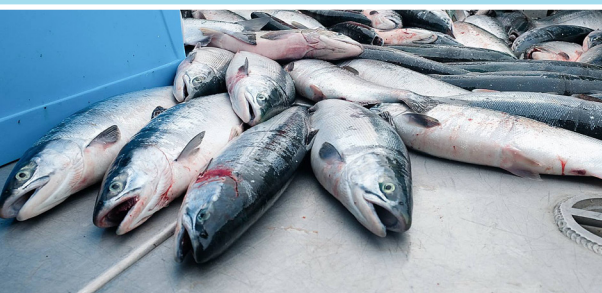


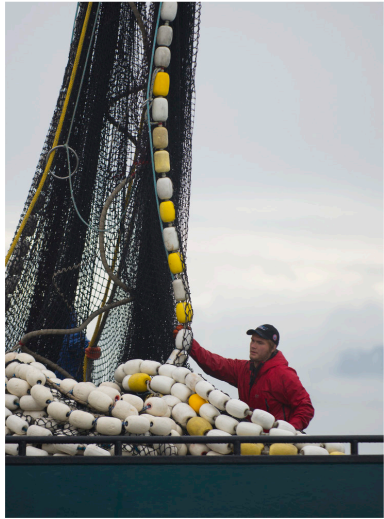
Economic Impact of the Prince William Sound Aquaculture Corporation

September 2018

Prepared for
**Prince William Sound
Aquaculture Corporation**



Prepared by
**McDowell
GROUP**

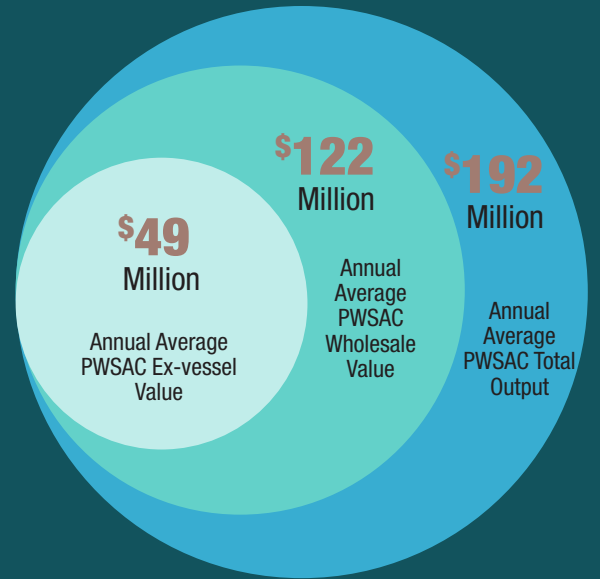




By the Numbers

Prince William Sound Aquaculture Corporation

2012-2017



539 million pounds

Cumulative common property harvest volume of PWSAC salmon

90 million pounds

Annual average volume of PWSAC salmon common property harvest

\$296 million

Cumulative common property harvest value of PWSAC salmon

\$49 million

Annual average value of PWSAC salmon common property harvest

\$59 million

Annual average odd-year value of PWSAC common property harvest

43%

PWSAC salmon share of total PWS commercial salmon harvest value, 2012-2017

\$730 million

Cumulative first wholesale value of PWSAC-produced salmon products

\$122 million

Annual average first wholesale value of PWS-produced salmon products

1,405 jobs

direct, indirect, and induced

Annual average employment supported by PWSAC

\$68 million

including all multiplier effects

Total annual labor income supported by PWSAC

\$192 million

Total annual economic output generated by PWSAC produced salmon



Introduction

This report details the broad economic impact on Alaska of Prince William Sound Aquaculture Corporation (PWSAC). This is the sixth impact report prepared by McDowell Group for PWSAC since 2001.

PWSAC was founded in 1974 by local Prince William Sound (PWS) fishermen. The private non-profit corporation's mission is to optimize salmon production in PWS for all user groups, including commercial, sport, personal use, and subsistence. PWSAC produces all five salmon species from five hatcheries, four located in PWS and one located inland on the Gulkana River. PWSAC manages and operates three facilities owned by the Alaska Department of Fish & Game at no cost to the state.

