemployed. Between 2008 and 2017 the number of residents eligible for the PFD decreased by -1.80% indicating a slight reduction in stable residency. Sitka was included under the Alaska Native Claims Settlement Act[1,2].

Harvesting Engagement: HIGH

Processing Engagement: MED-HIGH

Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33% cite

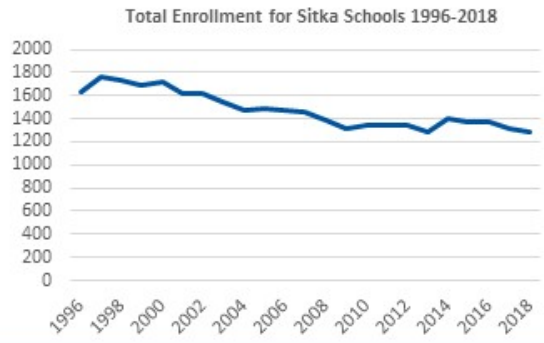
Coastal hazards:
- TSUNAMIS, volcanoes EARTHQUAKES, flood, LANDSLIDES, dam failure, EROSION, severe weather

**Bold indicates high hazard potential*

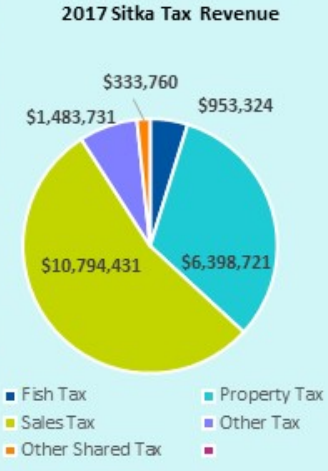
Native Tribes, Associations & Corporations:
- Sitka Tribe of Alaska
- Shee Atika, Incorporated
- Sealaska Corporation

Infrastructure & Transportation

Sitka is accessible by air and water and serviced twice daily with flights to Juneau and Seattle. There are several air taxis and air charters available as well. Sitka operates five small boat harbors with 1,350 stalls. The harbors can handle vessels up to 300 feet. A boat launch, haul-out, boat repairs, and other services exist. The privately owned Old Sitka Dock is the only deep water moorage facility in Sitka capable of accommodating large vessels. The state ferry services Sitka three times a week in the summer, less in the winter. Freight arrives by barge and cargo plane. Water is drawn from a reservoir treated, stored, and piped to nearly all homes. There are two hospitals and coast guard medical facilities. Seven schools in Sitka have an enrollment of 1284 students. Enrollment has decreased by 21.5% since 1996.

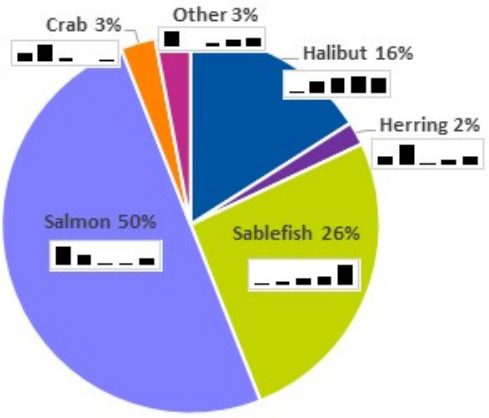


Current Economy



The economy is diversified with processing, tourism, government, healthcare, retail, transportation, and commercial fishing. The seafood industry is a major employer. Community leaders reported that Sitka's economy primarily relies on natural resource-based industries such as fishing, ecotourism (e.g. whale watching, kayaking), and sport hunting and fishing.[2] The waterways of Southeast Alaska are an important resource for the tourism industry and the lifestyle of local residents alike. The cruise ship sector heavily frequents the port. Many rural residents continue to participate in subsistence harvest of marine resources. The median household income is estimated to be $70,160, up from $62,024 (2010). Unemployment is estimated at 3.1%. Sitka receives fisheries-related revenue from the Shared Fisheries Business Tax, the Fisheries Resource Landing Tax, and harbor usage fees. Sitka received $953,324 (5%) in fish related tax in 2017.[Cite]

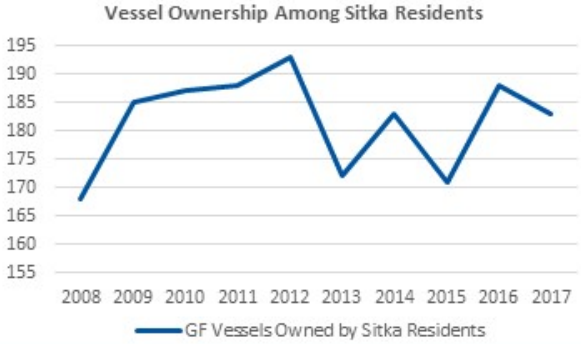
Share of landed revenue by species for resident owned vessels (*Sitka 2013-2017 average*)



Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

Harvesting Engagement — HIGH

Sitka was among the top ports in Alaska in the volume of groundfish harvested and the associated ex-vessel value in 2017. Sitka residents largely participate in groundfish fisheries with longline vessels that target sablefish in State and federal waters. The former necessitates a State limited entry permit while the latter necessitates quota shares. Community leaders noted that commercial fishing boats under 125 feet use Sitka as their base of operations during the fishing season. While the typical vessel ranges between 30 and 600 feet in length, there is a high number of small vessels less than 30 feet that who the port. Between 2008 and 2017, the number of groundfish vessels owned by Sitka residents fluctuated, peaking in 2012 at 193 vessels. While the total number of fishing vessels owned by residents decreased overall by 10 vessels (between 2008-2017), groundfish vessels showed an increase of 15 vessels, from 163 in 2008, to 178 vessels in 2017, hitting the low of 162 resident owned vessels in 2015.



