

# 2020 BBRSDA Processor Survey

*Prepared for*

**Bristol Bay Regional Seafood  
Development Association**

May 2021



**Northern  
Economics**

Wisdom • Trust • Relevance • Innovation



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## Abbreviations

ADF&G	Alaska Department of Fish and Game
BBEDC	Bristol Bay Economic Development Corporation
BBRSDA	Bristol Bay Regional Seafood Development Association
COAR	Commercial Operator’s Annual Report
H&G	Head and Gut
MMlb	Million pounds
RSW	Refrigerated Sea Water

## Introduction and Summary Conclusions

The Bristol Bay Regional Seafood Development Association (BBRSDA) contracted with Northern Economics, Inc. to conduct a survey of processors who operated in the 2020 Bristol Bay salmon fishery. This report summarizes the results of the study and is the twelfth iteration of the Processor Survey Report.

As in prior surveys, the survey instrument consisted of a series of questions about processor operations in Bristol Bay. The 2020 survey captured raw product data, fleet information, ice production volumes, chilling methods, and respondents' opinions of quality practices and priorities within the fishery. The survey response rate remained consistent with what has been observed in prior years.

This report provides information from the 2020 survey along with information from previous surveys as well as historical data reported by ADF&G and other sources. In general, tables in this document will report information back 10 years, i.e., from 2011–2020, although there are a few exceptions. Figures provided in this report will generally provide information back through the entire 13-year history of the BBRDA processor survey, or back through all the years for which data for the particular issue are available. It is also noted that the authors of this report regularly refine and update information from past reports. One example is that rather than relying on preliminary data from ADF&G or other sources, we provide fishery-wide data that has been updated to reflect the best available information. Examples of this include the reporting of historic run sizes, harvests, and prices. To the extent that information is available, we use data from the most recently published ADF&G management reports and online data, rather than data reported during the season or immediately after the season.

The 2020 survey collected a sixth year of responses to a series of questions introduced in 2015 to collect data on the quality of chilled raw product and preferred chilling practices as well as a fourth year of responses to a question about floating practices that was added to the 2017 survey. The 2020 survey also collected a third year of responses to a question that asked for the proportion of processor purchases by fish grade. This question supplements the analysis by relating chilling practices and other handling methods to product quality.

The operational questions focused on processors' purchases of chilled raw product, but this year instead of asking processors about the distribution of their raw product purchases among the four major product forms (canned, head and gut [H&G] frozen, H&G fresh, and fillet) by percentage, the survey instead asked respondents to provide estimates of total pounds of a broader array products including both primary and ancillary products.<sup>1</sup> The 2020 analysis once again includes Commercial Operator Annual Report (COAR) data, which includes production and wholesale value by product, and was first added to this report in 2018. The COAR data confirms observations from the processor survey and also provides information on product value, which is not collected in the survey.

The 2020 Bristol Bay sockeye run, the fifth largest on record, was 45 percent above the average run over the last 20 years and 25 percent above the Alaska Department of Fish and Game (ADF&G) preseason forecast (ADF&G 2020). ADF&G (2020) estimates the total Bristol Bay salmon harvest was 201.2 million pounds (MMLb). This year's processor survey captured 92 percent of the ADF&G estimate as respondent processors reported processing 185.5 MMLb of raw (round weight) product from all sources (drift and set permits) in 2020.

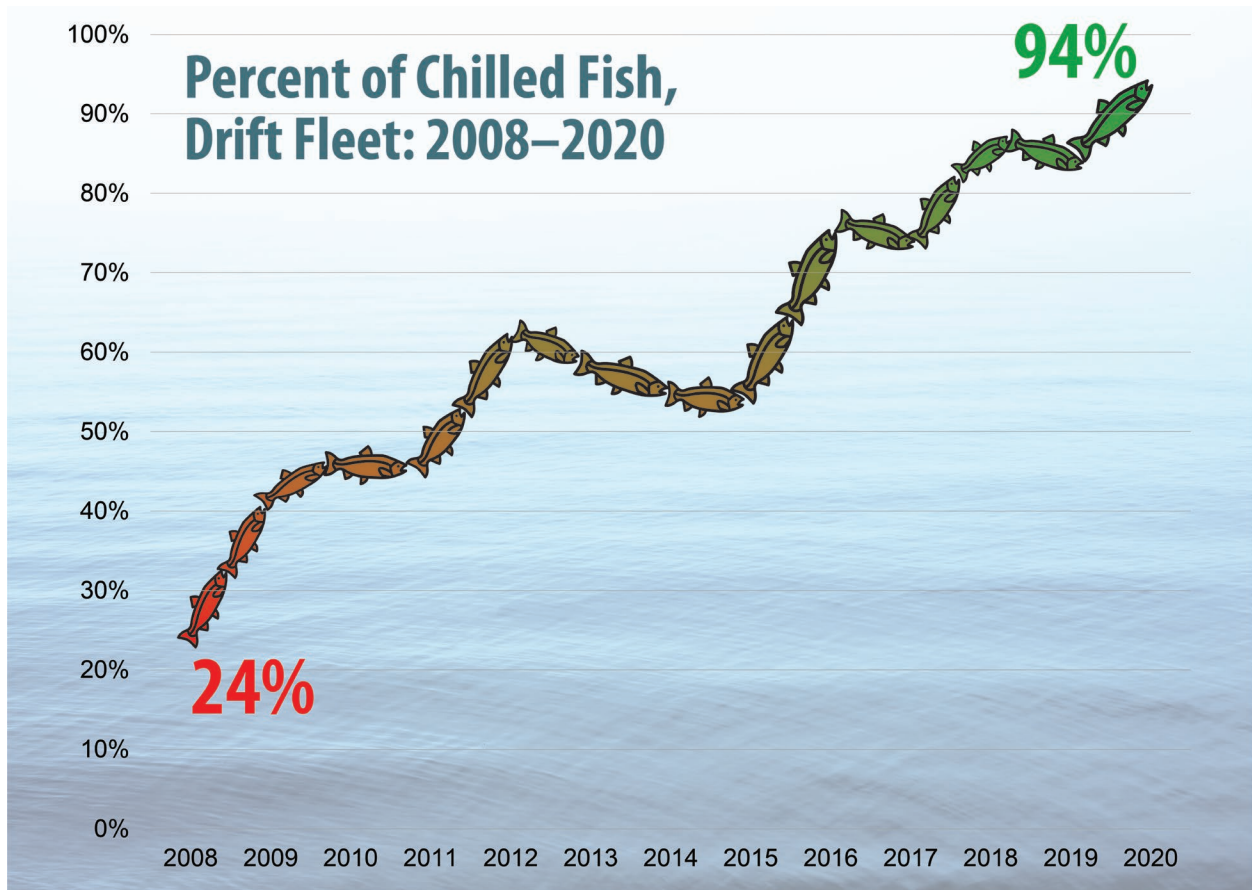
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<sup>1</sup> The full survey instrument is contained in an appendix to this report.

**This year’s key takeaways are:**

- In 2020 surveyed processors purchased 185.5 MMLb of raw product, down 21.6 MMLb from 2019’s 207.1 MMLb. Even though the total amount of chilled product purchased was slightly down in terms of weight, the percent of total catch chilled actually set a record high of 84.2 percent, an increase of 6.7 percent from 2019. Product chilled prior to delivery totaled 156.2 MMLb in the aggregate fishery, with 146.7 MMLb in the drift net fishery and 9.5 MMLb in the setnet fishery. The drift net fleet chilled the same amount of its catch in terms of pounds as in 2019, but because the catch was smaller, the percentage chilled increased by over 9 percent. Chilled fish purchased from setnetters fell by 4.4 MMLb, a 31 percent decline from 2019 levels.
- The 146.7 MMLb of drift fleet chilled product purchases ties with 2019 for the second highest volume recorded by the survey, surpassed only by the 2018 record of 151.6 MMLb of chilled product. Overall, 93.6 percent of drift fleet deliveries were chilled, representing nearly four times the percent of drift fleet chilled product purchases when the survey began in 2008 (Figure 1).
- With the largest portion of chilled product delivered yet, this year’s survey highlights the dramatic shift in chilling practices over the past 13 years with chilled purchases from the drift fleet growing from 24 percent in 2008<sup>2</sup> to almost 94 percent in 2020.

**Figure 1. Percent of Chilled Raw Product Purchased from the Drift Fleet**



Source: Northern Economics analysis

<sup>2</sup> In 2020, we corrected a spreadsheet error that erroneously estimated the 2008 chilled product percent to be 16%.



- The trend in the distribution of raw product flowing into each product form appears to have shifted in 2020. This may be the result of changes in the survey instrument,<sup>3</sup> but could also be related to issues with COVID and with a relatively large jump (from 1.4 percent in 2019 to 8.8 percent in 2020) in the amount of Bristol Bay salmon that was reported in the survey to have been transported outside of the Bay for primary processing. The results of the survey indicate that both canned and fillet production increased while fresh and frozen H&G production decreased.
- In 2020, refrigerated sea water (RSW) systems chilled 129.2 MMLb of fish, or 82.5 percent of the drift fleet’s total deliveries—the highest portion of RSW chilled fish recorded by the survey. Slush ice chilled 11.2 percent of total drift deliveries and the remaining 6.4 percent were dry (unchilled). When asked if there are any notable quality improvements gained from chilled floated fish (RSW) compared to chilled non-floated fish (slush ice), all but one of the 10 respondents stated that RSW fish is better or significantly better than fish chilled with slush ice.

---

<sup>3</sup> In 2020, the survey shifted from asking processors to report the portions of their round weight purchase going into each of four product categories (canned, H&G frozen, H&G fresh, and fillets) to a direct request of net-weight production volumes for both primary and ancillary product. The change in the survey was in part a response to large increases in the amount of “other products” reported by survey respondents in 2018 and 2019. However, the change to asking for primary product volumes requires that the analysis rely on product recovery rates to back-calculate round-weight equivalents, introducing a new source of potential error.

## Raw Product Purchases and Chilling

The combined raw product purchases (chilled and unchilled) from the set and drift net fleets for 2020 decreased from 2019's record high of 216.1 MMLb to 185.5 MMLb, a decline of 10 percent. (see Table 1). This decline in raw product purchases in 2020 disrupts the previous six-year trend of increasing harvests in Bristol Bay. Chilled raw product purchases decreased by 4.3 MMLb ( $\approx$  3 percent) while unchilled raw product purchases decreased by 17.2 MMLb (or 37 percent). In 2020, the portion of chilled product purchases out of total aggregate raw product was 84.2 percent, a 6.7 percent improvement over the 2019 level of 77.6 percent. The percent of unchilled purchases fell to 15.8 percent of total, the lowest percentage ever recorded by the survey.

