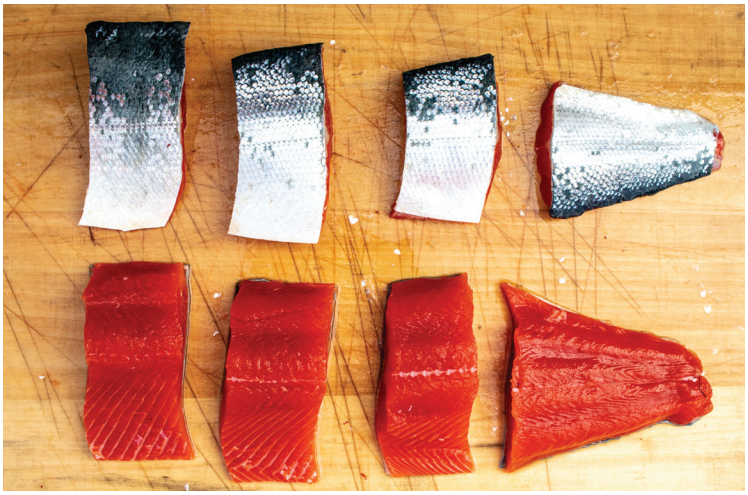

BRISTOL BAY SOCKEYE MARKET REPORT

FALL 2018 EDITION - NOV 2018

BRISTOL BAY

Regional Seafood Development Association

ACKNOWLEDGEMENTS

This report series relies on information from government agencies and input from industry contacts. I would like to thank Rachel Smith from the Alaska Department of Fish & Game, Elizabeth Nudelman from the Alaska Department of Revenue, Mike LaPointe from the Pacific Salmon Commission, and members of the seafood industry who contributed to this report. Cover image credits: Chris Miller, Kai Raymond, and Wesley Evans.

Dear Bristol Bay Fishermen,

This is the eleventh Sockeye Market report. For me, it marks an important turning point. Since 2013, I've been responsible for examining and explaining market conditions through bi-annual market reports to the fleet. This fall, I'm issuing the report as the Executive Director of the Bristol Bay Regional Seafood Development Association (BBRSDA). I'm very excited by the opportunity to help BBRSDA succeed in its mission, and deeply honored by the trust and encouragement I've received from Board members and fishermen.

The format and timing of this report will likely evolve away from the bi-annual schedule next year, but for now we're keeping the existing format. Our goal is to make future dispatches more efficient, more timely, and more useful for industry in support of our mission.

Market conditions are very good, at present. I can't promise you that every season will be better than the last because of the BBRSDA's actions, that's just not how it works with fishing. There are too many variables. However, I can guarantee that BBRSDA is pragmatically executing a plan to (sustainably) put as much fish as possible in the nets, delivered at higher quality, and sold into a market with increasing demand each year. With some continued cooperation from Mother Nature, I believe we'll see a lot of great seasons in the future. BBRSDA board members, staff, and contractors are hyper-focused on growing the size of the value pie produced by this fishery, and through this report and subsequent analyses, we will continue to monitor the share fishermen receive.

We have a sound plan. We have great industry partners, outstanding contractors, a committed staff, and a stable funding source, but more than anything we need you – the fleet. I'd encourage all Bristol Bay fishermen to sign up for our e-newsletter *Waypoints* (which you can do on our website), follow us on facebook (facebook.com/bbrsda), and check out our website (bbrsda.com). We like receiving input and project ideas from the fleet, and there are numerous ways fishermen can get involved to help us meet the mission of raising the fishery's value. On behalf of your volunteer board members and our staff, I thank you for your support. I hope you find this market report insightful and useful.

Sincerely,

Andy Wink
BBRSDA Executive Director

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SOCKEYE MARKET REPORT SUMMARY

The Bristol Bay Regional Seafood Development Association (BBRSDA) is tasked with increasing the value of Bristol Bay fisheries. As part of our service to the Bristol Bay fleet we offer this report on sockeye market conditions and resource value analysis. Key findings are listed below:

> Bristol Bay fishermen benefitted from a record sockeye run, poor harvests elsewhere in Alaska, and supportive market conditions in 2018. Resource value has increased substantially in recent years and the market outlook remains positive for Bristol Bay fishermen. However, with higher prices comes greater expectations on the part of buyers. Continuing to deliver high quality fish will be vital in preserving these gains.

SUMMARY OF MARKET CONDITIONS & OUTCOMES

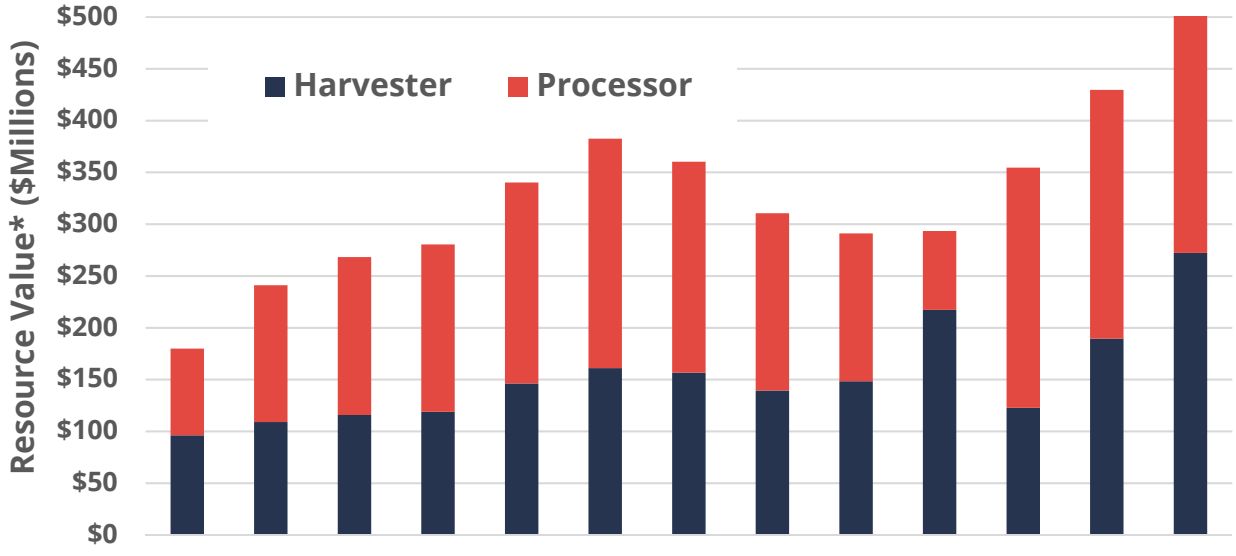
- Bristol Bay witnessed the largest sockeye run ever recorded and produced the second-largest harvest in history. Outside of the Wood River, overescapement was minimal given the historic size of the run. Fish size was down slightly to an average of 5.3 pounds/fish.
- In nominal terms, this was also the most valuable Bristol Bay salmon harvest ever recorded with a preliminary ex-vessel value of $281 million. After factoring in quality premiums and volume bonuses, the final value is projected to be over $335 million.
- Global sockeye supply was flat in 2018. A larger harvest in Bristol Bay and an “up” year in Canada offset poor sockeye harvests in other Alaska regions.
- Farmed salmon production is expected to grow by approximately 4-6 percent in 2018 and 4-5 percent in each of the next two years. Modest supply growth and strong demand are expected to support high farmed salmon prices going forward.
- First wholesale prices for all major sockeye product forms continued to increase during the May-August sales period in 2018, compared to the same period in the previous year.
- Frozen Bristol Bay sockeye prices are approaching 2013 levels, but at double the volume.
- Export sales are up but domestic buyers have been even more active in 2018.
- Quality and marketing will be important factors in maintaining higher prices for fishermen. BBRSDA funds quality outreach activities, informational quality materials, and plans to promote branded Bristol Bay sockeye in roughly 1,000 stores in 2018.

- The Pebble Mine and a trade war with China pose significant threats to future supply and demand for Bristol Bay sockeye. Pebble's draft EIS is due out in January 2019. A permitting decision is expected by early 2020.
- Bristol Bay fishermen still receive the lowest ex-vessel sockeye price of any region in Alaska, but the difference in final prices has tightened in recent years. Bay drifters earned by the far the highest average gross earnings of any major Alaska gillnet fishery in 2018.

Fishermen and other raw material producers (e.g. farmers) tend to realize a larger share of the supply chain value as the value of finished goods using those raw material increases, and vice versa. This has generally been the case in Bristol Bay during recent years; however, this was not the case from 2004 to 2012 for reasons explained in the Resource Value Analysis chapter. Value gains made during this period were shared among the two sectors roughly evenly and harvesters earned 44 percent of the resource value. Meanwhile, the resource value gained 75 percent from 2013 to 2017 and fishermen received 51 percent of the value.

FIGURE 1

Share of Bristol Bay Sockeye Salmon Resource Value by Sector, 2005-2017



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Harvester Share%	53%	45%	43%	42%	43%	42%	44%	45%	51%	74%	35%	44%	54%
Annual change for each sector (in $Millions)													
Harvester	+25	+13	+7	+3	+27	+15	-4	-17	+9	+69	-94	+67	+83
Processor	-23	+48	+20	+9	+33	+27	-18	-32	-28	-66	+156	+8	-4

**Represents first wholesale value of primary products (H&G, canned, fillets, and roe).*
Notes: Data is presented on a harvest year basis (June through the following May). Processor value equals net processing revenue (estimated first wholesale value – payments to fishermen). 2014 harvester% = 40%.
Source: Author's estimation based on ADOR (ASPR) and ADF&G data.

INTRODUCTION

The Bristol Bay Regional Seafood Development Association (BBRSDA) has funded bi-annual sockeye market reports since 2013. Andy Wink has been the primary author/analyst of this report series since its inception, and will continue to report on market conditions as the new Executive Director of BBRSDA.

REPORT PURPOSE & SCOPE OF WORK

BBRSDA represents the world's largest group of sockeye fishermen and is tasked with increasing the value of Bristol Bay fisheries (principally sockeye salmon). The goal of this report is to provide information about market conditions to the BBRSDA organization and its members. This report tracks market trends affecting sockeye salmon to help BBRSDA direct activities, inform its members about market conditions, and react effectively to emerging trends.

In addition to bi-annual reports, the *Sockeye Market Report* project includes summary presentations at the direction of the BBRSDA Board. Past analyses and presentations can be viewed or downloaded from BBRSDA's website (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), National Marine Fisheries Service (NMFS), and the Commercial Fisheries Entry Commission (CFEC).

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

Information provided in this report is believed to be accurate as of November 12, 2018 but is presented without warranty or guarantee of any kind. The Bristol Bay Regional Development Association may not be held accountable or liable for any direct or indirect damages associated with the information contained herein.