Fishing History and Regulatory Background

The Tlingit people and other residents have historically used a wide variety of marine resources. Subsistence harvests continue to be vital to many, and salmon is an important resource economically and culturally. Salmon and herring fisheries made up over 55% of ex-vessel value in 2017, while groundfish and halibut brought in 35% of ex-vessel value combined. In that same year, sablefish had an ex-vessel value of $16.6 million up from $10.2 million in 2008. Pacific cod and lingcod are also harvested in SE Alaska under state regulations, independent of federal fisheries. Demersal rockfish are caught as bycatch in the halibut longline and trawl fisheries. A small directed fishery for flatfish (other than halibut) has also taken place, but effort has declined. Pacific halibut fisheries in SE Alaska are managed by the International Pacific Halibut Commission. Sitka is located in Pacific Halibut Fishery Regulatory Area 2C and Federal Statistical and Reporting Area 650. The closest federal Sablefish Regulatory Area is "Southeast Outside."

Processing Engagement — MED-HIGH

The majority of processing activity is for salmon (57%), although groundfish make up 35% of processing. Total volume landed in Sitka increased by 34% while the associated value decreased by 1.5% since 2008. Groundfish landings, however, followed a different trend: while pounds landed decreased by 24%, the ex-vessel value increased from $13.8 million (2008) to $19.8 million in 2017 (a 43% increase).

	# of Vessel Landings	GF Pounds Landed	GF Ex-vessel Value	% of total Landings
2008	289	6,003,298	$13,796,904	17.5%
2009	291	5,149,161	$12,546,017	18.4%
2010	280	4,883,956	$13,767,637	19.6%
2011	278	4,876,478	$19,780,353	23.2%
2012	294	5,385,744	$17,511,241	29.3%
2013	244	5,229,337	$12,158,861	17.5%
2014	253	4,569,312	$13,403,449	20.9%
2015	254	4,525,840	$14,382,020	25.9%
2016	265	3,874,872	$13,964,503	25.3%
2017	263	4,551,003	$19,783,357	25.5%

Citations:

[1] United States Census 2010, Fact Finder, Retrieved 10/1/2018. https://factfinder.census.gov
[2] Alaska Community Survey, Alaska Fisheries Science Center 2013
[3] U.S. Forest Service (n.d.). Introduction to the Tongass, Learning Center. Retrieved 10/1/2018. https://www.fs.usda.gov/main/tongass/learning
[4] Alaska Fisheries Information Network (AKFIN). (2018). Commercial Comprehensive AK [dataset].
[5] Fey, M., S. Weidlich, N. Leuthold, R. Ames, and M. Downs; 2016. Fishing Communities of Alaska Engaged in Federally
Managed Fisheries. North Pacific Fishery Management Council, 32 p.

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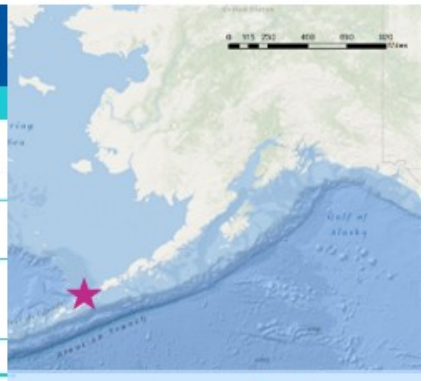
Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Stock Assessment and Fishery Evaluation Report

Community Sketch — UNALASKA



Demographics (self-identified, 2010 census)

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Unalaska	4,376	31.6% female 68.4% male	86%	$97,083	39.2%	6.1%	6.9%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	6.5%	1,167	2.7%	86.7%	32.6%	2.2%	15.2%

Area Description

Unalaska overlooks Iliuliuk Bay and Dutch Harbor on Unalaska Island in the Aleutian Chain. Often the name Dutch Harbor is applied to the portion of the city on Amaknak Island, which is connected to Unalaska Island by bridge. The area has been inhabited for thousands of year by the Unangan. The City of Unalaska was incorporated in March 1942. ~~In 2013, Community leaders estimated that approximately~~ An estimated 2,500 seasonal or transient workers come to Unalaska each year.[1] The population of Unalaska reaches its annual peak between January and April each year (during Pollock "A" Season). With an average household size of 2.46, the total number of households increased from 834 (2000) to 927 (2010), to an estimated 1,167 (2017).[2] In 2010, 2,099 residents lived in group quarters suggesting a seasonal work force.[3] Estimated unemployment is 0.08% Between 2008 and 2017, the number of residents eligible for the PFD increased by 15.81 % suggesting an increase in stable residency.[3] Unalaska was included under the Alaska Native Claims Settlement Act (ANCSA) and is federally recognized as a Native village.

Processing Engagement: HIGH

Harvesting Engagement: LOW

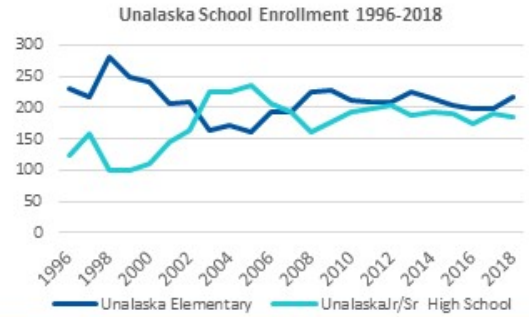
Sea level rise: Probability of shoreline loss between 2 and 1 m/yr is 10-33% [cite]

Coastal hazards: **TSUNAMIS**, **EARTHQUAKES**, storm surges, **EROSION**, Flooding, **VOLCANOES**.
**Bold indicates high hazard potential*

Native Tribes, Associations, & Corporations: Unangan (Aleuts)
Qawalangin Tribe of Unalaska
Ounalashka Corporation
Aleut Corporation

Infrastructure & Transportation

Dutch Harbor is serviced by daily scheduled flights from Anchorage and a seaplane base. The state ferry operates bi-weekly from Homer between May and September. There are six marine facilities in Unalaska which include 10 docks; three are operated by the city.[3] The International Port of Dutch Harbor serves fishing vessels and shipping, with 5,200 ft. of moorage and 1,232 ft. of floating dock, accommodating vessels up to 200 feet. The small boat harbor provides 238 moorage slips. The Unalaska Marine Center and US Coast Guard Dock offer cargo, passenger, and other port services. All homes and on-shore fish processors are served by the City's piped water system. All on-shore processors generate their own electrical power. Unalaska school enrollment has remained fairly stable over the past decade, with 184 students in 2018.