**Table 1. Total Raw Product (Drift and Set) Purchases, 2011–2020**

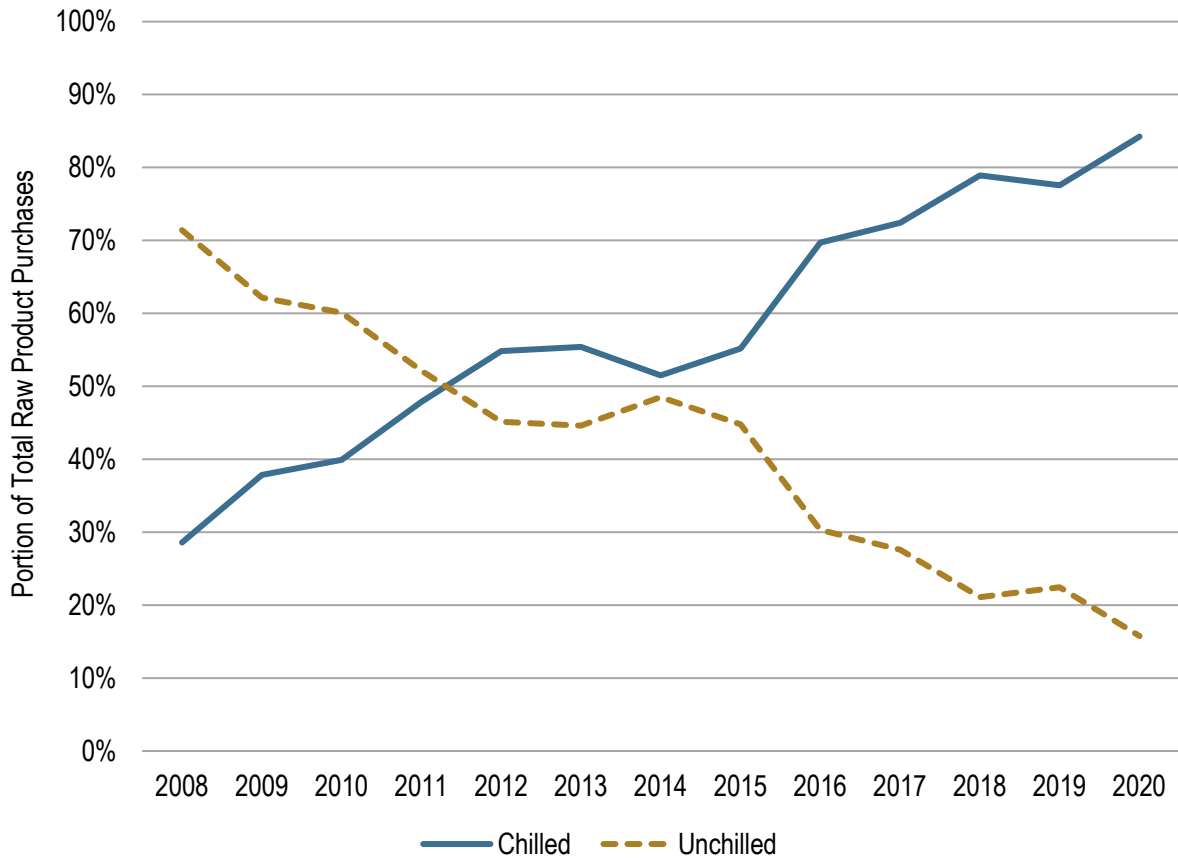
Catch	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year-over-Year Change	Average, 2011–2020
<b>Round Weight (MMLb)</b>												
Chilled	61.7	49.4	49.5	71.8	98.1	128.0	141.6	161.2	160.6	156.2	-4.3	112.9
Unchilled	67.3	40.7	39.9	67.7	79.6	55.7	54.0	43.1	46.5	29.2	-17.2	50.7
<b>Total</b>	<b>129.0</b>	<b>90.1</b>	<b>89.3</b>	<b>139.5</b>	<b>177.7</b>	<b>183.7</b>	<b>195.6</b>	<b>204.2</b>	<b>207.1</b>	<b>185.5</b>	<b>-21.6</b>	<b>163.6</b>
<b>Percent of Round Weight</b>												
Chilled	47.9%	54.9%	55.4%	51.5%	55.2%	69.7%	72.4%	78.9%	77.6%	84.2%	6.7%	66.6%
Unchilled	52.1%	45.1%	44.6%	48.5%	44.8%	30.3%	27.6%	21.1%	22.4%	15.8%	-6.7%	33.4%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>N/A</b>	<b>N/A</b>

Note: Column totals may not sum due to rounding.

Source: Northern Economics analysis

Figure 2 displays the portion of the total raw product purchases that were chilled or unchilled from the set and drift net fleets from 2008 through 2020. Apart from 2014 and 2019, the survey has recorded year-over-year increases in the percentage of chilled raw product purchases each year, and a corresponding decrease in the percentage of unchilled raw product purchases.

Figure 2. Total Chilled and Unchilled Product, 2008–2020

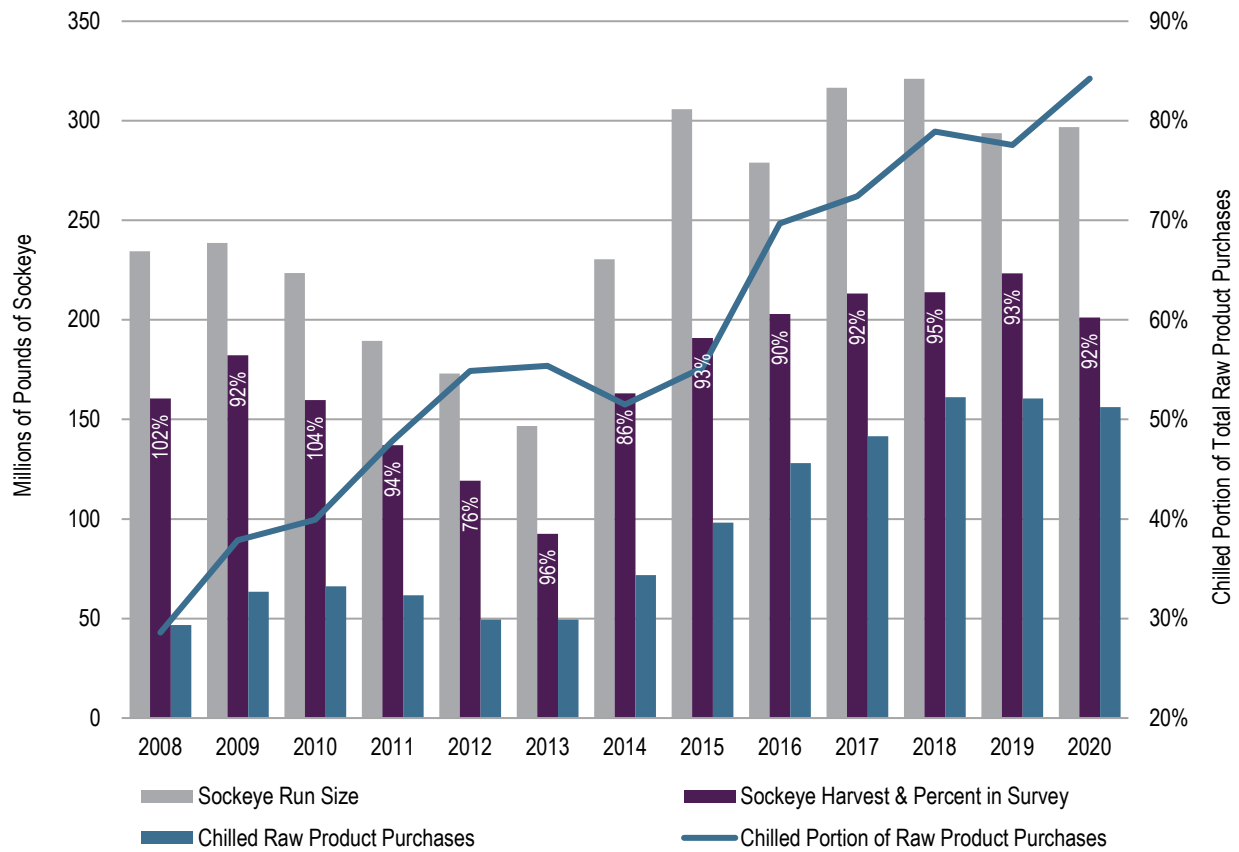


Source: Northern Economics analysis

Figure 3 displays the percentage of chilled raw product purchases recorded by the survey, the Bristol Bay sockeye salmon run size, and the Bristol Bay sockeye salmon commercial harvest from 2008 through 2020. In 2014, a significant increase in run size, relatively high base prices compared to bonuses, and compressed run timing are thought to have caused the decrease in the portion of chilled raw product purchases recorded by the survey that year. Since then, it appears that the region has been able to adjust to the larger run sizes. This suggests that the size of the run may have less of an impact on the portion of raw product purchases that are chilled.

In 2020, the sockeye run size increased relative to 2019, but the commercial harvest declined by 10 percent. The lower harvest levels in 2020 may have contributed, at least partly, to the increase in the portion of chilled raw product purchases recorded in this year's survey. It is also possible that other variables, such as run timing or duration and intensity (which vary among fishing districts), have significant impacts on the chilling practices in a given year within the region.

**Figure 3. Chilled Raw Product Purchases, Bristol Bay Sockeye Inshore Run Size, and Bristol Bay Sockeye Commercial Harvest, 2008–2020**



Note: For 2019 & 2020, the Bristol Bay sockeye run size and harvests are derived from the ADF&G Season Summaries (2020) by multiplying the number of fish in the Bristol Bay sockeye run by the sockeye average weight for the year. For 2011–2018, run size and harvest are taken from the 2018 Bristol Bay Area Annual Management Report (ADF&G, 2019). Chilled raw product purchases and the chilled portion of raw product purchases are recorded by the processor survey and are also represented in Table 1.

Table 2 displays the raw product purchases from the drift fleet alone (excluding setnet permit holders). Total purchases of raw product (chilled and unchilled) from the drift fleet declined by 17 MMLb, or about 10 percent, in 2020. Chilled raw product purchases from the drift fleet were unchanged from 2019 to 2020, but the amount of unchilled raw product declined by 17.1 MMLb in 2020. The overall portion of chilled fish purchases from the drift fleet increased by 10 percentage points from 84 percent in 2019 to 94 percent in 2020.

**Table 2. Drift Fleet Raw Product Purchases, 2011–2020**

Catch	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year-over-Year Change	Average, 2011–2020
<b>Round Weight (MMlb)</b>												
Chilled	50.7	45.1	45.4	64.3	80.3	118.1	124.6	151.6	146.7	146.7	0.0	102.5
Unchilled	59.4	27.4	32.9	52.0	66.2	38.6	43.8	24.1	27.0	10.0	-17.1	35.8
<b>Total</b>	<b>110.1</b>	<b>72.5</b>	<b>78.4</b>	<b>116.3</b>	<b>146.5</b>	<b>156.7</b>	<b>168.4</b>	<b>175.7</b>	<b>173.7</b>	<b>156.7</b>	<b>-17.0</b>	<b>138.3</b>
<b>Percent of Round Weight</b>												
Chilled	46.0%	62.2%	58.0%	55.3%	54.8%	75.3%	74.0%	86.3%	84.4%	93.6%	9.2%	71.6%
Unchilled	54.0%	37.8%	42.0%	44.7%	45.2%	24.7%	26.0%	13.7%	15.6%	6.4%	-9.2%	28.4%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>N/A</b>	<b>N/A</b>

Note: Column totals may not sum due to rounding.

