



RESEARCH &  
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# BRISTOL BAY SOCKEYE MARKET REPORT

SPRING 2018 EDITION

PREPARED FOR



**BRISTOL BAY**  
Regional Seafood  
Development Association

## ***ACKNOWLEDGEMENTS***

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RESEARCH CONDUCTED FOR



The Bristol Bay Regional Seafood Development Association is funded by a one-percent levy on driftnet salmon fishermen in Bristol Bay and supports activities aimed at maximizing the value of the Bristol Bay salmon fishery for the benefit of its members.

RESEARCH CONDUCTED BY



Wink Research & Consulting, LLC provides economic research, market research, and consulting services. Research and study findings contained in this report were conducted by Andy Wink.

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# SUMMARY OF FINDINGS

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Bristol Bay Regional Seafood Development Association (BBRSDA) is tasked with increasing the value of Bristol Bay sockeye and has contracted with Wink Research & Consulting, LLC to produce bi-annual sockeye market reports in 2018. These reports analyze market conditions for sockeye products, investigate market issues, examine historical trends, track the share of resource value (between fishermen and processors), and discuss market impacts on Bristol Bay salmon fishermen. Key findings are listed below:

Robust demand for Bristol Bay sockeye products, coupled with high farmed salmon prices, improved exchange rates, and improving financial performance on the part of processors is expected to result in higher ex-vessel prices in 2018. However, a large sockeye forecast in Bristol Bay and Canada could limit price appreciation.

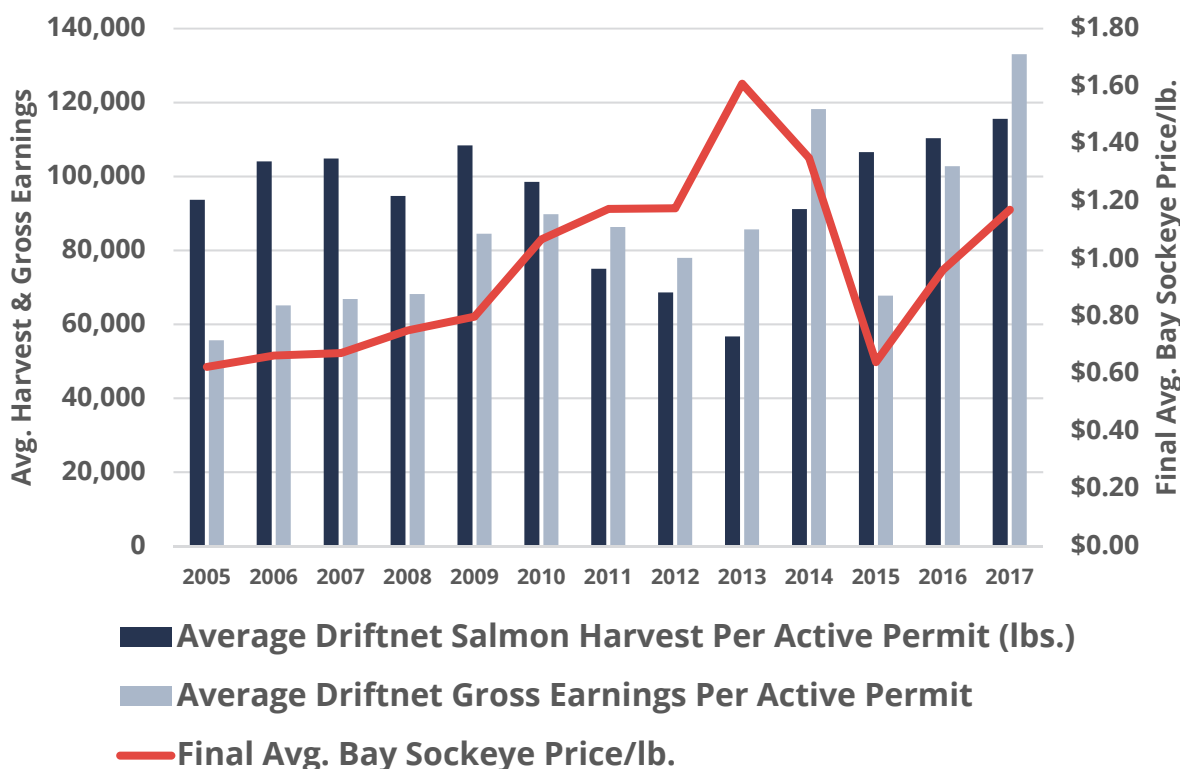
## SUMMARY OF MARKET CONDITIONS & OUTLOOK

- The Bristol Bay salmon fishery is expected to produce a commercial harvest of 37.6 million sockeye this season, similar to harvests caught in each of the past three seasons. Projected harvests in the Nushagak district are particularly large.
- Global sockeye supply is projected to increase by approximately 7 percent this year, due to a larger run of Fraser River sockeye in Canada. Many Fraser River salmon which were subjected to the effects of the 2014 Mount Polley mine disaster will return as adults this year.
- A leading research firm lowered its 2018 Atlantic salmon production forecast from 7 percent to 4 percent this past March, citing slower growth than originally anticipated.
- First wholesale prices for all major sockeye product forms increased in 2017 and there are no major inventory concerns heading into the 2018 season.
- The shift towards frozen and fresh products has intensified over the past two years. Despite a large harvest last season, canned sockeye production in the Bay was the lowest since 1998 and only three companies operated canning lines in 2017.
- Depending upon the data set referenced, farmed salmon prices are currently at or near record-high prices.
- Currency fluctuations have generally been favorable for Bristol Bay salmon producers over the past 12 months, with the U.S. dollar index weakening by 5 percent.

- Processing labor shortages and a large run resulted in many fishermen being put on limits last year. Given the expectation of another large harvest, processing labor will be a key factor in determining seasonal performance for both fishermen and processors.
- Despite the largest sockeye harvest since 1995, Bristol Bay fishermen chilled a higher percentage of the catch (73%) than ever. Improving quality has resulted in increasing average prices and better sales performance in recent years.
- The current market for Bristol Bay driftnet salmon permits is around \$150,000 per permit. This is relatively high compared to the past 20 years; however, average gross earnings per permit was outstanding last year and is expected to be strong in 2018.
- After three seasons of large sockeye harvests, there is probably more downside to run-size than ex-vessel pricing in 2018. If the sockeye show up as expected, the 2018 season will likely produce higher average gross earnings than the 2017 season – but a lot of fish must be caught and chilled first.

**FIGURE 1**

**Bristol Bay Driftnet Salmon Fishery Performance, 2005-2017**



Notes: 2017 average driftnet harvest volume and gross earnings is preliminary or estimated. Average price reflects final average ex-vessel payments per pound for driftnet and setnet fishermen.  
 Source: ADF&G and CFEC, compiled by Wink Research.

# INTRODUCTION

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The Bristol Bay Regional Seafood Development Association (BBRSDA) has funded bi-annual sockeye market reports since 2013. Previously, BBRSDA commissioned McDowell Group to produce the market report series but switched contractors in April 2018.

Wink Research and Consulting, LLC is operated by Andy Wink, who has extensive experience studying markets for Bristol Bay sockeye and economic issues related to the commercial seafood industry in Alaska. Mr. Wink has been the primary author/analyst of this report series since its inception.

## STUDY PURPOSE & SCOPE OF WORK

BBRSDA represents the world's largest group of sockeye fishermen and is tasked with increasing the value of Bristol Bay salmon (principally sockeye). In addition to bi-annual reports, the *Sockeye Market Report* project includes summary presentations at the direction of the BBRSDA Board and staff. This project tracks market trends affecting sockeye salmon to help BBRSDA direct marketing activities, inform its members about market conditions, and react effectively to emerging trends. Past analyses and presentations can be viewed or downloaded from BBRSDA's website ([www.bbrsda.com](http://www.bbrsda.com)).

## METHODOLOGY & DATA SOURCES

Data presented in this report was compiled from primarily from government agencies, including the Alaska Department of Fish & Game (ADF&G), the Alaska Department of Revenue (ADOR), and the Commercial Fisheries Entry Commission (CFEC). In addition, retail/grocery sales data purchased by BBRSDA was used to analyze regional sales trends in the U.S. market.

Data from these sources have been structured to provide information applicable to Bristol Bay sockeye to the fullest extent possible. In cases where the timing of data releases by the agencies causes gaps in the analysis, estimates have been developed based on historical relationships/patterns.



## **LIMITATIONS OF DATA & ANALYSIS**

Commercial fishing is a heavily regulated business and government agencies collect data on a wide range of variables, from harvest to price to participation. As wild fish move closer to the consumer, publicly available data diminishes. For instance, there is no readily accessible public data on the average retail price of canned salmon or the amount of sockeye fillets sold by individual retailers. This data gap has been addressed, to the extent practical, by utilizing point-of-sale information, interviewing sockeye buyers, and seafood industry trade press.

## **LEGAL DISCLAIMER**

The views expressed herein do not necessarily represent those of the Bristol Bay Regional Development Association. Information provided in this report is believed to be accurate as of May 2018 but is presented without warranty or guarantee of any kind. Neither the Bristol Bay Regional Development Association or Wink Research & Consulting, LLC may be held accountable for any direct or indirect damages as a result of the information contained herein.

# GLOSSARY OF TERMS & ABBREVIATIONS

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ADOR	Alaska Department of Revenue
ADF&G	Alaska Department of Fish and Game
ASMI	Alaska Seafood Marketing Institute
ASPR	Alaska Salmon Price and Production Reports (published by ADOR)
BBRSDA	Bristol Bay Regional Seafood Development Association
EV	Ex-Vessel terms
COAR	Commercial Operators Annual Report (published by ADF&G)
CY	Calendar year basis
DFO	Canadian Department of Fisheries and Oceans
FAO	United Nations Fisheries and Aquaculture Organization
FW	First wholesale terms
H&G	Headed and gutted
HY	Harvest year basis
NMFS	National Marine Fisheries Service
PACFIN	Pacific Fisheries Information Network

<b>Ex-Vessel Value/Price</b>	The value or price paid to fishermen by a processor for whole fish.
<b>First Wholesale Value</b>	The value (or average price) of processed product sold by processors to entities outside of their affiliate network. Typically refers to the value of product as it leaves Alaska.
<b>First Wholesale Volume</b>	The weight of processed product sold by processors to entities outside of their affiliate network. Also referred to as production volume.
<b>Harvest Year Cycle</b>	Refers to the 12-month period when most sockeye are caught and sold into the wholesale market. The harvest year cycle runs from May of the harvest year through April of the following year. Aligning the data by sales season, as opposed to calendar year provides a better basis for comparing first wholesale data to ex-vessel data. This period is also referred to as the annual sales cycle.
<b>Net Processing Revenue</b>	First wholesale value earned by processors less ex-vessel payments to fishermen.
<b>Refreshed Sockeye</b>	Refers to frozen H&G product which has been thawed out and filleted. This is usually done at secondary processing plants near final consumer markets by local seafood distribution companies. Processed, chilled sides/portions are then delivered to retailers and restaurants.
<b>Round Weight</b>	The weight of a whole fish as it is delivered to the processor in an uncut and unprocessed state.

# SUPPLY ANALYSIS

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Supply trends and production forecasts for sockeye and other competing salmon species have a significant impact on future ex-vessel and first wholesale prices for Bristol Bay sockeye. This chapter examines recent production trends and the outlook for future supply.