Current Economy

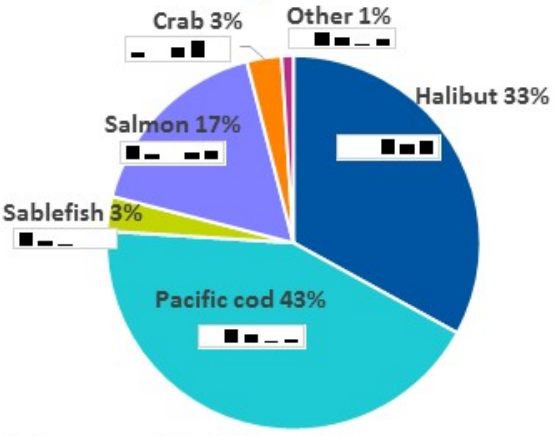
Unalaska's economy is based on commercial fishing, fish processing, and fleet services, such as maintenance, trade, repairs, fuel, and transportation. Onshore and offshore processors provide some local employment; however non-resident workers are usually brought in during peak seasons. Community leaders reported that marine fuel sales tax and fisheries related taxes at least partially supported the following public services: maintaining the harbor, medical and emergency services, educational scholarships, roads, social services, water and wastewater systems, roads, law enforcement, and fire protection.[2] In 2016, the per capita income in Unalaska was estimated to be $35,299 and the median household income was estimated to be $97,083, compared to $25,353 and $80,625 in 2010, respectively.[1]

Fishing History and Regulatory Background

In the early 20th century, seafood processing of salmon, herring, and cod was established in Unalaska; although major fisheries were not established until the late 1920s. By the 1940s, the military presence in the region overshadowed commercial fishing, and Dutch Harbor was mostly repurposed as a naval port. Following World War II. Halibut, salmon, and king crab fisheries began to develop in earnest in the 1960s. During the 1970s, the Bering Sea/Aleutian Islands (BSAI) king crab fishery brought about an economic boom. When crab stocks collapsed in the early 1980s, Unalaska began to transition to a groundfish-based economy. Rapid growth occurred in the BSAI pollock fishery between 1988 and 1992. During that time, there was a dramatic increase in the number of commercial fishing vessels and seafood processors within the community. By 1992, Dutch Harbor was the number one U.S. port in amount and value of commercial fish landed. In the years following, the commercial fishing and fish processing industry grew rapidly and diversified. Today, major varieties of fish processed in Unalaska include king, Tanner (bairdi) and snow (opilio) crab, pollock, Pacific cod, salmon, herring, halibut, sablefish, turbot, Atka mackerel, and rockfish.[4]

Share of revenue harvested by species

Unalaska 2013-2017 average

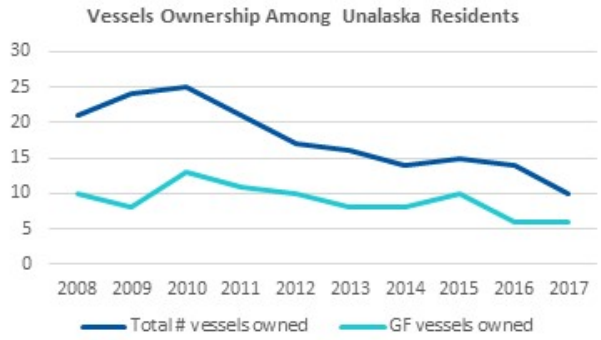


Bar charts represent 2013 to 2017 ex-vessel values (2017$) by species landed in the community. The scale of the y-axis is specific to the species.

Due to confidentiality concerns, specific harvest and processing activity has been withheld and general trends reported. For at least some years between 2008 and 2017, the number of pounds landed (and the associated ex-vessel revenue) is considered confidential due to a small number of participants. The area is included in Federal Statistical and Reporting Area 610, Pacific Halibut Fishery Regulatory Area 4A, and the Western Gulf of Alaska Sablefish Regulatory Area. Unalaska did not qualify as a CDQ community because of its previous processing history in BSAI groundfish fisheries.

Harvesting Engagement — LOW

For some years and species, the number of pounds landed and associated ex-vessel revenue is considered confidential due to a small number of participants. The total volume of groundfish harvested increased by 2.8 million pounds (87%) from 2008 to 2017 (with a peak in 2014). The associated value of groundfish decreased by $1.1 million (35%).[7] Pacific cod and halibut brought in the most revenue for the fleet. The number of fishing vessels owned by Unalaska residents continues to decrease in the past decade, from 21 vessels (2008) to 10 vessels (2017). Groundfish vessels owned by Unalaska residents followed a similar downward trend, decreasing from 10 vessels (2008) to six (2017).[ibid]



Processing Engagement — HIGH

For some years and species, the volume of groundfish processed and associated ex-vessel value is considered confidential due to a small number of participants. Although the majority of Unalaska residents depend on income derived directly or indirectly from the commercial fishing and fish processing industry, few have ownership interest in major seafood related firms. Many of the largest shoreside fish processors are wholly- or partially-owned by Japanese interests. Many other large processor vessels (motherships), or floating processor barges are owned by non-Alaskan firms,[5] although CDQ groups have some ownership interests as well. Between 2008-2017, the volume of groundfish processed has increased by 15%; however the associated ex-vessel value has decreased by 29%.[3]

Citations:

