

2017 BBRSDA Processor Survey

Prepared for

**Bristol Bay Regional Seafood
Development Association**

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**Northern
Economics**

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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
H&G	Head and Gut
MMlb	Million pounds
RSW	Refrigerated Sea Water

1 Introduction and Summary Conclusions

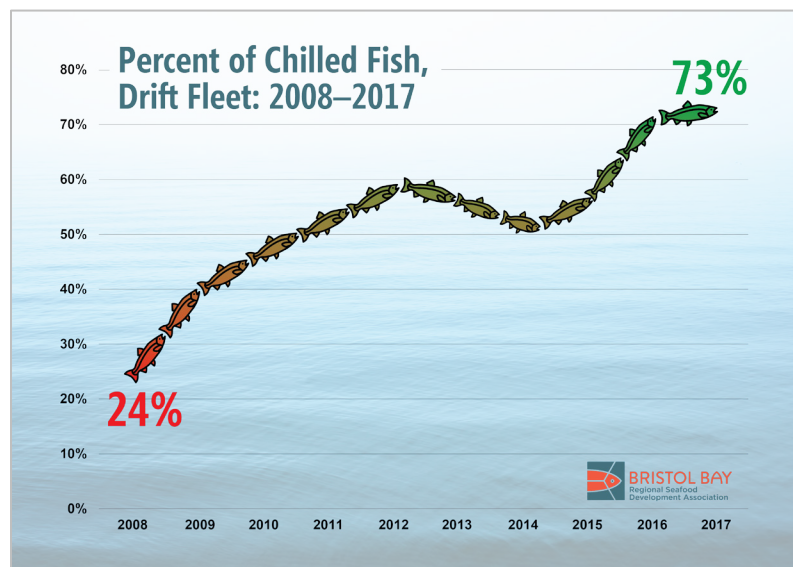
The Bristol Bay Regional Seafood Development Association (BBRSDA) contracted with Northern Economics, Inc. to conduct a survey of processors who operated in the 2017 Bristol Bay salmon fishery. This report summarizes the results of the study.

As in prior surveys, the survey instrument consisted of a series of questions about processor operations in Bristol Bay. The 2017 survey captured raw product data, fleet information, ice production volumes, chilling methods, and respondents' opinions of trends and priorities within the fishery. The 2017 survey collected a third 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, and added a new question about floating practices. The operational questions focused on processors' purchase of chilled raw product and 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).¹ All of the processors who have traditionally responded to the survey responded this year.

The 2017 Bristol Bay sockeye run was 63 percent above the average run over the last 20 years and 42 percent above the Alaska Department of Fish and Game (ADF&G) preseason forecast (ADF&G 2017). ADF&G estimates the total Bristol Bay salmon harvest at 219.3 million pounds (MMLb) for 2017, 7.5 MMLb more than in 2016, and the largest recorded in the past 20 years. This year's processor survey captured 94 percent of the ADF&G estimate as respondent processors reported processing 206 MMLb of raw (round weight) product from all sources (drift and set permits) in 2017.

This year's key takeaways:

- The harvest in 2017 was the largest in the last 20 years and harvesters, both set and drift, responded by chilling the largest amount of raw product ever in the history of the fishery. Product chilled prior to delivery reached 148.4 MMLb in the aggregate fishery, 129.0 MMLb in the drift net fishery, and 19.3 MMLb in the set net fishery—all record highs since 2008. The drift net fleet chilled 5 percent more sockeye than they did during the 2016 record-setting run. In addition, chilled raw product purchase amounts from the set net fleet increased over 33 percent.
- The total volume of drift fleet chilled purchases surpassed the previous record of 122.7 MMLb with a new record of 129 MMLb of chilled product. Overall, 73 percent of drift fleet deliveries were chilled. This year's portion of chilled product increased again, albeit less than the huge increase seen in 2016. After another record-setting year, in terms of run size and portion of



¹ The full survey instrument is contained in an appendix to this report.

chilled product delivered, this year's survey continues to illuminate the chilling capacity in Bristol Bay. This year's survey results also reiterate the drastic shift in chilling practices over the past 10 years, with chilled purchases growing from 24 percent in 2008 to 73 percent in 2017. These increases in chilling percentage and poundage appear to be driven by new processor requirements and bonuses for chilled fish, supported by efforts from BBRSDA, BBEDC, and the processors themselves to make sure that permit holders are supported in this transition.

- The distribution of raw product flowing into each product form continued to evolve in 2017, with a continued shift away from canned product and more of a focus on Fillet and H&G (fresh and frozen) products. Use of raw product for canned production dropped by nearly 25.8 million pounds while raw product being used for H&G Frozen production increased 40 percent to 117.1 million pounds. Raw product used to produce Fillets grew by 8 percent to 53.1 MMLb, coming on the heels of 2016 where fillets saw a huge increase in the portion of raw product utilized (50 percent). The portion of raw product used to produce H&G Fresh decreased in 2017, but was still its second highest recorded since 2008.
- Processors also reported improvements in the consistency of chilling practices among the drift fleet, with nearly 67 percent of vessels making chilled deliveries over 75 percent of the time. Conversely, the number of vessels delivering chilled product none of the time (dry deliveries) dropped to 17.9 percent in 2017, less than half the portion of vessels making dry deliveries first recorded in 2009. Both of these marks set new records since 2008.
- In 2017, Refrigerated Sea Water (RSW) systems chilled 111.2 MMLb of fish, or 86 percent of the drift fleet's total chilled deliveries. Slush ice chilled the remaining 14 percent of chilled deliveries, roughly 17.9 MMLb. When asked if there are any notable quality improvements gained from chilled floated fish (RSW) compared to chilled non-floated fish (slush ice), all respondents indicated that the quality of chilled floated fish is typically better than the quality of chilled non-floated fish.
- One of the additions made to the 2017 survey asked respondents to rank six best practices that they thought have the biggest impact on the quality of delivered product. Those 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), and vessel cleanliness/proper sanitation. Consistent chilling and lower brailer weights were reported as the best practices having the largest impact on the quality of delivered product.

2 Raw Product Purchases and Chilling

The combined raw product purchases of the set and drift net fleets increased by two percent to 206 MMLb—the largest total harvest recorded by this survey (see Table 1). The 3.8 MMLb increase in raw product purchases in 2017 continues a four-year trend of increasing harvests in Bristol Bay. Chilled raw product purchases increased by 11.2 MMLb (8 percent) while unchilled raw product decreased by 7.3 MMLb (11 percent). This pushed the percent of total aggregate raw product being chilled in 2017 to 72 percent. Conversely, the 2017 survey also recorded the lowest portion of total raw product purchases that were unchilled (28 percent), and the second lowest volume of unchilled raw product purchases (57.6 MMLb).

The 2017 survey continues to highlight the chilling capacity within the region. As noted in previous reports, years with a significant increase in run size and harvest were also likely to experience decreases in the portion of total raw product purchases that were chilled. However, the 2017 survey builds on the milestones from the 2016 survey— recording both an increase in overall raw product purchases and an increase in the portion of the raw product purchases that were chilled. This continues to suggest that the chilling capacity in the region is greater than previously assumed, or that the size of the run has less of an impact on the portion of raw product purchases that are chilled, and that some other variable, such as run timing or duration, may have more of an impact on the chilling practices in the region.

It is also worth noting that the portion of total raw product purchases that were chilled from both the set and drift net fleets has increased in every year except 2014, with an average increase of 11 percent per year. As a result, the portion of total aggregate raw product being chilled has more than doubled since this survey first started recording data in 2008. This is a clear indication of a shift in chilling practices and a resulting increase in the quality of raw product purchases in the region.

Table 1. Total Raw Product (Drift and Set) Purchases, 2008–2017

Catch	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
MMlb												
Chilled	46.7	63.4	67.2	61.7	69	49.9	78.8	105.4	137.2	148.4	11.2	82.8
Unchilled	116.7	113.9	98.7	67.3	62.4	43.2	81.9	85.8	64.9	57.6	-7.3	79.2
Total	163.4	177.3	165.9	129	131.4	93.1	160.7	191.2	202.2	206	3.8	162
%												
Chilled	29	36	41	48	52	54	49	55	68	72	8	50
Unchilled	71	64	59	52	48	46	51	45	32	28	-11	50
Total	100	100	100	100	100	100	100	100	100	100	2	

Note: Column totals may not sum due to rounding.

Figure 1 displays the portion of the total raw product purchases that were chilled or unchilled from 2008 through 2017. Apart from 2014, the survey has recorded year-over-year increases in the percentage of chilled raw product purchases, and a corresponding decrease in the percentage of unchilled raw product purchases. Both the chilled and unchilled percentages follow fairly linear trends. A significant increase in run size, relatively high base prices compared to bonuses, and a compressed run timing in 2014 are thought to have caused the temporary disruption in that trend, with the survey recording a decrease in the portion of chilled product and an increase in the portion of unchilled

product, but it appears that the region has been able to adjust to the larger run sizes seen in recent years. Results from the 2017 survey show a continuation of an increasing trend in chilled raw product, pushing the previous record for highest portion of chilled raw product purchases set in 2016 to a new record in 2017.

