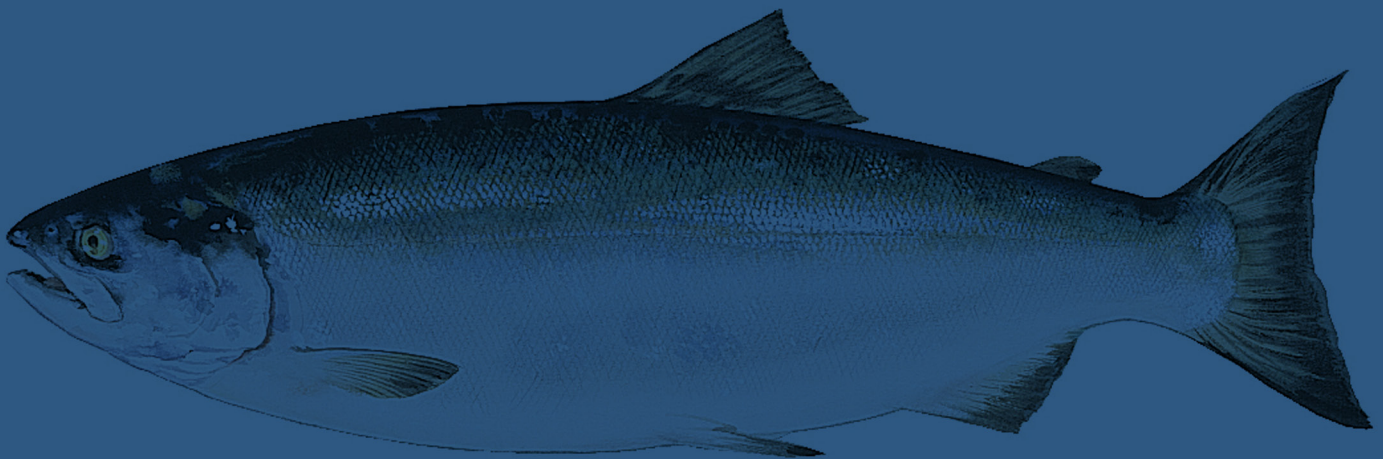




THE ECONOMIC BENEFITS OF **BRISTOL BAY** SALMON

FEBRUARY 2021



PREPARED FOR:

 **BRISTOL BAY DEFENSE FUND**

PREPARED BY:


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GROUP, LLC

Formerly McDowell Group

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Abbreviations and Terms

ADF&G	Alaska Department of Fish and Game
ADOR	Alaska Department of Revenue
AMR	Annual Management Report
ASFDB	Alaska Subsistence Fisheries Database
CFEC	Alaska Commercial Fishery Entry Commission
COAR	Commercial Operators Annual Report (Alaska Department of Fish and Game)
ADCCED	Alaska Department of Commerce, Community and Economic Development
ADOLWD	Alaska Department of Labor and Workforce Development
NOAA/NMFS	National Oceanic and Atmospheric Administration, National Marine Fisheries Service
QCEW	Quarterly Census of Employment and Wages

Other terms used in the report:

Ex-vessel value: The value at the point of sale from commercial harvester to a buyer – most often a seafood processor. In most cases this value is inclusive of post-season price adjustments.

Fisherman/Fishermen: Alaska seafood harvesters – both men and women – largely refer to themselves as fishermen. Though the gender-neutral term “fishers” has been adopted in some regions, our report uses the terms “fishermen” or “harvesters” in consideration of Alaska’s cultural norm.

First wholesale value: Alaska law requires that seafood processors report the value of the product they have purchased and processed at the first point of sale. This value is known as the “first wholesale” value.

Photos in this report are provided by the Alaska Salmon Digital Image Library and the Alaska Seafood Marketing Institute, except where noted.

Overview

Bristol Bay, Alaska encompasses 27.5 million acres of land and 12 million acres of marine ecosystem. The area is home to more than half a dozen major river systems, with hundreds of connected lakes, rivers, and streams that feed into a saltwater bay in the southeastern corner of the Bering Sea.

In recent years, more than 50 million salmon returned annually to Bristol Bay rivers. This return drives commercial and sport fisheries and underpins a significant economic, nutritional, and cultural engine that supports people throughout Alaska, the United States, and the world.

This wide-ranging system and associated dependent economic activities provide an annual recurring value to participants. All combined, the economic value of Bristol Bay's wild salmon resource in 2019 exceeded \$2.0 billion. Impacts occur within Alaska and spread from there through the Pacific Northwest and beyond.

Cultural and Harvest Values of Subsistence

- **Subsistence salmon harvest provides a significant amount of food with a high replacement value for Alaska residents.**
 - Alaskans requested **1,100 Bristol Bay subsistence salmon permits** and harvested **116,303 salmon in 2017**, the most recent year for which complete data are available.
 - The 2017 harvest equates to an estimated **503,890 pounds of usable fish** with a **replacement value of \$5 million**, assuming a cost of \$10 per pound to replace the protein source. Replacing subsistence salmon with commercially purchased equivalent would likely cost upwards of **\$10 million**. This translates to about **\$4,500 to \$9,000 in nutritional value to each participating household**.
 - For many subsistence salmon harvesters, it would not be economically or logistically feasible to replace the quality and quantity of protein subsistence salmon provides.
- **Cultural values are even more significant, though hard to quantify.**
 - Subsistence salmon harvest is critical to the **health and well-being of communities** in the region, to **individual and community identities**, and to **cultural connectedness** and continuity.
 - Subsistence is the **oldest and most continuous use** of Bristol Bay salmon, dating back thousands of years.
 - Participation in harvesting, sharing, and consumption of subsistence foods **provides essential and high-quality nutrition**, supports **physical and mental health**, and **strengthens and maintains community and cultural connectedness**.

- Salmon hold outsized importance as a subsistence resource in Bristol Bay.
 - Half to three-quarters of the Bristol Bay harvest, by pounds of usable food, is comprised of salmon, about twice the proportion of salmon in statewide subsistence harvests.
- The Bristol Bay subsistence salmon fishery is a statewide resource.
 - Overall, **30% of the state's subsistence sockeye harvest** is caught in Bristol Bay.
 - Alaskans from outside the region harvested about 16% of the Bristol Bay subsistence salmon catch in 2017.

Seafood Industry and Impacts

- Total direct, indirect, and induced impacts from the commercial fishery and related processing and support sector activity was \$2.0 billion in 2019 and resulted in 15,000 jobs.
 - This included approximately **\$990 million in economic activity in Alaska, \$800 million in the balance of the Pacific Northwest**, and the rest occurring across other regions of the United States.
 - **Scores of businesses and individuals** provide support sector services to the salmon-driven seafood industry in Bristol Bay, and harvesters and processors spend income and wages throughout the nation.
 - While direct harvesting and primary processing activity occurs in Alaska, **significant downstream activity occurs across the country**, following Bristol Bay permit holders and support sector businesses, as well as the distribution, retail, and dining businesses that provide Bristol Bay's wild salmon to consumers.
- Bristol Bay salmon runs yielded an annual commercial harvest of 218 million pounds from 2015 to 2019, with an annual direct value to harvesters of \$263 million.
 - More than **8,000 harvesters are directly employed** in the fishery each year, including more than 2,000 residents of the Bristol Bay region, another 2,500 Alaska residents, and 4,000 residents of other U.S. states.
 - Alaska resident **fishermen earned \$151 million** from Bristol Bay salmon in 2019, including **\$50 million earned by residents of Bristol Bay region communities**. Non-resident fishermen earned an additional \$192 million in 2019.
 - The Bristol Bay salmon run is a significant component of the overall Alaska salmon resource. The commercial harvest of 44.6 million salmon was **one-fifth of all salmon commercially harvested** in Alaska in 2019 and **more than half the ex-vessel value** of all Alaska salmon fisheries.

- Processed product from the Bristol Bay fishery averaged 137 million pounds between 2015 and 2019, with an average first wholesale value of nearly \$540 million. The peak value, in 2019, was nearly \$710 million.
 - Processors **employed 6,000 workers** in 2019 to transform the raw salmon harvest during the roughly 8-week harvest window from late June to mid-August.
 - Processing workers earned **\$49 million in wages** in 2019.
- Within Alaska, direct, indirect, and induced labor income from the Bristol Bay salmon fishery totaled **\$375 million** in 2019. Total associated economic output in the state was approximately **\$990 million**.
 - Commercial fishing activity resulted in **\$293.7 million** in labor income.
 - Processing activity generated **\$80.8 million** in labor income.

Tourism Industry and Impacts

- Tourism in the Bristol Bay region produced more than 2,300 seasonal jobs in Alaska (annualized equivalent of 1,400) and **\$67.9 million** in labor income in 2019.
 - Sportfishing and bear viewing are both important contributors, **generating \$77 million and \$20 million in visitor spending in Alaska**, respectively.
 - An estimated **40,000 to 50,000 people** visited the region annually to participate in these activities.
- More than 20,000 sportfishermen per year are estimated to have fished in Bristol Bay in the past five years.
 - This represents over **73,000 angler days** in the drainages of the Bristol Bay region
 - Harvest by sportfishermen totals **46,000 salmon annually** over the last 10 years.
- Roughly 90 lodges and camps in Bristol Bay cater to tourists, with a primary focus on sportfishing and bear viewing.
 - Average capacity in regional lodges is 14 guests, with **average daily rates of \$1,125**.
 - Estimated visitor **spending by lodge and camp guests was \$77 million** in 2019.
 - Sportfishing lodges and camps generate most tourism spending in the Bristol Bay region, most of which is generated by non-resident fishermen. Alaska residents also travel frequently to the region.
- Viewing bears who congregate to feed on migrating salmon is also an important tourist activity in the region, with the bulk of visitors making day trips from Anchorage or other communities in the Cook Inlet region.

- An estimated **20,000 people participated in bear viewing** during trips to Katmai National Park and Lake Clark National Park and Preserve in 2019.
- Total spending on these visitor trips is estimated at **\$20 million**.

Total Impacts within Alaska

In aggregate, employment and labor income impacts in the state of Alaska from commercial fishing, seafood processing and the salmon-driven visitor industry totaled \$442 million in 2019, with 16,900 seasonal jobs. Total economic output was \$1.1 billion.

Economic Impacts in Alaska from Commercial Fishing, Seafood Processing, and Tourism, 2019

	Direct	Indirect & Induced	Total
Seafood Industry			
Commercial Fishing			
Employment: (Seasonal) and Annualized	(8,600) 2,570	1,100	3,670
Labor Income (\$million)	\$223.2	\$70.5	\$293.7
Seafood Processing			
Employment: (Seasonal) and Annualized	(6,000) 1,200	500	1,700
Labor Income (\$million)	\$57.7	\$23.1	\$80.8
Economic Output (\$million)			\$990.0
Visitor Industry			
Employment: (Seasonal) and Annualized	(2,300) 1,400	600	2,000
Labor Income (\$million)	\$43.7	\$24.2	\$67.9
Economic Output (\$million)			\$155.0
Total All Industries			
Employment: Total (Seasonal) and Annualized	(16,900) 5,170	2,200	7,370
Labor Income (\$million)	\$324.6	\$117.8	\$442.4
Economic Output (\$million)			\$1,145.0

Source: McKinley Research Group

- **Alaska Municipalities gain significant revenues through a combination of fishery taxes, local bed taxes, and property taxes generated in the Bristol Bay region.**
 - The State of Alaska passed more than **\$5 million in fishery tax revenues** through to **13 local municipalities** in the Bristol Bay region on average in the three fiscal years from FY2018-FY2020. The state retained a near-equivalent amount.
 - Local raw fish taxes are also levied in four regional municipalities. These generated an **additional \$6.1 million per year** on average in the same period.

- Bed taxes, a significant portion of which can be assumed to be from salmon-related summer tourism and seafood activity, generated **\$475,000 in revenue for regional communities** in FY2019.

Study Purpose

Salmon are the lifeblood of Bristol Bay. The teeming salmon runs that return to Bristol Bay rivers each year drive the regional ecosystem, economy, and way of life. Bristol Bay is home to the largest wild sockeye run in the world and supports the most high-value salmon fishery in the state of Alaska. The region draws visitors from all over the world for salmon and trout sportfishing, and for opportunities to view the brown bears that thrive on a salmon-rich diet. Salmon is also at the center of the region's enduring subsistence traditions, which provide essential nutrition and sustain community well-being and identity.

This study quantifies the economic impact of the Bristol Bay salmon resource, tracking its contribution through commercial fisheries and seafood processing, the visitor industry, and the region's subsistence way of life. The annual salmon returns, with wise stewardship, represent perpetual opportunities to benefit a broad group of stakeholders in Alaska and the United States. This study includes:

- An overview of the study region, including its history, the magnitude of its salmon resource, and key geographic and demographic features.
- Analysis of the value of the region's subsistence salmon harvest and use.
- Assessment of the commercial salmon fishing and processing industries.
- Analysis of the salmon-supported tourism sector in the region, including profiles of a sampling of lodges and camps, and bear-viewing providers.
- Quantification of the collective economic benefit of salmon in the region.

Study Region

This study considers the area of Alaska known as the "Bristol Bay region," defined as areas and associated communities whose water resources drain into Bristol Bay in Southwest Alaska.

The region includes more than two dozen communities spread across an area of about 40,000 square miles (27.5 million acres), an area the size of Ohio.

An estimated 7,000 people live in the Bristol Bay region. The largest community is Dillingham, with a population of 2,226 in 2020. The remainder of the region's inhabitants live in communities of fewer than 1,000 people.

Figure 1. Communities of the Study Region



Bristol Bay is home to Yup'ik, Denai'na, Unangan, and Alutiiq people belonging to 25 federally recognized tribes. Indigenous peoples comprise about two-thirds of the Bristol Bay population.

Bristol Bay communities include the following:

- Along the Wood River: Aleknagik, Dillingham, Clark's Point, Ekok
- On the north side of the Alaska Peninsula: Naknek, South Naknek, Egegik, King Salmon, Ugashik, Pilot Point, Port Heiden
- On the Nushagak River: Portage Creek, Ekwok, Koliganek, New Stuyahok
- On the Lake Clark/Iliamna Lake/Kvichak River system: Iliamna, Igiugig, Kokhanok, Levelock, Newhalen, Nondalton, Pedro Bay, Port Alsworth
- West of Dillingham: Manakotak, Togiak, Twin Hills

Bristol Bay region landscapes inspired designation of three national parks and preserves, three national wildlife refuges, two national monuments, and one federally designated wild river. In addition, one of Alaska's largest state parks – Wood-Tikchik – lies within the region.