[1] Alaska Community Survey, Alaska Fisheries Science Center 2013
[2] United States Census (2010), Fact Finder, Retr'd 10/1/2018 https://factfinder.census.gov
[3] Alaska Fisheries Information Network (AKFIN).(2018).Commercial Comp. AK [dataset]
[4] Himes-Cornell, et al. (2013). *Community profiles for North Pacific fisheries* - Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-259, Volume 1
[5] Fey, M. et. al (2016) *Fishing Communities of Alaska Engaged in Federally Managed Fisheries*. NPFMC.
[6] School enrollment statistics compiled from AK. Dept. of Education & Early Development. Retrieved 08/30/2018 at http://www.eed.state.ak.us/stats/
[7] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2017. Retr.' 10/15/2018 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2018 https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/AlaskaTaxableDatabase.aspx

9.3. A Brief Overview of Commercial Fisheries in Alaska

Alaska fisheries are fairly diverse. Groundfish, salmon, crab, and herring all make substantial contributions to the state's fishery profile. Alaska fishing fleets comprise a range of vessels from small skiffs to ships more than 300 feet. These vessels utilize many harvest methods, including pelagic trawl, bottom trawl, troll, longline, purse seine, drift gillnet, setnet, pot, jig, and other commercial gear types. The State limited entry permit system issues harvest permits in 326 different categories by species, gear type, vessel size, and management area.[15] However, this diversity in harvest at the state level does not necessarily translate to communities. While a few communities, such as Kodiak, participate in the broadest range of fisheries, most communities are sustained largely by a few dominant fisheries, corporations, and/or gear types.

The North Pacific's commercial fisheries have changed through time with increased technology, labor, market demand, and legislation. The earliest commercial fishing efforts by U.S. vessels in waters off the coast of Alaska emerged in the 1860s, primarily targeting Pacific cod.[16] After the purchase of Alaska from Russia in 1867, U.S. interest in Alaska fisheries increased. Salmon and herring were two of the earliest commercial fisheries in Alaska. In the late 1800s, the product was salted for storing and shipment.[17] Improved canning technology and expanded markets led to dramatic growth in the Alaska salmon industry, with 59 canneries throughout Alaska by 1898, and 160 in operation by 1920.[18] With the development of diesel engines, commercial fisheries for Pacific halibut and groundfish expanded north to the Gulf of Alaska (GOA) and into the Bering Sea region by the 1920s.[19] Catch of herring for bait began around 1900. A boom in processing herring for fish meal and oil took place from the 1920 to 1960s, and sac roe fisheries developed in the 1970s to provide high value product to Japanese markets. By the mid-1900s, fisheries began to develop for crab, shrimp, and other shellfish, as well as for an increasing variety of groundfish species. Substantial commercial exploitation of crab began in the 1950s with the development of Bering Sea king crab fisheries. Today, king crab harvests are well below their peak in 1980, when crab fisheries rivaled the highly profitable salmon industry in terms of landings value.[20]

Groundfish fisheries changed dramatically in the wake of World War II as Alaskan commercial fisheries expanded and industrialized.[21] From the end of World War II to the start of Exclusive Economic Zone management under the Magnuson-Stevens Act, North Pacific harvests increased

[15]State of Alaska, Commercial Fisheries Entry Commission. (2011). *Current Fishery Codes Description Table.* Retrieved November 5, 2012 from `http://www.cfec.state.ak.us/misc/FshyDesC.htm`.

[16]Rigby, Phillip W., Ackley, David R., Funk, Fritz, Geiger, Harold J., Kruse, Gordon H., and Murphy, Margaret C. (1995). *Management of the Marine Fisheries Resources of Alaska.* Regional Information Report 5J95-04. Juneau, AK: Alaska Department of Fish and Game.

[17]Woodby, Doug, Dave Carlile, Shareef Siddeek, Fritz Funk, John H. Clark, and Lee Hulbert. (2005). *Commercial Fisheries of Alaska.* Alaska Dept. of Fish and Game, Special Publication No. 05-09. Retrieved December 29, 2011 from `http://www.adfg.alaska.gov/FedAidPDFs/sp05-09.pdf`.

[18]Clark, McGregor, Mecum, Krasnowski and Carroll. 2006. "The Commercial Salmon Fishery in Alaska." *Alaska Fisheries Research Bulletin* 12(1):1-146. Alaska Dept. of Fish and Game. Retrieved January 4, 2012 from `http://www.adfg.alaska.gov/static/home/library/PDFs/afrb/clarv12n1.pdf`.

[19]International Pacific Halibut Commission. 1978. *The Pacific Halibut: Biology, Fishery, and Management.* Technical Report No. 16 (Revision of No. 6).

[20]Woodby, Doug, Dave Carlile, Shareef Siddeek, Fritz Funk, John H. Clark, and Lee Hulbert. (2005). *Commercial Fisheries of Alaska.* Alaska Dept. of Fish and Game, Special Publication No. 05-09. Retrieved December 29, 2011 from `http://www.adfg.alaska.gov/FedAidPDFs/sp05-09.pdf`.

[21]North Pacific Fishery Management Council (June 2004). Final Programmatic SEIS, Appendix B History of Alaska Groundfish Fisheries and Management Practice. Accessed 10 October 2018. `https://alaskafisheries.noaa.gov/sites/default/files/sir-pseis1115.pdf`

from 8 million mt to 20 million mt. [22] The greatest increase was in the groundfish and crab sector in the Bering Sea Aleutian Islands (BSAI) and Gulf of Alaska (GOA). Groundfish harvest grew to exceed 2 million mt per year in the early 1970s. Technological developments and changes in marketing continued to increase harvests, leading to some concern of overexploitation, particularly by foreign fleets. The 1945 Truman Proclamation stressed the U.S.'s right manage and conserve living marine resources in these areas and to require foreign compliance.[8,23] This claim was not effectively exercised until the MSA was implemented in 1977.

