Annual Community Engagement and Participation Overview

An annual report focusing on sustained participation of those fishing communities substantially dependent on or substantially engaged in the North Pacific groundfish and crab fisheries.

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Economic and Social Science Program

ANNUAL COMMUNITY ENGAGEMENT AND PARTICIPATION OVERVIEW

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March 19, 2021

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www.fisheries.noaa/gov

Fishing Communities in Alaska

Fishing in Alaska contributes to local and State economies, cultural cohesion, and food security within Alaska and beyond. The hundreds of communities in Alaska involved in commercial, recreational, and subsistence fishing contribute to community wellbeing and economic livelihoods, and support meaningful ways of life for Alaskans. The Annual Community Engagement and Participation Overview (ACEPO) presents social and economic information for those communities substantially engaged in the commercial FMP groundfish and crab fisheries in Alaska. ACEPO is a community level analysis guided by The North Pacific Fishery Management Council (Council) management objectives and MSA National Standard 8 (NS8).

This document provides information on the social and economic benefits of FMP groundfish and crab fisheries. This objective is in line with NS8 which provides for the sustained participation and the minimization of adverse economic impacts for fishing communities. Economic and social benefits to fishing communities are tied to economic stability and community wellbeing. In line with MSA-NS8, the Council has identified seven management objectives, one of which is maximizing the economic and social benefits of fisheries to the nation over time (Crab FMP 7.2.2). These benefits include, but are not limited to: profits, income, employment, benefits to consumers, and "less tangible or less quantifiable social benefits such as the economic stability of coastal communities."

To support these management objects and MSA-NS8, the Alaska Fisheries Science Center (AFSC) developed ACEPO to provide an annual overview of community engagement. ACEPO will be updated annually and can be expanded to include more detailed information as needed. Alaska communities were examined within the context of their geographic place, as well as historical and current fishing involvement in Alaska's groundfish and crab fisheries. This analysis considers four performance metrics of fisheries participation to understand the different ways that communities are involved in FMP groundfish and crab fisheries: commercial processing engagement, commercial harvesting engagement, the processing regional quotient which measures the percentage of all FMP groundfish and crab landings occurring in each community, and the harvesting regional quotient that measures the percentage of all FMP groundfish and crab landings revenue 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 2019.

This document is divided into four sections to provide a multi-scaled synopsis of groundfish and crab fisheries engagement. Section I addresses the definition of fishing communities as provided in the MSA, and describes the social and economic benefits associated with participation in the FMP groundfish and crab fisheries. Section II details the method and criteria used to develop the Community Fisheries Participation Indices for Alaska communities, and to identify substantially engaged communities. Section III presents an overview of both groundfish and crab fisheries in relation to associated community level benefit. This section identifies which top communities participate in FMP groundfish and crab fisheries, along with observable trends in participation. A general overview of crab and groundfish fisheries within Alaska is provided here in order to locate this analysis in historical and regulatory context. Section IV is dedicated to the individual Community Sketches created for each community identified as substantially engaged in the FMP groundfish and/or crab fisheries. The sketches offer a deep dive into community participation in fisheries and provide vital context to better understand possible social benefits.

For the purpose of this annual report, to be consistent with Council management concerns, the existing database of community data was used including communities outside Alaska. The analysis focused only on commercial FMP groundfish and crab fisheries from 2008-2019, to maximize the best available data. It is worth noting that this report is not an exhaustive account of communities substantially engaged or dependent on fishing to support livelihoods and way of life; however ACEPO provides an overview of select communities that are identified as highly engaged through quantifiable select criteria (see the methods section).

Scientific and Statistical Committee comments

ACEPO was developed in response to comments in 2018 and 2019 by the Council's Scientific and Statistical Committed (SSC) requesting better access to community-level information for the groundfish and crab fisheries. Previously, social information was embedded in the fisheries economic SAFE reports. By consolidating community level fisheries information, ACEPO provides specific fisheries data relevant to community engagement and wellbeing to facilitate contextualized decision making by the Council.

The Importance of Human Communities

National Standard 8 of the Magnuson Stephenson Act (MSA) 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." The term "fishing community" is defined as 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." While the MSA requires consideration of "fishing communities;" what constitutes a fishing community in practice is complex and has long been debated.

Communities are complex and diverse. For the sake of consistency, this overview follows NMFS' interpretation of the term fishing community to mean "a social or economic group whose members reside in a specific location…" As community level analyses continue to develop further, it should be recognized that the concept of community may shift within differing contexts and perspectives. While geographic location may be relatively easy to determine, defining fishing community solely on geography risks overlooking social processes that are valuable to understanding social complexity, including social networks valuable to the flow of people, information, goods, and services. In light of the variations in the use of marine spaces across different social groups, it is vital that the parameters of what constitutes a fishing community are thoughtful and specific. Some managers have turned to "multiple constructions of communities" to better understand fishing communities. Others expand the concept of "community" to include those areas, resources, and social networks on which people depend. The move toward ecosystem-based management within Federal fisheries may suggest greater consideration of "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." While the communities identified in ACEPO are defined by geographic location, we consider the level of participation in direct harvest, post-harvest processing, and associated community benefits in order to capture the linkages among people engaged in groundfish and crab fisheries, as well as the social and economic impacts on communities of place.

Citations

[1]Electronic Code of Federal Regulations (CFR) Title 50, Chapter VI, Part 600, Subpart D, Section 600.345 (cited as 50 CFR 600.345)
[2]MSFCMA, § 600.345 National Standard 8—Communities.
[3]16 U.S.C. 1802 §3 (16).
[4]*50 CFR 600.345 - National Standard 8 – Communities.*
[5]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.
[6]Clay, P. M., & Olson, J. (2008). Defining" fishing communities": vulnerability and the Magnuson-Stevens fishery conservation and management act. *Human Ecology Review*, 143-160
[7]Kleiber, D., Harris, L. M., & Vincent, A. C. (2015). Gender and small-scale fisheries: A case for counting women and beyond. *Fish and Fisheries*, *16*(4), 547-562.
[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.
[10] 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.

SECTION I: Community Participation Indices

The ACEPO analysis considers four performance metrics of community fisheries participation to understand the different ways that communities are involved in Alaska fisheries: commercial processing engagement, commercial harvesting engagement, the processing regional quotient which measures the percentage of all Alaska commercial landings within the specific FMPs 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. Time series summary tables of these four metrics provide a quantitative measure of community participation in Alaska commercial fisheries and how that participation may have changed from 2008 through 2019, the most recent available data. The Community Participation Indices are relative, in that each community's level of engagement is dependent on the other communities included in the analysis, which in this case includes eight non-Alaska community groupings: Bellingham, WA; Other Washington; Newport, OR; Other Oregon; All California; All Other States; the At-Sea Processor grouping; and the Seattle metropolitan statistical area (MSA) which includes Seattle, Tacoma, and Bellevue. These grouping s were chosen to maintain consistency with Council analyses.

By examining fishing community participation over time, it is possible to trace sustained participation in specific fisheries, as well as flag changes in participation for some communities. Further research may then clarify some of the drivers of these changes. ACEPO presents an overview of communities substantially engaged in groundfish and crab fisheries, and highlights those communities highly engaged according to the established criteria. Due to the differences in the overall fisheries framework, involvement in CDQ programs was not among the criteria used to identify communities.

Note on Confidentiality

Due to the small number of reporting entities, some results are suppressed to protect the confidentiality of proprietary information. For example, confidentiality concerns required that Akutan's fishing engagement data be aggregated with neighboring communities Sand Point and King Cove in order to avoid disclosure of confidential information. For that reason, the Akutan community sketch provides information specific to the community of Akutan, but presents aggregated fishing data from Akutan, King Cove, and Sand Point communities.

Additional data about those communities are provided in order to offer valuable rich context and best available science to inform decision making. The dataset includes data on Alaska commercial fishing activities from 2008-2019 for all communities in the U.S. In line with continued efforts to increase relevancy, we could expand to include additional information in the future.

In response to comments from the SSC, the analysis presented here remains limited to participation in the commercial processing and harvesting sectors in North Pacific fisheries groundfish and crab fisheries. If interest grows, addition fisheries can be added to the analysis. Effort was made to provide most relevant fisheries data while adhering to confidentiality constraints. Most communities that emerged were discrete entities; however Kodiak Island Borough (KIB) was analyzed on the borough level separately from the City of Kodiak in order to reflect the significance of smaller communities on Kodiak Island, which may otherwise be obscured. For communities where the small number participating entities requires the suppression of individual statistics, reasons for data aggregation are noted.

Several assumptions were made within this analysis. Vessels were assigned to the community based upon the ownership address listed in the Alaska Commercial Fisheries Entry Commission (CFEC) registry. Vessel ownership can be complex; and there are multiple reasons for registration practices that may not relate to residency of owner(s). Permit information was assigned when possible a well. Given a mobile workforce and possibility of multiple home ports, these indicators only allow for a partial understanding of the flow of economic and social benefits associated with individuals and vessels. Shoreside processors were associate with geographic location although it is understood that economic benefits likely extend beyond one geographic community.

Commercial Fisheries Engagement Indices

The study population includes communities with any shoreside landings for FMP groundfish and both at-sea and shoreside landings for FMP crab; and communities with residents owning vessels that fished in those fisheries. Communities were included if they had shoreside landings for any year from 2008-2019 or residents owning vessels that fished in any year from 2008-2019. The engagement indices exclude inshore floating processor and any landings where the landing port is unknown or missing. The groundfish engagement indices also exclude the at-sea processing landings. The analysis separates variables into two categories of fisheries involvement: commercial processing and commercial harvesting for each FMP. 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 or crab in the community, and the number of processors in the community processing any FMP groundfish or crab. Harvesting engagement is represented by: the FMP groundfish and crab landings, revenues associated with vessels owned by community residents, the number of vessels with FMP groundfish or crab landings owned by residents in the community, and the number of distinct resident vessel owners whose vessels made FMP groundfish or crab 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 fishers and/or vessel owners that participate in commercial fisheries who 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. Two PCFAs are conducted (processing engagement and harvesting engagement) each year for 12 years (total of 24 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 24 PCFAs. Each index is normalized to have a mean of zero and a standard deviation of one. These indices are relative scores: they represent each community's engagement in commercial fisheries relative to all other communities in that year. Indices are then combined across all years to create a time series of relative engagement 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 year. These communities are used in additional analyses to explore the changes in their participation for communities that were highly engaged for all 12 years from 2008-2019 for processing engagement or harvesting engagement.

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.

Regional Quotient

The regional quotient (RQ) measures the share of a particular fishery landed in specific communities in relation to all Alaska FMP fisheries. This metric is meant to reflect a community's degree of involvement (as measured by fisheries landings) in a select fishery, in both the harvesting and processing sectors. The RQ is calculated as the landings or revenue attributable to a community divided by the total landings or revenue from all communities. To reflect each community's share of landings or revenue of the total groundfish or crab fisheries, the RQ takes into account landings in the at-sea sector (catcher processors and motherships) and at inshore floating processors, and treats the "at-sea" group as a separate community of practice. Calculated separately for the dimensions of processing engagement and harvesting engagement, the RQ uses the same criteria for inclusion as the commercial fisheries engagement indices (2008-2019).

SECTION II: Community Participation in North Pacific Groundfish Fisheries

Map design: Brett Holycross, Pacific States Marine Fisheries Commission

Alaska Commercial Groundfish Fisheries

North Pacific's commercial fisheries have transformed over time with changing 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. 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 (BS) region by the 1920s. By the mid-1900s, fisheries had developed for a variety of groundfish species. Groundfish fisheries changed dramatically in the wake of World War II as Alaskan commercial fisheries expanded and industrialized. From the end of World War II to the start of Exclusive Economic Zone management under the Magnuson-Stevens Act, North Pacific harvests increased substantially. The greatest increase was in the groundfish and crab sectors in the Bering Sea Aleutian Islands (BSAI) and 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 to manage and conserve living marine resources in these areas and to require foreign compliance.8 This claim was not effectively exercised until the Magnuson Stevens Act (MSA) was implemented in 1977. The MSA has been amended over the years, most substantially in 1996 with the Sustainable Fisheries Act, and in 2006 with the Reauthorization Act. It is currently due for review.

Commercial Groundfish Harvesting Engagement

Performance metrics of community participation in Alaska groundfish FMP fisheries from 2008-2019 are presented here. 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 used in commercial FMP groundfish fishing during this time period. Of these 99 communities, 54 had some groundfish landings in their community and were included in the commercial processing engagement analysis. In contrast, 92 of 99 communities had a resident who owned a vessel that participated in commercial groundfish harvest and were included in the commercial harvesting engagement analysis. The results of the commercial harvesting engagement PCFA analyses are shown here in Table 1 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient cite for all variables. 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 1, each PCFA provides an index score for each of the 92 communities included in the analyses as shown in Table 2 for the six communities that were highly engaged in FMP groundfish harvesting for at least one year between 2008-2019.

Table 1. Commercial harvesting engagement PCFA results 2008 – 2019.

YEAR	Eigenvalues				Factor Loadings				% variance explained	Armor's Theta
	1	2	3	4	Ex-vessel value from vessel owners	Pounds landed by vessel owners	Total # fishing vessels	Total # of unique vessel owners		
2008	3.27	0.73	0.00	0.00	0.91	0.90	0.92	0.89	0.82	0.93
2009	3.20	0.80	0.00	0.00	0.91	0.88	0.91	0.87	0.80	0.92
2010	3.17	0.83	0.00	0.00	0.90	0.88	0.91	0.87	0.79	0.91
2011	3.13	0.87	0.00	0.00	0.90	0.87	0.90	0.87	0.78	0.91
2012	3.12	0.88	0.00	0.00	0.89	0.88	0.90	0.86	0.78	0.91
2013	3.22	0.78	0.00	0.00	0.91	0.89	0.92	0.87	0.81	0.92
2014	3.19	0.81	0.00	0.00	0.90	0.89	0.91	0.87	0.80	0.91
2015	3.16	0.84	0.00	0.00	0.90	0.88	0.91	0.87	0.79	0.91
2016	3.11	0.89	0.00	0.00	0.89	0.88	0.91	0.85	0.78	0.91
2017	3.18	0.82	0.00	0.00	0.90	0.89	0.92	0.86	0.80	0.91
2018	3.14	0.86	0.00	0.00	0.90	0.88	0.92	0.85	0.79	0.91
2019	3.14	0.86	0.00	0.00	0.90	0.88	0.92	0.85	0.79	0.91

Commercial Harvesting Engagement

Table 2. Index scores of communities highly engaged in commercial harvest of Groundfish 2008 – 2019.

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Homer	1.10	1.24	1.35	1.32	1.41	1.44	1.35	1.48	1.50	1.56	1.56	1.56
Kodiak	2.52	2.61	2.70	3.16	2.99	2.31	2.51	2.79	2.66	1.98	1.73	1.88
Other Washington	1.28	1.21	1.15	1.04	1.00	1.04	1.03	0.96	0.93	0.88	1.08	1.04
Petersburg	1.40	1.31	1.50	1.24	1.29	1.37	1.44	1.41	1.38	1.48	1.44	1.55
Seattle MSA	8.34	8.22	8.12	8.05	8.08	8.29	8.18	8.14	8.12	8.23	8.22	8.19
Sitka	2.23	2.63	2.64	2.55	2.58	2.62	2.74	2.53	2.79	2.98	3.10	3.05

*Shaded cells are index scores above one (one standard deviation above the mean of zero) for at least one year (2008-2019).

The harvesting engagement index is an indicator of the degree of participation in a community relative to the participation of all other communities that fish in Alaska. It is a measure of the presence of commercial fishing through residents who own commercial fishing vessels that are active in FMP groundfish fisheries. Variables included in the index are pounds landed and revenue by resident vessel owners, the number of active vessels, and the number of unique vessel owners in the community. Table 2 presents the index scores, (which is defined as having an index score above one, or one standard deviation above the mean of zero), for the communities that emerged as Highly Engaged in harvesting FMP groundfish for at least one year (2008-2019). The index is an indicator of a community's participation relative to the participation of other communities. Of the six groupings listed in Table 2, five communities were Highly Engaged in commercial harvesting in all years from 2008-2019: Homer, Kodiak, Petersburg, Sitka, and the Seattle MSA. Seattle MSA has by far the highest degree of engagement consistently over time, with fairly consistent index scores from 2008-2019. Aside from Seattle MSA, Kodiak and Sitka have the highest engagement scores over time. Compared to the past five year average, Sitka's score increased in 2019, while Kodiak's score fell, with an uptick in the last year. The 2019 engagement index scores continued to increase modestly for Petersburg and Homer (Figure 1 and 2).

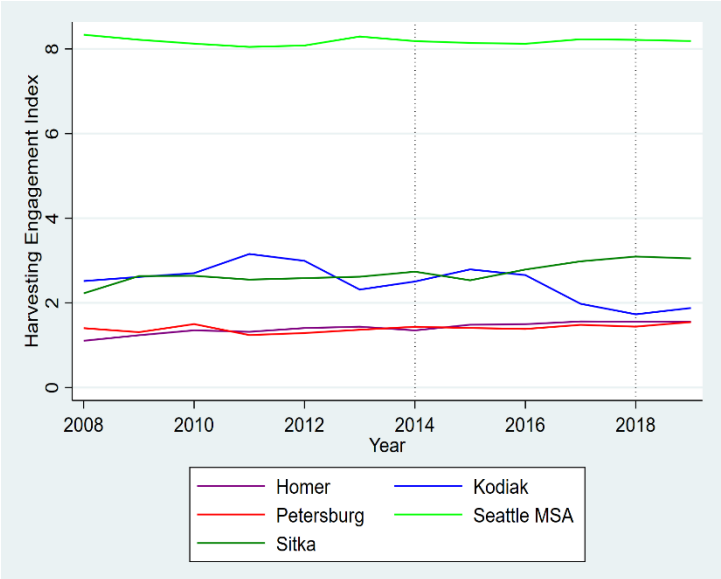


Figure 1. Index scores of communities highly engaged in commercial harvest for all years from 2008-2019. Dotted lines indicate the previous 5 year period (2014-2018).

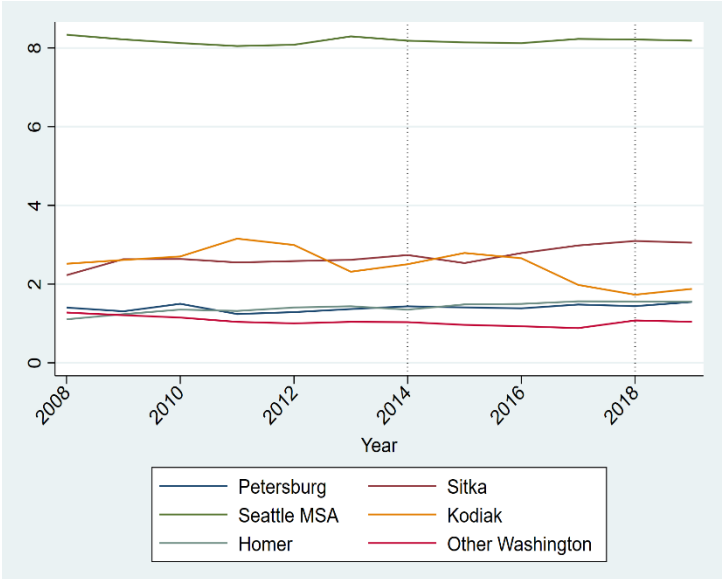


Figure 2. Index scores of communities highly engaged in commercial harvest for at least 1 year from 2009-2019. Dotted lines indicate the previous 5 year period (2014-2018).

Harvesting Regional Quotient

The commercial harvesting Regional Quotient (RQ) uses metrics associated with a community's resident vessel owners to account for where shares of fishing revenue enter the local economy. The RQ indicates the percentage contribution in pounds or revenue of FMP groundfish from resident vessel owners in a community relative to the total (shore-based and at-sea) landings or revenue from FMP groundfish fisheries in Alaska. The harvesting revenue regional quotient is quite similar to the harvesting pounds regional quotient. However, in contrast the Seattle MSA's average share of FMP groundfish revenues (70%) was lower than its average share of harvested pounds (80%), while the opposite was true of Kodiak (6% of revenue vs. 5% of harvested pounds). Petersburg vessel owners accounted for 2% on average of FMP groundfish ex-vessel revenue, while Sitka and Homer each represented 1%.

The most prominent community for harvesting FMP groundfish in terms of landing weight and ex-vessel revenues has been the Seattle MSA grouping, which accounts for 78% of the weight of FMP groundfish retained in the North Pacific on average over this period. The next largest share of volume harvested is by Kodiak vessels, at approximately 5% of the regional pounds landed from 2008-2019, followed by Petersburg at 1% and Sitka and Homer each at less than 1%. Figures 3 and 4 show the harvesting RQ both in pounds and revenue from 2008-2019.

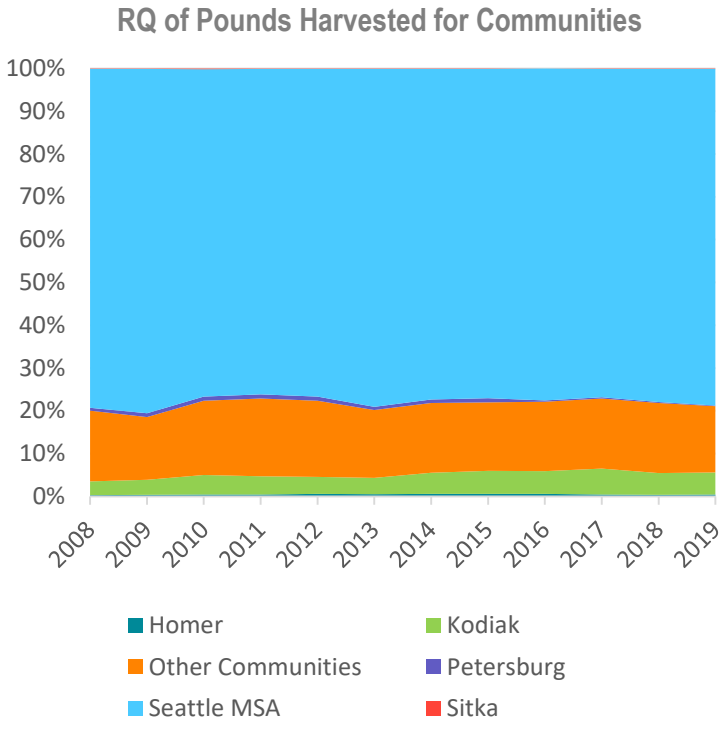


Figure 3. Harvesting regional quotient of pounds for communities highly engaged in commercial harvesting for all years from 2008-2019.

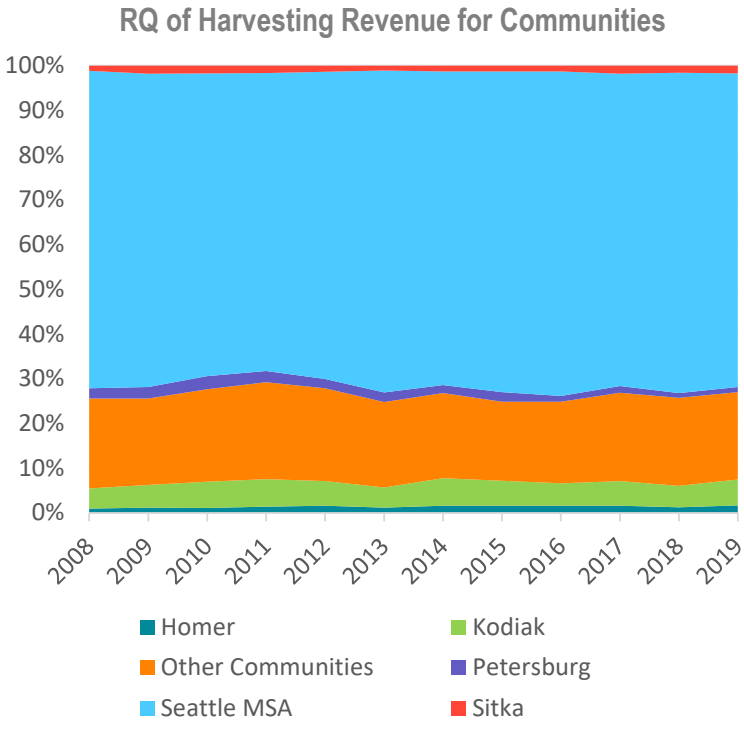


Figure 4. Harvesting regional quotient of revenue for communities highly engaged in commercial harvesting for all years from 2008-2019.

Commercial Processing Engagement

The results of the commercial processing engagement PCFA analyses are shown in Table 3 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coeficient (Armor, 1974) for all of the variables included in each PCFA. Vessel landings were used as a proxy metric for processing engagement. 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 3, each PCFA provides an index score for each of the 54 communities included in the analyses. These index scores are presented in Table 4 for the six communities that were Highly Engaged (index score above one, which is one standard deviation above the mean of zero) for at least one year from 2008-2019, and these cells are shaded in Table 4. The index is an indicator of the degree of participation in a community relative to the participation of other communities.

Table 3. Commercial processing engagement PCFA results

	Eigenvalues				Factor Loadings					
YEAR	1	2	3	4	Ex-vessel value	Pounds landed in community	Number vessels delivering	Number of Processors	% variance explained	Armor's Theta
2008	2.93	0.96	0.11	0.00	0.91	0.84	0.85	0.82	0.73	0.88
2009	2.88	0.93	0.19	0.00	0.92	0.85	0.81	0.81	0.72	0.87
2010	3.08	0.74	0.17	0.01	0.94	0.87	0.84	0.86	0.77	0.90
2011	3.03	0.78	0.18	0.01	0.94	0.86	0.84	0.84	0.76	0.89
2012	2.93	0.84	0.23	0.00	0.93	0.86	0.83	0.80	0.73	0.88
2013	3.03	0.81	0.15	0.00	0.93	0.87	0.81	0.87	0.76	0.89
2014	3.09	0.69	0.22	0.00	0.94	0.90	0.79	0.88	0.77	0.90
2015	2.98	0.79	0.23	0.00	0.93	0.88	0.84	0.80	0.74	0.89
2016	2.90	0.89	0.21	0.00	0.91	0.87	0.82	0.79	0.72	0.87
2017	2.82	0.94	0.24	0.01	0.92	0.87	0.85	0.70	0.70	0.86
2018	2.77	0.97	0.26	0.00	0.91	0.87	0.82	0.72	0.69	0.85
2019	2.72	1.05	0.23	0.00	0.90	0.86	0.81	0.73	0.68	0.84

Commercial Processing Engagement

Table 4. Index scores of communities highly engaged in commercial harvest of groundfish 2008 – 2019.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Akutan	2.06	2.21	2.36	2.24	2.21	2.23	2.17	2.26	2.33	2.92	2.81	2.78
Homer	0.85	1.01	1.47	1.36	1.39	1.37	1.33	1.43	1.48	1.52	1.63	1.49
Kodiak	3.95	4.01	4.04	3.85	3.86	3.66	3.68	3.88	3.61	3.36	2.90	2.93
Seward	0.74	0.87	0.75	0.83	1.00	1.01	0.94	1.05	1.03	1.17	0.97	0.85
Sitka	1.73	1.31	1.30	1.34	1.22	1.26	1.13	1.22	1.36	1.63	1.45	1.46
Unalaska/Dutch Harbor	4.50	4.46	4.36	4.67	4.67	4.85	4.96	4.65	4.71	4.39	4.72	4.74

Of the six communities, the four communities that were Highly Engaged in commercial processing for all 11 years from 2008-2019 are shown in Figure 5: Akutan, Kodiak, Sitka, and Unalaska/Dutch Harbor. Unalaska/Dutch Harbor has consistently held the highest engagement scores over time, followed by Kodiak. Processing engagement in Kodiak appeared relatively stable prior to 2017, when the scores decreased substantially before flattening out.

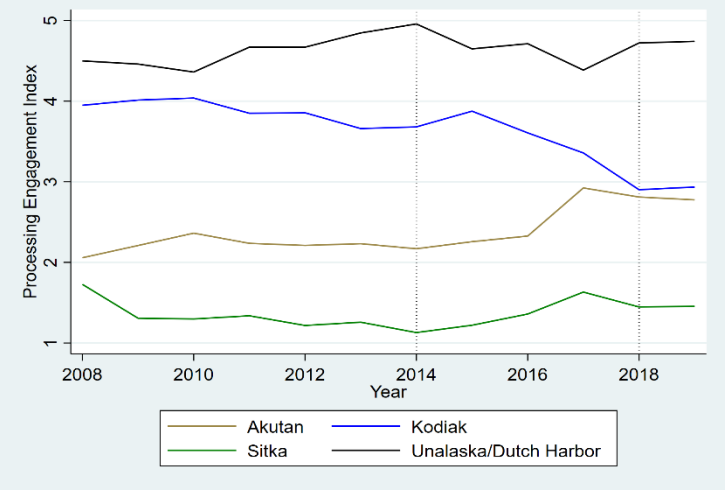


Figure 5. Index scores of communities highly engaged in commercial processing for all years from 2008-2019. Dotted lines indicate the previous 5 year period (2014-2018).

Several of the highly engaged communities experienced increases in their processing engagement scores when compared with their mean value for the previous 5 years (2014-2018), including: Akutan, Homer, Sitka, and Unalaska/Dutch Harbor (Figure 5). Kodiak's engagement score saw a small uptick in 2019, but still fell steeply compared to previous 5 year average, while Seward's scores decreased from 2017 (Figure 6).