- Refuges: Togiak National Wildlife Refuge, Becharof National Wildlife Refuge, Alaska Peninsula National Wildlife Refuge
- National parks and preserves: Katmai National Park and Preserve, Lake Clark National Park and Preserve, Katmai National Park and Preserve
- National monuments: Aniakchak National Monument, Aniakchak National Monument and Preserve
- Federally designated wild river: Alagnak River

The Bristol Bay watershed supports a diversity of wildlife, including 29 fish species, more than 190 bird species, and more than 40 species of terrestrial mammals. The basin's extensive freshwater system includes nine major rivers, countless streams, and some of the largest lakes in the United States (Iliamna and Becharof Lakes). The major rivers – the Togiak, Igushik, Nushagak, Ugashik, Wood, Alagnak, Egegik, Kvichak, and Naknek Rivers – all support salmon runs; the Nushagak and the Naknek-Kvichak systems are the largest and most productive.

Bristol Bay Salmon

The Bristol Bay salmon resource is exceptional in scope, size, and impact, and includes the largest wild sockeye salmon run in the world. The region supports all five salmon species, and, with no hatcheries, the stocks are all wild. Returning salmon are the keystone for a rich ecosystem that transfers marine nutrients into upstream watersheds to fuel dependent animals ranging from small microorganisms to 1,500-pound brown bears.

The region's ecological diversity supported evolution of significant genetic diversity within sockeye and other salmon species that originate in the basin. Researchers note several hundred discrete populations of salmon in Bristol Bay watersheds.¹ These populations, with habitat-driven genetic adaptations to the unique stream conditions where they spawn, have developed unique characteristics and distinguishable genetics. Scientists point to a "portfolio effect," whereby the region's salmon populations have more resilience due to this local diversity.



A Salmon-Centric History

Subsistence Roots

Yup'ik, Dena'ina (Athabascan), and Unangan (Aleut/Alutiiq) peoples have inhabited the Bristol Bay area for 10,000 years, living off the bounty of the lands and waters. Subsistence traditions center on salmon: almost three-quarters of wild food harvest in the Bristol Bay area is comprised of salmon, and the Southwest Region has the highest subsistence participation in the state.

This subsistence tradition has persisted through numerous changes and disruptions. In 1780, Alaska was claimed by Russia, and Russian explorers, fur traders, and missionaries were drawn to Bristol Bay. Russian cultures and traditions, including the Russian Orthodox Church, remain intermingled with Alaska Native traditions in the region.

Rise of Commercial Fisheries

The U.S. purchased Alaska from Russia in 1867, and in 1883, the first Bristol Bay salmon cannery opened at Naknek. More followed, signaling the start of a commercial fishery that soon accounted for more than half the state's commercial salmon catch.

In 1912, the largest volcanic explosion of the 20th century occurred at Katmai. Forewarned by days of rumbling, many fled nearby villages, and no one was killed, but the land and communities were deeply altered. The "Spanish flu" in 1918 devastated Bristol Bay, killing a majority of adults in many villages. The same year, the Bristol Bay salmon run crashed – from 25 million fish in 1918 to 6 million in 1919 – adding to the region's woes.

¹ <https://www.scientificamerican.com/article/salmon-runs-portfolio/>

The community of King Salmon became the site of a World War II airbase in 1941, and a village grew up around the base. The station went into caretaker status in 1993. Today, King Salmon's state-owned airport has the longest runway in the region, giving the village a key role in regional transportation and logistics.

Statehood and Limited Entry

Through the first half of the 20th century, federal regulators attempted to protect salmon escapement, with limited success: "By most accounts, enforcement of many of these regulations was negligible and the restrictions proved to be inadequate to achieve sufficient spawning escapements."² Federal legislation in 1924 meant to protect the fishery likewise faltered, and by the end of the 1920s there were indications of serious overfishing.



Concerns about unsustainable fisheries harvest in Bristol Bay and throughout the Territory of Alaska served as a core motivation for statehood. Outside interests were seen as decimating Alaska stocks for short-term gain, with little interest in conserving the resource for long-term benefit. Alaskans wanted to control their own resources, most notably fisheries. In 1959, Alaska became the 49th state, and a new era of fisheries management began.

The state's efforts to implement fisheries limitations ran into constitutional hurdles, leading to passage in 1972 of an Alaska constitutional amendment that authorized the state to limit entry into any fishery "for purposes of resource conservation, to prevent economic distress among fishermen and those dependent upon them for a livelihood and to promote the efficient development of aquaculture in the State."

Passage of the Alaska's Limited Entry Act (AS 16.43) followed in 1973. The act established the Commercial Fisheries Entry Commission to administer and adjudicate the limited entry system. Limited entry was implemented in 19 of the state's salmon fisheries in 1974, including the Bristol Bay salmon drift and set gillnet fisheries.

The State of Alaska's regulatory objectives for Bristol Bay salmon fisheries include managing for sustained yields, maintaining the genetic diversity and overall health of the escapement, providing an orderly fishery, helping to obtain a high-quality fishery product, and harvesting fish consistent with regulatory management plans. In 2016 the state announced the two-billionth salmon harvested in Bristol Bay's then-132-year commercial fishing history.

² Commercial Fisheries Entry Commission. https://www.cfec.state.ak.us/RESEARCH/salmon/CHPT2_10_21_04.pdf

Sportfishing and Tourism

In recent decades, Bristol Bay has become a sportfishing mecca, drawing visitors from across the globe seeking an unparalleled fishing and wildlife viewing experience in a spectacular and remote landscape. Visitors generally fly into full-service lodges, and tend to fish rivers and lakes, while commercial fishing is more ocean centered. Unlike other areas where sport and commercial fisheries interests have tangled, Bristol Bay's sport and commercial fisheries tend to occupy separate orbits and have coexisted peacefully.

More than 90 lodges, primarily catering to sportfishing and bear viewing, operate in the region. Many are accessible only through a network of "bush" plane operators with regional linkages to urban Alaska. While commercial fishing contributes a greater share of jobs and economic activity, sportfishing and related enterprises such as bear viewing help diversify the region's economy through sustainable resource use.

Subsistence Harvest

Subsistence is the oldest and most continuous use of Bristol Bay's remarkable salmon runs. The Alaska National Interest Lands Conservation Act of 1980 defines subsistence uses as "customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools or transportation; for the making and selling of handicraft articles out of non-edible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

Alaskans reported harvesting 116,303 salmon in Bristol Bay's 2017 subsistence fishery, the most recent year for which data are available, with a replacement value of between \$5 million and \$10 million, assuming one were to replace the protein pound for pound by purchasing store-bought alternatives. This translates to about \$4,500 to \$9,000 in nutritional value to each participating household.

But subsistence is far more than food; it is a critical underpinning of the health and well-being of communities in the region, of individual and community identities, and of cultural connectedness and continuity. A 2009 peer-reviewed study found participation in traditional subsistence activities to be higher in Southwest Alaska than in any other region of the state.³ In the Bristol Bay area, the center of subsistence activity is salmon. As the U.S. Environmental Protection Agency wrote of indigenous peoples of Bristol Bay, "Salmon are integral to the entire way of life in these cultures as subsistence food and as the foundation for their language, spirituality, and social structure."

The Alaska Department of Fish and Game wrote in a 2015 report:

In an area that is world-renowned for its commercial fisheries and its recreational opportunities, subsistence uses of wild renewable resources remain the most consistent and the most reliable component of the local economy of Bristol Bay communities. ... At the beginning of the 21st century, subsistence activities and values remain a cornerstone of area residents' way of life, a link to the traditions of the past, and one of their bases for survival and prosperity.⁴

Salmon comprise almost three-fourths of wild foods harvested in Bristol Bay, in pounds of usable food. Statewide, about one-third of the wild food harvest is comprised of salmon, making salmon a disproportionately important resource for subsistence users in Bristol Bay. Sockeye is the most significant salmon species harvested in the area, accounting for 77% of the subsistence salmon harvest in 2017 by number of fish, a figure that has been consistent over time.

The Bristol Bay subsistence fishery also has outsize value to subsistence users in the rest of the state. Fourteen percent of Bristol Bay's subsistence salmon harvest is caught by Alaskans from outside the region. Overall, 30% of the state's subsistence sockeye harvest is caught in Bristol Bay.

³ <https://www.tandfonline.com/doi/abs/10.3402/ijch.v67i4.18346?src=recsys>

⁴ Special Publication No BOF 2015-04: An Overview of the Subsistence Fisheries of the Bristol Bay Area.

https://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2015-2016/bristolbay/SP2_SP2015-004.pdf

Value of Bristol Bay Subsistence Salmon Harvest

Economic Value

In most Bristol Bay communities, subsistence is integral to the economy and way of life. ADFG describes rural Alaska's mixed "subsistence-market" economy:

Families invest money into small-scale, efficient technologies to harvest wild foods, such as fish wheels, gillnets, motorized skiffs, and snowmachines.... Successful families in these areas combine jobs with subsistence activities and share wild food harvests with cash-poor households who cannot fish or hunt, such as elders, the disabled, and single parents with small children.

REPLACEMENT OF PROTEIN SOURCE

It would cost between an estimated \$5 to \$30 per pound or more to replace subsistence salmon protein with a store-bought substitute, depending on the quality of the replacement, the location of the subsistence harvester, and timing. Even at the high end of this range, it might not be possible to purchase protein of equal nutritional and health value consistently. As ADFG notes, "It is unlikely that adequate substitutes for many subsistence foods produced in the region could be purchased."

Our research supports this observation. Calls to Bristol Bay groceries and suppliers indicate that animal-based protein sources can be found for about \$5-6 per pound at the low end in Dillingham (e.g., for boneless chicken or ground beef) to \$9-18 per pound or more for steak. These prices are not for organic meats, which have very limited availability. Of the six grocery stores in the region reached for this study (three in Dillingham, three in other communities), only one carried organic meat, and then only occasionally. One offered grass-fed ground beef for \$11 per pound.

Not all protein sources are created equal, however. Alaska's salmon is prized for its unique nutritional quality. Compared to typical protein sources such as chicken and beef and even many other types of seafood, wild Alaska salmon is high in protein, Omega-3 fatty acids, and vitamins, while low in saturated fats and naturally free of pesticides and additives. While it may be possible to replace the quantity of protein in subsistence salmon harvests, it would be very difficult for subsistence harvesters to replace the quality. *The "replacement value" exercise is a way of illustrating one component of the value of subsistence salmon harvests, rather than a practical scenario.*

Within the region, Bristol Bay salmon is not broadly available for purchase at the six grocery stores reached for this study. One store carries imported farmed salmon (Nova Scotia smoked lox) for \$17 per pound, and another offered smoked Alaska salmon for \$25 per pound. The others said they did not have salmon for sale. While some independent sellers in Bristol Bay sell salmon direct to buyers, pricing and availability vary.

Outside Dillingham, animal-based protein sources tend to cost at least \$1 to \$2 per pound more than in Dillingham, and fewer products are available. If residents are able to plan ahead and purchase somewhat larger quantities from Dillingham, groceries can be shipped for about \$0.50 to \$1.00 per pound, depending on the carrier, the amounts shipped, and the carrier's pricing structure.

At the low end, assuming Bristol Bay subsistence salmon harvests could be replaced by non-organically non-salmon meats for about \$5 per pound, the replacement value of the Bristol Bay subsistence salmon harvest would be \$2.5 million based on 2017 harvest data. At the high end, assuming \$20 per pound to more closely approximate the quality of subsistence salmon, the value would be \$10 million.

The following table shows calculations assuming a hybrid \$10 per pound replacement value. In this scenario, Alaskans would pay just over \$5 million to purchase 503,890 pounds of protein. Attempting to replace subsistence salmon pound-for-pound with Bristol Bay salmon purchased on the market would cost an estimated \$20. Again, it should be noted that this exercise is for illustrative purposes only, and is limited to one dimension of the value of subsistence salmon, notably its value as a protein source.

Table 1. Estimated Replacement Value of Bristol Bay Subsistence Salmon Harvest, 2017

	Chinook	Sockeye	Coho	Chum	Pink	Total
Number of fish	12,985	89,704	8,154	4,907	553	116,303
Pounds of usable fish	98,199	341,567	39,776	22,907	1,441	503,890
Usable fish, % of total by species	19%	68%	8%	5%	0	100%
Replacement value (\$10/pound)	\$981,992	\$3,415,673	\$397,762	\$229,066	\$14,411	\$5,038,904
Replacement value (\$20/pound)	\$1,963,980	\$6,831,346	\$795,524	\$458,140	\$28,820	\$10,077,800

Source: ADF&G and McKinley Research Group estimates.

OTHER ECONOMIC BENEFITS

There are also indirect household economic benefits of subsistence harvesting. As one Yup'ik woman in the region said, subsistence enables her to live and raise her two children while working as a self-employed artist with a limited cash income. Apay'uq Moore said subsistence provides her family high-quality food, and also saves her child care expenses because she is able to engage in subsistence activities with her children. In her view, which is supported by a growing body of research, subsistence also saves her family and the health care system in avoided mental health care costs, because subsistence practices and foods are healing and therapeutic. Subsistence also provides the inspiration for Moore's art, which in turn generates the cash she needs to supplement and support her family's subsistence lifestyle:

Subsistence has afforded me all sorts of things. Being able to have my kids with me ... I work from home and I'm a single mom. Without working for anyone else I'm able to do everything. It's difficult quantifying it all into dollar figures, to nitpick and say what is it saving me.

Other economic benefits derive from dollars circulated in the local economy in support of subsistence activities. For example, subsistence harvesters may spend money on boats, fuel, and other equipment. This includes subsistence harvesters who live in the region as well as those who travel from other parts of Alaska. Thus, the replacement value of subsistence salmon should be viewed as a low estimate of the economic value of subsistence salmon in Bristol Bay.

Health, Social, and Cultural Values

While there is significant tangible economic value to subsistence salmon in Bristol Bay, as Moore suggests, the value of subsistence activity goes much deeper than dollars. As the National Park Service notes, subsistence involves more than food:

*It involves the fundamentals of identity and culture, including the customs, traditions, values and beliefs that make Alaska Native peoples and rural communities unique. The subsistence way of life is rooted in a strong sense of place that extends back through the generations. It involves the social and economic ties that bind families and communities together. And, most importantly, it endures over time through the passing of traditional knowledge from one generation to the next.*⁵

The State of Alaska likewise acknowledges the multiple values of subsistence practices:

*The harvest and processing of wild resources for food, raw materials, and other traditional uses have been a central part of the customs and traditions of many cultural groups in Alaska, including Aleut, Athabaskan, Alutiiq, Euro-American, Haida, Inupiat, Tlingit, Tsimshian, and Yupik for centuries. The Alaska legislature passed the state's first subsistence statute in 1978 and established subsistence as the priority use of Alaska's fish and wildlife. The law defined subsistence as "customary and traditional uses" of fish and wildlife and highlighted the unique importance of wild resources, and the continuing role of subsistence activities in sustaining the long-established ways of life in Alaska.*⁶

These broader benefits and roles of subsistence have indirect and likely significant economic benefits, but they are difficult to quantify. We describe them briefly in qualitative terms:

Health: Subsistence salmon are more nutritious than most store-bought equivalents, without the chemical additives. Wild salmon are rich in healthy fats and protein and are lower in unhealthy fats than typical store-bought meat.⁷ Studies also point to the health benefits of increased physical activity associated with harvesting and processing subsistence foods.⁸ There is also growing acknowledgment of the mental health benefits of participation in subsistence harvest and consumption.