Armin F. Koernig Hatchery

Originally the site of a salmon cannery, the Armin F. Koernig Hatchery is located about 90 miles west of Cordova on Evans Island. The facility was PWSAC's first hatchery and began operations in 1974.

Wally Noerenberg Hatchery

The Wally Noerenberg Hatchery is located approximately 20 miles east of Whittier in Lake Bay. Built in 1985, the hatchery is one of the largest salmon production facilities in North America.

Cannery Creek Hatchery

The Cannery Creek Hatchery was built in 1978 by the Alaska Department of Fish and Game (ADF&G). In 1988 PWSAC took over management and operations (ADF&G still owns the hatchery.) The facility is located about 40 miles east of Whittier in Unakwik Inlet.

Main Bay Hatchery

Built in 1981 by ADF&G and still owned by the state, PWSAC began providing management and operation services in 1991. Main Bay Hatchery is located 40 miles southwest of Whittier.

Gulkana Hatchery

The Gulkana Hatchery is located on the Gulkana River near Paxson, 250 miles northeast of Anchorage. Established by ADF&G in 1973, PWSAC manages the facility which focuses primarily on sockeye salmon.

Administrative Operations

PWSAC's main administrative offices are in Cordova. The organization also operates a distribution center in Anchorage used to consolidate and expedite supplies to hatcheries. That center also houses administrative staff.



Commercial Fisheries Impact

Prince William Sound commercial seine and gillnet fishermen harvest significant volumes of salmon produced by PWSAC.

Common-property Commercial Harvest and Ex-vessel value

- ▶ Between 2012 and 2017, PWS commercial fishermen (all gear types) harvested a cumulative total of 539 million pounds of PWSAC-produced salmon worth \$296 million. The annual commercial harvest of PWSAC fish averaged 90 million pounds worth \$49 million.
- ▶ PWSAC salmon accounted for 43 percent of the total PWS salmon harvest volume over the 2012 to 2017 period (1.2 billion pounds) and 45 percent of the total value (\$642 million).
- ▶ By volume and value, pink salmon is the most important species produced by PWSAC. Commercial fishermen harvested 390 million pounds (120 million pink salmon) from PWSAC between 2012 and 2017 worth about \$131 million. The annual commercial harvest of PWSAC pink salmon averaged 65 million pounds worth \$22 million.
- ▶ Over the 2012-2017 period, more than one in three pink salmon harvested in PWS came from PWSAC.
- ▶ Sockeye salmon are the most valuable species produced by PWSAC on a per pound basis. Over the study period, 44 million pounds were harvested worth \$94 million. About 7.3 million pounds of sockeye worth \$16 million were harvested annually.
- ▶ Chum are valued primarily for their roe, but flesh markets have developed in recent years. About 104 million pounds of this PWSAC-sourced chum worth \$68 million were harvested between 2012 and 2017, or an annual average of 17 million pounds worth \$11 million.
- ▶ PWSAC also produces coho: about 2.2 million pounds worth \$2.3 million were harvested over the study period. Nearly 375,000 pounds were harvested annually worth about \$390,000.





Seine Harvest of PWSAC Salmon

- ▶ Seine vessels focus primarily on pink and chum salmon fisheries in PWS. About 220 vessels with 900 crew and captains harvest PWSAC fish.
- ▶ Between 2012 and 2017, seiners harvested about 996 million pounds of salmon in PWS worth \$347 million. PWSAC fish accounted for 404 million pounds or 41 percent of total volume. These hatchery fish were valued at \$148 million, 43 percent of the total seine harvest.
- ▶ For the individual PWS seine permit holder, earnings over this period totaled \$1.6 million, or an annual average of \$265,000. Harvest of PWSAC fish contributed about \$682,000 (annual average of \$114,000) to this total.