## KEY FINDINGS

- The Bristol Bay salmon fishery is expected to produce a harvest of 37.6 million sockeye, similar to harvests realized in each of the past three seasons.
- Sockeye run forecasts for the Nushagak District are particularly large.
- Global sockeye supply is expected to increase in 2018, due to an “up” year in Canada’s Fraser River system which historically produces a large harvest once every four years.
- Sockeye harvests in Alaska and Russia are expected to decline slightly, overall.
- Bristol Bay accounted for 50 percent of global sockeye harvests in 2016, and 54 percent in 2017 based on preliminary data.
- Farmed salmon production growth forecasts for 2018 were recently lowered, from 7 percent to 4 percent.
- Wholesale prices of farmed salmon in the U.S. are currently at record high levels. Most analyses predict prices will remain high for the foreseeable future, so long as production growth remains below historical averages.
- Fraser River salmon which were subjected to the effects of the 2014 Mount Polley mine disaster will return as adults for the first time this year. What impacts the event will have on sockeye productivity and fish health remains to be seen.

## BRISTOL BAY SOCKEYE FORECAST

The Alaska Department of Fish and Game (ADF&G) is forecasting a total run of 51.3 million sockeye in 2018, with a commercial common property harvest in the Bristol Bay region of 37.6 million sockeye. The forecast is based on age class models for each river system that uses the relationship between adult returns (by age class) and offspring witnessed in previous years. At an 80 percent confidence interval, the forecast total run range is 40.7 to 61.9 million sockeye. The 2018 forecast is 18 percent above the most recent 10-year average

of Bristol Bay sockeye runs and projects a harvest 35 percent greater than the average harvest during the same period. Since 2011, ADF&G forecasts have, on average, under-forecast the total run by 11 percent and have ranged from 44 percent below the actual run in 2014 to 19 percent above the actual run in 2011.

Individual river forecasts have greater uncertainty compared to region-wide forecasts. Since 2001, the forecasts have generally under-forecasted returns to the Alaganak, Togiak, Kvichak, Wood, and Nushagak systems by 13 percent or more, while over-forecasting returns to Igushik and Egegik by 14 percent and 16 percent, respectively.

The Nushagak District had a record breaking run in 2017. This was largely driven by robust returns from the 2013 brood year, which manifested as very large age 1.1 returns in the Wood River in 2016 and age 1.2 returns in the Wood and Nushagak rivers in 2017. Whether or not the 2013 brood year can sustain these very large returns and produce a large age 1.3 return in the Nushagak River is a major point of uncertainty in the 2018 forecast. Returns of the 2013 brood year to multiple stocks have been impressive to date, particularly in the Nushagak District. It is unclear how much longer the 2013 brood year can over-perform relative to the historical record.<sup>1</sup>

**TABLE 1**  
**Bristol Bay Sockeye Forecast by District, 2018**

District	Total Run	Harvest	----- Total Run -----		
	(Millions Sockeye)	(Millions Sockeye)	Age-3	Age-4	Age-5
Naknek-Kvichak	16.64	8.95	7.48	8.17	0.99
Egegik	9.12	7.45	1.19	5.15	2.77
Ugashik	2.87	2.06	0.42	2.16	0.29
Nushagak	21.79	18.53	9.16	12.42	0.07
Togiak	0.86	0.61	0.18	0.67	0.01
<b>Bristol Bay Total</b>	<b>51.28</b>	<b>37.59</b>	<b>18.43</b>	<b>28.58</b>	<b>4.13</b>

*Note: Totals may not sum due to rounding.*  
*Source: 2018 Bristol Bay Sockeye Salmon Forecast (ADF&G).*

Fishery managers project the Nushagak District will see the largest returns in 2018. Forecast models predict total sockeye runs in the Wood, Igushik, and Nushagak Rivers to be substantial, relative to runs witnessed in those rivers over the past 18 years. The run is

<sup>1</sup> 2018 Bristol Bay Sockeye Salmon Forecast (ADF&G, [link](#)).

expected to consist of 36 percent age-3 sockeye, 66 percent age-4 sockeye, and 8 percent age-5 sockeye.

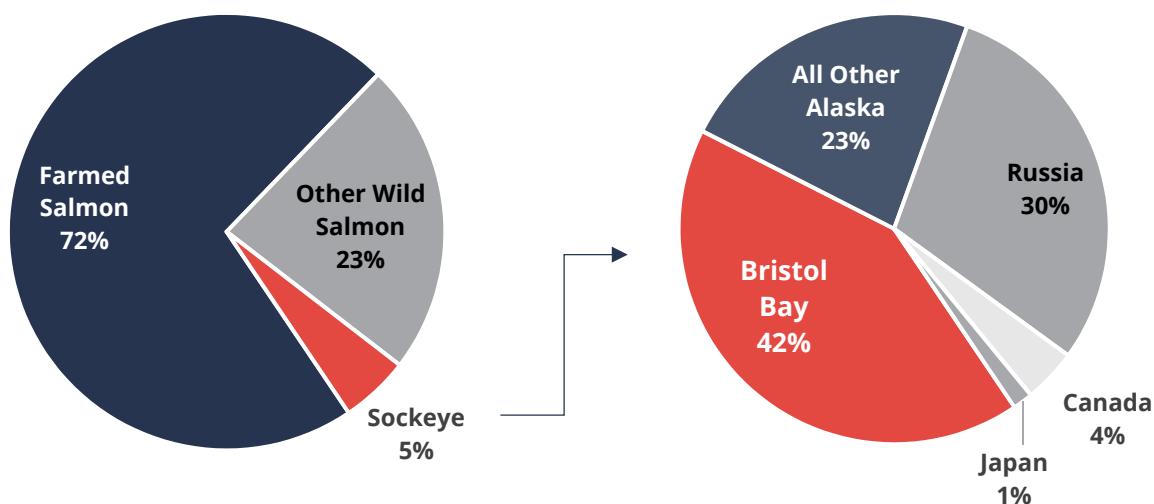
ADF&G is not the only organization which produces a Bristol Bay sockeye forecast. Biologists with the University of Washington (UW) also issue a forecast. The UW forecast is slightly lower than the ADF&G forecast, predicting a total Bristol Bay sockeye run of 47.6 million fish and a harvest of 33.5 million fish.<sup>2</sup>

## GLOBAL SOCKEYE SUPPLY

Most commercial salmon production comes from the farmed sector. Wild salmon fisheries accounted for 28 percent of commercial salmon production from 2013-2016, the last four years for which final harvest data is available. Sockeye made up 5 percent of total salmon harvests and comprised 18 percent of wild salmon harvests during that time (see Figure 2).

**FIGURE 2**

**Global Salmon Harvest and Sockeye Harvest by Region, 2013-2016 Average**



Source: ADF&G, FAO, and PACFIN.

Bristol Bay accounted for 42 percent of global sockeye production between 2013 and 2016. This is just slightly below the 25-year moving average of 44 percent. However, the Bay

<sup>2</sup><http://depts.washington.edu/aksalmon/preseason-forecast/>

produced half (50 percent) of the world’s commercial sockeye harvest in 2016, and slightly more than half in 2017, based on preliminary harvest estimates.

Russia is the next largest sockeye producing nation, after the U.S. Russian sockeye production has been stable in recent years, ranging from approximately 90 to 120 million pounds. Canadian sockeye harvests tend to spike once every four years but have generally produced less than ten million pounds during down years. Canada accounted for four percent of global sockeye harvests from 2013-2016.

Global sockeye harvests declined to approximately 388 million pounds in 2017, based on preliminary data. Sockeye harvests in Bristol Bay increased last year but declined in most other major production areas. Russian sockeye production was down 16 percent, Prince William Sound was down 22 percent, and Cook Inlet was down 20 percent. Alaska Peninsula and Kodiak sockeye harvests increased 20 percent and 21 percent, respectively.

**TABLE 2**  
**Global Sockeye Harvest by Region, 2010-2017**  
 in Millions of Pounds

Region	2010	2011	2012	2013	2014	2015	2016	2017P
Alaska Total	243	249	214	178	245	280	286	292
<b>Bristol Bay</b>	<b>170</b>	<b>135</b>	<b>119</b>	<b>92</b>	<b>161</b>	<b>185</b>	<b>202</b>	<b>208</b>
Other AK Areas	73	114	95	86	85	96	85	84
Rest of U.S.	11.6	1.8	0.9	0.2	4.3	0.5	0.1	0.1
Russia	80	90	112	122	104	113	110	93
Canada	44	7	5	1	52	5	3	3
Japan	6	4	5	5	6	6	2	N/A
<b>Total Harvest</b>	<b>384</b>	<b>351</b>	<b>335</b>	<b>305</b>	<b>411</b>	<b>404</b>	<b>402</b>	<b>388</b>
<b>Bristol Bay Pct.</b>	<b>44%</b>	<b>38%</b>	<b>36%</b>	<b>30%</b>	<b>39%</b>	<b>46%</b>	<b>50%</b>	<b>54%</b>
<b>Bristol Bay Sockeye Base Price/lb.</b>	<b>\$0.95</b>	<b>\$1.00</b>	<b>\$1.00</b>	<b>\$1.50</b>	<b>\$1.20</b>	<b>\$0.50</b>	<b>\$0.76</b>	<b>\$1.02</b>

*Note: 2017 figures are preliminary. Base prices do not include supplement payments (e.g. bonuses, etc.).  
 Source: ADF&G, PACFIN, FAO, DFO, Russian Federal Fishery Agency, and Wink Research estimates.*



## SOCKEYE SUPPLY EXPECTATIONS FOR 2018

Sockeye harvests in Alaska and Russia are projected to decline slightly in 2018 to 377 million pounds (see Table 3). Harvests are projected to increase slightly in Bristol Bay and decline by nearly 5 percent, collectively, in other Alaska regions.

Russian fishery scientists are projecting a sockeye harvest of 41,200 metric tons (91 million lbs.).<sup>3</sup> Actual harvests fell short of the 46,200 metric ton forecast last year, as Russian fishing companies caught 42,086 metric tons.

As any fisherman knows, pre-season projections can vary significantly from actual harvests. Areas in western Alaska tended to outperform the sockeye projection in 2017, with the exception of Chignik, the Bristol Bay, Alaska Peninsula, and Kodiak regions beat their pre-season harvest forecast. Prince William Sound and Southeast Alaska fell well short of the 2017 forecast while the Cook Inlet harvest was in line with its pre-season forecast.

**TABLE 3**  
**Sockeye Harvests and Forecasts for Key Producers, 2014-2018**  
 in Millions of Pounds

Region	2014	2015	2016	2017P	2018F	Forecast 2018 YoY Change
Alaska Total	245	280	286	289	286	-1.0%
<b>Bristol Bay</b>	<b>161</b>	<b>185</b>	<b>202</b>	<b>206</b>	<b>207</b>	<b>+0.5%</b>
Other AK Areas	85	96	85	83	79	-4.8%
Russia	104	113	110	93	91	-2.1%
<b>Key Producer Total</b>	<b>349</b>	<b>393</b>	<b>396</b>	<b>382</b>	<b>377</b>	<b>-1.3%</b>

Note: 2017 figures are preliminary and 2018 figures are based on forecasted returns.

Source: ADF&G, PACFIN, FAO, Russian Federal Fishery Agency, and Wink Research estimates.