Social and cultural benefits: Sharing is integral to subsistence values. A study of community sharing in six Bristol Bay/Alaska Peninsula communities found that 96% of households in the communities used subsistence salmon; 80% received salmon from other households; and 56% gave salmon to other households. Sharing alleviates potential economic distress among vulnerable residents and strengthens community relationships. "Sharing plays a critical role in community cohesion," study authors noted. Subsistence participation is also a way of teaching, learning, and practicing Alaska Native ethics and values.⁹ Subsistence participation – in harvest, sharing, and consumption – builds individual and community resilience. A growing body of research finds participation in subsistence activities strengthens cultural connections and helps protect individuals against adverse health impacts of trauma. A study of 3,830 Alaska Natives in three regions of the state, including Southwest Alaska, found subsistence is integrally linked to culture:

*Both traditional food and physical activity were associated with greater tribal self-identification, speaking a Native language at home, using traditional remedies and participating in or attending traditional events.*¹⁰

⁵ <https://www.nps.gov/subjects/alaskasubsistence/subsistence-learn.htm>

⁶ <https://www.adfg.alaska.gov/index.cfm?adfg=subsistence.definition>

⁷ http://www.adfg.alaska.gov/static/regulations/regprocess/gameboard/pdfs/2018-2019/se/rcs/rc012_ADF&G_Subsistence_Food_security_whitepaper.pdf

⁸ <https://www.tandfonline.com/doi/abs/10.3402/ijch.v67i4.18346?src=recsys&>

⁹ <https://www.poa.usace.army.mil/Portals/34/docs/civilworks/currentproj/APPXBSubsistenceFINAL012512.pdf?ver=2017-04-07-203156-967>

¹⁰ <https://www.tandfonline.com/doi/abs/10.3402/ijch.v67i4.18346?src=recsys>

This study found participation in traditional subsistence activities higher in Southwest Alaska than any other region of the state. The study also found salmon was the top subsistence resource consumed, followed by moose and *agutak* (a mixture of berries and fat).

Subsistence Salmon Harvests

Bristol Bay and Statewide Harvests

In 2017, the most recent published regional and statewide data, Bristol Bay subsistence salmon harvests totaled 116,303 fish, based on 1,000 returned subsistence permits with harvest data.¹¹ This harvest represents a significant portion of the statewide subsistence salmon harvest. Statewide, 7% of subsistence salmon permits returned to ADF&G reported Bristol Bay catch, and almost 14% of subsistence salmon, by number of fish, were harvested in the Bristol Bay Management Area. The Bristol Bay subsistence harvest comprised 29% of the state’s subsistence sockeye harvest, and 16% of the state’s subsistence Chinook harvest. Returned permits represent 90% of the 1,110 subsistence salmon permits requested for the Bristol Bay Management Area. ADF&G’s Subsistence Division extrapolates total harvest numbers based on returned surveys.

The harvest figures below do not include fish removed for home use from commercial catches. In addition, ADF&G reports that fish caught later in the season, such as coho and spawning salmon, are probably not documented as consistently as Chinook and prespawm sockeye. Thus, these figures may underestimate the subsistence harvest.

Table 2. Bristol Bay Management Area and Statewide Subsistence Salmon Harvests, 2017

	Permits Returned	Reported Salmon Harvest by Number of Fish					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Bristol Bay	1,000	12,985	89,704	8,154	4,907	553	116,303
Statewide	14,044	82,198	308,421	92,359	325,446	54,506	862,930
Bristol Bay as % of Statewide Harvest	7%	16%	29%	9%	2%	1%	14%

Source: ADF&G Division of Subsistence ASFDB 2018 (ADF&G, 2019).

Salmon holds unique importance in Bristol Bay as a subsistence and personal use resource. On average, Bristol Bay Borough residents in 2017 harvested 202 pounds of wild salmon per capita for home use, nearly ten times the statewide figure. Salmon comprised nearly three-quarters (73%) of all wild foods harvested in Bristol Bay, by weight, double the statewide average of 37%.¹² Bristol Bay Borough was second only to Lake and Peninsula Borough – most of which lies in the Bristol Bay drainage – in the amount of wild salmon harvested per capita.

¹¹ Each year, a subsistence permit is mailed to any household that returned a completed permit the previous year. Permits are also available by request in person, by phone, or by mail from ADF&G. All permit holders are required to record their harvest on the permit, listing areas shed by date and salmon harvested by species, and return the permit, regardless of whether they shed, no later than February 1 of the year following when the permit was issued (5 AAC 01.530(c)).

¹² <https://www.adfg.alaska.gov/static-sub/CSIS/PDFs/Estimated%20Harvests%20by%20Region%20and%20Census%20Area.pdf>

Table 3. Per-capita Bristol Bay Borough and Statewide Wild Food Harvests for Home Use, 2017

	Salmon (lbs.)	Total (lbs.)	Salmon as % of total wild harvest
Bristol Bay Borough	202.0	275.8	73%
Statewide (rural and urban)	22.8	61.6	37%

Source: ADF&G Division of Subsistence, 2019.

Historical Trends

Subsistence salmon harvests are trending downward in Bristol Bay, as they are statewide. The harvested number of subsistence salmon in 2017 was 8% below the previous five-year average, and 19% below the historic average. Harvested numbers of sockeye, the most significant subsistence species, show similar trends. The Alaska Board of Fisheries in 1993 determined that between 157,000 and 172,121 salmon is the amount “reasonably necessary” to provide for subsistence uses. Amounts for specific species or stocks were not established.

Table 4. Bristol Bay Management Area Subsistence Salmon Harvests, 2017 and Historical Averages

	Permits Returned	Reported Salmon Harvest by Number of Fish					
		Chinook	Sockeye	Coho	Chum	Pink	Total
2017	1,000	12,985	89,704	8,154	4,907	553	116,303
5-year average (2012-2016)	1,016	15,000	96,805	7,074	4,935	2,060	125,873
Historical average (1983-2016)	966	14,769	112,386	8,136	6,251	2,306	143,849

Source: ADF&G Division of Subsistence, ASFDB 2018 (ADF&G, 2019). Harvests are extrapolated for all permits issued, based on those returned.

A 2015 special report on subsistence in Bristol Bay found that declines in the subsistence salmon harvest since the 1990s are due to lower harvests per permit rather than less fishing effort. Since 1996, the analysis found, harvest per day was down 26% in years of escapements under 2 million fish, compared to the previous 13-year average.

Community Harvest Data

Under state regulations, all Alaska residents are eligible to participate in subsistence salmon fishing in the Bristol Bay Area. In Bristol Bay in 2017, local residents caught 84% of the subsistence salmon harvest, while other Alaska residents harvested 16%. The table below shows subsistence salmon harvests reported for each Bristol Bay community.

Table 5. Bristol Bay Area Subsistence Salmon Harvests by Community and Species, Alaska Residents Living Outside Bristol Bay, 2017

	Permits Returned	Reported Salmon Harvest by Number of Fish					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Aleknagik	21	984	1,706	176	50	0	2,916
Clarks Point	7	111	326	387	29	0	853
Dillingham	293	5,935	17,330	3,685	2,470	166	29,587
Egegik	2	0	27	63	1	1	92
Ekwok	14	540	691	164	227	0	1,622
Igiugig	5	11	853	0	0	0	864
Iliamna	17	5	3,388	0	0	0	3,393
King Salmon	70	130	5,130	203	28	30	5,520
Kokhanok	14	7	6,030	11	3	1	6,052
Koliganek	13	709	1,171	183	192	32	2,286
Levelock	2	1	168	0	0	0	169
Manokotak	22	191	2,018	153	14	24	2,400
Naknek	92	400	9,769	781	142	47	11,140
New Stuyahok	27	2,143	2,160	651	812	19	5,785
Newhalen	11	0	3,402	0	0	0	3,402
Nondalton	10	0	6,548	0	0	0	6,548
Pedro Bay	13	0	1,773	0	0	0	1,773
Pilot Point	2	0	0	0	0	0	0
Port Alsworth	42	0	3,834	28	0	2	3,864
South Naknek	14	49	1,274	157	50	26	1,554
Togiak	56	870	4,901	539	503	131	6,943
Twin Hills	8	89	262	6	42	0	398
Ugashik	6	6	376	113	4	1	499
Total Bristol Bay Resident	761	12,179	73,136	7,300	4,565	480	97,660

Source: ADF&G Division of Subsistence, ASFDB 2018 (ADF&G, 2019). Note: Harvests are extrapolated for all permits issued, based on those returned. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,100 permits issued for the management area, 1,000 were returned (90.1%).

Per-capita wild resource harvests are generally higher in the smaller communities of the Bristol Bay area than in the larger regional centers of Dillingham and King Salmon-Naknek. This is significant because these smaller communities typically have low household cash income, making subsistence particularly important to residents' well-being. In a 2015 report, the ADF&G Subsistence Division estimated that wild food harvested in smaller communities of Bristol Bay totaled 426 pounds of foods per person per year, with a household average of 1,541 pounds. Salmon comprised more than half of the total harvest in pounds. Given the low cash income and high cost and often limited selection of store-bought food in the region, subsistence is a critical component of food security in many communities in the region.

Since 1990, by State regulation all Alaskans are eligible for subsistence fishing in Bristol Bay, subject to limitations and with a permit.¹³ In 2017, Bristol Bay subsistence salmon drew Alaskans from 27 communities outside the region, ranging from Ketchikan to Barrow. Of 239 Alaskans residing outside the area who reported harvesting subsistence salmon in Bristol Bay in 2017, 48% were from Anchorage, 15% from Wasilla, 7% from Homer, and 6% from Fairbanks. Alaskans from outside the region harvested 16% of the Bristol Bay subsistence salmon catch by number of fish. Communities with one permit returned are Barrow, Copper Center, Cordova, Girdwood, Healy, Kasilof, Ketchikan, Kotzebue, Paxson, Seward, Sitka, and Willow.

While estimates of spending in Bristol Bay by nonresident subsistence participants are not publicly available, it is reasonable to assume these visitors spend money on lodging, transportation, food, and other goods and services while in the borough, and pay to ship their catch home.

Table 6. Bristol Bay Area Subsistence Salmon Harvests by Community and Species, Alaska Residents, 2017

Community	Permits Returned	Reported Salmon Harvest by Number of Fish					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	115	298	8,134	588	96	23	9,138
Big Lake	2	2	434	0	0	0	436
Chugiak	8	64	530	0	9	1	604
Eagle River	5	2	621	0	2	0	625
Fairbanks	13	74	1,142	25	73	19	1,333
Homer	16	32	813	35	22	1	903
Juneau	4	49	195	0	3	0	246
Kenai	5	64	418	31	7	2	522
Kodiak City	6	30	309	0	8	0	348
Nikiski	3	3	99	0	7	0	109
Palmer	12	24	739	74	21	12	870
Seldovia	2	1	49	0	0	0	50
Soldotna	2	19	185	0	22	0	226
Talkeetna	2	23	143	0	29	0	195
Wasilla	32	47	1,999	71	25	5	2,145
Communities with 1 permit returned	12	74	758	30	19	11	892
Total Other Alaska Resident	239	806	16,567	854	343	73	18,643

Source: ADF&G Division of Subsistence, ASFDB 2018 (ADF&G, 2019). Note: Harvests are extrapolated for all permits issued, based on those returned. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,100 permits issued for the management area, 1,000 were returned (90.1%).

¹³ Note that the National Park Service since 2001 enforces local-only restrictions within park boundaries.

Harvest by Location

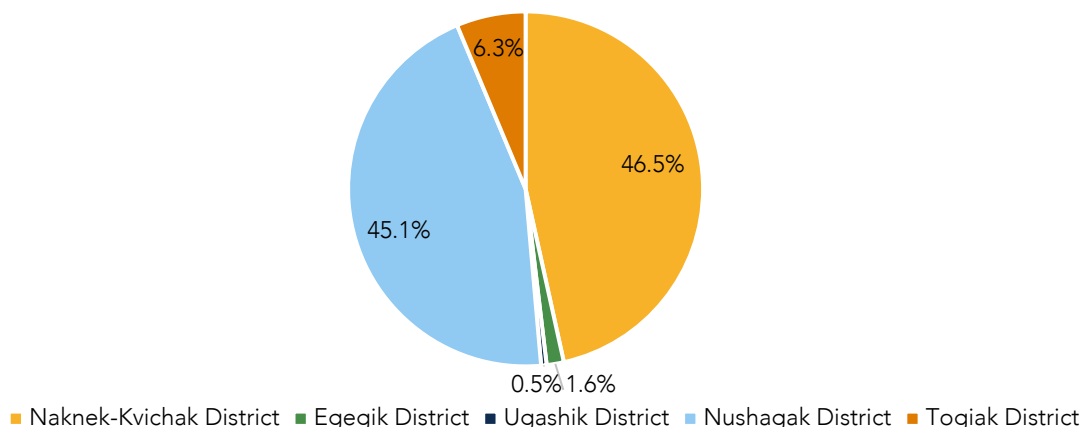
The vast majority (93%) of the Bristol Bay subsistence salmon harvest is associated with two river systems: the Naknek-Kvichak and the Nushagak. The Naknek-Kvichak system produces 57% of the area’s subsistence sockeye salmon harvest, while the Nushagak produces 86% of the subsistence Chinook harvest.

Table 7. Bristol Bay Area Subsistence Salmon Harvests by District Fished, 2017

Area and River System	Permits Issued	Reported Salmon Harvest by Number of Fish					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Naknek-Kvichak District	447	757	51,544	1,346	320	157	54,125
Egegik District	23	129	1,243	430	13	6	1,821
Ugashik District	15	18	444	113	5	2	581
Nushagak District	563	11,122	31,310	5,720	4,026	257	52,434
Togiak District	70	959	5,163	545	544	131	7,341
Total	1,110	12,985	89,704	8,154	4,907	553	116,303

Source: ADF&G Division of Subsistence, ASFDB 2019 (ADF&G, 2020). Note: Harvests are extrapolated for all permits issued, based on those returned and the area fished as recorded on the permit. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,100 permits issued for the management area, 1,000 were returned (90.1%). Sum of sites may exceed district totals, and sum of districts may exceed area total, because permittees may use more than one site.

Figure 2. Bristol Bay Area Subsistence Salmon Harvests by District Fished, 2017



Source: ADF&G Division of Subsistence, ASFDB 2019 (ADF&G, 2020).