Figure 1. Total Chilled and Unchilled Product

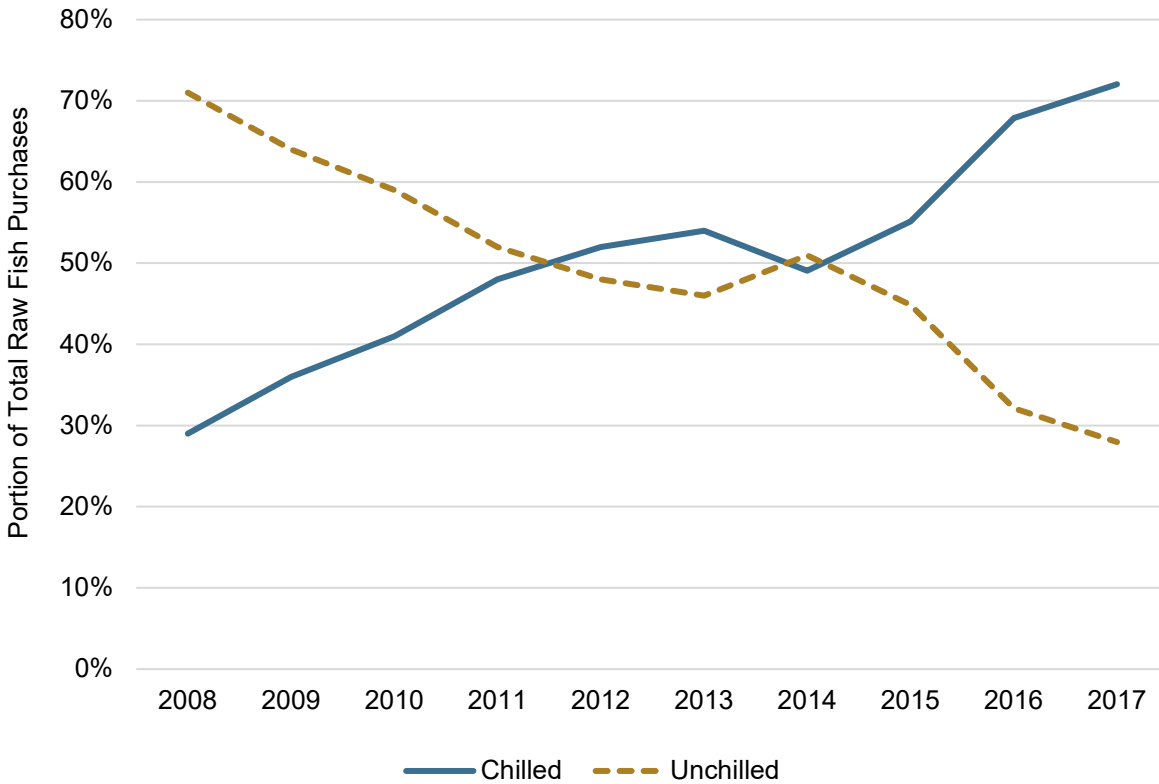


Table 2 displays the raw catch purchases from the drift fleet alone and excludes the contributions to the fishery made by set net permit holders. Total purchases from the drift fleet increased by 6.4 MMLb, or roughly 5 percent between 2016 and 2017. The increase from the previous record high reported in 2016 pushed total purchases from the drift fleet in 2017 to 129 MMLb—a new record in the history of the survey. The overall share of the total purchases from the drift fleet that were chilled increased from 71 percent in 2016 to 73 percent in 2017—again, setting the record for the highest portion of chilled drift fleet raw product purchases recorded by the survey.

The total volume, and portion, of unchilled raw product purchases from the drift fleet fell again in 2017. Processors reported a total of 48.7 MMLb of unchilled raw product purchases from the drift fleet, accounting for roughly 27 percent of their total drift fleet raw product purchases. This marks the lowest portion of unchilled drift fleet raw product purchases recorded by this survey.

Table 2. Drift Fleet Raw Product Purchases, 2008–2017

Catch	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
MMlb												
Chilled	32.5	60.0	63.4	58.8	64.8	45.5	67.3	87.7	122.7	129.0	6.4	73.2
Unchilled	102.2	91.7	72.6	51.4	44.6	35.5	65.0	69.8	49.0	48.7	-0.3	63.1
Total	134.7	151.7	136.0	110.2	109.4	81.0	132.3	157.4	171.7	177.8	6.1	136.2
%												
Chilled	24	40	47	53	59	56	51	56	71	73	5	53
Unchilled	76	60	53	47	41	44	49	44	29	27	-1	47
Total	100	100	100	100	100	100	100	100	100	100	4	

Note: Column totals may not sum due to rounding.

The total portion of the total drift net purchases that were chilled in 2017 increased 2 percent from the previous record set in 2016, with chilled purchases accounting for 73 percent of all purchases from the drift fleet. While the decrease in the portion of purchases that were chilled in 2014 was attributed to a significant increase in run size, it appears that the drift fleet was able to increase its chilling capacity to accommodate even larger runs in 2015, 2016, and 2017.

While the drift fleet continued to set new records for delivering chilled raw product, the small increase in total chilled raw product purchases from 2016 to 2017 can also be attributed to the set net fleet, with processors reporting 19.3 MMLb of the total chilled raw product purchases coming from the set net fleet. This is not only a 33 percent (4.8 MMLb) increase over 2016, but 69 percent the total purchases made from the set net fleet in 2017 were chilled. The performance of both fleets pushed the portion of total raw product being purchased from the fishery to 72 percent.

The amount of ice available to permit holders increased 43 percent between 2016 and 2017, which could be explained by the relatively large increase in the portion of chilled raw product purchases from the set net fleet as previous years have recorded increases in the portions of chilled raw product without the subsequent increase in ice availability. In these years, it is likely the increase in chilled raw product purchases is being driven by the use of RSW systems by the drift fleet. Chilling methods are discussed in more detail in Section 4 of this report.

Table 3. Set Net and Drift Fleet Chilled Product Purchases, 2008–2017

Catch	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2016
Chilled Drift MMLb	32.5	60.0	63.4	58.8	64.8	45.5	67.3	87.7	122.7	129.0	6.4	73.2
Chilled Set MMLb	14.2	3.4	3.8	2.9	4.2	4.4	11.5	17.8	14.5	19.3	4.8	9.6
Set Net Portion (%)	30.4	5.4	5.7	4.7	6.1	8.8	14.6	16.9	10.6	13.0	2.4	11.6

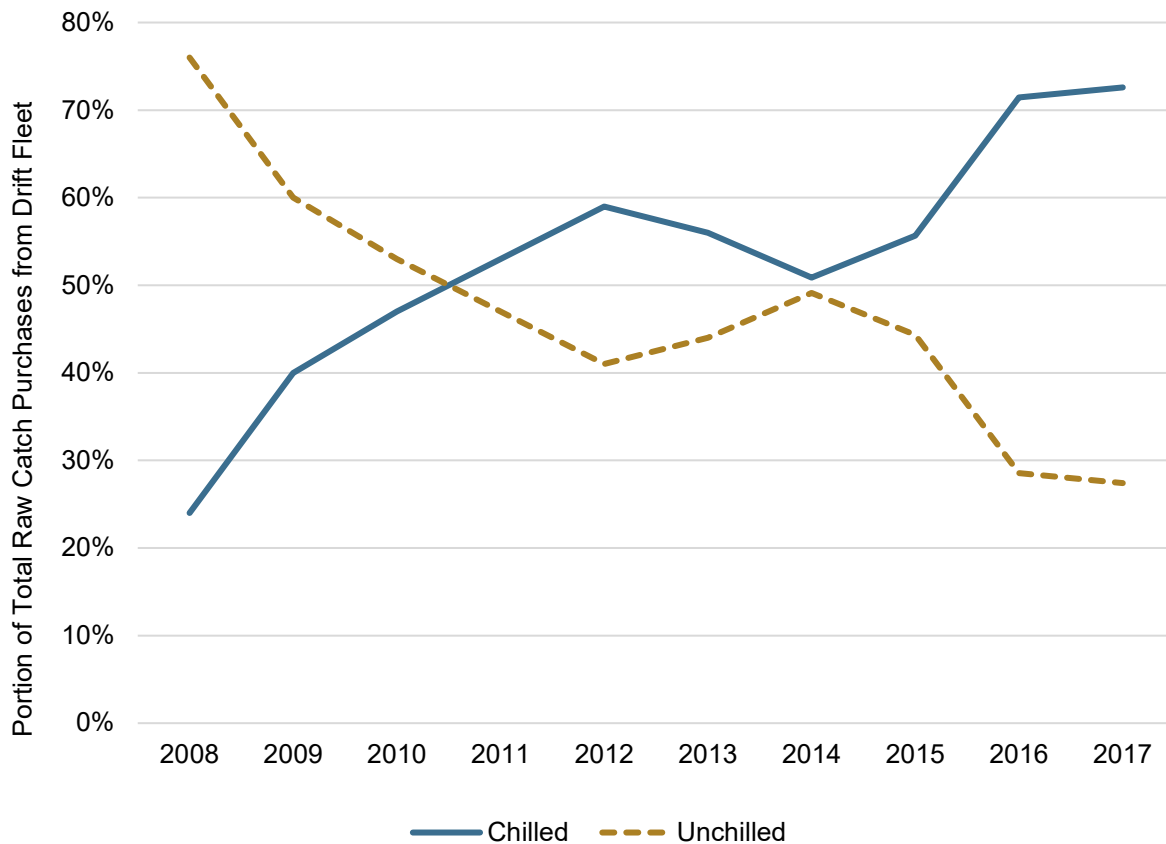
Figure 2 displays the chilled and unchilled portions of the raw product purchases from the drift fleet between 2008 and 2017. During the first five years of this survey, the portion of chilled drift net purchase consistently increased, but in 2013 and 2014 the trend reversed and the share of raw product that drift permit holders were chilling declined. The reversal of the trend of increased raw product