Source: Northern Economics analysis

Table 3 and Table 4 show that while chilled raw product purchases from the drift fleet was unchanged, purchases of chilled fish from setnetters declined by 31 percent to 9.6 MMlb in 2020. Typically, setnetters catch around 18 percent of Bristol Bay’s sockeye harvest. Although the composition of this processor survey has not changed significantly through time, it does not include all or even most setnet fish caught in recent years (2018–2020). The “missing” volume is very likely bought and processed by processors which focus more predominantly on setnet salmon and have not historically been included in this survey.

**Table 3. Driftnet and Setnet Chilled Product Purchases, 2011–2020**

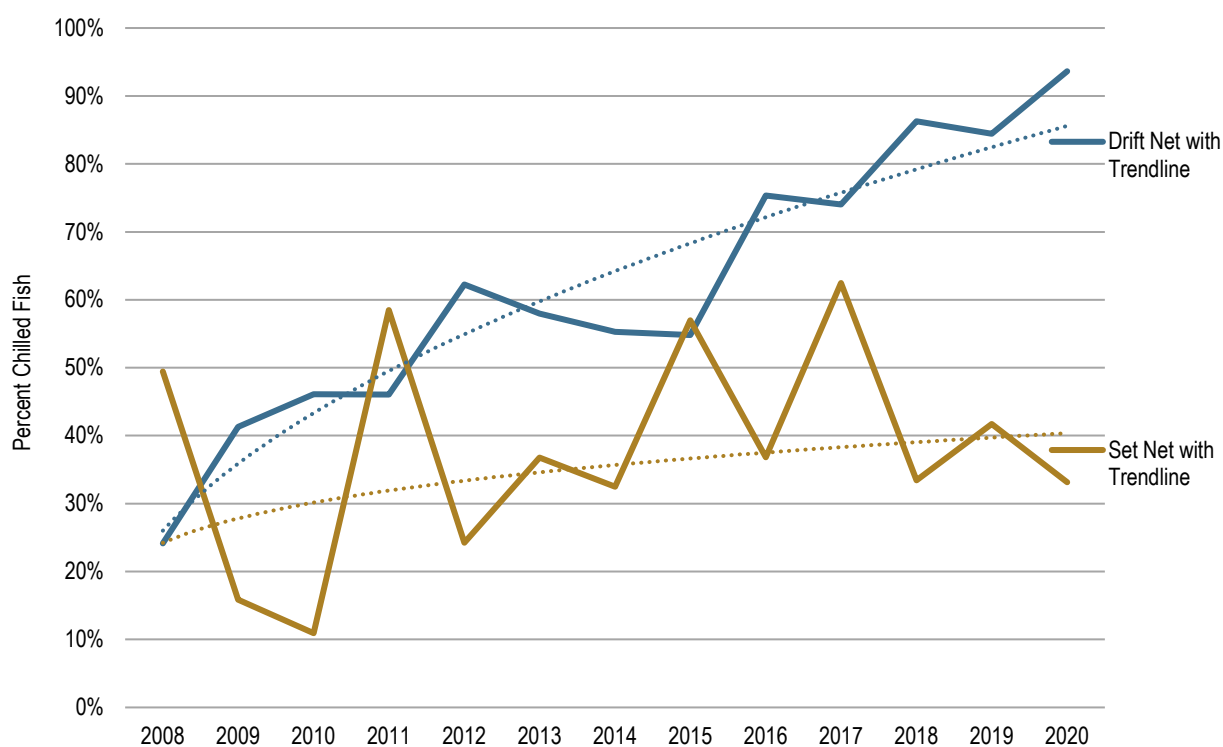
Catch	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year-over-Year Change	Average, 2011–2020
Chilled Driftnet MMlb	50.7	45.1	45.4	64.3	80.3	118.1	124.6	151.6	146.7	146.7	0.0	97.4
Chilled Setnet MMlb	11.0	4.2	4.0	7.6	17.8	9.9	17.0	9.5	13.9	9.6	-4.4	10.5
Setnet Portion (%)	18%	9%	8%	11%	18%	8%	12%	6%	9%	6%	-3%	10%

Source: Northern Economics analysis

Figure 4 displays the chilled portions of the raw product purchases from the drift fleet between 2008 and 2020 with a trendline (represented by the dotted line). During the early years of this survey, the portion of chilled drift net purchase consistently increased, but in 2013 and 2014 the trend reversed. Since 2015, the drift fleet has returned to its initial upward trend. In 2020 for the first time over 90 percent of the drift-fleet landing were chilled.

Percentages of setnet landings that are delivered chilled have bounced up and down considerably over the years in which the survey has been conducted. While overall there appears to be an upward trend in chilling by setnet permit holders, the apparently upward trend is mostly an artifact of the low chilling percentages in 2009 and 2010. If the trendline estimation began in 2011, it would show a slightly downward trend ranging from 42 percent declining to 39 percent in 2020.

Figure 4. Drift Fleet and Setnet Chilled Deliveries with Trend Lines, 2009–2020



Source: Northern Economics analysis

An incentive that is likely influencing the drift fleet’s chilling practices is ex-vessel price bonuses offered by processors. The bonuses can include quality premiums like chilling, bleeding, and mat bonuses; production bonuses; and retro-payments. These incentives reinforce the importance and value placed on high quality raw product purchases, which in turn allow processors the flexibility to direct raw product to the most profitable product forms. Permit holders and processors appear to be collaborating to ensure that all the stakeholders in the system (i.e., permit holders, processors, the community, and state government) maximize the value of the fishery, aligning with BBRSDA’s stated mission.

Table 4 shows the range of chilling bonuses that were offered each year, as well as the differences between average base and final prices received by Bristol Bay fishermen. The range of chilling bonuses during the fishing year is taken from Bristol Bay Fishermen’s Association (BBFA) newsletters (BBFA 2020). Chilling bonus have ranged from 7 to 22 percent of the base prices. The base prices shown in the table are taken from ADFG Season Summary data, published at the end of the fishing season (ADF&G 2020). The final prices for the years 2008–2019 are taken from COAR Buying data (ADFG, 2021b) and in theory report the final prices after all bonuses have been paid. Note that the final price for 2020 is a preliminary estimate by Northern Economics using the BBFA bonus and the price/lb from the ADF&G Season Summary.

Nominal differences between the average final and base prices account for all bonuses, including those which were retroactively paid to fishermen after adjustments at the end of the season. The largest difference to date was 34 cents in 2018. Since 2015, bonuses have been 21–22 percent of the base prices with the exception that in 2019 it was only 12 percent of the base price.

**Table 4. Bristol Bay Ex-Vessel Sockeye Salmon Prices and Chilling Bonuses (2008–2020)**

Year	Chilling Bonus Range (\$)	Base Price \$/lb	Final Price \$/lb	Bonus (\$Final – \$Base)	Bonus as % of Base Price
2008	\$0.10–\$0.13	\$0.69	\$0.75	\$0.06	8%
2009	\$0.10–\$0.10	\$0.70	\$0.80	\$0.10	13%
2010	\$0.10–\$0.16	\$0.95	\$1.07	\$0.12	11%
2011	\$0.12–\$0.15	\$1.00	\$1.17	\$0.17	15%
2012	\$0.15–\$0.15	\$1.00	\$1.18	\$0.18	15%
2013	\$0.15–\$0.15	\$1.50	\$1.61	\$0.11	7%
2014	\$0.10–\$0.15	\$1.20	\$1.35	\$0.15	11%
2015	\$0.15–\$0.15	\$0.50	\$0.64	\$0.14	22%
2016	\$0.15–\$0.25	\$0.76	\$0.96	\$0.20	21%
2017	\$0.15–\$0.20	\$1.02	\$1.31	\$0.29	22%
2018	\$0.10–\$0.23	\$1.26	\$1.60	\$0.34	21%
2019	\$0.15–\$0.25	\$1.35	\$1.54	\$0.19	12%
2020	\$0.05–\$0.30	\$0.70	\$0.89	\$0.19	22%
<b>Data Source:</b>	*BBFA Newsletters, 2008–2020	**ADFG 2008–2020 Season Summaries	***ADFG Ex-Vessel Price data	Calculation	Calculation

Note: None of the prices or bonuses in the table have been adjusted for inflation. For 2020, the last three columns “Final Price”, “Bonus” and “Bonus as % of Base Price” are estimated by Northern Economics.

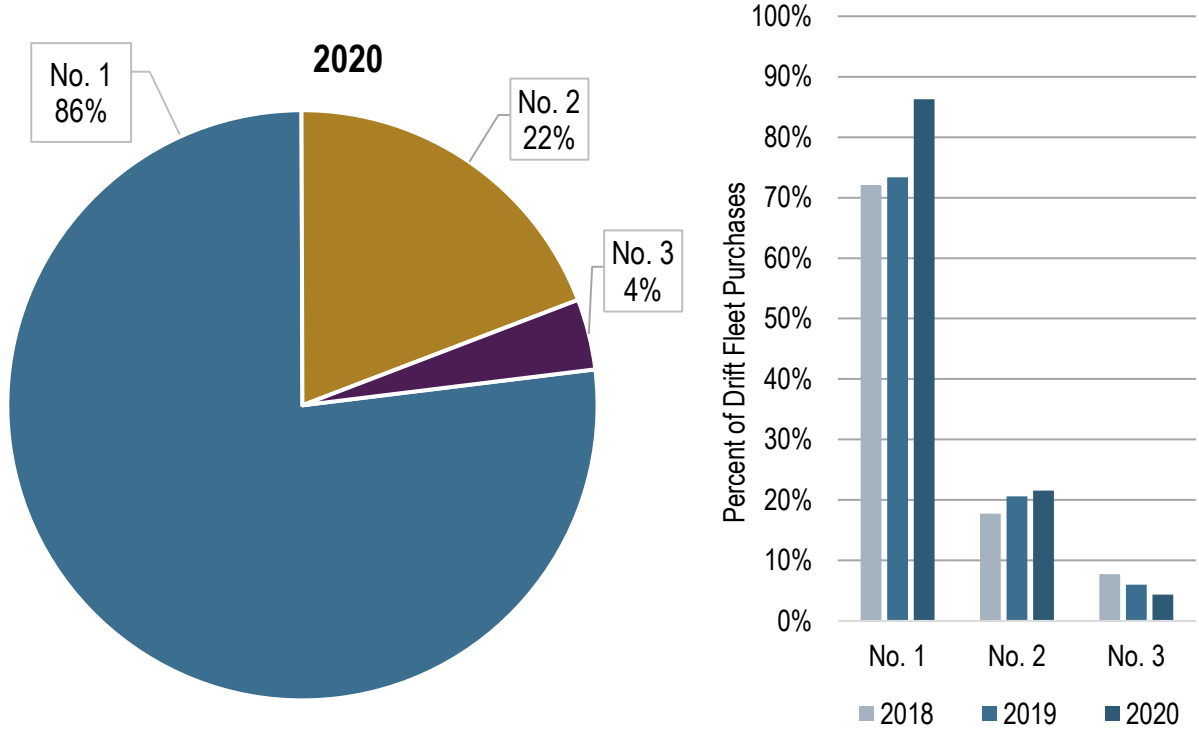
Sources: \*Bristol Bay Fishermen’s Association (2020) \*\*ADF&G (2020), \*\*\*ADF&G (2021b) for 2008–2019 prices and Northern Economics for 2020 price,

Since 2018, a question about the quality of fish purchased in Bristol Bay has been included in the survey. Respondents are asked to estimate their proportional purchases of number 1, 2, 3, and “other” grade fish. Number 1 quality grade in Bristol Bay includes the Alaska Seafood Marketing Institute’s “Premium Grade” and “Grade A” salmon categories, number 2 quality grade is the “Grade B” category, and number 3 quality grade is the “Grade C” category (Buckley 2017; ASMI 2015). In 2020, number 1 grade fish made up most of the purchases at 86 percent, followed by number 2 grade fish at 22 percent (Figure 5). The 2020 purchases represent a noticeable increase in product quality from the 2019 survey, which reported 73.4 percent number 1 grade fish and 20.6 percent number 2 grade fish. The portion of Number 3 grade fish decreased from 6.0 percent in 2019 to 4.0 percent in 2020. There were no “other” grade fish reported in 2020 or in 2019.