Commercially Caught Salmon Retained for Home Use

Bristol Bay commercial fishermen often retain salmon for personal use. Data is incomplete on the amount of salmon kept for personal use, or “homepack” in the region. The State subsistence division does not systematically collect this data. Data reported to the commercial fisheries division is considered an undercount, and the amount of salmon retained for home use likely significant for Bristol Bay commercial fishermen. In 2019, 4,924 commercially harvested fish were reported retained for personal use, of which 61% were sockeye and 36% Chinook. The majority (81%) were harvested in the Nushagak and Naknek-Kvichak districts.

Table 8. Salmon Taken in Commercial Salmon Fisheries but Not Sold, Bristol Bay Management Area, 2019

	Chinook	Sockeye	Coho	Chum	Pink	Total
Number of fish	1,778	2,999	90	41	16	4,924

Source: ADF&G. These figures are incomplete and should be considered minimums.

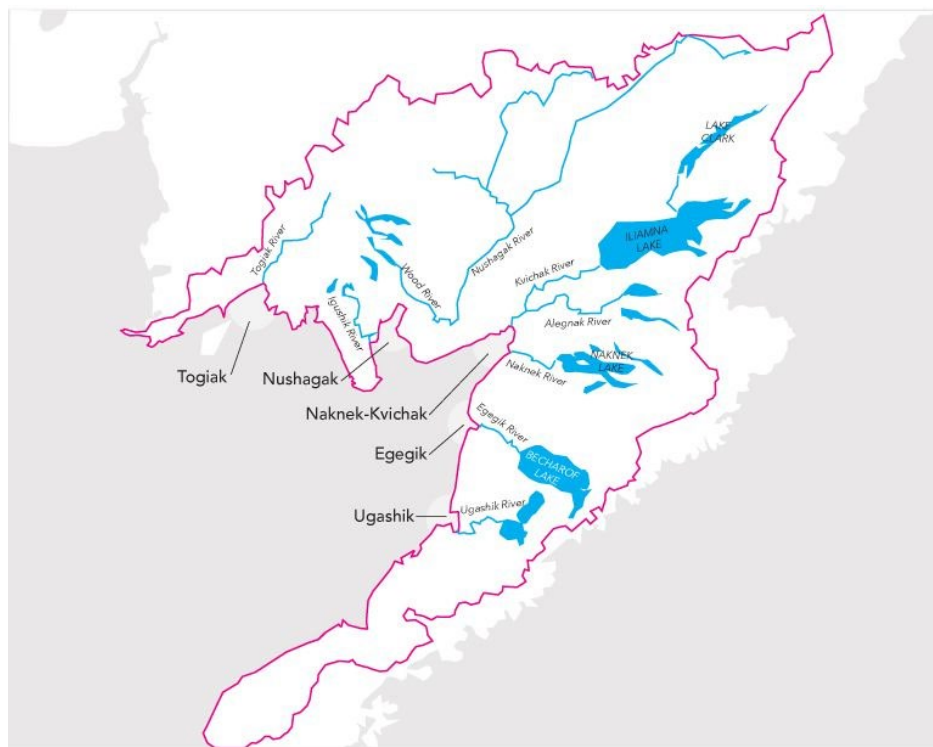
Commercial Salmon Harvest and Industry

Most economic activity and value generated by the Bristol Bay salmon resource results from the summer commercial fishery. The relatively small communities of Bristol Bay, which have a collective year-round population of just over 7,000, surge to at least triple their size with people and activity during the two-month fishery. People come from around Alaska, the United States, and beyond to participate directly in harvesting or processing salmon, or to provide the myriad services – from net building to hydraulic servicing to equipment expediting – that support the fishery.

The condensed timeframe – from late June to late July – in which the bulk of the fishery occurs has been likened by some to the turning off and on of a powerful hose. Most of the harvest – as much as 75% percent – can be caught in a three-week period, or even more quickly. Thus, the commercial fishing industry in the region is geared for an intense pulse of fish, with harvesting, processing, and the support sector all built around “peak” volumes that typically arrive in the first weeks of July. Processing capacity and logistics, in particular, are managed around maximum daily volumes of fish.

Salmon are harvested in five different fishing districts, the Nushagak, Naknek-Kvichak, Egegik, Ugashik, and Togiak districts. Each district is fed by rivers of the same name. Commercial fishery managers moderate harvest activity in the districts in relation to “escapement,” a count of fish that pass by commercial harvesters and move into the upriver systems. As escapement is reached in each river system, commercial harvest opportunity in the corresponding fishing district may be increased.

Figure 3. Bristol Bay Drainages and Fishing Districts



Bristol Bay's sockeye salmon provide the majority of global sockeye production. That proportion has increased in recent years, corresponding with record salmon returns in the Bristol Bay system.

Table 9. Bristol Bay Contribution to Global Sockeye Production (millions of fish)

# of Sockeye	2015	2016	2017	2018	2019	5-Yr Average
Bristol Bay	36.1	37.6	38.7	41.9	43.0	39.5
Global	74.3	75.2	71.0	75.1	75.6	74.2
% of Global	49%	50%	55%	56%	57%	53%

Source: McKinley Research Group Estimates

Commercial Harvest Volumes and Values

In 2019, the total run size for Bristol Bay was 58.6 million fish, including approximately 44.5 million harvested in the commercial fishery and 14.1 million fish that moved into river systems to spawn and seed the next generation of salmon.¹⁴

Table 10. Bristol Bay Salmon Run, 2019 (millions of fish)

	2019
Commercial Catch	44.5
Escapement	14.1
Total Run Size	58.6

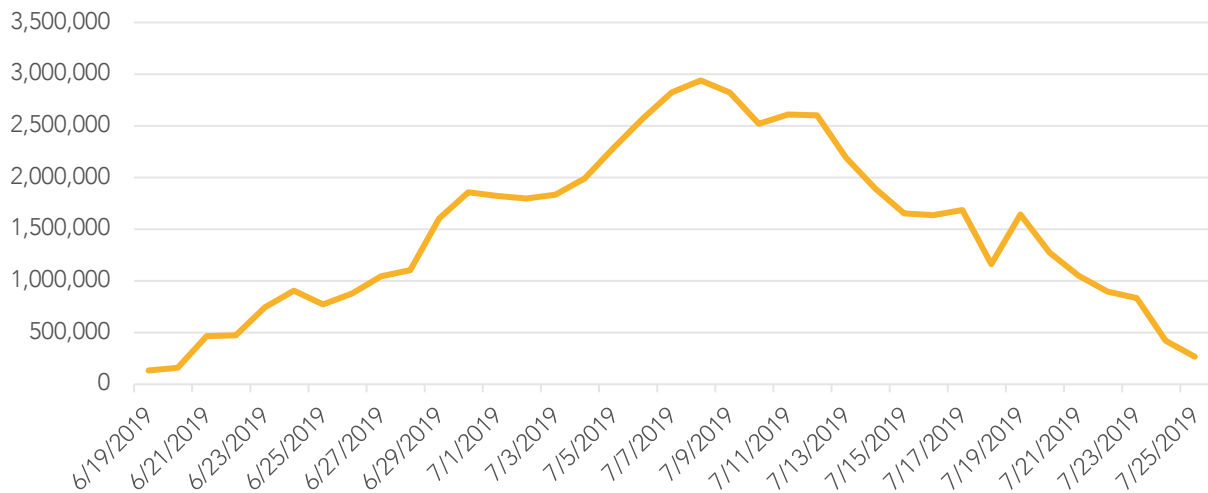
Source: ADF&G 2019 preliminary season summary reports.

Notes: Subsistence and Sport Harvest data are not included, due to different fish accounting systems. These are preliminary season estimates.

Of the total run, more than half was harvested or escaped into river systems in just 12 days, between July 3 and July 14, 2019. Peak harvest and escapement in 2019 occurred on July 8, when 2.6 million fish were harvested and an additional 386,000 escaped into river systems.

¹⁴ Fishery management and fish accounting is primarily driven by the commercial fishery, which accounts for the very great majority of harvest. Relatively small numbers of salmon taken in sport and subsistence fisheries are not accounted for in the metric of commercial cast and escapement, though nearly all sport fish and many subsistence fish are harvested up-river of the escapement enumerations.

Figure 4. Daily Run Counts, Including Commercial Harvest and Escapement, 2019 (number of fish)



Source: ADF&G Daily Run Summary

Note: Daily Run totals combine commercial harvest, escapement counts and in-river estimates.

Sockeye salmon account for most of the Bristol Bay salmon harvest, at 95% of the average harvest and 98% of average value over the last five years. While the commercial catch in some other parts of Alaska includes a significant contribution from hatchery production, the entirety of the Bristol Bay harvest is from wild, un-enhanced systems.

Sockeye typically command the second-highest price for fishermen of Alaska's five salmon species (after the prized but far more limited Chinook). Though less plentiful in numbers and pounds than pink salmon statewide, the higher per-pound price means sockeye represent approximately one-half to two-thirds of the total salmon harvest value in Alaska in recent years. Bristol Bay itself represents one-quarter to one-half of that statewide value.

The Bristol Bay salmon fishery, like all wild harvest fisheries, is subject to annual variation in abundance. Sockeye salmon returns in Bristol Bay have reached record levels in recent years. The 10-year run average, from 2010 to 2019, totaled 45.5 million sockeye, with a low in 2013 of 24.4 million fish. The 5-year average from 2015 to 2019 is more than 20% higher, at 57.5 million sockeye.

Table 11. Bristol Bay Sockeye Salmon Run, 2010-2019 (millions of fish)

	Sockeye Commercial Catch	Sockeye Escapement	Total Sockeye Run
2010	29.1	11.6	40.6
2011	22.1	8.5	30.6
2012	20.9	9.4	30.4
2013	15.4	8.7	24.4
2014	29.1	12.0	41.1
2015	36.7	22.4	58.8
2016	37.6	14.1	51.7
2017	38.8	18.8	57.6
2018	41.9	21.0	63.0
2019 [†]	43.0	13.4	56.3
5-Year Average	39.6	17.9	57.5
10-Year Average	31.5	14.0	45.5

Source: ADF&G AMR.

*Subsistence and Sport Harvest data are not included due to different fish accounting systems.

[†]2019 data are preliminary.

In addition to historic peaks in volume, recent years have also brought record market pricing for the fishery. Prior to the COVID-19 pandemic, these peak market conditions combined to drive record total values for Bristol Bay salmon. The Bristol Bay commercial fishery produced an average 181 million pounds of fish over the 10-year period from 2010 to 2019. The average ex-vessel value of salmon for that time frame was approximately \$215 million. The wholesale value of all commercial salmon in Bristol Bay averaged about \$465 million from 2010 to 2019, with \$450 million (about 97%) coming from sockeye salmon. In 2019, first wholesale value topped \$700 million.

Per-pound value of salmon to fishermen also trended higher over this period. As a result, the ex-vessel value nearly doubled in the five years from 2015 to 2019, while the run size increase was a more modest 16%. This meant 200 million pounds yielded a value of \$125 million in ex-vessel value in 2015, while 230 million pounds generated an ex-vessel value of \$370 million in 2019.

Table 12. Ex-Vessel Value and Volume and First Wholesale Value of Bristol Bay Salmon, 2010-2019 (millions of pounds and dollars)

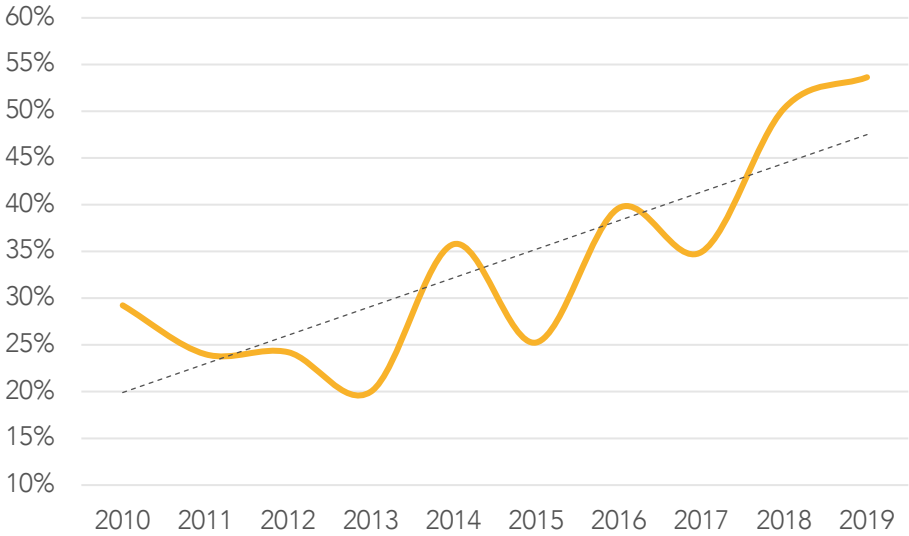
Year	Ex-Vessel Volume (lbs.)	Ex-Vessel Value	First Wholesale Value
2010	181.2	\$165.2	\$403.9
2011	139.7	\$158.9	\$363.5
2012	127.1	\$142.7	\$299.3
2013	100.6	\$151.4	\$323.0
2014	171.4	\$221.5	\$408.2
2015	199.7	\$124.9	\$381.5
2016	210.8	\$192.4	\$482.1
2017	219.4	\$275.5	\$563.5
2018	228.5	\$349.6	\$717.4
2019	232.4	\$372.0	\$709.9
5-Year Average	218.1	\$262.9	\$570.9
10-Year Average	181.1	\$215.4	\$465.2

Source: ADF&G COAR.

Contribution of Bristol Bay to the Total Alaska Salmon Industry

Bristol Bay’s contribution to the total Alaska salmon industry increased markedly over the decade from 2010 to 2019. While noting that the relative contribution oscillates on a two-year cycle linked to pink salmon abundance elsewhere in the state, increasing harvest volumes and strong prices have combined overall to drive Bristol Bay’s contribution from approximately 20% at the start of the decade, to over 50% in each of the last two years of the decade.

Figure 5. Bristol Bay Salmon Harvest Value as Percent of Alaska Total Salmon Harvest Value, 2010-2019



Source: ADF&G.

The significant contribution of Bristol Bay in overall salmon fishery value in Alaska also is apparent in the earnings of fishermen in many of Alaska’s boroughs and census area, as noted later in this report.

Characteristics of the Fleet

Two types of salmon fishing operations are employed in Bristol Bay – driftnets and setnets. Driftnets are operated from self-contained boats, which have a regulatory length limit of 32 linear feet. Fishermen use hydraulics to reel the nets on and off a drum on board the vessel. Drift fishermen launch their boats at the start of the season or drive them to Bristol Bay from other regions of the state. Drifters typically remain on their boats for the duration of the season, going ashore only in unusual circumstances such as breakdowns. Their fish are delivered to larger boats, called tenders, that transport the catch to shoreside or floating processors.

Setnet operations are shore-based. Setnets are secured to shore at one end and are worked by hand by fishermen in skiffs. These fishermen typically spend the season in camps, cabins, or homes on land.

Both fisheries are subject to a regulatory structure that constrains total participation to a limited group of permitted harvesters.