chilled was not surprising, considering our finding in 2012 that easier conversions to RSW largely had been completed and that future conversions would be limited to smaller and older vessels.

Since 2014, the drift fleet has returned to its initial upward trend, with the portion of chilled raw product purchases from the drift fleet increasing in the last three consecutive years. During the 2017 season, 73 percent of drift fleet purchases were chilled, surpassing the previous survey record set in 2016 by 2 percent.

As discussed in Section 5, the portion of permit holders that chill “nearly all of the time” has increased slightly since 2014 after three years of recorded declines, which also suggests more consistent chilling practices across the drift fleet.

Figure 2. Drift Fleet Chilled and Unchilled Product



One variable that could be influencing the portion of chilled raw product is the chilling bonus offered by processors for delivering properly chilled raw product. This chilling bonus is a premium that is added to the base ex-vessel price of Bristol Bay salmon on a per-pound basis. Table 4 shows the number of processors that offered chilling bonuses and the average bonus per pound offered. The average chilling bonus has remained relatively consistent since 2011, despite variability in the average base ex-vessel price. For example, the average chilling bonus was steady at \$0.17 per pound in 2011, representing 13.2 percent of the average base price. However, in 2015, when the average base price was at the lowest point recorded by the survey, the chilling bonus was only \$0.16 per pound and represented nearly 28 percent of the average base price that year.

In 2017, the bonus as a percent of average base price decreased to 16.5 percent because of a spike in price from 2015 and 2016—returning to levels experienced between 2008 and 2012. Since the chilling bonus has a greater impact on the final ex-vessel price (base ex-vessel price plus the chilling bonus), there is a greater incentive for the drift fleet to deliver properly chilled raw product in years when the bonus represents a larger percentage of the average base price. Even though that percentage fell in 2017, the levels of chilled raw product delivered pushed to record highs.

Table 4. Bristol Bay Ex-Vessel Salmon Prices and Chilling Bonuses (2008-2017)

Year	Total Processors	Processors Offering Bonus	Average Base Price/lbs (\$2017)	Average Bonus/lbs (\$2017)	Bonus as % of Base Price	% of Total Drift Purchases Chilled
2008	11	10	0.96	0.15	15.2	24
2009	11	9	0.96	0.13	14.0	40
2010	9	8	1.18	0.14	12.1	47
2011	10	7	1.29	0.17	13.2	53
2012	7	6	1.28	0.18	13.7	59
2013	<i>Data Not Available</i>					
2014	<i>Data Not Available</i>					
2015	9	7	0.56	0.16	27.8	56
2016	11	8	0.80	0.17	21.0	71
2017	11	10	1.02	0.17	16.5	73

Source: Bristol Bay Fishermen's Association, 2018.

Between 2008 and 2012, the number of processors offering chilling bonuses steadily decreased, but between 2015 and 2017 that number has steadily increased. It should be noted that there are a number of processors operating in Bristol Bay that mandate chilling, so the chilling bonus are included in the base ex-vessel price for those processors. This suggests that chilled raw product is becoming more of a standard rather than an option that needs to be incentivized. The processors that mandate raw product be chilled rather than offer chilling bonuses have a higher average ex-vessel prices to account for the increased level of quality of their purchases.

Similar to chilling, some processors have also started to offer bonuses for using slides, bleeding fish, and floating fish—which are seen as best practices that increase the overall quality of purchases. 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. By ensuring the value chain starts at the highest possible level, permit holders do their part in ensuring that all of the stakeholders in the system (i.e., permit holders, processors, the community, and state government) maximize the value of the fishery. The 2017 survey included a new question, discussed in Section 6, asking respondents to rank best practices based on their impact on the overall quality of delivered product.

3 Finished Product Forms

Along with the increase in the amount of total raw product, there was also a shift in the product mix that was produced in Bristol Bay in 2016 (see Table 5). Most notably, the portion of raw product purchases used to produce H&G Frozen (57 percent) and Fillet (26 percent) products increased to the highest levels recorded by this survey—accounting for 83 percent of total raw product utilized. Conversely, the portion of raw product purchases used to produce canned products continued to decrease—falling by 25.8 MMlb to a record low of 14 percent.

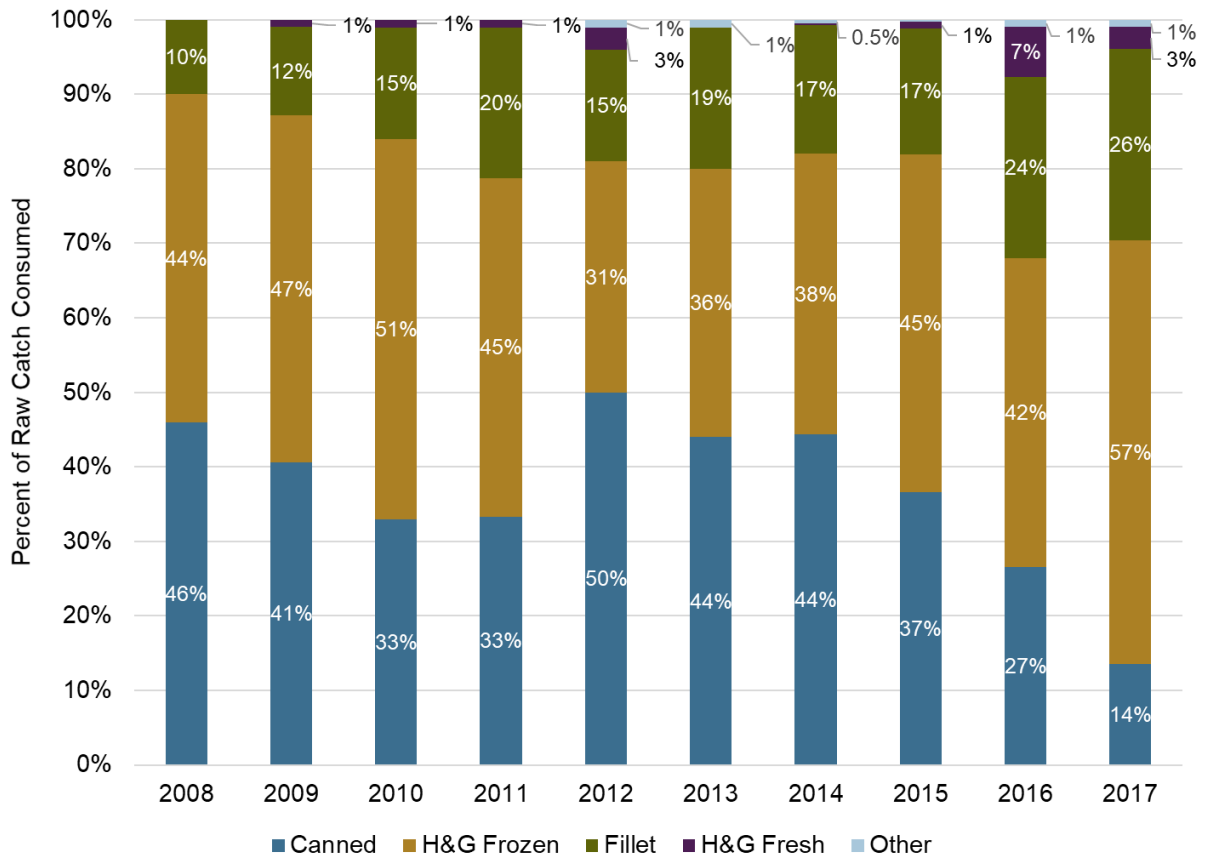
Table 5. Total Raw Product Consumed by Estimated First Wholesale Product Form, 2008-2017