Despite the (essentially) flat forecast in Alaska and Russia, global sockeye supply will likely get a boost in 2018 from Canada's Fraser River—a system that produces virtually all of Canada's sockeye salmon. Canadian harvests are expected to spike this year, consistent with a cycle that brought large harvests in 2014, 2010, 2006, and 2002. Canadian managers publish a range of projected returns at several probability intervals, whereas fishery

<sup>3</sup><http://fish.gov.ru/press-tsentr/novosti/21351-v-2018-godu-uchenye-rekomenduyut-k-vylovu-492-tys-tonn-lososej-na-dalnem-vostoke>

managers in most other areas publish the midpoint of the forecasted range. The 2018 Fraser River sockeye forecast, at the 50 percent probability level, is 13.98 million sockeye (total run). By comparison, the 2014 midpoint forecast was 22.9 million sockeye. The 2014 season is the last “up” year for Fraser River sockeye, and the parent class to most of this year’s returning sockeye. The total Fraser River sockeye return was approximately 20 million fish in 2014 and the commercial harvest weighed 52 million pounds. Based on these figures, the actual Fraser River sockeye harvest is expected to be at least 30 percent lower than 2014.

## MOUNT POLLEY MINE DISASTER

In early August 2014, a tailings pond breach at the Mount Polley Mine near Likely, British Columbia released four square kilometers (24 million cubic meters) of toxic process water and mining waste into Polley Lake, Hazeltine Creek, and Quesnel Lake. These lakes and streams flow into the Fraser River, which is the one of the world’s largest sockeye producing river systems. Rather incredibly, the provincial government has not levied any fines or charges stemming from the event. The deadline for criminal charges has passed, and the provincial Court dismissed at least one private lawsuit. Government officials have another 17 months to file charges for violations of Canadian Federal Fisheries Act, but nothing has been filed as yet.<sup>4</sup>



*The empty tailings pond of Imperial Metal's Mount Polley mine following a dam breach. Toxic process water and mining waste flowed into nearby Polley Lake and down Hazeltine Creek.*

*Image credit: MiningWatch Canada.*

The first generation of sockeye born after that event will return to spawn this summer. The 2014 breach occurred during a time when many sockeye had recently spawned. Shortly after the event, fishing and some hunting activities were closed in affected areas due to health and safety concerns. According to a CBC report, Quesnel Lake sockeye accounts for the

<sup>4</sup><http://vancouversun.com/business/local-business/no-charges-will-be-laid-over-mount-polley-dam-failure-under-b-c-law>

second-largest sockeye population in the Fraser River system and have been an essential food source for First Nations peoples for thousands of years.<sup>5</sup> No closures have been announced for this year's commercial sockeye fishery.

The effect on regional salmon resources is unclear and could take many more years to develop, if the effects can ever be isolated. Fishery managers explained lower forecasts for this generation as the result of a downward trend in productivity and warm water temperatures. Interestingly, overall Fraser River sockeye returns have been well below the forecast since 2015, the year following the mine disaster. However, Fraser River sockeye runs had been trending down for many years prior to the breach. The 2016 return was the smallest in over 120 years.

A 2011 study published by Fisheries and Oceans Canada found that disease was partly to blame for the declining sockeye runs.<sup>6</sup> Some scientists, such as Dr. Alexandra Morton, believe that pathogens and parasites from salmon farms are to blame.<sup>7</sup>

Regardless of what is driving the long-term decline in the Fraser River system, this year (and future years) will provide a tangible data point regarding what happens when salmon grow up on the heels of a tailings pond breach. However, it should be noted that the topography and hydrology of the Mount Polley mine site and Fraser River watershed is different than Bristol Bay. As a result, the effects of the breach, locally and further down-river, may be different in mines placed in other areas.

One final point bears mention. The Mount Polley tailings pond was designed by Knight Piesold Ltd., an international engineering firm. Opponents of the Pebble Mine project have expressed concern that initial plans for the Pebble Mine tailings pond were designed by the same firm. Further, the scale of the two mines is vastly different. Whereas the Mount Polley mine produced 20,000 tons of tailings per day, initial plans for the Pebble mine projected tailings of 200,000 tons per day.<sup>8</sup>

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<sup>5</sup><http://www.cbc.ca/news/canada/british-columbia/future-of-fraser-river-s-2nd-largest-sockeye-population-unclear-3-years-after-mining-disaster-1.4236469>

<sup>6</sup><https://www.scientificamerican.com/article/what-is-killing-off-fraser-river-sockeye-salmon/>

<sup>7</sup><https://www.ecowatch.com/salmon-farms-2459280965.html>

<sup>8</sup><https://www.tu.org/blog-posts/part-one-bc-mine-dam-failure-shows-why-pebble-is-a-disaster-in-waiting>

## FARMED SALMON SUPPLY

Although a growing number of consumers differentiate between farmed and wild salmon, the price and availability of farmed Atlantic and farmed coho salmon still has a meaningful impact on values for sockeye. In general, market trends in the farmed salmon industry are currently very positive for Bristol Bay salmon fishermen.

Farmed salmon production forecasts of investment banks have bounced around in recent years, perhaps as a result of grown uncertainty over the impact of environmental changes. In 2016, Norwegian investment bank Nordea projected that it would take four years to rebuild farmed salmon production to the 2015 level, following the Chilean algal bloom in 2016. However, more recent estimates suggest that threshold may have been crossed in 2017.

Kontali Analyse, a reputable salmon market research company, initially projected production volumes of Atlantic salmon to grow by 7 percent in 2018 but has since revised that projection to 4 percent. Company analysts cite colder seawater temperatures in Norway and slower growth rates in Chile as principal drivers.

**TABLE 4**  
**Farmed Salmon Production & Wholesale Price, 2010-2018F**

in Thousands of Metric Tons

YEAR	Atlantic Salmon	Coho Salmon	Urner Barry Atlantic Salmon Fillet Index Price/lb.
2010	1,437	138	\$5.41
2011	1,735	160	\$5.06
2012	2,074	172	\$4.36
2013	2,094	157	\$5.34
2014	2,348	172	\$5.08
2015	2,382	141	\$4.12
2016	2,248	124	\$5.63
2017P	2,393	144	\$5.75
2018F	2,494	N/A	\$5.81*

\*Average price index through 4/30/2018.

Note: The Urner Barry Atlantic Salmon Index represents a weighted-average proxy of wholesale prices for fresh farmed salmon fillets sold in the U.S. The original index was discontinued in 2017 and historical prices were revised using a new methodology.

Source: FAO, Urner Barry, Undercurrent News, and Wink Research estimates.

Atlantic salmon production is expected to approach 2.5 million metric tons (round-weight basis) in 2018, based on Kontali Analyse growth forecasts and FAO production data. Farmed coho is also an important competing species for Bristol Bay sockeye. Coho production declined sharply in 2016 but rebounded sharply in 2017. Coho production estimates vary, but may have increased by as much as 35 percent in Chile last year.

Regardless of the better-than-expected growth in 2017, farmed salmon prices remain high and most analysts expect prices to remain high in the near-term. Several have revised future price estimates upward in recent months. High prices are largely the result of sluggish production growth in recent years, which has created a gap between supply and demand resulting in tighter supplies globally.

Atlantic salmon production has grown by 5-7 percent, on average, over the past couple decades. Demand growth has followed suit. However, production has not grown materially since 2015. Previously, salmon farmers were able to close the gap created by bad years with double-digit percentage increases in production. That does not appear possible within the next few years, according to farmed salmon analysts. Moreover, salmon farmers may be more cautious about overproducing in coming years, as 2017 was the most profitable year on record, collectively.

Whether consumers around the world will continue to buy farmed salmon at elevated prices remains to be seen but demand may be more resilient than previously thought. Despite high prices, U.S. imports of Atlantic salmon have expanded. A Marine Harvest executive underscored the sentiment in an Undercurrent News article in February 2018:

“You are definitely seeing retail sales growing. I don’t think the high prices have slowed the growth. In my opinion, one of the good things about the (Chilean) algae bloom was that retailers understood that salmon does not need to be at a \$5.99 per pound price to sell.”<sup>9</sup>

While production growth is limited in the short term, salmon farmers do have several options for continued production growth in the long-term:

- Land-based aquaculture
- Undeveloped regions in Chile

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<sup>9</sup><https://www.undercurrentnews.com/2018/02/12/marine-harvests-fidalgo-high-salmon-prices-havent-slowed-us-retail-sales/>

- Off-shore net pens

Onshore salmon farms are being built in Florida (1) and Maine (2). Total investment in these three farms is quoted at approximately \$850 million. Whether the economics of land-based salmon farming will work remains to be seen but the companies involved have plans for substantial production, perhaps exceeding 100,000 metric tons between the three companies. Florida's Atlantic Sapphire farm will likely be the first U.S. shore-based salmon farm selling production, as it projects to have mature fish by 2020.<sup>10</sup> The salmon farming sector is watching these new plants very closely. It's too early to tell how wild salmon producers may be affected. High operating costs for land-based have always been cited as a reason why the concept isn't feasible. In addition to price, fish quality, taste, and environmental impacts will all be key factors.

New regulations in Chile's farmed salmon sector will limit production growth in the country's most productive regions. This has many salmon farming companies looking at undeveloped areas, such as the XII Region of Magallanes. Presently, the region accounts for 10 percent of Chilean salmon production but that figure will likely rise as new Region XII farms come online.<sup>11</sup> The region has not been widely developed because it is in a more remote area with less infrastructure than other regions to the north. Expanding operations in the region will generally cost more than those built in more developed areas.

Projects are underway in Norway and Japan to raise salmon in large numbers in offshore pens.<sup>12</sup> Most salmon farms are situated near-shore in protected areas, but companies anticipate offshore pens would reduce incidences of sea lice and water contamination caused by leftover feed. Automation is a primary goal of these pilot projects, which aim to operate the facilities with either zero or only a few onsite workers. Whether the farms will be able to withstand the larger swells present in open ocean waters remains to be seen, but if the technology proves successful, it could open up far more territory for farmed salmon production in coming decades.

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<sup>10</sup><https://www.undercurrentnews.com/2018/02/05/atlantic-sapphires-land-based-salmon-plant-on-track-for-2020/>

<sup>11</sup><https://www.undercurrentnews.com/2018/04/05/chile-salmon-industry-goes-south-for-growth/>

<sup>12</sup><https://www.japantimes.co.jp/news/2017/10/03/business/norway-japan-tap-new-tech-start-large-scale-offshore-salmon-farming/#.WuihoYgyvUk>



# SOCKEYE MARKET ANALYSIS

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Wholesale market conditions have a direct impact on future ex-vessel prices. This chapter examines trends in the wholesale market for major sockeye products as well as competing salmon products.

## KEY FINDINGS

- Prices for all major sockeye product forms increased in 2017. Despite higher prices, sales volumes of frozen H&G, frozen fillets, and fresh H&G all increased versus the previous year.
- There are no major inventory concerns heading into the 2018 season—a significant accomplishment given that the last three seasons have produced historically large harvests of Bristol Bay sockeye.
- The total sales revenue and volume of frozen H&G Bristol Bay sockeye in 2017 was higher than any previous year on record (since 2001) by a wide margin. Average prices of the most important product form were the second-highest since 2001.
- Sales of fresh H&G out of the Bay increased 38 percent to 7.7 million pounds.
- Canned production fell in 2017, as other product forms received a higher priority due to stronger demand. The number of companies canning Bristol Bay sockeye declined from six to just three in 2017.
- The number of U.S. stores running sockeye promotions over the past 12 months declined, compared to the prior 12-month period. Retail volumes of farmed and wild salmon are generally down; however, higher prices have resulted in increased retail sales revenue and many industry contacts report strong demand for Bristol Bay sockeye.