Participation

About 2,500 commercial salmon permits were actively fished in Bristol Bay in 2019, representing almost 90% of total Bristol Bay permits. Half of all salmon permits in Bristol Bay are held by Alaska residents, with one-quarter held by Bristol Bay residents (half of all Alaska resident permit holders). Driftnet permit holders are more likely to reside outside Alaska (just over half of all driftnet permit holders). Only 17% of fished driftnet permits were held by Bristol Bay residents. One-third of setnet permit holders who actively fished are from the Bristol Bay region; two-thirds are Alaska residents.



About 8,500 total fishermen take part in the salmon harvest, a number that includes about 6,000 crew members (70% of total Bristol Bay fisherman). About half of all fishermen are Alaska residents, with half of those (or a quarter of all fishermen) residing in the Bristol Bay region.

Of the just over 230 million pounds of salmon harvested in 2019, just under half was captured by Alaska residents, including 15% harvested by fishermen from the Bristol Bay region.

Fishermen residing outside Alaska account for more than half of annual harvest volumes and value. In 2019, non-residents captured 56% (\$191.8 million) of total value, with 44% (\$150.7 million) going to Alaskans, including \$49.7 million earned by Bristol Bay region residents. The driftnet fleet drives the bulk of production, with nearly 78% of the harvest in 2019, and the remaining 22% taken by the setnet fleet.

Table 13. Resident and Non-Resident Permit Ownership, Fishery Participation, and Ex-Vessel Value, 2019

	All Permit Holders	All Alaska Resident	Bristol Bay Resident	Other Alaska	Total Nonresident
Total Number of Bristol Bay Salmon Permits	2,827	1,477	663	814	1,350
Number of Permits Actively Fished	2,495	1,334	598	736	1,161
Driftnet Permits Actively Fished	1,605	744	274	470	861
Setnet Permits Actively Fished	890	590	324	266	300
Total Number of Estimated Fishermen	8,567	4,598	2,070	2,528	3,969
Estimated Number of Crew Members	6,072	3,264	1,472	1,792	2,808
Total Salmon Harvest Volume (millions of lbs.)	234.7	104.8	35.7	69.1	129.9
Driftnet Salmon Harvest Volume	183.8	73.8	20.0	53.8	110.0
Setnet Salmon Harvest Volume	50.9	31.0	15.7	15.3	19.9
Total Ex-Vessel Salmon Earnings (\$million)	\$342.5	150.7	\$49.7	\$101.1	\$191.8
Driftnet Ex-Vessel Earnings	\$272.0	108.1	\$28.3	\$79.8	\$163.9
Setnet Ex-Vessel Earnings	\$70.6	42.7	\$21.4	\$21.3	\$27.9

Source: CFEC and McKinley Research Group estimates.

Note: There is a small discrepancy in reported ex-vessel value between ADF&G COAR reports and CFEC reporting.

PERMIT OWNERSHIP BY ALASKA REGION

Alaskans from nearly every borough and census area are invested in Bristol Bay region fisheries, spreading the value of the fishery throughout the state. In 2019, 1,454 permits were held by residents of all but two boroughs/census areas. Ownership is concentrated in communities in the Bristol Bay watershed (including the Dillingham Census Area, Bristol Bay Borough, and Lake and Peninsula Borough), with 661 permits held by regional residents, and an average of nearly \$47 million in ex-vessel earnings between 2017 and 2019. The Municipality of Anchorage follows, with 254 permits held in 2019 and ex-vessel earnings of \$21 million. An additional 218 permit holders live in the Kenai Peninsula with earnings of nearly \$7 million. The fishing communities of the Kodiak Island Borough and Petersburg Census Area also have high concentrations of Bristol Bay permits (59 and 34, respectively), as does the Bethel Census Area at 38.



Table 14. Number of Bristol Bay Permit Holders, by Alaska Borough/Census Area, 2019 and 2017-2019 Averages

	2019	3-Year Average (2017-2019)	Ex-vessel Value, 3-Year Average (2017-2019*)
Aleutians East Borough	1	2	\$120,506
Aleutians West Census Area	1	1	\$146,324
Anchorage Municipality	254	250	\$20,923,751
Bethel Census Area	38	39	\$2,601,811
Bristol Bay Borough	149	151	\$8,433,238
Denali Borough	2	2	\$127,122
Dillingham Census Area	439	444	\$33,802,178
Fairbanks North Star Borough	22	23	\$2,170,884
Haines Borough	0	2	\$244,236
Hoonah-Angoon Census Area	3	2	\$146,324
Juneau City and Borough	17	16	\$1,829,098
Kenai Peninsula Borough	218	207	\$27,882,437
Ketchikan Gateway Borough	6	7	\$589,192
Kodiak Island Borough	59	56	\$7,921,085
Kusilvak Census Area	2	3	-
Lake and Peninsula Borough	73	78	\$4,577,444
Matanuska-Susitna Borough	98	97	\$11,879,217
Nome Census Area	0	1	-
North Slope Borough	1	1	\$46,059
Northwest Arctic Borough	1	1	\$188,459
Petersburg Census Area	34	33	\$5,390,665
Prince of Wales-Hyder Census Area	4	5	\$438,973
Sitka City and Borough	8	8	\$647,577
Southeast Fairbanks Census Area	7	5	\$484,607
Valdez-Cordova Census Area	15	18	\$3,036,035
Wrangell City and Borough	1	1	\$188,459
Yukon-Koyukuk Census Area	1	1	-
All Alaska Resident Permit Holders	1,454	1,455	\$133,815,684

Source: CFEC.

Notes: Permit ownership reveals investment in the Bristol Bay fishery does not necessarily equate to fishery participation in any given year. Approximately 10% of all Bristol Bay permits were inactive in 2019.

* 2019 ex-vessel values are preliminary.

The relatively high value of the sockeye fishery also means that Bristol Bay contributes meaningfully to total fishing earnings in many Alaska communities – even those with abundant local fisheries. For example, Bristol Bay earnings represented one-third of all salmon earnings in the Kenai Peninsula Borough in 2019, and more than one-fifth of all salmon-related earnings in the Kodiak Island Borough. In the Municipality of Anchorage,

“Alaska’s largest fishing town,” Bristol Bay earnings represented more than one-third of fishery earnings in the region, including 56% of all salmon-related earnings.

Table 15. Bristol Bay Salmon Contribution to Fishery Earnings in Selected Alaska Boroughs and Census Areas, 2019

	Bristol Bay as a Percentage of All Salmon Earnings	Bristol Bay as a Percentage of All Fishery Earnings
Anchorage Municipality	56%	34%
Kenai Peninsula Borough	33%	24%
Kodiak Island Borough	22%	8%
Petersburg Census Area	27%	10%

Source: CFEC

Alaska residents living outside the Bristol Bay region tend to capture a greater share of the total harvest and value than residents living within the region. The 55% of Alaska permits held by residents outside the region captured 67% of total Alaska resident earnings in 2019.



Ownership and Participation within the Bristol Bay Region

Of all permits held by Alaskans in 2019, 45% were held by residents of the Bristol Bay region. In 2019, about 30% of held and fished Bristol Bay salmon permits in Alaska belonged to residents of Dillingham, earning 22% of ex-vessel value. One tenth of permit holders hail from Bristol Bay Borough, earning 8% of ex-vessel earnings in Alaska. The remainder, about 4% of actively fished permits, are owned to residents of Bristol Bay communities within the Lake and Peninsula Borough, at about 3% of ex-vessel earnings.

Table 16. Permit Ownership, Fishery Participation and Earnings by Bristol Bay Region and Other Alaska Residents, 2019

	Number of Permits Held	Number of Permits Fished	Ex-vessel Earnings (\$million)
Dillingham Census Area	442	411	\$33.5
Bristol Bay Borough	149	129	\$11.7
Lake and Peninsula Borough communities in the Bristol Bay region	72	58	\$4.4
Alaska, other than Bristol Bay region	814	736	\$101.1
Total	1,477	1,334	\$150.7

Source: CFEC

FISHERY PARTICIPATION BEYOND ALASKA

Participants in Bristol Bay fisheries come from around the United States. Permit holders are particularly concentrated in Washington State, with 657 (26%) actively fished permits held by residents of the state in 2019. Washington permit holders earned more than \$117 million in ex-vessel value in 2019. Residents of Oregon and California fished another 9% of active Bristol Bay permits in 2019 and earned over \$34 million collectively.

Table 17. Permit Ownership, Fishery Participation and Earnings by non-Alaska Residents, 2019

	Number of Permits Held	Number of Permits Fished	Ex-vessel Earnings (\$million)
Washington	761	657	\$117.5
Oregon	124	110	\$16.9
California	132	126	\$17.8
Other states and countries	349	329	\$45.3
Total	1,366	1,222	\$197.5

Source: CFEC

Permits as Assets

Limited entry permits for Bristol Bay salmon are a valuable asset base for commercial harvesters. Permits are bought and sold in the marketplace. Possession of a permit is a requirement for fishery participation and has been since the early 1970s when the limited entry system was enacted by the Legislature.

Limited entry permits for Bristol Bay include driftnet permits and setnet permits. Driftnet permits make up the majority (86%) of the total assets value of limited entry permits in Bristol Bay, worth almost \$326 million in 2019. Setnet permits were worth almost \$53 million, or about 14% of the total value.

Alaska residents held just under half of Bristol Bay drift permit assets, with a value of over \$147 million; Bristol Bay residents held 39% of Alaska-held driftnet assets (and 18% of all driftnet permits). The majority of setnet permit values are held by Alaska residents, at 65% of total setnet permit asset value in 2019. Of these Alaska-held setnet assets, more than half (53%) were owned by Bristol Bay residents (34% of all setnet asset value).

Table 18. Value of Permit Ownership by Residency, 2019

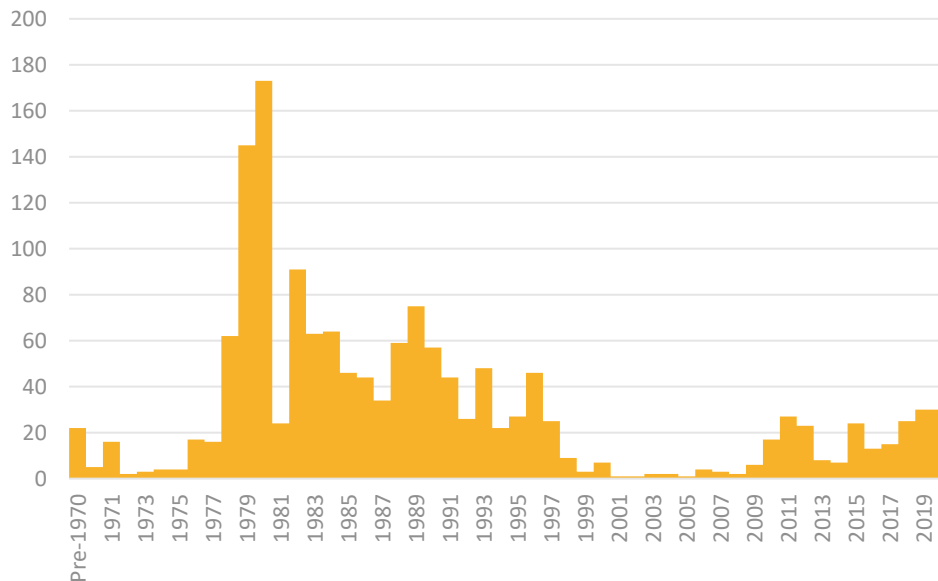
Residency	Driftnet Permit Value (\$million)	% of Total Driftnet Permit Value	Setnet Permit Value (\$million)	% of Total Setnet Permit Value	Total (\$million)	% of Total Permit Value
All Limited Entry Permits	\$325.9		\$52.7		\$378.5	
Alaska	\$147.4	46%	\$34.6	65%	\$182.1	48%
Dillingham Census Area	\$41.5	13%	\$11.2	21%	\$52.7	14%
Bristol Bay Borough	\$10.0	3%	\$5.0	9%	\$15.0	4%
Lake and Peninsula Borough communities in the Bristol Bay drainage	\$5.4	2%	\$2.2	4%	\$7.7	2%
Other Alaska	\$90.5	28%	\$16.2	31%	\$106.7	28%
Nonresident	\$178.5	55%	\$18.0	34%	\$196.5	52%

Source: CFEC

COMMERCIAL FISHING FLEET

Commercial fishing boats are another significant source of value in the Bristol Bay sockeye fishery. Over 1,500 drift gillnet boats are registered to fish in Bristol Bay. Most were built in the late 1970's and 1980's following Bristol Bay's designation as a limited entry fishery in 1975. A 2017 estimate placed the total value of Bristol Bay fishing vessels at \$228 million¹⁵, though approximately 100 new drift gillnet boats registered in Bristol Bay were reported built in the last four years. Boats can cost anywhere from \$500,000 to \$900,000 to build and represent a significant annual investment in the fishery.

Figure 6. Year of Build of the Bristol Bay Drift Gillnet Fleet



Source: Commercial Fisheries Entry Commission

¹⁵ Wink Research & Consulting, "Economic Benefits of the Bristol Bay Salmon Industry," July 2018.

Regulations limit the size of Bristol Bay boats to 32 linear feet. As a result, the bulk of the Bristol Bay fleet is designed specifically for this fishery. Most of these vessels only fish in Bristol Bay and would have limited value in a different fishery or for other uses.

In addition to harvesting vessels, a large tender fleet supports the Bristol Bay fishery. Tenders transport salmon from the fishing grounds to processors, whether shoreside or floating. While a portion of the total tender fleet strictly limit their annual activity to the Bristol Bay region, others are used throughout the state in numerous fisheries each year. Estimates of tender value are not included in this report.



Seafood Processing Activity and Impacts

The number of Bristol Bay commercial operators purchasing salmon has grown over the last 20 years, with 33 operators reporting they purchased Bristol Bay sockeye in 2019, up from 26 in 2000. This count includes both on-shore and off-shore processors. Much of this growth is attributable to growth of new, small scale operations that depend on direct marketing of Bristol Bay sockeye.

In 2020, 26 shore-based seafood processing plants operated in Bristol Bay. These plants are located in seven different communities, with over 40% in Naknek. Of these 26 processors, ADF&G reports that the 15 largest account for 99.8% of the Bristol Bay sockeye salmon purchased in 2018. Together, Bristol Bay processors have capacity to process 2.54 million sockeye per day.¹⁶ This is a 26% increase in the processing capacity reported in 2011¹⁷. In addition to growth in both the number and capacity of Bristol Bay processors, additional investment has been made in existing processing facilities to produce higher value products and operate more efficiently.