Processors were also asked to provide an estimate of the hypothetical revenue increases that could result if 100 percent of the fish were considered to be Number 1s. In 2020 six of the ten processors provided responses indicating that total revenue could increase from between 5 to 30 percent. Processors were also asked to indicate why they think that Number 3s are occurring and how the percentage of Number 3 could be reduced: The list below summarize several recurring themes:

- Mesh sizes have decreased resulting in more net marks.
- Pumping and rough handling of fish is adding to counts of number 3 fish.
- There will always be Number 3 fish, seals will continue to bite, and deliveries will continue to be delayed.
- More icing infrastructure would help.
- Continue to disseminate information to harvesters about the benefits of quality fish.

Figure 5. Proportion of Raw Product Purchases by Grade, 2018–2020



Source: Northern Economics analysis



## Finished Product Forms

Historical sockeye salmon production and revenue data are available by request through the Commercial Operator's Annual Reports (COAR) database maintained by ADF&G. While our survey captures a detailed sample of the activity in the fishery, the COAR data represent total production over all Bristol Bay processors for a longer time period and provide validity to the survey estimates. COAR data also provide revenue information for products and facilitates forecast for revenues of production reported in the current year survey. Collection of COAR data by ADF&G from processors occurs in the spring, so COAR data will always lag one year behind the BBRSDA Survey. From this perspective, the survey provides a one-year forecast of industry trends not yet available in public data.

In 2020, the survey used a different strategy to assess the production of products. Rather than asking respondents to indicate the percentage of total round weight used to produce each of the four primary products—1) canned, 2) H&G frozen, 3) H&G fresh, and 4) fillets—the survey instead asked processors to report the total pounds produced of these product categories plus six additional categories: 5) dressed, 6) whole, 7) mince, 8) meal, 9) oil, and 10) roe. A primary driver of the change was an attempt to understand the products that were leading increases seen in COAR data in the “Other Products” category. Table 5 summarizes 2011–2019 COAR data in terms of net-weight product pound (millions) and shows the forecast<sup>4</sup> of production by product from the 2020 survey. Figure 6 on the following page provides a longer time series.

The forecast based on the 2020 survey indicates an increase of  $\approx 25$  percent of canned/retort products relative to canned/retort products reported in the COAR data for 2018 and 2019. The forecast also indicates a 41 percent decline in H&G (fresh and frozen) relative to actual COAR data totals 2018 and 2019. Note that in 2020, the survey indicates that  $\approx 16.5$  MMLb of raw fish was transported out of Bristol Bay before processing—this is 13.5 MMLb higher than the amount shipped out of Bristol Bay in 2019.

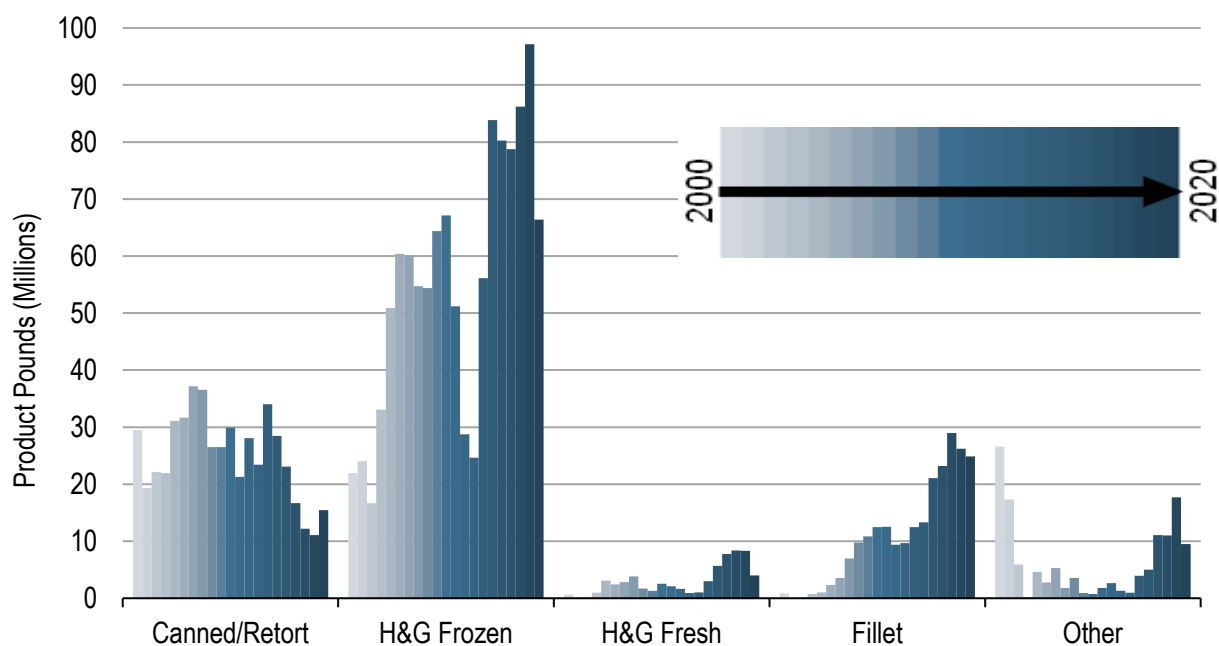
**Table 5. Processed Product Pounds from Bristol Bay Production, 2011–2020**

Product Form	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 Forecast	Year-over-Year Change	Average, 2011–2020
<b>Product Weight (MMlb)</b>												
Canned	21.3	28.1	23.4	34.0	28.4	23.1	16.7	12.2	11.1	15.6	4.53	21.4
H&G Frozen	51.2	28.7	24.7	56.1	83.9	80.2	78.7	86.2	97.1	67.0	-30.10	65.4
H&G Fresh	2.1	1.6	0.9	1.0	3.0	5.7	7.8	8.4	8.3	4.1	-4.24	4.3
Fillet	12.5	9.4	9.7	12.5	13.3	21.0	23.2	29.0	26.2	25.1	-1.14	18.2
Roe	3.2	2.5	2.3	3.2	4.7	5.5	5.1	5.5	5.2	4.6	-0.57	4.2
Other	1.8	2.6	1.3	1.0	4.0	5.0	11.1	11.0	17.7	4.9	-12.72	6.0
<b>Total</b>	<b>92.1</b>	<b>72.9</b>	<b>62.3</b>	<b>107.8</b>	<b>137.3</b>	<b>140.6</b>	<b>142.6</b>	<b>152.2</b>	<b>165.6</b>	<b>121.4</b>	<b>-44.24</b>	<b>119.5</b>

*Notes: Other includes ancillary products such as trim, meal, and oil, and may possibly include some minor primary products such as dressed, head-on fish. Fish purchased in Bristol Bay but shipped out the bay for primary processing are not included. The 2020 forecast relies on data reported in the 2020 survey as well as data from surveys from 2017–2019.*

*Sources: ADF&G (2020), ADF&G (2021a), DCCED (2020) and Northern Economics analysis.*

<sup>4</sup> The forecast of 2020 net weight production accounts for missing data (two respondents did not complete this section of the survey). We used product mix percentages from 2017–2018 for the specific processors that did not complete this section of the survey. The forecast also takes into account the survey-reported amount of raw-fish that was shipped out of Bristol Bay before processing and the survey-reported total raw fish purchases as a percent of estimated total harvest in Bristol Bay.

**Figure 6. Bristol Bay Commercial Operator Sockeye Salmon Annual Net Weight Production by Form, 2000–2020**

Note. In this figure “Other” includes primary products such as whole and dressed head-on fish, as well as ancillary products such as roe, fillet trim, meal, and oil.

Sources: Data for 2020 reflect survey data and estimates from Northern Economics. Data from 2000–2019 reflect COAR data (ADF&G, 2021a).

Table 6 summarizes COAR data from 2011–2019 along with the 2020 forecast based on the survey of wholesale production values. The 2020 forecast—which assumes product prices for 2020 are equal to product prices in 2019—indicated a decline in processed product revenue of \$128 million, an 18 percent year-over-year percentage change. A large portion of this decline is certainly related to much higher levels of raw fish that were shipped out the Bay before primary processing. As with the product pounds forecast, revenues for H&G fish decline and forecast revenues for canned/retort products are expected to increase. Figure 7, which follows the table, provides a 20-year summary of wholesale revenues by product from COAR Data (ADF&G 2021a) augmented with the 2020 forecast.