## SOCKEYE MARKET OUTLOOK FOR 2018

The ex-vessel price of Bristol Bay sockeye will likely increase in 2018 due to a robust wholesale sales performance, high prices for competing farmed salmon, increasing net processing revenues, and no material inventory concerns entering the 2018 season.

## WHOLESALE SOCKEYE MARKET ANALYSIS

*Note: Charts in the following section represent unit values per processed pound. Unit values are equal to the first wholesale sales revenue divided by the number of pounds sold for each product form.*

### FROZEN H&G SOCKEYE

**KEY MARKETS: JAPAN, NORTH AMERICA, AND EUROPE**

**ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2016): 51 PERCENT**

Key market developments for frozen H&G sockeye are as follows:

- A greater focus on fish quality and marketing efforts has increased demand, and pricing, for frozen Bristol Bay sockeye.
- The average price of frozen H&G Bristol Bay sockeye increased 24 percent in 2017, versus the previous year.
- Frozen Bristol Bay sockeye sold for a much higher total value (adjusted for inflation) than any previous year on record (since 2001).
- The average, inflation-adjusted price of frozen H&G Bristol Bay sockeye sold during 2017 was greater than any previous year except 2013, which was based on a much lower sales volume.
- Due to robust sales volumes following the 2017 season, there are no major concerns about frozen H&G sockeye heading into the 2018 fishing season.

Frozen H&G sockeye prices continued to increase in 2017. Average prices of frozen H&G Bristol Bay sockeye increased approximately 60 cents per pound during the second and third trimesters of 2017. Prices for frozen Bristol Bay sockeye ended the year higher than any point since early 2014.

Demand for frozen Bristol Bay sockeye has increased dramatically in recent years. More frozen Bristol Bay sockeye was sold in 2017 than any previous year on record in the Alaska Salmon Price Report data set (since 2001), and it sold for a higher inflation-adjusted price than any other year except 2013 when the Bay produced a significantly smaller harvest (and much less frozen sockeye production).

First wholesale sales of frozen H&G Bristol Bay sockeye increased by \$58 million in CY 2017, versus the previous year. In addition, more product was sold during the last half of 2017 than was sold during the same period in 2016, further underscoring the demand for the product form.

**FIGURE 3**  
**Average First Wholesale Value per Pound of Major Alaska Sockeye Products & Final Average Ex-Vessel Price for Bristol Bay Sockeye, 2010-2017**

by Quadrimester (Four-Month Average)



\*Final average ex-vessel price/lb. for Bristol Bay sockeye.

Note: Prices in line chart represent average value per pound of all product forms for Alaska sockeye.

Source: ADF&G, ADOR (ASPR), compiled by Wink Research.

The value of frozen Bristol Bay sockeye has grown substantially for several reasons. Tighter supplies in the farmed salmon market and a slightly weaker U.S. dollar explain part of the increase in demand; however, fishermen, processors, and marketing organizations deserve a lot of credit as well.

The quality of Bristol Bay sockeye has increased, based on anecdotal reports from sales representatives and quantitatively in terms of the number of boats chilling fish. Raising the average quality of the pack results in fewer discounts and fewer unsatisfied consumers. Most

Bristol Bay processors have responded to the market by offering larger chilling bonuses over the past five years or making chilled fish a requirement.

Branding and promotional campaigns are raising the profile of Bristol Bay sockeye and broadening awareness among buyers. Marketing efforts conducted by BBRSDA and ASMI have likely played an instrumental role in raising demand to a level where large sockeye harvests could not only be absorbed by the supply chain, but result in increasing prices throughout the period of large harvest volumes.

The development of “refreshed” retail sockeye programs has also increased demand. Prior to 2010, the vast majority of frozen H&G sockeye was sold into export markets, principally Japan. Since that time, the amount of product remaining in the U.S. market has increased, largely due to distributors slacking out and filleting frozen sockeye. ASMI and BBRSDA have supported growth in this area by providing branded product and coordinating promotions of sockeye fillets outside of the fresh season. Even Costco ran a large sockeye promotion in April 2018 using refreshed sockeye fillets. The addition of another substantial market segment for Bristol Bay sockeye has translated into higher prices for fishermen and processors. The importance of market diversification and a lack of inventory on the heels of several years of large harvests is hard to understate.

Annual reported sales of frozen H&G Alaska sockeye in 2017 were 2 percent greater than the previous year, although more product was moved in later months during 2017. Total frozen H&G production increased 5 percent in 2017. Based on this sales data and anecdotal reports about early 2018 sales, the impact of unsold inventory heading into the 2018 season is not a concern.

**TABLE 5**  
**First Wholesale Sales of Frozen H&G Alaska Sockeye, 2011-2016**  
 in Millions of Pounds

Quadrimester	2013	2014	2015	2016	2017	Pct. Change YoY
January - April	3.0	3.4	10.5	10.8	7.2	-33.3%
May - August	18.3	13.8	38.9	53.6	36.8	-31.3%
September - December	17.5	29.6	54.6	38.2	60.6	+58.6%
Annual Production	38.8	46.8	104.0	102.6	104.6	+1.9%
BBS* Harvest Volume	92.0	160.6	184.8	201.6	205.8	+2.1%

\*Bristol Bay sockeye.

Source: ADOR (ASPR), compiled by Wink Research.

The average first wholesale price of frozen Bristol Bay sockeye sold in CY 2017 was \$3.56 per pound. In last year's spring market report, it was estimated that 2017 pricing would fall between \$3.30 to \$3.75 per pound.

## **FROZEN FILLETS & FRESH H&G**

### **KEY MARKETS: U.S., CANADA, & EUROPE**

#### **ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2016): 39 PERCENT**

Frozen fillet prices generally reflect changes in frozen H&G prices. Like the latter, prices for frozen fillets increased in 2017. Many quotes in the secondary market (sold by distributors) show frozen sockeye fillets selling for more than \$7.00 per pound. Production volume of frozen Bristol Bay sockeye fillets increased by 12 percent, more than any other product form except fresh H&G. Based on preliminary data, it is estimated that the value of frozen Bristol Bay sockeye fillet production increased 20 percent during the 2017 sales season. Some processors would have probably preferred to fillet even more fish last season, but labor shortages limited fillet capacity for some companies.

Sales and production of fresh H&G Bristol Bay sockeye increased by 38 percent in 2017, and average prices were up 32 percent over 2016. This is good news for industry, as fresh sales generally receive a slight premium even after subtracting for freight, incur virtually zero storage costs, and cash flow is realized earlier than frozen sales. Demand for fresh Bristol Bay sockeye was greater in 2017 due to smaller sockeye harvests in Cook Inlet and Copper River. Successful promotions of fresh and frozen sockeye are also likely creating more interest in fresh sockeye.

Frozen fillets and fresh H&G Bristol Bay sockeye accounted for nearly 40 percent of total first wholesale value in CY 2017.

## **CANNED SOCKEYE**

### **KEY MARKETS: UK, CANADA, U.S., & AUSTRALIA**

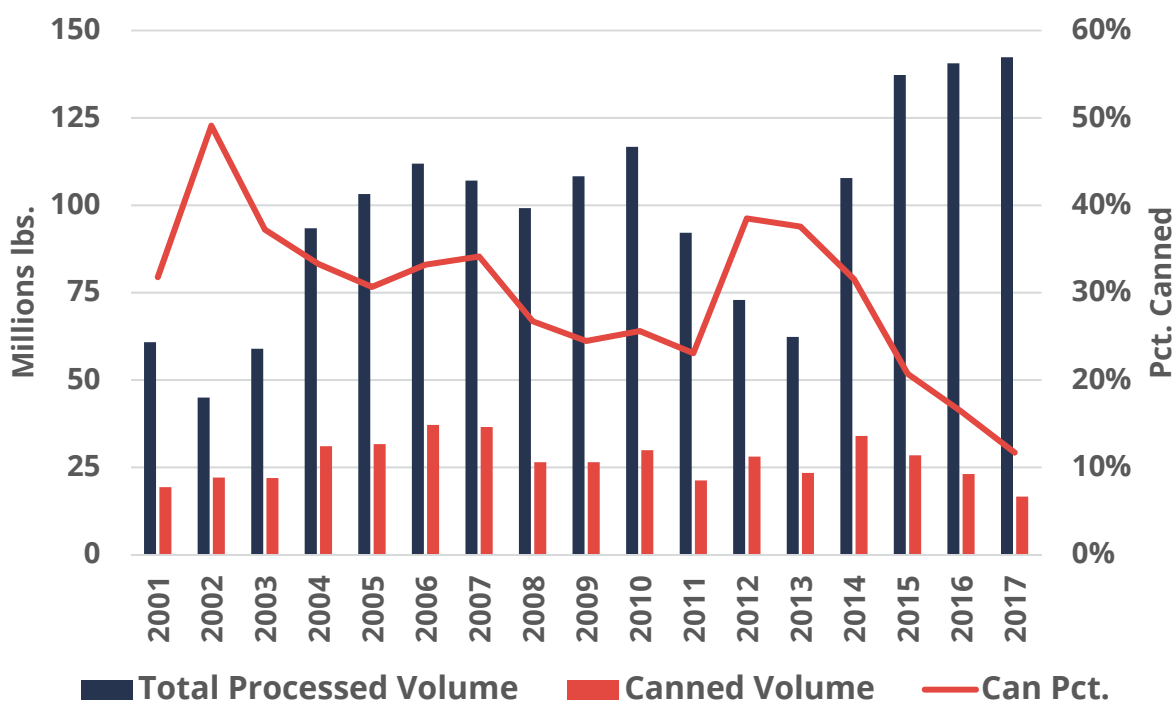
#### **ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2016): 14 PERCENT**

Production of canned sockeye in Bristol Bay declined by 29 percent and the canned product form accounted for just 12 percent of total production volume last season. In fact, statewide canned sockeye production—most of which occurs in Bristol Bay—was lower in 2017 than any previous year since 2001. This is especially noteworthy considering the 2017 statewide

sockeye harvest was the second-largest harvest since 2001. The number of companies canning Bristol Bay sockeye declined from six in 2016 to just three in 2017. Despite a much larger harvest in 2017, the volume of Bristol Bay sockeye canned during 2017 is down 51 percent from 2013 (see Figure 4). As discussed in previous market reports, the canned product form is losing production volume to other product forms.

Although demand for canned sockeye is relatively lower than other product forms, prices have increased due to lower production volumes. The average price of canned halves was up 14 percent during the third trimester of 2017, compared to the same period in the previous year. Given market developments over the past few years, it is likely that the trend towards lower canned production will continue as processors seek to fill pre-season orders but are hesitant to can too much product for inventory purposes, so long as processing lines creating other products can keep pace with harvests.

**FIGURE 4**  
**Canned Sockeye Production in Bristol Bay, 2001-2017**



Source: ADF&G (COAR), compiled by Wink Research.



## SOCKEYE ROE

### KEY MARKETS: JAPAN

#### ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2016): 6 PERCENT

Sockeye roe prices increased 24 percent during the 2017 sales season, based on preliminary data. Declining global harvests of pink and keta salmon and improving demand in Eastern Europe have pushed roe prices for all salmon species higher over the past 18 months.