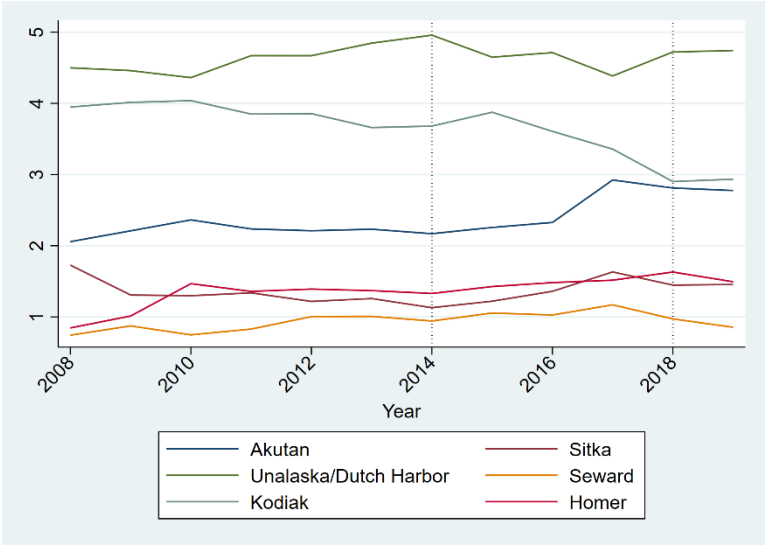


Figure 6. Index scores of communities highly engaged in commercial harvest for at least 1 year from 2008-2019. Dotted lines indicate the previous 5 year period (2014-2018).

Processing Regional Quotient

Another measure of community participation in commercial FMP groundfish fisheries is its processing regional quotient (RQ), defined as the share of commercial landings/revenues within a community out of the total North Pacific FMP groundfish landings/revenues. The RQ is an indicator of the percentage contribution (in pounds or revenue) landed in that community relative the total landings (including shorebased and at-sea) from all Alaska landings. Figures 7 and 8 show the processing RQ both in pounds and revenue from 2008-2019.

The most prominent community for processing FMP groundfish in terms of landing weight has been the At-Sea Processing grouping, which accounted for approximately 52% of volume landed and 59% of associated landing revenue of FMP groundfish retained in the North Pacific in 2019, a slight increase from previous years. In terms of shoreside processing, Unalaska/Dutch Harbor accounts for approximately 33% of groundfish landed in 2019, as a result of the high volume of pollock and other groundfish fisheries in the Eastern Bering Sea. In the past five years, the share of landings volume has remained steady for both the at-sea sector and Unalaska/Dutch Harbor. The community with the next highest share of landings volume was Kodiak, whose processing RQ averaged 7% from 2008-2019. Akutan was the only other community with an appreciable share of FMP groundfish volume, and combined with all non-highly engaged communities, accounted for approximately 15% of FMP groundfish landings volume over this period. Sitka accounted for less than 1% groundfish harvest volume. 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 52% of total FMP groundfish ex-vessel revenues, while Unalaska/Dutch Harbor and Kodiak represented 16% and 8%, respectively. Sitka accounted for about 2% on average of FMP groundfish ex-vessel revenue, while Akutan and all other communities represented 21% combined.

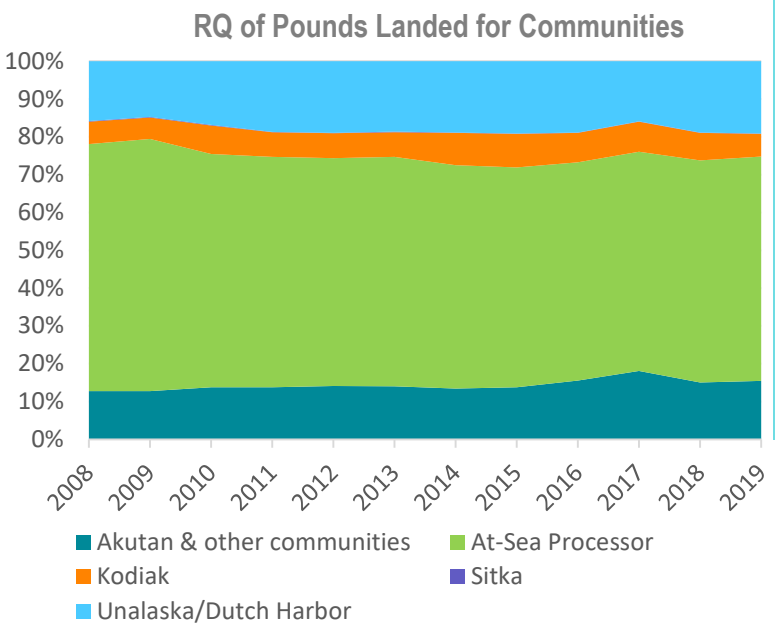


Figure 7. Processing regional quotient of pounds for communities highly engaged in commercial processing for all years from 2008-2019. Sitka is in analysis, but it's small percentage is difficult to see.

Alaska Pollock
Gadus chalcogrammus

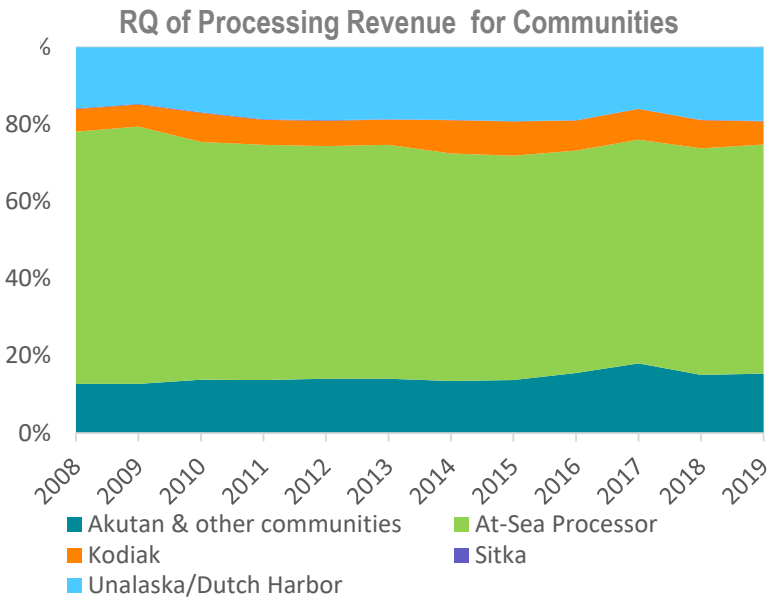


Figure 8. Processing regional quotient of landings revenue for communities highly engaged in commercial processing for all years from 2008-2019. Sitka is in analysis, but it's small percentage is difficult to see.

Participation Summary for FMP groundfish fisheries

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 0.5), medium-high (index scores between 0.50001 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 here in Table 5. There are 24 communities or community groupings in Table 5 that had medium, medium-high, or high engagement in either harvesting or processing engagement and nine communities were highly engaged in one aspect of commercial fisheries in any year from 2008-2019. There were six communities that were highly engaged in processing engagement and six that were highly engaged in harvesting engagement for at least one year from 2008-2019.

Table 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 (2008-2019). Shading indicates High engagement (blue).

	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

Groundfish Fishery Taxes

Taxes generated by the fishing industry, particularly the fish processing sector, are important revenue sources for communities, boroughs, and the State. There are two main sources of fishery taxes in Alaska: shared taxes administered through the State of Alaska, and municipal fisheries taxes independently established and collected at select municipalities. Fisheries tax revenue is presented here in Figure 9.

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.

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 trans-shipment. Fishery resource landing tax rates vary from 1%-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.

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 in their annual municipal budgets collected by the Alaska Division of Community and Regional Affairs.

Of those groundfish dependent communities receiving tax revenue (from either harvesting or processing), figure 8 shows the eight communities receiving the highest share of fishery tax revenue from 2008-2019. Unalaska consistently brings in the most fishery related tax revenue through the Fishery Business and Fishery Landing taxes and municipal raw fish tax. Unalaska experienced over a $4 million loss of fishery tax revenue from 2016 to 2017, but slightly increased in 2019. It is worth noting that until 2017, Akutan was entirely dependent on fishery tax income. In 2017, Akutan implemented a 1.5% sales tax, and stopped collecting a municipal raw fish tax.

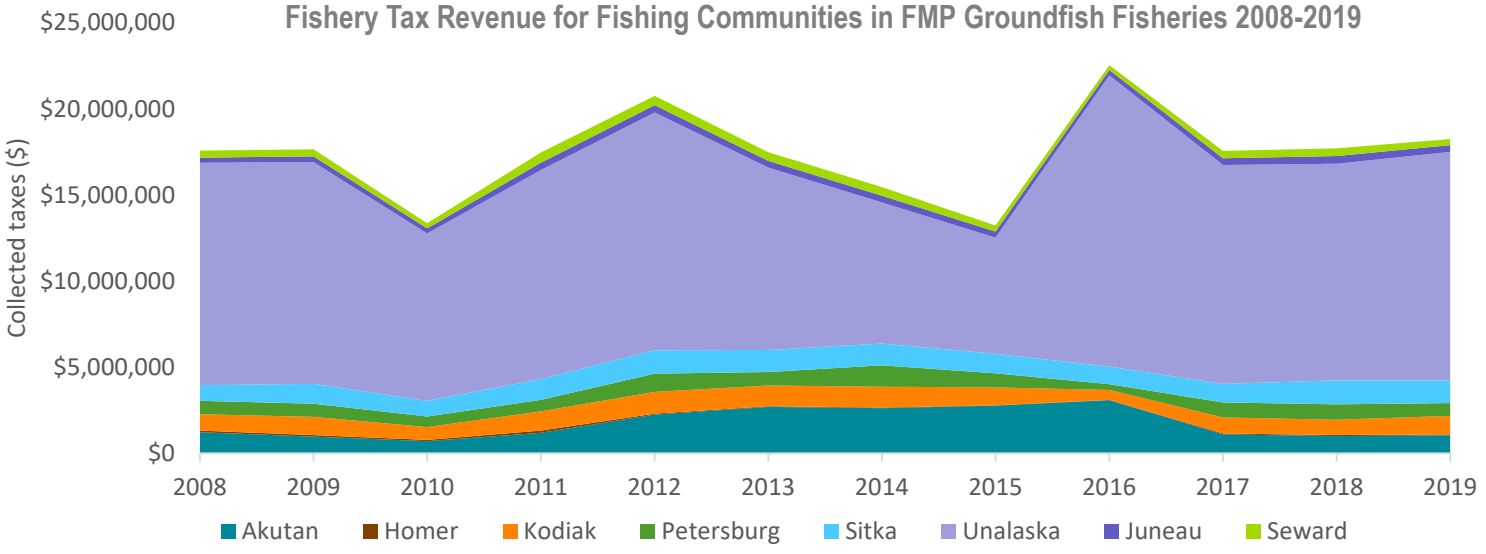


Figure 9. Fishery tax revenue from 2008-2019.

School Enrollment in Groundfish Communities

Ensuring the productivity and sustainability of fishing communities is a core mandate of Federal fisheries management. One indicator to evaluate community vitality is K-12 public school enrollment. Declining enrollment trends, and particularly school closures, signal the community is in transition and possible social disruption. Public educational institutions offer a space for people to gather and invest in community events and shared wellbeing. Communities with struggling schools are likely also experiencing population outmigration, a declining tax base, and reduced public services. Figure 10 presents K-12 public school enrollment numbers for the eight highly engaged groundfish communities within Alaska (in either the harvesting or processing sector).

Overall, from 2008-2020, there has been a decline of about 1,699 students (down 13.6% enrollment) for Akutan, Homer, Kodiak, Petersburg, Sitka, Unalaska, Seward, and Juneau combined. With the exception of Akutan and Unalaska, all other communities report a decline in school enrollment. Unalaska school district experienced an increase of 6.5% and Akutan, a 53.8% growth in enrollment. It should be noted that Akutan's growth rate reflects the community's very small enrollment size (20 students): an increase of only a few students drastically increases growth percentages. Homer has experienced the greatest enrollment decline (down -32.9%), followed by Petersburg (-15.7%), Kodiak (-13.8%), Sitka (-10.9%), Juneau (-9.5%), and Seward (-1.0%) respectively.

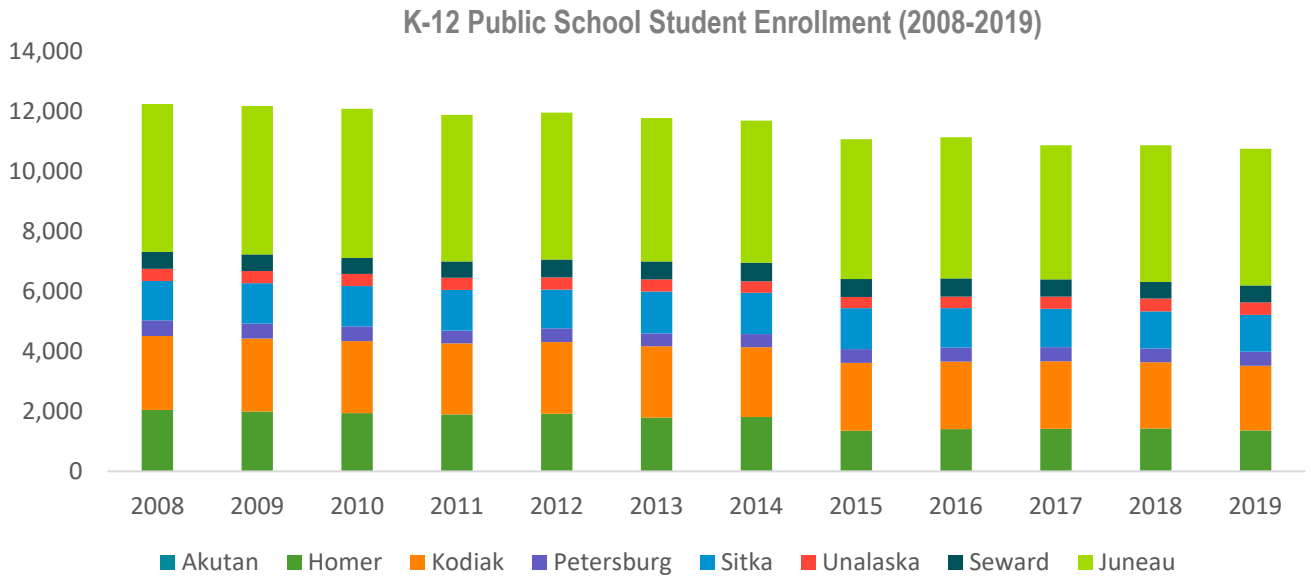
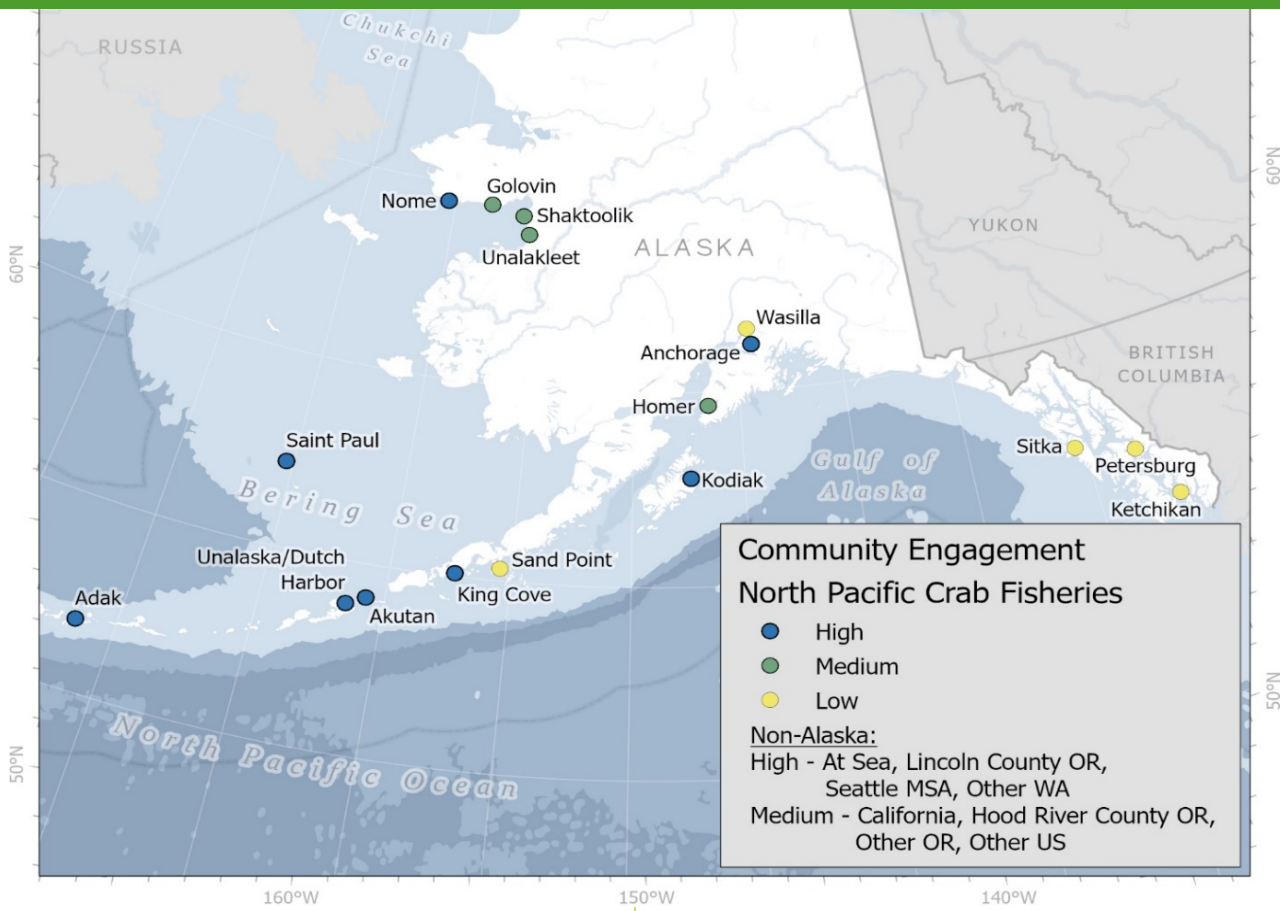


Figure 10. Highly engaged FMP groundfish communities (either harvesting or processing) K-12 public school student enrollment from 2008-2019.

SECTION III: Community Participation in North Pacific Crab Fisheries



Map design: Brett Holycross, Pacific States Marine Fisheries Commission.

Alaska Commercial Crab Fisheries

Ten species of crabs are caught in Alaskan crab fisheries, and seven of these have commercial importance: red king crab, *Paralithodes camtschaticus*; blue king crab, *P. platypus*; golden king crab, *Lithodes aequispinus*; Tanner crab, *Chionoecetes bairdi*; snow crab, *C. opilio*; hair crab, *Erimacrus isenbeckii*; and Dungeness crab, *Cancer magister*. The three minor species, scarlet king crab, *L. couesi*; grooved Tanner crab, *C. tanneri*; and Triangle Tanner crab, *C. angulatus*, are landed mostly as incidental catch in other crab fisheries. In addition to commercial fisheries, subsistence and personal use fisheries occur in many coastal areas, and support local food security. The Bering Sea/Aleutian Islands (BSAI) king and Tanner crab fisheries are managed by the State of Alaska, NOAA Fisheries and the North Pacific Fishery Management Council (Council). As of 2018, BSAI crab fisheries prosecuted by an active fleet of 99 catcher vessels and two catcher processors, and landed and processed at 12 processing facilities throughout the region. Commercial crab fisheries blossomed in the 1950s with the market of king crab fisheries in the Bering Sea, but today many of the stocks are in a depressed state. Although a variety of management responses have been attempted, many Alaska commercial crab fisheries have not yet recovered. The Fisheries Management Plan (FMP) for the commercial king and Tanner crab fisheries in the BSAI was approved in 1989 and establishes a State/Federal cooperative management regime. The BSAI Crab Rationalization Program was proposed in 2004 and implemented in 2005 to allocate resources from the major BSAI crab fisheries among harvesters, processors, and coastal communities. The BSAI Crab Plan Team provides the Council scientifically-based recommendations for BSAI crab management.

Commercial Crab Harvesting Engagement

Performance metrics of community participation in Alaska crab FMP fisheries from 2000-2019 are presented here. Data were collected for 38 communities or community groupings throughout the U.S. that had either some commercial FMP crab fisheries landings or residents who owned vessels used in commercial FMP crab fishing during this time period. The results of the commercial harvesting engagement PCFA analyses are shown here in Table 6 which presents the eigenvalues, factor loadings, total variance explained, and Armor's theta reliability coefficient for all variables. 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 6., each PCFA provides an index score for each of 38 communities included in the analysis. Table 7 presents these index scores for the three communities identified as highly engaged in FMP crab harvesting for at least one year between 2000 and 2019.

Credit: ADFG

Tanner Crab

Chionoecetes bairdi and C. opilio

Table 6. Commercial harvesting engagement PCFA results (2000 – 2019)

	Eigenvalues				Factor Loadings					
YEAR	1	2	3	4	Ex-vessel value from vessel owners	Pounds Landed by vessel owners	Total # fishing vessels	Total #of unique vessel owners	% varience explained	Armor's Theta
2000	3.99	0.01	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2001	3.99	0.01	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2002	3.99	0.01	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2003	3.99	0.01	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2004	3.99	0.01	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2005	3.98	0.02	0	0	1.00	1.00	1.00	1.00	1.00	1.00
2006	3.93	0.07	0	0	0.99	0.99	0.99	0.99	0.98	0.99
2007	3.90	0.10	0	0	0.99	0.99	0.99	0.99	0.98	0.99
2008	3.94	0.06	0	0	0.99	0.99	0.99	0.99	0.99	1.00
2009	3.93	0.07	0	0	0.99	0.99	0.99	0.99	0.98	0.99
2010	3.91	0.09	0	0	0.99	0.99	0.99	0.99	0.98	0.99
2011	3.90	0.10	0	0	0.99	0.99	0.98	0.99	0.97	0.99
2012	3.88	0.12	0	0	0.99	0.98	0.98	0.99	0.97	0.99
2013	3.85	0.14	0	0	0.98	0.98	0.98	0.98	0.96	0.99
2014	3.83	0.17	0	0	0.98	0.98	0.98	0.98	0.96	0.99
2015	3.85	0.15	0	0	0.98	0.98	0.98	0.98	0.96	0.99
2016	3.83	0.17	0	0	0.98	0.98	0.98	0.98	0.96	0.99
2017	3.81	0.19	0	0	0.98	0.98	0.97	0.98	0.95	0.98
2018	3.84	0.15	0	0	0.98	0.98	0.98	0.98	0.96	0.99
2019	3.86	0.14	0	0	0.98	0.98	0.98	0.98	0.96	0.99

Commercial Harvesting Engagement

Table 7. Index scores of communities highly engaged in commercial harvest of Crab for at least 1 year 2000 – 2019.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Anchorage	-0.04	0.01	0.02	0.02	0.02	0.11	0.15	0.75	0.83	0.61	0.93	0.82	0.92	1.13	1.16	1.20	0.65	0.59	0.65	0.47
Kodiak	1.35	1.25	1.10	0.90	0.97	0.82	0.90	0.90	1.08	1.05	0.78	0.77	0.84	0.77	0.74	0.68	0.63	0.62	0.50	0.54
Seattle MSA	5.72	5.76	5.79	5.81	5.80	5.85	5.81	5.72	5.71	5.75	5.71	5.72	5.67	5.61	5.59	5.61	5.71	5.71	5.75	5.78

*Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2000-2019.

The harvesting engagement index is an indicator of the degree of participation in a community relative to the participation of all other communities that harvest FMP crab in Alaska. It is a measure of the presence of commercial crab fishing through residents who own commercial fishing vessels: this includes pounds landed by vessel, revenue, the number of vessel owners, and the total number of owners in a specific community. Table 7 presents the index scores for the communities that emerged as Highly Engaged in harvesting FMP crab (index score above one, which is one standard deviation above the mean of zero) for at least one year (2000-2019). Of the three groupings listed in Table 7, Seattle MSA is the only community grouping emerging as *Highly Engaged* in commercial crab harvesting for all years (2000-2019). The Seattle MSA, which consists of Seattle and surrounding satellites and suburbs, has the highest degree of engagement over time, with consistent index scores well above 5.0 all years from 2000-2019. Anchorage and Kodiak emerged as having historically high engagement scores; however Kodiak's engagement index fell below the threshold of 1.0 in 2009. Anchorage's index scores rose above 1.0 from 2013-2015. Compared to the past five year average, Seattle MSA's score increased in 2018 and again in 2019. Kodiak and Anchorage's scores fell during the same time period (see Figures 11 and 12).

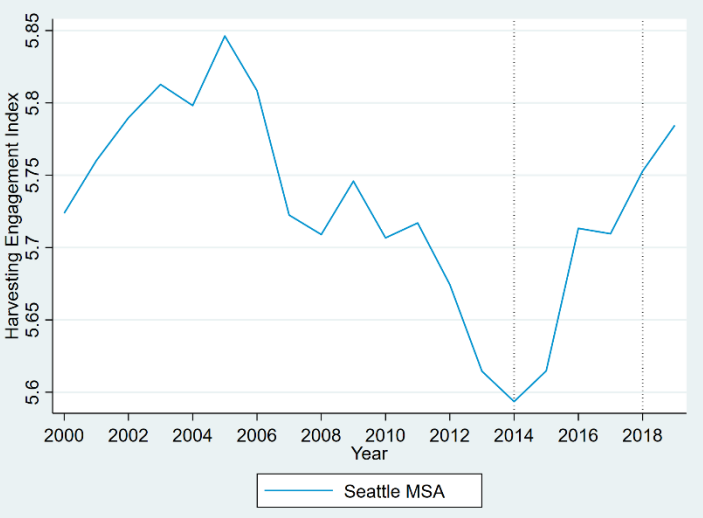


Figure 11. Index scores of communities highly engaged in commercial crab harvest for all years from 2000-2019. Dotted lines indicate the previous 5 year period (2014-2018).

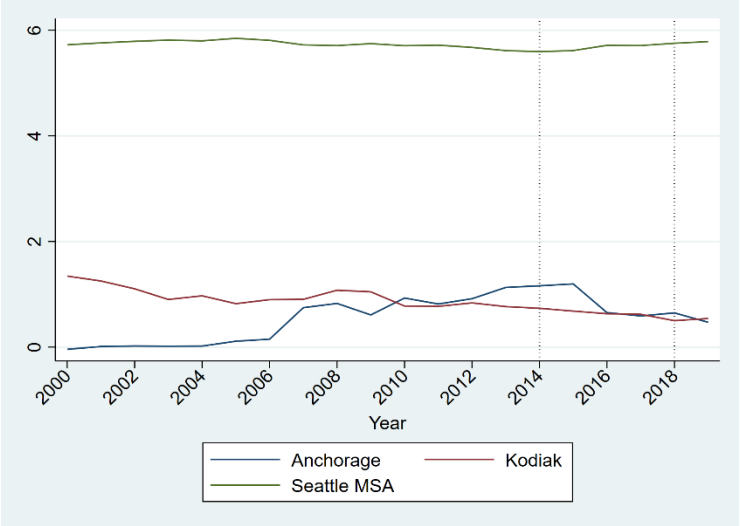


Figure 12. Index scores of communities highly engaged in commercial crab harvesting for at least 1 year from 2000-2019. Dotted lines indicate the previous 5 year period (2014-2018).

Harvesting Regional Quotient

To examine where some share of fishing revenues enter the local economy, the Regional Quotient (RQ) of commercial harvesting was calculated using vessel owner residency for those vessels participating in North Pacific FMP crab fisheries. This is a new metric, based on residency of vessel owners with vessels that are active in the fisheries. It is assumed that some portion of revenue gained from participation in the FMP crab fisheries is deposited in the local economy through direct or indirect community engagement. This section summarizes where the owners of vessels participating in North Pacific crab fisheries reside, and therefore some share of fishing revenues are expected to enter the local economy. The harvesting RQ is an indicator of the percentage contribution in pounds or revenue from FMP crab from resident vessel owners in a community relative the total (shore-based and at-sea) landings or revenue across all FMP crab fisheries. Figure 13 shows the harvesting RQ for FMP crab fisheries both in pounds and revenue from 2008-2019.

In 2019, the most prominent community grouping for harvesting FMP crab was Seattle MSA, which accounted for about 69% of both the weight and value of FMP crab on average over this time period. Kodiak is the community of residence for the largest percentage of crew for FMP crab fishing vessels between 2006-2018. The percentage of FMP crab crew members from Kodiak averaged 10% across all years considered. The next largest community of residence was Anchorage at an average of 6%, followed by Seattle MSA at 5%.

Presented above is the harvesting RQ for Kodiak to provide context for one highly engaged community (see Figure 14).

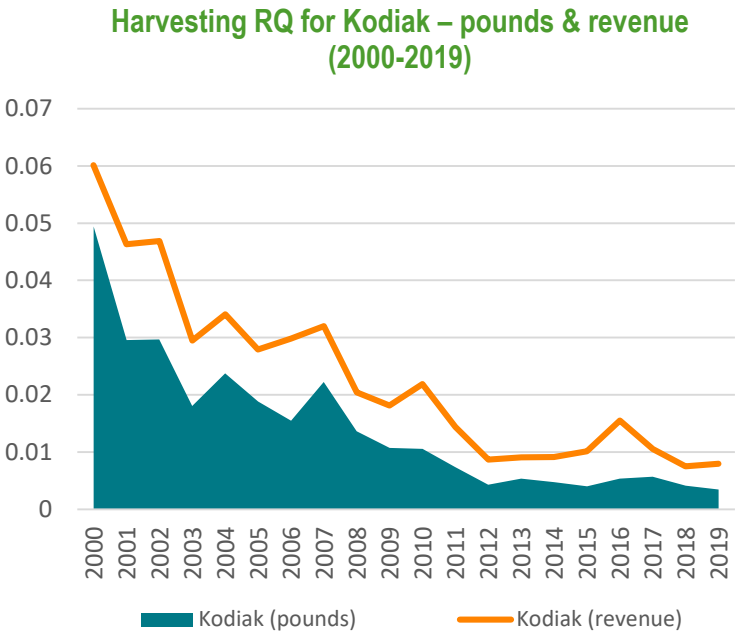


Figure 14. Harvesting regional quotient of pounds and revenue for Kodiak from 2000-2019.