GLOSSARY OF TERMS & ABBREVATIONS

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
PSC	Pacific Salmon Commission

Ex-Vessel Value/Price — The value or price paid to fishermen by a processor for whole fish.

First Wholesale Value — 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.

First Wholesale Volume — The weight of processed product sold by processors to entities outside of their affiliate network. Also referred to as production volume.

Harvest Year Cycle — 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.

Net Processing Revenue — First wholesale value earned by processors less ex-vessel payments to fishermen.

Nominal Terms — Not adjusted for inflation.

Refreshed Sockeye — 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. Chilled sides/portions are then delivered to retailers and restaurants.

Round Weight — The weight of a whole fish as it is delivered to the processor in an uncut and unprocessed state.

2018 Bristol Bay Season Summary

This section relies on preliminary data to summarize the 2018 Bristol Bay salmon season.

Key Findings

- Bristol Bay witnessed the largest sockeye run ever recorded and produced the second-largest harvest in history, largely due to the harvest of 24 million sockeye in the Nushagak district (the most ever caught in one district).
- In nominal terms, this was also the most valuable harvest ever recorded with a preliminary ex-vessel value of $281 million.
- After factoring in quality premiums and volume bonuses, the final value is projected to be approximately more than $335 million. Adjusted for inflation, the 2018 projected value would rank 8th all-time.
- Outside of the Wood River, overescapement was minimal given the historic size of the run.

The tables below summarize Bristol Bay salmon harvests over the past two seasons. Coming on the heels of an outstanding 2017 season that saw the highest preliminary ex-vessel value since 1996, the 2018 was even better. The inshore sockeye run topped 62 million fish and base sockeye prices increased by roughly 25 cents.

TABLE 1
Bristol Bay Salmon Harvest Summary, by Species, 2018

	Preliminary	Preliminary	Avg. Fish	--- Harvest Volume (000s) ---	
Species	Price/lb.	Value ($000s)	Weight	Fish Caught	Pounds
Sockeye	$1.26	$275,489	5.3	41,253	218,642
Chum	$0.36	$4,305	6.4	1,868	11,957
Coho	$0.80	$731	6.6	138	914
Chinook	$0.80	$347	10.4	42	434
Pinks	$0.20	$158	3.6	219	788
Total	**-**	**$281,029**	**-**	**43,521**	**232,735**

Notes: Preliminary prices represent base ex-vessel prices, not including supplemental payments (e.g. quality bonuses, etc.). Totals may not sum due to rounding.
Source: ADF&G (2018 Bristol Bay Salmon Season Summary).

TABLE 2
Bristol Bay Salmon Harvest Summary, by Species, 2017

Species	Preliminary Price/lb.	Preliminary Value ($000s)	Avg. Fish Weight	--- Harvest Volume (000s) --- Fish Caught	Pounds
Sockeye	$1.02	$209,898	5.5	37,683	205,783
Chum	$0.30	$3,418	6.4	1,780	11,392
Coho	$0.65	$988	6.3	240	1,521
Chinook	$0.72	$312	11.2	39	434
Pinks	$0.16	$22	3.9	35	139
Total	**-**	**$214,639**	**-**	**39,777**	**219,267**

Notes: Preliminary prices represent base ex-vessel prices, not including supplemental payments (e.g. quality bonuses, etc.). Totals may not sum due to rounding.
Source: ADF&G (2017 Bristol Bay Salmon Season Summary).

Table 3 compares sockeye forecast, harvest, and escapement by district. Fishery managers boldly projected a historic run in the Nushagak. Incredibly, that bold prediction ended up being surpassed by nearly 12 million fish. Somewhat overshadowed by the Nushagak's monster return was the fact that the Togiak district also posted a record sockeye run. Harvests and escapement were generally close to the 20-year average in the Kvichak, Egegik, and Ugashik districts.

TABLE 3
Bristol Bay District Summary, in Millions of Sockeye, 2018

District	Over/Under Forecast	2018 Harvest	20YR Avg. Harvest	Escapement Goals	2018 Escapement
Naknek-Kvichak	+1%	8.61	8.01	3.1 - 12.0M	8.20
Egegik	-28%	4.96	6.75	800K - 2.0M	1.61
Ugashik	+37%	2.77	2.83	500k – 1.4M	1.17
Nushagak	+54%	24.06	6.42	1.2 – 3.1M	9.53
Togiak	+59%	0.86	0.56	120 – 270K	0.51
Total	**+21%**	**41.25**	**24.57**	**-**	**21.01**

Source: ADF&G (2018 Bristol Bay Salmon Season Summary).

Eastside districts witnessed the latest run timing on record and because of the disparity in run timing between the Nushagak and eastside districts, processors were able to keep pace

with the large run. Despite being a larger overall run, the harvest was less compressed than last year. As a result, the expectation is that pack quality will be more consistent in 2018.

In terms of composition, this year's run was dominated by sockeye with one year of freshwater residence (1.2s and 1.3s). Fish with two years of freshwater residence (2.2s and 2.3s) were below expectations, particularly in the Egegik and Kvichak rivers.[1] Due to the prevalence of younger fish, average fish weights were down. Fish weight and size distribution are key variables to track as finding markets for small fish has been more difficult, historically. The price difference between small, medium, and large sockeye is significant.

DEATH AND REBIRTH IN BRISTOL BAY

Tragically, this season claimed the lives of fisherman (Anthony Active from Togiak), tenderman (John Phillips from Juneau), and processing worker (Grant Hildreth Jr. from Kotzebue) near the end of the 2018 season. All three men drowned. Active and Hildreth fell overboard and Phillips perished when the tender vessel *Pacific Knight* capsized near Clark's Point. Active and Hildreth were not wearing personal floatation devices, and it is unknown if Phillips was wearing one at the time he went into the water. The National Institute for Occupational Safety and Health (NIOSH) says man overboard fatalities are the second leading cause of death among commercial fishermen nationwide. There were 204 man overboard fatalities between 2000 and 2016 and not a single victim was wearing a personal floatation device.[2]

The crew of the *F/V Kristi* survived a harrowing capsizing after their vessel lost power and became pinned between the 400-foot cargo ship *Sohoh* and the 330-foot processing vessel *Gordon Jensen*. Crew members of the *Gordon Jensen* were able to lift one of the *Kristi* crew to safety while the other two were able to climb onto a giant rubber fender just seconds before the *Kristi* went down. KDLG coverage of the event includes a full interview and video of the event.[3]

On the positive side, Peter Pan Seafoods began the rebuilding process after a fire destroyed its Port Moller processing plant in 2017. Company officials expect the new facility to be operational next season.

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[1] ADF&G (2018 Bristol Bay Season Summary)
[2] Parker, Peggy, "Three Fatalities Mark This Year's Bristol Bay Season," *Seafoodnews.com*.
[3] http://www.kdlg.org/post/fv-kristi-sinks-near-clark-s-point-all-board-survive#stream/0

SAVE NOW ON CRITICAL SAFETY EQUIPMENT

BBRSDA would like all Bristol Bay fishermen to know that LFS and Seattle Marine are currently offering personal floatation devices and other safety equipment at discounted prices. The LFS discounts are good through the Pacific Marine Expo (11/20/18) while Seattle Marine prices are good through 12/10/18. Both suppliers can ship purchases to the Bay for a nominal fee.

Auto Hemi Light 3 (ACR3764): **$10.00**
Lifesling2 Overboard Rescue System (LIFESLINGW): **$135.00**
Mustang Auto Work Vest PFD w/HIT (MD3188): **$199.00**
AISLink Personal Man Overboard Beacon (ACR2886): **$239.00**

ACR Water-Activated LED Strobe Light (ACR3964): **$13.46**
Lifesling2 Overboard Rescue System (LIF357634): **$135.00**
Onyx Auto-Inflating PFD (MD3188): **$77.09**

SUPPLY ANALYSIS

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

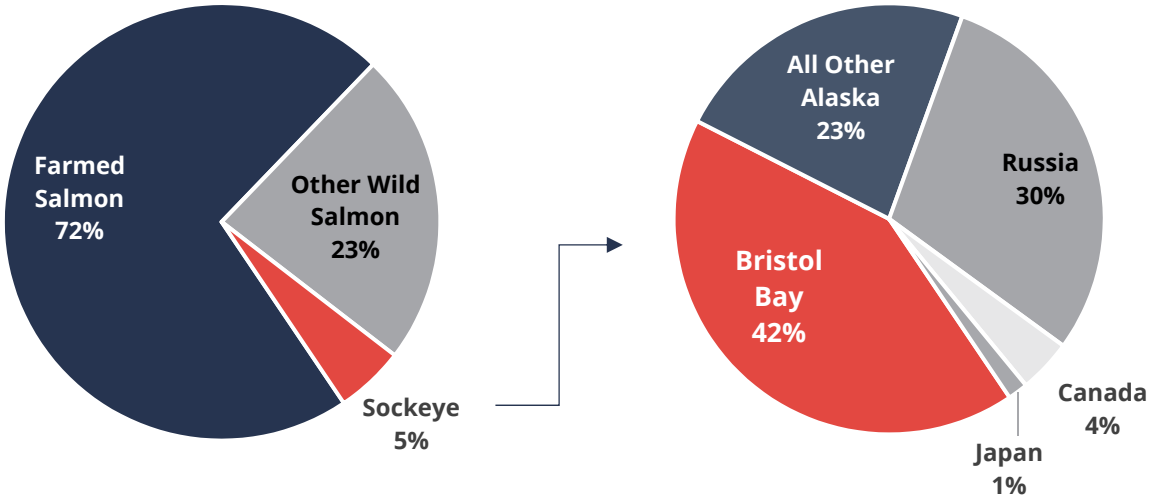
- Salmon supply trends were highly favorable for Bristol Bay fishermen in 2018.
- Global sockeye harvests declined by 1 percent in 2018 to 381 million pounds, based on preliminary harvest data and estimates derived from available data sources.
- Bristol Bay accounted for 57 percent of global sockeye production, due to the second-largest harvest on record. The 2018 season marks the third year in a row that Bristol Bay has accounted for more than half of global sockeye production.
- Sockeye harvests in other areas of Alaska were the worst in over four decades, producing just 44 million pounds.
- This was an "up" year for Canadian sockeye production, but harvests were relatively low. It is estimated that the Canadian sockeye harvest declined by 58 percent from the last "up" year (2014).
- Farmed salmon production is expected to grow by approximately 4-6 percent in 2018 and 4-5 percent in each of the next two years.
- Most analysts predict farmed salmon prices will remain high for the foreseeable future due to constrained supply.
- Farmed coho production is expected to increase in 2018.

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 comprehensive 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.