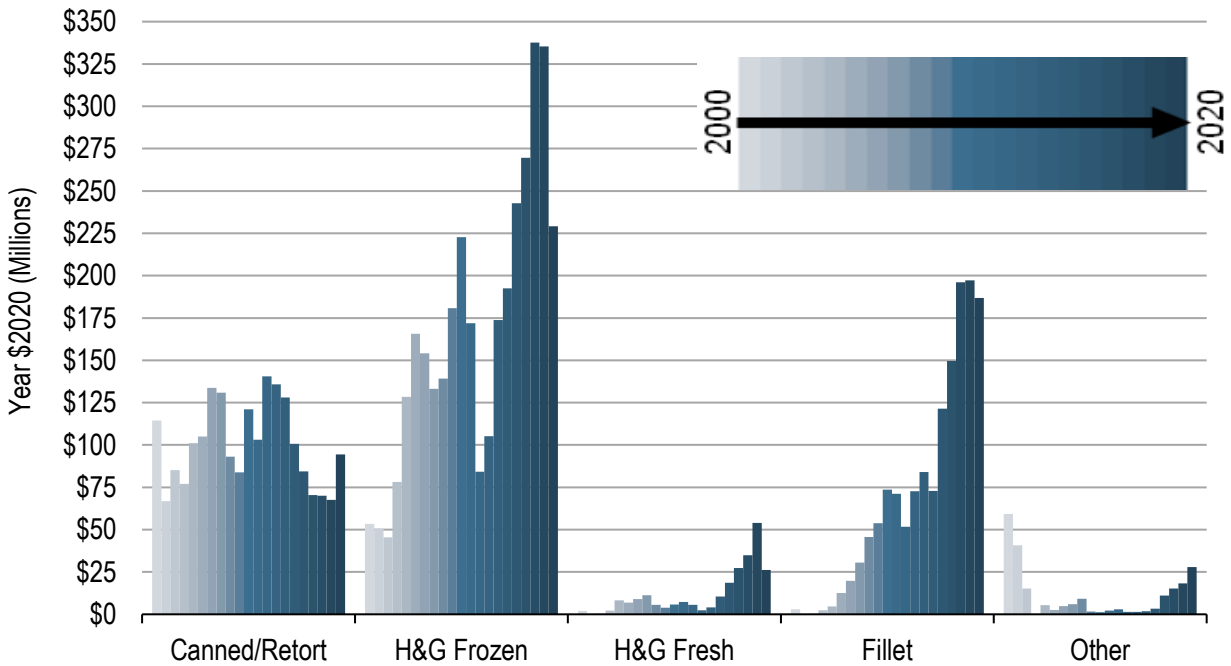
**Table 6. Processed Product Pounds and Wholesale Revenue from Bristol Bay Production, 2011–2020**

Product Form	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 Forecast	Year-over-Year Change	Average, 2011–2020
<b>First Wholesale Product Revenue (2020\$, Millions)</b>												
Canned	\$103	\$141	\$136	\$128	\$101	\$84	\$70	\$70	\$68	\$95	\$28	\$100
H&G Frozen	\$172	\$84	\$105	\$174	\$192	\$243	\$270	\$338	\$335	\$231	-\$104	\$214
H&G Fresh	\$7	\$6	\$2	\$4	\$10	\$19	\$27	\$35	\$54	\$26	-\$28	\$19
Fillet	\$71	\$52	\$73	\$84	\$73	\$121	\$150	\$196	\$197	\$189	-\$9	\$121
Roe	\$20	\$20	\$21	\$19	\$18	\$30	\$35	\$44	\$26	\$23	-\$3	\$26
Other	\$2	\$3	\$2	\$2	\$2	\$3	\$11	\$15	\$18	\$5	-\$13	\$6
<b>Total</b>	<b>\$376</b>	<b>\$305</b>	<b>\$338</b>	<b>\$411</b>	<b>\$396</b>	<b>\$501</b>	<b>\$563</b>	<b>\$697</b>	<b>\$699</b>	<b>\$570</b>	<b>-\$128</b>	<b>\$486</b>

Notes: Other includes ancillary products such as trim, meal, and oil, and may possibly include some minor primary products such as dressed, head-on fish. Fish purchased in Bristol Bay but shipped out the bay for primary processing are not included. Forecast for 2020 from Northern Economics analysis of returned surveys assumes product prices from 2019.

Sources: ADF&G (2020), ADF&G (2021a) and Northern Economics analysis.

Figure 7. Bristol Bay Commercial Operator Sockeye Salmon Wholesale Values by Product Form, 2000–2020



Note: Data for 2020 reflect survey data and estimates from Northern Economics.

Source: ADF&G (2020), ADF&G (2021a) and Northern Economics analysis.

Table 7 provides estimates of the percentage of total round weight purchases processed within Bristol Bay by primary product forms for 2011–2020 along with an estimate of the percent of raw fish purchases that were transported out of Bristol Bay for processing. Figure 8 shows estimates back through 2008. The percentages in the table and the figure through 2019 are based directly on survey data, while the 2020 estimates are forecasts that rely on back-calculations of round-weights derived using product pounds reported in the survey and product recovery rates for salmon products (DCCED, 2020). The table and figure also include the percentage of raw fish purchases from survey respondents that were shipped out of the Bay before any primary processing occurred. There are noticeable changes that go against recent trends:

- 1) Raw fish processed into cans appears to have increased for the first time since 2012.
- 2) Raw fish processed into H&G products appears to have decreased to levels not seen since 2014.
- 3) Raw fish processed into fillets appears to have jumped to new highs.

It is important to reiterate that there was a methodological change in 2020. Estimates of the percentages going into each product form were estimated for 2020 rather than reported directly by processors. The use of product recovery rates if they are off by a few percentage points could very easily account for much of the year-over-year changes.

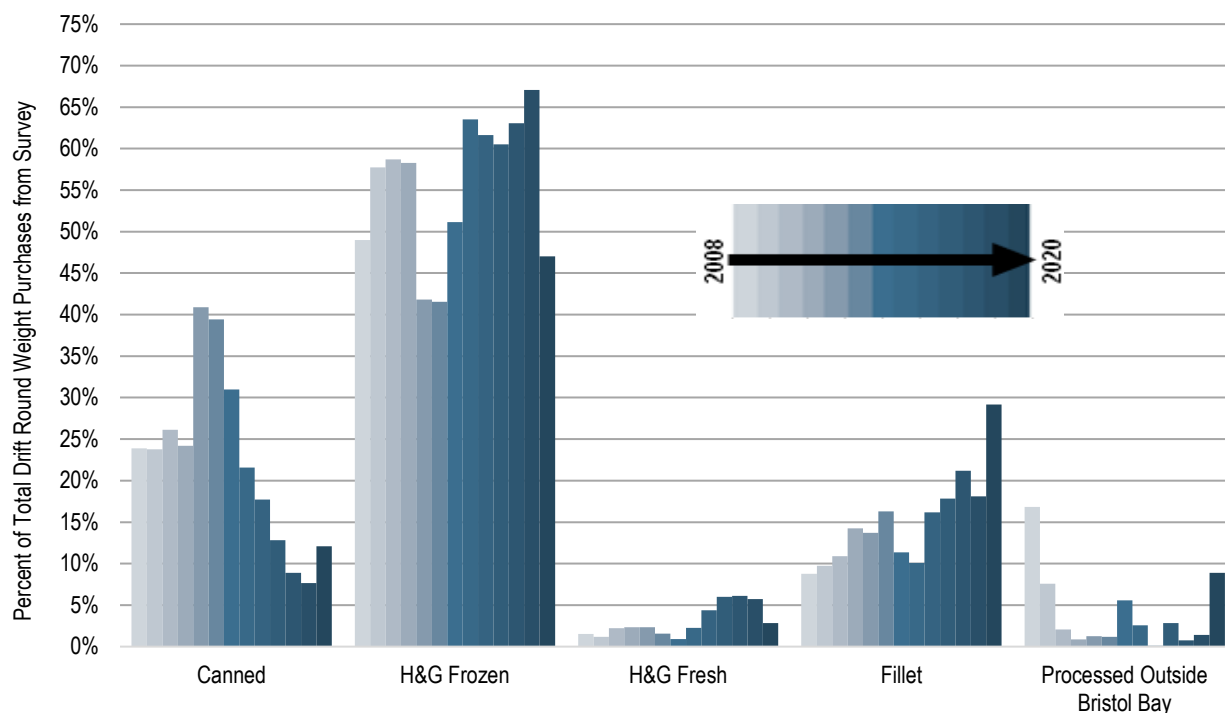
**Table 7. Total Raw Product Consumed by First Wholesale Product Form, 2011–2020**

Product Form	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 Forecast	Year-over-Year Change	Average, 2011–2020
<b>Percent of Total Round Weight Purchased</b>												
Canned	24%	41%	39%	31%	22%	18%	13%	9%	8%	13%	5.5%	22%
H&G Frozen	58%	42%	42%	51%	64%	62%	61%	63%	68%	52%	-16.4%	57%
H&G Fresh	2%	2%	2%	1%	2%	4%	6%	6%	6%	3%	-2.7%	4%
Fillet	14%	14%	16%	11%	10%	16%	18%	21%	18%	32%	13.6%	17%
Processed outside of Bristol Bay	1%	1%	1%	6%	3%	0%	3%	1%	1%	9%	7.5%	2.5%
<b>Total</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	NA	100%

Notes: Other includes ancillary products such as trim, meal, and oil, and may possibly include some minor primary products such as dressed, head-on fish. Fish purchased in Bristol Bay but shipped out the bay for primary processing are not included. Forecast for 2020 from Northern Economics analysis of returned surveys assumes product prices from 2019.

Sources: ADF&G (2020), ADF&G (2021a), DCCED (2020), Northern Economics analysis

**Figure 8. Raw Product Forms of Product Processed in Bristol Bay, 2008–2020**



Notes: Percentages for 2020 and amounts processed outside of Bristol Bay are from the BBRSDA survey. Percentages for 2008–2019 are adjusted from ADF&G COAR data to account for purchases transported outside of Bristol Bay, as reported in the survey.

Sources: ADF&G (2020), ADF&G (2021a), DCCED (2020), Northern Economics analysis

## Product Chilled Prior to Delivery

As in prior years, the 2020 survey asked processors about the use of RSW and slush ice systems within the drift fleet. RSW and slush ice systems were used to chill an estimated 146.7 MMlb of raw product in 2020, tied with 2019 for the second largest volume of chilled raw product recorded by the survey and only 4.9 MMlb below the record high in 2018 (see Table 8). The majority of raw product in 2020, 82 percent, was chilled using RSW systems and 11 percent was chilled using slush ice. The remaining 6 percent was unchilled.

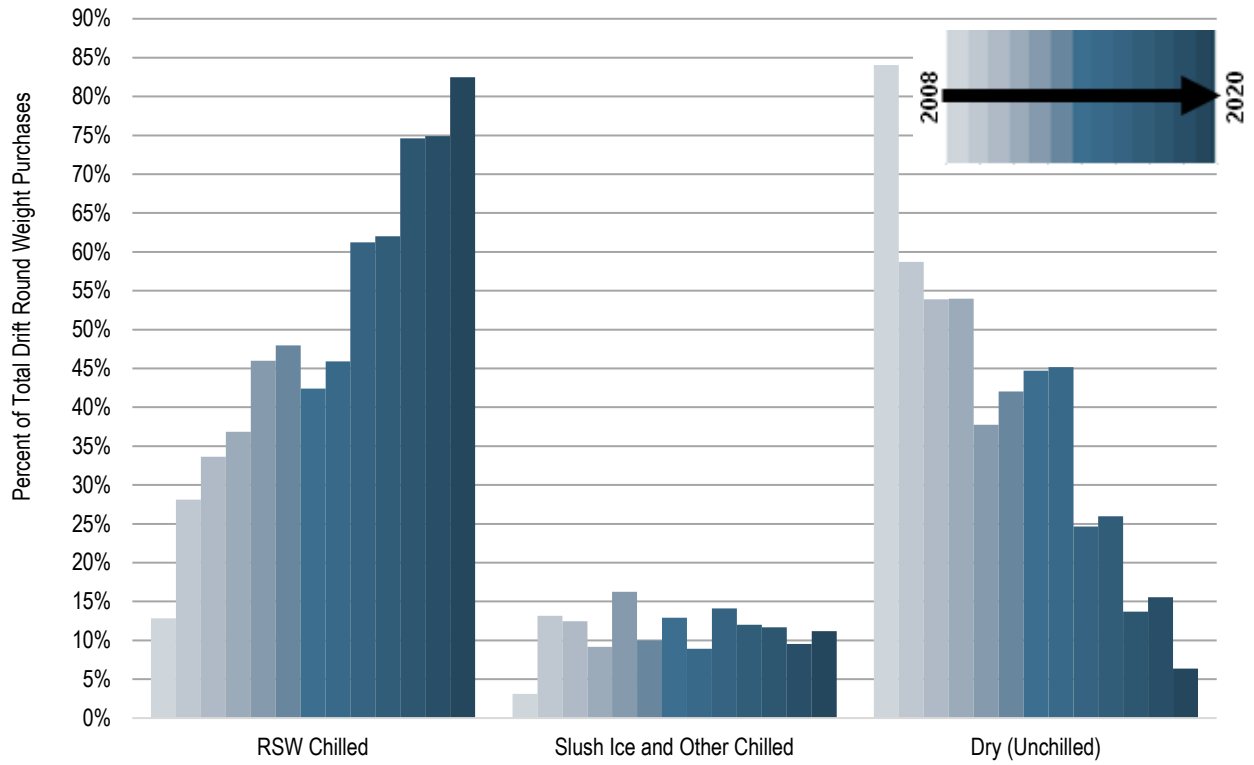
**Table 8. Drift Fleet Chilling Methods 2011–2020**