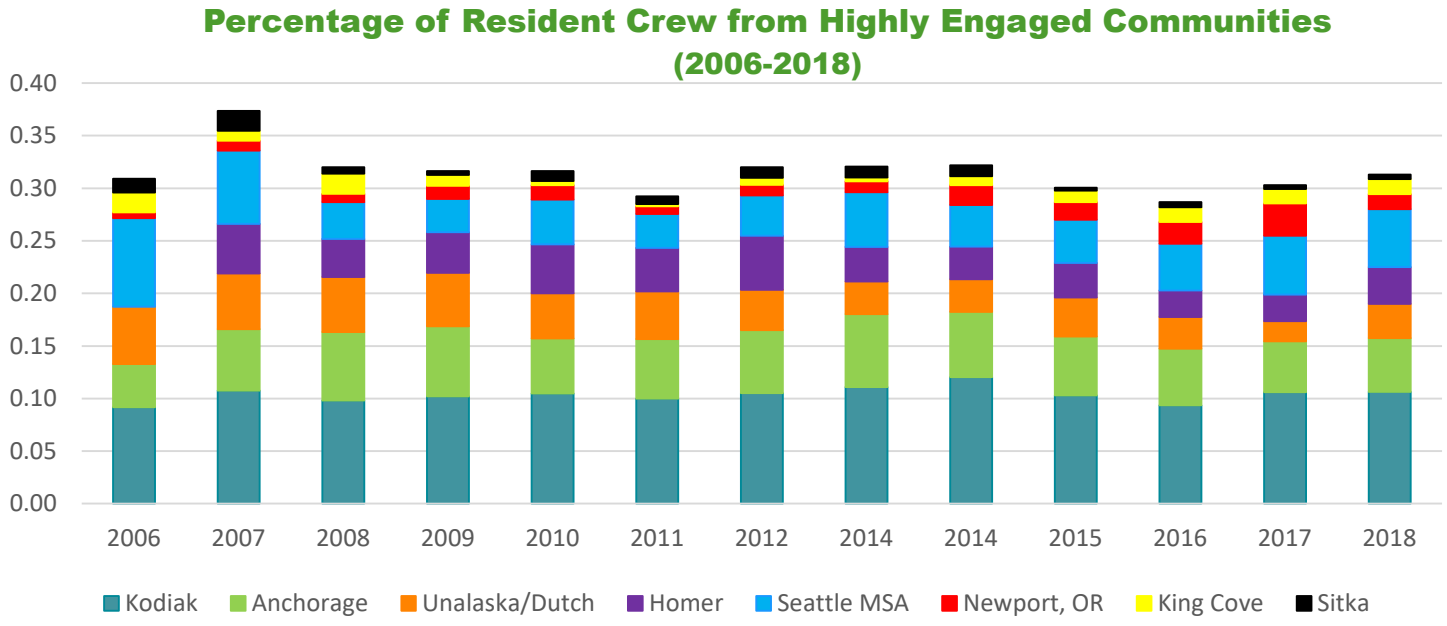


Figure 13. The percentage of crew by residence for top communities participating in FMP crab harvest. 2006-2018

Commercial Processing Engagement

The results of the commercial processing engagement PCFA analyses are shown in Table 8 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 8, each PCFA provides an index score for each of the communities included in the analyses. These index scores are presented in Table 9 for the six communities or groupings that were highly engaged (index score above one, which is one standard deviation above the mean of zero) for at least one year from 2000-2019. Cells indicating high engagement are shaded in Table 9. The index is an indicator of the degree of participation in a community relative to the participation of other communities.

Table 8 - Commercial crab processing engagement PCFA results

	Eigenvalues				Factor Loadings					
YEAR	1	2	3	4	Ex-vessel value	Pounds landed in community	Number vessels delivering	Number of Processors	% variance explained	Armor's Theta
2000	3.47	0.51	0.02	0.01	0.97	0.98	0.99	0.76	0.87	0.95
2001	3.28	0.67	0.04	0.02	0.96	0.97	0.99	0.66	0.82	0.93
2002	3.39	0.55	0.03	0.02	0.95	0.97	0.99	0.76	0.85	0.94
2003	3.51	0.46	0.02	0.01	0.97	0.98	0.99	0.80	0.88	0.95
2004	3.58	0.39	0.03	0.01	0.97	0.98	0.99	0.84	0.89	0.96
2005	3.52	0.42	0.05	0.01	0.96	0.98	0.98	0.82	0.88	0.95
2006	3.67	0.20	0.11	0.02	0.97	0.98	0.96	0.92	0.92	0.97
2007	3.55	0.41	0.03	0.01	0.94	0.97	0.98	0.87	0.89	0.96
2008	3.56	0.36	0.07	0.01	0.95	0.98	0.98	0.86	0.89	0.96
2009	3.71	0.21	0.06	0.02	0.97	0.98	0.98	0.93	0.93	0.97
2010	3.57	0.35	0.06	0.02	0.94	0.97	0.98	0.89	0.89	0.96
2011	3.74	0.17	0.08	0.01	0.97	0.98	0.97	0.94	0.94	0.98
2012	3.74	0.22	0.03	0.01	0.97	0.98	0.99	0.93	0.93	0.98
2013	3.60	0.34	0.04	0.01	0.97	0.96	0.98	0.89	0.90	0.96
2014	3.55	0.39	0.05	0.01	0.95	0.96	0.97	0.88	0.89	0.96
2015	3.66	0.31	0.02	0.01	0.95	0.97	0.98	0.93	0.92	0.97
2016	3.76	0.18	0.04	0.01	0.97	0.98	0.96	0.97	0.94	0.98
2017	3.60	0.30	0.09	0.02	0.94	0.97	0.94	0.94	0.90	0.96
2018	3.54	0.38	0.07	0.01	0.94	0.96	0.95	0.92	0.89	0.96
2019	3.76	0.16	0.07	0.01	0.97	0.98	0.96	0.96	0.94	0.98

Commercial Processing Engagement

Table 9. Index scores of communities highly engaged in processing of Crab 2008 – 2019.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Akutan	0.76	0.50	0.51	0.53	0.68	0.59	1.04	1.07	1.31	0.82	1.07	1.60	1.90	1.65	1.84	2.43	2.06	1.99	1.97	1.87
At Sea	3.60	3.17	3.15	3.06	3.41	2.69	2.48	3.02	0.94	2.34	2.51	2.09	1.75	1.19	1.06	1.08	0.11	0.06	0.03	0.12
Unalaska/ Dutch Har.	4.17	4.44	4.41	4.59	4.39	4.79	4.65	4.63	4.42	4.09	4.06	3.90	3.78	3.91	4.01	4.01	4.26	4.39	4.33	4.12
King Cove	0.56	0.42	0.56	0.70	0.64	0.99	1.06	0.57	0.79	0.75	0.87	0.62	0.59	0.65	0.68	0.81	1.03	0.76	0.69	0.66
Nome	0.58	0.84	0.82	0.77	0.42	0.54	0.50	0.91	0.61	0.63	0.87	0.74	0.81	1.12	1.30	1.06	0.76	1.12	1.41	0.60
Saint Paul	0.79	1.22	1.34	0.94	0.89	1.10	1.48	0.02	3.05	2.92	2.53	3.00	3.19	3.31	3.08	2.70	2.96	2.72	2.76	3.40

*Shaded cells are index scores above one (which is one standard deviation above the mean of zero) for at least one year from 2008-2019.

Of the six communities found in Table 9, only Unalaska/Dutch Harbor was highly engaged in commercial crab processing for all years from 2000-2019. Other communities were highly engaged for some portion of the time period, including Akutan, King Cove, Nome, and Saint Paul. The At Sea processing sector scored as highly engaged fairly consistently until 2016; however this analysis focuses on the sustained participation of geographic communities. Unalaska/Dutch Harbor has consistently held the highest engagement scores over time, followed by Saint Paul, particularly since 2008. Processing engagement scores in Akutan appears to have picked up in 2010, reaching a peak in 2015. Although well below the threshold of 1.0. for 2000 through 2012, Nome's recent index scores have steadily increased over time with a drop on 2016 and again in 2019. Index scores of communities highly engaged for at least one year from 2000-2019 are shown in Figure 14. Those communities highly engaged in all years during the same time period are shown in Figure 15.

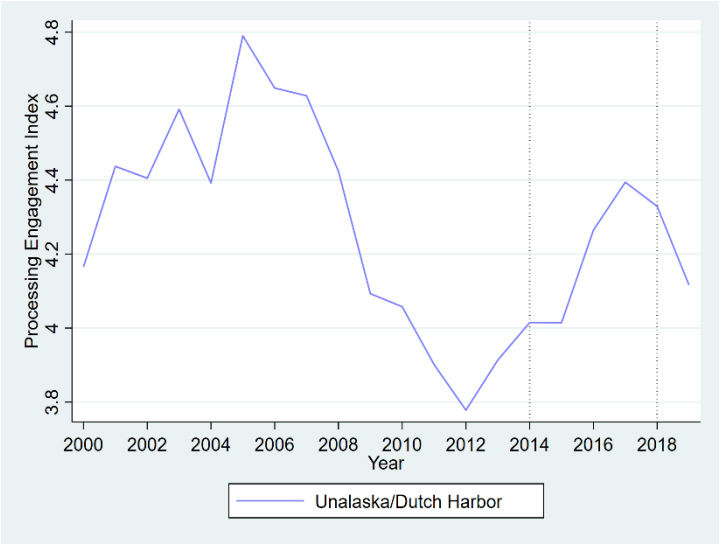


Figure 14. Index scores of communities highly engaged in commercial crab processing for at all years from 2000-2019. Dotted lines indicate the previous 5 year period (2014-2018).

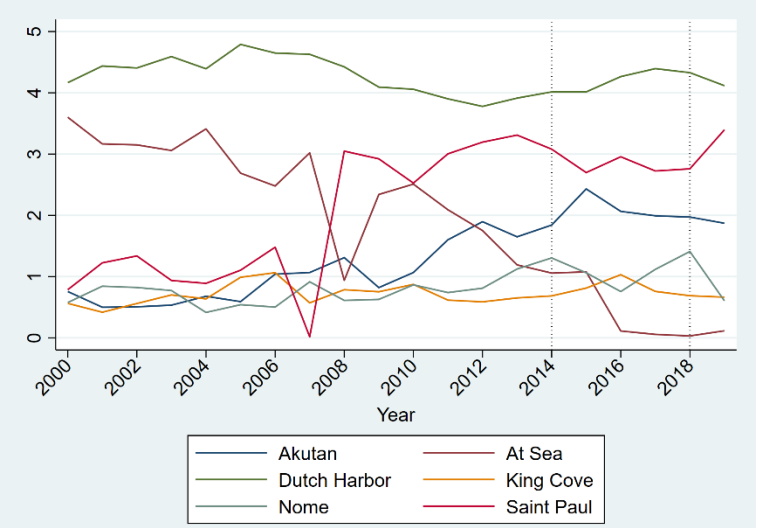
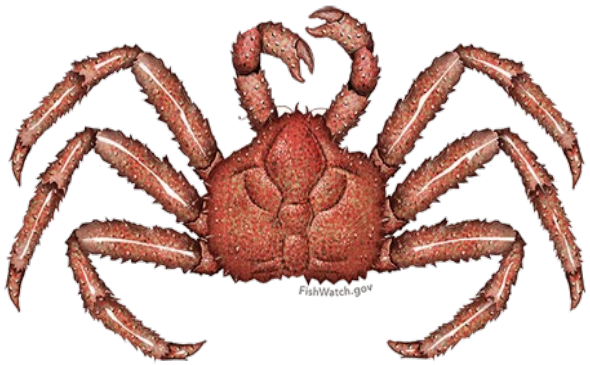


Figure 15. Index scores of communities highly engaged in commercial crab processing for at least one year from 2000-2019. Dotted lines indicate the previous 5 year period (2014-2018).



Alaska Red King Crab
Paralithodes camtschaticus

Processing Regional Quotient

Another measure of community participation in commercial FMP crab fisheries is its processing regional quotient (RQ), defined as the share of commercial landings or revenues within a community out of the total North Pacific FMP crab landings or revenues. The RQ is an indicator of the percentage contribution (in pounds or revenue) landed in that community relative to the total landings (including shore-based and at-sea) from all communities. Figures 16 and 17 show the FMP crab processing RQ both in pounds and revenue from 2000-2019.

The most prominent community for processing FMP crab in terms of landing weight and revenue has been Unalaska/Dutch Harbor, which was also the only community highly engaged in FMP crab for all years in the analysis. In 2019, Unalaska/Dutch Harbor accounted for about 40% of weight landed and 44% of processing revenue for FMP crab retained in the North Pacific. This shows a slight decrease compared to the previous five year average of 41% and 47% respectively. Saint Paul was the next highest in both weight (34%) and revenue (27%). This marks an increase from the previous five year average (28% and 20% respectively). Akutan accounted for 14% of weight and 16% of processing revenue, a decrease compared to the previous five year average of 17% of processing weight, and 19% processing value.

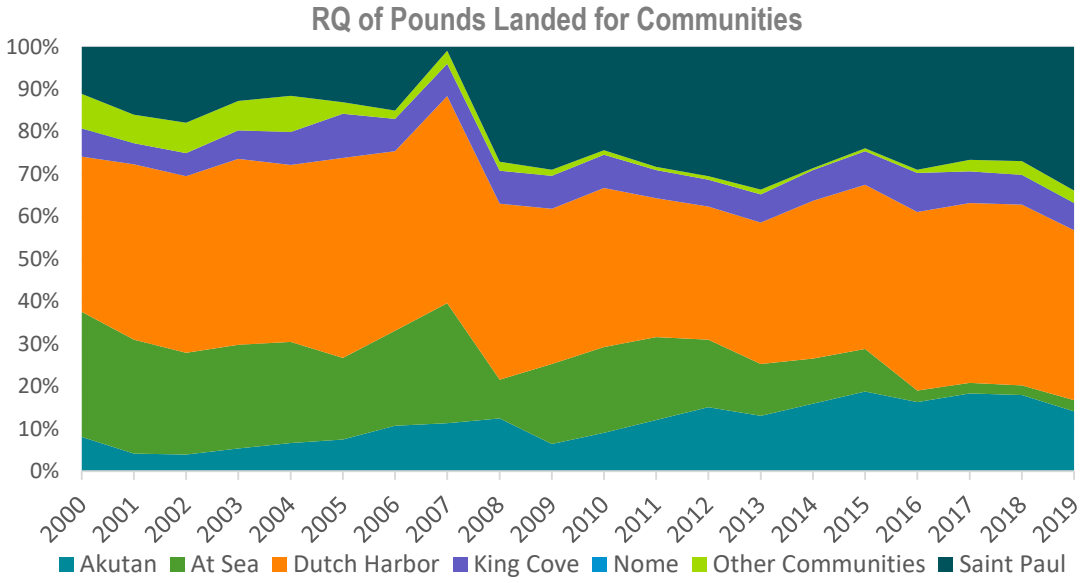


Figure 16. Processing regional quotient of pounds for communities highly engaged in commercial processing for one year from 2000-2019

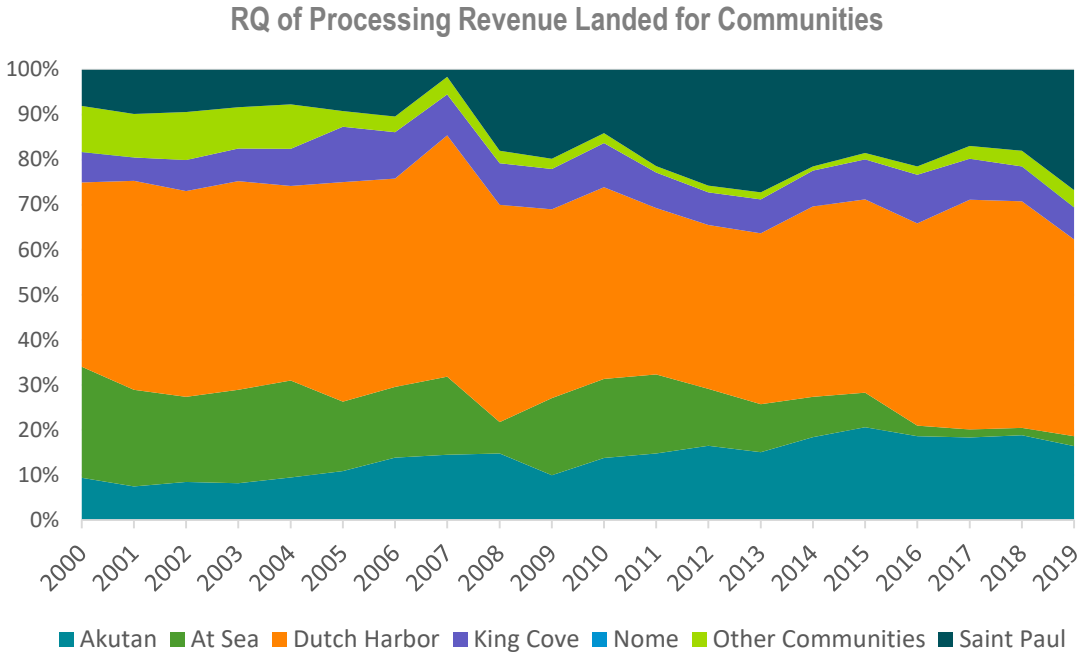


Figure 17. Processing regional quotient of landing revenue for communities highly engaged in commercial crab processing for one year from 2000-2019

Crab Fishery Taxes

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

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.

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 those municipalities where fishery resources are landed.

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.

Figure 18 presents the top nine dependent crab communities (either harvesting or processing) receiving any kind of fishery tax revenue from 2008-2019. 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, but has slightly increased since 2019. 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, and stopped collecting a municipal raw fish tax. Saint Paul did not report a raw fish tax in 2013 or 2015, but likely collected, which explains declines for those years. Shaktoolik generated $200 in fishery related taxes in 2014; otherwise it did not receive any fishery related income.

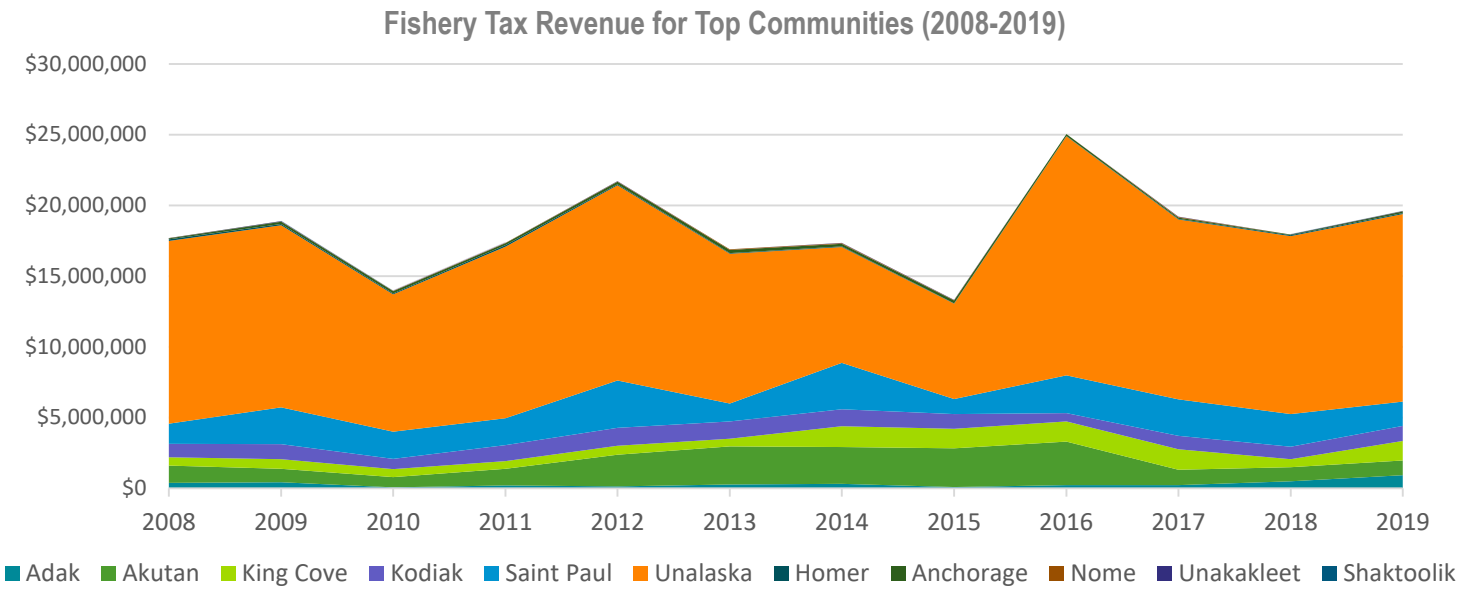


Figure 18. Fishery tax revenue for select communities from 2008-2019.

Crab School Enrollment in Crab Communities

Ensuring the productivity and sustainability of fishing communities is a core mandate of Federal fisheries management. One indicator to evaluate community vitality and sustainability is K-12 public school enrollment. Declining enrollment trends, and particularly school closures, signal that the viability of fishing communities is threatened as communities that lack public education typically experience significant population outmigration and a decline of public services. Figure 19 presents annual K-12 school enrollment from 2008-2019 for each of the top nine communities engaged in FMP crab fisheries in the North Pacific (either harvesting or processing). School enrollment for Anchorage is presented separately in Figure 20, given the difference in scale between Anchorage and the other nine communities. Overall, there has been a decline of about 1,000 students between 2008-2019, about 17% of total enrollment for fishing communities in the region. Communities with declining enrollment were: Saint Paul (-35.2%), Kodiak (-13.8%), Homer (-32.9%), and King Cove (-18.0%). Many of these communities are small and remote, where the loss of a school signifies a significant social disruption. Schools provide education as well as a venue for gathering, community events, social interactions, knowledge sharing, and public services such as internet and library access. In comparison, Kodiak and Homer are larger school districts for Alaska, and worth monitoring closely given the steep drops in enrollment. Saint George Island school closed in 2018, leaving only Saint Paul school in the Pribilofs. Not all districts have declined. Unalaska school district has experienced a 6.5% growth. Adak is up 28.6%, Akutan 53.8%, and Shaktoolik 75.6%. It should be noted, however, that these schools have very low enrollment numbers (14-80 students) and so an increase of only a few students will drastically increase growth percentages.

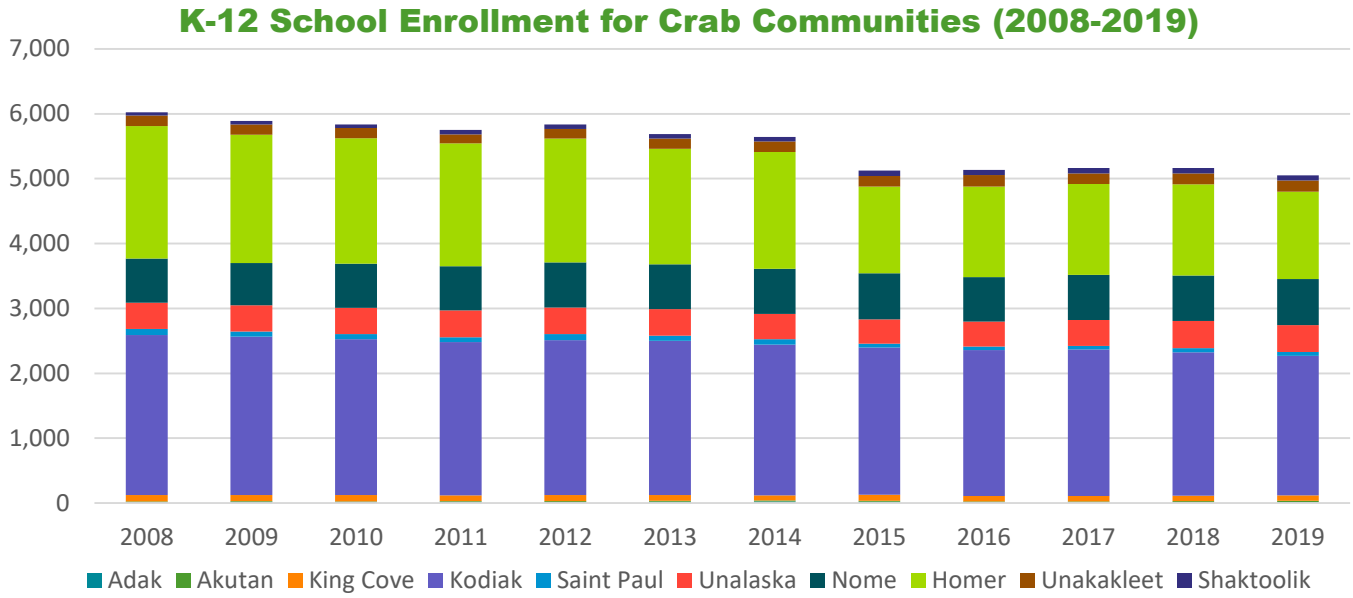


Figure 19. K-12 public school enrollment for top nine reliant crab communities combined (either harvesting or processing) from 2008-2019.

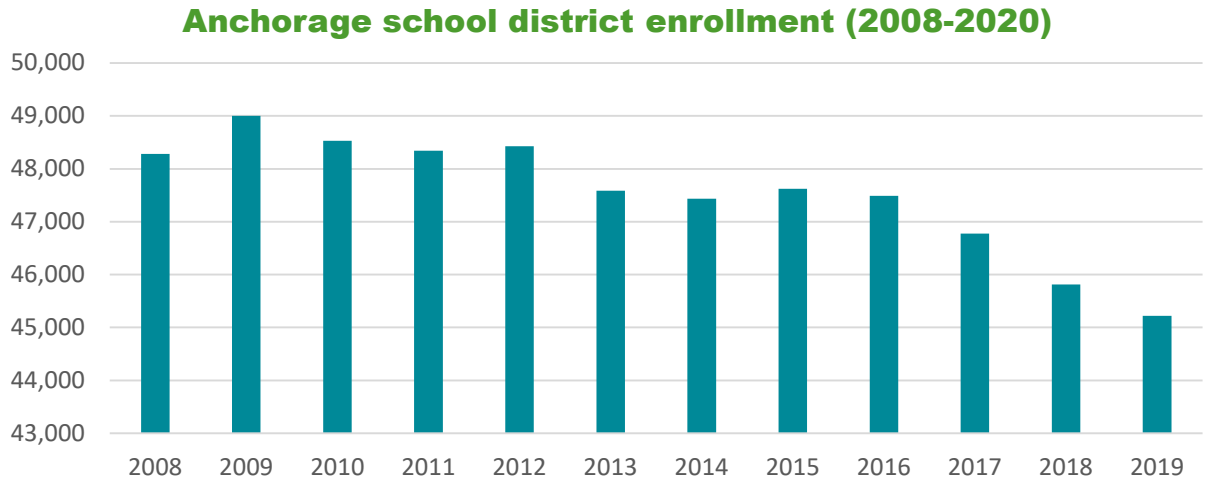


Figure 20. Anchorage school district enrollment numbers from 2008-2020.

Participation Summary for FMP crab fisheries

Based on the community engagement index scores for both commercial crab processing and harvesting engagement, communities were categorized into low (index scores below the mean of 0), medium (index scores between 0 and 0.5), medium-high (index scores between 0.50001 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 10. There are 24 communities or community groupings in Table 10 that had medium, medium-high, or high engagement in either harvesting or processing engagement and nine communities were highly engaged in one aspect of commercial fisheries in any year from 2008-2019. There were six communities that were highly engaged in processing engagement and six that were highly engaged in harvesting engagement for at least one year from 2008-2019.

Table 10. Number of years by processing and harvesting engagement level for all commercial crab fisheries. Alaska communities not listed had low FMP crab processing and harvesting engagement in all years (2008-2019). Shading indicates High engagement (blue).

	Harvesting Engagement				Processing Engagement			
Community	Low	Medium	Medium-High	High	Low	Medium	Medium-High	High
Adak	20	0	0	0	11	9	0	0
Akutan	20	0	0	0	0	1	6	13
Anchorage	1	7	9	3	20	0	0	0
At Sea	20	0	0	0	0	4	1	15
Dutch Harbor	20	0	0	0	0	0	0	20
Homer	7	13	0	0	20	0	0	0
Hood River County OR	19	1	0	0	20	0	0	0
King Cove	20	0	0	0	0	1	17	2
Kodiak	0	0	15	5	2	16	2	0
Lincoln County OR	0	20	0	0	20	0	0	0
Nome	5	5	10	0	0	1	14	5
Other OR	2	18	0	0	20	0	0	0
Other WA	0	19	1	0	20	0	0	0
Saint Paul	20	0	0	0	0	1	3	16
Seattle MSA	0	0	0	20	20	0	0	0
Shaktoolik	14	6	0	0	20	0	0	0
Unalakleet	11	9	0	0	18	2	0	0

Community Sketches
for FMP Crab and Groundfish Fisheries

Ten communities were identified as having sustained and substantial engagement in the North Pacific FMP groundfish and crab fisheries (in the harvesting or processing sector, or both) for at least one year from 2008-2019: Akutan, Homer, Kodiak Island, Nome, Petersburg, the Seattle MSA, Sitka, Seward, St. Paul, and Unalaska. Many of these communities emerged as Highly Engaged in all years, while others more recently became Highly Engaged. Detailed sketches provide an overview of how these communities differ geographically, historically, culturally, economically, and demographically. The decision was made to include communities with High engagement for at least one year to track participation over time. Because Seattle MSA and Anchorage are major cities engaged in multiple industries and the vastly different context in which fisheries operate, the decision as made to conduct separate analyses at a later date.