Ex-vessel Earnings from PWSAC Salmon

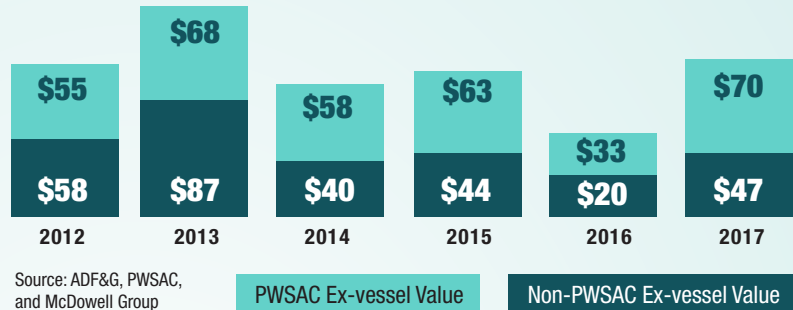
2012-2017 (millions of dollars)

Year	Seine	Gillnet	Total
2012	\$23	\$35	\$58
2013	\$58	\$29	\$87
2014	\$14	\$25	\$40
2015	\$25	\$19	\$44
2016	\$2	\$18	\$20
2017	\$25	\$22	\$47
Total	\$148	\$148	\$296

Source: ADF&G, PWSAC, and McDowell Group Estimates.

Value of Prince William Sound Common-Property Salmon Harvest

by Source, 2012-2017 (millions of dollars)



Gillnet (Drift and Setnet) Harvest of PWSAC Salmon

- ▶ Gillnetters harvest less volume than seiners but capture higher value sockeye and coho. Nearly 520 drift vessels with about a thousand crew and captains harvest fish in PWS, in addition to roughly 30 setnet sites with 90 crew and permit holders.
- ▶ PWS gillnet fishermen harvested 220 million pounds of salmon between 2012 and 2017, an annual average of 37 million pounds. This harvest was worth \$295 million, an annual average of \$49 million per year. Of this total, salmon from PWSAC contributed 135 million pounds worth \$148 million, or 61 percent of total volume and 50 percent of earnings.
- ▶ For the average permit holder, earnings over this 6-year period totaled \$538,000. Harvest of PWSAC fish accounted for \$270,000 of this amount, or about \$45,000 annually.



Processing Impact

- ▶ Salmon from PWSAC is processed primarily in Cordova and Valdez, in addition to Seward, Kodiak, and other communities.
- ▶ The PWS seafood processing sector includes shoreside plants, floating processors, and direct marketers.
- ▶ Between 2012 and 2017, PWS processors sold \$1.63 billion worth of seafood products; \$1.58 billion (97 percent) came from salmon. Halibut, sablefish, Pacific cod, and other species composed the remainder.
- ▶ Between 2012 and 2017, the first wholesale value of salmon products originating from PWSAC salmon totaled more than \$730 million, or an annual average of about \$122 million. Pink salmon products were the largest component, contributing an annual average of more than \$70 million.
- ▶ Processors added \$434 million in value to PWSAC-produced salmon over the 2012-2017 period. This value-added (or gross margin) is total value (\$730 million) minus the cost of purchasing the fish (\$296 million).
- ▶ Most PWSAC pink salmon is processed into frozen headed and gutted (H&G) form and shipped to a reprocessing facility. A declining portion of pink salmon are canned. In 2012 about half of all Alaska pink salmon were canned; in 2017 this proportion had declined to about a quarter.
- ▶ Nearly all PWSAC chum leave Alaska as frozen H&G. The primary coho and sockeye products are also primarily frozen, but with more value-add such as fillets and vacuum sealed. These two species also serve the fresh market, especially sockeye in the early season.
- ▶ Utilization of PWS salmon has increased as markets have been developed for different grades of salmon flesh products. Increased regional capacity for fish meal and fish oil production has also increased utilization.