Global sockeye harvests declined 1 percent to an estimated 381 million pounds in 2018, based on preliminary data. Sockeye harvests in Bristol Bay increased again last year but fell sharply in Alaska's other major sockeye-producing districts. Elsewhere, Russian sockeye production was up slightly while Canadian production was also up – though not as much as previous "up" years.

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 produced half (50 percent) of the world's commercial sockeye harvest in 2016, and more than half in 2017 and 2018, based on preliminary harvest estimates. Sockeye harvests in Bristol Bay have exceeded 200 million pounds in each of the past three seasons. The 2018 harvest of 41.3 million sockeye is the second-largest Bristol Bay season on record behind the 1995 harvest of 44.2 million sockeye. The 2018 inshore Bristol Bay sockeye run of 62.3 million fish is the largest on record dating back to 1893.

Outside of the record year in Bristol Bay, sockeye fishing ranged from poor to disastrous in Alaska. Sockeye harvests in every other Alaska fishing district fell short of the preseason forecast, producing a harvest of just 44 million pounds – the smallest collective amount from non-Bristol Bay systems in Alaska since 1976. Fishermen in Chignik landed just 128 sockeye.

Russia is the next largest sockeye producing nation, after the United States. Russian sockeye production has been stable in recent years, ranging from approximately 90 to 120 million pounds. Preliminary reports from Russia's federal fishery agency (Rosrybolovstvo) indicated sockeye harvests increased slightly in 2018.

Canadian sockeye harvests tend to spike once every four years but have generally produced less than five million pounds during down years. This was an "up" year for Canada's Fraser River sockeye run. Fishery scientists predicted a run of roughly 14 million sockeye to the Fraser River system. This was a significant forecast reduction from the previous "up" year in 2014, when a 23 million sockeye run produced a harvest of 52 million pounds. Preliminary harvests statistics suggest the 2018 harvest was down significantly. It is estimated that Canadian sockeye harvests amounted to 22 million pounds in 2018, down 58 percent compared to 2014 (the last "up" year). Canada accounted for four percent of global sockeye harvests from 2013-2016.

TABLE 4

Global Sockeye Harvest by Region, 2012-2018

in Millions of Pounds

Region	2012	2013	2014	2015	2016	2017P	2018E
Alaska Total	214	178	245	280	286	289	267
Bristol Bay	**119**	**92**	**161**	**185**	**202**	**208**	**219**
Other AK Areas	95	86	85	96	85	81	44
Rest of U.S.	0.9	0.2	4.3	0.5	0.1	0.1	2
Russia	112	122	104	113	110	93	95
Canada	5	1	52	5	3	3	22
Japan	5	5	6	6	2	N/A	N/A
Total Harvest	**335**	**305**	**411**	**404**	**402**	**385**	**381**
Bristol Bay Pct.	**36%**	**30%**	**39%**	**46%**	**50%**	**54%**	**57%**
BB Sockeye Base Price/lb.	**$1.00**	**$1.50**	**$1.20**	**$0.50**	**$0.76**	**$1.02**	**$1.26**
BB Sockeye Final Price/lb.	**$1.18**	**$1.61**	**$1.35**	**$0.64**	**$0.95**	**$1.31**	**N/A**

Note: 2017 & 2018 figures are preliminary estimates. Base prices do not include supplement payments (e.g. bonuses, etc.).
Source: ADF&G, PACFIN, FAO, DFO, PSC, and Russian Federal Fishery Agency.

FARMED SALMON SUPPLY

Although a growing number of consumers differentiate between farmed and wild salmon, the price and supply 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 positive for Bristol Bay salmon fishermen.

Atlantic salmon production is expected to grow by approximately 6 percent to 2.53 million metric tons in 2018, and is projected to expand by roughly 4 percent in 2019. By comparison, total sockeye harvests amounted to approximately 175,000 metric tons (385 million lbs.) last year.

These are relatively tepid growth rates for Atlantic salmon. Compared to the farmed salmon industry's volatile production history, the past couple years (2017-2018) and near-term forecasts suggest relative stability. Density regulations in Chile and parasite challenges in Norway are limiting production growth for salmon farmers in the near-term.

TABLE 5

Farmed Salmon Production & Wholesale Price, 2010-2019F

in Thousands of Metric Tons

YEAR	Atlantic Salmon	Coho Salmon	Urner Barry Atlantic Salmon Fillet Index Price/lb.
2010	1,437	122	$5.41
2011	1,735	160	$5.06
2012	2,074	162	$4.36
2013	2,094	145	$5.34
2014	2,348	159	$5.08
2015	2,382	127	$4.12
2016	2,248	111	$5.63
2017P	2,374	150	$5.75
2018F	2,526	180	$5.81*
2019P	2,629	N/A	-
2020P	2,753	N/A	-

**Average price index through 10/20/2018.*

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.

Source: FAO, Urner Barry, Nordea, Sernapesca and author's estimations.

An algal bloom in Chile during 2016 lowered output and pushed prices to high levels. Chilean production has recovered but the supply setback and slow growth has kept market supply tight. High prices are expected to persist due to strong demand growth and barriers to production growth.

In the past, when farmed salmon prices and profitability increased for Atlantic salmon farmers the sector tended to respond with double-digit percentage growth. Not surprisingly, this resulted in a glut of supply that pushed prices down resulting in poor financial performance. The sector has witnessed several such cycles over the past twenty years; however, it appears there may not be any rabbits left in the salmon producing hat for farmers. The market has been generally tight and undersupplied since 2016 but this sort of market-resetting supply growth witnessed in the past appears virtually impossible for the foreseeable future. This makes it unlikely that Atlantic salmon prices will 'crash' back to some of the low levels witnessed in years prior to 2016 so long as global economic conditions remain healthy.

Farmed coho is also an important competing species for Bristol Bay sockeye. Chilean coho production declined sharply in 2016 but rebounded in 2017. According to Sernapesca, Chile's National Fisheries and Aquaculture Service, production increased 35 percent in 2017 and trade data suggests supply growth of approximately 15-20 percent in 2018.

Virtually all farmed coho are produced in Chile. Japan is the primary market for Chilean coho, although other countries have become more active buyers in recent years. Despite strong growth rates from these alternative markets, Japanese imports of Chilean coho expanded significantly in 2018. Greater availability of Chilean coho in Japan could create pressure on demand for Bristol Bay sockeye.

While farmed salmon 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
- 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.[4] 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.[5] 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.[6] 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.

[4] https://www.undercurrentnews.com/2018/02/05/atlantic-sapphires-land-based-salmon-plant-on-track-for-2020/

[5] https://www.undercurrentnews.com/2018/04/05/chile-salmon-industry-goes-south-for-growth/

[6] https://www.japantimes.co.jp/news/2017/10/03/business/norway-japan-tap-new-tech-start-large-scale-offshore-salmon-farming/#.WuihoYgvyUk

SOCKEYE MARKET ANALYSIS

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

- First wholesale prices for all major sockeye product forms continued to increase during the May-August sales period in 2018, compared to the same period in the previous year.
- Sales volumes of frozen H&G Bristol Bay sockeye in July-August 2018 were 29 percent higher than the same period in 2017 – a signal of good demand.
- U.S. exports of frozen sockeye increased 5 percent in July-September 2018, compared to the same period in 2017. Export value of frozen sockeye jumped 29 percent due to a 23 percent increase in average price.
- Given the larger increase in total sales of frozen sockeye, it is likely that U.S. buyers were relatively more active than foreign buyers during the early stages of the 2018 sales cycle.
- Despite the increase in farmed coho production and modest gains in total U.S. sockeye export volume, frozen sockeye exported to Japan and South Korea is up 16 percent.
- Sales of frozen sockeye fillets declined 36 percent in May-August 2018, compared to the same period in 2017. Sales of fresh H&G sockeye were also down in 2018.
- Continuing to improve quality will be critical to maintaining high prices for Bristol Bay sockeye, as buyers will expect higher quality when paying higher prices.
- BBRSDA plans to promote branded Bristol Bay sockeye in roughly 1,000 stores in 2018.

SOCKEYE MARKET OUTLOOK FOR 2018

Sales performance during the early months of the 2018 sales cycle are generally positive, despite higher prices. At this point, it appears likely that processors will be able to sell the 2018 pack ahead of next season. However, higher prices tend to result in fewer promotions at retail and can erode demand over time. Continuing to deliver high quality sockeye products will be critical to maintaining demand.

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 (2017): 52 PERCENT

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

- Persistently high farmed salmon prices, a greater focus on fish quality, and marketing efforts have increased demand and pricing for frozen Bristol Bay sockeye.
- Sales volume of frozen H&G sockeye, in absolute terms and as a percentage of total first wholesale sales, is at an all-time high. This supports anecdotal reports of growth in the domestic "refreshed" sockeye market.
- Frozen Bristol Bay sockeye sold for the highest total value in 2017 than any previous year on record (since 2001).
- First wholesale prices of frozen Bristol Bay sockeye are trending up and are nearly as high as prices last witnessed following the 2013 season when harvest volume was less than half of the bumper 2018 harvest.

Frozen Bristol Bay sockeye is the largest, most influential product form in terms of affecting market conditions for Bristol Bay fishermen. Frozen Bristol Bay sockeye prices continued to increase in 2018 (see Figure 3). Average prices of frozen H&G Bristol Bay sockeye increased to nearly $4.00 per pound this summer. Prices for frozen H&G product are approaching price levels not seen since the 2013 sales cycle. The major difference is that the 2013 Bristol Bay harvest produced only 92 million pounds, easily the smallest harvest of the past 15 years. In contrast, the 2017 and 2018 were huge volume years in the Bay, producing well over 200 million (round) pounds in each year. Clearly, demand for frozen Bristol Bay sockeye has increased dramatically in recent years.