¹⁶ <https://www.adfg.alaska.gov/FedAidPDFs/SP19-08.pdf>

¹⁷ https://www.adfg.alaska.gov/static/fishing/PDFs/commercial/2011_bristolbay_sockeye_capacity.pdf

The remoteness of Bristol Bay and compressed timing of the massive salmon run mean that fish need to be processed quickly, and close to where they are caught, for maximum quality. It takes over 6,000 processing workers to produce 157 million pounds of processed salmon during a typical season. These workers earn an estimated \$49 million in wages (5-year average) in this short time frame, and in turn process over half a billion dollars in salmon (at wholesale prices).

Table 19. First Wholesale Volume and Value of Bristol Bay Salmon, All Species, 2015–2019

	2015	2016	2017	2018	2019	Average
Volume (million lbs.)	141.5	148.0	150.8	167.0	177.6	156.9
Value (\$million)	\$381.5	\$482.1	\$563.5	\$717.4	\$709.9	\$570.9

Source: ADF&G COAR

Product composition in Bristol Bay changed significantly in recent years as the processing fleet continued to invest and retool for greater headed/gutted (H&G) and fillet production, replacing a long-running reliance on canned production. Considering sockeye production only, canned salmon totaled more than 20% of total Bristol Bay production in 2015. That proportion fell to only 8% in 2019 despite a far larger harvest. H&G and fillet, together, represented 89% of Bristol Bay production in 2019.

Table 20. First Wholesale Volume of Bristol Bay Sockeye Products, by Form, 2015–2019

	2015	2016	2017	2018	2019	Average
Volume (million lbs.)	133.1	135.3	131.0	140.6	145.9	137.2
Headed/Gutted*	86.8	85.9	86.5	94.6	105.4	91.9
Canned	28.4	23.1	16.7	12.2	11.1	18.3
Fillets	13.3	21.0	23.2	29.0	24.3	22.2
Roe**	4.5	5.2	4.6	5.0	5.1	4.9
Volume by Percent						
Headed/Gutted*	65%	64%	66%	67%	72%	67%
Canned	21%	17%	13%	9%	8%	13%
Fillets	10%	16%	18%	21%	17%	16%
Roe**	3%	4%	4%	4%	3%	4%

Source: ADF&G COAR

*Includes Fresh and Frozen

**Roe includes roe bait, ikuro and sujiko.

Despite its preponderance in production volumes, H&G fish have a smaller proportion of the pack value. In 2019, H&G fish yielded 59% of total value, while fillets commanded a greater value relative to their proportion of the pack, at 28% of total value.

Table 21. First Wholesale Value of Bristol Bay Sockeye Products, by Type, 2015–2019

	2015	2016	2017	2018	2019	Average
Value (\$ millions)	\$371.5	\$462.3	\$527.8	\$669.3	\$656.7	\$537.5
Headed/Gutted	\$191.2	\$243.7	\$286.0	\$367.6	\$384.4	\$294.6
Canned	\$94.9	\$78.6	\$67.8	\$69.0	\$66.8	\$75.4
Fillets	\$68.6	\$113.2	\$144.0	\$193.4	\$181.0	\$140.1
Roe**	\$16.7	\$26.8	\$30.1	\$39.4	\$24.5	\$27.5
Value by Percent						
Headed/Gutted*	51%	53%	54%	55%	59%	55%
Canned	26%	17%	13%	10%	10%	14%
Fillets	18%	24%	27%	29%	28%	26%
Roe**	5%	6%	6%	6%	4%	5%

Source: ADF&G COAR

*Includes Fresh and Frozen

**Roe includes roe bait, ikuro and sujiko

Workforce

The seafood processing workforce is scaled to match harvest volume. Processing labor is a significant portion of the overall cost of production and sizing the workforce to the actual run is critical to processor profitability.

Data on wages and residency of the seafood processing workforce show that more than 6,000 processing workers earned \$58 million in total wages in Bristol Bay fisheries in 2019. This was higher than the 5-year average (2015-2019) of \$49 million.

The processing workforce draws almost entirely from outside the Bristol Bay watershed. In fact, the 2019 processing workforce equated roughly to the combined populations of the Dillingham Census Area and Bristol Bay Borough. However, the approximately 100 local residents employed in the processing workforce in 2019 earned more than \$800,000 combined.

Table 22. Seafood Processing Workforce, Totals and Local Resident, 2015 – 2019

Year	Total Processing Workers	Local Processing Workers	Percent Local	Total Wages	Local Wages	Local Wages Percent
2015	4,840	85	1.8	\$39,481,050	505,828	1.3
2016	5,471	75	1.4	\$45,699,854	504,542	1.1
2017	5,422	76	1.4	\$46,284,981	637,367	1.4
2018	5,933	102	1.7	\$55,852,313	802,504	1.4
2019	6,036	103	1.7	\$57,693,133	807,382	1.4
5-Year Average	5,540	88	1.6	\$49,002,266	651,525	1.3

Source: ADOLWD and McKinley Research Group estimates.

*Claimed residency in a Borough or Census Area within the Bristol Bay Region.

Most Bristol Bay salmon processing happens in the Bristol Bay Borough, where two-thirds of the region’s processing workforce earned \$30 million in wages in 2018 (the most recent year for which complete data are available). Of these workers, 20% had five or more years of experience, and 12% were Alaska residents.

Nonresident workers earned \$55 million in wages in 2018, about 90% of wages in each area of the Bristol Bay region.

Just under 20% of processors worked in the Dillingham Census area, and 15% of these workers were residents. These workers earned \$10.7 million in wages in 2018 (19% of total); about 16% of them had five or more years of experience.

Most processing workers in the Lake and Peninsula Borough are nonresident workers (94% in 2018), though they only make up about 7% of the processing workforce in the region. Of these workers, 20% had five or more years experience, and earned about 8% of total processing wages in 2018.

Table 23. Processing Workers in Bristol Bay Region, 2018

Borough or Census Area	Processing Workers	Percent Nonresident Workers	Processing Wages	Percent Nonresident Wages	Workers with 5+ Years Processing Experience	Average Quarterly Wage
Bristol Bay Borough	3,906	88%	\$30,714,913	91%	767	\$6,308
Dillingham Census Area	1,096	85%	\$10,691,309	90%	178	\$6,022
Lake and Peninsula Borough*	434	94%	\$4,878,759	92%	88	\$5,647
Bristol Bay Total	5,933	86.7%	\$55,852,313	89.5%	1,027	\$6,193

Source: Alaska Department of Labor and Workforce Development, Research and Analysis Section, Nonresidents Working in Alaska 2018 report.

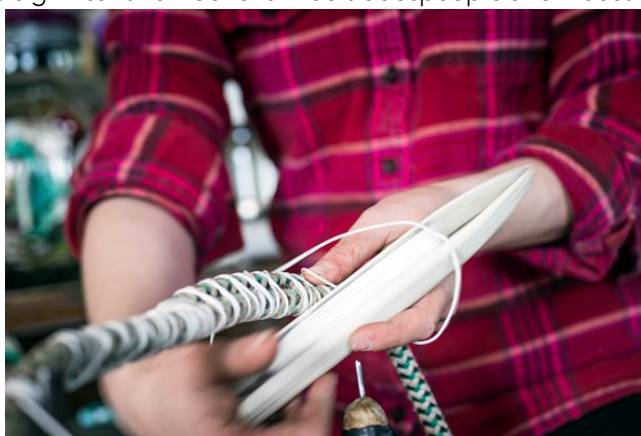
*Includes all communities in Lake and Pen Borough, some of which lie outside the study region.

Note: Workers are being counted in any borough or census area where they worked in 2018. Therefore, the number of processing workers in each borough or census area will not sum to the total since some workers work in more than one borough or census area during any given year.

Support Industries

In addition to fishermen and processing plant workers, a significant number of skilled tradespeople and industry support service providers mobilize to the Bristol Bay region each summer. The diverse nature of these businesses and the widespread distribution of their “home” states requires intensive investigation of support activity on a state-by-state basis and is beyond the scope of this research. However, a census of the kinds of businesses and skilled tradespeople that operate seasonally in Bristol Bay includes:

- Air taxi/floatplane services
- Expeditors
- Refrigeration technicians
- Welders and parts fabricators
- Machinists
- Diesel mechanics



- Fiberglass specialists
- Net builders
- Marine surveyors
- Small engine repair technicians

Bristol Bay Salmon: Supply Chain Activity

The Bristol Bay salmon season is a complex web of activity starting well before salmon begin to return to their natal rivers, and extending far beyond the harvest of the season's last fish.

For both harvesters and processors, the work of preparing for the season's fishery starts months prior to its start. The logistical demands of getting supplies, equipment and people to Bristol Bay are significant, and require lead time and detailed planning. For processors, material inputs (such as cans, boxes, and other packing materials) as well as supplies needed to keep equipment and facilities in good condition must all be ordered many months prior to the fishery. Hiring also begins in winter months.

For fishermen, pre-season work can happen in various locations, depending on where boats and gear are stored between seasons. Pre-season preparations can also include Spring trips to the Bristol Bay region to prep boats, and skilled tradespeople often deploy to Bristol Bay well in advance of the actual fishing season.

Equipment, supplies, groceries, fuel, and other necessary inputs are all shipped to Bristol Bay in the months preceding the fishery. A variety of commercial shippers bring resources to the region's ports. Tenders sometimes carry additional freight as they deploy to Bristol Bay in advance of the season.

In the weeks preceding the fishery, the 6,000 processing workers and more than 8,000 commercial fishermen deploy to the region. There are several weeks of intense activity as boats are launched, shoreside setnet camps are opened up, and other support infrastructure is put in place. Tenders travel to the region from elsewhere in Alaska or the Pacific Northwest.

The waters of Bristol Bay quickly fill with vessels of all sorts. Fuel barges and ice barges arrive or are launched in advance of the season. As the season begins and fishing activity commences, large transoceanic trawler vessels arrive and anchor offshore, waiting to be loaded with containers of processed salmon for transport overseas. Domestic shippers also carry containers of processed fish south, primarily to Puget Sound.

Bristol Bay salmon receive primary processing at the facilities in the Bristol Bay region, but secondary processing and value-adding occurs at a network of facilities around the globe. Significant secondary processing infrastructure for Alaska seafood products is in China and other east Asian countries. Value-added processors in the Pacific Northwest also do secondary processing, particularly for North American markets. Salmon may be minimally processed and sold in a fillet or portion fillet form in grocery stores; or it may go into more value-added chains, emerging in ready-to-eat meals, packaged products, or under specialty labels.

Whatever the form, Bristol Bay salmon pass through a distribution network that brings them to the point of consumption, whether via a restaurant, retailer, or directly to the consumer.

Wild salmon is inextricably linked with Bristol Bay's tourism industry. The most obvious connection is through sportfishing, which draws tens of thousands of visitors from around the globe every year, along with millions of new dollars to the regional economy. In addition to directly fishing for salmon and trout, visitors also come to the region to view bears that congregate to feed on migrating salmon. This section provides an overview of the region's visitor industry and an estimate of associated spending.

Visitor Volume and Profile

Total annual visitor volume to the Bristol Bay region is estimated at 40,000 to 50,000 people. The most common purposes of people's trips are either overnight sportfishing, often at a lodge or camp, or day trips to see bears feeding on salmon. Estimates of total visitor volume and activities are based on past McKinley Research Group (formerly McDowell Group) research, including visitor research conducted for the State of Alaska in the summer of 2016, adjusted to reflect 2019 visitor traffic levels.¹⁸

Characteristics of Bristol Bay visitors are presented in the table on the following page, based on the 2016 study, which included a statewide survey of Alaska visitors. This profile includes visitors to the following communities and destinations: Brooks Camp, Brooks Falls, Dillingham, Ekwok, Iguigig, Iliamna, Katmai, King Salmon, Lake Aleknagik, Lake Clark, Naknek, Nondalton, Nushagak River, Port Alsworth, Port Heiden, Rainbow Basin, and Togiak.

- Two-thirds of visitors (65%) traveled for vacation/pleasure; 14% to visit friends or relatives; and 22% for business-related reasons.
- The most popular visitor activity in the region was wildlife viewing (59%) followed by fishing (49%) (33% guided fishing plus 19% unguided). Other common activities were hiking (25%), flightseeing (18%), camping (17%), and hunting (10%).
- Among these visitors, the most common region of origin was the Western U.S. at 42%, followed by Midwest at 20%, South at 14%, and East at 8%. Fifteen percent of visitors were international travelers.
- Bristol Bay visitors spent an average \$1,861 per person while in the region. The bulk of this spending was attributable to lodge packages at \$1,482 per person.
- Visitors reported an average age of 50 years old. They were more likely to be male than female (57% versus 43%). Average party size was 1.9 people, and average household income was \$121,000.

¹⁸ Data comes from the McDowell Group Alaska Visitor Statistics Program 7, published in May 2017. This proprietary research product is produced by McDowell Group, now known as McKinley Research Group.

Table 24. Bristol Bay Visitor Profile, Summer 2016

	% of Visitors
Trip purpose	
Vacation/pleasure	65%
Visiting friends/relatives	14%
Business	12%
Business/pleasure	10%
Top activities in Bristol Bay region	
Wildlife viewing	59%
Fishing	49%
Guided fishing	33%
Unguided fishing	19%
Hiking/nature walk	25%
Flightseeing	18%
Camping	17%
Hunting	10%
Average per-person spending in Bristol Bay region	
Lodge packages	\$1,482
Tours/activities/entertainment	\$114
Rental cars/fuel/transportation	\$98
Food/beverage	\$78
Lodging	\$61
Total	\$1,861
Region of Origin	
Western U.S.	42%
Midwestern U.S.	20%
Southern U.S.	14%
Eastern U.S.	8%
International	15%
Demographics	
Average age	50 years old
Male/female ratio	57%/43%
Average party size	1.9 people
Average household income	\$121,000

Source: McDowell Group Alaska Visitor Statistics Program 7, published in May 2017.

Sportfishing

The Bristol Bay region is a world-famous sportfishing destination, where anglers target all five species of Pacific salmon, as well as rainbow trout and Dolly Varden (which feed on salmon flesh and eggs). Visiting Bristol Bay anglers generally stay in all-inclusive lodges and fish camps, often only accessible by floatplane or boat. Due to remoteness and high transportation costs, most stays are five to seven days in length.

The trout fishing season starts in early June, before large volumes of salmon have entered areas rivers. From mid-June to mid-July, Chinook salmon return to the rivers to spawn. The Chinook run is followed by the massive



sockeye salmon run in late June through early August. It is not uncommon for anglers to easily catch their daily limit of five sockeye per day early in the morning and spend the afternoons targeting trout. The sockeye run is followed by a coho salmon run in August.

While Bristol Bay salmon provide directed fisheries, their seasonal rhythm also impacts fall sportfishing activity. Spawning sockeye fill rivers with hundreds of millions of eggs and – after their deaths – their flesh. This creates a concentrated feeding opportunity for

rainbow trout, many of the larger of which leave the lakes for the rivers to feed. Many lodges advertise this time as their “trophy season” with trout commonly over 30 inches in length.