Sport, Personal Use, and Subsistence Impact

Sport

- ▶ PWSAC salmon are commonly harvested by charter boat operators from Seward.
- ▶ Nearly 40,000 PWSAC coho were harvested by anglers over the 2012-2017 period, equal to about 2,200 daily bag limits annually; 7,500 PWSAC sockeye were harvested as well, or more than 200 daily bag limits per year.
- ▶ Residents of more than 50 Alaska communities harvested more than 325,000 PWSAC-produced sockeye salmon from 2012 through 2017, including:
 - Fairbanks: **115,000 fish**
 - Anchorage: **80,000 fish**
 - Matanuska-Susitna: **60,000 fish**
 - Copper River Valley: **50,000 fish**

Personal Use and Subsistence

- ▶ Personal use and subsistence users harvest sockeye salmon produced by PWSAC's Gulkana hatchery in the Copper River. Between 2008 and 2017, PWSAC was the source of nearly two-in-five sockeye salmon harvested in these fisheries.
- ▶ Assuming the average 4-person family eats 40 salmon per year, PWSAC's annual contribution to personal use and subsistence fisheries helps feed 5,400 Alaskans annually.
- ▶ Harvest of PWSAC salmon attracts users who support hospitality, retail, and guiding businesses in the Copper River Valley.

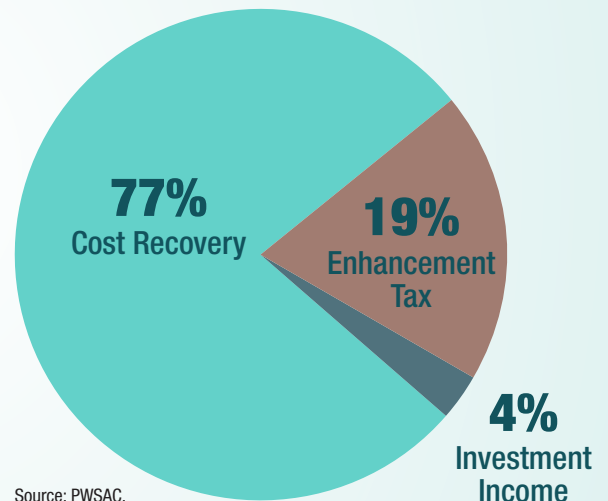


PWSAC Operations

PWSAC is funded primarily through revenue generated from cost recovery operations when a portion of returning hatchery fish are sold directly to seafood processors. Other sources of operating revenue include a 2.0 percent enhancement tax paid by area fishermen and investment revenue. PWSAC periodically receives capital grants from the State of Alaska to support improvements at state-owned facilities.

- ▶ In 2017, operating revenue totaled \$12.6 million. Cost recovery was the largest component, contributing \$10.1 million or 80 percent of the total. Enhancement tax revenue of \$2.0 million (16 percent) and investment income of \$0.6 million (4 percent) accounted for the remainder.
- ▶ Over the 2012-2017 period, operating revenue from all sources averaged \$12.0 million. Cost recovery revenue contributed an annual average of \$9.3 million, or 77 percent of the total. Enhancement tax generated an average of \$2.3 million (19 percent) per year and investment income totaled \$0.4 million (4 percent) annually.

PWSAC Operating Revenue Sources
2012-2017 Annual Average



Source: PWSAC.



Economic Impact of PWSAC in Alaska

- ▶ PWSAC accounted for an annual average of 1,405 direct, indirect, and induced jobs over the 2012-2017 period. Total annual labor income averaged \$68 million over this time, including all multiplier effects.
- ▶ PWSAC's employment impacts include 610 annual-equivalent jobs connected with commercial fishing, 645 jobs associated salmon processing, and 150 jobs related to hatchery administration and operations.
- ▶ PWSAC's impacts include \$39 million in labor income connected with commercial fishing, \$24 million associated salmon processing, and \$6 million related to hatchery administration and operations.
- ▶ Total economic output associated with PWSAC, including all direct, indirect, and induced spending and wages, is estimated at \$192 million annually.
- ▶ The total number of people earning income as a result of PWSAC operations and production is more than double the annual average of 1,405, including fishermen, seasonal processing workers, seasonal and year-round hatchery employees, and support sector workers.