Presented here are detailed sketches for each community that provide social and economic contextual details to increase understanding and inform management processes regarding fishing communities relying on groundfish and crab fisheries. The purpose of the Community Sketches is to: 1) present a brief but detailed snapshot of the communities with sustained and substantial engagement in crab and 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 federally managed fisheries and broader community well being.

The sketches will be updated yearly and additional communities of interest may be developed and presented according to Council feedback and needs. Given the aim of the Community Sketches, it was necessary to modify the constraints of the information slightly for certain communities. The engagement indices identified Kodiak City as one of the substantially engaged communities; however the choice was made to include the greater Kodiak Island in the community sketch in order to give attention to the close economic, social, and governance linkages among Kodiak Island communities.

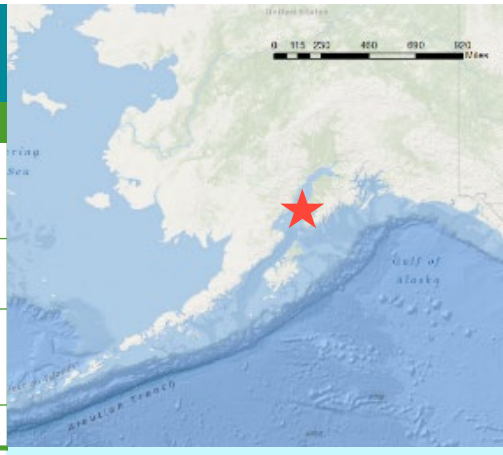
Finally, confidentiality concerns required that Akutan's and King Cove's fishing engagement data be aggregated with neighboring communities in order to avoid disclosure of confidential information. For that reason, the Akutan and King Cove sketches provides information on each community, but presents aggregated fishing data from Akutan, King Cove, and Sand Point communities.

NOAA FISHERIES

Alaska Fisheries Science Center

Economic and Social Sciences Research Program

Community Sketch HOMER



Demographics (self-identified, 2018 ACS)

HOMER

Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
5,003	53.0% female 47.0% male	78.0%	$59,185	86.3%	5.0%	0.4%
Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
8.9%	2,825	16.5%	94.7%	1.4%	0%	6.2%

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. Homer area has been home to the Kenaitze tribe for millennia. 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. Homer was not included under the Alaska Native Claims Settlement Act (ANCSA).

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med.
Poverty:	Low
Population Composition:	Low
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	Med.
Recreational Fishing Engagement:	High
Recreational Fishing Reliance:	Med-High

Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%

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

**Bold indicates high hazard potential*

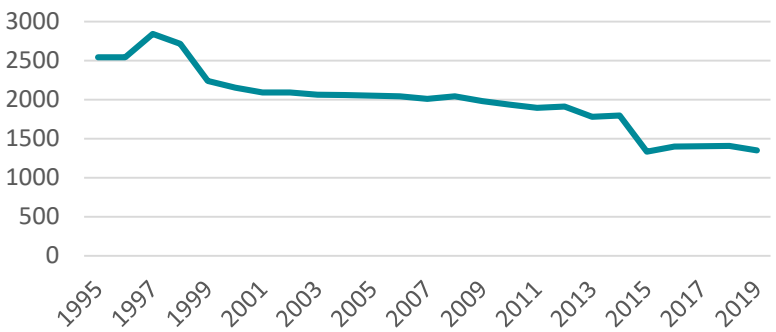
Native Associations & Corporations:

- Aleut Ninilchik 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. Overall enrollment has decreased 47% since 1995.[5] This is noteworthy given that this district is not small by Alaskan standards and is rapidly shrinking.

Homer School Enrollment 1995-2019

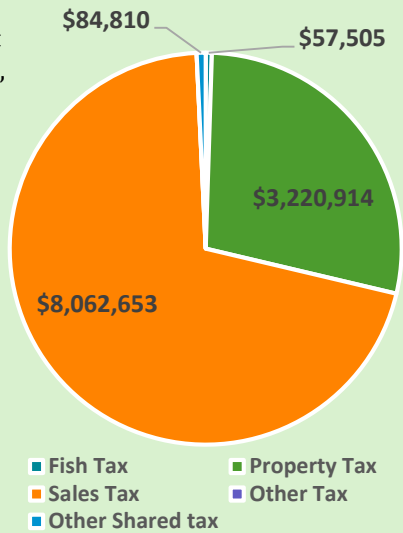


Current Economy

Important economic drivers in Homer include commercial fishing ecotourism, and sport hunting and fishing.[1] In 2018, Homer generated $57,505 in fishery related taxes. An estimated 50 residents are employees of shore-side processing plants.[3]

In 2017, per capita income in Homer was estimated to be $32,595, and the median household income was estimated to be $59,185. This represents a significant increase reported in 2000 ($21,823 and $42,823, respectively).[1] During the same year, unemployment was estimated at 3.7%.[2] 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.

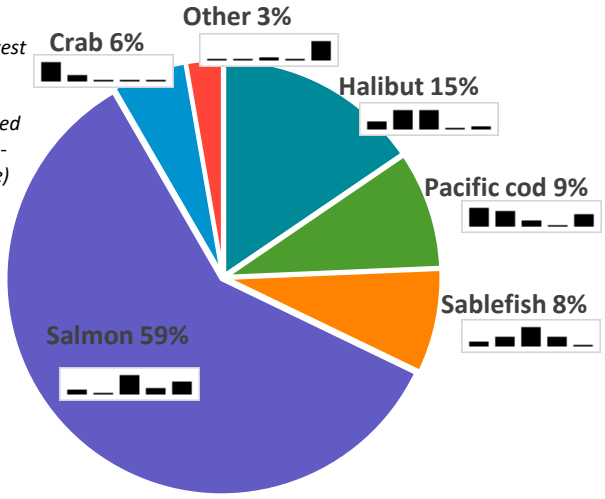
Homer 2019 Tax Revenue



Share of harvest revenue landed by species

Homer 2015-2019 average

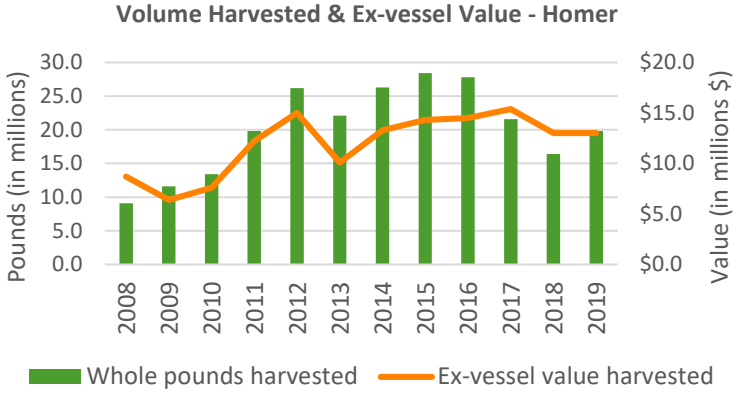
Share of harvest revenue by species for resident-owned vessels (2015-2019 average)

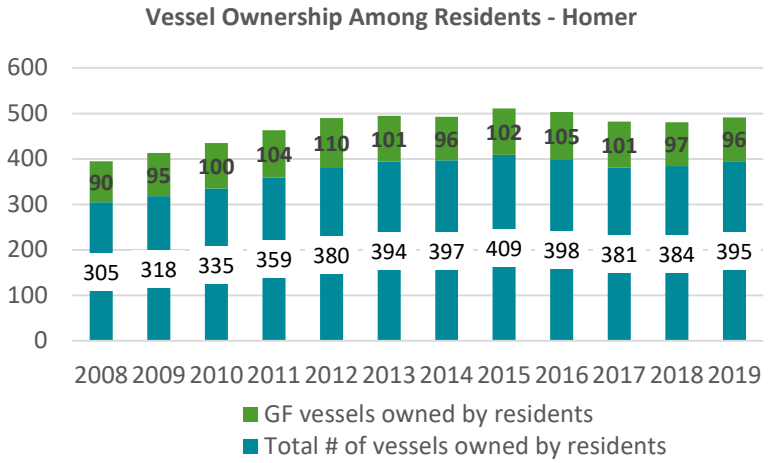


Bar charts represent 2015 to 2019 ex-vessel values (2019$) by species landed in the community. The scale of the y-axis is specific to the species.

Groundfish Harvesting Engagement *HIGH*

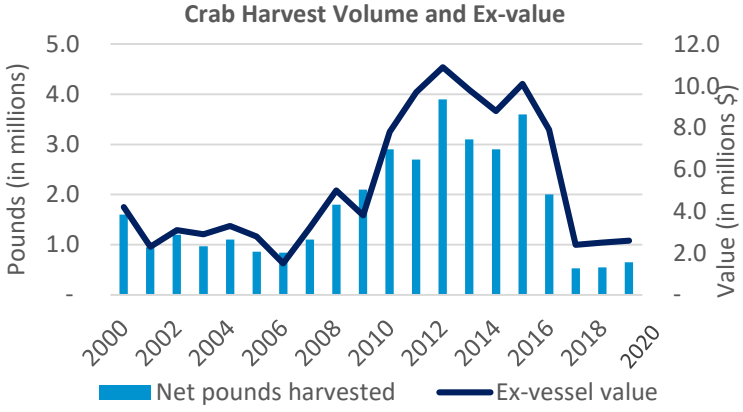
Homer fishers are diversified in commercial fisheries, including salmon, halibut, crab, groundfish, herring, and "other shellfish." Salmon remains the most abundant and valuable species; however a wide range of fishing vessels use Homer as a base of fishing operations.[1] On average from 2015-2019, the majority of harvest revenue came comes first from salmon (59%), then halibut (15%). Fishing vessels owned by Homer residents increased from 306 vessels (2008) to 395 vessels (2019), an increase of 30%, although in the last five years the number has dropped slightly (down 14 vessels or 4%). The volume of groundfish harvested has steadily declined in the last five years, with a slight uptake in 2019. Compared to the previous five year average, the volume harvested decreased by 3 million pounds or 13%, from 28.4 million (2015) to 19.8 million pounds (2019). Meanwhile, the ex-vessel value increased by $1 million in the same time period, from $14.3 to $13 million. Ownership of groundfish vessels among Homer residents has increased by about 7% since 2008, reaching a peak of 110 vessels in 2012. In the last five years, the number of groundfish vessels has decreased 6% from 102 (2015) to 96 (2019).

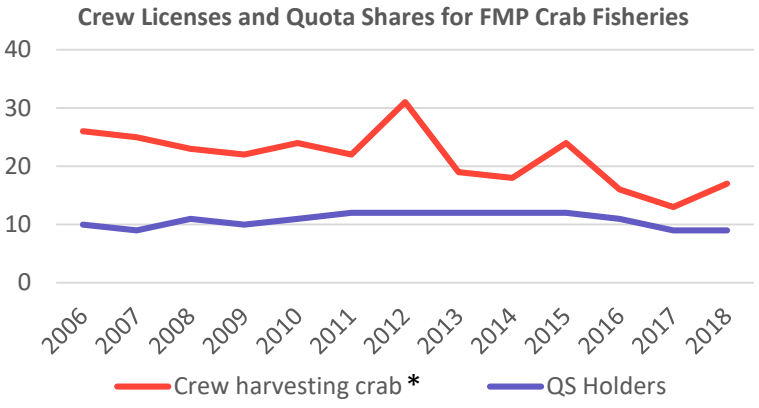




Crab Harvesting Engagement *MED*

Homer's resident vessels harvesting BSAI crab fisheries saw a dramatic decline in both harvest volume and associated value beginning in 2016 when harvest decreased 1.6 million pounds (44%) and $2.2 million (22%). Again in 2017, harvests fell by 1.5 million pounds (down 277%) and $5.5 million in associated value (224%). In 2019, Homer's resident vessels harvested 6.5 million pounds with a value of $2.6 million. Vessels registered in Homer fell by 50% in 2016 (from 6 to 3 vessels), but have remained steady since. During the same time period, permits have also fallen by 33%. The number of crew residing in Homer who engage in FMP crab fisheries has declined by from 26 in 2006 to 17 in 2018 (down 35%).

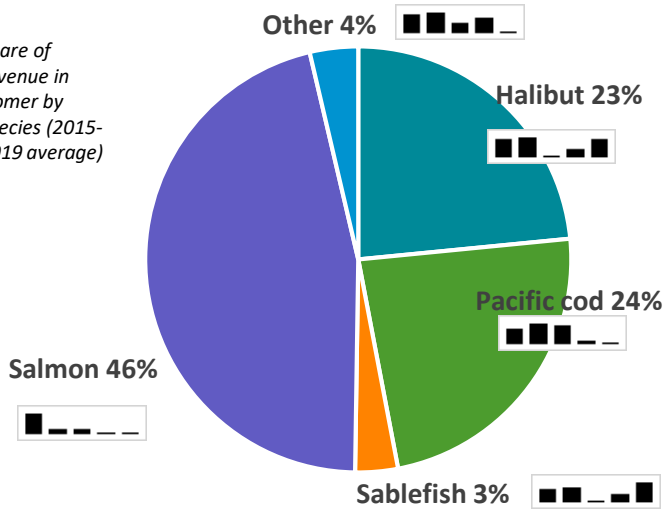




* Combines counts of crew license holders and CFEC permits on crab vessels

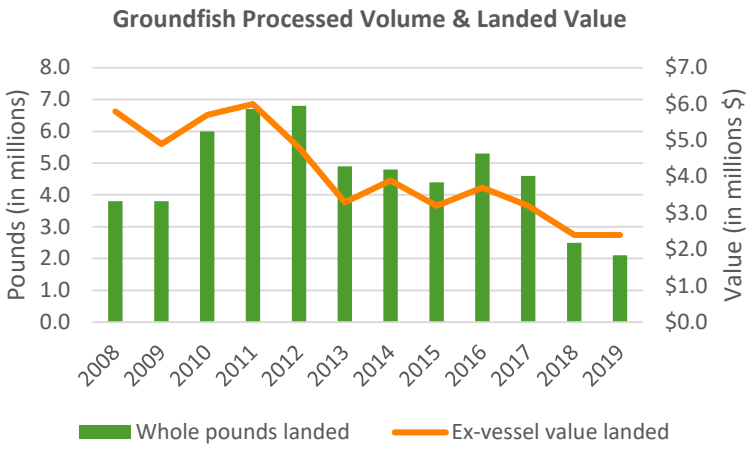
GF Processing Engagement — HIGH

Share of revenue in Homer by species (2015-2019 average)



Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

Although salmon dominates the processing sector, accounting for 46% of landed value in 2019, Homer is one of the leading groundfish processing communities in Alaska. In 2019, Homer's processing sector processed 2.1 million pounds of groundfish with an associated value of $2.4 million. Compared to the previous five year average, both landings volume and value showed a decline of 1.6 million pounds (down 43%) and $0.56 million (down19%). Pacific cod showed the largest decline, dropping 55% compared to the five year average volume and 30% in associated value. Although only accounting for 3% of processing share, sablefish showed increases in volume (up 28%) during the same time period, but a decline in value (down 10%). In 2019, groundfish comprised 25% of total volume processed in Homer, a steady decline since 2016. Within the past five years, groundfish have accounted for an average of 12.5% of processing revenue.[6] Two processing facilities were closed in 2019, leaving 10 remaining.



Crab Processing Engagement — LOW

There is not a substantial amount of crab processing activity in Homer to report.

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] Homer is in House District 31, Senate District P.

Citations:

[1] 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 2008-2019. Retr.' 10/15/2020 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'10/20/2020 https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/AlaskaTaxableDatabase.aspx

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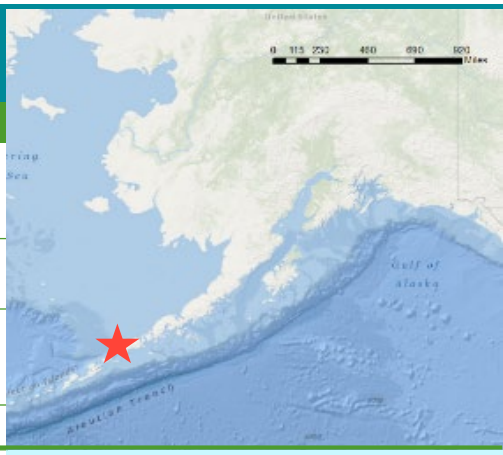
Community Sketch

AKUTAN



Demographics (self-identified, 2018 ACS)

AKUTAN

Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
1052	31.2% female 68.8% male	97.5%	$26,750	15.1%	16.2%	16.2%
Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
19.0%	77	5.5%	76.9%	35.1%	1.7%	18.2%

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 14m^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. In 1878 Akutan became a fur storage and trading port for the Western Fur & Trading Company and the Pacific Whaling Company built a whale processing station across the bay from Akutan in 1912.During 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 2015-2019 ACS data, the average household size in 2019 was 2.81 persons (an increase from 2.25 in 2010), and there were a total of 77 housing units. Of the households surveyed in 2019, 73.8% were owner-occupied (30% in 2010), 26.2% were renter occupied (61% in 2010), and 15.6% were vacant (9% in 2010). Group quarters with the processing plant housed 937 people in 2010, up from 638 in 2000. There are approximately 100 year round residents.

Social Indicators for Fishing Communities[1]

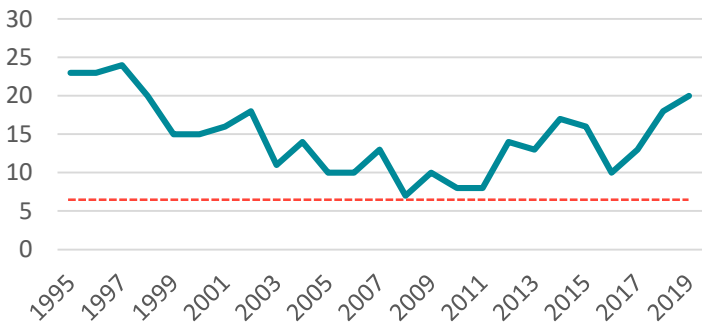
Labor Force:	Low
Housing Characteristics:	High
Poverty:	Med.
Population Composition:	High
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	High
Recreational Fishing Engagement:	Low
Recreational Fishing Reliance:	Low

Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.
Coastal hazards: Erosion threat to community's water supply. Tsunamis, **EARTHQUAKES**, storm surges, **COASTAL EROSION**, coastal flooding, riverine erosion, and **VOLCANOES.**
Native Associations & Corporations: Akutan Corporation; Aleut Corporation; Aleutian Pribilof Islands Association

Infrastructure & Transportation

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 increased to 20 students in 2019, however the school has hovered just above the state closure threshold for several years.[4]

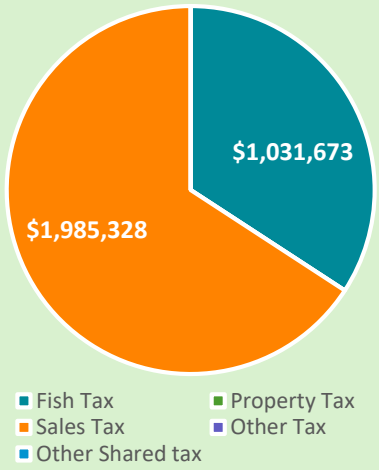
Akutan School Enrollment 1995-2019



Current Economy

Akutan's economy is primarily based on commercial fishing and subsistence harvest. Subsistence is vitally important to the community as a source of food and cultural identity. The main employer is the processing facility.

Akutan 2019 Tax Revenue



The 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 2017, the median household income was estimated to be $26,750 and per capital income $26,978, compared to $34,375 and $20,099 in 2010 respectively.[2] The unemployment rate was an estimated 0.5% in 2017, down from 2.7% in 2010. In 2019, fish related tax brought in $1.3 million (34%) of the total municipal tax revenue, funding needed services for the community.[5]

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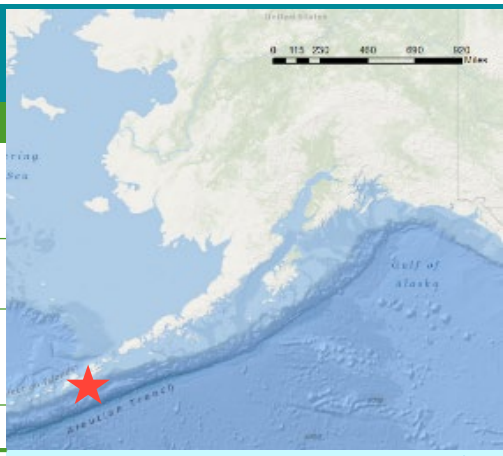
Community Sketch — King Cove



Demographics (self-identified, 2018 ACS)

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
King Cove	1,147	40.5% female 59.5% male	82.1%	$73,229	11.1%	56.2%	2.4%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	13.6%	370	9.9%	85.8%	20%	0%	6.5%

Area Description

King Cove (also known as Agdaaĝux̂ in Aleut**)** is located on the south side of the Alaska Peninsula, 18 miles southeast of Cold Bay and 625 miles southwest of Anchorage. It is located in the midst of a storm corridor, which often brings extreme fog and high winds. King Cove was founded in 1911 when a salmon cannery was built by Pacific American Fisheries. The first settlers were Scandinavian, European, and Unangan fishermen. Year round residents are largely Aleutic, with a large influx of temporary workers in March and again in June/July, driven by seafood processing employment. The city was founded om 1911 around the Pacific American Fisheries salmon cannery which operated until 1976 when it was destroyed by fire. In 1949, the city was incorporated. King Cove was included under the Alaska Native Claims Settlement Act (ANCSA), and is federally recognized as a Native Village. The estimated per capita income in King Cove in 2019 was $32,761, and the estimated median household income was $73,229, compared to $17,791 and $45,893 in 2000, respectively. The unemployment rate in 2019 was estimated at 3.6%.[1]

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med-High
Poverty:	Med.
Population Composition:	High
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	High
Recreational Fishing Engagement:	Low
Recreational Fishing Reliance:	Low

Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.
Coastal hazards: Erosion threat to community's water supply. Tsunamis, **EARTHQUAKES**, storm surges, **COASTAL EROSION**, coastal flooding, riverine erosion, and **VOLCANOES.**
Native Associations & Corporations: Agdaaĝux̂ Aleutian Pribilof Islands Association

Infrastructure & Transportation

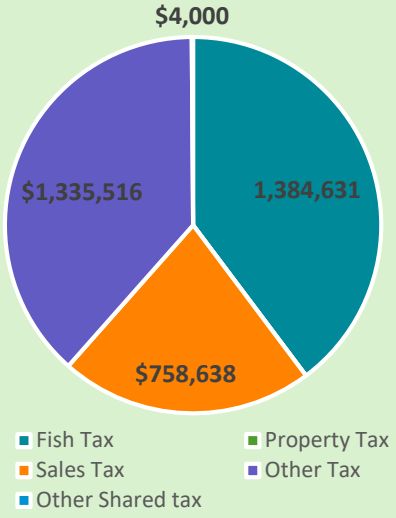
King Cove is accessible only by air and sea. A State-owned 3,360 foot gravel runway is available for flights. The State Ferry operates monthly between May and October, and uses one of three available docks. A deep water dock is also operational. The North Harbor provides moorage for 90 boats, and is ice-free all year. A new harbor and breakwater is under construction by the Corps of Engineers and Aleutians East Borough. Once completed, a new harbor will be operated by the City, and will provide additional moorage for 60′ to 150′ vessels. According to the municipality, all King Cove residents are connected to a water pipeline supplied by Ram Creek. A new water project is near completion. There is one local health clinic. There is one school in King Cove; enrollment has decreased by 44.2% from 1995-2019.[6]

King Cove School Enrollment 1995-2019

Current Economy

King Cove's economy depends almost entirely upon year round fishing and processing. It is home to Peter Pan's largest processing facility, which processes king crab, bairdi and opilio tanner crab, pollock, cod, salmon, halibut and black cod. While this facililty historically canned salmon, in more recent years it has transitioned to whitefish operations. The plant employs around 500 employees year round. Residents continue to participate in subsistence harvest of marine resources.

King Cove 2019 Tax Revenue



King Cove is highly dependent on fisheries-related revenue, and received $1,384,631 (54.6%) in fish related taxes in 2019.[7] Community leaders in AFSC survey reported that a variety of public services are at least partially funded by fisheries-related taxes and fees, including harbor maintenance, the health clinic, roads, the police force and fire protection, the recreation center, social services such as libraries, and general city administration.[2]

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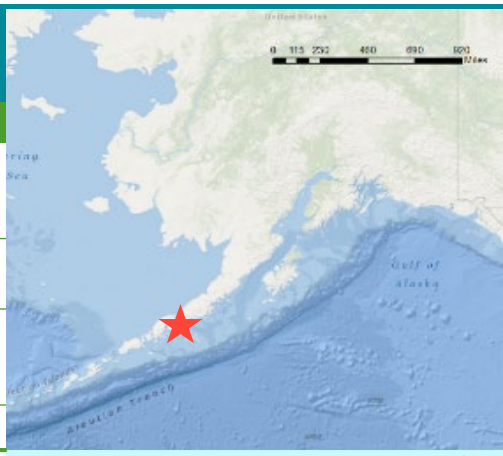
Community Sketch Sand Point



Demographics (self-identified, 2018 ACS)

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Sand Point	1,309	43.1% female 56.9% male	82%	$67,500	15.8%	52.2%	0.8%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	14.3%	497	9.7%	86.1%	14.1%	2.4%	5.6%

Area Description

Sand Point, also known as Qagun Tayagungin, is situated on Popof Island, off the southern coast of the Alaska Peninsula. Prior to the arrival of Europeans, the population of Aleuts in the region is estimated to have ranged between 12,000-20,000 people. Following arrival, the population of Aleuts declined by 80-90% as a result of disease, warfare, malnutrition, and forced labor as sea otter hunters. The settlement of Sand Point was founded in 1898 as a cod fishing outpost and incorporated in 1946. Sand Point is home to one of the largest fishing fleets in the Aleutian Chain. According to the 2015-2019 ACS data, the average household size in 2019 was 2.55 persons (2.54 in 2010), with a total of 497 housing units. Of the households surveyed in 2019, 68.2% were owner-occupied, 31.8% were renter occupied; 14.7% were vacant. Fisheries employs a number of seasonal workers each year. Included under the Alaska Native Claims Settlement Act (ANCSA), Sand Point was has three native tribes: The Qagan Tayagungin Tribe of Sand Point Village, the Native Village of Unga, and Pauloff Harbor Village.

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med-High
Poverty:	Med.
Population Composition:	High
Commercial Fishing Engagement:	Low
Commercial Fishing Reliance:	Low
Recreational Fishing Engagement:	Low
Recreational Fishing Reliance:	Low

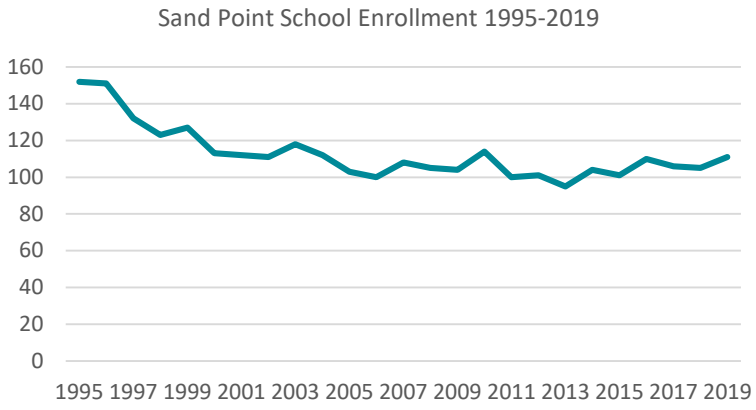
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.

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

Native Associations & Corporations: Qagan Tayagungin Tribe, Unga Tribe, Pauloff Harbor Tribe, Shumagin Corporation, Unga Corp., Sanak Corp.