9.3.1 Population trends

Alaska fishing communities represent a diversity of demographic, cultural, socio-economic, and historical conditions. Some are large municipalities that serve as regional economic hubs, such as Anchorage, while other communities are relatively isolated with only a few dozen inhabitants. Population growth in certain areas fluctuates, and is largely driven by resource extraction including fisheries.

Of the communities that are highly engaged in commercial fishing harvesting and processing, Akutan, Homer and Unalaska had the greatest increases in population between 1990 and 2017 (68.6%, 45.2%, and 40.5% respectively (Figure 9.11, Table 9.6), whereas Kodiak and Petersburg had slight decreases in population over this time period. The population of Sitka has remained the most stable over time. Of these communities, Akutan's population has increased the most with the greatest population increase (137.6%) occurring between 1997 and 2017.

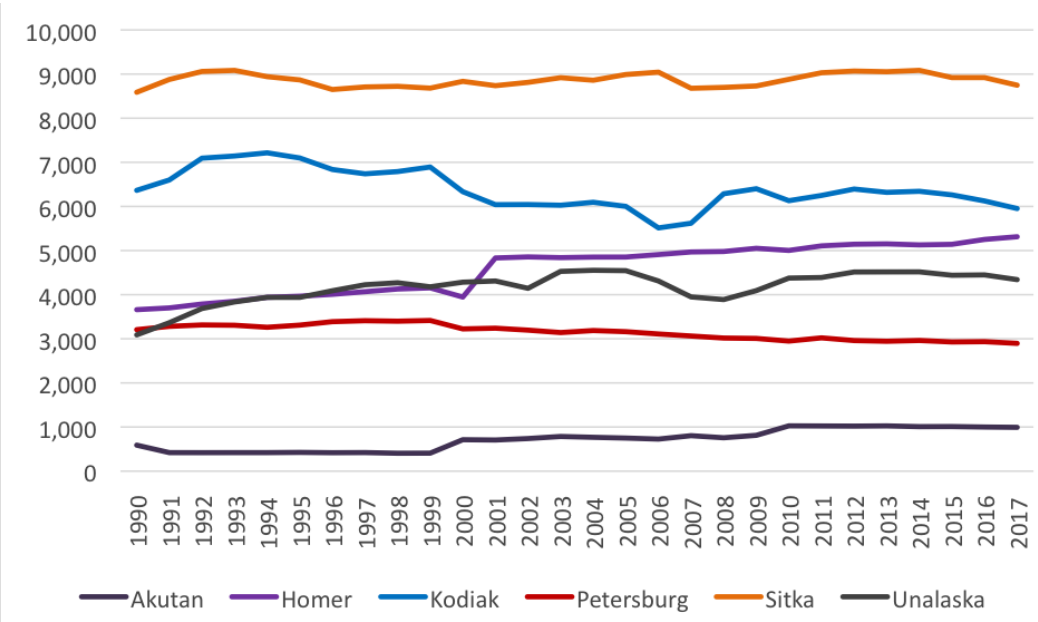


Figure 9.11: Population between 1990 and 2017 of communities highly engaged in commercial fishing harvesting and processing.

[22] Miles, E. (1979). The management of marine regions: the North Pacific. *Ocean Development & International Law*, *6*(1), 7-30.

[23] Koers, A. W. (1973). International regulation of marine fisheries.

Table 9.6: Population change of communities highly engaged in commercial fishing harvesting and processing.

	% change 2017-1990	% change 2017-1997	% change 2017-2007
Akutan	68.59%	137.56%	23.51%
Homer	45.16%	32.56%	6.94%
Kodiak	-6.49%	-12.94%	5.93%
Petersburg	-9.70%	-14.52%	-5.45%
Sitka	1.86%	1.13%	0.81%
Unalaska	40.53%	6.16%	9.93%

This dramatic transformation coincided with the Magnuson-Stevens Fisheries Management and Conservation Act's "Americanization" of the groundfish fleet in North Pacific waters and the subsequent growth of the fish processing industry, both onshore and at sea. Some communities that have experienced rapid population growth have also seen an influx of ethnic diversity as the fishing industry has become a global enterprise that draws labor from around the world. By 2013, there were high percentages of non-Alaskan and foreign-born residents working in fish processing plants and the majority of foreign-born individuals were residing in the Aleutian Islands (Aleutians East 57% and Aleutians West 35%) and Kodiak Island (14%).[24] Asian migrant workers comprise a large portion of fish processing workers in many communities.

In contrast, many communities have experienced population decline in recent years as local economic conditions such as lack of employment and high cost of living drive migration to urban areas such as Anchorage and the Matanuska-Susitna Borough. Some communities may experience economic collapse from seafood processing or cannery closures leading to out-migration.[25] These downturns demonstrate the reliance of small communities on fisheries.

Alaska's population is aging as a whole: the numbers of both males and females 50 years and over has increased in the past sixteen years. Specifically, the number of men and women in the 60-69 age group more than doubled since the year 2000. Alaska also has had a relatively young population composition. The average median age was 32.7 in 2000, which was somewhat younger than the U.S. median of 35.3 in 2000. However, Alaska's median age increased to 34.5 in 2015 and the national median 37.8 in 2015.[26] Although extractive industries, including fisheries, has drawn young laborers to Alaska in recent decades, fewer younger residents of Alaska fishing communities participate in fisheries than in the past.[27]

The ratio of men to women in many Alaska communities is indicative of labor mobility in industries such as fisheries and oil extraction. Many Alaskan communities report a higher ratio of men than women. This is particularly true of communities relying heavily on oil, fishing, and fish processing. When compared to the U.S. population in 2000 and 2016, which has been distributed nearly equally between men and women (49.1% male in 2000, 49.4% male in 2016), Alaska has slightly more males (51.7% male in 2000 and 2016). A considerable number of communities which have had the highest

[24]ADLWD 2015. Alaska Economic Trends. Foreign-Born Alaskans. Alaska Department of Labor and Workforce Development. March 2015, Volume 35, No 3.

