2009 Bristol Bay Processor Survey

Prepared for

Bristol Bay Regional Seafood Development Association

February 2010

Northern Economics

Wisdom • Trust • Relevance • Innovation

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880 H Street, Suite 210
Anchorage, Alaska 99501
Phone: (907) 274-5600
Fax: (907) 274-5601
Email: mail@norecon.com

119 N Commercial Street, Suite 190
Bellingham, WA 98225
Phone: (360) 715-1808
Fax: (360) 715-3588

PROFESSIONAL CONSULTING SERVICES IN APPLIED ECONOMIC ANALYSIS

Principals:
Patrick Burden, M.S. – President
Marcus L. Hartley, M.S. – Vice President
Jonathan King, M.S.

Consultants:
Alexus Bond, M.A.
Leah Cuyno, Ph.D.
Michael Fisher, MBA
Cal Kerr, MBA
Bill Schenken, MBA
Don Schug, Ph.D.
Katharine Wellman, Ph.D.

Administrative Staff:
Diane Steele – Office Manager
Terri McCoy, B.A.

Northern Economics

880 H Street, Suite 210
Anchorage, Alaska 99501
Phone: (907) 274-5600
Fax: (907) 274-5601
Email: mail@norecon.com

119 N Commercial Street, Suite 190
Bellingham, WA 98225
Phone: (360) 715-1808
Fax: (360) 715-3588

Preparers

Team Member	Project Role
Jonathan King	Project Manager
Marcus Hartley	Economist
Terri McCoy	Editor

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Contents

Section		Page
1	Introduction	1
2	Raw Product Purchases and Chilling	2
3	Finished Product Forms	3
4	Product Chilled Prior to Delivery	6
5	Processor Drift Fleets	8
6	Processor Ice Making Capability	10
7	Quality and Chilling	11
8	Open Ended Responses	12
9	Conclusions and Recommendations	15

Table **Page**

Table 1. Total Raw Product Purchases, 2008 vs. 2009 2
Table 2. Drift Fleet Raw Product Purchases, 2008 vs. 2009 2
Table 3. Raw Product Consumed by Estimated First Wholesale Product Form, 2008 and 2009 3
Table 4. Estimated First Wholesale Product Form, 2008 and 2009 4
Table 5. Canning Location, 2008 and 2009 5
Table 6. Chilling Methods in 2009 6
Table 7. Chilling Through the Season 7
Table 8. Processor Fleets 8
Table 9. Consistency of Chilling, 2008 vs. 2009 8
Table 10. Consistency of Chilling, 2009 9
Table 11. Average Percentage Discount off the #1 Wholesale Price 11
Table 12. RSW versus Slush Chilling 12
Table 13. Enhancing the Quality and Health of the Fishery 13
Table 14. Questions We Aren't Asking 14

Figure **Page**

Figure 1. Percent of Round Weight Product Used for Canned Production by Anonymized Respondent 5
Figure 2. Chilling Method in the Drift Fleet (2009) 6
Figure 3. Consistency of Chilling, 2008 vs. 2009 9

1 Introduction

The Bristol Bay Regional Seafood Development Association contracted with Northern Economics, Inc. to conduct a survey of processors who operated in the 2009 Bristol Bay salmon fishery. This report summarizes the results of the study.

As with last year, the survey instrument consists of a series of questions about the processors, their operations in Bristol Bay in 2009, and their perceptions about how the fishery is changing. The operational questions focus on processors' purchase of chilled product and the distribution of their production between the four major product forms (i.e., canned, H&G frozen, H&G fresh, and fillet).[1] As of this date, eleven of the twelve processors that we contacted responded to the survey. These processors reported processing more than 177.3 million pounds (Mlb) of raw (round weight) product in 2009. The total production recorded by the survey is over 92 percent of the production for the fishery recorded via ADF&G fish tickets. This percentage is in line with the 94 percent coverage we achieved last year.

As a preface, we note that this year's survey results show significant changes in the fishery from 2008:

- Processors purchases of chilled raw products increased substantially in 2009. In addition, rate of growth in chilled raw product purchases was faster than the rate of growth in all product purchases: respondent processor purchases from all permit holders increased by roughly 8.5 percent over 2008 levels while respondent purchases of chilled product from all permit holder increased by nearly 35.6 percent over 2008 levels.[2]
- Purchases of chilled product from drift net permit holders nearly doubled in 2009 over 2008 levels. As ice available from processors increased only slightly, this increase in chilled product purchases was supported primarily by investments in ice barges and individual permit holders' investments in RSW systems.
- Production of canned product fell nearly 4 percent by weight and over 11 percent as a portion of total production.
- The portion of vessels that consistently chill their product grew by more than 30 percent while the portion of vessels that rarely chill their product fell roughly 15 percent.