Chilling Method	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year-over-Year Change	Average, 2011–2020
<b>Round Weight (MMlb)</b>												
RSW Chilled	40.6	33.4	37.6	49.3	67.2	95.9	104.4	131.1	130.1	129.2	-0.9	81.9
Slush Chilled and Other	10.1	11.8	7.8	15.0	13.1	22.1	20.2	20.5	16.6	17.5	0.9	15.5
Dry (Unchilled)	59.4	27.4	32.9	52.0	66.2	38.6	43.8	24.1	27.0	10.0	-17.1	38.1
<b>Total</b>	<b>110.1</b>	<b>72.5</b>	<b>78.4</b>	<b>116.3</b>	<b>146.5</b>	<b>156.7</b>	<b>168.4</b>	<b>175.7</b>	<b>173.7</b>	<b>156.7</b>	<b>-17.0</b>	<b>135.5</b>
<b>Percent of Round Weight</b>												
RSW Chilled	37%	46%	48%	42%	46%	61%	62%	75%	75%	82%	8%	57%
Slush Chilled and Other	9%	16%	10%	13%	9%	14%	12%	12%	10%	11%	2%	12%
Dry (Unchilled)	54%	38%	42%	45%	45%	25%	26%	14%	16%	6%	-9%	31%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>	<b>100%</b>

Source: Northern Economics analysis

The survey results show that the portion of fish deliveries chilled with RSW has increased more than six-fold between 2008 and 2020 (Figure 9). In the first several years of the survey, it appeared that the run size impacted the chilling method with the portion of raw product chilled by RSW systems decreasing during the large run in 2014, but results from the 2015, 2016, 2017, and 2018 surveys directly contradict that perceived trend. Processors and permit holders have commented that steady and consistent run intensity allows more time for chilling fish as they are harvested. Thus, run intensity appears to be a factor as well as the size of the run. The portion of raw product chilled by RSW systems increased in 2020, as well as the portion chilled by slush ice, and thus the portion of unchilled fish decreased to 6.4 percent. This aligns with the increase in the portion of raw product purchases that were chilled in 2020 (Table 1).

Figure 9. Chilling Methods in the Drift Fleet, 2008–2020



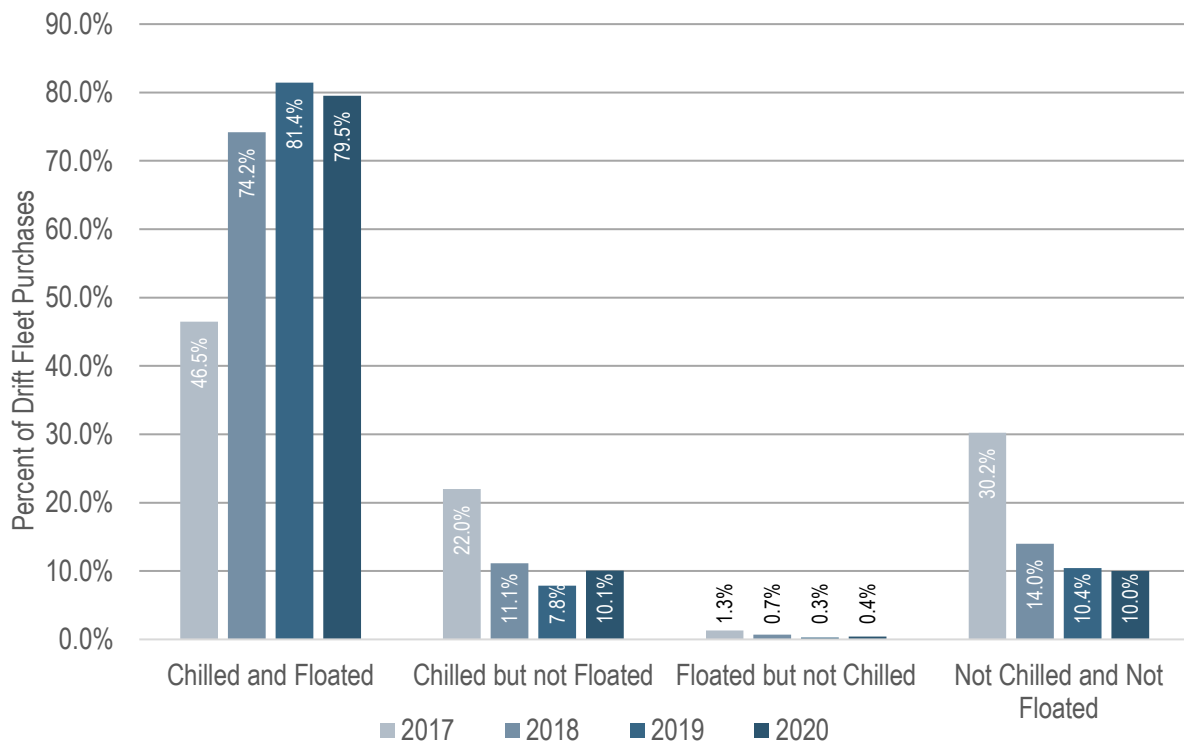
Source: Northern Economics analysis

## Quality of Chilled Raw Product

New to the 2017 survey and continued in the 2018–2020 surveys, were questions about the percentage of raw product being purchased from the drift net fleet that is chilled and/or floated, processor employment of third-party quality assurance contractors, and best practices that have the biggest impact on the quality of delivered raw product. In 2020, 90 percent of respondents reported that the quality of chilled floated RSW fish is better than the quality of slush chilled, non-floated fish. Eight respondents answered that chilled floated RSW fish is ‘significantly better’, one respondent answered that it is ‘slightly better’, and one respondent reported that it was no different.

The survey asked respondents specifically to report the total raw product purchased from the drift fleet in four categories of fish: floated and chilled (RSW), chilled but non-floated (slush ice), floated and not chilled, and non-floated/non-chilled. The breakdown of total raw product purchases made from the drift fleet in 2020 is shown in Figure 10, indicating that over ≈80 percent of raw product purchased from the drift fleet was floated and chilled, down slightly from 2019, but higher than in 2018.

**Figure 10. Proportion of Drift Fleet Raw Product Chilled and/or Floated, 2017–2020**



Source: Northern Economics analysis

Since 2015 the survey has included a question about the sample size used to determine chilling bonuses. In 2020, however, the question was divided into two parts consisting of a) the sample and b) the number of fish per sample. Nine of ten respondents indicated that they required a sample from each delivery. Perhaps surprisingly there was significant variation in the answers as described in Table 9.

**Table 9. Sampling Methods used for Quality Assurance and Chilling Bonuses**

Responses			
1 fish/brailer from up to 4 brailers	10 fish from a single brailer	20 fish/delivery	20 fish/brailer
HOBO data logger is used	3 fish/delivery (2 responses)	10 fish/delivery	3 fish/brailer

Seven of ten survey respondents provided answers to questions regarding quality assurance (Q.A.) on tender vessels and whether their own staff or third-party contractors were used. Responses are summarized below.

**Table 10. Quality Assurance on Tender Vessels**

Responses		
Our own Q.A. staff on 30 % of tender trips.	Our own Q.A. staff on 33 % of tender trips.	3rd-party Q.A. contractors on 100% of tender trips (2 responses)
Our own Q.A. staff on 75 % of tender trips.	Our own Q.A. staff on 100 % of tender trips.	HOBO data logger is used.

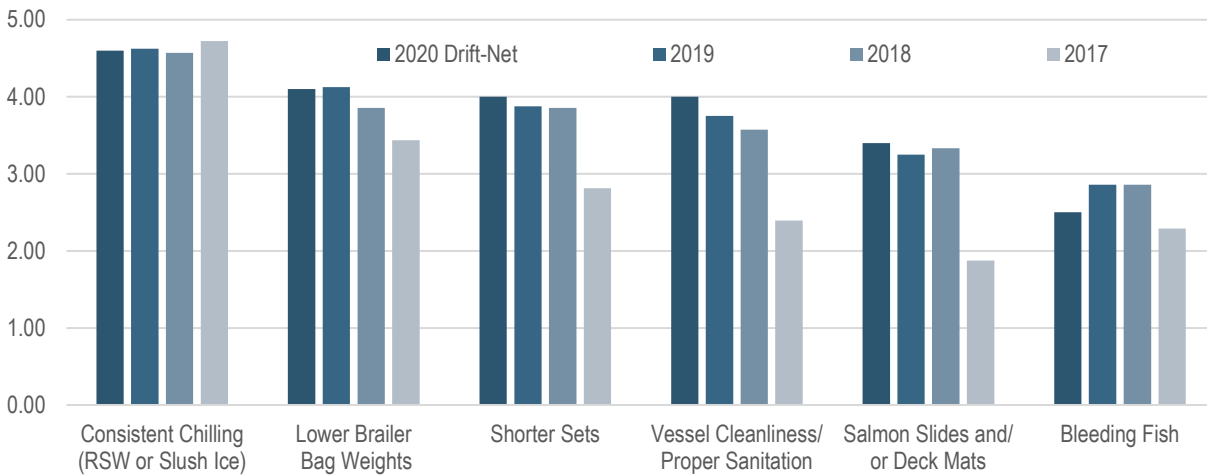
The 2020 survey was the fourth year that included a question asking respondents to score six best practices based on the magnitude of impact the practice has on the quality of the delivered raw product. New for 2020, the question was modified to ask respondents to rate the practices for both the drift fleet and setnetters separately. Respondents were asked to score the practices from 1 to 5, with 1 having no impact on quality and 5 having maximum impact. The practices included:

- consistent chilling (RSW or slush ice)
- fish bleeding
- shorter sets
- salmon slides and/or deck mats
- lower brailer weights (500–600 lb. or less per brailer bag)
- vessel cleanliness/proper sanitation

Figure 11 summarizes the average scores received for each practice since 2017, noting that we’ve included only the score for the drift fleet in this comparison with other years. Consistent chilling scored the highest of the “best practices” in all four years. Note also that the ranked order among the six practices listed has been consistent over all four years with lower brailer bag weight ranked #2, shorter sets ranked #3, and vessels cleanliness ranked #4. Bleeding fish rank lowest of the six in all four years with the exception of 2017 in which it ranked fifth.