Annual Average Economic Impact of PWSAC 2012-2017

	Direct Impacts	Indirect & Induced Impacts	Total Economic Impacts
Commercial Fishing			
Employment	420	190	610
Labor Income	\$29.4 million	\$9.2 million	\$38.6 million
Seafood Processing			
Employment	425	220	645
Labor Income	\$16.8 million	\$7.0 million	\$23.8 million
PWSAC Operations			
Employment	85	65	150
Labor Income	\$3.5 million	\$2.2 million	\$5.7 million
Total Economic Impact			
Employment	930	475	1,405
Labor Income	\$49.6 million	\$18.4 million	\$68.0 million
Output	\$123.2 million	\$69.0 million	\$192.2 million

Note: Totals may not sum due to rounding.
Source: McDowell Group estimates using IMPLAN, ADF&G, DOLWD, and PWSAC data.





Distribution of Economic Impacts

The economic impact of PWSAC extends well beyond Prince William Sound. PWS seine and gillnet permit holders come from many Alaska communities:

- ▶ In 2017, PWS seine permit holders were from 22 Alaska communities; residents of 30 Alaska communities held PWS gillnet permits.
- ▶ In 2017, Anchorage and Matanuska Borough residents held 115 limited entry permits for PWS.
- ▶ After Cordova, Homer residents generate the most commercial fishing income (more than \$21.6 million in 2017) from PWS salmon fisheries. Resident of Kenai Peninsula Borough earned a total of \$31.9 million.
- ▶ Municipality of Anchorage residents rank third in terms of PWS commercial fishing income, with \$13.7 million in earnings in 2017, while Mat-Su Borough residents earned more than \$3.5 million.

With PWSAC accounting for 45 percent of the value of PWS salmon fisheries over the 2012-2017 period (including 40 percent in 2017), it is evident that income generated by harvest of PWSAC salmon is broadly distributed.

PWSAC's economic impact outside of PWS also stems from its purchases of supplies, professional services, freight services, and many other goods and services from vendors throughout Southcentral Alaska.

In 2017, PWSAC spent \$4.0 million on with 158 different vendors in 23 Alaska communities, including \$1.5 million in Anchorage with 102 different vendors. Other spending occurred in Whittier, Seward, Fairbanks, Palmer, Eagle River, and Kenai, among others.

PWSAC has more direct economic impact in the Anchorage/Mat-Su area as well, employing 16 individuals from the region with annual wages of nearly \$600,000. PWSAC maintains an office in Anchorage, with 7 employees.

Local processors handling PWSAC salmon supported further economic impacts in Southcentral Alaska outside PWS through purchases of supplies, utilities, and other services.

Residency of PWS Salmon Permit Holders with Ex-vessel Earnings, 2017

Location	Permits Owned	Ex-vessel Earnings
Valdez/Cordova Census Area	325	\$36,865,213
Cordova	301	\$33,093,490
Valdez	21	n/a
Chitina	1	n/a
Copper Center	1	n/a
Whittier	1	n/a
Kenai Peninsula Borough	155	\$31,853,416
Homer	97	\$21,627,598
Seward	22	\$4,238,507
Soldotna	6	\$282,171
Kasilof	7	\$269,402
Kenai	7	n/a
Anchor Point	5	n/a
Sterling	5	n/a
Moose Pass	3	n/a
Ninilchik	1	n/a
Nikolaevsk	1	n/a
Seldovia	1	n/a
Municipality of Anchorage	81	\$13,735,376
Anchorage	48	\$4,352,712
Girdwood	22	\$6,224,356
Eagle River	8	n/a
Chugiak	3	n/a
Mat-Su Borough	34	\$3,546,537
Wasilla	26	\$2,117,088
Palmer	3	n/a
Willow	3	n/a
Sutton	2	n/a
All Other Alaska	27	\$2,606,806*
Juneau	6	n/a
Kodiak	5	\$1,964,499
Delta Junction	5	\$642,307
Fairbanks	3	n/a
Petersburg	3	n/a
Dillingham	2	n/a
Dutch Harbor	1	n/a
Haines	1	n/a
Hoonah	1	n/a
Alaska Resident Total	622	\$90,580,317

*Subtotal does not include confidential values.