Product Form	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
MMlb												
Canned	74.6	71.9	55.0	42.9	66.0	40.8	71.2	70.1	53.6	27.8	-25.8	57.4
H&G Frozen	71.2	83.1	84.5	58.7	40.3	33.5	60.7	86.7	83.9	117.1	33.2	72.0
H&G Fresh	0.8	1.0	1.3	1.3	4.1	0.2	0.4	1.8	13.6	5.9	-7.7	3.0
Fillet	16.2	20.7	24.9	25.9	20.3	17.8	27.7	32.3	49.1	53.1	4.0	28.8
Other	0.7	0.6	0.1	0.2	0.7	0.7	0.8	0.4	1.9	2.0	0.1	0.8
Total	163.5	177.3	165.8	129.0	131.4	93.0	160.7	191.2	202.2	206.0	3.8	162.0
%												
Canned	46	41	33	33	50	44	44	37	27	14	-48	37
H&G Frozen	44	47	51	45	31	36	38	45	42	57	40	44
H&G Fresh	0	1	1	1	3	0	0	1	7	3	-56	2
Fillet	10	12	15	20	15	19	17	17	24	26	8	18
Other	0	0	0	0	1	1	0	0	1	1	0	0
Total	100	101	100	99	100	100	100	100	100	100	2	

Note: Column totals may not sum due to rounding.

During the 2017 season, it appears that processors continued to reallocate resources previously used for canned products to produce a greater volume of fresh and frozen product forms. Between 2008 and 2014, the portion of raw product turned into canned products remained relatively consistent, averaging 42 percent of total raw product utilized. However, since 2015 the percent of raw product purchases being used for canned product has continued to decrease sharply. The reallocation of raw product previously being allocated for canned product now appears to be used to produce higher quantities of H&G product (both frozen and fresh) and fillets. These three product forms have grown from utilizing 55 percent of the raw product purchases in 2015 to using over 85 percent in 2017. The change in product mix could be the result of changing market demands and preferences, increased processing capacity for fresher products, or a more efficient supply chain that can get less preserved products to market more reliably.

Figure 3. Raw Product Forms of Product Processed in Bristol Bay, 2008-2017



The changes in final product form between 2008 and 2017 mirror those exhibited among raw product forms in terms of both volume and raw product share (see Table 6). Using the responses from the processor survey, the study team estimates that 138.9 MMLb of first wholesale product was produced from the 2017 run. This is an increase of 3.8 MMLb, or a 3 percent increase from the previous year, which can be attributed to a second third in a row of above-average runs, with 2017 ranking as the largest run over the past 20 years. H&G Frozen and Fillet product forms saw the largest increases in the volume of first wholesale product produced with increases of 24.6 MMLb and 2.1 MMLb, respectively. The total volume of canned first wholesale products dropped by 48 percent between 2016 and 2017 to 18.6 MMLb. Canned products accounted for only 13 percent of the total estimated first wholesale products, half of that reported in 2016 and the lowest portion recorded by this survey to date. The combination of a larger run size and a decrease in canned product suggests that the region has a larger processing capacity for other products forms, such as H&G (both fresh and frozen) and Fillet, than previously assumed. It also might be a strong indication of changes in market preferences, shifting from more processed products to fresh products.

Table 6. Estimated First Wholesale Product Form, 2008–2017

Product Form	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
MMlb												
Canned	50.0	48.2	36.9	28.8	44.2	27.3	47.7	47.0	35.9	18.6	-17.3	38.5
H&G Frozen	52.7	61.5	62.5	43.4	29.8	24.8	44.9	64.1	62.1	86.7	24.6	53.2
H&G Fresh	0.6	0.8	1	1	3.1	0.2	0.3	1.3	10.0	4.4	-5.7	2.3
Fillet	9.2	11.8	14.2	14.8	10.8	9.4	14.7	17.1	26.0	28.1	2.1	15.6
Other	0.7	0.6	0.1	0.2	0.4	0.4	0.4	0.2	1.0	1.1	0.1	0.5
Total	113.2	122.9	114.7	88.2	88.3	62.1	107.9	129.7	135.1	138.9	3.8	110.1
%												
Canned	44	39	32	33	50	44	44	36	27	13	-48	36
H&G Frozen	47	50	55	49	34	40	42	49	46	62	40	47
H&G Fresh	1	1	1	1	3	0	0	1	7	3	-56	2
Fillet	8	10	12	17	12	15	14	13	19	20	8	14
Other	1	0	0	0	0	1	0	0	1	1	7	0
Total	101	100	100	100	99	100	100	100	100	100	3	100

Note: Column totals may not sum due to rounding.

The amount of raw product canned in the Bay dropped to 22.3 MMlb in 2017, a 43.3 MMlb decrease from the eight-year high recorded in 2015 (see Table 7). However, the amount of raw product canned outside the Bay increased in 2017 to 5.5 MMlb. In terms of the percent of total production, raw product canned within the Bay accounted for only 11 percent of total production and raw product canned outside the Bay accounted for 3 percent. The results of the 2017 survey show an overall shift away from canned products, with a smaller portion of raw product purchases being allocated towards canning within the region.

Table 7. Canning Location, 2008–2017

Product Form	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
Round Pounds												
Reported Canned in the Bay	47.0	59.2	51.6	41.8	64.1	39.7	63.4	65.5	53.4	22.3	-31.1	50.8
Assumed Canned Outside the Bay	27.5	12.7	3.4	1.1	1.9	1.0	7.8	4.6	0.2	5.5	5.4	6.6
Total	74.6	71.9	55.0	42.9	66.0	40.8	71.2	70.1	53.6	27.8	-25.8	57.4
% of Total Production												
Reported Canned in the Bay	29	33	31	32	49	43	39	34	26	11	-16	33
Assumed Canned Outside the Bay	17	7	2	1	1	1	5	2	0	3	3	4
Total	46	41	33	33	50	44	44	37	27	14	-13	37

Note: Column totals may not sum due to rounding.

4 Product Chilled Prior to Delivery

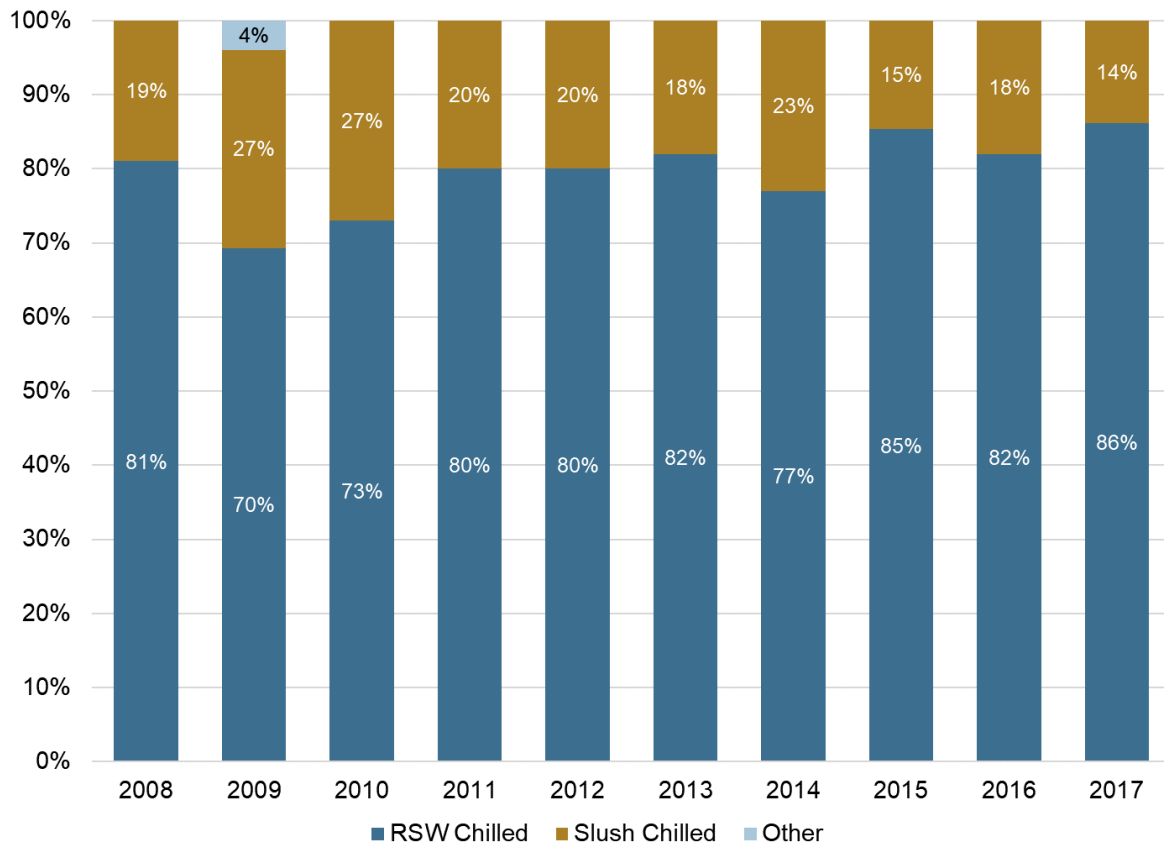
As in previous iterations, the 2017 survey asks processors about the use of RSW and slush ice systems within the drift fleet. RSW and slush ice systems were used to chill an estimated 129 MMlb of raw product in 2017, the largest volume of chilled raw product recorded by the survey to date (see Table 8). The majority of raw product, about 86 percent, was chilled using RSW systems and the remaining 14 percent was chilled using slush ice.