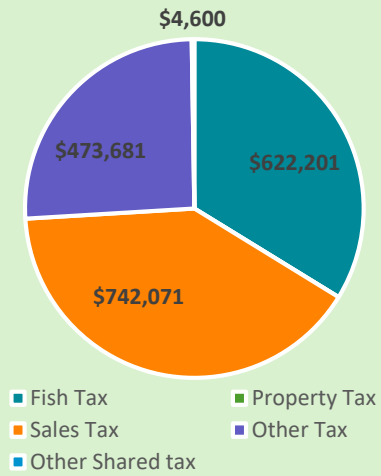
Infrastructure & Transportation

Sand Point has an airport with a 5,200 feet paved runway and daily flights to Anchorage. Marine facilities include a 25-acre boat harbor with four docks, 134 boat slips, a harbormaster office, barge off-loading area, and a 150-ton lift. Regular barge services supply the community. The state ferry operates between Sand Point and Unalaska, Akutan, False Pass, Cold Bay, and King Cove between May and October. Medical services are provided by the Sand Point Community Health Clinic. The Sand Point School provides K-12 education. School enrollment has decreased by 27% since 1995; however enrollment trends have been holding relatively stable since 2016.[4]



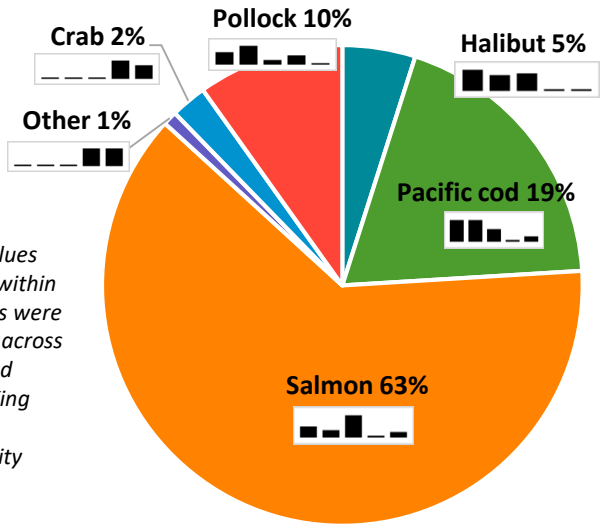
Current Economy

Sand Points' economy is primarily based on commercial fishing and processing, with Trident Seafoods being a top employer. In addition to the seafood industry, local employers in Sand Point include the Aleutians East Borough School District, local government offices, the Shumagin Corporation, Peninsula Airways, and the State of Alaska. In 2019, the median household income was estimated to be $67,500 and per capital income $34,675, compared to $63,750 and $22,610 in 2010 respectively.[2] The unemployment rate was an estimated 4.6% in 2019, down from 5.8% in 2010. In 2019, fish related tax brought in $622,201 (34%) of the total municipal tax revenue, funding needed services for the community. Sand Point relies almost exclusively on fish taxes, sales tax, and other shared taxes from the State of Alaska.



Share of harvest revenue landed by species

Akutan, Sand Point, King Cove combined 2015-2019 average

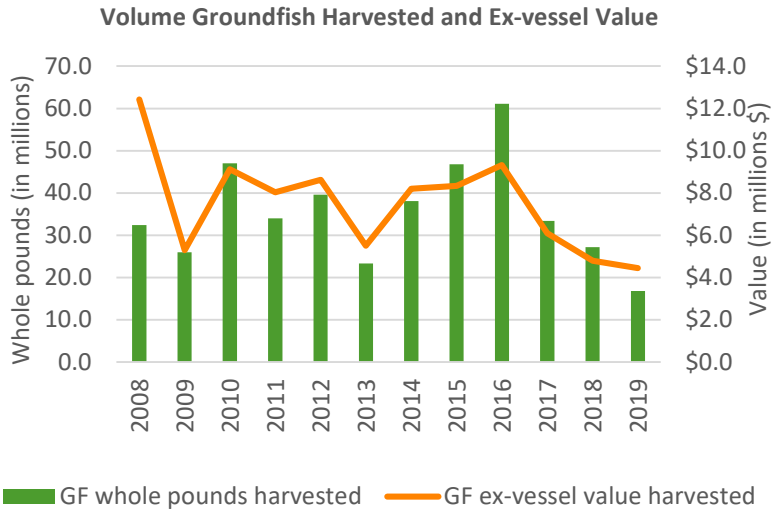


Ex-vessel values of landings within communities were aggregated across Akutan, Sand Point, and King Cove due to confidentiality issues.

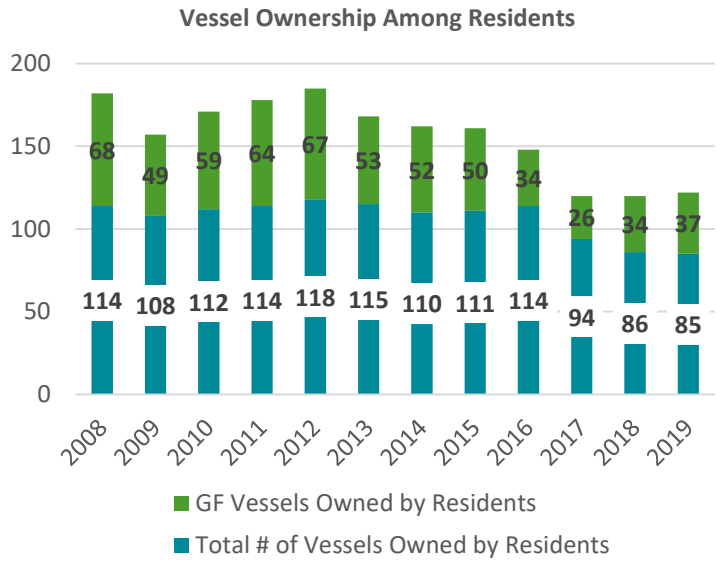
Bar charts represent 2015-2019 ex-vessel values by species landed in community. The scale of the y-axis is specific to the species.

GF Harvesting Engagement — LOW

Due to the small number of participants, some data are considered confidential. For this reason, data were aggregated to include adjacent communities within the Aleutians East Borough (AEB) to include Akutan, Sand Point, and King Cove communities. Commercial salmon harvest dominates the area's fisheries; however groundfish harvest accounted for an average of 31% of the total value landed over the past five years. In 2019, groundfish harvests were 26% of the total value landed in these communities, landing 16.8 million whole pounds, with an ex-vessel value of $4.5 million. Compared to the past five year average, 2019 shows a 55% decline in pounds harvested and 33% in the associated value.

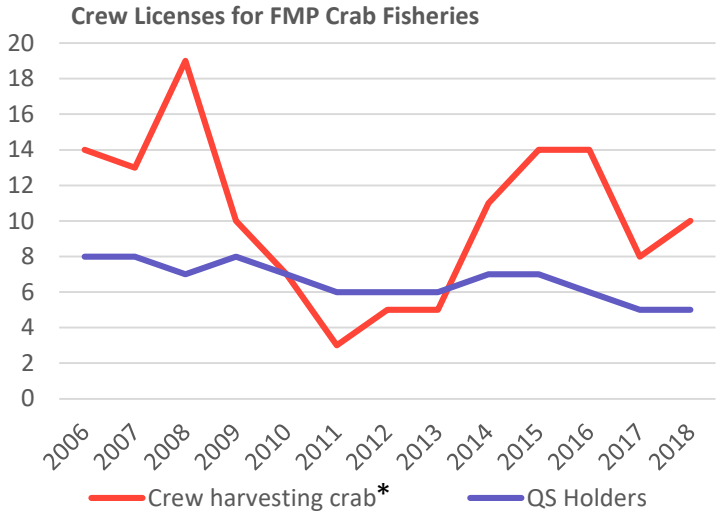


While the total number of resident owned fishing vessels decreased by 1 in 2019, ownership of groundfish vessels among residents increased by 3 vessels for a total of 37.



Crab Harvesting Engagement — LOW

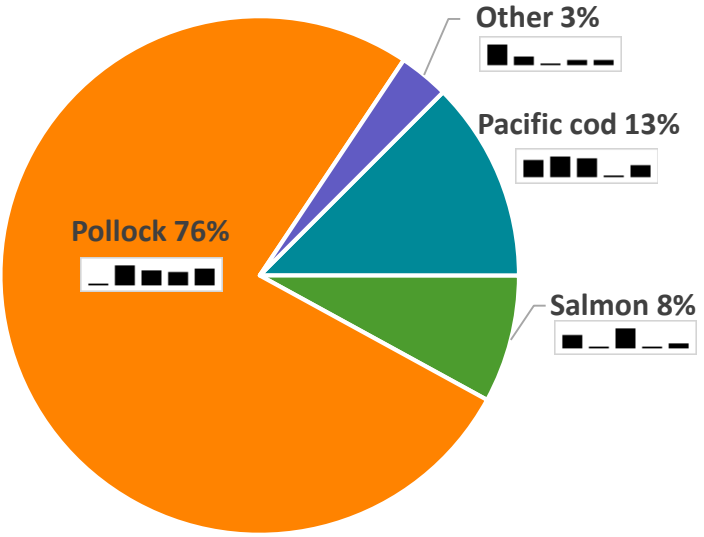
There is not a substantial amount of crab harvesting activity in Akutan, Sand Point, and King Cove to report. Historical data shows diminishing crab landings until ending altogether in 2008. A number of hired crew resides in these communities and residents continue to own crab licenses and quota shares, although participation has fluctuated. From 2014-2018, the five year average shows an aggregation of 11 crew, 9 crab licenses, and 6 quota shares in these communities. The latest data available sees 2018 to have a slight increases in the number of crew, crab licenses, and quota shares with increases of 12%, 8%, and 17% respectively.



* Combines counts of crew license holders and CFEC permits on crab vessels

Share of processing revenue landed by species

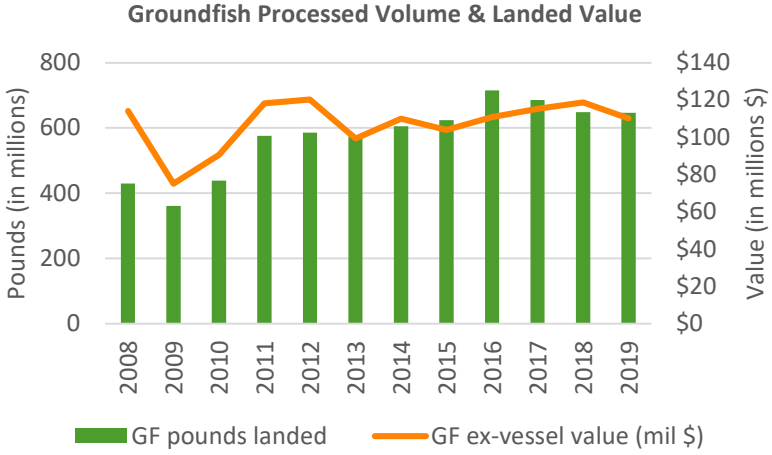
Akutan, King Cove, Sand Point combined 2015-2019 average



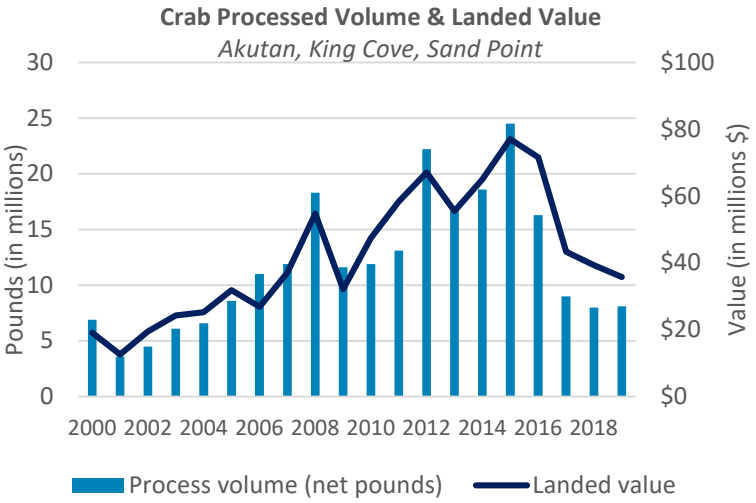
Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

GF Processing Engagement — HIGH

Walleye pollock accounts for 76% of the landed value within the processing sector in Akutan, King Cove, and Sand Point, while 13% is Pacific cod and 8% salmon. The number of processing facilities has increased in recent years to six plants, processing 647 million pounds of groundfish with an associated value of $110 million in 2019. Compared to the previous five year average, both landings volume and value showed a slight increase: pounds landed was up 17 million pounds (3%)and associated value up $1.6 million (just over 1%). In 2019, groundfish fisheries made up 64% of the total value landed in these communities, a slight decline from 2018. The Pcod fishery continued to decline, with a 32% dip in pounds processed and a 10% drop in associated value in 2018. In the last year, whole pounds landed decreased a further 13% or 11 million pounds. The value landed declined as well, by $3.5 million (down 10%). Pollock fisheries remained relatively steady, but did show a slight decline in both pounds (3%) and landed value (7%) compared to the past five year average.



Crab Processing Engagement — HIGH



Due to confidentiality concerns, Akutan, King Cove, and Sand Point processing activities are aggregated. These communities are highly engaged in the crab processing sector with six processing facilities in the region. In 2019, these communities processed 8.1 million net pounds of crab with an associated value of $35.8 million. Compared to the previous five year average, the volume decreased by 5 million pounds (down 39%) and the value decreased by $17.6 million (down 33%). The amount of BSAI crab processed in the region reached a peak of 24.5 million pounds in 2015, quickly dropping to 16.3 million pounds the following year (down 33%). Comparatively, the associated value dropped by $5.4 million or 7% during the same year. Both volume and landed value continued a steady decline since.

Fishing History and Regulatory Background

Historically, Aleuts harvested salmon, cod, herring, and other species around Akutan. Subsistence harvest continues to be important. Commercial fisheries began in the late 1800s, and today Akutan is one of the busiest fishing ports in the world.[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] The Akutan community comprises two distinct subgroups: long term residents who live in the village year-round and processing plant employees who live in group quarters. This dichotomy is evident in the village's successful campaign to participate in the Community Development Quota program (represented by the Aleutian Pribilof Islands Community Development Association).[8] Akutan is located in Federal Reporting Area 519, International Pacific Halibut Commission (IPHC) Regulatory Area 4B, and the Aleutian Islands Sablefish Regulatory Area.

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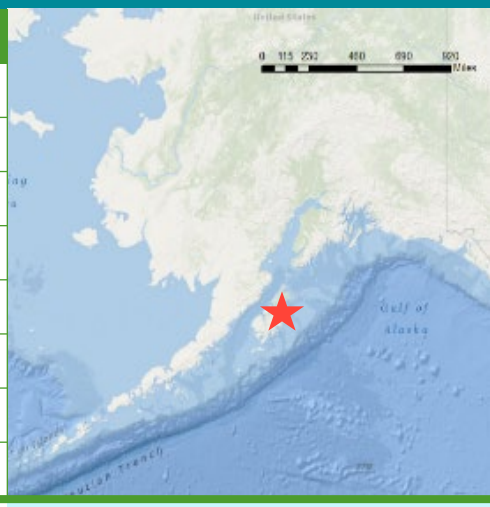
Community Sketch

KODIAK ISLAND

Demographics (self-identified, 2018 ACS) – *All Communities*

Kodiak Island

	Akhiok	Chiniak CDP	Karluk	Kodiak City	Larsen Bay	Old Harbor
Population	70	47	37	5,968	85	221
AK. Native	92.5%	N/A	100%	11.8%	45.2%	66.9%
Housing Units	32	27	25	2,173	76	119
Med. Income	$27,500	N/A	$18,000	$69,868	$36,250	$29,063
Poverty	20.8%	N/A	27.5%	10.9%	35.7%	22.8%
Med. age	36	N/A	19	36	47	29
High School Ed. or higher	100%	N/A	70.6%	85.3%	81.8%	77.1%



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. KI has been inhabited for the past 8,000 years and the majority of the Alaska Native population are Alutiiq. A Russian settlement was established at Chiniak Bay in the late 1700s supported by fur trading. In 1882 a fish cannery opened in Karluk spit, sparking further commercial development. Kodiak communities are highly dependent on fisheries. The majority of commercial vessels and seafood processing plants are in Kodiak City; however all 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 2015-2019 ACS data, the population estimate is 13,451, with the vast majority living in Kodiak City. The other seven island communities reported populations between 29 and 231. 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 2019, the average household size for KI was estimated to be 2.91, up slightly from 2.94 in 2010.

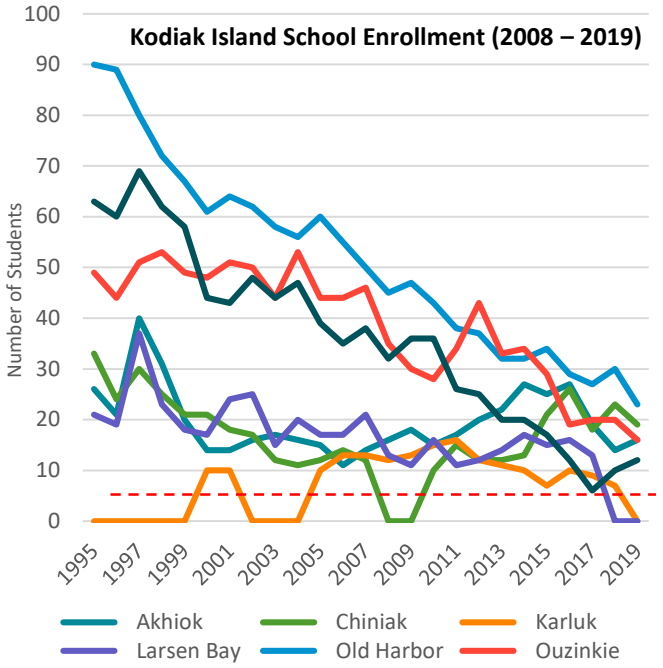
Social Indicators for Fishing Communities

Labor Force:	Low
Housing Characteristics:	Med.
Poverty:	Med.
Population Composition:	High
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	High
Recreational Fishing Engagement:	High
Recreational Fishing Reliance:	Med.

Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%
Coastal hazards: TSUNAMIS, EARTHQUAKES, storm surges, EROSION, Flooding, VOLCANOES.
Native Associations & Corporations: Natives of Kodiak, Inc.; Koniag, Inc.; Kodiak Area Native Association

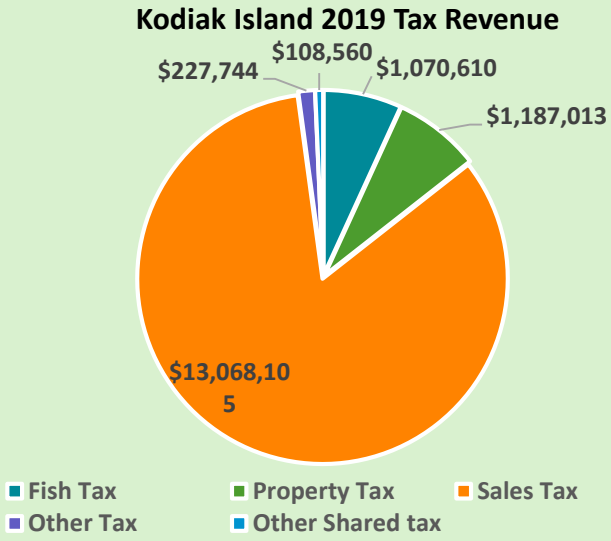
Infrastructure & Transportation

Kodiak Island is accessible by air and sea, however accessibly varies drastically among communities. Kodiak City has two small airports, which are served with several daily flights. Air taxi services provide flights to five remote villages; however 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. Three deep-draft piers accommodate ferries, cruise ships, container ships, military vessels, and a variety of large commercial fishing vessels. Boat launch ramps, a shipyard, and 150 ton vessel lift are available. 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. Total K-12 school enrollment has decreased by 69.5% since 1996. Larsen Bay School closed in 2018, and Karluk school closed in 2019. Old Harbor is the only school with greater than 20 students for the 2019-2020 school year. Schools with 10 students or less typically close. Kodiak City was not included in the analysis due to difference in size of schools.



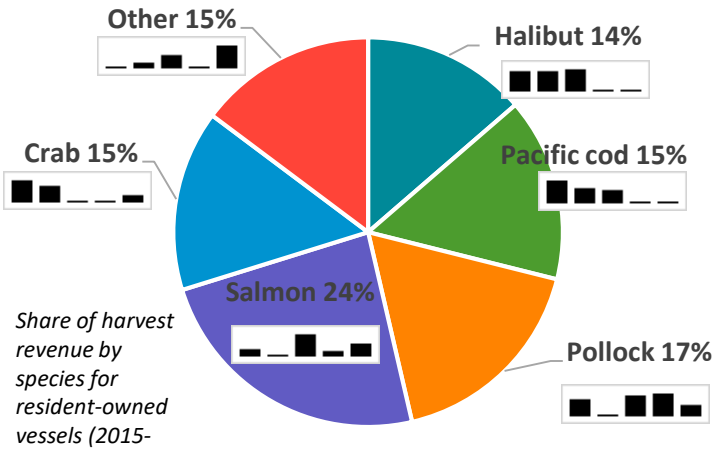
Current Economy

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 fishing, logging, ecotourism, and sport hunting/fishing.[5] In 2019, Kodiak borough collected $1.07 million in fisheries-related taxes, compared to $5.27 in 2010 and $3.63 million in 2000. The vast majority of Kodiak's revenue comes from sales tax, reported as $13 million in 2019. However, it should be noted that data related to port/dock usage fees are not available. Since those fees account for a significant portion of fisheries-related revenue in previous years, it is likely that revenue figures are underrepresented.



Share of Revenue Harvested by Species

Kodiak Island 2015-2019 average

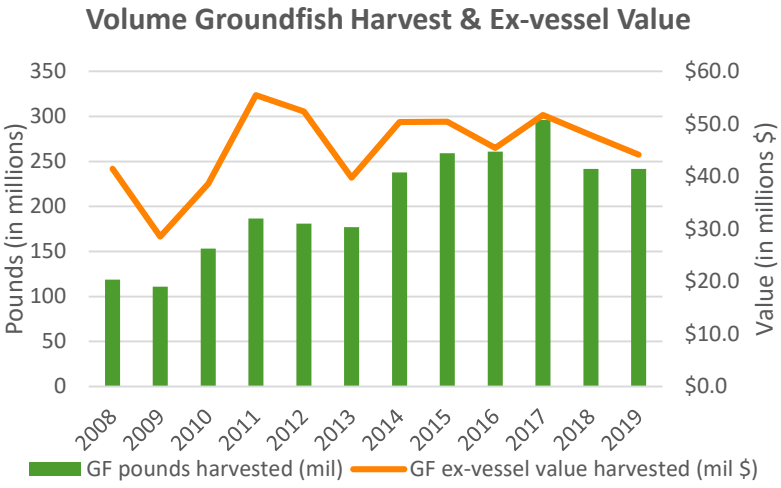


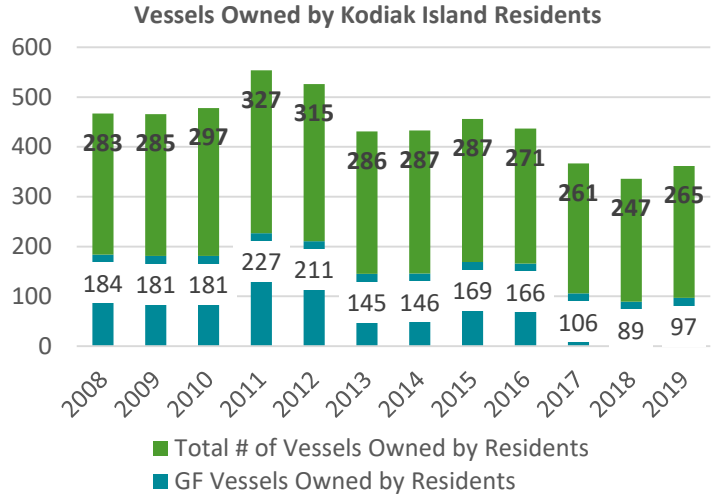
Share of harvest revenue by species for resident-owned vessels (2015-2019 average)

Bar charts represent 2015 to 2019 ex-vessel values by species landed in the community. The scale of the y-axis is specific to the species

GF Harvesting Engagement — *HIGH*

Kodiak has a diversified fisheries profile, with groundfish making up about 40% of total fisheries harvest in Kodiak. Pacific cod has shown a consistent decline in recent years, as has halibut, crab, and to some degree Pollock. In 2019, the volume of groundfish harvest was 241.6 million pounds with an associated value of $44.1 million. Compared to the previous five year average, both the harvest volume and associated value showed declines of 18 million pounds (down 7%) and $3.8 million (down 8%) respectively. Resident ownership of fishing vessels increased by 18 vessels (7%) in 2019, while groundfish fishing vessels owned by Kodiak residents increased in number from 89 to 97 vessels (up 9%). Smaller communities on Kodiak Island are often most severely impacted by shifts in fisheries participation given that the bulk of commercial fisheries operations occur in Kodiak City.

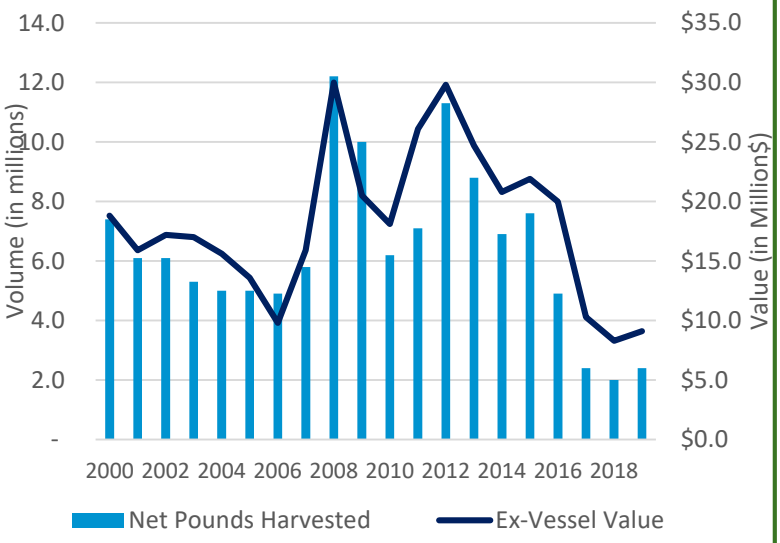




Crab Harvesting Engagement — HIGH

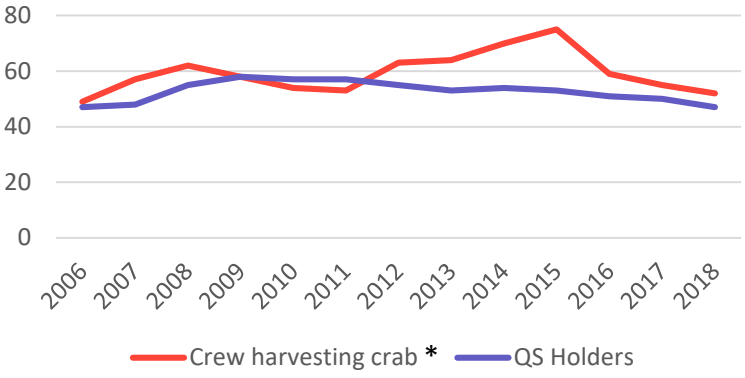
Kodiak's resident vessels harvesting BSAI crab fisheries saw a 22% drop in harvest volume and 17% decline associated value beginning in 2012 when harvest decreased 2.4 million pounds and $5.1 million. Although both harvest volume and value have continued downward since, there was a slight uptick in 2019. This year, fishers harvested 2.4 million pounds of crab with an ex-vessel value of $9.1 million which, compared to the previous five year average, showed a 1.5 million net pounds (38%) decline in volume and $4.8 million (35%) drop in value.

Crab Harvest Volume & Ex-vessel Value



Within the FMP crab fisheries, the number of crew living in Kodiak declined by slightly from 55 to 52 in 2019. Having hit a peak in 2015 of 75 resident crew members, the number fell by 20% in 2016, and continues to decline. As of 2019 there were 47 quota share holders residing in Kodiak.

Crew, License, and Quota Shares for FMP Crab Fisheries



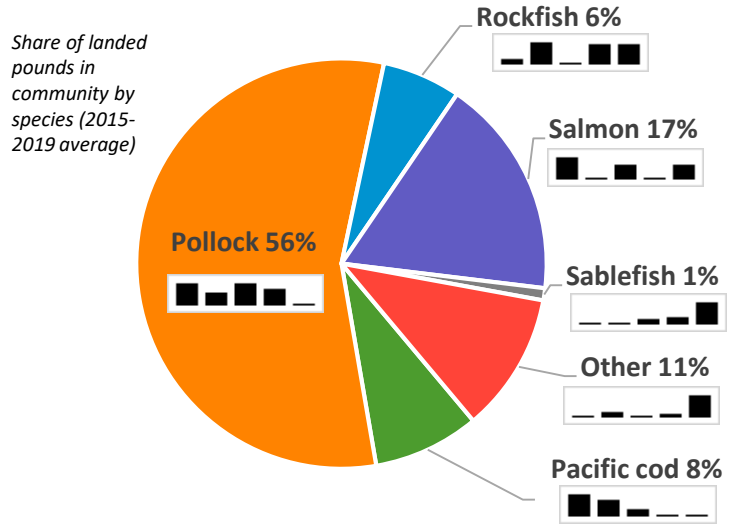
* Combines counts of crew license holders and CFEC permits on crab vessels

GF Processing Engagement — HIGH

Kodiak Island has several multi species processors in Kodiak City. Over the past five years, groundfish made up an average of 51% of the total value of all species landed. In 2019, Groundfish processing accounted for 44% of total fish landed, which is a marked decrease. Although the bulk of processing occurs in Kodiak City, smaller Kodiak communities are involved in seafood processing as well. Pollock holds the majority share of revenue landed in Kodiak Island Borough in 2019 at 56%, followed by salmon at 17%. Overall, Kodiak facilities processed 278 million whole pounds of groundfish worth $61.5 million in 2019. When compared to the previous five year average, the volume of groundfish landings fell by 85.7 million pounds (24%) and $13 million in associated value (down 20%).