## FARMED SALMON MARKET CONDITIONS

Depending on the data set referenced, prices of farmed Atlantic salmon are at or near record highs, as supply conditions remain tight. As previously mentioned, a major industry research firm recently lowered production forecasts for 2018 and several other firms have raised price forecasts. High prices have not deterred U.S. buyers, as indicated by higher import volumes in 2017 and 2018 (through the first three months).

Whether higher wholesale prices can continue to be passed on to consumers remains to be seen. Retail margins on farmed salmon have compressed since 2016 and retail sales volume likely declined somewhat in 2017. However, sales volumes of salmon in the foodservice sector increased in 2017.<sup>13</sup>

Barring extraordinary changes, current high prices are not expected to result in a “crash” similar to what occurred in 2014. Farmed salmon production increased 12 percent in 2014, Russia (a major farmed salmon importer) imposed an embargo on Norwegian salmon, and the value of the dollar strengthened significantly during that time. These are the factors that drove farmed salmon prices lower in 2014/2015, contributing to lower prices for Bristol Bay sockeye in 2015 and 2016. Tight market conditions will likely be resolved by steady supply growth and demand erosion due higher prices in coming months/years.

## CURRENCY FLUCTUATIONS

Exchanges rates of foreign currencies versus the U.S. dollar directly impact prices for Bristol Bay sockeye because many products produced by the industry are exported. In addition,

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<sup>13</sup> Global Seafood Marketing Conference, 2018 (Salmon Panel Presentation).

Bristol Bay sockeye competes with salmon from Russia, Canada, Chile, and Norway. Currency fluctuations can change the pricing of competing products in domestic and global markets.

From July 2014 to January 2017, the U.S. dollar strengthened significantly versus most foreign currencies. For an export-dependent industry like Bristol Bay salmon, this is not a good thing as it makes Bristol Bay salmon products more expensive from the perspective of foreign buyers while returning the same or fewer U.S. dollars to producers.

However, exchange rate movements over the past twelve months have been favorable for Bristol Bay salmon producers. The U.S. dollar index has declined (weakened) by 5.0 percent and the U.S. dollar is weaker against all currencies of countries listed above with the exception of Russia (see Table 6).

**TABLE 6**  
**Foreign Exchange Rate Changes for Selected Currencies, April 2017 vs. 2018**

Currency	April 2017	April 2018	Pct. Change	Foreign Currency vs. U.S. Dollar
Japanese Yen (JPY/USD)	110.8	107.5	-3.0%	Stronger (Good)
Euro (USD/EUR)*	1.07	1.228	+14.8%	Stronger (Good)
Russian Ruble (RUB/USD)	56.5	60.6	+7.1%	Weaker (Bad)
Norwegian Kroner (NOK/USD)	659.7	601.3	-8.9%	Stronger (Good)
Chilean Peso	8.60	7.85	-8.8%	Stronger (Good)
Canadian Dollar	1.342	1.275	-5.0%	Stronger (Good)
<b>U.S. Dollar Index</b>	<b>124.1</b>	<b>117.9</b>	<b>-5.0%</b>	<b>Weaker (Good)</b>

\*Most currencies are quoted in terms of how much foreign currency is required to “buy” or equal one U.S. dollar; however, the typical convention for euros is the opposite – most often quoted in terms of how many dollars it takes to “buy” or equal one euro. As a result, the euro strengthens versus the U.S. dollar if the (USD/EUR) ratio increases.

Source: OANDA.com (average monthly interbank ask rate) and Federal Reserve Bank of St. Louis.

## TRENDS IN SOCKEYE PROMOTION

Higher prices led to fewer sockeye promotions in U.S. grocery stores from June 2017 through May 2018, compared to the previous 49-week period.<sup>14</sup> The average number of U.S. stores

<sup>14</sup> Urner Barry Retail Features Database.

promoting sockeye fillets each week declined 18 percent from 1,388 to 1,689.<sup>15</sup> The average promotional price increased from \$10.44/lb. to \$10.97/lb.

The data above comes from a database of weekly circular ads compiled by research firm Urner Barry. While it is a robust data set, it does not include all promotions. One notable omission is Costco, which moves a substantial volume of farmed salmon and sockeye salmon at its 514 U.S. stores. The data set also does not contain information about how many pounds are sold at each promotion. As a result, the data provides an indication of promotion trends but does not provide an exact measure of actual U.S retail sales volume.

Mark Jones, a retail consultant for BBRSDA and ASMI, is not surprised to hear promotional activity for sockeye is down year-over-year. “Prices were up a little bit this year, so that affects how much retailers are willing to promote. However, we’re seeing a lot of interest in lining up retail sockeye promotions this summer.”

Rising Tide Communications and Jones have kept sockeye sales humming over the past year by coordinating promotions of branded Bristol Bay sockeye with chains such as HyVee, HEB, Giant Eagle, and other grocery chains. Together, the consultants provide retailers with Bristol Bay Sockeye marketing assets and training information to maximize the impact of promotions. In addition to BBRSDA efforts, ASMI worked with Costco this spring to promote refreshed sockeye sides at more than 100 West Coast stores.



*A Bristol Bay sockeye promotion at Lunds & Byerlys grocery store in Minneapolis, MN with Rising Tide Communications’ Christine Fanning and Bristol Bay fisherman Tom Rogotzke.*

“The refreshed sockeye form has really made sockeye a year-round, everyday item at many grocery stores. It’s a permanent category in their seafood cases. That’s a very exciting thing when you think about. Promotions and sales can move a lot of product, but a lot of customers buy it off-sale just because they like it so much. I recently spoke with a seafood

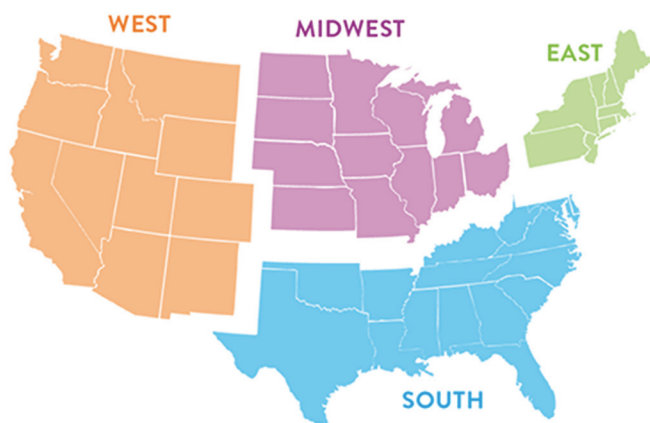
<sup>15</sup> Based on advertisements in weekly circulars.

manager at a large Southeast grocery chain who said they just tried putting vacuum packed (sockeye) sides in a bunker without a discount, and they have to keep restocking it because it sells so well.” Jones says.

Partnering with grocery stores on promotions is a fundamental part of building a branded food product, whether it’s Bristol Bay Sockeye or Heinz ketchup. Successful branded products rise above the commodity level and enjoy a following of loyal customers, which allows for a premium retail and wholesale price. Grocery chains partner with BBRSDA because they see value in the story and the product. Said one grocery executive, “I want our customers to know that we are in the Bristol Bay sockeye business.”

## U.S. RETAIL ANALYSIS OF SALMON PRODUCTS

Table 7 summarizes region sales of salmon in a large sample of U.S. grocery stores, covering 52 weeks ending October 28, 2017 and the prior 52-week period. Total sales dollars increased by 3.0 percent in 2017 while the total volume of product sold declined 8.9 percent. Prices rose by 13.1 percent, on average, and the change was fairly consistent across regions.



Sales dollars increased the most in the East region. Average salmon prices were also highest in the East region, which may explain why the region showed the lowest per capita sales. Southern states sold the most salmon, by a wide margin. However, the region also saw sales volumes slip the most in 2017. Sales dollars increased slightly in the West, which consumes far more wild salmon than any other region. Average prices were lowest in the Midwest region.

*See table on following page.*

**TABLE 7**  
**Retail Salmon Sales in U.S. Grocery Sector**  
 52 Weeks Ending 10/28/17

Region	Dollars \$Millions	Dollars YoY%	Pounds M-lbs.	Pounds YoY%	Avg. Price	Sales per Capita (lbs.)
South	\$428	3.0%	50	-10.4%	\$8.60	0.88
West	\$272	0.7%	31	-11.6%	\$8.68	0.46
East	\$253	6.3%	27	-2.6%	\$9.37	0.22
Midwest	\$183	2.2%	23	-8.9%	\$7.82	0.30
<b>U.S. Total</b>	<b>\$1,137</b>	<b>3.0%</b>	<b>132</b>	<b>-8.9%</b>	<b>\$8.64</b>	<b>0.40</b>

*Note: Includes most U.S. grocery chains, but excludes mass merchandisers such as Walmart, Target, and Costco. Includes all salmon species.*

*Source: Nielsen Retail Scan Data & Wink Research estimates.*

# SALMON MARKET NEWS SUMMARY

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## PEBBLE MINE

Last May, the Environmental Protection Agency (EPA) reached a deal with Pebble mine developers to continue the mine permitting process. An updated mine plan and permit application was submitted to the U.S. Army Corps of Engineers. A public scoping period, in which public comment and testimony is solicited, began in April of this year. Initially the public comment period was limited to 30 days, but after pressure from Senator Lisa Murkowski and others, the Army Corps of Engineers extended the period by 60 days. Public comment on the mine can now be submitted through June 29, 2018. BBRSDA members and others can learn more about the updated Pebble mine application and provide input at the following website: [www.pebbleprojecteis.com](http://www.pebbleprojecteis.com).

An influx of funding from a Canadian mining company (First Quantum) has resurrected the Pebble Mine project. First Quantum provided \$37.5 million to finance a federal permit application in December 2017 and is in negotiations over an option agreement to buy 50 percent of the project for \$1.5 billion.<sup>16</sup> Last month, a delegation of mine opponents traveled to Toronto to attend First Quantum's annual shareholders' meeting.

The Pebble mine project is opposed by nearly 85 percent of Bristol Bay fishermen and more than 70 percent of watershed residents, based on stakeholder surveys.<sup>17,18</sup>

## FARMED SALMON PRICES EXPECTED TO REMAIN HIGH

Prices for Chilean farmed salmon, which compete with Bristol Bay sockeye in global markets, are expected to remain high through 2020, according to analysts with Norwegian investment bank DNB. The bank recently revised its price forecasts up and notes it does not see new

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<sup>16</sup><https://www.nrdc.org/experts/joel-reynolds/pebble-mine-taking-battle-board-room-again>

<sup>17</sup><https://static1.squarespace.com/static/56b0dfb660b5e98b87fc3d52/t/56d8792e01dbaea69481f1cc/1457027380474/June-2011-Commercial-Fish-Survey+2.pdf>

<sup>18</sup><https://corpwatch.org/article/us-dueling-polls-oppose-support-pebble-mine-project>

technologies or expansion into underutilized farming areas changing the supply picture in the next three years.<sup>19</sup>

## **JAPAN CHUM SALMON HARVESTS HISTORICALLY LOW**

Japan is (or at least, it was) the world's largest chum salmon producer, due to an expansive network of hatcheries in the northern region of Hokkaido. From 2005 to 2014, the country averaged harvests of 375 million pounds of chum salmon. However, harvests have plunged in recent years with a harvest of 211 million pounds in 2016, which was the lowest harvest in 24 years. Final figures are not available for 2017, but trade press reports that chum harvests in the Hokkaido region were down 40 percent last year.<sup>20</sup>

The disappearance of nearly 250 million pounds of chum salmon from a major salmon market has had a significant impact on global prices for salmon roe products and provided support for sockeye and farmed coho prices as well.