First wholesale sales of frozen H&G Bristol Bay sockeye increased by $45 million in HY 2017, versus the previous year - an increase of 22 percent. The volume of frozen H&G sales has

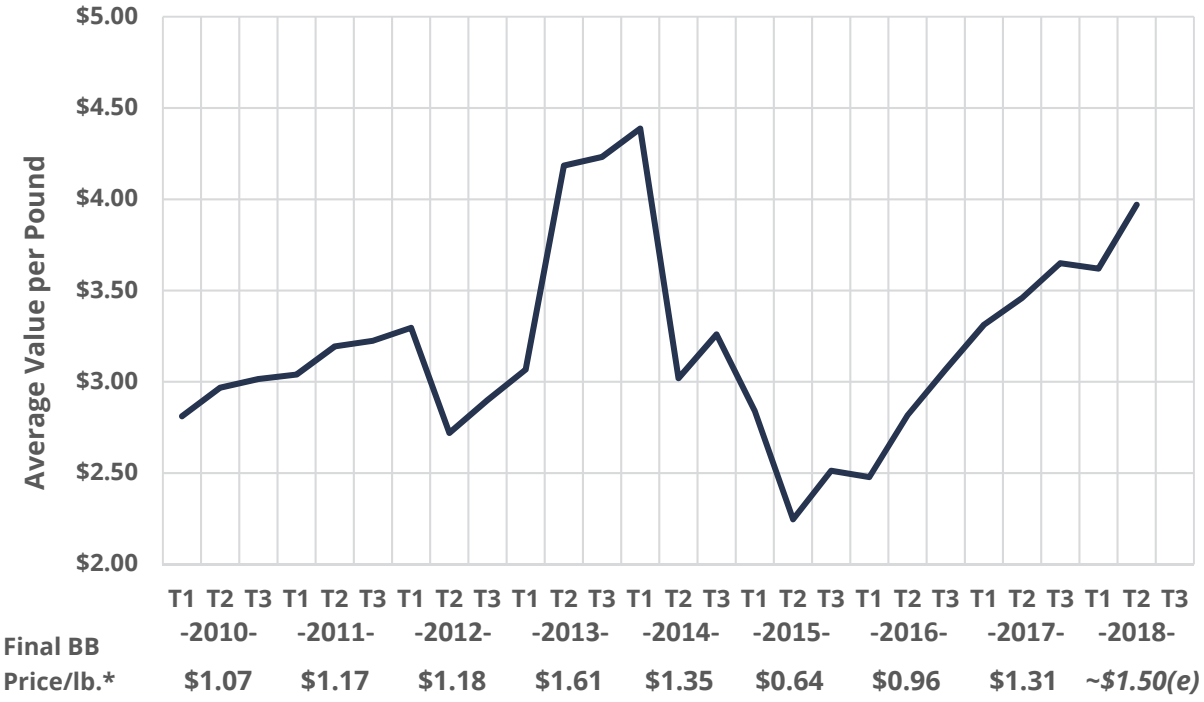
increased in recent years, not only in absolute terms because of larger harvests, but in relative terms compared to other product forms.

The most recent sales data for frozen Bristol Bay sockeye is encouraging. Sales made in July-August 2018 were 29 percent greater than the same period in 2017 in volume terms, and 49 percent greater in terms of total sales value (for frozen H&G Bristol Bay sockeye). These data confirm that even though prices increased, sales volume/velocity actually increased early on in the sales cycle. See the Appendix for historical data regarding first wholesale prices of frozen H&G Bristol Bay sockeye.

FIGURE 3

Average First Wholesale Price of Frozen Bristol Bay Sockeye, 2010-2018

by Quadrimester (Four-Month Average)



**Final average ex-vessel price/lb. for Bristol Bay sockeye. 2018 is an approximate estimate of final price.*
Source: ADF&G, ADOR (ASPR), and author's estimation.

The value of frozen Bristol Bay sockeye has grown substantially for several reasons. Tighter supplies in the farmed salmon market 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 improved significantly, 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, less waste, fewer unsatisfied consumers, and stronger demand. 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. Imagine all the product which is unsellable due to bruising, belly burns, or defects. All this volume must be covered by sales of saleable product, thus lowering the price buyers are able to offer processors. In some cases, fish of sub-par quality make it to consumers. Poor presentation and poor eating experiences can result in the loss of consumers.

Branding and promotional campaigns are raising the profile of Bristol Bay sockeye and broadening awareness among buyers. Marketing efforts conducted by BBRSDA and the Alaska Seafood Marketing Institute (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 increasing harvest volumes. BBRSDA expects to promote branded Bristol Bay Sockeye Salmon products in approximately 1,000 stores during 2018.

Photos of Bristol Bay Sockeye Salmon retail promotions.

The development of "refreshed" retail sockeye programs has also increased demand. These programs allow retailers to sell sockeye out of their glass cases on a year-round basis. 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. BBRSDA and ASMI 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, regional 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.

FROZEN FILLETS & FRESH H&G

KEY MARKETS: U.S., CANADA, & EUROPE
ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2016): 31 PERCENT

Frozen fillet prices generally reflect changes in frozen H&G prices. Like the latter, prices for frozen fillets increased in 2018. According to first wholesale sales data published by the State of Alaska, frozen sockeye fillet prices averaged $7.32 per pound for product sold this summer (May-August). This is 18 percent higher than average prices during the same time last year, or a difference of $1.12 per pound.

TABLE 6
First Wholesale Sales of Frozen Fillets & Fresh H&G Products, 2010-2018
in Millions of Pounds

HARVEST YEAR	ALASKA SOCKEYE FROZEN FILLETS	BRISTOL BAY SOCKEYE FRESH H&G (JULY ONLY)
2010	18.9	0.2
2011	22.1	N/A: Confidential
2012	20.2	N/A: Confidential
2013	15.5	N/A: Confidential
2014	17.2	N/A: Confidential
2015	22.3	0.1
2016	27.0	1.8
2017	27.2	2.5
2018	-	1.7

Source: ADOR (ASPR).

While higher prices are an indication of strong demand, it is concerning that sales volumes of frozen fillets during the 2018 summer (May-August) sales period lagged the previous year significantly (-36 percent). See the Appendices section for information on historical first wholesale prices of frozen Alaska sockeye fillets.

Complete data on sales of fresh Bristol Bay sockeye products will not be available until next spring (when ADF&G's COAR data is released), but ASPR data suggests that processors shipped out smaller volumes of fresh H&G product in 2018. The ASPR shows a 31 percent decline in sales of fresh H&G Bristol Bay sockeye during July 2018, compared to July 2017. However, the average price did increase 8 percent. Last year, there was a considerable volume of whole, fresh sockeye shipped out of the Bay (that did not appear in ASPR data) but whether that product was again moved in 2018 is not yet known. Fresh sales are important for the Bristol Bay salmon industry because processors receive income much faster than frozen or canned sales and fresh product tends to fetch higher prices.

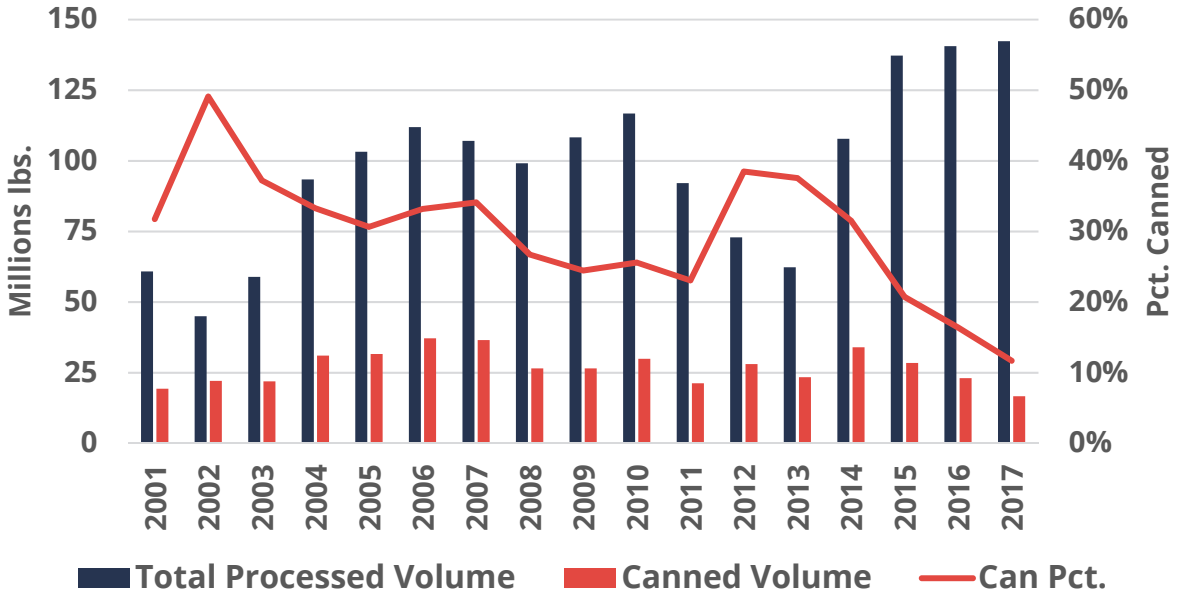
CANNED SOCKEYE

KEY MARKETS: UK, CANADA, U.S., & AUSTRALIA
ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2017): 11 PERCENT

Canned production data for the 2018 season will not be available until next year, but anecdotal information suggests processors continued to focus on frozen H&G and fillet production this past season. Prices of canned sockeye have increased in recent years driven by substantial cuts in production volume, but the difference between prices for frozen and canned product is not large enough to incentivize processors to increase canned production. Further, the market for canned sockeye is generally shrinking and any spike in production would likely result in lower prices. While it is not likely that the product form will completely disappear anytime soon as it is still widely available on grocery stores around the U.S., Canada, United Kingdom, and Australia, it appears to be transforming into more of a niche product. See the Appendix for historical canned tall sockeye prices.

FIGURE 4

Canned Sockeye Production in Bristol Bay, 2001-2017



Source: ADF&G (COAR).

SOCKEYE ROE

KEY MARKET: JAPAN

ESTIMATED PCT. OF BRISTOL BAY SOCKEYE FIRST WHOLESALE VALUE (2017): 5 PERCENT

Frozen roe products generally account for 4-7 percent of the first wholesale value of Bristol Bay sockeye. Complete data for the 2018 sales cycle is not available, but early returns are encouraging. The value of Bristol Bay sockeye roe sold during July-August 2018 increased 8 percent versus the same period in 2017. The average value per pound was up 12 percent. 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 couple years. However, a record pink salmon harvest in Russia this summer and the expectation of a larger pink salmon harvest in Alaska next summer will likely limit the upside potential for prices of sockeye roe going forward.

Japanese advertisement for sujiko (whole, marinated salmon roe skeins).

SOCKEYE EXPORTS

Trade data provides a detailed picture of sockeye trade in foreign markets and is released in a timely fashion. Export data for the most recent three months containing sales of frozen sockeye (likely) produced from the 2018 season show increases in sales activity and average price (see Table 7). Most exports of frozen sockeye occur between July through October.

Japan and South Korea increased purchases of frozen U.S. sockeye in 2018 (July-September) by 16 percent versus the same period in the previous year. Frozen exports to Canada and China fell sharply. Exports to Central Europe were up 23 percent, but there has been a big shift towards Poland and Lithuania and away from Germany. Much of this product is sold to salmon smoking companies. The average price of exported 2018 frozen sockeye is up 23 percent. It should be noted that average price figures computed using export data tend to be somewhat lower than actual market prices because the data involves product weight, as opposed to net weight.