Volume and Location of Anglers

Over the past five years, more than 20,000 anglers sportfished in Bristol Bay annually, representing more than 73,000 angler days. A similar number of anglers fished the three areas of Kvichak (6,249 anglers), Nushagak (6,912), and Alaska Peninsula (7,499), though some anglers may have fished in multiple areas.¹⁹

Table 25. Bristol Bay Sportfishing, Average Number of Annual Anglers, and Angler Days, 2015-2019

Sub-Area	# of Anglers	# of Angler Days
Kvichak	6,249	22,593
Nushagak	6,912	29,459
Alaska Peninsula (Bristol Bay drainage)	7,499	21,400
Total	20,660	73,452

Source: AF&G Alaska Sport Fishing Survey.
Note: Some anglers fish in multiple regions.

¹⁹ Alaska Sport Fishing Survey database. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 25, 2020). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Though the program is now discontinued, the most recent 3-year data from the ADF&G freshwater guided harvest logbook program (2014-2016) showed a trend of steady year-over-year increases in guided angler days in the Bristol Bay region, with a 5% total increase over the period.

Sportfishing Species

Bristol Bay sportfishermen take about 46,000 salmon annually, primarily coho (37%), sockeye (36%), and Chinook (22%). Chum and pink make up just 4% and 1% of the total harvest, respectively.

Table 26. Salmon Sportfishing in the Bristol Bay Region, Average Annual Number of Fish by Species, 2010-2019

	# of Fish	% of Total
Coho	16,931	37%
Sockeye	16,745	36%
Chinook	10,094	22%
Chum	1,679	4%
Pink	497	1%
Total	45,946	100%

Source: AF&G Alaska Sport Fishing Survey.

A smaller portion of trout are harvested in the region, accounting for around 3,000 fish annually. (Note that trout are frequently released after catching so harvest figures underrepresent the total targeted.) Most harvested trout are Dolly Varden or Arctic char, at 58% of the total. Lake trout make up about 18%, and rainbow trout about one-quarter (24%).

Table 27. Trout Sportfishing in the Bristol Bay Region, Average Annual Number of Fish by Species, 2010-2019

	# of Fish	% of Total
Dolly Varden/Arctic Char	1,852	58%
Rainbow trout	763	24%
Lake trout	588	18%
Total	3,203	100%

Source: AF&G Alaska Sport Fishing Survey.

Sportfishing Lodges and Other Providers

Lodge and fish camp spending constitutes the bulk of sportfishing economic activity in the Bristol Bay region, with most spending generated by non-residents. A 2005 study found that while non-residents accounted for only about 35% of total sportfishing trips, they accounted for almost 80% of sportfish spending, and that most non-resident spending was for trips to lodges and fish camps.²⁰



Photo courtesy of Bob Waldrop

Of the roughly 100 sportfishing lodges and fish camps in the Bristol Bay region, spread from Togiak to the Alaska Peninsula, the majority are full-service providers. Providers range from simple tent camps on the side of the river to luxury lodges. They typically offer four-to-eight-day trips that include lodging, guided fishing, and meals. Many lodges and fish camps are remote and require air service from Bristol Bay communities. Sportfish providers either include flights as part of their package or help coordinate flights at an additional cost.

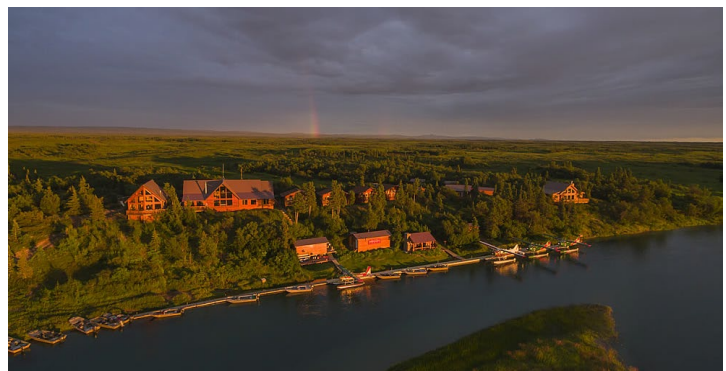
A 2019 analysis of sportfish providers in the region collected detailed information from 33 providers. Average annual revenues for the providers totaled \$1.1 million each. Average guest capacity totaled 14; daily rates averaged \$1,125; and operating season averaged 105 days. Total annual sportfishing lodge/camp guests are estimated at 14,000 annually, with total spending estimated at \$77 million.

LODGING EXPERIENCES

The following lodges showcase the range of visitor experiences, rates, and offerings for visitors to the Bristol Bay area.

Alaska Sportsman's Lodge

The Alaska Sportsman's Lodge is a luxury fishing lodge located on the Kvichak River, four miles from Lake Iliamna.²¹ The lodge accommodates up to 20 guests. The property includes a 3,500-square foot main lodge plus four cabins. Guests fish for salmon (Chinook, sockeye, and coho), rainbow trout, and Arctic char. The lodge offers both on-site and fly-out



Source: Alaska Sportsmen's Lodge.

²⁰ https://www.epa.gov/sites/production/files/2015-05/documents/bristol_bay_assessment_final_2014_vol3.pdf

²¹ <https://www.fishasl.com/kvichak>

fishing in addition to river float trips and bear viewing. Amenities include five-star dining, massage services, and a sauna. Rates range from \$1,700 (per person, per night) for a seven-night package, to \$2,000 for a three-night package. All packages include a private charter flight from Anchorage. The lodge operates from early June to early October.

Enchanted Lake Lodge

Enchanted Lake Lodge is primarily a fly-fishing lodge, located on 54 acres of private land in Katmai National Park, on Nonvianuk Lake. The lodge consists of a main building plus six cabins, with capacity for 12 guests. While services focus on rainbow trout, guests also fish for Arctic char, Dolly Varden, grayling, and salmon. Guests primarily access fishing areas via floatplane. The lodge offers a seven-night package at \$1,700 per person, per night. All packages include a flight to and from King Salmon. The lodge operates from early June through September.



Source: TripAdvisor.

Alagnak Lodge

Alagnak Lodge is located on the Alagnak River, 25 miles north of King Salmon.²² The lodge offers 12 guestrooms of various sizes (there are no cabins). Guests fish primarily for salmon, and generally access fishing areas via boat (rather than floatplane). The lodge charges a base rate of \$750 plus \$750 per day. Guests can choose their length of stay. A seven-day stay costs \$6,000, or about \$850 per day, while four days costs \$3,750, or about \$940 per day. Packages include floatplane transport from King Salmon. Guests must pay extra for fly-outs.



Source: Alagnak Lodge.

²² Alagnaklodge.com

Anderson's Outdoors Alaska Salmon Camp

The Alaska Salmon Camp is located below the East and West forks of the Nushagak River.²³ It consists of four, two-person cabins, a dining tent, and a shower facility. Guests fish for Chinook, sockeye, and chum salmon. The camp has several motorboats; fly-out fishing is not available. Rates are \$700 per-person, per-night for a five-night package and \$750 for a four-night package. All packages include floatplane transport to and from Dillingham. The camp operates from mid-June to mid-July.



Source: Alaska Salmon Camp.

Bear Viewing

Bear viewing in the Bristol Bay study area is concentrated in two areas: Katmai National Park and Lake Clark National Park and Preserve. An estimated 20,000 people participated in bear viewing at these two locations in 2019.²⁴

Katmai National Park

Katmai National Park, located approximately 270 air miles southwest of Anchorage, is one of Alaska's premier bear viewing destinations. Bear viewing visitors are mostly concentrated near the mouth of the Brooks River, although they also view bears in more remote areas including Hallo Bay and Kulik River. Bear viewing occurs throughout the summer, with visitation peaking in July.

The bulk of bear viewing visitors to Katmai are on day trips from Anchorage. Those that overnight in the park have three options: staying at Brooks Lodge, which offers overnight packages; tent camping at a campground near the lodge; or backcountry camping. Katmai bear viewers spent an estimated \$20 million combined on visits in 2019, including on lodging, camping, meals, tours, and air transportation.

Lake Clark National Park and Preserve

Lake Clark National Park and Preserve contains several world-class bear-viewing areas: Chinitna Bay, Crescent Lake, and Silver Salmon Creek. There are no lodging facilities located in the area, so most visits occur for the day from Anchorage, Homer, or area lodges. A small number of visitors participate in overnight camping, many on guided photography and wildlife tours. The National Park Service estimates about 8,000 bear viewing visitor-days in Lake Clark in 2019.

²³ <https://andersonsoutdoors.com/>

²⁴ National Park Service data and McKinley Research Group estimates.

BEAR VIEWING EXPERIENCES

The following sampling of bear viewing companies in the Bristol Bay area provides a range of costs and visitor experiences.

Brooks Lodge

Brooks Lodge is a unique property in Alaska, offering lodging within walking distance of one of the world's premier bear viewing destinations.²⁵ According to the lodge's website, as many as 50 bears live along the adjacent 1.5-mile stretch of the Brooks River during salmon season. The property includes a main lodge plus 16 cabins with four bunk beds each, for a total capacity of 64 guests. In addition to offering bear viewing from elevated platforms, the lodge offers canoeing, kayaking, sportfishing (guided fly-out or unguided in the immediate area), and flightseeing and bus tours to the Valley of Ten Thousand Smokes, 22 miles away. Rooms cost \$850 per night for one to four guests; meals and tours are not included. The lodge is open June 1 to September 18.



Source: Brooks Lodge.

Regal Air

Regal Air operates day-long bear viewing tours from Anchorage to both Katmai National Park and Lake Clark National Park and Preserve.²⁶ Their Katmai tour lasts 10 hours, including 2.5 hours of flight time each way, and lands at either Brooks Lake or Naknek Lake. Flight capacity is five to nine passengers. The cost is \$940 per person. The tour is offered June 20 to late September (depending on bear activity). The Lake Clark tour lasts 6.5 hours, including 75 minutes of flight time each way, and lands at either Chinitna Bay or Silver Salmon Creek. Flight capacity is five passengers. The cost is \$795 per person. The tour is offered May 10 to mid-September. Each tour includes flightseeing, lunch, and guided bear viewing.



Source: Regal Air.

²⁵ <https://katmailand.com/>

²⁶ <https://regal-air.com/alaska-shore-excursions/alaska-bear-viewing/>

AK Adventures

AK Adventures operates bear viewing tours out of Homer to Katmai National Park.²⁷ Standard day tours costs \$875 per person and last eight hours, including the 1-hour flight each way to Katmai. A nine-hour tour geared specifically for photographers is also available. Multi-day bear viewing packages are offered at \$850 per person, per night, with a two-night minimum; guests sleep in tents on-site. Tours operate June through August.



Source: AK Adventures.

Alaska Bear Adventures

Alaska Bear Adventures operates out of Homer and offers bear viewing to both Katmai and Lake Clark.²⁸ They offer several day trip options, varying in length from four to 10 hours, and ranging in price from \$600 to \$900 per person depending on length and group size. The price includes flightseeing, lunch, and guide services. They also offer custom multi-day packages.



Source: Alaska Bear Adventures.

²⁷ <https://goseebears.com>

²⁸ <https://alaskabearviewing.com/>

Economic Impacts of Bristol Bay Salmon

This report provides a range of data and information illustrating the economic impact of Bristol Bay salmon. These measures of industry – in seafood and tourism – plus the critical role of salmon to regional subsistence activity together clearly indicate Bristol Bay salmon are a major economic force. However, a complete picture of economic impacts requires analysis of direct, indirect, and induced impacts, i.e., the multiplier effects. Multiplier effects are defined as follows:

- **Direct impacts** include the jobs and income earned in commercial fishing, seafood processing, and visitor industry services in Bristol Bay.
- **Indirect impacts** are jobs and payroll generated in support sectors as Bristol Bay fishermen, seafood processors, and visitor industry businesses (mainly lodge operators) purchase a broad range of goods and services in support of their operations. These impacts spread across the region, the state and the nation.
- **Induced impacts** are generated as fishermen, processing workers, and visitor industry workers spend their wages in support of their personal and household needs. This spending flows widely throughout the service and support sector.

In this analysis, economic impacts are presented in terms of employment, labor income (net income earned by fishermen and wages earned by processing sector workers and visitor industry workers), and economic output, a measure of total economic activity. Multiplier effects occur at local, regional, statewide, and national levels.

Figure 7. Key Drivers of Economic Impacts of Bristol Bay Salmon

- **Commercial fisheries** with total **ex-vessel value at \$372 million** and total **first wholesale value of \$710 million** in 2019.
- **8,600 fishermen participating** in Bristol Bay commercial fisheries, including permit holders and crew. Participation includes an estimated **4,600 Alaskans and 4,000 non-residents**.
- Commercial fishery **limited entry permit values totaling \$379 million**, including \$326 million for driftnet permits and \$53 million for setnet permits.
- **6,000 workers employed in seafood processing** in Bristol Bay, with total **annual wages of \$56 million**.
- **Tens of thousands of visitors traveling to the region** annually to experience the region's rich natural resources, mainly for sport fishing and bear viewing and approximately **100 lodges** or other sport fishing operations.
- **\$82 million in total annual spending by visitors** to the Bristol Bay region, supporting lodges, transportation providers, and other businesses.

National and Regional Impacts of the Seafood Industry

Most jobs associated with the Alaska seafood industry are connected to commercial fishing, processing, or other direct support sectors. Employment related to grocers and restaurants selling Alaska seafood (of all types) only accounts for about one third of the total direct employment created by the industry. Since most jobs associated with the Alaska seafood industry are related to catching, processing, and managing the resource, it has a much greater economic impact on the U.S. economy than imported seafood. These general factors are all true for Bristol Bay salmon, specifically.

Total Impact (National)
\$2.0 billion in economic output
and 15,000 jobs.

In addition to direct harvesting and processing, a robust support sector provides critical inputs to the Bristol Bay salmon fishery. As noted earlier in this report, these support sector roles can range from transportation and logistics, to fishing and processing equipment and gear, boats, groceries, and skilled labor such as welding or marine refrigeration technicians. Much of the support sector activity outside Alaska occurs in or is home-based in the Pacific Northwest, though the supply chain for these supplies and inputs is national and global. Induced economic impact follows the individuals who participate in harvesting, processing, and support sectors, and is therefore spread across the nation depending on their residency and individual spending patterns.

Across the United States, including all direct, indirect, and induced impacts associated with the seafood industry, Bristol Bay salmon created \$2.0 billion in total economic output in 2019. This included \$830 million in labor income and annualized employment of 15,000 jobs.

Table 28. Economic Impact of Bristol Bay Seafood Industry in the United States, 2019

	Total Employment (annualized)	Labor Income	Total Output
United States (total)	15,000	\$830 million	\$2.0 billion
Within Alaska	5,370	\$375 million	\$1.0 billion
Outside Alaska	9,600	\$460 million	\$1.0 billion
Pacific Northwest	7,700	\$370 million	\$0.8 billion

Source: McKinley Research Group.
 Notes: All data is presented in annualized numbers. Numbers do not total due to rounding. Employment for harvesters and processing is reflected within Alaska, regardless of the residency of participant, because that economic activity occurs within the state. Indirect and induced impacts of those participants flow differently in regional estimates, as residency impacts the location of supporting expenditures and related economic activity.