**Figure 11. Average Score of Best Practices Impacting the Quality of Delivered Product, 2017–2020**



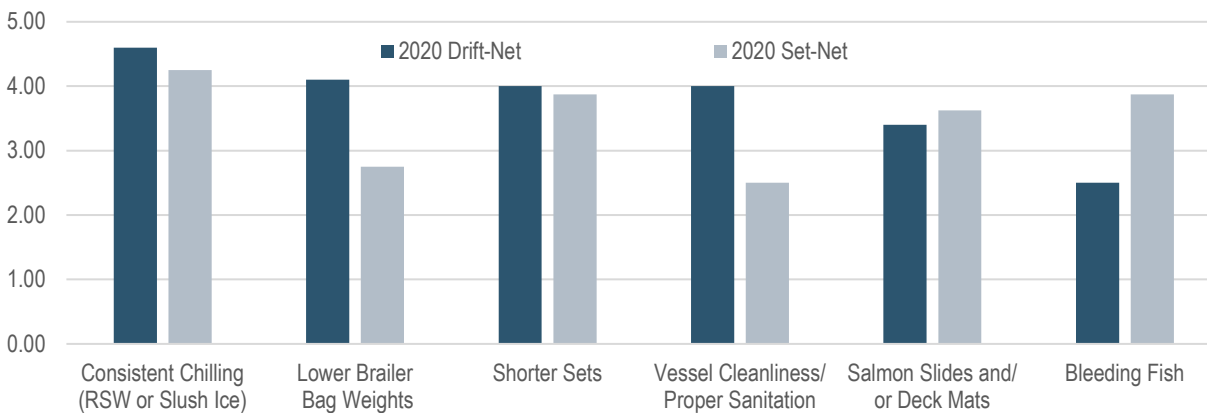
Note: 1=no impact, 5= maximum impact

Source: Northern Economics analysis

Figure 12 shows the differences between best practice ratings for the drift-net and setnet deliveries. For both harvest methods, consistent chilling is the top-ranked practice. It is noteworthy that for setnet deliveries, fish bleeding ties for second place (with shorter sets) whereas bleeding fish is the lowest ranked of the best practices for the drift-net fleet.

Respondents to the drift and setnet best practices questions were also asked two open-ended questions of what the single most important thing each gear type can do to improve quality. For the drift fleet, the most common responses had to do with proper handling and chilling and making prompt deliveries. For setnet harvesters, it is clear that processors would like to see them pick their fish sooner and deliver fish more often.

**Figure 12. Average Score of Best Practices Impacting the Quality of Delivered Drift and Setnet Fish in 2020**



Note: 1=no impact, 5= maximum impact

Source: Northern Economics analysis

## Drift Fleet Size and Chilling

The number of vessels in the drift fleet fishing for surveyed Bristol Bay processors in 2020 decreased by 33 vessels to 1,304 (see Table 11). The survey asked processors to consider a boat as part of their fleet if it was contractually obligated to deliver to them or if they felt that it made more than 50 percent of its deliveries to them. The average number of vessels per surveyed processor decreased slightly in 2020 to 130 vessels. It is important to note that the data reported here should not be taken to be an accurate estimate of the total number of active vessels in the fishery—not all processors are included in or responded to the BBRSDA survey.

**Table 11. Number of Vessels in the Drift Fleet, 2011–2020**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year-over-Year Change	Average, 2011–2020
Total Vessels in Survey Processors' Drift Fleets	1,358	1,076	1,253	1,251	1,397	1,258	1,327	1,328	1,337	1,304	-33	1,289
Percent Change in Survey Processors' Fleet Size from Previous Year	-21%	+16%	-0%	+12%	-10%	+5%	+0%	+1%	+1%	-2%	NA	NA
Average Vessels per Surveyed Processor	123	135	157	156	155	140	147	148	149	130	-18	144

Source: Northern Economics analysis

As in prior years, the 2020 survey asked processors to categorize vessels by the portion of the vessel's deliveries that were chilled. The total number of vessels in the drift fleets of surveyed processors that chilled more than 75 percent of their deliveries reached 1,178, the largest number ever to be recorded in this category (Table 12). The number of vessels that delivered chilled raw product 50–75 percent of the time decreased significantly from 120 vessels in 2019 to just 51 in 2020, and the number of vessels that delivered chilled raw product less than 25 percent of the time and 25–50 percent of the time also decreased, which could be attributed to the increase in vessels chilling 75 percent or more of their deliveries. The number of vessels that delivered chilled raw product none of the time continued to decline, dropping from 61 vessels in 2019 to 45 vessels in 2020.

The data suggest that conversions from dry vessels to vessels with RSW systems are still occurring or that the drift fleet is using slush ice to properly chill product more consistently. As more vessels convert to RSW systems, there is also less pressure on the ice supply and distribution network in Bristol Bay, and more ice is available to permit holders who choose to chill their product deliveries using slush ice. The shift in chilling practices could soon be approaching a tipping point where delivering chilled product is no longer seen as a preference, but rather a requirement in Bristol Bay. There are already multiple processors operating in Bristol Bay that mandate raw product deliveries be chilled.

Table 12. Consistency of Chilling, 2009–2020

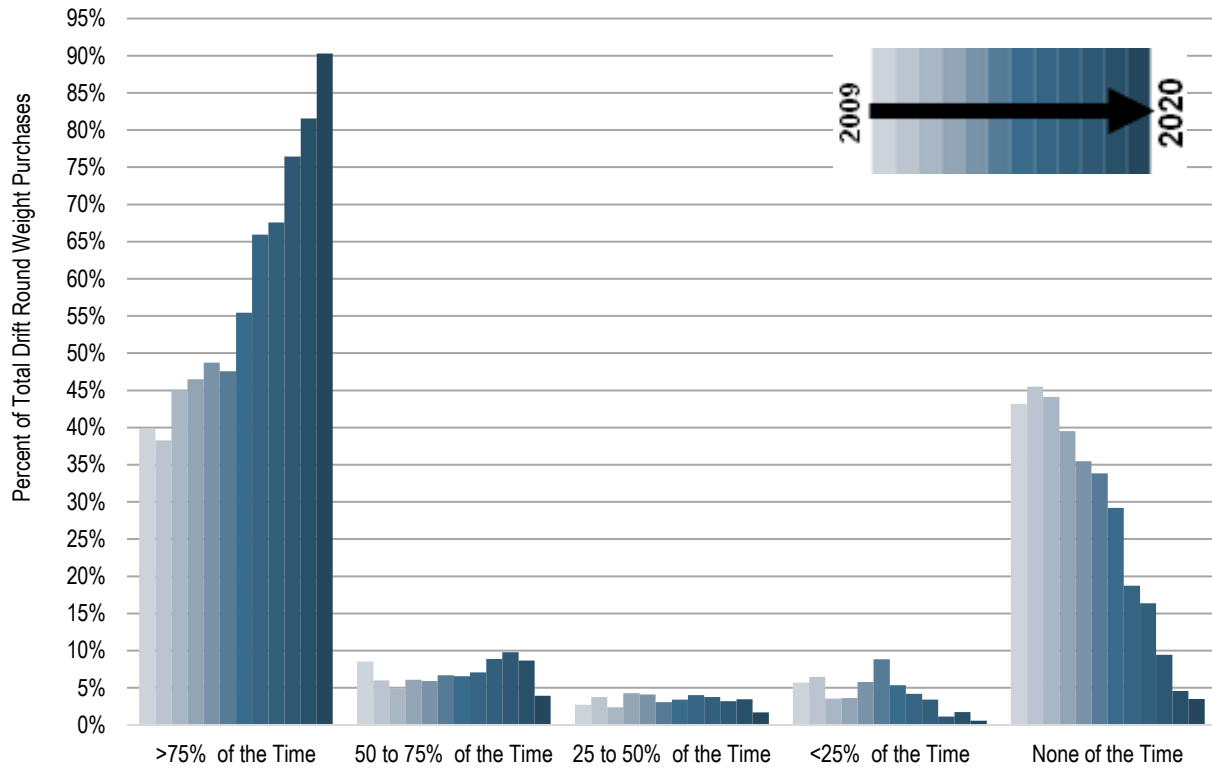
Year	Percent of Deliveries that Were Chilled				
	>75% of the Time	50 to 75% of the Time	25 to 50% of the Time	<25% of the Time	None of the Time
<b>Number of Vessels</b>					
2009	522	112	35	74	565
2010	514	81	51	87	611
2011	612	66	32	48	599
2012	500	66	46	39	425
2013	611	74	51	72	445
2014	595	84	38	111	423
2015	775	92	48	75	408
2016	831	89	51	53	236
2017	896	118	50	45	217
2018	1,015	130	42	15	125
2019	1,091	116	46	23	61
2020	1,178	51	22	7	45
<b>Percent of Vessels</b>					
2009	40%	9%	3%	6%	43%
2010	38%	6%	4%	6%	45%
2011	45%	5%	2%	4%	44%
2012	46%	6%	4%	4%	40%
2013	49%	6%	4%	6%	35%
2014	48%	7%	3%	9%	34%
2015	55%	7%	3%	5%	29%
2016	66%	7%	4%	4%	19%
2017	68%	9%	4%	3%	16%
2018	76%	10%	3%	1%	9%
2019	82%	9%	3%	2%	5%
2020	90%	4%	2%	1%	3%

Note: Totals may not match the table above because of rounding.

Source: Northern Economics analysis

In 2020, 94 percent of vessels delivered chilled raw product more than 50 percent of the time (note that this is an aggregation of the 50 to 75 percent and over 75 percent categories shown in Table 12), which represents the most consistent chilling practices recorded by this survey to date (Figure 13). The portion of vessels who chilled their deliveries less consistently (less than 25 percent or none of the time) decreased in 2020 to just 6.3 percent. This is the lowest portion of vessels making unchilled or dry deliveries recorded by the survey.

Figure 13. Chilling Consistency among the Drift Fleet, 2009–2020



Source: Northern Economics analysis

## Processor Ice-Making Capability

Total ice production capacity of processors declined in Bristol Bay by over 26 percent in 2020, from 865 tons per day in 2019 to 638 tons per day (Table 13). The amount of ice available to permit holders from processors also declined by an even greater percentage—down 37% from 187 tons in 2019 to 119 tons in 2020. Barge ice production comes from two vessels operated and subsidized by BBEDC, and production capacity has remained constant at about 200 tons per day. We note that the survey data indicate that there are sizeable year-over-year changes in the amount of ice available to harvesters from individual processors.

When barge ice is included in the calculation, the total amount of daily ice available to permit holders fell by 18 percent to 319 tons per day in 2020. While the increased use of RSW systems to chill product may have taken some of the pressure off processors to provide their fleets with ice, as reported in Table 8, 11 percent of the raw product delivered by the drift fleet was still chilled using slush ice and 6 percent of raw product delivered by the drift fleet was unchilled in 2020.