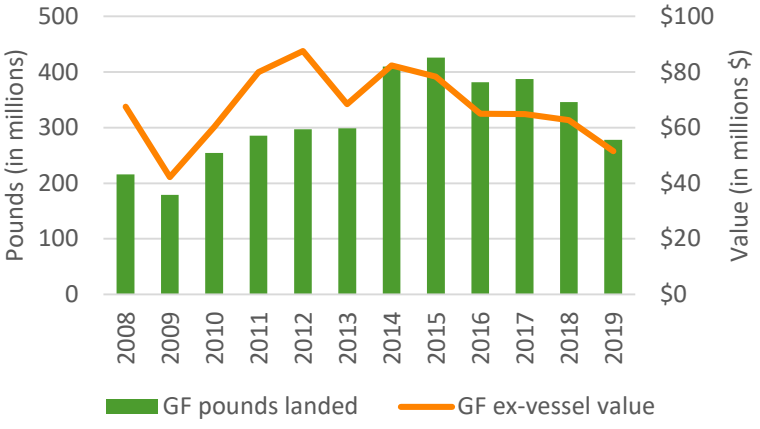
Share of revenue landed by species for Kodiak

combined 2015-2019 average



Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

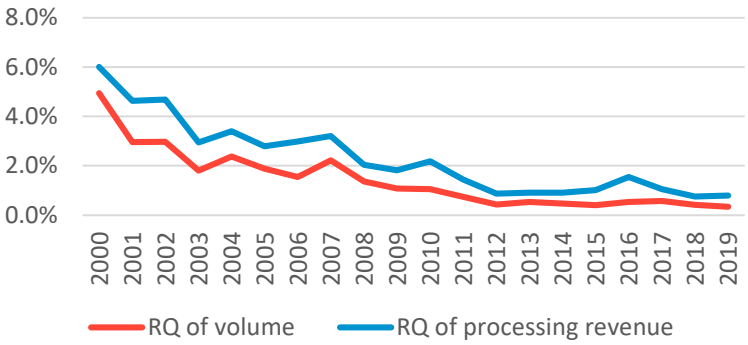
Groundfish Landings & Ex-vessel Value 2008 - 2019



Crab Processing Engagement *MED*

Due to confidentiality concerns, some processing data is restricted and therefore can only be shown as general trends. In order to show the general processing trends for crab FMP, the processing regional quotient (RQ) is presented here. The RQ for pounds and revenue landed in Kodiak are both under 1% of the national totals in 2019; however the data illustrates a steady decline over the past two decades, indicating a decrease in participating in the crab processing sector.

Regional Quotient for FMP Crab Processing in Kodiak
(2000-2019)



Fishing History and Regulatory Background

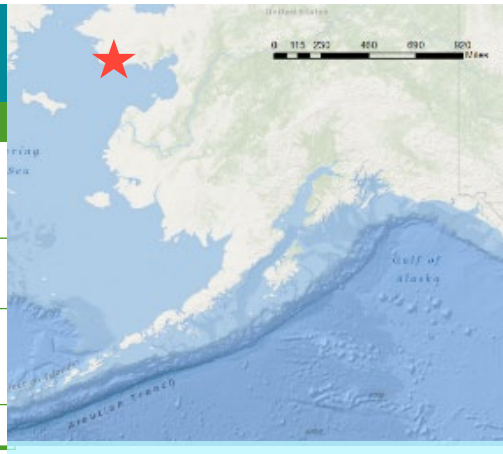
The Alutiiq peoples have harvested fish, marine invertebrates, and marine mammals for thousands of years on Kodiak Island. Russian fur trappers established an active fur trade in Kodiak in 1792, and reliance on commercial and subsistence natural resources is vital to Kodiak culture and economy. Commercial fisheries began in the early 1800s, and today Kodiak City is Alaska's second largest commercial fishing port in volume of seafood landed. Top commercial species harvested are salmon (24%), Pollock (17%), Pacific cod (15%), crab (15%), and Halibut (14%). Pollock dominates the processing sector. Kodiak is located in Federal Statistical and Reporting Area 630, Pacific Halibut Fishery Regulatory Area 3A, and Central Gulf of Alaska Sablefish Regulatory Area.

NOAA FISHERIES

Alaska Fisheries Science Center

Economic and Social Sciences Research Program

Community Sketch — Nome



Demographics (self-identified)[1]

Nome

Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
3,850	50.0% female 50.0% male	71.0%	$84,574	27.5%	58.2%	2.0%
Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
6.2%	1,550	7.0%	91.3%	1.1%	0.3%	6.4%

Area Description

Nome is located on the south coast of the Seward Peninsula, facing Norton Sound and the Bering Sea. Historically, Malemiut, Kauweramiut, and Unalikmiut Inupiat have occupied the area for thousands of years. Nome was a supply center for Russian whaling and trading in the mid 1800s; its population exploded during the Nome gold rush in 1898. The City of Nome was incorporated in 1901. In the winter of 1925, there was a diphtheria epidemic. Fierce territory-wide blizzard conditions prevented the delivery of a life-saving serum by air from Anchorage. A relay of dog sled teams was organized to deliver the serum. Today, the Iditarod Dog Sled Race follows the same route they took and ends in Nome. Nome serves as the regional center of supply, services, and transportation in the Norton Sound and Bering Strait region. Many government offices are located in Nome. Nome was included under the Alaska Native Claims Settlement Act (ANCSA) and is federally recognized as a Native village. Four federally-recognized Tribes are located within the City of Nome which include the Nome Eskimo Community, Solomon Tribal Council, King Island Native Community, and the Council Traditional Council.

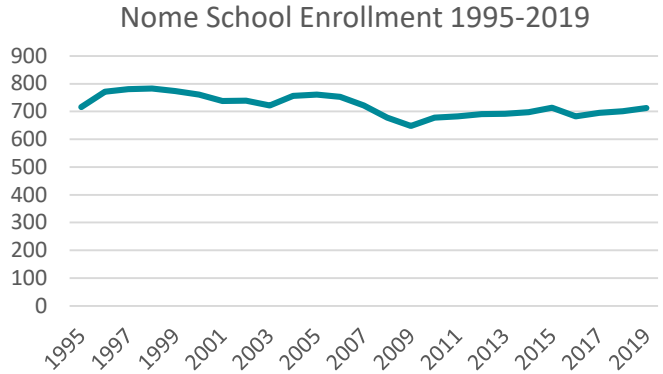
Social Indicators for Fishing Communities

Labor Force:	Low
Housing Characteristics:	Med.
Poverty:	Low
Population Composition:	Med-High
Commercial Fishing Engagement:	Med-High
Commercial Fishing Reliance:	Med.
Recreational Fishing Engagement:	Low
Recreational Fishing Reliance:	Low

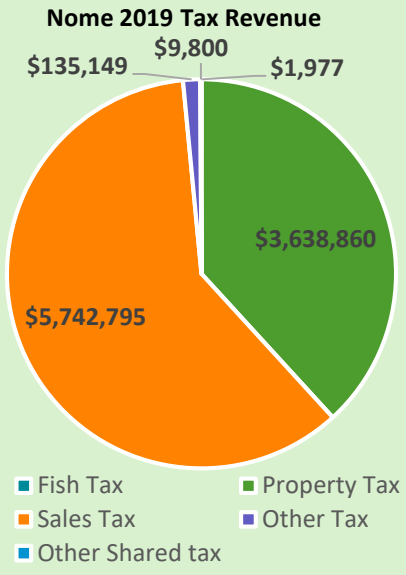
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%
Coastal hazards: TSUNAMIS, EARTHQUAKES, STORM SURGES, EROSION, FLOODING, WILDFIRES, volcanoes. Bering Straights Native Corporation; Sitnasuak Native Corporation

Infrastructure & Transportation

Nome is primarily accessible by air, although heavier supplies arrive by water during summer months. There are two state owned airports. Nome Health Center and the Norton Sound Regional Hospital are both located in Nome, and operated by the Norton Sound Health Corporation. The hospital is a qualified Acute Care facility and offers Medevac Service. Additional community facilities and services include a State Superior Court, State Correctional Center, a city recreational center, community center, Boys and Girls club, City Hall, a senior center, a public pool, a City Museum, and three libraries (one public and two located within schools). Nome has three schools; school enrollment has remained fairly stable over the past decade, with 712 students in 2019-2020 school year.



Current Economy

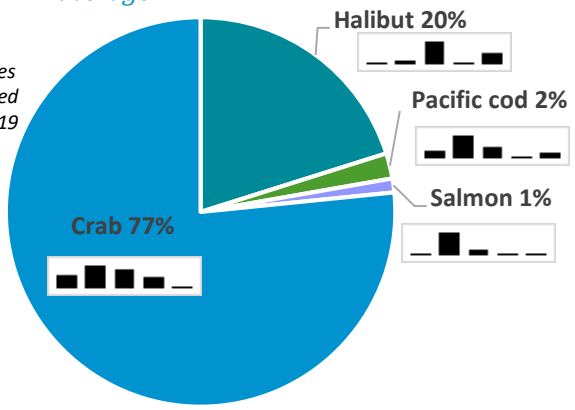


Nome's economy is based on public administration, fishing and other public sector jobs. As of 2010, the top three local employers in Nome were the Norton Sound Health Corporation, the State of Alaska, and Kawerak, Inc., the Native non-profit organization serving the Bering Strait region. Norton Sound Seafood Products was established in 1995 and processes red king crab (mid-June to late August), salmon (mid-July to mid-September), and halibut (August to mid-October). Many residents engage in commercial fishing, and subsistence activities. According to 2015-2019 ACS data, unemployment in Nome is 7.0%. The 2019 median household income was $84,574 and per capita income was $35,583. Nome generates almost all of its revenue through sales and property tax; it received $1,977 in shared fishery taxes in 2019.

Share of harvest revenue landed by species

Nome 2015-2019 average

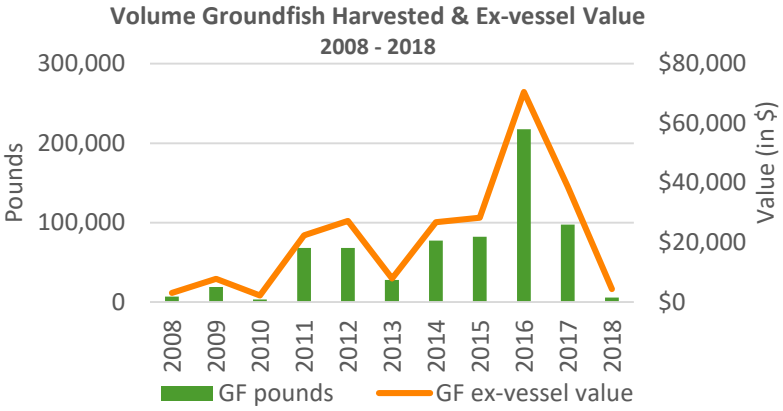
Share of harvest revenue by species for resident-owned vessels (2015-2019 average)



Bar charts represent 2015 to 2019 ex-vessel values by species landed in the community. The scale of the y-axis is specific to the species

GF Harvesting Engagement — LOW

Among commercial fisheries in Nome, groundfish engagement is low and primarily targeting Pacific cod. Pacific cod accounts for 2% of harvest revenue. Due to confidentiality concerns, data is shown from 2008-2018 due to a drop in the number of vessels from Nome participating in Groundfish fisheries.

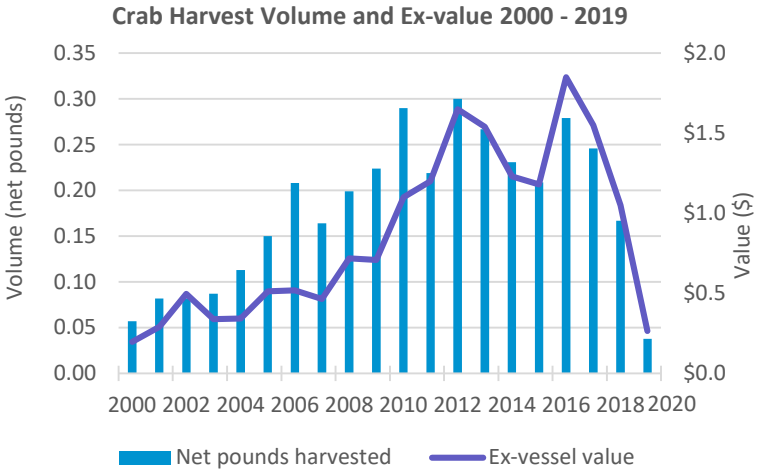


While Groundfish fisheries remains a small percentage of total catch, there are vital commercial crab and halibut fisheries. Crab fisheries make up 77% and halibut 20% of total harvest.

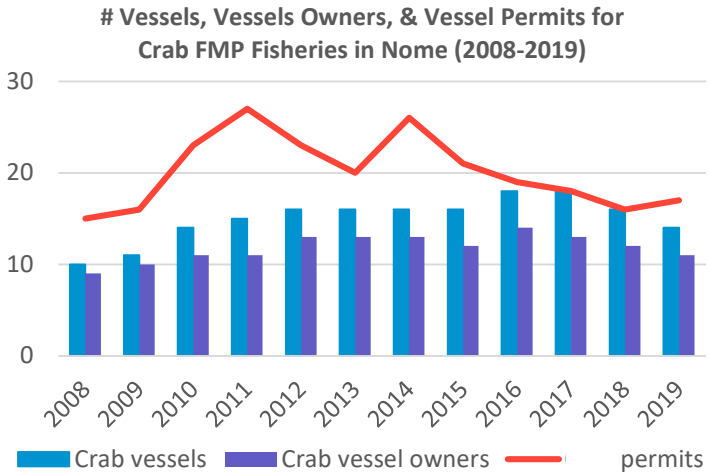
Crab Harvesting Engagement — MED

Alaska crab fisheries have struggled in recent years: hitting a peak in 2016 in both harvested volume and associated value, then steeply declining. Crab fisheries, other than the Bering Sea snow crab, have faced closures, late starts to the season, and reduced catch limited. In 2019, only mature male crabs can be retained for sale in any of Alaska's crab fisheries.

In 2019, crab vessels registered in Nome harvested 38 million pounds of BSAI crab, a 77% decrease from 2018, and an 80% decline from the five year average. The associated harvest value in 2019 was $266,136, down 75% from the previous year, and a 77% decrease compared to the five year average.



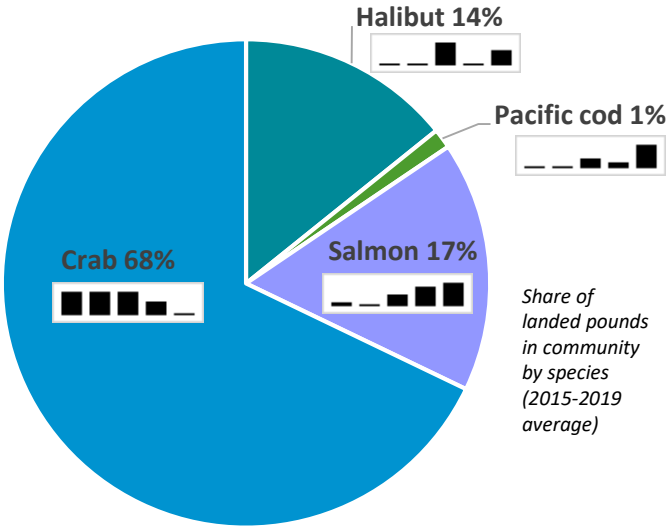
Due to confidentiality concerns, only select data is available. In the winter of 2019 in Norton Sound, diminished sea ice affected the crab harvest, resulting in the poorest red king crab (RKC) catch in over 10 years. For the 2019 winter fishery season, Norton Sound RKC harvest consisted of 3,295 pounds (winter commercial); 3,100 pounds (winter subsistence), ADF&G reported that at least 1/3 of the 96 crab pots dropped were lost due to moving ice. Summer harvest was also smaller than expected (75,023 pounds): Nome crabbers reported high numbers of cod and Pollock in the area, which reduced catches. Total catch was 81,418 commercial pounds. In response to reduced catches and apparent reproductive failure of the RKC, the Norton Sound Economic Development Corporation announced it would not purchase crab in 2020, effectively closing the commercial market.



Because the winter fishery does not use vessels, the number of permits better indicates participation level for winter and summer fisheries. In 2019, there were 14 crab vessels, 11 vessel owners, in Nome. This is down from previous years. Compared to the previous five year average, vessel number decreased by 2 vessels (down 15%), and ownership decreased by 1 (down 11%). The number of permit holders in Nome shows steady declines as well with a slight uptick in 2019. Compared to the previous five year average, permits fell by 1 (down 7%).

Share of revenue landed by species for Nome

combined 2015-2019 average



Share of landed pounds in community by species (2015-2019 average)

Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

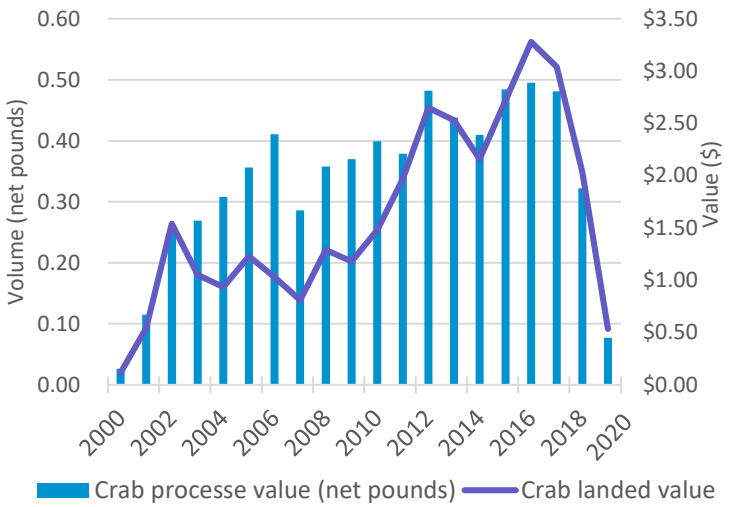
GF Processing Engagement — *LOW*

There is not a substantial amount of groundfish processing activity in Nome to report.

Crab Processing Engagement — *HIGH*

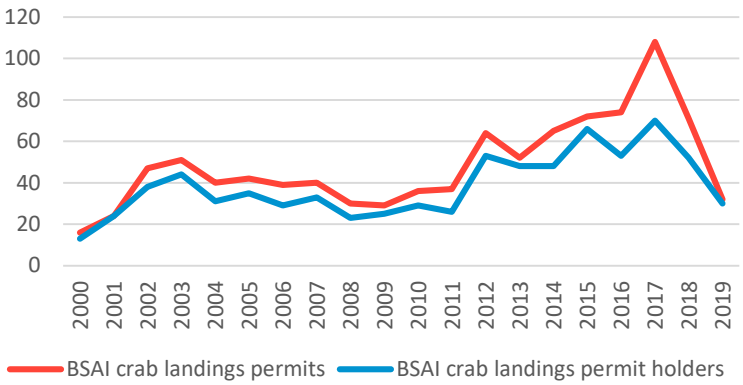
Nome is highly engaged in the crab processing sector. The number of processing facilities in the region has fluctuated over the years, but dropped from 8 to 3 in the last year (42% decrease). In 2019, Nome processed 76, 554 net pounds of crab with an associated value of $534,563 million. Compared to the previous five year average, the volume decreased by nearly 300,000 net pounds (down 79%) and $1.8 million in value (down 77%).

Crab Processed Volume & Landed Value 2000-2019



The amount of BSAI crab processed in the region reached a peak of 494,871 net pounds (with a value of $3.3 million) in 2016, then declining steeply since. The number of landings permits continues to fall as well: in 2019, there were 30 crab landings permit holders in Nome, a drop from 52 in 2018. Compared to the previous five average number of permit holders (54), 2019 indicates a 45% decline.

Crab Landing Permits and Permit Holders in Nome (2008-2019)



Fishing History and Regulatory Background

Commercial exploitation of halibut and groundfish first extended into the Bering Sea region in 1928 after development of diesel engines, which allowed fishing vessels to undertake longer trips. King crab fisheries developed in the Bering Sea beginning in the 1950s, and Norton Sound is one of the historical centers of this fishery. NMFS and ADF&G jointly manage Bering Sea king crab stocks. Nome king crab fishermen hold both state-issued king crab permits, as well as permits in the Community Development Quota (CDQ) king crab fishery. Norton Sound Seafood Products was established in 1995 and processes red king crab (mid-June to late August), salmon (mid-July to mid-September), and halibut (August to mid-October). Nome is located in Pacific Halibut Fishery Regulatory Area 4E and the Bering Sea Sablefish Regulatory Area.

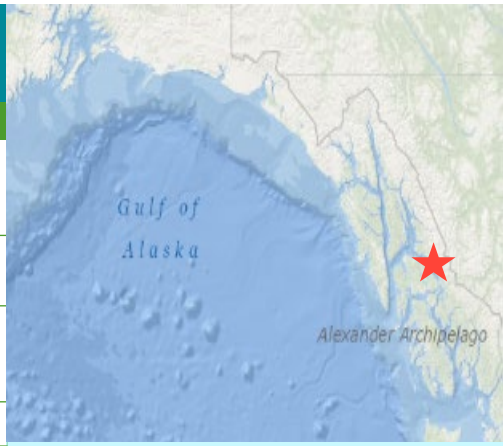
NOAA FISHERIES
Alaska Fisheries Science Center
Economic and Social Sciences Research Program

Community Sketch — Petersburg

Demographics (self-identified) [1]

Petersburg

Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
3,221	52.6% female 47.4% male	77.5%	$63,490	76.2%	7.2%	0.6%
Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
7.8%	1,828	16.7%	89.5%	6.8%	1.1%	10.6%



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 had build a cannery, sawmill and dock by 1900. Alaska's first shrimp processor, Alaska Glacier Seafoods, was founded here in 1916. In 2013 the City and Borough of Petersburg was incorporated.[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. The average household size in Petersburg has increased over time from 2.73 persons per household in 2019, from 2.36 in 2010. During the same period, the number of households increased slightly, from 1,252 in 2010, to 1,134 in 2019. The number of Petersburg City residents living in group quarters is approximately 46;[1] although this is not associated with fisheries.

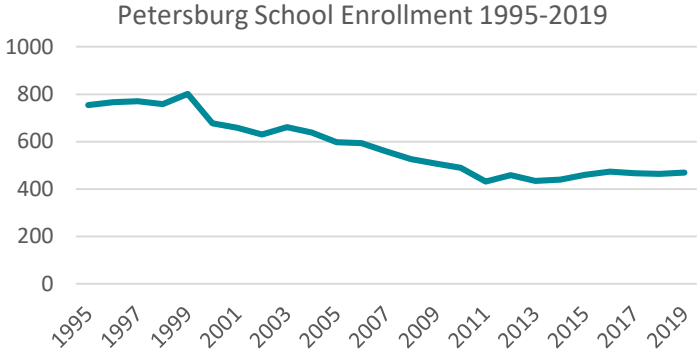
Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med.
Poverty:	Low
Population Composition:	Med.
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	High
Recreational Fishing Engagement:	Med-High
Recreational Fishing Reliance:	Med.

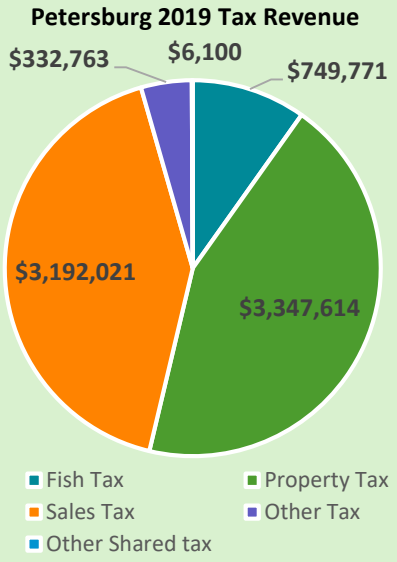
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.
Coastal hazards: Erosion threat to community's water supply. **TSUNAMIS**, **EARTHQUAKES**, flooding, severe weather, erosion, **VOLCANOES.**
Native Associations & Corporations: Petersburg Indian Association

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; overall enrollment has declined 37.7% in this district since 1995.



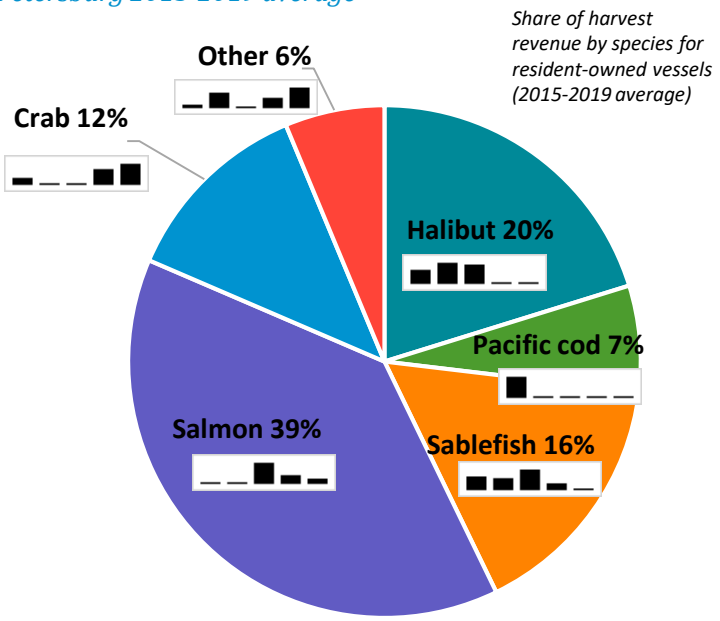
Current Economy



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, some logging, and for the Tongass National Forest.[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 $35,044 in 2017. The unemployment rate was estimated to be 3.1% in 2017.[2]

Share of harvest revenue landed by species

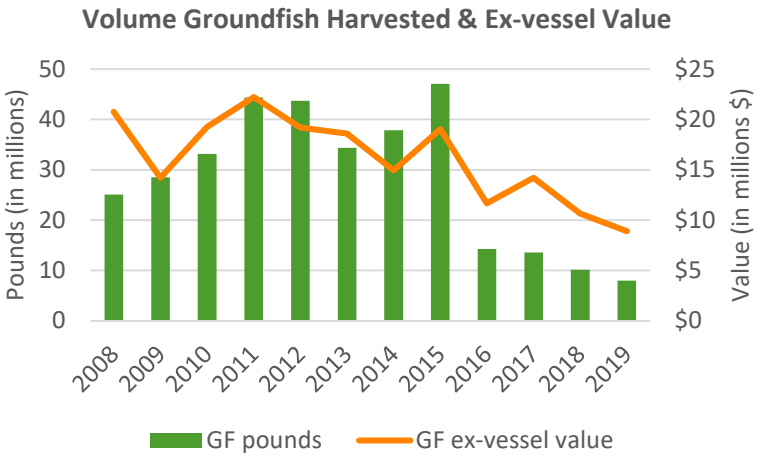
Petersburg 2015-2019 average

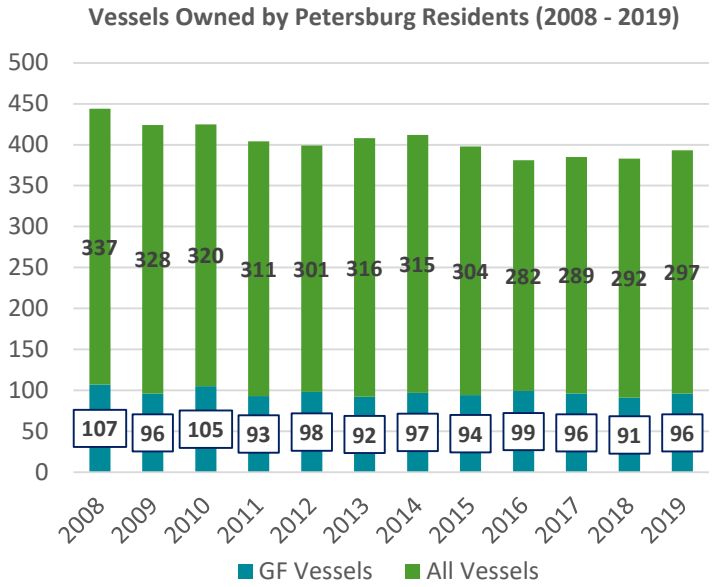


Bar charts represent 2015 to 2019 ex-vessel values by species landed in the community. The scale of the y-axis is specific to the species.

GF Harvesting Engagement — HIGH

While highly engaged in groundfish fisheries, Petersburg brings harvest revenue from a diverse range of fisheries including 39% of revenue from commercial salmon harvest, 20% from halibut, 12% from crab. The volume of groundfish harvested in 2019 was 8 million pounds with an associated value of$ 8.9 million. When compared to previous five year average of 18.6 million pounds with $12.9 million ex-vessel value, the 2019 harvest shows a substantial decrease of 57% and 31% respectively. Since 2008, groundfish harvests show an overall decrease of 68% in volume and 57% in value. Pacific cod remained relatively stable in 2019 compared to the previous year, actually increasing in volume by 7% and associated value by 19%. The largest drop was in Pollok with harvest volume decreasing by 82% and value by 80% since 2018.





Resident ownership of fishing vessels increased by five vessels (2%) in 2019, all of which operate within the groundfish sector. This brings the total number of groundfish vessels registered in Petersburg up to 96.