TABLE 7

U.S. Exports of Selected Sockeye Products, 2015-2018

in Metric Tons and $Millions

	FROZEN SOCKEYE (JUL-SEP)			CANNED SOCKEYE (JAN-SEP)		
YEAR	**MT**	**$M**	**$$/LB.**	**MT**	**$M**	**$$/LB.**
2015	28,118	$144.2	$2.33	8,335	$69.2	$3.76
2016	30,606	$180.8	$2.68	8,818	$59.8	$3.08
2017	29,253	$202.7	$3.14	6,859	$49.8	$3.29
2018	30,671	$260.6	$3.85	8,031	$64.3	$3.63
YoY%	**+5%**	**+29%**	**+23%**	**+17%**	**+29%**	**+10%**

Source: NMFS trade data.

Canned salmon exports follow a less seasonal pattern, therefore it makes more sense to examine them on a year-to-date (YTD) basis. YTD canned sockeye exports have increased 17 percent by volume and 29 percent by value through September 2018. The majority of product is exported to Canada and the United Kingdom. However, using U.S. export data to specific countries to serve as a proxy for market strength is problematic as a large portion of canned sockeye shipped to Canada is subsequently re-exported (mostly to the United Kingdom).

FARMED SALMON MARKET CONDITIONS

Farmed salmon prices have declined since this spring, but remain relatively high compared to common trading levels witnessed prior to 2016 (see Figure 5).

FIGURE 5

NASDAQ Farmed Salmon Index, 2014-2018 (through October)

in Norwegian Kroner per Kilogram (NOK/kg)

Source: NASDAQ.

Despite recent declines in farmed salmon prices, there is a lot of optimism about future market conditions from the perspective of salmon producers. Chilean production has rebounded from losses connected to the large 2016 algal bloom but while supply growth has been sluggish in recent years overall, global demand for salmon continues to grow. In the past, salmon producers were able to expand production significantly which led to steep corrections (i.e. reductions) in price. The ability of salmon farmers to drastically increase production appears to be limited in the near-term.

The Norwegian investment bank Nordea recently summed up farmed salmon market conditions in an October report, which was reported on by Undercurrent News.[7] The report predicts muted supply growth going forward and notes the increased risk of supply setbacks due to algae, parasites, and disease.

The report also notes upside for salmon prices and equity valuation in the sector. Nordea expects the market could absorb 6-7 percent more fish at current prices (and perhaps as

[7] https://js.undercurrentnews.com/wp-content/uploads/2018/10/Nordea-report.pdf

much as 10-15 percent) but 2019 production will likely be below these ranges. Therefore, Nordea expects farmed salmon prices to increase by 5 percent in 2019. Rising demand from traditional markets in Europe and the U.S., coupled with very strong demand from rebuilding the Russian market and the emergence of China, are driving prices.

Profitable market conditions are evident in the most recent quarterly earnings report issued by Marine Harvest, the largest salmon farming company in the world. Marine Harvest posted record Q3 profit (EBIT) of 207.1 million euros, beating it's Q3 2017 earnings by 7 percent.

SALMON MARKET NEWS SUMMARY

FORECAST DECLINES FOR 2019 BRISTOL BAY SEASON

ADF&G released its preseason forecast for Bristol Bay sockeye on 11/9/18. The predicted run is 22 percent lower than last year's forecast and calls for a decline of roughly 11 million sockeye in the total run and Bristol Bay harvest. The regional forecast is the sum of individual predictions for nine river systems incorporating models based on the previous three and five years of return data. Forecasts for individual river systems are shown below.

TABLE 8
Bristol Bay Sockeye Forecast for 2019
in Millions of Sockeye

RIVER SYSTEM	TOTAL RUN FORECAST	YOY PCT.*	BB HARVEST FORECAST	ACTUAL 2018 HARVEST
Kvichak	6.95	-12%	2.69	-
Alagnak	3.97	-10%	1.54	-
Naknek	5.21	+35%	3.61	-
Naknek-Kvichak	**16.12**	**-3%**	**7.84**	**8.61**
Wood	4.62	-62%	3.47	-
Igushik	1.58	-26%	1.25	-
Nushagak	4.18	-43%	3.26	-
Nushagak District	**10.38**	**-52%**	**7.97**	**24.06**
Egegik	9.07	-1%	7.04	4.96
Ugashik	3.46	+21%	2.38	2.77
Togiak	1.15	+34%	0.87	0.86
Total	**40.18**	**-22%**	**26.11**	**41.25**

Source: ADF&G.

RECORD SEASON IN BRISTOL BAY

Bristol Bay posted the largest sockeye salmon run on record in 2018, besting every year since the fishery began in 1893. The total run of 62.3 million sockeye was 21 percent above ADF&G's preseason forecast. In nominal terms, it was the most valuable season ever with a preliminary value of $281 million in ex-vessel terms for all salmon species caught in the Bay.

The Nushagak and Togiak districts set harvest records, while sockeye returns to districts on the east side were the latest on record. Overall, the harvest of 41.3 million sockeye was the second-largest on record. Every Bristol Bay river system reached its escapement goals.[8]

PEBBLE MINE

In May 2017, 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 (USACE). The permitting process has passed the public scoping period. USACE released a scoping report in August 2018, which was widely criticized by organizations opposed to the Pebble Mine. Representatives with Trout Unlimited complained that the report left out numerous important technical reports and other research critical to a robust evaluation of the impacts of large-scale mining, as well as scant coverage of more than 400,000 public comments many of which raised concerns with the mine plan.[9]

A draft environmental impact statement (EIS) is expected to be released in January 2019, which will likely be followed by a 90-day public comment period. USACE has indicated it expects to have a final record of decision regarding mine permitting by early 2020. The short permitting timeline has also been a subject of criticism, given the magnitude of a mine project like Pebble. In contrast, the recently permitted Donlin Gold mine took nearly five years to be permitted through the National Environmental Policy Act (NEPA) process.

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.[10,11] BBRSDA members and others can learn more about the updated Pebble mine application and provide input at the following website: www.pebbleprojecteis.com. Bristol Bay fishermen can also receive updates about the mine and get involved by working with "Commercial Fishermen for Bristol Bay" at www.fishermenforbristolbay.org.

[8] http://www.kdlg.org/post/623-million-bristol-bay-s-2018-salmon-season-largest-ever#stream/0
[9] http://www.savebristolbay.org/in-the-news/2018/8/31/for-immediate-release
[10] https://static1.squarespace.com/static/56b0dfb660b5e98b87fc3d52/t/56d8792e01dbaea69481f1cc/1457027380474/June-2011-Commercial-Fish-Survey+2.pdf
[11] https://corpwatch.org/article/us-dueling-polls-oppose-support-pebble-mine-project

STAND FOR SALMON BALLOT INITIATIVE VOTED DOWN

Alaskans voted down the 'Stand for Salmon' ballot initiative by a margin of 61 percent against versus 35 percent in favor of the measure. The Alaska ballot initiative was aimed at increasing environmental protections for salmon populations across the state. Opponents of the measure claimed it would hinder resource development while supporters said a more stringent permitting process with expanded opportunity for public comment was necessary to protect salmon runs.[12]

Opponents organized a "Stand for Alaska – Vote No on 1" campaign and raised over $12 million, primarily from large mining companies such as BP Alaska, Donlin Gold, and ConocoPhillips Alaska. Meanwhile, the "Stand for Salmon" campaign received less than $3 million in donations.

TRADE WAR LIMITS ACCESS TO GROWING CHINESE MARKET

A trade war between the U.S. and China is resulting in higher tariffs and will have significant impacts on seafood industry supply chains. Compared to other species, the impact for sockeye salmon producers will be minimal, at least in the near-term. A relatively small volume of Bristol Bay sockeye is exported to China for secondary processing, but product sent to China for processing and re-export is exempt from punitive tariffs.

A larger consequence of increased tariffs will be reduced access to the booming Chinese domestic market. China's growing middle class represents a huge opportunity for many imported seafood products, including salmon. Chinese consumers are understandably concerned about food safety and quality. With tariffs making American products significantly more expensive and the trade war damaging the marketability of such goods, Chinese importers will seek alternatives from other countries. Simun Jacobsen, sales director for the large salmon farming company Bakkafrost, expects China to import 200,000 metric tons per year by 2025 – about double its current import volume.[13] Others speaking at the China Fisheries & Seafood Expo predicted even higher growth rates for farmed salmon imports into China.

[12] https://www.ktoo.org/2018/11/06/ballot-measure-1-additional-protections-for-salmon-habitats/
[13] https://www.undercurrentnews.com/2018/11/09/china-could-import-up-to-400000t-of-salmon-by-2025-if-supply-is-there/

BRISTOL BAY SOCKEYE RESOURCE VALUE ANALYSIS

The amount of first wholesale revenue paid to fishermen through ex-vessel prices, as well as the amount of revenue retained by processors after paying fishermen provides strong clues as to the future direction of ex-vessel prices and value. Analyzing these data also allows for a reliable measure of resource value allocation between fishermen and processors.

KEY FINDINGS

- Net processing revenue earned during the 2017 sales cycle was $236 million, roughly in line with the previous two years. This is a significant increase from nearly every other year prior to 2015 and marks the third straight year of productive seasons for Bristol Bay processors.
- The percentage of resource value (i.e. first wholesale value) paid to Bristol Bay fishermen increased from 44 percent in 2016 to 54 percent in 2017.
- In general, recent data shows that fishermen tend to receive a larger share of resource value when first wholesale values are high. This is consistent with the expectation that the value of raw material increases as prices for finished product increases. This finding supports the notion that marketing efforts focused on raising demand for finished products produces economic gains for raw material producers (i.e. fishermen).
- Not surprisingly, ex-vessel prices have increased along with increases in net processing revenue.
- Early data for the 2018 sales cycle is encouraging for the Bristol Bay salmon industry, as first wholesale revenue, sales volume, and average price are all up.

EX-VESSEL AND FIRST WHOLESALE ACCOUNTING

Trends in processors' cash flow have a direct bearing on ex-vessel prices. The more cash processors receive, the greater the ability to bid up the price of fish. Cash flows for the processing sector can be tracked by comparing first wholesale sales value to the ex-vessel value paid for the fish, in this case Bristol Bay sockeye. Comparing ex-vessel and first

wholesale value also provides a quantifiable measure of how resource value is allocated between the harvesting and processing sectors.

Properly analyzing data for the harvesting and processing sectors requires a few adjustments and conventions:

1. In this chapter, a calculated statistic called "Net Processing Revenue" is used to approximate cash flows for processors after paying fishermen, 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). It should be noted that net processing revenue should not be used as a measure of profit as processors also have considerable expenses which must be paid out of this amount, including tendering, labor, materials, energy, and other costs.