Alaska Impacts of Commercial Fishing and Seafood Processing in Bristol Bay

Commercial harvest of Bristol Bay salmon generates a broad range of economic impacts. Those impacts accrue regionally, across Alaska, and around the country. As noted earlier a total of 8,600 fishermen, including 2,500 permit holders and 6,100 crew, earn income directly from the fishery. These fishermen received \$372 million for their harvest in 2019. Approximately 60% of that harvest value, or \$223 million, became net pay to fishermen (labor income), after expenses for fuel, gear, food, and a range of other supplies and services.

Within Alaska, direct impacts can be measured in ex-vessel earnings by harvesters, including crew payments. Indirect and induced impacts include labor income in support sectors, as well as the expenditures throughout the general economy supported by the direct and indirect earnings. Direct employment is presented both in terms of total participation and annualized employment. Annualizing commercial fishing employment estimates, while understating the number of people that earn income by commercial fishing, allows for consistent comparison to other sectors of the economy. Because commercial fishing in Bristol Bay occurs in a very concentrated season of about six weeks, annualized employment is well below total participation, however the very broad distribution of income is an important aspect of Bristol Bay commercial fishing's economic impact.

All harvesting employment and income is accounted within Alaska, as that is where the fishery occurs. The full economic impact of commercial harvesting, including multiplier effects, distributes throughout various regions of the United States depending on a number of factors. The primary factor is the residency of permit holders and crew. The modeling treats resident and nonresident fishermen differently, to account for lower multiplier effects among non-Alaskans participating in the fishery:

- Alaska resident fishermen likely spend more of their personal income in Alaska than their non-resident counterparts.
- Alaska resident fishermen likely secure a greater portion of their commercial fishing service and supply needs through in-state providers compared to non-resident fishermen.

Residency of the seafood processing workforce also is an important aspect of the economic impact of seafood processing in Bristol Bay. Approximately 90% of employment and wages earned in seafood processing in Bristol Bay are earned by non-Alaska residents, resulting in low induced economic impacts. However, the indirect impacts of seafood processing are important, including critically important tax revenues paid by the industry (raw fish taxes, shared state taxes, and property taxes), supporting local government employment and services in the region.

Including multiplier effects, commercial fishing in Bristol Bay accounts for \$294 million in labor income in Alaska, earned by 8,600 seasonal fishermen and 1,100 workers in the support sector (annualized equivalent of 3,670 jobs). The total economic impact in Alaska of seafood processing in Bristol Bay is estimated at \$81 million in total annual labor income earned by approximately 6,000 processing workers and 500 support sector workers (annualized equivalent of 1,700 jobs). Total economic output for the Bristol Bay salmon industry in Alaska is \$990 million.

Table 29. Economic Impact in Alaska of Bristol Bay Commercial Fishing and Seafood Processing, 2019

	Direct	Indirect & Induced	Total
Commercial Fishing			
Employment: Total (Seasonal) and Annualized	(8,600) 2,570	1,100	3,670
Labor Income (\$million)	\$223.2	\$70.5	\$293.7
Seafood Processing			
Employment: Total (Seasonal) and Annualized	(6,000) 1,200	500	1,700
Labor Income (\$million)	\$57.7	\$23.1	\$80.8
Total Economic Output (\$million)			\$990.0

Source: McKinley Research Group.

Additional Salmon-Derived Benefits and Activities

FISHERY MANAGEMENT

The State of Alaska Department of Fish and Game is responsible for regulating the salmon fisheries in Bristol Bay, and the state at large, to ensure that harvests provide for the sustainability of salmon. ADF&G sets escapement goals for river systems, conducts in-season counts of fish using a variety of tools ranging from sonar to hand counts at remote weir sites, and conducts in-season harvest monitoring and harvest management to allow adequate numbers of fish to enter the spawning grounds to ensure the resource continues for future years.

Alaska Department of Fish and Game workers, including 50 fish and wildlife technicians, two fish and game program technicians, three biologists, and one maintenance person, support the commercial fishing industry in Bristol Bay. All together, these 56 employees earn \$5.3 million in wages including cost-of-living-allowances and premium pay.

Table 30. Bristol Bay Fisheries Management Workforce

	Dillingham	King Salmon	All Bristol Bay
Full-time workers and equivalents	3	1	4
Seasonal workers	18	34	52
Total Workers	21	35	56
Total Salaries	\$3,589,721	\$1,157,100	\$4,746,821
Total Salaries with COLA and Premium Pay	\$4,029,650	\$1,274,781	\$5,304,431

Source: Office of Management and Budget, State of Alaska FY2020 Operating Budget, Department of Fish and Game, Central Region Fisheries Management Component Budget Summary

FISHERY TAXES

The State of Alaska levies two primary fisheries-related taxes which are shared with the community or borough where seafood is landed or processed. The Fisheries Business Tax is a 1 to 5 percent tax on the ex-vessel value of seafood landed in Alaska within state waters. The Fishery Resource Landings Tax is a 1 to 3 percent tax levied on the ex-vessel value of seafood processed at sea, outside state waters, but moved through Alaska ports for transshipment. Funds are also distributed more broadly in the region via an ADCCED shared fishery tax community aid program.



The Fisheries Business Tax is typically the larger of the taxes. In the data presented below, Togiak is the only community to have received a share of the Fishery Resource Landing Tax. Shared fishery tax receipts can be an important source of revenue for Bristol Bay communities. For example, in Bristol Bay Borough in FY2019, shared fishery taxes contributed one-third of the borough's total revenues; for the City of Dillingham, the contribution was smaller, at 6%.

Fisheries taxes collected by the State of Alaska and distributed to municipalities in the Bristol Bay region generated more than \$5.4 million in annual revenues from FY2018 to FY2020. In the peak year, FY2019, revenue exceeded \$6.5 million. The state's annual retained portion averaged \$5.1 million.

Table 31. Municipal Receipts of Shared Fishery Taxes, FY2018-2020

Municipality	FY2018	FY2019	FY2020	3-Yr Average
Boroughs				
Bristol Bay Borough	\$3,829,195	\$4,964,047	\$3,195,031	\$3,996,091
Lake and Peninsula Borough	\$265,112	\$266,057	\$247,060	\$259,410
Cities				
Aleknagik	\$4,188	\$7,784	\$24,947	\$12,306
Clark's Point	\$263,328	\$8,642	\$17,090	\$96,353
Dillingham	\$462,555	\$804,435	\$585,198	\$617,396
Egegik	\$130,517	\$192,797	\$149,604	\$157,640
Ekwok	\$3,471	\$6,168	\$19,134	\$9,591
New Stuyahok	\$6,117	\$10,888	\$34,769	\$17,258
Newhalen	\$3,919	\$7,703	\$23,464	\$11,695
Nondalton	\$3,747	\$6,703	\$20,056	\$10,169
Pilot Point	\$6,630	\$36,639	\$40,784	\$28,018
Port Heiden	\$14,580	\$0	\$3,724	\$6,101
Togiak	\$173,859	\$218,501	\$203,725	\$198,695
All Shared Fishery Tax Revenue	\$5,167,218	\$6,530,363	\$4,564,587	\$5,420,723

Source: ADOR, ADCCED.

Note: A very small portion of shared fish taxes received in the Lake and Peninsula Borough result from fishery activity in communities outside the Bristol Bay region.

Raw fish, or severance, taxes are also collected by a handful of the region's municipalities. They also generated significant revenue for the region, with a three-year average contribution of \$6.1 million.

Table 32. Local Raw Fish Tax Revenues, FY2017-2019

	FY2018	FY2019	FY2020	3-Yr Average
Boroughs				
Bristol Bay Borough	\$2,117,857	\$1,758,141	\$2,305,299	\$2,060,432
Lake and Peninsula Borough	\$1,638,335	\$2,812,642	\$1,714,986	\$2,055,321
Cities				
Egegik	\$1,230,569	\$2,390,820	\$1,048,978	\$1,556,789
Manokotak	\$-	\$-	\$100,479	\$33,493
Pilot Point	\$-	\$1,080,508	\$-	\$360,169
Togiak	\$-	\$-	\$133,239	\$44,413
Total Local Raw Fish Tax Revenue	\$4,986,761	\$8,042,111	\$5,302,981	\$6,110,618

Source: ADCCED, Alaska Taxable.

Regional Spotlight: Economic Impacts of Seafood in the Pacific Northwest

Alaska's fishing industry has strong historical and contemporary ties to other states on the Pacific Coast, most notably Washington and, to a noteworthy but lesser extent, Oregon and California. Seattle and the greater Puget Sound region have long provided transportation and supply linkages between Alaska and the rest of North America. Puget Sound plays a crucial role as a gateway port for the Alaska seafood industry. The region

boasts a wide range of port facilities and is home to many companies that manufacture and/or sell equipment to Alaska operations. Additionally, Pacific states fishermen have participated in Bristol Bay commercial fisheries in large numbers since inception. Particular linkages include:

- Significant numbers of Washington, Oregon, and California residents who participate in the Bristol Bay salmon fishery. These fishermen earned \$152 million in ex-vessel value in 2019. Earnings by Washington permit holders accounted for 77% of that total value.
- The bulk of maritime shipping – both northbound for the transport of fishing gear, processing supplies, fuel, and other necessary industry inputs, and southbound for the transport of seafood – runs through the Puget Sound region.
 - Industry interviews suggest approximately 50% of Bristol Bay salmon on a round-pound basis (including nearly all of Bristol Bay’s canned production, which was 8% of processed 2019 volume) moves through ports in Puget Sound.
 - As much as 80% of the H&G and fillet product that is shipped to the Puget Sound region reportedly receives secondary/value-added processing in regional facilities.
- Many of the seafood processing companies that do business in Bristol Bay operate corporate headquarters or major corporate offices in Washington State, and many employees of those companies relocate to Bristol Bay during the fishing season. These include major seafood companies such as North Pacific Seafoods, Icycle and Ocean Beauty Seafoods (recently combined to OBI Seafoods), Peter Pan Seafood, Trident Seafoods, Alaska General Seafoods, and Leader Creek Fisheries, as well as several smaller companies.
- Institutions of higher education have strong linkages to the Bristol Bay region. Examples include the University of Washington’s Alaska Salmon Program, which has conducted research in Bristol Bay for more than seven decades.
- Most of the air transport into and out of Alaska routes through Seattle.

Marine servicing and support sector businesses in the Puget Sound region are critical to the Bristol Bay fishery. For example, regional cold storage companies, processing and fishing equipment companies, shipyards and boatbuilders, and financial institutions all provide key inputs for the harvesting and processing sectors. While it is beyond the scope of this research to detail all support sector businesses, previous McKinley Research Group (McDowell Group) studies provided a partial census of seafood industry support businesses in the Puget Sound region. That research identified nearly 70 support sector businesses, most of which are likely doing some business in support of Bristol Bay’s seafood sector.

As noted above, the indirect and induced impacts of the Bristol Bay salmon fishery in the Pacific Northwest are estimated at approximately 7,700 annualized jobs, labor income of approximately \$370 million, and \$1 billion in total economic output.

Table 33. Economic Impact of Bristol Bay Salmon in Puget Sound, 2019

	2019
Employment: Annualized	7,700
Labor Income (\$million)	\$370
Economic Output (\$billion)	\$1.0

Source: McKinley Research Group.

Economic Impact of the Tourism Industry

Visitor spending creates jobs in many sectors of the economy, including hotels and lodges, tour companies, retail establishments, transportation providers, dining establishments, and a range of other businesses. Data from government sources does not provide a clear measure of jobs and wages in the visitor industry because jobs are so widely spread across the economy and because visitor-affected sectors are also impacted by resident travelers and resident spending. Tourism spending in Bristol Bay is a combination of sportfishing-focused visits and significant bear viewing traffic. This research limits the employment, wage, and total economic output assessment to Alaska only.²⁹

Total Impact (Alaska)
\$155 million in economic output
and 2,300 jobs.

Bristol Bay visitor spending per trip ranges from under \$1,000 for a day bear viewing to well over \$5,000 for a multi-night stay at a sportfishing lodge. For visitors spending time at a sportfishing lodge, it is reasonable to attribute all spending in Alaska to their Bristol Bay experience (fishing in Bristol Bay is often the primary purpose of their trip to Alaska). For day-trippers, only the spending on the Bristol Bay excursion from a location within Alaska can be attributed to the region (and the salmon the watershed produces).

The best available data suggests that Bristol Bay region sportfishing lodge businesses and bear viewing generate approximately \$97 million in total annual visitor spending within Alaska. That spending supported a total economic output of \$155 million in Alaska in 2019, including approximately 2,300 jobs (1,400 annualized) and \$67.9 million in direct, indirect, and induced labor income.

Table 34. Economic Impact in Alaska of Visitors to Bristol Bay Region, 2019

	Direct	Indirect & Induced	Total
Employment: Total (Annualized)	2,300 (1,400)	600	2,000
Labor Income (\$million)	\$43.7	\$24.2	\$67.9
Economic Output (\$million)			\$155.0

Source: McKinley Research Group.

²⁹ Non-Alaska expenditures, such as travel costs, are difficult to directly link to Bristol Bay with current available data. For example, out-of-state expenditures by a visitor who makes a 10-day trip to Alaska but spends 3 of those at a Bristol Bay lodge, or who flies to the region for 6 hours for bear viewing, cannot be entirely attributed to Bristol Bay. Future primary research could help allocate costs appropriately. Estimates are therefore conservative.

Additional Benefits: Municipal Bed Taxes

Another source of salmon-derived benefit that flows to communities is through municipal bed tax revenues. Not all bed tax can be attributed to salmon-driven economic activity. For example, people traveling for a broad range of business purposes or to visit family would not be included in an estimate of related spending. In certain communities, however, visitor overnights related to lodges and other tourism infrastructure are a more dominant part of total local activity. To the extent that bed taxes exist in communities, they can be a mechanism for capturing additional benefits from salmon-induced visitors.

Table 35. Local Bed Tax Revenues, FY2017-2019

Municipality	FY2017	FY2018	FY2019	3-Yr Average
Boroughs				
Bristol Bay Borough	\$102,892	\$111,871	\$136,127	\$116,963
Lake and Peninsula Borough	\$108,896	\$146,140	\$240,746	\$165,261
Cities				
Dillingham	\$80,286	\$76,052	\$94,376	\$83,571
Aleknagik	\$139,209	\$-	\$-	\$46,403
Manokotak	\$-	\$-	\$3,466	\$1,155
Nondalton	\$-	\$272	\$91	\$91
Total Bed Tax Revenue	\$431,283	\$334,063	\$474,987	\$413,444

Source: ADCCED, Alaska Taxable.