Crab Harvesting Engagement — LOW

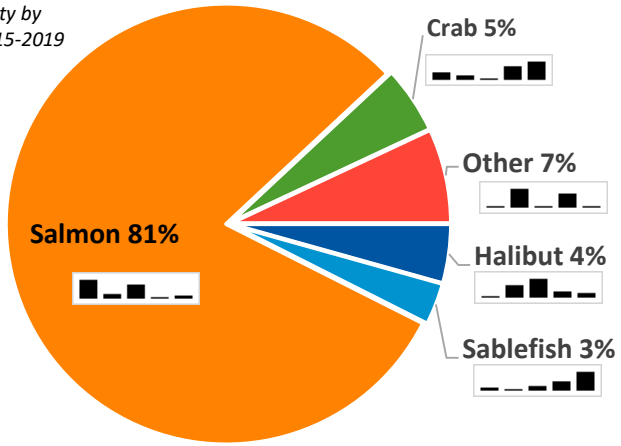
There is not a substantial amount of crab harvesting activity in Petersburg to report.

Due to confidentiality concerns, only select data is available.

Share of revenue landed by species for Petersburg

combined 2015-2019 average

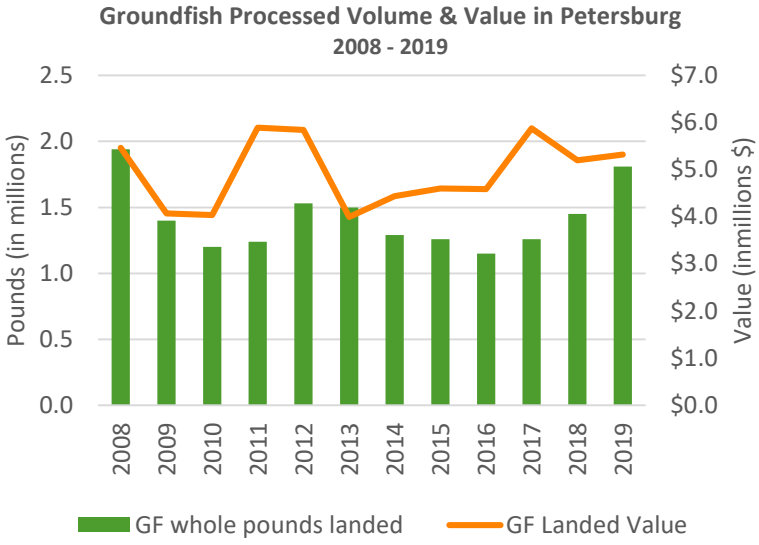
Share of landed pounds in community by species (2015-2019 average)



Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

GF Processing Engagement — *MED-HIGH*

The processing sector in Petersburg is dominated by salmon fisheries accounting for 82% of the landed revenue. Although comparably small, crab fisheries accounts for 5%, halibut 4%, and sablefish 3% of fish processed in the community. In 2019 Petersburg had a total of 56 seafood processing facilities, landing a total of 33.5 million pounds of fish at a value of $38.4 million. Of those facilities, six processed groundfish, landing a total of 1.8 million pounds of groundfish with an associated value of $5.3 million. Compared to the previous five year average, this marks 30% increase in volume and a 4% increase in value. Both landed volume and value continue an upward trend since hitting a low in 2016. The ratio of groundfish to total value of landings fluctuated over the last decade between 10-14%; while the volume of groundfish landed ranged between 1-5%. In 2019, groundfish made up 5% of total volume landed, and about 14% of value.



Crab Processing Engagement — *LOW*

There is not a substantial amount of crab processing activity in Petersburg to report.

Due to confidentiality concerns, only select data is available.

Fishing History and Regulatory Background

Petersburg has 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. Although salmon continues to be the most abundant and valuable species, Petersburg has a diversified fleet that participates across numerous State and federal fisheries including GOA 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. 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. Petersburg is in House District 35, Senate District R.

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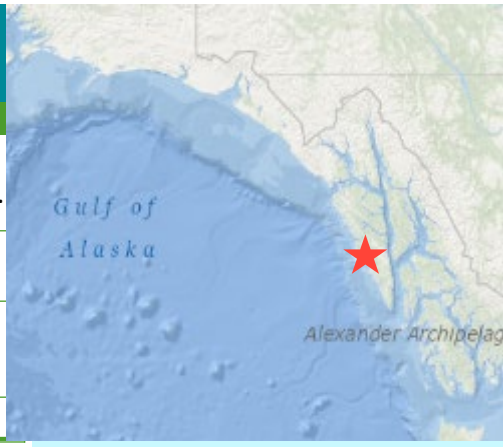
Community Sketch SITKA



Demographics (self-identified)[1]

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Sitka	8,647	48.7% female 51.3% male	77.6%	$70,765	64.8%	14.3%	1.0%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	9.2%	4,175	13.9%	93.5%	6.9%	0.4%	6.3%

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)." A Russian expedition arrived in 1741 and by 1808, Sitka was the capital of Russian Alaska. Fur trading and fish canning were mainstays in the town's growth. Sitka was the capital of the Alaska Territory until the government was transferred to Juneau in 1906. In 1878, Sitka became the site of one of the first canneries in Alaska, although the Sitka cannery closed after only two seasons of operation. During the early 1900s, gold mines flourished, and the city was incorporated in 1913. During World War II, the US Navy built an air base on Japonski Island with 30,000 military personnel. Sitka has approximately 1,800 seasonal workers each year: this annual peak in population is mostly driven by fisheries and tourism. In 2019, the average household size in Sitka was 2.80 (increased from 2.43 in 2010). The total number of housing units increased from 3,545 in 2010 to 4,225 in 2019. In 2019, 3.5% of the population was unemployed. Sitka was included under the Alaska Native Claims Settlement Act.[1,2]

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med.
Poverty:	Low
Population Composition:	Low
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	Med-High
Recreational Fishing Engagement:	High
Recreational Fishing Reliance:	Med.

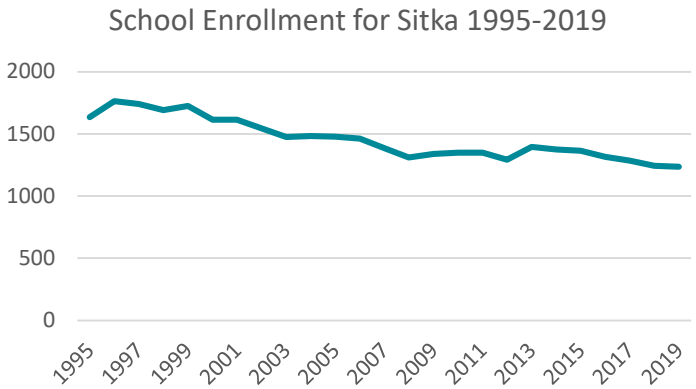
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.

Coastal hazards: TSUNAMIS, EARTHQUAKES, flooding, LANDSLIDES, dam failure, volcanoes, severe weather, EROSION.

Native Associations & Corporations: Shee At'iká, Inc.; Sealaska Corporation

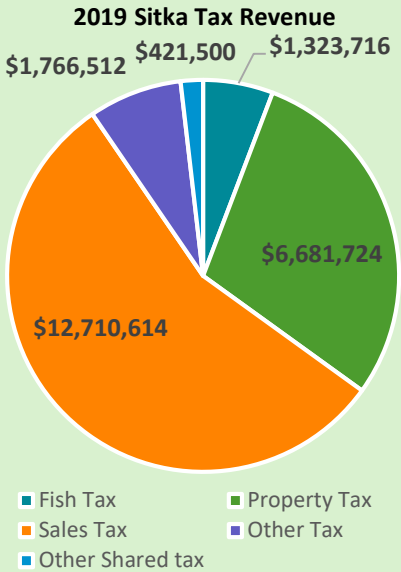
Infrastructure & Transportation

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 slips. 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 coastguard medical facilities. Sitka has 7 schools even schools; enrollment has decreased by 24.5% since 1995.[6]

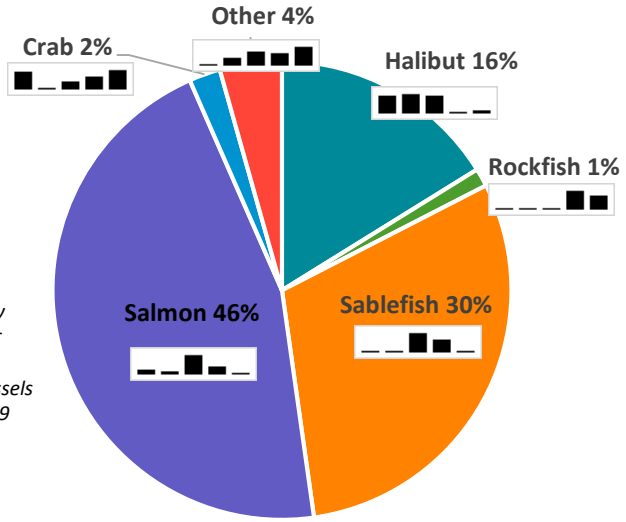


Current Economy

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 in 2017 is estimated to be $70,765, up from $62,024 (2010). Unemployment is estimated at 3.5% in 2017. Sitka receives fisheries-related revenue from the Shared Fisheries Business Tax, the Fisheries Resource Landing Tax, and harbor usage fees. Sitka received $421,500 (2%) in fish related tax in 2019.[7]



Share of harvest revenue by species for resident owned vessels *Sitka 2015-2019 average*

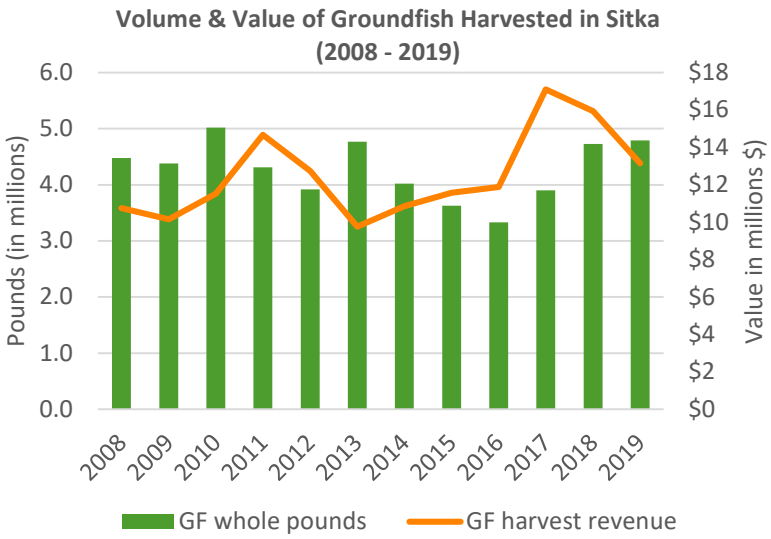


Share of harvest revenue by species for resident-owned vessels (2015-2019 average)

Bar charts represent 2015 to 2019 ex-vessel values (2019$) by species landed in the community. The scale of the y-axis is specific to the species.

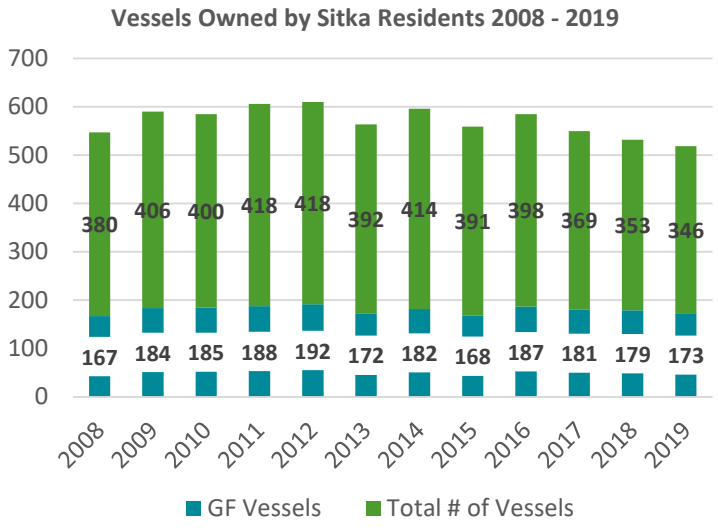
GF Harvesting Engagement *HIGH*

Sitka was among the top ports in Alaska for the volume of groundfish harvested and the associated ex-vessel value in 2019. Other key fisheries include salmon, accounting for 46% of harvest revenue in 2019, halibut 16%, and crab 2%. In 2019, Sika fisheries harvested 4.8 million whole pounds of groundfish with and associated value of $13.2 million. Compared to the previous five year average, this represents an increase in volume (up 712,545 pounds or 18%), but a slight decrease in ex-vessel value (down $781,000 or 6%). After hitting a low in pounds harvested in 2016 (3.3 million pounds), the volume of groundfish fisheries harvested has steadily risen. Ex-vessel value peaked in 2017 at $17 million, but has steeply declined since. 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.



In 2019, number of groundfish vessels owned by Sitka residents decreased by six for a total of 173 vessels. The total number of fishing vessels owned by residents is 346. Between 2008 and 2019, the number of groundfish vessels owned by Sitka residents fluctuated, peaking in 2012 at 192 vessels.

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 use the Sitka port.



Sablefish
Anoplopoma fimbria

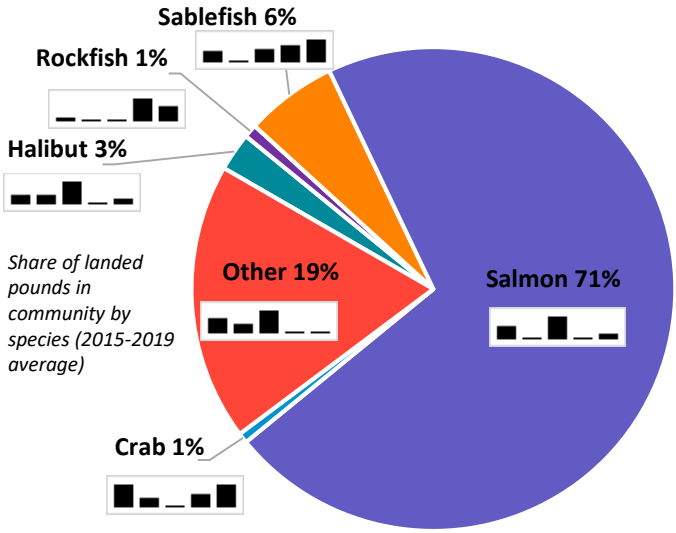
Also Known As: Black cod, Butterfish, Skil, Beshow, Coalfish
REGION: Alaska, West Coast

Crab Harvesting Engagement *N/A*

There is not a substantial amount of crab harvesting activity in Sitka to report.
Due to confidentiality concerns, only select data is available.

Share of revenue landed by species for Sitka

combined 2015-2019 average

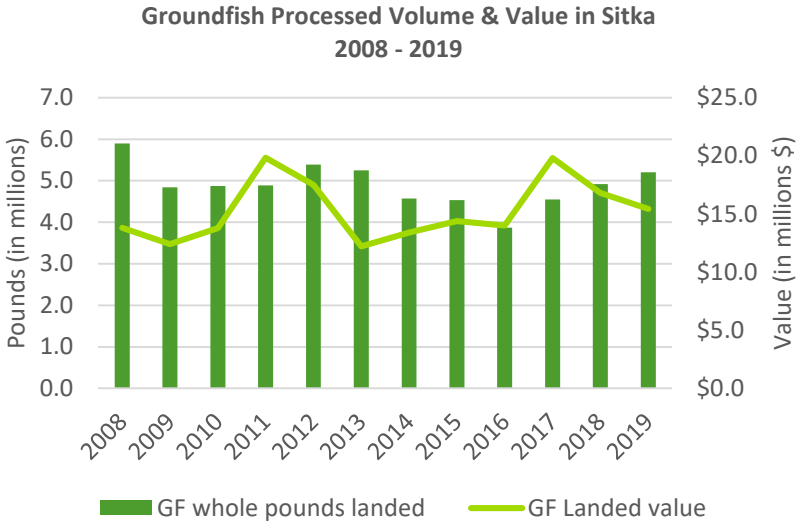


Share of landed pounds in community by species (2015-2019 average)

Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

GF Processing Engagement *HIGH*

The majority of processing activity is for salmon (71%), although groundfish made up 29% of total processing revenue in 2019. Sable fish accounts for 6%, halibut 3%, and crab 1%. In 2019, the total number of groundfish processing facilities was three, landing 5.2 million pounds, with an associated value of $15.4 million. This marks a slight increase of 273,534 pounds (6%) from the year before. Compared to the previous five year average, 2019 saw increased volume in groundfish processing: up 581,678 pounds (13%). While volume increased, the associated value landed decreased during the same time period. Landed revenue decreased by $1.4 million (7%) compared to 2018, and $662,499 (4%) compared to the previous five year average.



Crab Harvesting Engagement *N/A*

There is not a substantial amount of crab processing activity in Sitka to report.

Due to confidentiality concerns, only select data is available.

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. Demersal rockfish are caught as bycatch. 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.

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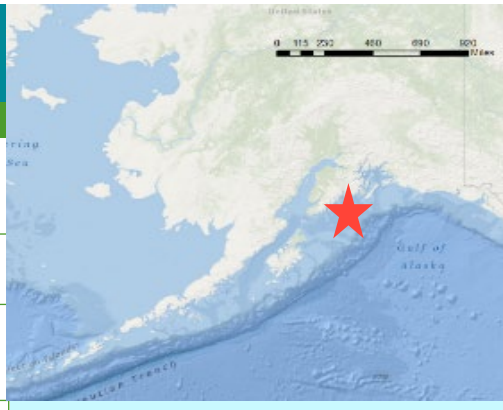
Community Sketch SEWARD



Demographics (self-identified)[1]

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
Seward	2,796	37.8% female 62.2% male	78.1%	$73,611	68.3%	13.2%	2.4%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	12.0%	1,141	13.1%	91.8%	7.8%	2.6%	9.1%

Area Description

Seward is located at the head of Resurrection Bay on the Kenai Peninsula, and is the gateway to the Kenai Fjords National Park. The earliest residents of Seward were the Unegkurmiut, a subgroup of the Alutiiq Chugash. The City was founded in 1903 as the ocean terminus of the Alaska Railroad, and is notable as a transportation hub with sea, rail, highway and air transportation to most of Alaska's major urban population centers. As an ice-free harbor, Seward has become an important transport and supply center for Interior Alaska. Seward was incorporated in 1912, and became a strategic military port during WWII. Seward was heavily impacted by the Good Friday Earthquake of 1964, with 90% of Seward's industry destroyed by several tsunami waves and resulting fires. It took many years for the city to recover. Seward was not included under the Alaska Native Claims Settlement Act, although the Qutekcak Native tribe is very active in the area and is seeking federal recognition. Additionally, Seward is recognized as home to Mile 0 of the Iditarod Trail.

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med-High
Poverty:	Med-High
Population Composition:	Low
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	Med-High
Recreational Fishing Engagement:	High
Recreational Fishing Reliance:	High

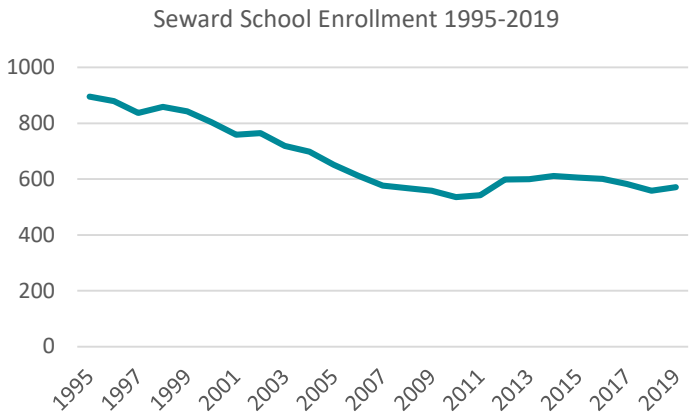
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.

Coastal hazards: TSUNAMIS, EARTHQUAKES, FLOODING, LANDSLIDES, dam failure, volcanoes, SEVERE WEATHER, EROSION.

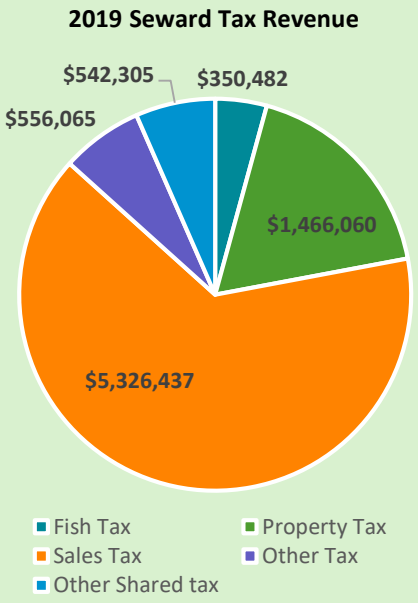
Native Associations & Corporations: Qutekcak Native Tribe

Infrastructure & Transportation

Seward is accessible by air, water, highway and rail. Bus and other commercial trucking services are available daily from Anchorage. The deep water port remains ice free year round, and services cruise ships, and other cargo barges from Seattle. The small boat harbor has slips for 650 boats. All water, waste collection, and power services are offered through the city and the borough. Medical services in Seward are provided by the Providence Seward Medical Center. ADF&G and NMFS both have offices in Seward. Seward has 3 schools; enrollment has decreased by 36.27% since 1995, although enrollment has somewhat stabilized since 2012.[6]

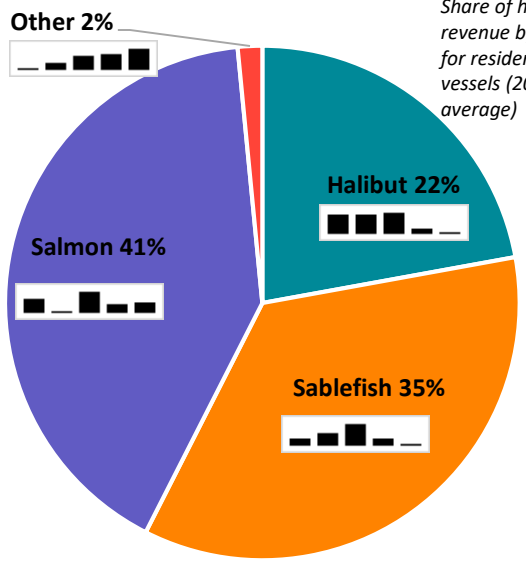


Current Economy



Seward's economy is based off its role as a transportation hub. The economy is diversified and includes commercial fishing and processing, shipping, coal export, employment through the state prison and tourism fueled by the proximity of Kenai Fjords National Park. Seward is also a popular destination for recreational fishing, with 28 active sport fish guide businesses. In 2019, 4% of the population was unemployed. According to the 2015-2019 ACS, in 2019 the per capita income in Seward was estimated to be $27,751, compared to $28,613 in 2010. The vast majority of Seward's tax revenue comes from sales tax (65%). Seward receives fisheries-related revenue from the Shared Fisheries Business Tax, and harbor usage fees. Seward received $350,482 (4%) in fish related taxes in 2019.[7]

Share of landed revenue by species for resident owned vessels *Seward 2015-2019 average*



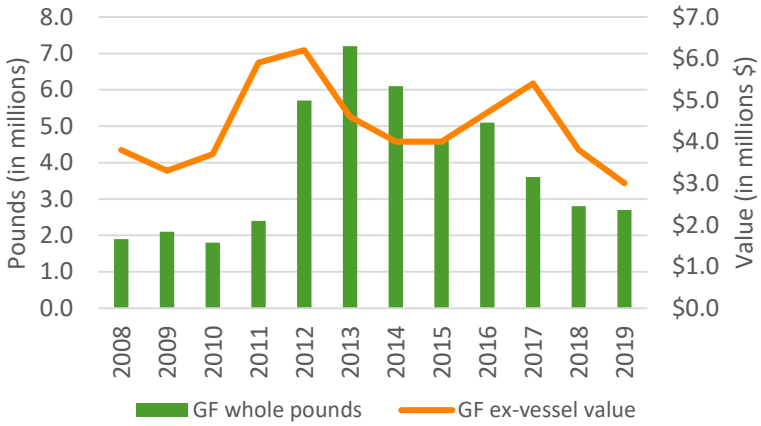
Share of harvest revenue by species for resident-owned vessels (2015-2019 average)

Bar charts represent 2015 to 2019 ex-vessel values (2019$) by species landed in the community. The scale of the y-axis is specific to the species.

GF Harvesting Engagement LOW

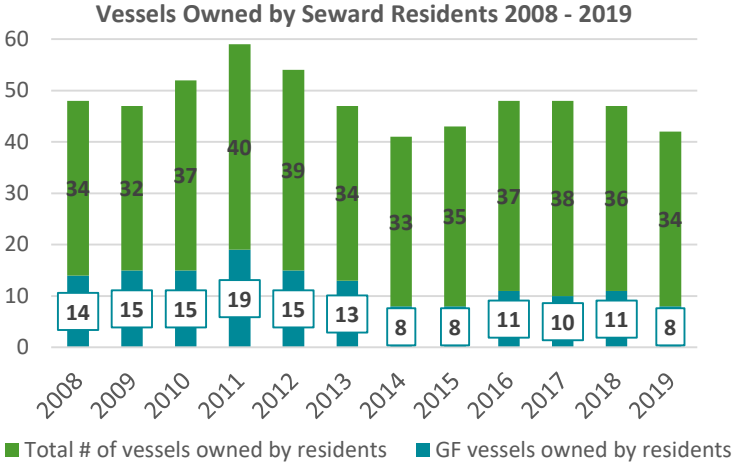
Seward participates in several fisheries. About 36% of ex-vessel value is from groundfish fisheries, while 22% from halibut fisheries, and 41% from salmon. In 2019, vessels owned by Seward residents harvested 2.7 million pounds of groundfish with an associated value of $3 million. This marks a slight decrease from the year before in volume harvested (down 81,569 pounds or 3%) and a more substantial decrease in value ($821,191 or 22%). Compared to the previous five year average, 2019 harvest volume shows a decline of 1.1 million pounds (down 28%) with an associated value of $1.2 million (down 29%). Groundfish have seen a steady and steep decline since a peak in 2013. Ex-vessel value took a turn upward in 2017 harvesting $5.4 million, but quickly dropped and continues to fall.

Volume Groundfish Harvested & Ex-vessel Value in Seward (2008 - 2019)



In 2019, number of groundfish vessels owned by Seward residents dropped by three for a total of 8 vessels. The total number of fishing vessels owned by residents was 34. Between 2008 and 2019, the number of groundfish vessels owned by Seward residents fluctuated, peaking in 2011 at 19 vessels.

Vessels Owned by Seward Residents 2008 - 2019

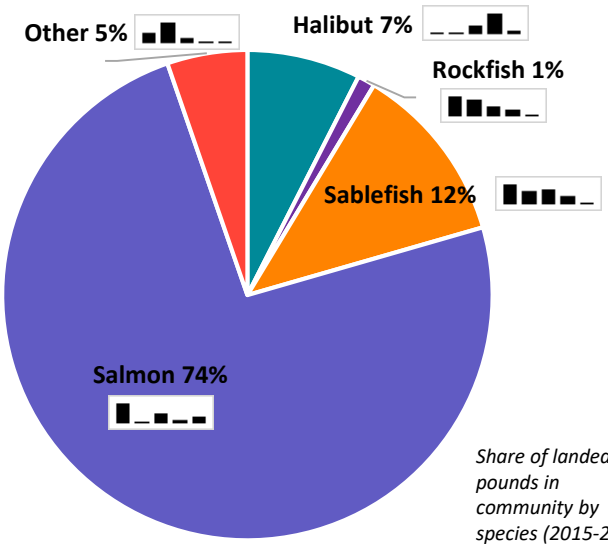


Crab Harvesting Engagement *N/A*

There is not a substantial amount of crab harvesting activity in Seward to report.
Due to confidentiality concerns, only select data is available.

Share of pounds landed by species for Seward

combined 2015-2019 average

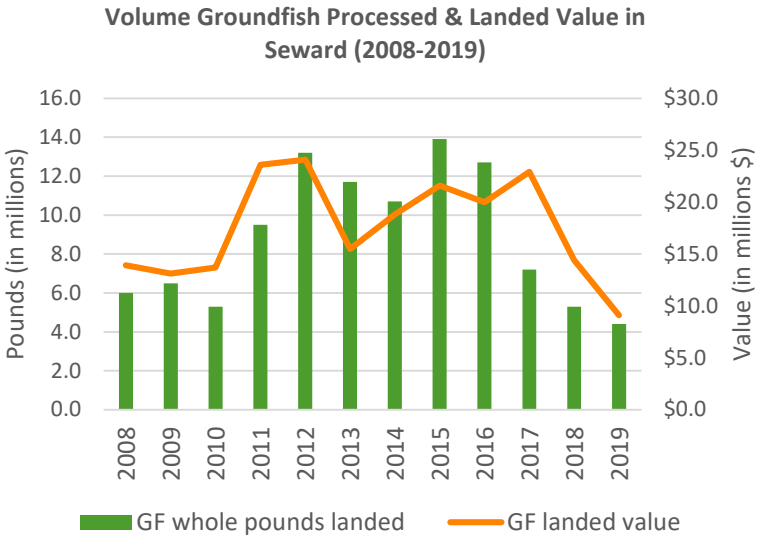


Share of landed pounds in community by species (2015-2019 average)

Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

GF Processing Engagement — HIGH

There were five processing plants in Seward that process groundfish. In 2019, processing facilities landed 4.4 million whole pounds with an associated value of $9.1 million. This shows a decrease of 902,755 pounds (17%) and $5.3 million (37%) landed value from 2018. Compared to the previous five year average, 2019 landed volume marks a decrease of 4.3 million pounds (50%) and $5.3 million in value (58%). For that same time period comparison, the greatest drop in landed value was within the Pollock processing sector (99%), followed by sablefish (48%), and Pcod (47%).