Note: n/a means values are confidential. **Alaska Resident Total** includes confidential data.

Source: CFEC



Tax Revenue Associated With PWSAC

PWSAC salmon production generates significant state and local taxes

- ▶ Between 2012 and 2017, harvest of PWSAC salmon generated about \$10.6 million through the State of Alaska's Fisheries Business Tax. Half of this total is shared with communities where PWSAC salmon are landed (\$5.3 million) and the State retains the remainder. Cordova and Valdez receive most of these funds.
- ▶ Other tax revenue is directly generated when PWSAC-sourced fish are landed in a community with a raw fish tax (e.g., Kodiak). Communities with sales tax (e.g., Cordova and Seward) are also supported indirectly when the harvest and processing sector purchase goods and services locally.
- ▶ Property tax revenue is also generated indirectly through processing of salmon. Silver Bay Seafoods and Peter Pan Seafood are among the largest non-oil property tax payers in Valdez. Trident Seafoods, Ocean Beauty Seafoods, and Copper River Seafoods paid nearly \$250,000 in 2018 property taxes to the City of Cordova.





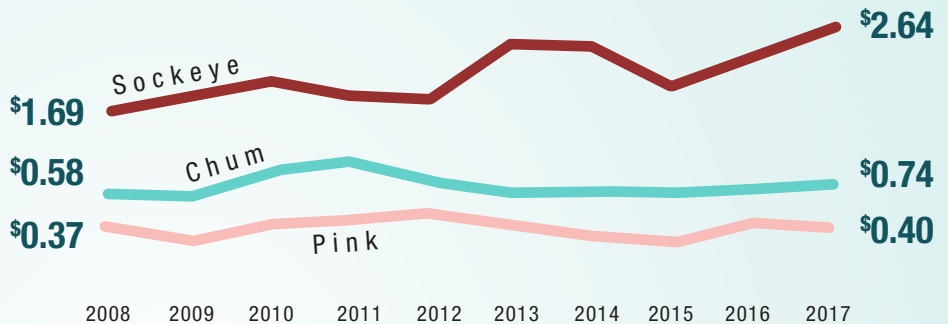
Market Outlook for Wild Alaska Salmon

- ▶ The near-term market outlook for wild Alaska salmon is positive. Strong consumer demand for Alaska-caught fish combined with processor innovations and a focus on quality have strengthened Alaska's place in the competitive global market.

- ▶ Over the last decade ex-vessel prices have generally been stable or trended higher. Nominal ex-vessel pink salmon prices averaged \$0.39 per pound in PWS, ranging from a high of \$0.53 in 2012 to a low of \$0.23 in 2015. Relatively weak statewide harvest levels for pink salmon in 2018 will help support demand and a stable or elevated price.

- ▶ Chum salmon prices averaged \$0.67 per pound over the same period, including a high of \$0.87 in

Average Nominal Prince William Sound Ex-vessel Salmon Prices (per pound), 2008-2017



Source: ADF&G

2011. Average PWS sockeye prices per pound have grown, reaching \$2.64 in 2017.

- ▶ Near-term threats to the Alaska salmon industry include currency fluctuations, trade disruptions, and run failures. Competition with farmed salmon remains a long-term challenge.



Methodology and Sources

All photos are from ASMI, Franklyn Dunbar, and McDowell Group.

The data used in this report comes from a variety of sources, including PWSAC, Alaska Commercial Fisheries Entry Commission (CFEC), Alaska Department of Fish and Game (ADF&G), Alaska Department of Labor and Workforce Development (DOLWD), and Alaska Department of Revenue (DOR). In addition, interviews were conducted with PWSAC staff, ADF&G employees, and other experts. Estimates provided in this report are based on the best available data. The study team used data from these sources, in addition to proprietary research, to develop economic models to estimate direct, indirect, and induced employment and labor income.