Table 8. Drift Fleet Chilling Methods 2008 – 2017

Chilling Method	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Year over Year Change	Average, 2008- 2017
MMlb												
RSW Chilled	26.5	41.7	46.0	47.2	51.6	37.5	51.8	74.8	100.4	111.2	10.8	58.9
Slush Chilled	6.1	16.1	17.0	11.6	13.2	8.0	15.5	12.9	22.1	17.9	-4.2	14.0
Other	N/A	2.2	-	-	-	-	-	-	-	-	-	2.2
Total	32.6	60.0	63.0	58.8	64.8	45.5	67.3	87.7	122.4	129.0	6.6	75.1
%												
RSW Chilled	81	70	73	80	80	82	77	85	82	86	11	80
Slush Chilled	19	27	27	20	20	18	23	15	18	14	-19	20
Other	N/A	4	0	0	0	0	0	0	0	0	0	0
Total	100	101	100	100	100	100	100	100	100	100	5	100

While there is some variation in the portion of raw product purchases chilled using RSW or slush ice systems, the survey results between 2008 and 2017 show a relatively stable distribution between the two chilling methods. In the first seven years of the survey (2008–2011) it appeared that the run size impacted the chilling method, with the portion of raw product chilled by RSW systems decreasing on years that saw larger runs, but results from the 2016 and 2017 surveys directly contradict that perceived trend. Processors and permit holders have told us that the steady and consistent nature of the recent runs' intensity allowed more time for chilling fish as they were harvested. Thus, run intensity appears to be a factor as well as the size of the run.

Figure 4. Chilling Methods in the Drift Fleet, 2008-2017



The 2017 survey recorded an increase in the portion of total round pounds chilled by the drift fleet using RSW systems for the third consecutive year (see Table 9). Except for the slight dip in 2013 and 2014, the survey has consistently recorded year-over-year increases in the percent of total drift fleet chilled product that was chilled using a RSW system. The inverse can be seen in the portion of the total round pounds unchilled by the drift fleet, which has steadily decreased since 2009 except for 2013 and 2014, which recorded slight increases. In 2017, 27 percent of total drift fleet purchases were unchilled, the lowest portion recorded by the survey and a 64 percent decrease from the data collected by the first survey in 2008. Over the life of the survey, the portion of the total raw product purchased from the drift fleet being chilled with ice has remained relatively stable, ranging between 5 percent and 13 percent, and it appears that the increase in raw product chilled by RSW systems is really driving the overall change in icing practices in the region.

The ten years of data collected by this survey show a distinct shift in the chilling practices in Bristol Bay, from most of the drift fleet delivering unchilled raw product in 2008 (76 percent unchilled), to the majority of the drift fleet delivering chilled raw product in 2017 (73 percent chilled).

Table 9. Drift Fleet Chilling Methods as a Percentage of Total Drift Chilled Raw Product, 2008-2017

Year	Total Round Pounds	RSW		Ice Chilled		Dry (Unchilled)	
		Round Pounds	Percent of Total	Round Pounds	Percent of Total	Round Pounds	Percent of Total
2017	177.8	111.2	63	17.9	10	48.7	27
2016	171.7	100.4	58	22.1	13	49.0	29
2015	157.4	74.8	47	12.9	8	69.8	44
2014	132.3	51.8	39	15.5	12	65.0	49
2013	81.0	37.5	46	8.0	10	35.5	44
2012	109.4	51.6	47	13.2	12	44.6	41
2011	110.1	47.2	43	11.6	10	51.4	47
2010	136.0	46.0	34	17.0	12	72.6	53
2009	151.7	41.7	27	16.1	11	91.7	60
2008	134.7	26.5	20	6.1	5	102.2	76
Total	1,362.1	588.6	43	140.3	10	630.5	46

Note: Round pounds may not equal total pounds due to the exclusion of 'other' chilling methods.

5 Drift Fleet Size and Chilling

The number of vessels participating in the Bristol Bay salmon run in 2017 increased slightly to 1,447 vessels (see Table 10). This represents a slightly higher number of vessels than the average reported since the start of the survey (1,373). While the number of active vessels will always exhibit some variation year-to-year, the coefficient of variation in the drift fleet is relatively low (seven percent), indicating that the region has a sustained carrying capacity close to the recorded average of 1,373 vessels.² So while the region will continue to see fluctuating fleet sizes due to variations in run sizes, intensity, and economic conditions, the region is unlikely to support a much larger fleet sizes on a long-term basis.

The survey asked processors to consider a boat 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 vessels per processor increased slightly in 2017 to 145 vessels per processor, and the median vessels per processor also increased slightly from 129 in 2016 to 132 in 2017. The maximum reported fleet size (among processors) in 2017 decreased slightly from 2016, while the minimum fleet size increased. Overall there was slightly more variation among the responses received in 2017 than in the previous year. The majority of respondents, approximately 70 percent, reported having between 100 and 200 vessels in their drift fleets.

Table 10. Number of Vessels in the Drift Fleet, 2008-2017

Year	Total Vessels in Drift Fleet	Percent Change in Fleet Size	Average Vessels per Processor	Median Vessels per Processor
2017	1,447	4	145	132
2016	1,390	-6	139	129
2015	1,485	7	149	151
2014	1,394	6	155	143
2013	1,309	-14	145	123
2012	1,530	13	153	134
2011	1,358	1	123	115
2010	1,343	3	122	115
2009	1,309	13	119	100
2008	1,162	N/A	97	98
Average	1,373	3³	135	124

As in prior iterations, the 2017 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 fleet reached 962, the largest number of vessels ever to be recorded in this category (Table 11). The increase in vessels coincides with increases reported for vessels delivering chilled raw product more than 50 percent of the time. Inversely, the number of vessels delivering chilled raw product less than 50 percent (or none of the time) decreased. In 2017, the number of vessels that delivered chilled raw product none of the time dropped to 259 vessels from 302 vessels in 2016. This suggests that conversions from dry vessels to vessels with RSW

² The coefficient of variation measures the dispersion of a distribution around its mean. The coefficient of variation is expressed as a percentage and defined as the ratio of the standard deviation to the mean.

³ Average does not include 2008.

systems are still occurring or the drift fleet is using slush ice to properly chill their product more consistently. As more vessels convert to RSW systems, there is also less pressure on the ice supply 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 preference, but rather a requirement in Bristol Bay. There are already multiple processors operating in Bristol Bay that mandate raw product deliveries be chilled, and pay a higher price per pound, but do not offer icing bonuses.