The following sections discuss the results of the survey by topic area and provide a comparison to the 2008 survey results.

[1] The full survey instrument is contained in Appendix A of this letter report.

[2] Last year's survey included one additional smaller processor. If last year's data is adjusted to exclude that processor then the processors who participated in both surveys increased their purchases by roughly 11 percent and their purchase of chilled raw product by roughly 37 percent. The majority of this report is unadjusted data as we anticipated the last processor participating in the survey up until our publishing date and because adjusting the data reveals confidential information about that processor's 2008 production. We note where we have adjusted this data to reflect the absence of this processor.

2 Raw Product Purchases and Chilling

Processor purchases of raw product and of chilled raw product increased substantially in 2009 as compared to 2008, while purchases of unchilled product actually declined. In 2009, surveyed processors reported purchasing 177.3 Mlb of raw product as compared to 163.5 Mlb in 2008; an 8.5 percent increase. Processor purchases of chilled raw product increased by 35.6 percent to 63.4 Mlb from 46.8 Mlb. At the same time, purchases of unchilled product fell by 2.4 percent to 114.0 Mlb from 116.73 Mlb.

As a portion of total harvest, chilled product purchases increased by 25 percent to 35.7 percent of the total while unchilled harvest fell by 10.0 percent to 64.3 percent of the total. Thus, unchilled product still dominates Bristol Bay raw product purchases even though chilled raw product purchases saw substantial increases this year in both absolute and relative terms.

Table 1. Total Raw Product Purchases, 2008 vs. 2009

	2008		2009		Percent Change	
Type	Round Pounds	Percent of Total	Round Pounds	Percent of Total	Round Pounds	Portion of Total
Chilled	46,730,000	28.6%	63,380,000	35.7%	35.6%	25.0%
Unchilled	116,730,000	71.4%	113,940,000	64.3%	-2.4%	-10.0%
Total	163,460,000	100.0%	177,320,000	100.0%	8.5%	N/A

Source: Northern Economics, Inc. 2009

In 2009, the slush ice production on mobile platforms supported by BB-RSDA increased total ice production by roughly 1.4 Mlb. The effect of this program is clearly evident in the data gathered by this year's survey. In 2009 processors purchased nearly 28 Mlb more chilled product from drift permit holders than they purchased in 2008, a nearly 85 percent increase in total purchases of chilled product. The purchase of unchilled product fell by just over 10 percent from 102.2 Mlb to 91.7 Mlb. As a portion of total purchases from the drift fleet chilled product purchases increased by nearly 64 percent in 2009 while unchilled product purchases fell over 20 percent as a portion of total drift fleet purchases.

Table 2. Drift Fleet Raw Product Purchases, 2008 vs. 2009

	2008		2009		Percent Change	
Type	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total
Chilled	32,530,000	24.1%	60,010,000	39.6%	84.5%	63.9%
Unchilled	102,200,000	75.9%	91,680,000	60.4%	-10.3%	-20.3%
Total	134,730,000	100.0%	151,690,000	100.0%	12.6%	0.0%

Source: Northern Economics, Inc. 2008

3 Finished Product Forms

The past year saw a significant shift in product form production amongst reporting processors as the percentage of raw product that went into cans was not the dominant consumer of raw product. In 2009, the H&G frozen product form was the largest consumer of raw product, utilizing 46.9 percent of the reported production compared to 43.6 percent in 2008. This change represents a nearly 8 percent increase in the portion of the reported production consumed by the H&G frozen product form. Thus, in 2009, the H&G frozen product form is the largest product form in both amount of raw product consumed and finished product produced. At the same time, the portion of raw product going into fillets increased by nearly 18 percent from 9.9 percent of overall raw product in 2008 to 11.7 of overall raw product in 2009. At the same time, total raw product moving into cans fell by over 11 percent as a portion of total raw product and by nearly four percent in absolute terms.