2. First wholesale sales are compiled according to a customized "sales cycle" intended to better imitate the actual wild salmon sales season. Therefore, first wholesale sales made from June through May are applied to the season in which those fish were likely harvested. 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 first wholesale sales data in this manner, as opposed to a calendar year basis, allows for a more accurate comparison to ex-vessel figures.

HISTORICAL RESOURCE VALUE ANALYSIS

Table 9 (on the following page) compares first wholesale value, ex-vessel value, and net processing revenue of Bristol Bay sockeye from 2005 to 2017, on a harvest year basis. First wholesale value has increased substantially over the past four seasons with available data (2018 harvest year data will not be available until late 2019, as the 2018 harvest year ends in May 2019). In 2014, major Bristol Bay sockeye products sold for a first wholesale value of $293 million, by 2017 this figure had grown to $508 million.

The percentage of resource value paid to fishermen increased from 2010 to 2014, culminating in fishermen receiving 74 percent of first wholesale value in 2014. This figure was far outside of historical averages due to a sharp decline in wholesale prices following the 2014 season. Processors saw a sharp decline in net processing revenue following the 2014 season. Predictably, ex-vessel value and fishermen's share of resource value plummeted the following year. Since 2015, ex-vessel value and the share of resource value

paid to fishermen has rebounded substantially. Processors benefitted the most during the early stages of the 2015-2017 "bull" sockeye market as companies recapitalized after a terrible 2014 sales cycle, but virtually all the gains in first wholesale value since 2015 have been paid to fishermen. Even still, processors have posted net processing revenue figures far greater than most previous years. These data points support the notion that rising demand for finished products increases the value and demand of underlying raw material. Similar patterns are observed for many other commodities, some of which have been investigated in previous reports in this series.

TABLE 9

Bristol Bay Sockeye Harvest & Resource Value Allocation, 2005-2017

In Millions

HARVEST YEAR	HARVEST M-LBS.	FW SALES VALUE	EX-VESSEL VALUE	NET PROCESSING REVENUE	EV AS PCT. OF FW VALUE
2005	155	$180	$96	$84	53.4%
2006	164	$241	$109	$132	45.2%
2007	173	$268	$116	$152	43.2%
2008	159	$280	$119	$162	42.4%
2009	183	$340	$146	$194	42.9%
2010	170	$383	$161	$221	42.1%
2011	135	$360	$157	$203	43.5%
2012	119	$310	$139	$171	44.9%
2013	92	$291	$148	$143	51.0%
2014	162	$293	$217	$76	74.0%
2015	193	$355	$123	$232	34.6%
2016	201	$430	$189	$240	44.1%
2017	208	$508	$272	$236	53.5%

Note: Ex-vessel value figures may differ slightly from previous reports based on newly published historical ADF&G data. Historical data can differ depending on how data is compiled and attributed to a region, such as Bristol Bay. Figures may not sum due to rounding.
Source: ADOR (ASPR), ADF&G (COAR), and author's estimation.

Although difficult to quantify, fish quality has likely played a key role in growing resource value for Bristol Bay sockeye in recent years. Harvest volume increased substantially from 2013 to 2017 and yet base prices from 2014 to 2017 increased from $0.50 to $1.26 per round pound. The value of quality/production premiums increased as well. Typically, when the supply of a commodity increases, price goes in the opposite direction. Despite large harvests and increasing prices during these years, processors were able to sell all (or the vast majority)

of the previous year's pack. The absence of inventory helped drive demand higher for each passing season.

FW DEMAND DRIVES RESOURCE VALUE FOR FISHERMEN

The goal of BBRSDA is to increase the value of Bristol Bay fisheries for the benefit of fishermen, who fund the organization through a 1 percent self-imposed assessment on the value of salmon landed in the region. Therefore, the question of resource value allocation of Bristol Bay sockeye salmon is central to the mission of BBRSDA and a frequent topic of conversation within the fleet. With a large fleet and relatively few buyers, how can fishermen be assured that prices are competitive and the allocation of resource value is distributed fairly between the harvesting and processing sectors?

These are complex questions beyond the scope of this sub-section; however, an analysis of resource value allocation yields some important conclusions. On average, greater revenue at the first wholesale level and higher first wholesale prices have resulted in fishermen retaining a larger percentage of the Bristol Bay sockeye resource value in recent years. However, prior to 2013, the impact of first wholesale price and sales revenue had a much smaller effect, perhaps even a negligible effect, on the share of revenue paid to fishermen (see Table 10). In total, fishermen were paid an average of $124 million in ex-vessel value (44 percent of resource value) from 2004-2012 while processors retained an average of $159 million in net processing revenue (56 percent of resource value).

In a competitive market, one would expect that the value of raw material would rise with higher wholesale revenues and/or higher wholesale prices. From 2004 to 2012, the first wholesale value per round pound of Bristol Bay sockeye harvested doubled and first wholesale value increased substantially. However, the share of resource value paid to fishermen remained relatively steady outside of a spike in 2005 and 2006. Basically, processors and fishermen shared (roughly) equally in the bull market for Bristol Bay sockeye during the 2004-2012 period, rather than the expectation of more gains flowing to raw material producers (i.e. fishermen). From 2004 to 2012, fishermen received a total of $1.11 billion in ex-vessel value while processors received a total of $1.43 million in net processing revenue. Overall, fishermen received 44 percent of resource value during this period.

There are several reasonable explanations for this market behavior. First, the entire Alaska salmon industry was recovering from a disastrous period in the early 2000s. Second, the processing sector was investing heavily in transitioning from canned to frozen products.

Fiscal caution and reinvestment in product development were primary concerns for Bristol Bay processors during this period. The economic crisis of 2008 to 2011 likely played a role in processors being more cautious with financial commitments to fishermen as well. Finally, there was less competition among processors during this period, as Silver Bay Seafoods and Copper River Seafoods were not yet present. Even though financial performance among Bristol Bay processors was improving through the mid-to-late 2000s, the memories of poor years in the early 2000s likely gave pause to new potential entrants. This left existing Bay processors in a more favorable buying position.

These are all plausible explanations, but it's also important to remember that each year in the Bay brings unique conditions in regards to predicted/actual harvest volume and product form production (which affects processing costs). It is very likely that processing costs were becoming more expensive on a per pound basis during this period as processors bore the burden of increased capital investment. In addition, the Bristol Bay processing sector has very high barriers to entry (for new firms) and competition can be somewhat constrained by processing capacity (though adding capacity also adds costs, which must ultimately be paid for by the fishery). These factors can also impact how the market allocates resource value between the two sectors.

In contrast, fishermen received a total of $950 million in ex-vessel value from 2013 to 2017, compared to $927 million for processors (in the form of net processing revenue). Overall, fishermen received 51 percent of resource value during this period. Prices and first wholesale fluctuated wildly during this period, but again, gains in first wholesale value since 2016 have generally flowed backward to raw material producers. The share of revenue retained by the processing sector was relatively steady from 2015 to 2017 (at approximately $235 million), while the value paid to fishermen increased substantially. It is clear that the link between resource value and the allocation of that value has become stronger in recent years.

In terms of data quality, the Alaska Salmon Price Report (ASPR) and ADF&G's Commercial Operators Annual Report (COAR) series are believed to be accurate representations of actual first wholesale value. The data consistently track foreign trade data and each agency performs data integrity checks.

These data do not prove any sort of unfair trade practices on the part of processors during the 2004-2012 period, as a unique set of circumstances likely explains movements in the data. Further, processing companies are not required to pay any given percentage of first

wholesale price or revenue share to fishermen and fishermen are generally not restricted from selling their catch to competing processors or from forming their own processing venture. Processing companies take on large risks to operate in Bristol Bay and have made many millions of dollars of investments for the purpose of creating a return. In short, both processors and fishermen are entitled to reap the rewards of growing resource value as dictated by competitive forces in the fishery and neither sector is required to sell to or buy from the other.

TABLE 10

Bristol Bay Sockeye Harvest & Resource Value Allocation, 2004-2017

In $Millions

HARVEST YEAR	FW SALES VALUE	EX-VESSEL VALUE	NET PROCESSING REVENUE	EV AS PCT. OF FW VALUE	FW VALUE PER ROUND LB.*
2004	$178	$71	$107	40.0%	$1.29
2005	$180	$96	$84	53.4%	$1.16
2006	$241	$109	$132	45.2%	$1.47
2007	$268	$116	$152	43.2%	$1.55
2008	$280	$119	$162	42.4%	$1.76
2009	$340	$146	$194	42.9%	$1.86
2010	$383	$161	$221	42.1%	$2.26
2011	$360	$157	$203	43.5%	$2.67
2012	$310	$139	$171	44.9%	$2.61
Period Totals	**$2,542**	**$1,114**	**$1,427**	**43.8%**	**$1.82**
2013	$291	$148	$143	51.0%	$3.15
2014	$293	$217	$76	74.0%	$1.81
2015	$355	$123	$232	34.6%	$1.84
2016	$430	$189	$240	44.1%	$2.14
2017	$508	$272	$236	53.5%	$2.45
Period Totals	**$1,877**	**$950**	**$927**	**50.6%**	**$2.19**

**Value of first wholesale value per round pound of Bristol Bay sockeye harvested. This approach minimizes price distortion from changing product form composition over time.*

Notes: Ex-vessel value figures may differ slightly from previous reports based on newly published historical ADF&G data. Historical data can differ depending on how data is compiled and attributed to a region, such as Bristol Bay. Figures may not sum due to rounding.

Source: ADOR (ASPR), ADF&G (COAR), and author's estimation.

LOOKING AHEAD

The 2018 sales season is far from over, but ASPR data for the key months of July-August is available and it is very encouraging. The first wholesale value of Bristol Bay sockeye products sold during July-August 2018 is 36 percent greater than the same period in the previous year and the average value per pound (for all products combined) increased from $4.01 to $4.51. Sales volume was up 21 percent. Export data are also encouraging. U.S. exports of frozen sockeye from July-September 2018 are up 29 percent in value terms compared to the same period in 2017 on steady volumes. ASPR and export data basically show wholesale sales volume is well ahead or at least steady with last year, and product is moving at significantly higher prices.

It's still too early to predict with absolute certainty how the 2018 sales season will unfold, but available data and anecdotal information is positive. Coming off a year with excellent ex-vessel values, the natural question is "yeah, but what about next year." In 2014, a great season for fishermen was followed up by drastically lower ex-vessel prices in 2015. The 2014 season turned out to be a mirage, but just as this report series predicted fishermen would not see such a reversal in 2018, the foreseeable future continues to look good. Again, a lot can happen between now and next year, but early 2018 sales data suggests strong demand for Bristol Bay sockeye and processors are well capitalized after several good seasons.