## **PROCESSING LABOR SHORTAGES CREATE FISHING LIMITS**

Many Bristol Bay fishermen were put on limits last year stemming from the huge sockeye run and a lack of processing labor. While last year was a very good year for fishermen and processors, it could have been even better.

Finding processing workers is becoming more difficult due to better economic conditions in the lower 48 and difficulties securing foreign workers through visa programs. Norm Van Vactor, president of the Bristol Bay Economic Development Corporation, estimated some processors saw production capabilities fall by as much as 30 or 35 percent due to workforce challenges.<sup>21</sup>

Bay processors need anywhere from 4,500 to 6,000 processing workers each summer. Labor recruiters say it's becoming harder and harder to find willing and capable workers. However, if this season is going to live up to its potential, it will require a large and ready processing workforce.

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<sup>19</sup><https://www.undercurrentnews.com/2018/04/24/dnb-chilean-salmon-prices-to-remain-high-through-2020/>

<sup>20</sup><https://www.undercurrentnews.com/2017/10/12/japanese-saury-prices-rise-as-catches-fall-far/>

<sup>21</sup>[http://www.thedutchharborfisherman.com/article/1731seafood\\_processors\\_have\\_trouble\\_finding](http://www.thedutchharborfisherman.com/article/1731seafood_processors_have_trouble_finding)



# BRISTOL BAY SOCKEYE RESOURCE VALUE ANALYSIS

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The amount of first wholesale revenue paid to fishermen through ex-vessel prices, as well as the gross marginal amount of revenue retained by processors provide strong clues as to the future direction of ex-vessel prices and value.

## KEY FINDINGS

- Net processing revenue earned during the 2016 sales cycle was the highest figure on record (since the early 2000s) and net processing revenue through the first 8 months of the 2017 sales cycle is up 28 percent (\$44 million). Larger cash flows for Bristol Bay processors are expected to result in higher ex-vessel prices in 2018.

## EX-VESSEL AND FIRST WHOLESALE ACCOUNTING

Trends in processors' cash flow have a direct bearing on ex-vessel prices. Cash flows can be tracked by comparing first wholesale sales value to the ex-vessel value paid for the fish, in this case Bristol Bay sockeye. Analyzing processing sector cash flows using ex-vessel and first wholesale data requires a few adjustments and conventions:

1. In this chapter, the focus is on a calculated statistic called Net Processing Revenue, which is an estimate of revenue earned by Bristol Bay processors for selling key sockeye products (H&G, fillets, canned, and roe) made in the region, less the ex-vessel cost of that sockeye (i.e. payments to fishermen).
2. First wholesale sales are compiled according to a customized "sales cycle" intended to better imitate the actual wild salmon sales season. Because first wholesale sales data is generally broken into four-month periods and most commercial salmon fisheries start up in May/June, the period of May through the following April is treated as one 12-month "sales cycle." For example, salmon caught in July 2014 and sold by Alaska processors in February 2015 would be part of the 2014 harvest year (also referred to as the 2014 sales cycle). Compiling the sales data in this manner, as opposed to a calendar year basis, allows for a better comparison to ex-vessel figures.

## HISTORICAL RESOURCE VALUE ANALYSIS

Trends in processors' cash flow have a direct bearing on ex-vessel prices. Cash flows can be tracked by comparing first wholesale sales value to ex-vessel payments over time. The difference between the two pays for other processing costs (e.g. labor, materials, etc.) and serves as working capital for the following season.

The last two sales cycles (2015/2016) have produced markedly better net processing revenue figures than previous seasons. This is a key reason why total ex-vessel value increased so much last season, in addition to a larger than expected harvest.

Table 8 summarizes net processing revenue through the full 12-month sales cycle, and the first 8 months of the sales cycle for 2016 and 2017. Data for the last four months of the 2017 sales cycle is not yet available but as most sales occur during the first 8 months of each sales cycle, it is instructive to compare partial year results. Despite a larger ex-vessel value paid out in 2017, the net processing revenue through the first 8 months is up \$44 million, or 28 percent.

**TABLE 8**  
**Net Processing Revenue Derived from Bristol Bay Sockeye, 2005-2017**

In \$Millions

HARVEST YEAR	FW SALES VALUE	EX-VESSEL VALUE	NET PROCESSING REVENUE	EV AS PCT. OF FIRST WHOLESALE
2005 – Full 12 mo.	\$194	\$96	\$98	49.6%
2006 – Full 12 mo.	242	110	131	45.7%
2007 – Full 12 mo.	265	119	146	45.0%
2008 – Full 12 mo.	283	118	165	41.7%
2009 – Full 12 mo.	338	142	196	42.1%
2010 – Full 12 mo.	384	177	207	46.0%
2011 – Full 12 mo.	363	155	208	42.6%
2012 – Full 12 mo.	311	140	172	44.9%
2013 – Full 12 mo.	289	149	140	51.5%
2014 – Full 12 mo.	289	217	71	75.3%
2015 – Full 12 mo.	353	123	230	34.8%
2016 – Full 12 mo.	438	193	245	44.1%
2016 – 1 <sup>st</sup> 8 mo.	\$353	\$193	\$160	54.7%
2017 – 1 <sup>st</sup> 8 mo.	\$448	\$243	\$204	54.4%

Source: ADOR (ASPR), ADF&G (COAR), and Wink Research estimates.

First wholesale sales volumes from May through December 2017 were similar to the same period in 2016 sales cycle, and sockeye harvests in the two years were very similar. Therefore, it is likely that processor revenue realized during the last 4 months of the 2017 sales cycle will follow a similar trajectory as the first 8 months, resulting in the highest net processing revenue figure on record (since the early 2000s). Anecdotal reports suggest sales performance through the entire 2017 sales cycle has been good and there are no major inventory concerns heading into the 2018 season. These developments suggest that buyers have been active despite higher prices and first wholesale prices are unlikely to decline during the 2018 sales cycle.

**TABLE 9**  
**May-December Sales of Bristol Bay Sockeye Products, 2010-2017**

In \$Millions

HARVEST YEAR (HY)	MAY-DEC FW SALES VOL.	FULL HY FW SALES VOL.	PCT. SOLD IN MAY-DEC	MAY-DEC FW SALES VALUE	FULL HY FW SALES VALUE
2010	98	114	86%	\$328	\$384
2011	79	91	87%	\$307	\$363
2012	66	78	85%	\$257	\$311
2013	46	54	85%	\$242	\$289
2014	53	71	74%	\$215	\$289
2015	88	115	76%	\$262	\$353
2016	102	122	84%	\$353	\$438
2017	104	-	-	\$448	-

Source: ADOR (ASPR), compiled by Wink Research.

Increasing net processing revenue and strong sales volume figures are key reasons why ex-vessel prices are expected to increase this season. With a large forecast and an “up” year for Canada’s Fraser River system looming, some processors may hedge their bets somewhat in 2018. However, improving quality, a growing brand identity, high farmed salmon prices, and better currency market conditions are all supportive factors for 2018 ex-vessel value.

# RELATIONSHIP BETWEEN EX-VESSEL PRICE & OTHER FACTORS

## HISTORICAL PRICING FACTORS

Ex-vessel prices generally aren't set in the Bristol Bay salmon fishery until fishing is well underway, or mostly complete. However, examining a range of factors which affect market conditions can provide clues as to which direction ex-vessel prices are likely to move. Table 10 provides a summary of historical base prices versus selected factors which affect pricing. This is a very important data series for those seeking direction on ex-vessel value in 2018.

**TABLE 10**  
**Historical Bristol Bay Sockeye Prices vs. Key Pricing Factors**

Year	Base Price	BBS Forecast <sup>1</sup>	Global Sockeye Harvest <sup>2</sup>	Farmed Salmon Price <sup>3</sup>	U.S. Dollar Index	BBS Frz. H&G Price <sup>4</sup>	Previous Year's NPR <sup>5</sup> (\$Millions)
2010	\$0.95	30.5	384	\$6.11	101.5	\$2.99	\$196
2011	\$1.00	28.5	351	\$6.23	95.3	\$3.21	\$207
2012	\$1.00	21.8	335	\$4.72	99.0	\$2.83	\$208
2013	\$1.50	16.6	305	\$5.97	100.2	\$4.22	\$172
2014	\$1.20	16.9	411	\$5.60	102.4	\$3.10	\$140
2015	\$0.50	38.5	404	\$4.01	115.0	\$2.41	\$71
2016	\$0.76	29.5	402	\$5.95	119.2	\$2.96	\$230
2017	\$1.02	27.5	385 (P)	\$6.03	124.1	\$3.58	\$245
2018	???	37.6	408 (F)	\$6.59	117.9	???	Est: \$260-\$300

<sup>1</sup> Bristol Bay harvest forecast in millions of sockeye.

<sup>2</sup> Figures millions of pounds, 2018 reflects forecasts for major sockeye fisheries. Data for 2017 is a preliminary estimate.

<sup>3</sup> Urner Barry Fresh Farmed Salmon Price Index.

<sup>4</sup> Average first wholesale price of frozen H&G Bristol Bay sockeye during harvest year cycle. 2017 data is incomplete.

<sup>5</sup> Net processing revenue (NPR) for the preceding year (2017 full sales cycle is estimated). For example, the NPR figure shown in the 2016 row represents the NPR realized by processors during the 2015 sales cycle. Source: ADF&G, ADOR (ASPR), Federal Reserve Bank of St. Louis, Urner Barry Comtell, and Wink Research estimates.

Heading into the 2018 season, the Bristol Bay sockeye forecast is relatively large. Typically, larger harvest volumes result in lower ex-vessel prices. However, supply and demand must be considered in a larger context than just the Bristol Bay fishery.

Presently, farmed salmon prices are very high and first wholesale prices of frozen H&G Bristol Bay sockeye are at their highest point since 2013 (when the harvest volume was considerably lower). Given the lack of inventory concerns, first wholesale pricing should remain strong in the 2018 sales cycle. In addition, currency market conditions are also more favorable for Bristol Bay salmon producers than the prior year.

Total sockeye supply is expected to increase by 7 percent. Normally larger global supplies of sockeye would be expected to drag down prices but given that the expected increase is relatively small in percentage terms and other market factors are more favorable than this point last year, it stands to reason that ex-vessel prices will likely increase in 2018.

## EX-VESSEL PRICE VS. FROZEN H&G PRICE

Frozen H&G prices have a direct correlation with ex-vessel prices. Outside of a few outlier years, the relationship between ex-vessel price and the average price of frozen H&G sockeye sold during the sales season is relatively consistent. Since 2010, base ex-vessel prices have been equal to 31 percent of the frozen H&G price, on average (see Table 11 on the following page). However, fishermen have received a smaller percentage of frozen H&G price (in terms of base price) in recent years.

Given that market conditions have become more favorable, it is likely that frozen H&G prices for Bristol Bay sockeye will at least hold steady or increase during the 2018 sales season (assuming supply comes in as forecasted). With growing net processing revenues, fishermen will likely get a higher percentage of the frozen H&G price as a base price than they did in 2015-2017. Like others contained in this report, an analysis of frozen H&G prices versus ex-vessel prices suggests the base ex-vessel will likely increase, at least somewhat, in 2018. For instance, if fishermen receive 31 percent of frozen H&G price in 2018, and frozen H&G prices for Bristol Bay sockeye average \$3.70 per pound, that would result in a base price of \$1.15 per pound (see Table 12).