Table 3. Raw Product Consumed by Estimated First Wholesale Product Form, 2008 and 2009

	2008		2009		Percent Change	
Product Form	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total
Canned[3]	74,560,000	45.6%	71,860,000	40.5%	-3.6%	-11.2%
H&G Frozen	71,230,000	43.6%	83,140,000	46.9%	16.7%	7.6%
H&G Fresh	800,000	0.5%	1,020,000	0.6%	27.5%	17.5%
Fillet	16,200,000	9.9%	20,710,000	11.7%	27.8%	17.8%
Other	680,000	0.4%	590,000	0.3%	-13.2%	-20.0%
Total	163,460,000	100.0%	177,320,000	100.0%	8.5%	N/A

Source: Northern Economics, Inc. 2009

Final product forms shifted commensurately with the shifts in raw product input:

- Canned product declined from an estimated 44.1 percent of the production by weight to 39.2 percent (see Table 4);
- H&G frozen product increased to just over 50 percent of all product from 46.4 percent;
- Filleted product increased from 8.2 percent to 9.6 percent of first wholesale product weight.

[3] This number includes long-haul fish.

Table 4. Estimated First Wholesale Product Form, 2008 and 2009

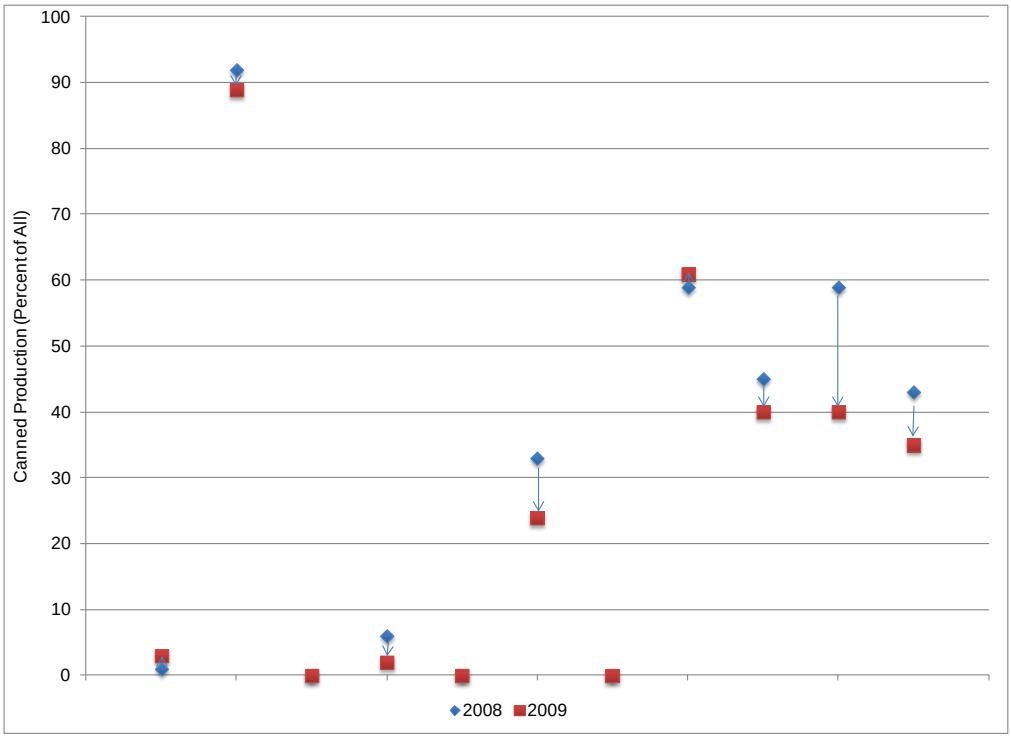
Product Form	2008		2009		Percent Change	
	Finished Pounds	Portion of Total (%)	Finished Pounds	Portion of Total (%)	Finished Pounds	Portion of Total
Canned[4]	49,960,000	44.1%	48,150,000	39.2%	-3.6%	-11.2%
H&G Frozen	52,710,000	46.6%	61,520,000	50.1%	16.7%	7.6%
H&G Fresh	590,000	0.5%	750,000	0.6%	27.1%	17.1%
Fillet	9,230,000	8.2%	11,800,000	9.6%	27.8%	17.8%
Other	680,000	0.6%	590,000	0.5%	-13.2%	-20.0%
Total	113,170,000	100.0%	122,810,000	100.0%	8.5%	N/A

Source: Northern Economics, Inc. 2009

The decline in canned production is somewhat surprising given the increased sized of this year's run, but not so surprising given this year's early and extended run timing. In the past we would have expected processors to increase their production of canned product both as a percent of total input product and total product produced. Figure 1 shows the shift in each respondent's portion of production going into cans with diamonds representing the portion in 2008 and squares representing the portion in 2009. The survey data and the figure show that as a percentage of overall production, more processors lowered the portion of raw product going to canned product than increased it—two respondents very slightly increased their portion of raw product going to cans; three processors whose canning portion was already at or near zero maintained this portion; and five processors decreased their portion.