[25]Donkersloot, R., Carothers, C., 2016. The Graying of the Alaskan Fishing Fleet. Environment: Science and Policy for Sustainable Development 58, 30-42.

[26]Alaska Department of Labor and Workforce Development. 2016. Alaska Population Overview 2015 Estimates.

[27]Donkersloot, R., and C. Carothers. 2016. The graying of the Alaskan fishing fleet. Environment: Science and Policy for Sustainable Development 58, no. 3: 30-42. Online: `http://dx.doi.org/10.1080/00139157.2016.1162011`.

ratio of men to women are located in Southwest Alaska (in the Alaska Peninsula and Aleutian Islands), and in Southeast Alaska. These areas are heavily involved in commercial fishing and fish processing; labor sectors that tend to be male-dominated. For example, as of 2016, Akutan's population composition was 78.1% male and 21.7% female, and Unalaska's was 67.2% male and 32.8% female. Both of these communities are heavily engaged in fisheries with among the highest fishery landings in the U.S.

Some remote Native communities which are likely more stable than employment driven populations, have more balanced gender structures, such as Newhalen (50% male in 2000 and 49.7% male in 2015) and Hooper Bay (49.7% male in 2000 and 53.9% male in 2015). Other Native communities have more women than men, which could also be linked to employment trends. When compared statewide, few communities in Alaska have more females than males (roughly 19% of all communities in 2015).

9.3.2 Current Economy

Marine species were among the earliest and most important of Alaska's commercial resources, especially marine mammals. Commercial fisheries began in the mid-1800s with salted cod, salmon, and herring, and later canned salmon. Lucrative offshore fisheries were conducted by fishing fleets from Russia, Japan and Korea, until the 1976 Magnuson Fishery Conservation and Management Act claimed the area between 3 and 200 miles offshore as the exclusive economic zone of the U.S.[28] Crab and other shellfish, herring, halibut, salmon, and groundfish have all contributed to this important industry for the state, supporting a fishing economy that ranges from family fishing operations to multinational corporations, and transforming the social landscape by the immigration of workers from around the world.

There were 304,556 Alaskan residents employed throughout the State in 2016, compared to 284,000 in 2000. The private sector maintains the highest number of employees (236,086 in 2016 and 219,496 in 2001). The government sector, including state and local levels, also provide considerable employment with 68,470 jobs in 2016 and 74,500 jobs in 2000. In 2000, this was followed by services/miscellaneous (73,300 or 25.8%), trade (57,000 or 20.1%), transportation, communications and utilities (27,300 or 9.6%), manufacturing (13,800 or 4.86%, with seafood processing contributing the bulk of jobs at 8,300 or 2.9%), and mining (10,300 or 3.6%, with oil and gas extraction contributing the most jobs at 8,800 or 3.1%). This distribution changed slightly in 2016, with trade, transportation, and utilities (63,143 or 20.7%) providing the most jobs, followed by educational and health services (45,947 or 15.0%), leisure and hospitality (30,783 or 10.0%) and professional and business services (26,146 or 8.6%).[29]

[28] Rigby, Phillip W., Ackley, David R., Funk, Fritz, Geiger, Harold J., Kruse, Gordon H., and Murphy, Margaret C. (1995). *Management of the Marine Fisheries Resources of Alaska.* Regional Information Report 5J95-04. Juneau, AK: Alaska Department of Fish and Game.

[29] Statistics in this paragraph are sourced from 1) Alaska Department of Labor and Workforce Development. (2001). The Year 2000 in Review: Growth Picks up in Alaska in 2000. *Alaska Economic Trends 2001.* Anchorage: Alaska Department of Labor and Workforce Development; and 2) *Alaska Local and Regional Information Database.* Retrieved October 8, 2018 from `http://live.laborstats.alaska.gov/alari/`.

Commercial fishing and fish processing industries remain important in Alaska's economy, culture, and social wellbeing.[30] Fish harvesting employment (monthly average) increased from 7,959 in 2001 to 8,273 in 2015, and seafood processing workers increased from 22,571 in 2001 to 24,863 in 2015. The non-Alaska resident share of seafood processing workers has increased from 65.6% in 2011 to 70.2% in 2015.[31] Major industries including oil, military, and commercial fishing are integral to the state's continued growth. At the same time, new sectors such as tourism have begun to contribute noticeably to Alaska's economy. Cruise ships, recreational fishing excursions, cultural tourism and eco-tourism are on the rise.

9.3.3 Labor in Alaska's Commercial Fishing Industry

The commercial fishing sector is the largest private employer in Alaska. The fishing industry provides a variety of employment opportunities, including fish harvesting, processing, transport, and dock and harbor work. In 2015, a total of 207 communities had at least one resident that held a CFEC fishing permit; a decline from 215 communities in 2000, and 240 in 1990.[32] According to the CFEC, there were 12,317 permit holders in Alaska communities in 2015. The number of permit holders decreased from 13,271 in 2000, and further still from 15,728 in 1990.

The number of licensed Alaskan crew members employed annually in Alaskan commercial fisheries has fluctuated over recent decades, from more than 20,145 in 1993, to approximately 10,461 in 2003, and 11,993 in 2015.[33] In addition, the number of communities with at least one licensed crew member has decreased from 209 in 2000 to 195 in 2013. The decline is likely due to a combination factors. Although the majority of licensed crew members are Alaska residents, the labor pool also draws from Washington, other U.S. states, and around the world. The industry remains male-dominated, with women accounting for an average of 11% licensed crew from 2005-2014. In addition, personnel turnover is high; the average crew member holds a license for just 1.8 years.[34] Similar declines were seen in the total number of vessels primarily owned by Alaskan residents, vessels homeported in Alaskan communities and vessels landing catch in Alaskan communities.