Crab Harvesting Engagement — N/A

There is not a substantial amount of crab processing activity in Seward to report.

Due to confidentiality concerns, only select data is available.

Fishing History and Regulatory Background

The first commercial salmon fishery in Prince William Sound (PWS) developed along the Copper River Delta around 1900. Commercial exploitation of halibut and groundfish first extended into the Gulf of Alaska (GOA) in the 1920s after development of diesel engines, which allowed fishing vessels to undertake longer trips. In the 1920s, herring had become increasingly valued for oil and meal, and a number of reduction plants were built. Commercial crab fisheries began to develop in the GOA in the 1930s. Historically, commercial fisheries for herring took place in both Cook Inlet and PWS. Currently, the Cook Inlet herring fishery is closed due to low stock abundance. Seward is located immediately within the Eastern district of the Lower Cook Inlet commercial salmon fishery, and the Southwestern district of the Prince William Sound commercial salmon fishery is located approximately 25 miles east of Resurrection Bay. The marine waters at the outlet of Resurrection Bay are included within Federal Statistical and Reporting Area 630, Pacific Halibut Fishery Regulatory Area 3A, and the Central GOA Sablefish Regulatory Area. Historically, both Cook Inlet and Prince William Sound supported commercial fisheries for Dungeness, king, and Tanner crab. However, crab fisheries are currently closed in these areas due to low stock abundance. In addition to federal groundfish fisheries that take place in the Central and Eastern GOA, state groundfish fisheries take place in the inland waters of Cook Inlet and PWS for rockfish, lingcod, pollock, sablefish, and Pacific cod.

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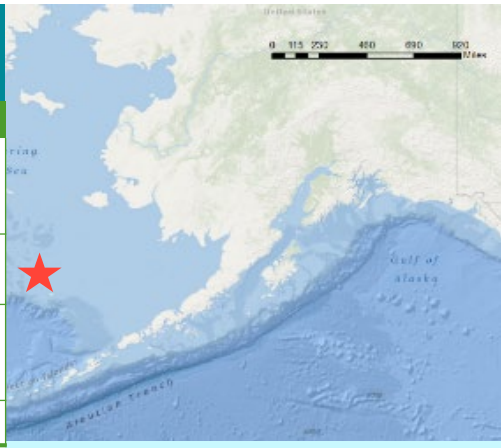
Community Sketch Saint Paul



Demographics (self-identified)[1]

	Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
St. Paul	479	38.8% female 61.3% male	82.9%	$63,571	14.8%	74.8%	0%
	Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
	12.7%	207	10.0%	87.5%	0%	3.8%	4.2%

Area Description

St. Paul is located on the southern tip of St. Paul Island, the largest of the Pribilof Islands, located north of the Aleutians in the Bering Sea. St. Paul was likely unpopulated until the arrival of the Russians, although Unangax̂ oral history acknowledges Native knowledge and use as a seasonal hunting ground on this island group before Russian contact. In 1786, Russian fur traders discovered St. Paul and relocated Aleuts from Siberia, Atka and Unalaska to hunt fur seals, and their decedents live on St. Paul today. In 1983, Congress passed the Fur Seal Act Amendments, which ended government control of the seal harvest, as well as Federal presence on St. Paul. Community services are provided by local government. St. Paul was included under the Alaska Native Claims Settlement Act (ANCSA), and is federally recognized as a Native Village. The estimated per capita income in St. Paul in 2019 was $33,925, and the estimated median household income in 2019 was $59,063, compared to $18,408 and $50,750 in 2000, respectively. The unemployment rate in 2019 was estimated at 3.4%.[1]

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Med-High
Poverty:	Med-High
Population Composition:	Low
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	Med-High
Recreational Fishing Engagement:	High
Recreational Fishing Reliance:	High

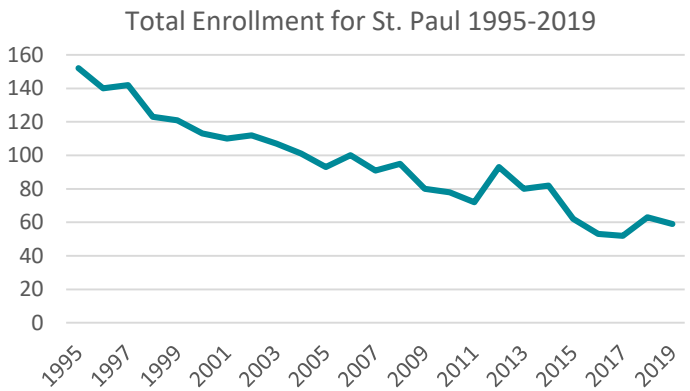
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.

Coastal hazards: TSUNAMIS, EARTHQUAKES, FLOODING, LANDSLIDES, dam failure, volcanoes, SEVERE WEATHER, EROSION.

Native Associations & Corporations: Aleutian Pribilof Islands Association; Tanadgusix Corporation

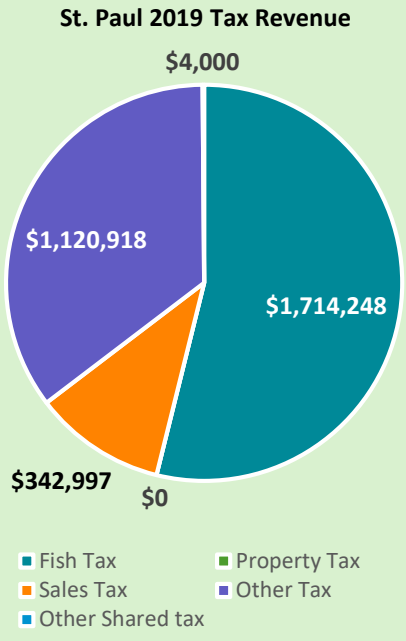
Infrastructure & Transportation

St. Paul is accessible by air and water, and has regularly scheduled flights. There is a State owned gravel runway that is 6,500 feet, as well as a breakwater, with 700 feet of dock space. Most freight arrives by barge. Water is supplied by wells and an aquifer, and is piped to all homes. A new $3 million power plant has just been completed and there is also a small wind turbine that provides power to the village office. There is one local health clinic. There is one school in St Paul; enrollment has decreased by 65.8% from 1996-2018.[6] School enrollment remains a concern, as the only other school in the Pribilofs located on St. George closed in 2018. However, enrollment at St. Paul School slightly increased to 63 from 52 students in 2019. It is currently at 59 students for the 2019-2020 school year.



Current Economy

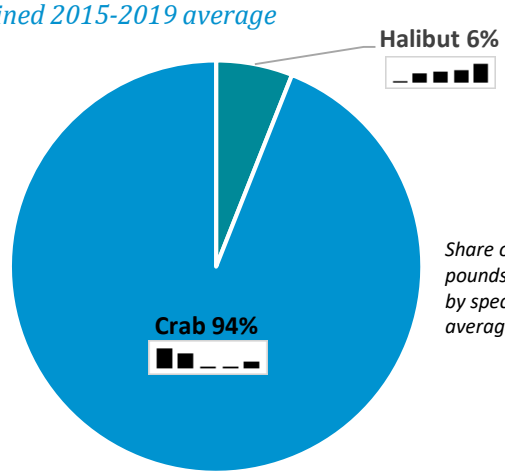
The federally controlled fur seal industry dominated the economy at St. Paul until 1985. Since then, the economy has transitioned to servicing the commercial fishing industry, and the city is a port for the Central Bering Sea fishing fleet. There is a local commercial halibut fishery, a Trident Seafoods processing plant, as well as up to nine offshore processing plants that are serviced out of St. Paul. Ecotourism, reindeer harvesting and local government jobs provide additional sources of income. Many rural residents continue to participate in subsistence harvest of marine resources. St. Paul is dependent on fisheries-related revenue, and received $1,714,248 (54%) in fish related taxes in 2018.[7]



GF and Crab Harvesting Engagement *LOW*

Halibut is the primary target fishery for St. Paul. 1.5 million pounds of halibut was harvested in St. Paul in 2019. Groundfish fisheries account for less than one percent of harvest. There is not a substantial amount of groundfish harvest activity in St. Paul to report.
Due to confidentiality concerns, only select data is available.

Share of revenue landed by species for St. Paul
combined 2015-2019 average



Share of landed pounds in community by species (2015-2019 average)

Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

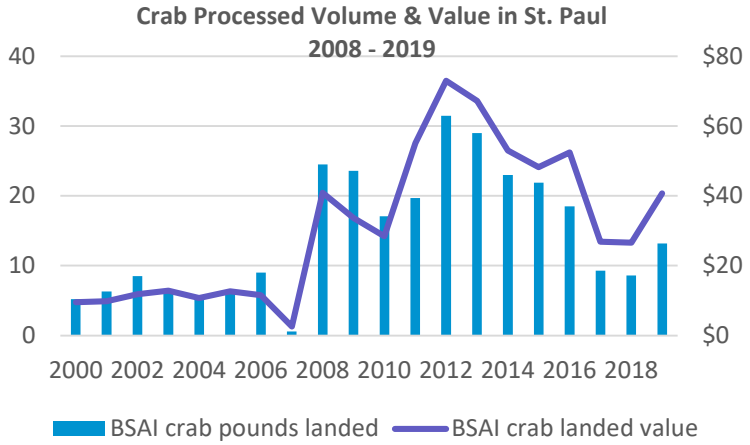
GF Processing Engagement *LOW*

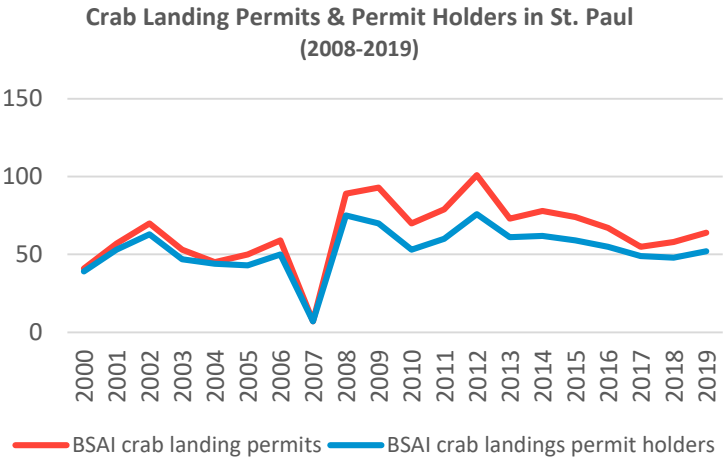
There is not a substantial amount of groundfish processing activity in St. Paul to report.
Due to confidentiality concerns, only select data is available.

Crab Processing Engagement *HIGH*

The majority of processing activity in St. Paul is for crab (94% of landed revenue). Halibut accounts for 6% of landed revenue. In 2019, the island of St. Paul had six processing facilities, which landed 13.2 million pounds of crab with an associated value of $40.7 million. This marked an increase from the last two previous years; however compared to the previous five year average, there was an overall decreased in volume by 1.1 million pounds (8%) and increase of $39 million (4%) in landed value. After hitting a peak in 2012 of 31.5 million pounds and $73 million landed revenue, crab processing began a steady decline. There was a sharp uptake in 2019.

The number of landing permits in St. Paul increased slightly since 2018 from 58 to 64 (up 10%), while the number of permit holders increased from 48 to 52 (up 8%). Compared to the previous five year average, the number of permits remained steady while permit holders fell by 1%.





Fishing History and Regulatory Background

The Pribilof Islands were historically used by Aleut people as a seasonal fishing and hunting site. Commercial fur seal harvest was the basis of the wage economy in Saint Paul until 1983, when the U.S. government ended the commercial seal harvest. Subsistence harvest of fur seals is governed by the Fur Seal Act of 1966 and the Marine Mammal Protection Act of 1972. Amendments were added to these Acts in 1985 and 1986, respectively, with the purpose "to limit the take of fur seals to a level providing for the subsistence needs of the Pribilof Aleuts using humane harvesting methods, and to restrict taking by sex, age, and season for herd management purposes." In addition to fur seal, residents of Saint Paul have historically harvested seal, sea lion, and halibut for subsistence purposes. Saint Paul is located within Pacific Halibut Fishery Regulatory Area 4C, Federal Statistical and Reporting Area 513, and the Bering Sea Sablefish Regulatory Area. Currently, the greatest number of Saint Paul residents participate in the commercial halibut fishery, while a smaller number of residents are also involved in fisheries for groundfish, crab, and salmon.

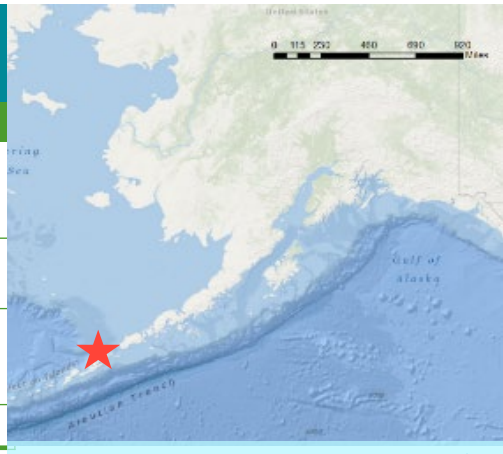
NOAA FISHERIES

Alaska Fisheries Science Center

Economic and Social Sciences Research Program

Community Sketch

UNALASKA



Demographics (self-identified)[1]

Unalaska

Population	Gender pop. (%)	Pop. Over 18 (%)	Median household income ($)	White	Am. Indian/AK. Native	Black or African Am.
4,497	39.4% female 60.6% male	82.8%	$91,635	30.2%	3.8%	5.6%
Below poverty level (%)	**Housing units**	**Pop. Over 65 (%)**	**High school graduate or higher (%)**	**Asian**	**Native Hawaiian**	**Hispanic or Latino**
6.2%	1,199	4.7%	87.6%	44.8%	2.1%	14.2%

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. In 1759, more than 3,000 nangan lived in 24 settlements on Unalaska and Amaknak Islands. Soon after, Unalaska became a Russian trading port for fur seals. The City of Unalaska was incorporated in March 1942. 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 3.87, the total number of households increased from 927 (2010), to an estimated 963 (2019).[2] Estimated unemployment in 2019 was 1.6%. In 2010, 2,099 residents lived in group quarters, which is associated with processor housing.[3] Unalaska was included under the Alaska Native Claims Settlement Act (ANCSA) and is federally recognized as a Native village.

Social Indicators for Fishing Communities[1]

Labor Force:	Low
Housing Characteristics:	Low
Poverty:	Low
Population Composition:	Med-High
Commercial Fishing Engagement:	High
Commercial Fishing Reliance:	High
Recreational Fishing Engagement:	Low
Recreational Fishing Reliance:	Low

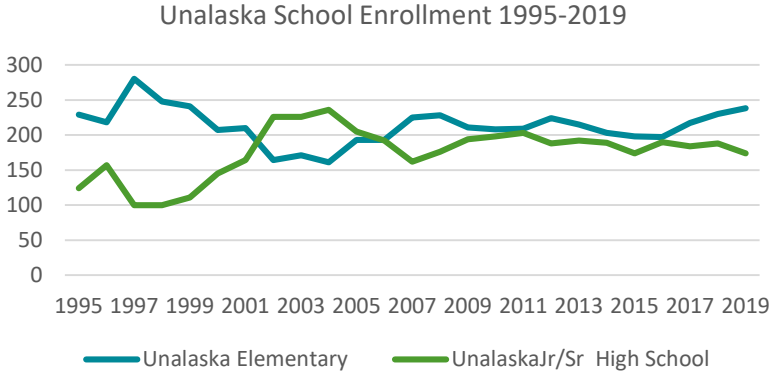
Sea Level Rise Risk*: Probability of shoreline loss between 2 and 1 m/yr is 10-33%.

Coastal hazards: TSUNAMIS, EARTHQUAKES, storm surges, EROSION, flooding, volcanoes.

Native Associations & Corporations: Ounalashka Corporation; Aleut Corporation

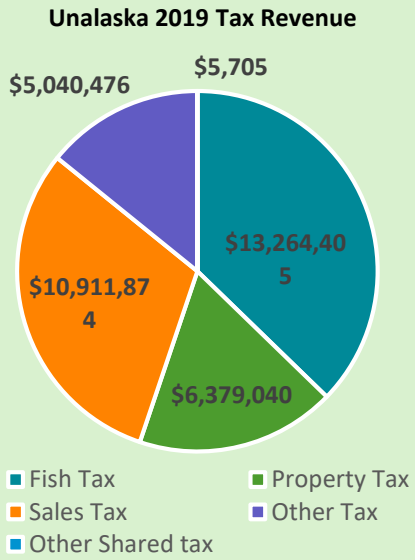
Infrastructure & Transportation

Unalaska is serviced by daily scheduled flights from Anchorage. 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 412 students in 2019-2020 school year.

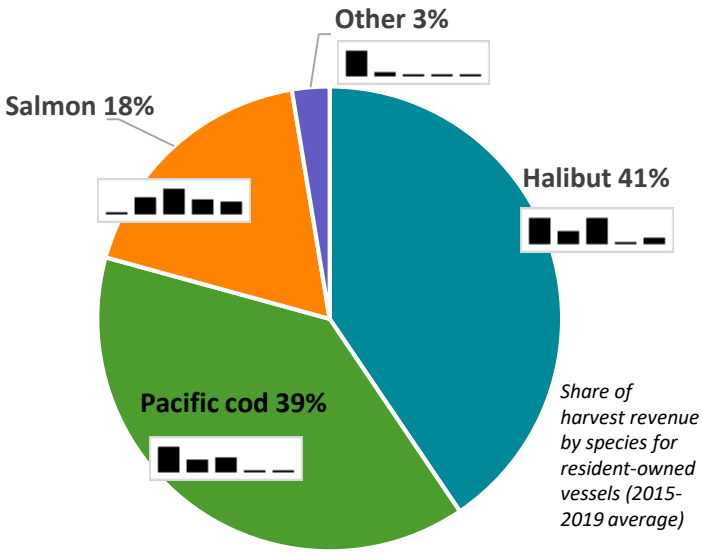


Current Economy

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, law enforcement, and fire protection.[2] In 2017, the per capita income in Unalaska was estimated to be $36,514 and the median household income was estimated to be $91,635, compared to $25,353 and $80,625 in 2010, respectively.[1]



Share of landed revenue by species for resident owned vessels Unalaska 2015-2019 average



Share of harvest revenue by species for resident-owned vessels (2015-2019 average)

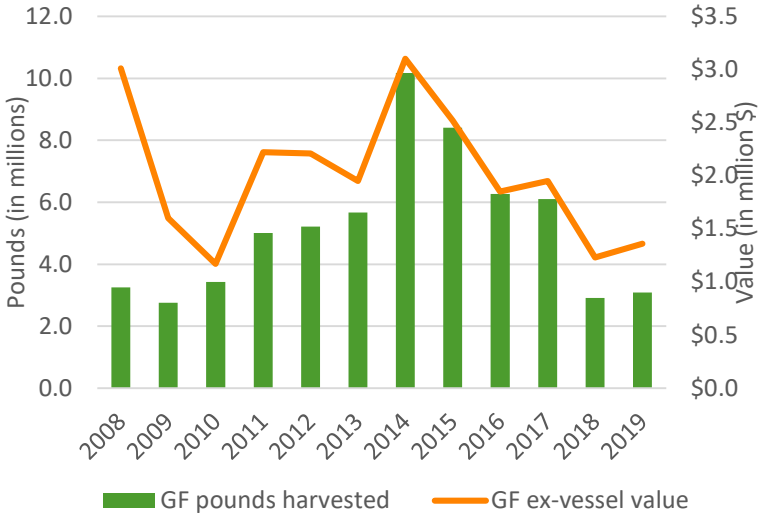
Bar charts represent 2015 to 2019 ex-vessel values (2019$) by species landed in the community. The scale of the y-axis is specific to the species

GF Harvesting Engagement — LOW

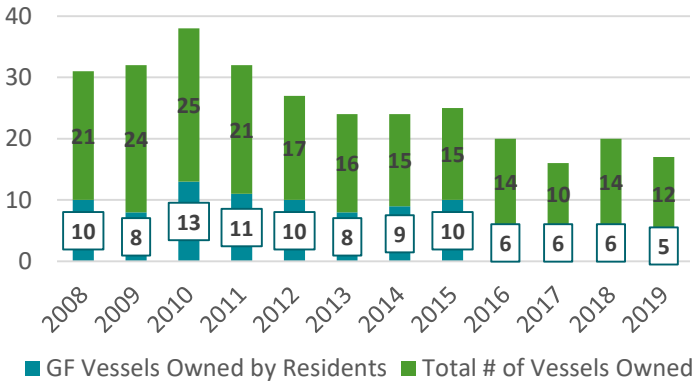
Unalaska participates in a broad suit of fisheries: in 2019 halibut accounts for 41% of the community's harvest, Pacific cod 39%, and salmon 18%. Unalaska harvested 3.1 million pounds of groundfish with an associate value of $1.6 million in 2019. This marks an increase from 2018: both volume and value harvested increased 179,237 pounds (6%) and value of $133,413 (11%) respectively. Compared to the previous five year average, the volume of harvest shows a substantial decrease of 2.3 million pounds (down 42%). Associated value also decreased by $422,335 (down 23%).

The number of groundfish vessels owned by Unalaska residents fell by one vessel in 2019 (from six to five vessels). The total number of fishing vessels in Unalaska also decreased from 14 to 12 vessels.

Volume & Value of Groundfish Harvested (2008-2019)



Vessel Ownership Among Unalaska Residents (2008-2019)



Crab Harvesting Engagement — LOW

There is not a substantial amount of groundfish harvesting activity in Unalaska to report.

Due to confidentiality concerns, only select data is available.

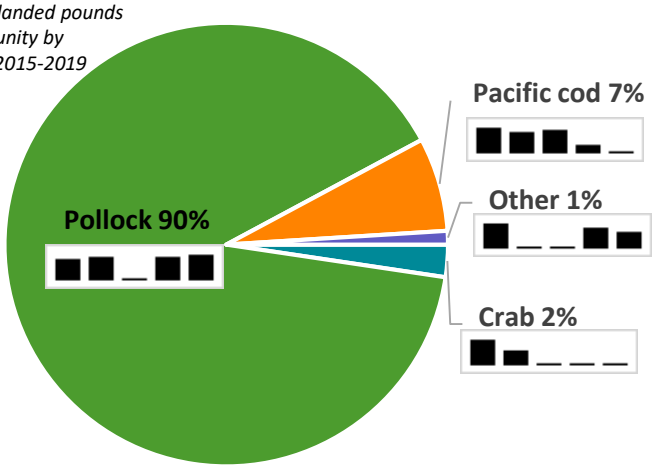
As of 2018, there were 16 crew members participating in the crab FMP residing in Unalaska, up from 10 the previous year. Despite the uptick, there is overall decreasing trend in the number of crab crew in Unalaska since a peak in 2009 of 29.

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. By 1992, Dutch Harbor was the number one U.S. port in amount and value of commercial fish landed. Today, Dutch Harbor is ranked as #1 port by volume and #2 by value of fish landed.[8] 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] 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. Unalaska is in House District 37, Senate District S.

Share of revenue landed by species for Unalaska/Dutch Harbor *combined 2015-2019 average*

Share of landed pounds in community by species (2015-2019 average)

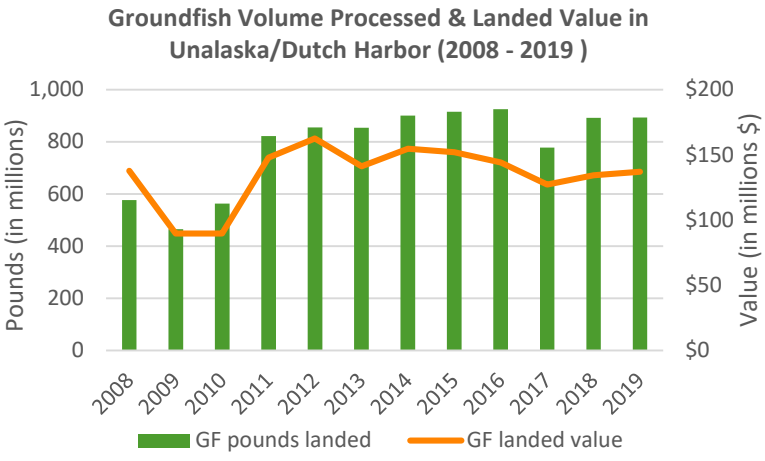


Bar charts represent 2015 to 2019 pounds landed by species in the community. The scale of the y-axis is specific to the species.

GF Processing Engagement HIGH

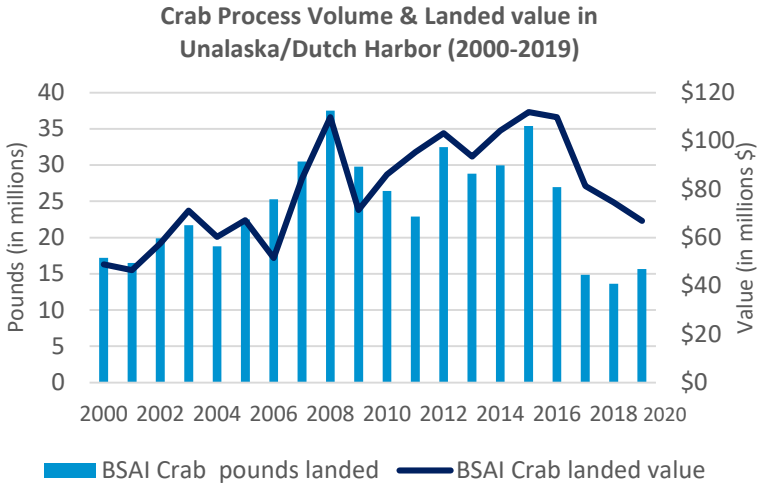
Although the majority of Unalaska residents depend on income derived directly from the commercial fishing and fish processing industry, few residents have ownership interest in major seafood related firms. Many of the largest shoreside fish processors are wholly- or partially-owned by Japanese interests. Many other large processor vessels (motherships), or floating processors are owned by non-Alaskan firms,[5] although CDQ groups have some ownership interests as well.

Unalaska has a total of 12 seafood processing plants, five of which process groundfish. The vast majority of landings in Unalaska is Pollock at 90%.; Pacific cod accounts for about 7%, and crab 2%. In 2019, Unalaska processed 893.6 million pounds of groundfish with an associated landed value of $137.1 million. This is a less than 1% increase in volume from the previous year (up 1.4 million pounds) as well as an increase in landed value(up $2.7 or 2%). Compare to the previous five year average, value of landings decreased in 2019 by $1.9 million (1%) and volume increased by 13 million pounds (2%).

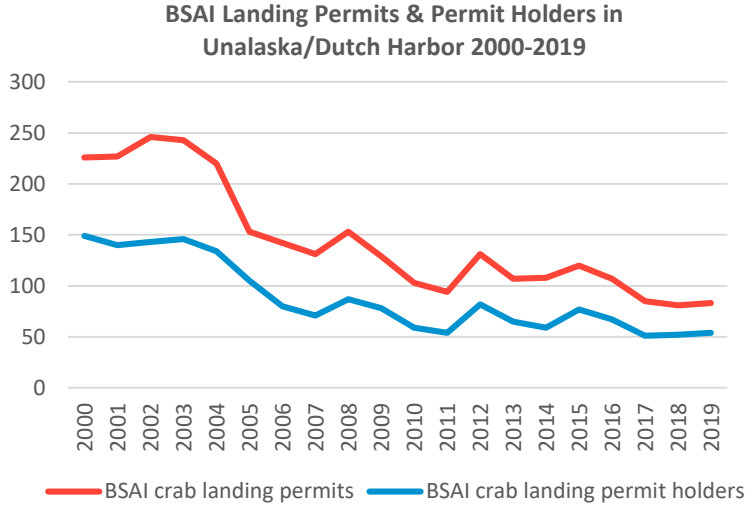


Crab Processing Engagement HIGH

Unalaska is highly engaged in the crab processing sector. The number of processing facilities in the region has diminished since its peak in 2011, with 7 in 2019. During that same year, Unalaska processed 15.7 pounds crab with an associated value of $66.9 million. This marks a 15% increase (2 million pounds) in volume landed since 2018, and a 10% decrease in landed value (down $7.8 million). Compared to the previous five year average both volume and processed and landed value in 2019 has decreased: pounds processed fell by 5.6 million (down 27%) and landed value by $22 million (down 25%). The amount of BSAI crab processed in the region reached a peak of 35.4 million pounds (with a value of $112 million) in 2015, then began a steep decline.



The number of landings permits and permit holders increased by 2 in 2019: there were 83 crab landings permits and 54 holders in Unalaska. Compared to the previous five average number of permit (95), and permit holders (60), 2019 indicates a decline of 13% and 10% respectively. The number of processing employees peaked in 2013 at 365, but has seen an overall decline since. The previous five year average was 301 emplyees,



Citations:

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[2] Alaska Community Survey, Alaska Fisheries Science Center 2013.

[3] Alaska Fisheries Information Network (AKFIN).(2019).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 08/30/2020 at http://www.eed.state.ak.us/stats/

[7] Tax data from AK. Dept. of Revenue, Annual Reports 2008-2019. Retr.' 10/15/2019 from http://tax.alaska.gov/programs/sourcebook/index.aspx; Dept. of Commerce AK Taxable Database, AK Division of Community & Regional Affairs. Retr.'11/05/2019 https://www.commerce.alaska.gov/dcra/dcrarepoext/Pages/AlaskaTaxableDatabase.aspx

[8] NOAA, NMFS Office of S&T. https://www.st.nmfs.noaa.gov/commercial-fisheries/commercial-landings/index

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