[4] This number includes long-haul fish.

Figure 1. Percent of Round Weight Product Used for Canned Production by Anonymized Respondent



Source: Northern Economics, Inc. 2009

The net result of these shifts is that use of product for "in the Bay" canning rose from 47.0 Mlb to 59.2 Mlb, but overall use of raw product for canning dropped from 74.6 Mlb to 71.9 Mlb as respondents reported shipping 12.7 Mlb of raw product out of Bristol Bay for processing in 2009. This amount is a 54 percent reduction in the amount of raw product shipped outside of the Bay. We note that these results are both supportive and contrary to a recent discussion in the Alaska Seafood Marketing Institute's December 2009 Seafood Market Bulletin. As in that discussion, we found that "in the Bay" canning increased overall and that some processors increased long haul shipping; but our survey also shows a significant step away from long haul shipping by a number of processors. Long-haul shipping declined from 16.8 percent of raw product purchases to 7.2 percent even though the Bay saw a large raw run size this year. It is too early to say whether these data represent a long-term trend. Processors could simply have been responding to conditions specific to this year. Regardless, the net result was a substantial reduction in reported long-haul shipping and a slight reduction in the total amount of Bristol Bay raw product that flowed into cans. From a Bay perspective, this event is positive as it indicates that some processors maximized their value of Bristol Bay fish using resident production resources and minimized losses associated with long-haul processing.

Table 5. Canning Location, 2008 and 2009

Product Form	Round Pounds		Percent of Total Production	
	2008	2009	2008	2009
Reported Canned in the Bay	47,030,000	59,160,000	28.8%	33.4%
Assumed Canned Outside the Bay	27,530,000	12,700,000	16.8%	7.2%
Total	74,560,000	71,860,000	45.6%	40.5%

Source: Northern Economics, Inc. 2009

4 Product Chilled Prior to Delivery

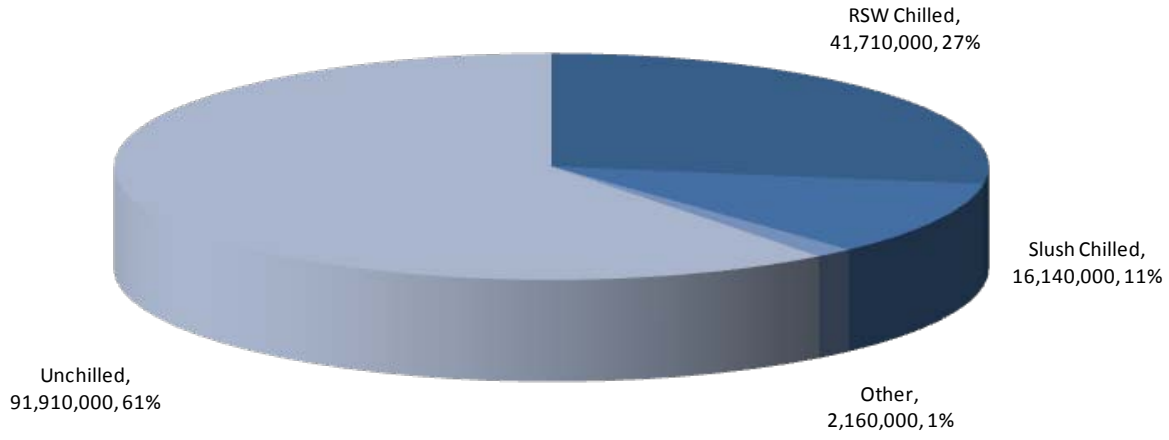
For the second year, the survey asked respondents how permit holders were chilling their product prior to delivery. This year's data showed a substantial increase in the total amount of raw product chilled; chilled raw product from the drift fleet increased from 32.5 Mlb to 60.0 Mlb. While both RSW and slush chilling methods showed gains in total product chilled, slush ice chilling methods made larger gains on a percentage basis. Overall, RSW chilled product increased by 58 percent from 24.5 Mlb to 41.71 Mlb, while slush ice chilled product increased by 165 percent from 6.1 Mlb to 16.1 Mlb. In 2009, RSW represented roughly 70 percent of chilled raw product while slush ice covered roughly 27 percent. As a portion of the total, product chilled by slush ice increased by 44 percent while the portion representing RSW chilled product fell by 15 percent. We note that three to four percent of the product reported as chilled was chilled by an undefined method which we believe may have been spray RSW based on respondent comments (see Table 6 and Figure 2).[5]