The employment data collected by the U.S. Census noticeably under-represents those involved in the fishing industry. The figures originate from Census form questions which are phrased in a way that likely deters answers from self-employed persons (as most fishermen are). In the results of the Census, agriculture, forestry, fishing and hunting were combined together into one reported figure, which makes it difficult to discern which individuals were involved in the fishing portion of the category. In addition, processing sector employment data is not available to at the community level. However, processing sector data is available at a higher aggregation level, such as at regional levels.

[30]Carothers, Courtney and Jennifer Sepez. (2005). Commercial Fishing Crew Demographics and Trends in the North Pacific. Poster presented at the *Managing Our Nation's Fisheries: Focus on the Future* Conference, Washington D.C., March 2005. Available at ftp://ftp.afsc.noaa.gov/posters/pCarothers01_comm-fish-crew-demographics.pdf.

[31]Alaska Department of Labor and Workforce Development. 2017. Research and Analysis Statewide Data, Fishing and Seafood Industry Data. Available at: `http://live.laborstats.alaska.gov/seafood/seafoodstatewide.cfm`. Accessed September 6, 2017.

[32]Alaska Fisheries Information Network (AKFIN). (2017). Community Profile Database, 1991-2016. Data compiled for the Alaska Fisheries Science Center, Seattle.

[33]Alaska Department of Fish and Game. (2017). *Alaska sport fish and crew license holders, 2000 – 2015.* ADF&G Division of Administrative Services. Data compiled by Alaska Fisheries Information Network for the Alaska Fisheries Science Center, Seattle. [URL not publicly available as some information is confidential.]

[34]Carothers, Courtney and Jennifer Sepez. (2005). Commercial Fishing Crew Demographics and Trends in the North Pacific. Poster presented at the *Managing Our Nation's Fisheries: Focus on the Future* Conference, Washington D.C., March 2005. Available at ftp://ftp.afsc.noaa.gov/posters/pCarothers01_comm-fish-crew-demographics.pdf.

Employment information for the important offshore processing sector is also not discussed because the effect on Alaska communities is indirect and is brokered for the most part out of Seattle.

9.3.4 Fish Taxes in Alaska

Taxes generated by the fishing industry, particularly the fish processing sector, are important revenue sources for communities, boroughs, and the state. Considered in this analysi are two main sources of fishery taxes in Alaska: shared taxes administered through the State of Alaska, and municipal fisheries taxes independently established and collected at select municipalities. Shared taxes comprise revenue from multiple sources, including liquor sales, electric and telephone cooperatives, etc. The two main shared taxes that are derived from fishing; the fisheries business tax (also known as the raw fish tax), and the fisheries resource landing tax. Table 9.7 presents the number of communities receiving any kind of fishery tax revenue from 2012-2017, which has been generally decreasing over that period.

Table 9.7: Number of communities receiving any kind of fishery tax revenue per year from 2012-2017.

Year	Communities
2012	60
2013	52
2014	55
2015	48
2016	44
2017	41

State Taxes

The fisheries business tax, implemented in 1990, is levied on businesses that process or export fisheries resources from Alaska. Tax rates vary under the fisheries business tax, depending on a variety of factors, including how well established the fishery is, and whether processing takes place on a shoreside or offshore facility. Although the fisheries business tax is typically administered and collected by the individual boroughs, revenue from the tax is deposited in Alaska's General Fund. According to state statute, each year the state legislature appropriates 25%-50% of the revenue from the tax to the municipality or borough where processing occurs.[35]

The State of Alaska has collected the fisheries resource landing tax since 1994. This tax is levied on processed fishery resources that were first landed in Alaska, whether they are destined for local consumption or shipment abroad. This tax is collected primarily from catcher-processor and at-sea processor vessels that process fishery resources outside of the state's three-mile management jurisdiction, but within the U.S. Exclusive Economic Zone, and bring their products into Alaska for transshipment. Fishery resource landing tax rates vary from 1% to 3%, depending on whether the resource is classified as "established" or "developing." According to state statute, all revenue from the Fishery Resource Landing Tax is deposited in the state's General Fund, but half of the revenue is available for sharing with municipalities where fishery resources are landed.[36]

[35] Alaska Department of Revenue, Tax Division. Annual Reports 2012-2017 `http://tax.alaska.gov/programs/sourcebook/index.aspx`

[36] Alaska Department of Revenue, Tax Division. Annual Reports 2012-2017 `http://tax.alaska.gov/programs/sourcebook/index.aspx`

Municipal Taxes

In addition to these state taxes, some communities have developed local tax programs related to the fishing industry. These include taxes on raw fish transfers across public docks, fuel transfers, extraterritorial fish and marine fuel sales, and fees for bulk fuel transfer, boat hauls, harbor usage, port and dock usage, and storing gear on public land. There is no one source for data on these revenue streams; however, most communities self-report them in their annual municipal budgets collected by the Alaska Division of Community and Regional Affairs. In 2017, 10 communities reported collecting some form of municipal fisheries tax, as well as four boroughs (Aleutians East, Bristol Bay, Kodiak Island, and Lake and Peninsula), which was down from 14 communities in 2016.

Total Fisheries Tax Income

The communities with the highest total fishery related income from 2012-2017 are presented in Figure 9.12. Total fishery tax income includes the fisheries business tax, fisheries resource landing tax, and any municipal raw fish taxes collected. Unalaska consistently brings in the most fishery related tax revenue through its income through the Fishery Business and Fishery Landing taxes as well as leveraging its own municipal raw fish tax. It is likely that Unalaska collected a 2% raw fish tax in in 2014 and 2015, and did not self-report, which is why Unalaska taxes fluctuate significantly. Unalaska did experience over a $4,000,000 loss of fishery tax revenue from 2016 to 2017.