DIFFERENCE IN EX-VESSEL VALUE & PRICE BY REGION

EX-VESSEL PRICE DIFFERENCES

Bristol Bay fishermen received an average base price of $1.26 for sockeye in 2018. This was 43 cents below the average for other Alaska sockeye; however, the price difference will shrink considerably once quality and production premiums are factored in to Bristol Bay sockeye prices. Revised 2017 data show a shrinking final price gap between Bristol Bay sockeye and those from other districts. This is somewhat remarkable, given that harvests in other areas were merely average and were very large in Bristol Bay in 2017. This data suggests that fish quality has increased in the Bay and this factor was reflected in more competitive prices paid by processors. Despite the progress, a sizable pricing gap remains. While Bristol Bay's uniquely abundant supply will always be a factor in pricing, sockeye prices in other areas do represent what is potentially possible for Bristol Bay fishermen.

TABLE 11

Ex-Vessel Price of Bristol Bay Sockeye versus Other Regions, 2012-2018P

Region	2012	2013	2014	2015	2016	2017	2018P*
Bristol Bay	**$1.18**	**$1.61**	**$1.35**	**$0.64**	**$0.96**	**$1.31**	**$1.26**
Prince William Sound	$1.82	$2.45	$2.42	$1.98	$2.33	$2.64	$2.71
Cook Inlet	$1.46	$2.18	$2.11	$1.54	$1.51	$1.84	$2.27
Kodiak	$1.47	$1.82	$1.83	$0.93	$1.28	$1.51	$1.56
Alaska Peninsula	$1.26	$1.66	$1.41	$0.75	$1.02	$1.19	$1.23
Other Alaska Sockeye Avg.	**$1.49**	**$1.96**	**$1.91**	**$1.17**	**$1.29**	**$1.52**	**$1.69**
Other Alaska Sockeye Avg. Difference vs. Bristol Bay	**$0.31**	**$0.35**	**$0.56**	**$0.53**	**$0.34**	**$0.21**	**$0.43**
BB Sockeye Harvest as Pct. of AK Sockeye Harvest	**56%**	**51%**	**65%**	**66%**	**71%**	**71%**	**83%**

**2018 prices are preliminary and do not include quality/production bonuses.*
Note: Prices are regional averages, including quality/production bonuses (2012-2017).
Source: ADF&G and Wink Research estimates.

Bristol Bay fishermen almost always receive the lowest sockeye prices of any major producing district. However, average prices have actually been lower in the Alaska Peninsula

the past couple years. Initially, the Alaska Department of Fish and Game had calculated the final, average ex-vessel price of Bristol Bay sockeye to be $1.19 in 2017, but has since revised that 2017 figure upwards to $1.31 to reflect the influx of additional premiums paid to fishermen on the heels of a productive season. The difference between base price and final average price in Bristol Bay has tended to be about 10 to 20 cents, but 2017 broke out of that range due to larger quality premiums, profit sharing, and other production bonuses.

Bristol Bay sockeye prices increased from an average base price of $1.02 last year to $1.26 per pound in 2018. The final 2017 price represented an increase of 29 cents over the base price. With higher base prices this year, it is not a given that the average price adjustment will be as high in 2017, but larger bonus structures will likely mean an adjustment of at least 20 cents on average (remember not every fisherman is paid the same bonuses). Also, these prices include payments to setnetters. Therefore, a conservative estimate of final price would be in the neighborhood of $1.50 per pound. Post season adjustments to sockeye from other areas tend to be smaller outside of western Alaska. If the final price were to reach $1.50 in 2018, it would generally represent a continued tightening of price spreads between Bristol Bay and other regions. Again, this suggests that fish quality is improving although smaller fish sizes in other regions may have played a role in 2018 as well.

EX-VESSEL VOLUME & VALUE DIFFERENCES

Sockeye prices in any region are dictated by market factors but prices are 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 fared much better in the Bay over the past several years. Tables 12 and 13 summarize regional sockeye harvests and ex-vessel value for the past seven years. Outside of a down year in Area M in 2018, sockeye districts in the Bering Sea have increased harvest volume while those in the Gulf of Alaska have lost significant harvest volume. Lower harvest volumes in other areas have led to lower ex-vessel values for those fisheries as well. The diverging trends are striking, to put it mildly.

TABLE 12

Harvest Volume of Bristol Bay Sockeye versus Other Regions, 2012-2018P

In Millions of Pounds

Region	2012	2013	2014	2015	2016	2017	2018P
Pr. William Sound	24.8	14.2	19.5	17.3	10.4	8.0	6.0
Cook Inlet	22.2	17.7	15.8	15.0	15.0	11.9	5.7
Kodiak	12.4	14.8	17.0	15.0	10.6	12.9	9.3
Alaska Peninsula	16.4	17.3	19.1	33.3	33.8	40.3	19.4
Other AK Sockeye	**94.6**	**87.2**	**85.8**	**98.0**	**86.6**	**83.1**	**43.6**
Bristol Bay	**119.1**	**92.3**	**161.7**	**192.6**	**200.9**	**207.8**	**218.6**

Note: Figures for 2018 are preliminary. Figures do not sum because 'Other AK Sockeye' include additional areas not shown.
Source: ADF&G.

TABLE 13

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

In $Millions

Region	2012	2013	2014	2015	2016	2017	2018P
Pr. William Sound	$44.9	$34.7	$47.0	$34.8	$22.6	$21.2	$16.1
Cook Inlet	$32.4	$38.6	$33.3	$23.2	$23.4	$22.0	$13.0
Kodiak	$18.3	$27.2	$30.9	$13.9	$10.7	$19.5	$14.4
Alaska Peninsula	$20.7	$28.8	$26.7	$25.6	$24.2	$47.9	$23.9
Other AK Sockeye	**$137.8**	**$169.8**	**$161.8**	**$114.9**	**$150.0**	**$126.6**	**$73.7**
Bristol Bay	**$139.4**	**$148.4**	**$217.2**	**$122.7**	**$152.7**	**$272.2**	**$275.5**

Note: Figures for 2018 are preliminary. Figures do not sum because 'Other AK Sockeye' include additional areas not shown.
Source: ADF&G.

AVERAGE VALUE PER PERMIT

Perhaps the best way to measure the relative performance of sockeye fisheries is not through average ex-vessel prices or total volume/value landed, but the average value returned to each active permit. Average ex-vessel earnings per active permit show more parity than total values, due to the large fleet that fishes in Bristol Bay. In general, a similar trend appears in average earnings where fisheries facing the Bering Sea have fared better than those in the Gulf of Alaska. Average Bristol Bay earnings have shot up in recent years.

Average ex-vessel earnings data is not yet available for 2018; however, it is estimated that Bristol Bay drifters averaged approximately $193,500 per active permit while Bristol Bay setnetters averaged $73,000. Area M drifters saw their estimated average earnings decrease significantly in 2018 due to a smaller sockeye harvest.

TABLE 14
Average Ex-Vessel Earnings per Active Permit in Selected Alaska Fisheries, 2013-2018E

Region	2013	2014	2015	2016	2017	2018E
PWS (S03E)	$99,087	$104,137	$72,747	$71,239	$82,868	$69,500
Cook Inlet (S03H)	$50,868	$44,148	$20,158	$25,042	$26,354	$14,600
Kodiak (S04K)	$62,797	$61,369	$30,862	$32,602	$71,435	$49,400
Area M (S03M)	$109,085	$124,388	$83,066	$148,935	$192,962	$116,600
BB Drift (S03T)	**$85,686**	**$118,212**	**$67,761**	**$102,751**	**$147,822**	**$193,500**
BB Setnet (S04T)	**$28,212**	**$44,906**	**$22,846**	**$40,042**	**$55,740**	**$73,000**

Note: Figures for 2018 are estimations based on preliminary harvest data and an assumption that the number of permits fished did not change materially within each fishery from 2017.
Source: CFEC and authors estimations based on preliminary ADF&G ex-vessel data.

Table 15 shows the average permit price for sockeye-dependent gillnet fisheries in Alaska. Permit prices for 2018 generally represent sales made between May-September 2018, and may differ from current market conditions.

TABLE 15
Average Permit Values for Selected Alaska Fisheries, 2013-2018

Region	2013	2014	2015	2016	2017	2018
PWS (S03E)	$195,200	$224,100	$224,200	$155,400	$147,800	$158,600
Cook Inlet (S03H)	$83,100	$74,400	$63,500	$52,500	$42,400	$41,800
Kodiak (S04K)	$80,000	$77,500	$77,500	$77,500	$77,500	$67,500
Area M (S03M)	$81,800	$98,000	$119,500	$103,900	$122,000	$153,800
BB Drift (S03T)	**$100,400**	**$149,500**	**$148,200**	**$109,300**	**$133,300**	**$157,800**
BB Setnet (S04T)	**$39,900**	**$38,600**	**$38,500**	**$33,700**	**$38,700**	**$42,700**

Note: Permit values for 2018 generally reflect sales made between May and September.
Source: CFEC.

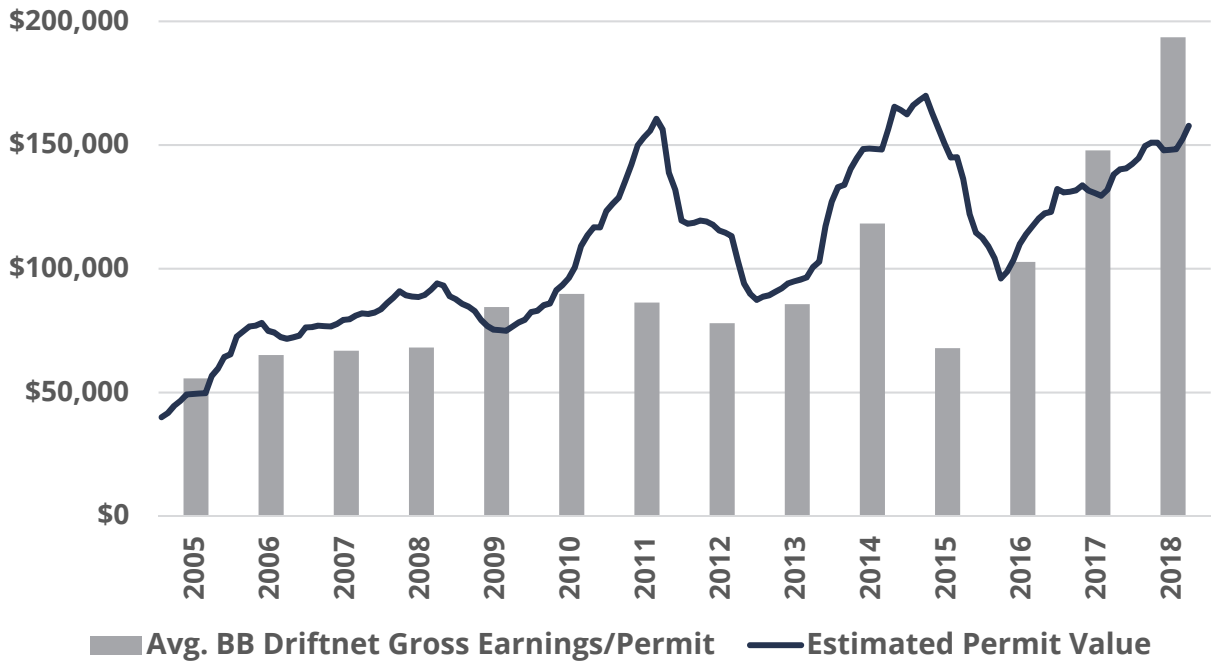
BRISTOL BAY DRIFTNET PERMIT ANALYSIS

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 $160,000. Permit prices are up 14 percent, year-over-year, representing an increase of $19,700 per permit.