Table 6. Chilling Methods in 2009

	2008		2009		Percent Change	
Category	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total (%)	Round Pounds	Portion of Total
RSW Chilled	26,450,000	81.3%	41,710,000	69.5%	58%	-15%
Slush Chilled	6,080,000	18.7%	16,140,000	26.9%	165%	44%
Other	Not Asked	Not Asked	2,160,000	3.6%	N/A	N/A
Total	32,530,000	100.0%	60,010,000	100.0%	84%	N/A

Source: Northern Economics, Inc. 2009

Figure 2. Chilling Method in the Drift Fleet (2009)



Source: Northern Economics, Inc. 2009

[5] We suggest asking processors whether they track RSW deliveries by whether the permit holder used spray RSW or floating RSW.

In an attempt to measure how permit holders' ability to chill product changes throughout the season, the survey asked respondents how the percentage of the raw product they bought was chilled prior to delivery. The survey data indicate that this year a pound of raw product was roughly 23 percent more likely to be chilled early in the season than it was during the season peak. In 2008, the survey data indicated that product was roughly 15 percent more likely to be chilled during the first and last thirds of the season. This year multiple processors reported that the last third of season saw a five percent decline in the likelihood of a pound of product being chilled. We are unsure how to interpret this result at this time given that ADF&G noted that the run appeared earlier than expected and many permit holders stopped fishing after July 13th.[6]

Table 7. Chilling Through the Season[7]

Category	First Third of the Season (Before July 1)	Peak of the Season (July 1-July 15)	Last Third of the Season (After July 15)
2009	123	100	95
2008	115	100	115

Source: Northern Economics, Inc. 2009

[6] If many permit holders did stop fishing around the 13th we suspect that the reason the chilling index dropped is that many of the permit holders who continued fishing were "in region" permit holders. Prior Northern Economics research has shown that local permit holders fish longer and are less likely to have vessels equipped with RSW systems than "outside" permit holders.

[7] The analysis is unable to directly report the amount of chilled product delivered in each of the three time periods asked by this question as the survey did not ask respondents to break down their total chilled deliveries by time period. The amounts could be estimated by applying a standard distribution to deliveries based on ADF&G data of the 2008 run.

5 Processor Drift Fleets

Processors reported 1,309 vessels in their fleets this year. The survey asked processor respondents to count a boat in their fleet if they believed that permit holder made 50 percent or more of that boat's deliveries to them. The 1,309 vessel count is higher than last year's 1,162 vessel count and the average processor fleet was 22 vessels higher at 119 vessels per processor. Interestingly, the median processor fleet size only rose by 2 vessels (see Table 8). This lack of change indicates that a small number of processors increased their fleets while other processors maintained their fleet size.

Table 8. Processor Fleets

Year	Total	Average	Median
2009	1,309	119	100
2008	1,162	97	98

Source: Northern Economics, Inc. 2009

The drift fleet saw a substantial increase in the portion of vessels that chilled at least 75 percent of the time and a substantial decrease in the portion of the fleet that chills less than 25 percent of the time. This year's data show an 11.1 percentage point increase in vessels that chill nearly all the time and an 8.9 percentage point drop in the vessels that rarely chill (see Table 9). These data mean the former group grew by nearly 40 percent in 2009 while the later group shrank by nearly 15 percent (see Table 9).