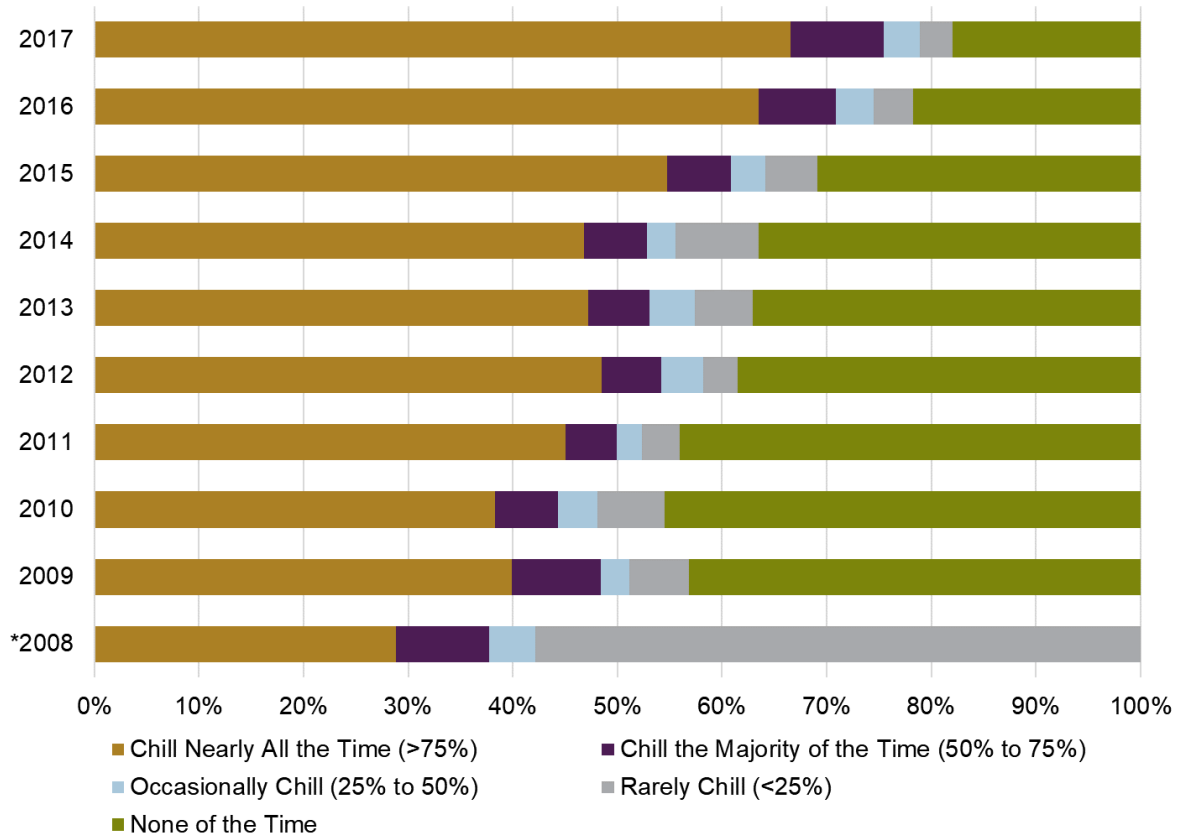
Table 11. Consistency of Chilling, 2008-2017

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
Number of Vessels					
2017	962	130	50	45	259
2016	884	103	51	53	302
2015	812	92	48	75	458
2014	652	84	38	111	509
2013	617	77	56	72	486
2012	741	87	61	51	589
2011	612	66	32	48	599
2010	514	81	51	87	611
2009	522	112	35	74	565
2008	335	104	51	672	N/A
Percent of Vessels					
2017	66.5	9.0	3.4	3.1	17.9
2016	63.6	7.4	3.6	3.8	21.7
2015	54.7	6.2	3.2	5.0	30.9
2014	46.8	6.0	2.8	7.9	36.5
2013	47.2	5.9	4.3	5.5	37.1
2012	48.5	5.7	4	3.3	38.5
2011	45.1	4.9	2.4	3.6	44.1
2010	38.3	6	3.8	6.4	45.5
2009	39.9	8.5	2.7	5.7	43.2
2008	28.8	8.9	4.4	57.8	N/A

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

In 2017, 75.5 percent of vessels delivered chilled raw product more than 50 percent of the time (note this is an aggregation of the 50 to 75 percent and over 75 percent categories shown in Table 11), the most consistent chilling practices recorded by this survey to date (Figure 5). The portion of vessels who chilled their deliveries less consistently, less than 25 percent or none of the time, also decreased in 2017 to just over 21 percent of vessels. This is the lowest portion of vessels making unchilled or dry deliveries recorded by the survey.

Figure 5. Chilling Consistency among the Drift Fleet, 2008-2017



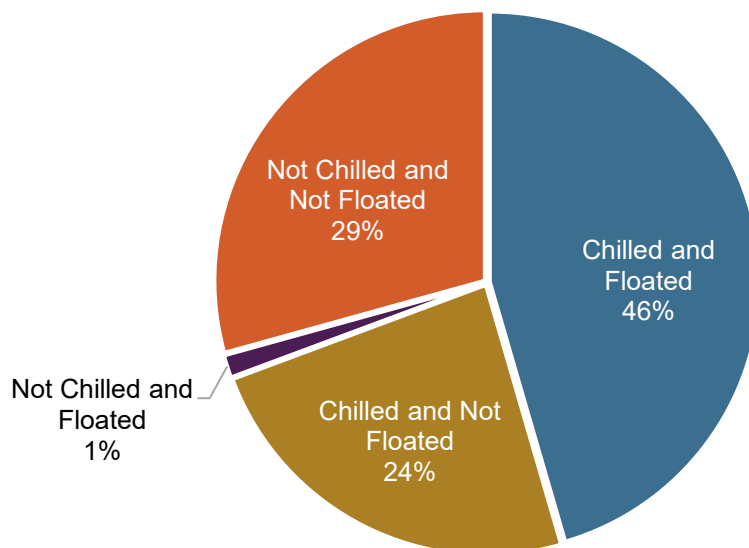
6 Quality of Chilled Raw Product

Questions pertaining to the quality of chilled raw product in the Bristol Bay drift net fishery changed in 2017, building on feedback provided in previous surveys to ask new and more refined questions. New to the 2017 survey are questions inquiring about the percentage of raw product being purchased from the drift net fleet that are chilled and/or floated, processor employment of third part quality assurance contractors, and best practices that have the biggest impact on the quality of delivered raw product. Conversely, the 2017 survey removed a series of questions asking about the maximum, minimum, and ideal temperatures of chilled raw product.

To capture data on the quality of chilled raw product in the Bristol Bay drift net fishery, the 2017 survey collected a third year of data using the same questions to start to identify trends or changes in the preferred practices and shifting attitudes towards the predicted quality of raw product delivered in Bristol Bay moving forward—all respondents reported that the quality of chilled floated RSW fish is better than the quality of slush chilled, non-floated fish. The degree to which the quality of chilled floated RSW fish is better was split, with approximately half answering the chilled floated RSW fish is 'significantly better' while the other half reported it is only 'slightly better'.

Further, building on feedback from the 2015 and 2016 surveys, the 2017 survey asked respondents to further breakdown total raw product purchased from the drift fleet into four categories of fish: floated RSW, non-floated RSW, floated slush ice, and non-floated slush ice. The additional breakdown helps to further understand the additional method of floating, which refers to the degree of crowding, and can be achieved using both chilling methods. The breakdown of total raw product purchases made from the drift fleet in 2017 are shown in Figure 6, indicating that nearly two-thirds of chilled raw product purchase from the drift fleet was floated.⁴

Figure 6. Proportion of Drift Fleet Raw Product Chilled and/or Floated, 2017



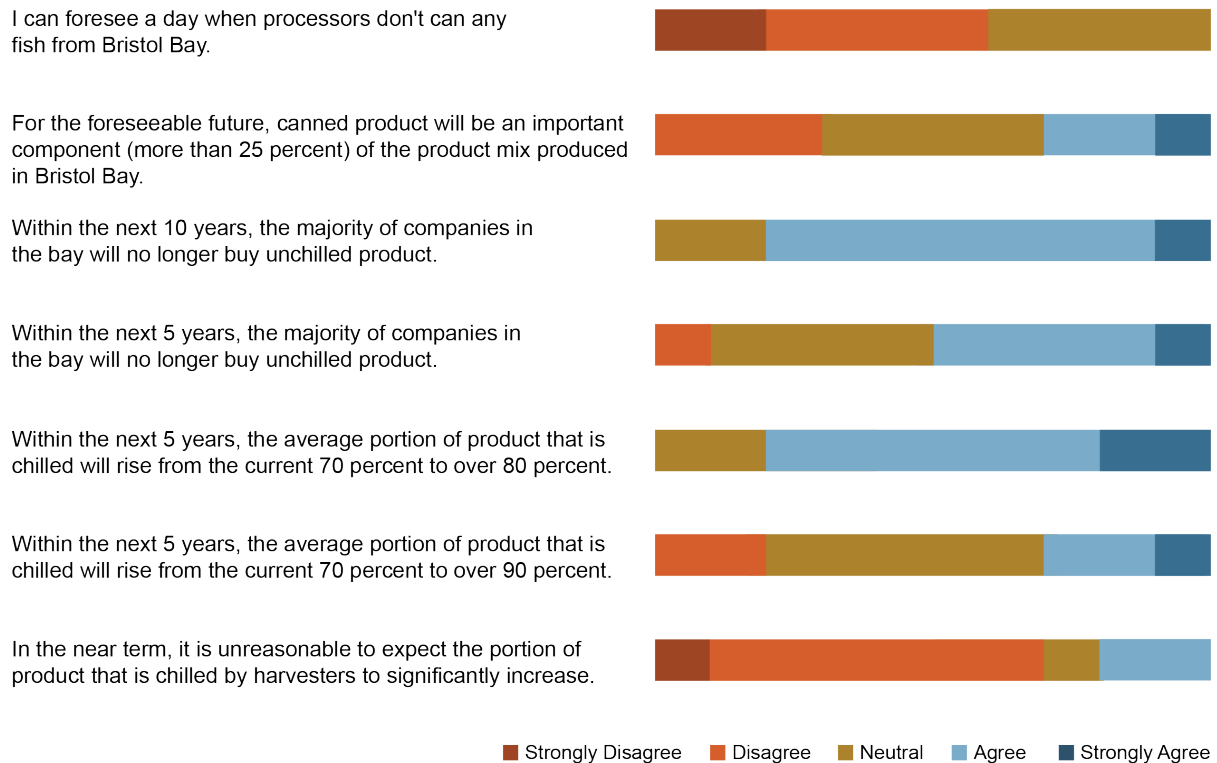
Note: two processors did not complete the question regarding floating practices

⁴ Note that two processors did not complete the question regarding floating practices and are not included in the analysis.