A review of permits currently listed for sale suggests that the current market price for Bristol Bay driftnet permits is closer to $165,000. This marks an increase of $15,000 to $20,000 from permit values prior to the 2018 season. It was recently report by Alaska Fish Radio that fishermen in Cook Inlet and Southeast are looking to transition out of those areas into Bristol Bay, according to Doug Bowen who runs Alaska Boats and Permits. This could mean the number of permits fished in Bristol Bay could rise in the future.

FIGURE 6

Estimated Permit Value & Average Gross Earnings, 2005-2018



Note: Permit values are current through September 2018 but tend to lag actual market prices because they are based on sales from recent months. Average gross earnings for 2018 reflect preliminary estimates.
Source: CFEC and authors estimations.

Direct Marketer Spotlight: Matt Luck – F/V Meg J "Pride of Bristol Bay"

Direct marketers are ideal spokespeople for the fishery, as each potential customer they interact with gains a deeper appreciation of the product and the people who produce it. Unfortunately, there are not exact figures on how many fishermen have direct marketing businesses.[14] However, anecdotal information suggests that a significant number of Bristol Bay fishermen market fish directly in their own community. With fishermen from 41 different U.S. states owning commercial Bristol Bay salmon fishing permits, this is a sizable number of potential grassroot marketers. This chapter provides an interview of one such business.

Matt Luck aboard the F/V Meg J
Photo credit: Bob Waldrop.

Originally from New England, Matt Luck came to Alaska in 1976 and has been fishing in Bristol Bay since 1979. After raising a family in Cordova, he now spends the offseason in Idaho. Matt was kind enough to pull back the curtain on his direct marketing business for this special section of the *Fall 2018 Sockeye Market Report*. It is important to point out that this section is meant to inform fishermen about the experiences of one direct marketer and is not intended to be promotional in any sort of way.

Like many Bristol Bay fishermen residing in the Lower 48, Matt sells salmon directly to customers. Due to the unique intensity of the Bristol Bay salmon fishery, Luck sells his catch to Leader Creek Fisheries and buys back

[14] While the State of Alaska does require direct marketers who process fish aboard their vessel or sell fish directly to consumers to be licensed, fishermen who buy back product from processors are not required to obtain a direct marketer license.

product to sell during the offseason rather than attempting to process the fish himself.

Luck began doing direct sales in 2013. He markets vacuum packed frozen fillets and portions through his website (www.prideofbristolbay.com), buying clubs located in six different communities around the U.S., and also sells product to distributors. Luck's company is a relatively young business but the veteran fishermen has proven just as adept at finding customers as he is at finding schools of salmon, with a roster of over fifteen hundred customers and growing.

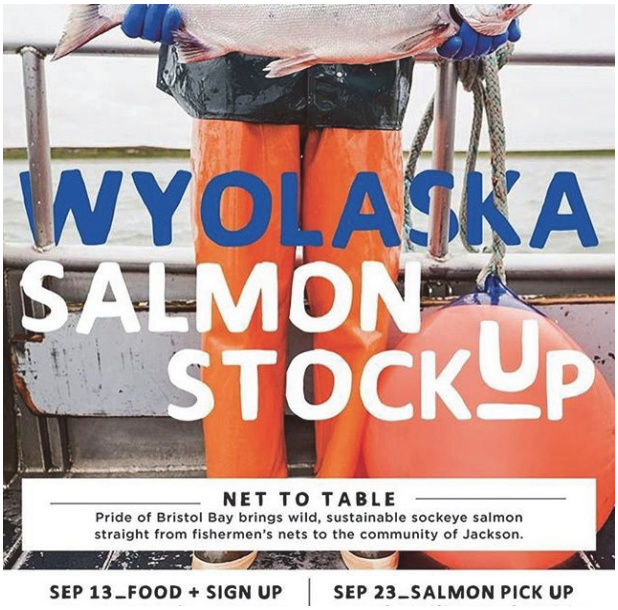
"This venture largely started out as a passion project to reach and educate consumers, but I also wanted to see if it was something that could be done profitably and in a scalable and replicable manner. There's a lot of additional work and cost, not to mention risk, but the results have been very encouraging. Basically, I've been able to develop this model into a profitable business," says Luck.

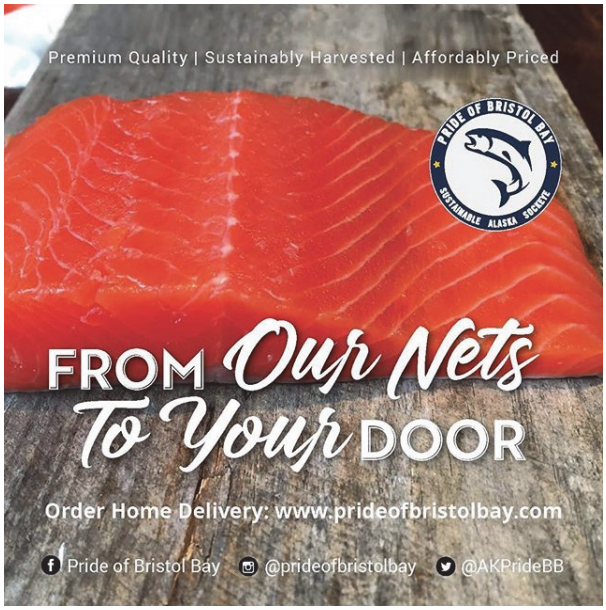
Sales growth has been impressive for Luck, who sold close to 100,000 pounds last year. However, growth comes at a cost. Matt estimates it costs about $30 to acquire each new customer, plus there were considerable upfront costs in developing the website, online ordering platform, and social media accounts.

Most successful direct marketing businesses are built on a roster of faithful, repeat customers, a commitment to providing them with high quality fish at a reasonable price, and word-of-mouth marketing. Luck sells 20-pound cases of fillets and portions on his website and contracts with a perishables fulfillment service to get product from warehouse to customers. He also uses a "buying club" approach, where a group of people place a deposit on a specified amount of product upfront and then pick it up (and pay for the balance of the order) at a predetermined time and place. Selling product in 20-pound cases and via the buying club approach allows him to lessen the sting of shipping costs, which are significant, especially for small volume orders.

Technology and shifting food trends were key factors in Luck's decision to try direct marketing. "There's a real potential with the growth of technology to supply seafood to a huge pool of consumers who want to have a connection to the producer," says Luck. Online sales are just the start. Home delivery services (e.g. Fresh Direct and Blue Apron) are eager to connect discerning consumers with niche food producers, providing a great opportunity for Bristol Bay sockeye salmon suppliers.

Like suppliers of all sizes, Luck uses marketing assets from BBRSDA (which can be accessed at www.bristolbaysockeye.org) to help sell his product, as well as assets purchased for his company. Mixing high quality food photos, recipes, and videos with company specific assets allows Luck and others to create a robust online presence at a lower cost.





Successful direct marketers are also good for the fishery as a whole because they are yet another form of market diversification. The more fishermen who sell product directly leaves less product which must be sold into other markets—making what is left more valuable (all things equal). Direct marketing also increases the amount of resource value which is retained by fishermen, in exchange for taking on the role of supply chain "middlemen."

Finally, Luck is a fierce advocate for sustainable fisheries management and development, having served on many boards and committees throughout the years (including BBRSDA). Matt puts his money where his mouth is by donating 10 percent of his company's net profit to the *Save Bristol Bay* program, which aims to preserve regional salmon habitat.

BBRSDA TOOLS FOR DIRECT MARKETERS

BBRSDA encourages any Bristol Bay fisherman who sells their catch directly to customers, or other sales agents to use a suite of sales tools provided by the organization at no charge. The only stipulation is that the product sold must be Bristol Bay salmon and it must be marketed as "Bristol Bay" product.

Direct marketers can benefit from the following tools by visiting our consumer-facing website (www.bristolbaysockeye.org):

- Bristol Bay Media Library with high quality photo and video assets
- Sales assets developed specifically for direct marketers
- Listings on the Bristol Bay Sockeye Suppliers Website
- Customized Bristol Bay Sockeye recipes

The Bristol Bay Sockeye Suppliers website bears special mention. BBRSDA is in the process of upgrading the website's capabilities through a partnership with SWAMC's MAKE (Manufacture Alaska Extension) program. The new site will allow potential customers to select the type of supplier that suits their needs (primary processor, distributor, direct marketer, or retailer). Even more exciting, the new site will allow individual consumers to locate direct marketers and retailers carrying Bristol Bay sockeye in their area. Consumers simply provide their zip code and the site will present them with a list of local supplier choices as well as those suppliers who offer online sales. Even better, our partnership with SWAMC will allow us to promote the new site to customers through social media and digital ads.

BBRSDA has developed an attractive brand for Bristol Bay sockeye salmon and we often receive inquiries from customers looking to buy product. This presents a challenge because it's often difficult to ascertain where they can find in their area. The new site will be able to direct them to appropriate suppliers and hopefully drive sales.

However, we need your help. If you are a direct marketer or anybody else who sells Bristol Bay sockeye salmon, please contact BBRSDA at info@bbrsda.com and let us know that you'd like to add your business to our Supplier page. This page can benefit larger suppliers as well, and we encourage processors, distributors, retailers, and restaurants to contact us so we can add them to our database and connect them to new customers.

APPENDIX

TABLE 16

First Wholesale and Ex-Vessel Sockeye Prices, 2010-2018

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	-
Jan-Apr 2018	$3.62	$3.88	$6.82	
May-Aug 2018	$3.97	$3.86	$7.32	$1.26

Source: ADOR (ASPR) & ADF&G.

BRISTOL BAY

Regional Seafood Development Association