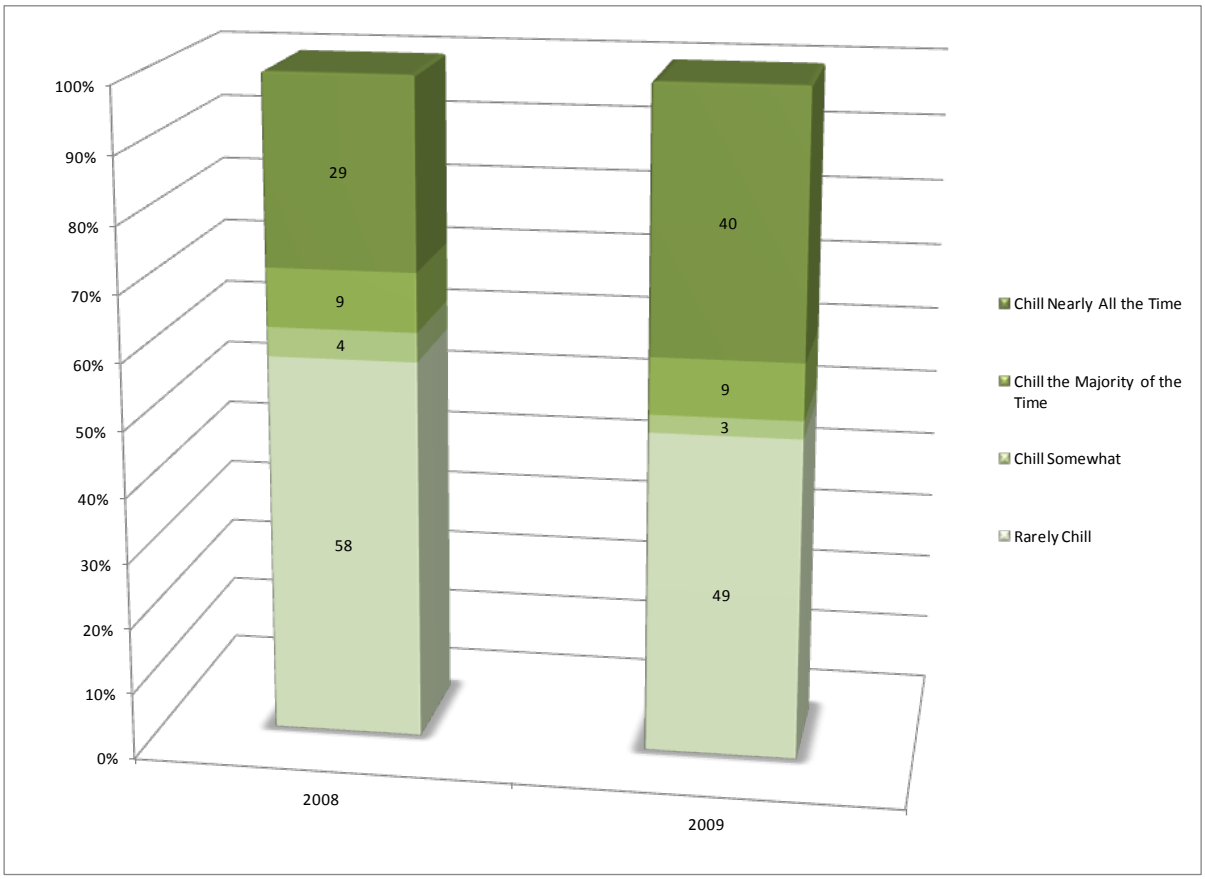
Table 9. Consistency of Chilling, 2008 vs. 2009

	Percent of Deliveries that Were Chilled			
Percent of Total	Greater than 75	50 to 75	25 to 50	Less than 25
2009	39.9%	8.5%	2.7%	48.9%
2008	28.8%	8.9%	4.4%	57.8%
Percent Change	38%	-4%	-39%	-15%

Source: Northern Economics, Inc. 2009

Figure 3 shows the distribution of the fleet by how consistently groups of vessels chilled their raw product in 2008 and 2009. As noted above, the group which chills nearly all of the time expanded substantially while the portion represented by those vessels which rarely chill shrank. The "in between" categories were somewhat constant as a percentage of the whole.

Figure 3. Consistency of Chilling, 2008 vs. 2009



Source: Northern Economics, Inc. 2009

As shown in Table 10, most of the vessels that chill less than 25 percent of the time do not conduct any chilling at all—a result which reinforces our conclusion from last year that chilling is generally an all or nothing affair with very little in between. In somewhat simpler terms, the portion of vessels that rarely chill their product dropped by almost a fifth while the "die-hard" chillers group increased by more than a third. If these trends continue, this latter group will be the largest group in the fishery by next season and represent a majority of the permit holders within a season or two. The key question is whether this trend will continue. As discussed in greater detail below, further expansion of chilling may require either continued individual permit-holder investment in RSW systems or additional "group"/"large entity" investment in ice-making systems.