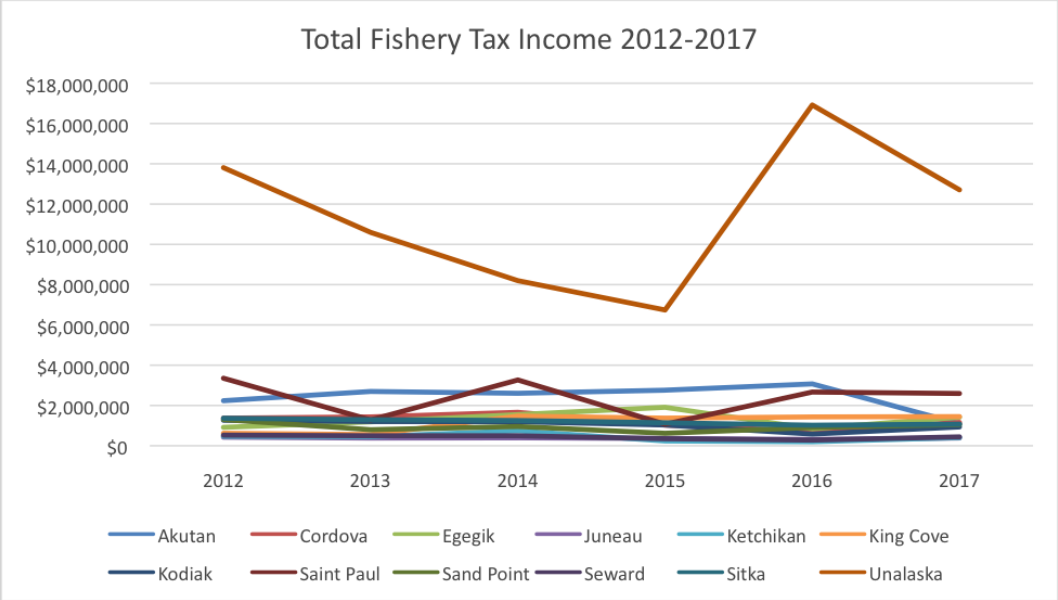


Figure 9.12: Top 12 communities with the highest total fishery related tax income from 2012-2017.

As shown in Table 9.8, 12 communities derived 50% or more of their municipal income from fisheries at some point over 2012-2017. Dependence on fishery related tax income is variable, likely due to a number of factors including the amount of revenue generated through other shared taxes, revenue generated through other local municipal taxes, and the vitality of the fisheries being taxed. However, it is worth noting that a few communities have been consistently and exclusively dependent on fishery tax income from 2012-2017, including Chignik and Egegik. It is also worth noting that until 2017, Akutan was entirely dependent on fishery tax income. In 2017, Akutan implemented a 1.5% sales tax, which generated $3,337,019 and stopped collecting a municipal raw fish tax.

Table 9.8: Communities with 50% or more Total Tax Revenue from Fisheries Taxes, 2012-2017.

	2012	2013	2014	2015	2016	2017
Akutan	100%	100%	100%	100%	100%	25%
Chignik	100%	100%	n/a	100%	100%	100%
Egegik	100%	100%	100%	100%	100%	100%
Pilot Point	100%	100%	100%	100%	0%	0%
Atka	99%	66%	n/a	44%	n/a	100%
Saint Paul	89%	32%	90%	30%	88%	88%
Sand Point	59%	46%	50%	36%	50%	58%
Port Lions	56%	5%	16%	0%	0%	n/a
Larsen Bay	54%	n/a	n/a	77%	64%	63%
False Pass	41%	31%	44%	81%	78%	78%
King Cove	27%	26%	69%	68%	60%	66%
Togiak	n/a	44%	50%	29%	53%	39%

Notes: n/a should be interpreted as representing communities that did not report their total municipal income, rather than communities lacking fisheries related tax income. Fisheries taxes include shared and municipal taxes.

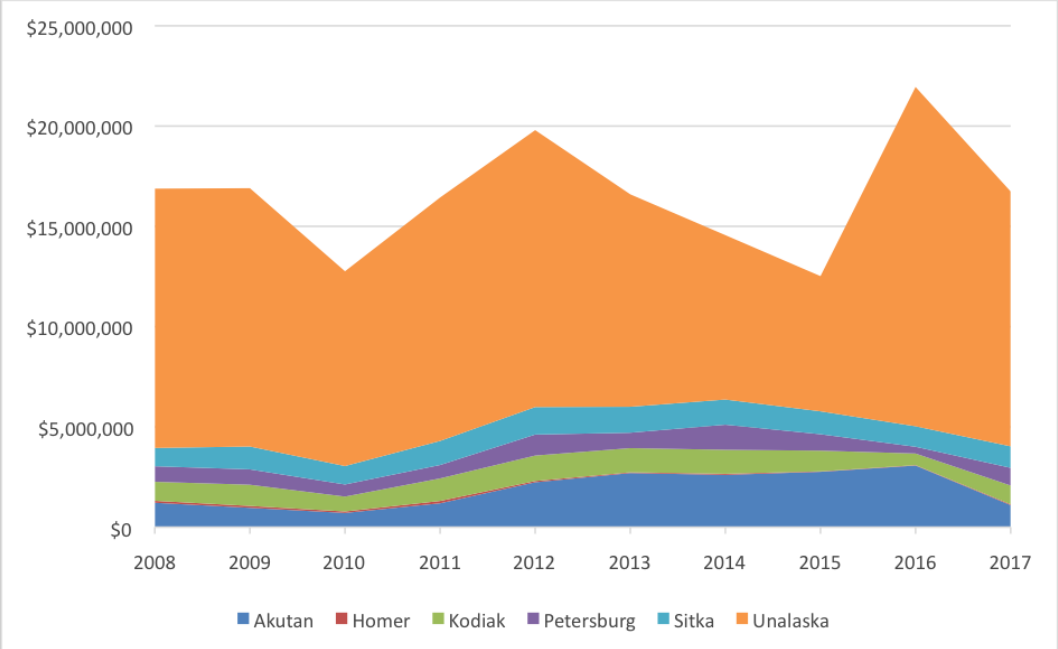


Figure 9.13: Tax Revenue from Fisheries Taxes, 2008-2017 for Highly Engaged Groundfish Communities in Alaska.