*See tables on following page.*

**TABLE 11**

**Base Ex-Vessel Price for Bristol Bay Sockeye vs. Frozen H&G Price, 2010-2017**

HARVEST YEAR (HY)	BASE EX-VESSEL PRICE/LB.	FROZEN H&G PRICE/LB.	BASE PRICE PCT.	HARVEST VOLUME (M-LBS.)	NET PROCESSING REVENUE
2010	\$0.95	\$2.99	32%	170	\$207
2011	\$1.00	\$3.21	31%	135	\$208
2012	\$1.00	\$2.83	35%	119	\$172
2013	\$1.50	\$4.22	36%	92	\$140
2014	\$1.20	\$3.10	39%	161	\$71
2015	\$0.50	\$2.41	21%	192	\$230
2016	\$0.76	\$2.87	26%	201	\$245
2017	\$1.02	\$3.58	29%	208	N/A
2010-17 AVG.	\$0.99	\$3.15	31%	160	\$182

Note: 2017 Net Processing Revenue not included in 2010-2017 average figure.

Source: ADOR (ASPR) and ADF&G, compiled by Wink Research.

**TABLE 12**

**Expected Ex-Vessel Prices for Bristol Bay Sockeye Based on Frozen H&G Price**

EXPECTED BASE PRICE AT VARIOUS PERCENTAGES OF FROZEN H&G PRICE			
FROZEN H&G PRICE/LB.	29 PCT.	31 PCT.	33 PCT.
\$3.50	\$1.02	\$1.09	\$1.16
\$3.60	\$1.04	\$1.12	\$1.19
\$3.70	\$1.07	\$1.15	\$1.22
\$3.80	\$1.10	\$1.18	\$1.25
\$3.90	\$1.13	\$1.21	\$1.29
\$4.00	\$1.16	\$1.24	\$1.32

Source: ADOR (ASPR) and ADF&G, compiled by Wink Research.

# SUMMARY OF FISH CHILLING PROGRESS

**Key Findings:** The percentage of salmon chilled by the Bristol Bay driftnet fleet has increased substantially since 2008. Better fish quality has supported market development for fillets and H&G product, resulting in a greater focus on these products and larger bonuses for chilling. Increasing the volume of chilled salmon has been instrumental in avoiding inventory issues, resulting in better prices for Bristol Bay fishermen in 2017 (and likely in 2018 as well).

Table 13 compares the percentage of salmon harvests chilled by the Bristol Bay driftnet fleet to other metrics, including harvest volume, value, and pricing. The percentage of the harvest which is chilled prior to delivery has roughly tripled since 2008. Data pertaining to chilling performance in the Bristol Bay salmon fishery comes from Northern Economics' 2017 *BBRSDA Processor Survey* report ([link](#)).

**TABLE 13**

## Salmon Chilling and Value in the Bristol Bay Driftnet Fishery, 2008-2017

YEAR	DRIFT HARVEST (M-LBS.)	PCT. CHILLED	BASE SOCKEYE PRICE/LB.	AVG. EX-VESSEL VALUE/PERMIT	FW VALUE OF ALL BB SOCKEYE (\$M)*
2008	139	24%	\$0.68	\$68,169	\$283
2009	157	40%	\$0.70	\$84,492	\$338
2010	147	47%	\$0.95	\$89,784	\$384
2011	114	53%	\$1.00	\$86,325	\$363
2012	104	59%	\$1.00	\$77,954	\$311
2013	84	56%	\$1.50	\$85,687	\$289
2014	140	51%	\$1.20	\$118,241	\$289
2015	165	56%	\$0.50	\$67,885	\$353
2016	170	71%	\$0.76	\$102,768	\$438
2017	177	73%	\$1.02	\$133,050	N/A

\*Total first wholesale value of key Bristol Bay sockeye products is reported on a harvest year basis. First wholesale value data for 2017 is incomplete, though will be considerably higher than 2016.

Note: 2017 Average Ex-Vessel Value per Permit Fished is estimated, as data is preliminary at this time.

Source: ADF&G, ADOR, CFEC, and Northern Economics (2017 BBRSDA Processor Survey).

From 2009 to 2013, chilling percentages climbed from 40 percent to 56 percent, yet the average ex-vessel value per active permit remained relatively flat—even declining substantially in 2012 which coincided with the highest chilling percentage of that period. This period was probably discouraging for many driftnet fishermen. Chilling fish requires



substantial capital investments in refrigerated seawater (RSW) systems or using ice which can affect fishing productivity. However, it should be noted that driftnet harvest volumes contracted significantly from 2009 to 2013, going from 157 million pounds to 84 million pounds. Improving fish quality through chilling likely played a significant role in maintaining average ex-vessel gross earnings during this period of declining harvest volumes.

The sockeye market essentially imploded after the 2014 season for a variety of reasons analyzed in detail by previous reports. The seasons that followed have brought historically large harvests, yet Bristol Bay driftnetters have chilled a higher percentage of their harvest than ever. In the opinion of this market analyst, rising prices and the lack of inventory issues (in the face of large harvests) are primarily due to better fish quality. Retailers and distributors have had little trouble moving larger sockeye volumes because consumers are seeing excellent value. Better fish quality, along with more favorable external market factors, is a key reason why 2018 is projected to be a very strong year for Bristol Bay fishermen and processors.

## **Chilling is becoming a market requirement**

Weaker demand for canned salmon has prompted processors to increase chilling bonuses or make them an outright requirement. Processors do not receive higher prices for canning chilled sockeye, but chilling does result in better prices (and fewer discounts) for fillets and H&G product. Canned sockeye production, as a percentage of total Bristol Bay production, declined substantially in 2016 and 2017 as processors have diverted more product to fillet and H&G forms. This explains the sharp increase in chilling percentages witnessed in 2016.

BBRSDA has worked to increase the volume of chilled salmon in the Bay for many years, through the funding of ice barges and more recently through offering discounted RSW systems to the fleet. This strategy is driven by a belief that raising overall fish quality will result in better prices for all fishermen. Current market conditions and sales trends in recent years suggest the strategy is working. While fishermen chilling salmon have done much better as a result of realizing larger bonuses, base prices would likely be lower than they were in 2017 and would likely be lower than where they'll end up this year if processors were carrying unsold inventory or had to offer more discounts on lower quality product.

Barring an unexpected resurgence of demand in the canned market, the need to produce high quality salmon for fillet and H&G markets will likely continue. Now more than ever, Bristol Bay driftnetter's gross earnings are being driven not just by vessel harvest volume, but by fish quality as well.

# DIFFERENCE IN EX-VESSEL VALUE & PRICE BY REGION

## EX-VESSEL PRICE DIFFERENCES

Bristol Bay fishermen again received lower sockeye prices than fishermen in most other Alaska regions in 2017. Only Alaska Peninsula fishermen received lower prices for sockeye. The gap between the final average Bristol Bay sockeye price versus the price paid for all other Alaska sockeye declined in 2017. However, this was largely driven by relatively larger harvests in the Alaska Peninsula region and smaller sockeye harvests in Prince William Sound and Cook Inlet.

**TABLE 14**  
**Ex-Vessel Price of Bristol Bay Sockeye versus Other Regions, 2011-2017**

Region	2011	2012	2013	2014	2015	2016	2017
<b>Bristol Bay</b>	<b>\$1.17</b>	<b>\$1.18</b>	<b>\$1.61</b>	<b>\$1.35</b>	<b>\$0.64</b>	<b>\$0.95</b>	<b>\$1.19</b>
Prince William Sound	\$1.86	\$1.82	\$2.45	\$2.42	\$1.98	\$2.33	\$2.64
Cook Inlet	\$1.42	\$1.46	\$2.18	\$2.11	\$1.54	\$1.51	\$1.84
Kodiak	\$1.53	\$1.47	\$1.82	\$1.83	\$0.93	\$1.28	\$1.45
Alaska Peninsula	\$1.24	\$1.26	\$1.66	\$1.41	\$0.75	\$1.02	\$1.16
<b>Other Alaska Sockeye Avg.</b>	<b>\$1.47</b>	<b>\$1.49</b>	<b>\$1.96</b>	<b>\$1.91</b>	<b>\$1.17</b>	<b>\$1.29</b>	<b>\$1.42</b>
<b>Other Alaska Sockeye Avg. Difference vs. Bristol Bay</b>	<b>\$0.30</b>	<b>\$0.31</b>	<b>\$0.35</b>	<b>\$0.56</b>	<b>\$0.53</b>	<b>\$0.34</b>	<b>\$0.23</b>
<b>BB Sockeye Harvest as Pct. of AK Sockeye Harvest</b>	<b>54%</b>	<b>56%</b>	<b>51%</b>	<b>65%</b>	<b>66%</b>	<b>71%</b>	<b>71%</b>

*Note: Prices are regional averages, including quality/production bonuses.*

*Source: ADF&G and Wink Research estimates.*

The gap between sockeye prices in Bristol Bay and Prince William Sound widened by 7 cents per pound in 2017; however, this is likely due to lower sockeye harvests in Prince William Sound. During the first 2017 fishing opener, some Prince William Sound fishermen received more than six dollars per pound. However, “first fish prices” are not necessarily indicative of where seasonal prices eventually end up, as the average Prince William Sound sockeye price was \$2.64 per pound last year.

The ex-vessel pricing gap increased by 9 cents per pound compared to Cook Inlet and decreased by 9 cents per pound versus Kodiak sockeye. For the first time since 2010, average sockeye prices in Bristol Bay were greater than those paid to Alaska Peninsula fishermen.

## EX-VESSEL VOLUME & VALUE DIFFERENCES

Sockeye prices in any region are dictated by market factors but is generally affected by regional harvest volumes. Smaller harvests usually result in relatively higher prices, and vice versa. Therefore, it is important to consider not just price but total volume and ex-vessel value as well. Although Bristol Bay prices are often lower than other areas, harvest volumes and ex-vessel values have generally fared better in the Bay over the past couple years. Tables 15 and 16 summarize regional sockeye harvests and ex-vessel value for the past seven years.