We also asked processors how many fish tenders are required to sample in a delivery to determine the chilled temperature and possibly qualify for a chilling bonus. Responses ranged from 3 fish to 20 fish per delivery, with the most common response being 3 fish (50 percent of respondents) and the average 5.6 fish. The 2017 survey also included two questions regarding the hiring of quality assurance contractors: 1) Do you employ a third-party quality assurance contractor for your tender fleet? And 2) If you did employ a third-party quality assurance contractor, what percentage of your tenders had a third-party quality assurance contractor on board during the 2017 season? Four processors reported having hired a third-party quality assurance contractor in 2017. However, of those reporting they hired a third-party contractor, only one further disclosed the percentage of tenders that had a contractor on board.

The 2017 survey also collected a third year of data introduced in the 2015 survey that presented processors with a set of seven statements regarding the future of product mixes and the portion of chilled product purchases in Bristol Bay and asked them to indicate if they strongly disagree, disagree, neither agree or disagree, agree, or strongly agree with each statement.⁵ The 2017 survey continued collecting data on processors’ attitudes towards these forward-looking statements (see Figure 7).

Figure 7. Future of Product Mix and Chilling Trends in Bristol Bay, 2017



Comparing the results over the past three years, there continues to be a shift in processors’ attitudes toward canning in Bristol Bay. The portion of respondents that disagreed with the statement “I can foresee a day when processors don’t can any fish from Bristol Bay” increased slightly from 40 percent in 2016 to 60 percent of respondents in 2017. The portion of respondents that felt that canned product would account for more than 25 percent of the product mix in Bristol Bay remained unchanged at 30

⁵ Changes were made to the questions regarding the average portions of product being chilled in the next five years to reflect current portion levels.

percent. These findings are relatively similar to those found in the 2016 survey and come on the heels of a season where processors reported another significant drop (25.8 MMLb) in canned product from the previous year. In 2017 canned product accounted for only 14 percent of the Bristol Bay product mix.

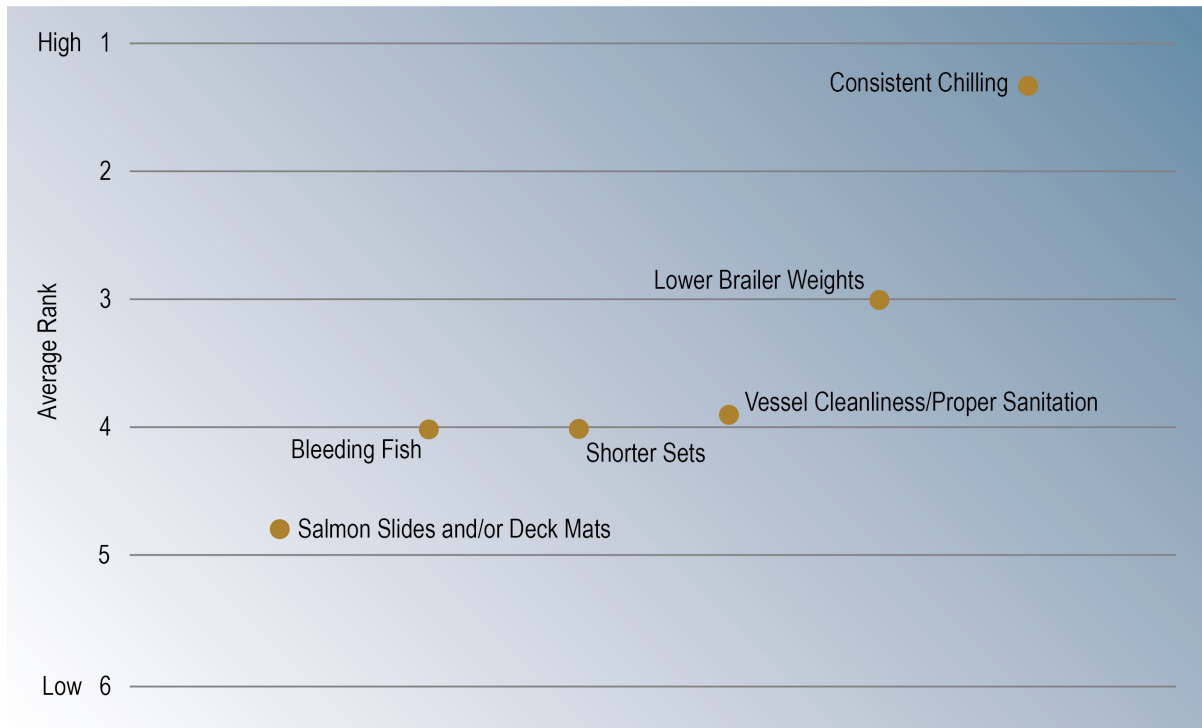
The survey also recorded a shift in processors' attitudes toward the predicted portion of purchases that will be chilled over the next five years. In 2016, 50 percent of processors indicated that it was reasonable to expect the portion of chilled harvest to significantly increase in the near term, but the 2017 survey recorded 70 percent of respondents shared that same sentiment. In addition, 60 percent of respondents reported they agreed with the statement that "within the next 5 years, the average portion of product that is chilled will rise from the current 70 percent to over 80 percent." Although slightly less optimism was reported for the portion of raw product that is chilled rising to over 90 percent in the next ten years.

New to the 2017 survey was a question asking respondents to rank six best practices based on the magnitude of impact the practice has on the quality of the delivered raw product. Respondents were asked to rank the practices from 1 to 6, with 1 having the biggest impact on quality and 6 having the smallest impact on quality. 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), and vessel cleanliness/proper sanitation. Consistent chilling was ranked highest among all respondents except for two. The fact that chilling has long been the principal focus of the survey may provide some influence as being uppermost importance to respondents. It is also possible that chilling is ranked highest because without that practice, many of the other best practices would be less important.

Going forward, especially in light of the great gains made in chilling, BBRSDA may want to focus more on other improvements. For example, the use of lower brailer weights ranked second highest in providing higher quality to raw product delivered, while vessel cleanliness/proper sanitation, shorter sets, and bleeding fish all ranked closely—as indicated by the cluster in Figure 8.⁶ It is also worth noting that the variance among rankings were relatively small (0.5) among the highest ranked (consistent chilling) and lowest ranked (salmon slides and/or deck mats). However, rankings of the other four best practices varied between 1.8 and 2.9, indicating less consensus among the importance of those practices.

⁶ Only nine responses were used due to completeness.

Figure 8. Average Rank of Best Practices Impacting the Quality of Delivered Product, 2017



Note: 1= Biggest Impact, 6= Lowest Impact

Source:

7 Processor Ice-Making Capability

Total ice production dropped again 2017, falling by 13 percent to 695 tons per day (Table 12). However, the amount of ice available to permit holders from processors increased from 104 tons in 2016 to 149 tons in 2017—a notable increase of 43 percent. These changes deviate from the average reported over the nine years that the survey has been completed.

When barge ice is added to the equation, the total amount of daily ice available increases to 247 tons per day. This is a four percent decrease from the previous year. Although there was an overall decrease in the amount of total ice production, the significant increase in ice being made available to permit holders from processors signifies the responsiveness of processors in providing ice to the drift fleet, as well as the importance of ice to the drift fleet’s chilling practices. And 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, there is still a significant portion of the drift fleet that uses slush ice to chill their product, with about 14 percent of chilled deliveries using slush ice in 2017.