**Table 13. Ice Production in Tons per Day, 2011–2020**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Avg
Total Ice Production Capacity (tons)	735	645	535	635	775	705	665	732	865	638	677
Available to vessels from processors (tons)	130	137	27	59	113	104	149	199	187	119	126
Processor ice % available to vessels	18%	21%	5%	9%	15%	15%	22%	27%	22%	19%	18%
Barge Ice (tons)	200	200	200	200	200	200	200	200	200	200	200
<b>Total ice available to vessels (tons)</b>	<b>330</b>	<b>337</b>	<b>227</b>	<b>259</b>	<b>313</b>	<b>304</b>	<b>349</b>	<b>399</b>	<b>387</b>	<b>319</b>	<b>326</b>

Source: BBEDC (2020), Northern Economics analysis

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## Appendix: Survey Instrument

## Introduction

**Welcome to the 2020 Bristol Bay Salmon Fishery Processing Survey! We're glad to be conducting this survey again after successful 2008-2019 surveys. The 2020 survey builds on the data in prior surveys and will allow you to see aggregate changes in the fishery that have occurred between 2008 and 2020.**

**As with the prior surveys:**

**The purpose of the survey is to collect information on the chilling of fish by fishermen and the distribution of finished product among product forms.**

**Unless specifically stated and verified, all of the data reported by individual respondents will be held in confidence by Northern Economics and will only be reported in aggregate.**

**The aggregated survey results will be submitted to the survey sponsor, the Bristol Bay Regional Seafood Development Association (BBRSDA). Northern Economics will also distribute the same report that it delivers to BBRSDA to each participant who completes the survey.**

**If you experience problems while completing the survey, please call Terri McCoy at 907-274-5600.**

**PLEASE MAKE SURE YOU HIT NEXT AT THE BOTTOM OF EACH PAGE.**

1. What is the name of your processing company?

2. What is your name?

3. What is your primary contact phone number?

4. Please enter your email so that we may send you a copy of the survey results.

5. Please list the processing facilities and/or floating processors included in your response



## Raw Product (Round Weight) Purchases

**This section asks questions about a processor's purchase of raw product (round weight fish) in 2020. Please ensure that all answers are for the 2020 season.**

**Please note that some questions refer to all of your operations in 2020 while other questions refer specifically to the DRIFT NET fleet.**

**The survey form does not accept commas, \$ signs, decimals, or % symbols. Please enter whole numbers only. For example \$1,254, would be entered as 1254 while 50% would be entered as 50.**

**NOTE: THE PAGE WILL NOT ADVANCE IF A REQUIRED SUM DOES NOT ADD TO 100 OR IF A % SYMBOL IS INCLUDED IN THE ENTRY.**

6. In 2020, how many pounds of raw product (round weight fish) did your company purchase from the Bristol Bay salmon fishery?

2020 Raw Product Weight

7. In 2020, how many pounds of previously chilled raw product (using ice or refrigerated sea water [RSW]) did your company purchase in the Bristol Bay salmon fishery?

2020 Chilled Raw Product Weight

8. What percentage of your total raw product came from the drift net fleet and from setnetters in 2020? Please enter your responses in the nearest whole numerals. The survey form does not accept % symbols or decimals.

Portion of Total Raw Product from the Drift Net Fleet

Portion of Total Raw Product from Setnetters

9. What percentage of your total CHILLED raw product came from the drift net fleet and from setnetters in 2020? Please enter your responses in the nearest whole numerals. The survey form does not accept % symbols or decimals.

Portion of Total Chilled Raw Product from the Drift Net Fleet

Portion of Total Chilled Raw Product from Setnetters

10. What percentage of your TOTAL 2020 purchases in the Bristol Bay salmon fishery was shipped long-haul for processing at a plant outside of Bristol Bay?

Percentage Processed Outside Bristol Bay

11. What percentage of the chilled raw product your company purchased from the DRIFT NET fleet in 2020 was from each of the following categories? The total of your answer should be 100.

RSW

Slush Ice

Other

12. What percentage of the raw product purchases your company purchased from the DRIFT NET fleet in 2020 were chilled and/or floated? The total of your answer should be 100.

Chilled and Floated

Chilled but not Floated

Floated but not Chilled

Not Chilled and not Floated

## Processed Products

**The following questions pertain to the volume and types of products you produce from your raw product purchases from both the drift fleet and setnetters.**

13. Please list the total Bristol Bay sockeye production volume your company produced in 2020 for the product forms listed below (in net pounds). Do not include other salmon or fish species, only sockeye salmon caught in Bristol Bay. Do not include production volume unless it was produced for sale. This product form data will be aggregated and company level data will be kept confidential.

Canned and Retort Products	<input type="text"/>
Frozen H&G	<input type="text"/>
Frozen Fillets and Portions	<input type="text"/>
Roe	<input type="text"/>
Meal	<input type="text"/>
Oil	<input type="text"/>
Mince	<input type="text"/>
Dressed Sockeye (Head On, Gutted)	<input type="text"/>
Whole Sockeye	<input type="text"/>
Other (Please list product form and weight)	<input type="text"/>
Other (Please list product form and weight)	<input type="text"/>
Other (Please list product form and weight)	<input type="text"/>
Other (Please list product form and weight)	<input type="text"/>

14. If your plant produced canned sockeye in 2020, did you process chilled and un-chilled fish separately?

- Always
- Never
- Sometimes

If you answered "sometimes" please indicate the conditions when you do or don't separate chilled and un-chilled fish.

## Your Fleet

**This page asks questions about DRIFT NET boats that you consider to be part of "your fleet."**

15. In 2020, how many DRIFT NET boats did you consider to be part of "your fleet"? A boat would be counted as part of your fleet if they were contractually obligated to deliver to your company or if you felt they made more than 50% of their deliveries to your company in 2020.

16. Please estimate the percentage of the DRIFT NET boats in your fleet that fit into the following categories. Please make sure your answers sum to 100.

75% to 100% of their 2020 deliveries were chilled

50% to 75% of their 2020 deliveries were chilled

25% to 50% of their 2020 deliveries were chilled

1% to 25% of their 2020 deliveries were chilled

None of their 2020 deliveries were chilled

## Processor Ice Production

**This section of the survey asks about chilling in the bay including your company's production of ice in 2020 and its availability to your fleet.**

17. In 2020, what was your company's total daily ice making capacity in Bristol Bay in tons? Please exclude any ice produced by the BBEDC ice barges.

Daily Ice Production Capacity (tons)

18. What percentage of your 2020 daily ice making capacity located in Bristol Bay is available for use by your drift net fleet? Please exclude any ice produced by the BBEDC ice barges.

Portion Available to Your Drift Boat Fleet (%)

19. Which statement do you think best describes the amount of ice available to DRIFT NET permit holders in comparison to demand for 2020? Please check one box.

- There was an excess of ice-making capacity available.
- The right amount of ice was available to meet the needs of the fleet to always deliver chilled fish.
- There was not enough ice to meet the needs of the fleet to always deliver chilled fish.

## Quality of Chilled Product

**This section of the survey asks about the quality of the chilled product purchased in the Bristol Bay salmon fishery during the 2020 season.**

20. On average, are there any notable quality improvements gained from chilled floated fish compared to chilled non-floated fish?

...significantly worse...    ...slightly worse...    ...not different...    ...slightly better...    ...significantly better...

On average, the quality of chilled floated product is... than the average quality of non-floated chilled product.

21. When tenders take a sample to determine the chilled temperature and possibly qualify for a chilling bonus, how do you conduct your sample (e.g. fish per brailer, fish per delivery, etc.)?

22. How many fish are required in each sample?

Number of fish required

23. Do you use any of the following quality assurance protocols for your tender fleet?

- third-party quality assurance contractor
- quality assurance staff employed by your company
- Other (please specify)

24. Please estimate the overall percentage of tender vessels trips that utilized one of the quality assurance protocols from the previous question

Percentage of tenders

25. If you employed a third-party quality assurance contractor, what percentage of your tenders had a third-party quality assurance contractor on board during the 2020 season?

Percentage of tenders

26. Thinking specifically about the DRIFT FLEET, please rate each of these best practices in terms of their impact on the quality of delivered product (1 = no impact on quality and 5 = maximum impact on quality).

	No Impact	Slight Impact	Moderate Impact	Considerable Impact	Maximum Impact
Consistent Chilling (RSW or Slush Ice)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bleeding Fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shorter Sets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salmon Slides and/or Deck Mats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower Brailer Weights (500-600 lbs or less per brailer bag)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vessel Cleanliness/Proper Sanitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. What is the most important thing DRIFT fishermen can do to improve quality?

28. Thinking specifically about SETNETTERS, please rate each of these best practices in terms of their impact on the quality of delivered product (1 = no impact on quality and 5 = maximum impact on quality).

	No Impact	Slight Impact	Moderate Impact	Considerable Impact	Maximum Impact
Consistent Chilling (RSW or Slush Ice)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bleeding Fish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shorter Sets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salmon Slides and/or Deck Mats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower Brailer Weights (500-600 lbs or less per brailer bag)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vessel Cleanliness/Proper Sanitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

29. What is the most important thing SETNET fishermen can do to improve quality?

30. Please estimate the percentages of your total fish purchases (drift and setnet combined) for each of the following quality grades. Percentages must sum to 100.

Number 1

Number 2

Number 3

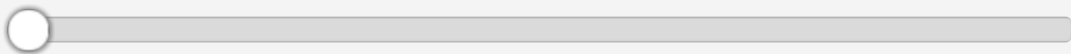
Other

31. Why do you think #3 grade fish are occurring in the fishery? In your comments please indicate the gear to which the comment is most applicable (i.e. drift gear, set gear, both gears).

32. Please estimate the percentage by which the total wholesale value of your 2020 product would increase if all of the fish you purchased in 2020 were #1's.

Increase over expected  
product value for 2020

0 100



33. What would help you as a processor improve quality within your operation and what can BBRSDA do to help?



## Processor Input

**BBRSDA believes that increased communication between processors and permit holders will lead to cooperative opportunities that benefit both groups. The distribution of our survey results are an example of this concept in action. BBRSDA is interested in knowing if the processing industry believes there are certain actions BBRSDA can take or promote that will benefit both groups. We're interested in knowing what you would like our role to be in the fishery.**

34. BBRSDA is authorized to spend money in four areas to improve the overall health and value of the Bristol Bay salmon fishery. These areas include: Infrastructure, Research, Quality, and Marketing. BBRSDA is interested in knowing which area you think it is most important for BBRSDA's focus. Thinking back on the last 5 years of BBRSDA work, and thinking ahead to future work, what areas are most important for BBRSDA to focus on?

	1-Very Low Importance	2-Low Importance	3-Moderate Importance	4-High Importance	5-Very High Importance
Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marketing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

35. Please describe what you think is the single most important project that BBRSDA could undertake in the coming year. If you were BBRSDA, what project would you undertake?

Thank You!

**Thank you for completing the survey. As always, we greatly appreciate your time and efforts. A copy of the survey results will be available from BBRSDA in the first half of 2021. BBRSDA will email a copy of the results to you using the contact information you provided with the survey.**