**TABLE 15**

### Harvest Volume of Bristol Bay Sockeye versus Other Regions, 2011-2017

In Millions of Pounds

Region	2011	2012	2013	2014	2015	2016	2017
Pr. William Sound	21.6	24.8	14.2	19.5	17.3	10.4	8.1
Cook Inlet	36.2	22.2	17.7	15.8	15.0	15.0	12.0
Kodiak	13.4	12.4	14.8	17.0	15.0	10.6	12.9
Alaska Peninsula	16.8	16.4	17.3	19.1	33.3	33.8	40.6
<b>Other AK Sockeye</b>	<b>113.8</b>	<b>94.6</b>	<b>87.2</b>	<b>85.8</b>	<b>98.0</b>	<b>86.6</b>	<b>83.5</b>
<b>Bristol Bay</b>	<b>134.7</b>	<b>119.1</b>	<b>92.3</b>	<b>161.7</b>	<b>192.6</b>	<b>200.9</b>	<b>208.1</b>

*Note: Figures for 2017 are preliminary.*

*Source: ADF&G and Wink Research estimates.*

*See table on following page.*

**TABLE 16**

**Ex-Vessel Value of Bristol Bay Sockeye versus Other Regions, 2011-2017**

In \$Millions

<b>Region</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Pr. William Sound	\$39.9	\$44.9	\$34.7	\$47.0	\$34.8	\$22.6	\$21.3
Cook Inlet	\$52.0	\$32.4	\$38.6	\$33.3	\$23.2	\$23.4	\$22.1
Kodiak	\$21.7	\$18.3	\$27.2	\$30.9	\$13.9	\$10.7	\$18.7
Alaska Peninsula	\$20.7	\$20.7	\$28.8	\$26.7	\$25.6	\$24.2	\$47.1
<b>Other AK Sockeye</b>	<b>\$169.9</b>	<b>\$137.8</b>	<b>\$169.8</b>	<b>\$161.8</b>	<b>\$114.9</b>	<b>\$150.0</b>	<b>\$117.3</b>
<b>Bristol Bay</b>	<b>\$156.7</b>	<b>\$139.4</b>	<b>\$148.4</b>	<b>\$217.2</b>	<b>\$122.7</b>	<b>\$152.7</b>	<b>\$247.6</b>

*Note: Figures for 2017 are preliminary.*

*Source: ADF&G and Wink Research estimates.*

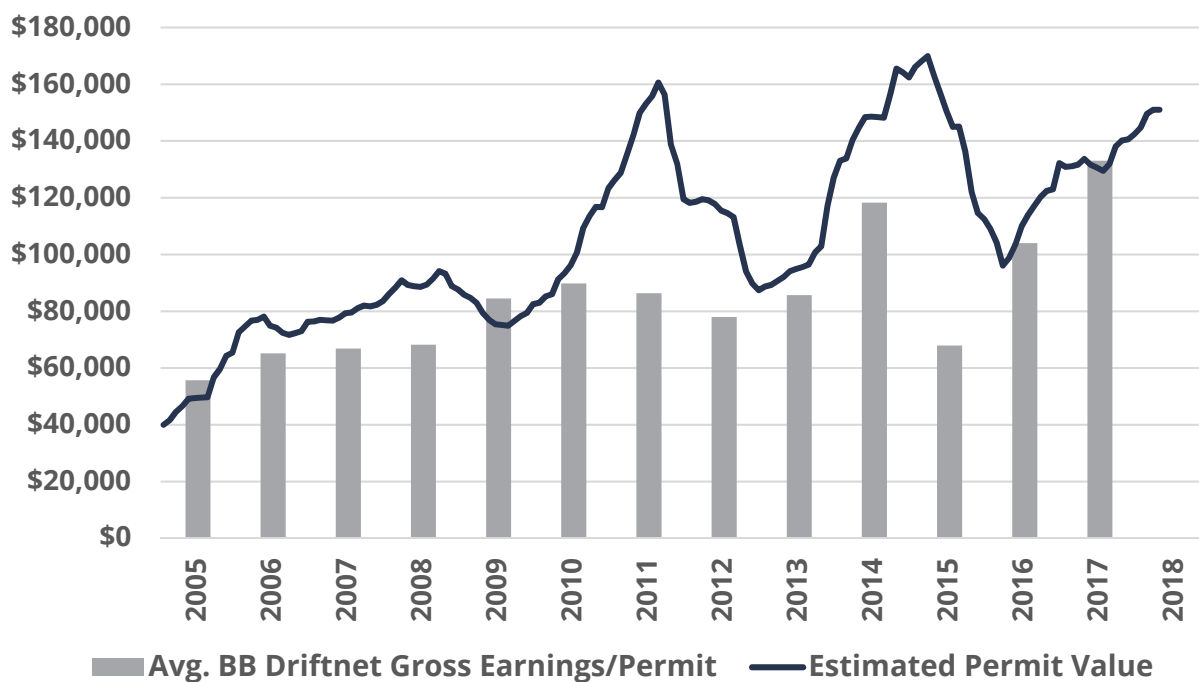
# BRISTOL BAY DRIFTNET PERMIT ANALYSIS

Permit prices for the Bristol Bay salmon driftnet fishery have increased significantly since early 2016 reflecting increasing average gross earnings in the fishery. Based on data published by CFEC, the current value of a Bristol Bay driftnet permit is approximately \$150,000. Permit prices are up 13 percent, year-over-year, representing an increase of \$17,300 per permit.

This is supported by data provided by permit brokers which show several sales in recent months at prices just below \$150,000. Most Bristol Bay driftnet permits currently on offer range from \$150,000 to \$170,000. Permit lease rates are pretty consistent in the neighborhood of \$23,000.

**FIGURE 5**

**Estimated Permit Value & Average Gross Earnings, 2005-2018**



*Note: Permit values current through April 2018. Average gross earnings for 2018 are not yet available and average gross earnings for 2017 are preliminary estimates.*  
 Source: CFEC and Wink Research estimates.

# EX-VESSEL PRICING SCENARIOS FOR 2018

## HISTORICAL FISHERY VALUE & SOCKEYE PRICING

Base Bristol Bay sockeye prices have varied from \$0.50 to \$1.50 per pound since 2010, but the collective ex-vessel value of the regional driftnet fishery was more stable from 2010 through 2016. The average Bristol Bay driftnet permit has generally produced gross earnings between \$77,000 to \$102,000, outside of 2014-2015 which witnessed a drastic swing in value that averaged out to \$93,031 per permit fished between the two years. Adjusted for inflation, the 2017 season produced the highest average gross earnings per permit fished since the 1990s.

It should also be noted that the final Bristol Bay sockeye prices shown below are averages. Many Bristol Bay fishermen who receive chilling and production bonuses realized significantly higher prices than those shown below. Based on anecdotal information, some captains report receiving 30 cents or more per pound above the base price in 2017.

**TABLE 17**

**Bristol Bay Salmon Driftnet Fishery: Harvest, Value, & Prices, 2010-2017**

Year	Driftnet Harvest (Millions lbs.)	Driftnet EV (\$Millions)	Avg. EV Value per Permit Fished	Base BB Sockeye Price/lb.	Final BB Sockeye Price/lb.
2010	147	\$134	\$89,784	\$0.95	\$1.07
2011	114	\$132	\$86,325	\$1.00	\$1.17
2012	104	\$118	\$77,954	\$1.00	\$1.18
2013	84	\$128	\$85,687	\$1.50	\$1.61
2014	140	\$182	\$118,241	\$1.20	\$1.35
2015	165	\$105	\$67,885	\$0.50	\$0.64
2016	170	\$158	\$102,768	\$0.76	\$0.95
2017	177	\$204	\$133,050	\$1.02	\$1.17

*Note: Total 2017 ex-vessel value and average ex-vessel value per permit fished are estimated, as final figures are not available at this time.*

*Source: ADF&G and CFEC.*

## POTENTIAL 2018 EX-VESSEL PRICING MATRIX

Ex-vessel sockeye prices are dependent upon many factors and are historically not determined in Bristol Bay until salmon fishing is well under way. With a large forecast this year and favorable market conditions, the expectation is for another above-average year for the Bristol Bay fleet.

Table 18 calculates a range of Bristol Bay sockeye prices required to produce various levels of average driftnet fishery earnings, assuming 1,532 active driftnet permits and a harvest volume equal to the pre-season forecast.<sup>22</sup> For example, if the 2018 harvest forecast is met and final prices do not change from the previous year, the average active driftnet permit could be expected to gross between \$130,000 and \$140,000.

Given current market conditions, it is likely that ex-vessel sockeye prices will increase somewhat in 2018. After three years of large sockeye harvests in the Bay, there may be more downside to run size as opposed to prices this year. If the harvest comes up short of the 37.6 million fish forecast, higher prices would be needed to achieve the average gross earnings levels shown below.

**TABLE 18**  
**Ex-Vessel Sockeye Prices Required to Produce Various Levels of Average Gross Earnings per Active Permit in Bristol Bay Driftnet Fishery, 2018**

Potential Average Driftnet Earnings Levels per Active Permit*	Estimated Base Sockeye Price/lb.	Estimated Final Average Sockeye Price/lb.
\$100,000	\$0.75	\$0.90
\$110,000	\$0.84	\$0.99
\$120,000	\$0.93	\$1.08
\$130,000	\$1.02	\$1.17
\$140,000	\$1.11	\$1.26
\$150,000	\$1.20	\$1.35
\$160,000	\$1.29	\$1.44
\$170,000	\$1.38	\$1.53

\*Assuming 1,532 active driftnet permits and a driftnet sockeye harvest of 166.6 million lbs.

Note: Assumes a difference of \$0.15/lb. between base price and final average price.

Final price calculation example: Final price at \$130,000 avg. =  $(\$130,000 * 1,532 * .98) / 166.6$  million lbs.

<sup>22</sup> 37.59 million sockeye \* 5.5 lbs. per sockeye \* 80.6 percent caught by driftnet fleet = 166.6 million lbs. of sockeye



Figures shown in Table 18 only represent the ex-vessel price required to produce a given range of average driftnet gross earnings based on assumptions about fishery participation and harvest volume. Actual 2018 ex-vessel prices will be a reflection of wholesale market conditions, run size/timing, and processors' willingness to bid up the price of fish.

## APPENDIX

**TABLE 19****First Wholesale and Ex-Vessel Sockeye Prices, 2005-2017**

Average Price per Pound

PERIOD	BRISTOL BAY FROZEN H&G	ALASKA CANNED HALVES	ALASKA FROZEN FILLETS	BASE BRISTOL BAY EX-VESSEL PRICE
Jan-Apr 2010	\$2.81	\$2.98	\$5.18	-
May-Aug 2010	\$2.97	\$3.10	\$5.06	\$0.95
Sep-Dec 2010	\$3.01	\$3.45	\$5.96	-
Jan-Apr 2011	\$3.04	\$3.50	\$6.29	-
May-Aug 2011	\$3.19	\$3.83	\$5.66	\$1.00
Sep-Dec 2011	\$3.22	\$4.38	\$5.87	-
Jan-Apr 2012	\$3.30	\$4.08	\$6.05	-
May-Aug 2012	\$2.72	\$4.73	\$5.88	\$1.00
Sep-Dec 2012	\$2.90	\$4.55	\$5.72	-
Jan-Apr 2013	\$3.07	\$4.59	\$5.90	-
May-Aug 2013	\$4.18	\$4.89	\$7.10	\$1.50
Sep-Dec 2013	\$4.23	\$5.33	\$7.64	-
Jan-Apr 2014	\$4.39	\$5.45	\$7.12	-
May-Aug 2014	\$3.02	\$5.14	\$7.09	\$1.20
Sep-Dec 2014	\$3.26	\$4.42	\$6.19	-
Jan-Apr 2015	\$2.84	\$3.97	\$6.25	-
May-Aug 2015	\$2.25	\$3.63	\$5.47	\$0.50
Sep-Dec 2015	\$2.51	\$3.07	\$5.73	-
Jan-Apr 2016	\$2.48	\$3.03	\$5.37	-
May-Aug 2016	\$2.82	\$3.11	\$5.73	\$0.76
Sep-Dec 2016	\$3.07	\$3.39	\$6.76	-
Jan-Apr 2017	\$3.31	\$3.46	\$5.79	-
May-Aug 2017	\$3.46	\$3.57	\$6.20	\$1.02
Sep-Dec 2017	\$3.65	\$3.87	\$6.90	-

Source: ADOR (ASPR), compiled by Wink Research.



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