Table 12. Ice Production in Tons per Day, 2008-2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
Total Ice Production Capacity	760	750	680	735	820	615	710	975	795	695	754
Available to permit holders from processors	85	89	155	130	202	85	59	113	104	149	117
Percent available to permit holders from processors	11	12	23	18	25	14	8	12	13	21	16
Barge Ice		98	98	98	98	98	98	98	98	98	98
Total ice available to permit holders	N/A	187	253	228	300	183	157	211	202	247	219

8 Open-Ended Responses

Questions 23 and 24 of the 2017 survey captured processor priorities and opinions regarding the fishery. These questions asked respondents to rank in importance areas on which BBRSDA should focus to improve the overall health of the fishery, and to identify the most important projects that the BBRSDA can undertake to improve the fishery. Each is restated below (in italics), and processor responses are summarized in the following paragraphs.

Question 23

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 to focus. Thinking back on the last 5 years, and thinking ahead to future work, what areas are most important for BBRSDA to focus on?

Since this question was first introduced in 2012, quality has received the highest average score each year (except in 2016 when quality tied with research for the highest average score). Table 13 summarizes the average score (on a five-point scale) ranking the priorities of BBRSDA as reported by survey respondents and the proportion of responses at, or above, moderate importance. As shown, respondents indicated that quality and research should be the two most important focuses of BBRSDA. Among processors, the importance of quality is relatively consistent across the board, as measured by the variance from the average (0.7). A smaller variance indicates that answers are largely clustered together, while a larger variance means that answers are more spread out. In recent years, the importance of research has also been mostly agreed upon by processors; however, in 2017 the importance of research varies slightly more, and was more closely aligned with infrastructure (both varied from their average by 1.0). Marketing remained the category with the highest variance among processors, with scores varying 1.2 from the average.

Since its debut in 2008, the survey has recorded notable gains in the chilling practices in Bristol Bay, which can be directly tied to the quality of raw catch. It is possible that as chilling and other quality-related goals are met, processors could shift their priorities to more heavily focus on other focus areas.

Table 13. Prioritization of Spending Areas

Area for Focus	Average Score 1-5 Scale						Portion At or Above Moderate Importance					
	2012	2013	2014	2015	2016	2017	2012	2013	2014	2015	2016	2017
Infrastructure	3.7	3.3	3.4	3.6	3.4	3.6	80	67	67	80	70	80
Research	3.5	4.0	4.0	3.7	3.8	3.8	80	89	100	90	100	90
Quality	4.1	4.2	4.4	3.9	3.8	4.1	80	89	100	90	100	90
Marketing	3.0	2.9	3.0	3.5	3.5	3.6	60	67	75	80	90	70

*1= Very Low Importance, 5=Very High Importance

Question 24

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?

In 2017, chilling and research were the primary topics of the open-ended responses collected for this question. Processors would continue to like to see programs that help fishermen finance and install RSW systems, as well as evaluate the possibility of underwriting processor's on-board monitoring systems. Respondents also brought up the potential for BBRSDA to market wild Alaskan salmon.

9 References

- Alaska Department of Fish and Game (ADF&G). 2017 *Bristol Bay Salmon Season Summary*. Issued September 14, 2017. Available at <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/865497019.pdf>. Accessed on February 23, 2018.
- Bristol Bay Fishermen's Association (formerly AIFMA). Fisherman's Prices (Current Prices Available to Members). Available at http://www.aifma.org/fishermans_prices.html. Accessed on February 27, 2018.

Appendix: Survey Instrument

Introduction

Welcome to the 2017 Bristol Bay Salmon Fishery Processing Survey! We're glad to be conducting this survey again after successful 2008-2016 surveys. The 2017 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 2017.

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 four dominant product forms (excluding roe).

All of the data reported by individual respondents will be held in confidence by Northern Economics and will only be reported in aggregate. At no time will anyone other than Northern Economics staff have access to individual survey responses.

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 Michelle Humphrey 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.

Raw Product

This section asks questions about a processor's purchase of raw product (round weight fish) in 2017. Please ensure that all answers are for the 2017 season.

Please note that some questions refer to all of your operations in 2017 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 TO 100 DOES NOT SUM TO 100 OR IF A % SYMBOL IS INCLUDED IN THE ENTRY.

5. In 2017, how many pounds of raw product (round weight fish) did your company purchase from the Bristol Bay salmon fishery?

2017 Raw Product Weight

6. In 2017, 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?

2017 Chilled Raw Product Weight

7. What percentage of each of the following categories came from the DRIFT NET fleet in 2017?

For example, if the DRIFT NET fleet accounted for 75% of your purchases you would enter 75 below. The survey form does not accept % symbols or decimals.

Portion of Total Raw Product from the Drift Net Fleet

Portion of Total Chilled Raw Product from the Drift Net Fleet

8. What percentage of your 2017 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

9. Of the raw product (round weight fish) that your company purchased in 2017, and processed INSIDE Bristol Bay, please estimate the percent that your company used for each of the following product forms. The total should equal 100. ENTER ONLY NUMBERS. DO NOT ENTER PERCENT SYMBOLS (%).

Canned Product

H&G Frozen

H&G Fresh

Fillet

Other

10. What percentage of the chilled raw product your company purchased from drift net fleet boats in 2017 was from each of the following categories? The total of your answer should be 100.

RSW

Slush Ice

Other

11. What percentage of the raw product purchases your company purchased from the drift net fleet in 2017 were chilled and/or floated? The total of your answer should be 100.

Chilled and Floated

Chilled and Not Floated

Not Chilled and Floated

Not Chilled and Not
Floated

Your Fleet

This page asks questions about drift net boats that you consider to be part of "your fleet."

12. In 2017, 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 2017.

Number of Drift Fleet Vessels

13. 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 2017 deliveries were chilled

50% to 75% of their 2017 deliveries were chilled

25% to 50% of their 2017 deliveries were chilled

1% to 25% of their 2017 deliveries were chilled

None of their 2017 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 2017 and its availability to your fleet.

14. In 2017, 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)

15. What percentage of your 2017 daily ice making capacity located in Bristol Bay is available for use by your drift boat fleet? Please exclude any ice produced by the BBEDC ice barges.

Portion Available to Your Drift Boat Fleet (%)

16. Which statement do you think best describes how the amount of ice available to permit holders from ALL processors in aggregate is likely to change in the next five years? Please check one box.

- Substantially More Ice Available from Processors
- Marginally More Ice Available from Processors
- No Change in the Amount of Ice Available from Processors
- Marginally Less Ice Available from Processors
- Substantially Less Ice Available from Processors

Quality of Chilled Product

This section of the survey asks about the quality of the chilled product purchased in the Bristol Bay driftnet salmon fishery during the 2017 season.

17. 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.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. How many fish are the tenders required to sample in a delivery to determine the chilled temperature and possibly qualify for a chilling bonus?

19. Do you employ a third party quality assurance contractor for your tender fleet?

- Yes
- No

20. If you did employ a third party quality assurance contractor, what percentage of your tenders had a third party quality assurance contractor on board during the 2017 season?

21. After five years of little to no growth in the portion of Bristol Bay product which was chilled prior to delivery, we saw a large increase in the portion of chilled product during the 2016 season. Between 2011-2015 harvesters chilled between 53 and 59 percent of the harvest, but in 2016 the portion of chilled product shot up to 71 percent. By comparison, the average gain between 2011 and 2015 was around 4 percent per year, but between 2015 and 2016 we saw a 28 percent increase in the portion of chilled purchases. BBRSDA is interested in exploring what processors think the future might hold for product mixes and the portion of chilled product. Please tell us how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
In the near term, it is unreasonable to expect the portion of product that is chilled by harvesters to significantly increase.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Within the next 5 years, the average portion of product that is chilled will rise from the current 70 percent to over 80 percent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Within the next 5 years, the average portion of product that is chilled will rise from the current 70 percent to over 90 percent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Within the next 5 years, the majority of companies in the bay will no longer buy unchilled product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Within the next 10 years, the majority of companies in the bay will no longer buy unchilled product.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For the foreseeable future, canned product will be an important component (more than 25 percent) of the product mix produced in Bristol Bay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can foresee a day when processors don't can any fish from Bristol Bay.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Which of these best practices have the biggest impact on the quality of delivered product? (1= biggest impact on quality and 6= smallest impact on quality)

<input type="text"/>	<input type="text"/>	Consistent Chilling (RSW or Slush Ice)
<input type="text"/>	<input type="text"/>	Bleeding Fish
<input type="text"/>	<input type="text"/>	Shorter Sets
<input type="text"/>	<input type="text"/>	Salmon Slides and/or Deck Mats
<input type="text"/>	<input type="text"/>	Lower Brailer Weights (500-600 lbs or less per brailer bag)
<input type="text"/>	<input type="text"/>	Vessel Cleanliness/Proper Sanitation

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.

23. 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"/>

24. 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 2018. BBRSDA will email a copy of the results to you using the contact information you provided with the survey.

All individual data will remain in confidence with Northern Economics.