Table 10. Consistency of Chilling, 2009

	Percent of Deliveries that Were Chilled				
Drift Vessels	>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 (N)	522	112	35	74	565
Percent (%)	39.9	8.5	2.7	5.7	43.2

Source: Northern Economics, Inc. 2009

6 Processor Ice Making Capability

The survey data indicate that total daily ice production from respondent processors increased in 2009 from roughly 714 tons per day to 750 tons per day.[8] The amount available to permit holders increased from 74 tons per day to 89 tons per day—an increase of 28,000 pounds per day and a large contributor to the overall increase in ice available to permit holders in 2009. We note that BB-RSDA's support of ice operations on board the *Innovator* played a role in this increased production. We also note that the increase was not evenly spread across all processors. Four processors decreased their production of ice while three processors increased their production; the remainder stayed the same.

The survey asked processors about the availability of additional ice to permit holders from processors in the future. While none of the processors indicated that less ice would be available in the future, nine of the eleven indicated that only marginally more ice would be available in the future.

[8] These 2008 numbers have been adjusted to reflect the absence of one processor in this year's survey.

7 Quality and Chilling

BB-RSDA and NEI designed several new questions to enhance the amount of information linking chilling and product quality. The survey asked respondents to tell us how much less frozen fillets and frozen H&G product made from #2 grade fish are worth compared the same products made from #1 grade fish. In other words, if product from a #1 grade fish receives a score of 100 from the wholesale market, what grade does product from a #2 fish receive?

The survey data show products from #2 grade fish do receive discounts in the wholesale market. Respondents reported to us that the discount on frozen fillets ranges from 15 percent to 80 percent, with an average reported discount of nearly 50 percent. The discount range on frozen H&G fish was much lower; respondents reported a low discount of 5 percent and a high discount of 30 percent with an average discount of 16 percent. Intuitively, these results make sense as flaws are much more likely to be visible in the fillet product than they are in an H&G product.

Table 11. Average Percentage Discount off the #1 Wholesale Price

Product Form	Low Discount	High Discount	Average	Median
Frozen Fillet	-15	-80	-48	-50
Frozen H&G	-5	-30	-16	-16

Source: Northern Economics, Inc. 2009

Immediately following these questions the survey asked whether a chilled fish is more likely to be a #1 fish than a #2 fish. All of the respondents indicated that chilled fish are either "somewhat more likely" or "much more likely" to be a #1 fish. While not a quantitative answer, these data reinforce the hypothesis that chilling adds value when processors are producing higher value products and that the amount of value that can be lost by providing a #2 fish instead of a #1 fish increases as you get to the highest value products such as fresh and frozen fillets.

8 Open Ended Responses

As with the 2008 survey, this year's survey contained several open-ended questions including:

1. Does your company notice differences in the quality of the raw product depending on the type of the chilling system used by the fishermen? How does the type of chilling system make a difference in how likely a fish is to be graded #1?
2. What do you believe are the projects BBRSDA could undertake that would most advance the overall value and health of the Bristol Bay salmon fishery?
3. Are there aspects of chilling that we are not asking about in this survey that we should be asking about?

The responses to the first question are mixed.[9] Some of the respondents indicated that RSW and slush ice were equal while slightly more respondents indicated that slush ice produced a higher percentage of #1 fish. At the same time, a number of respondents noted that operator adherence to the proper methods and the limits of their individual chilling systems are the most important factors. In addition, we received comments separate from the main survey that the real difference between RSW and slush ice is whether the RSW system is a floating system or a spray system. These comments clearly stated that a floating system can provide comparable results to slush ice system when both are operated properly, but that a spray system does not cool fish quickly enough.

Table 12. RSW versus Slush Chilling

Comment
RSW boats seem to deliver more consistent chilled fish than iced!
No. Substantial data collected (15,000+ fish tags) show no difference between floating slush ice and floating RSW.
Yes. It's all about time and temperature.[10]
Chance of being #1: RSW: 10-25% Slush ice: 30-40%
Slush ice produces a higher percentage of number 1s.
This depends completely on the operator, and how hard they try to do the right job. A fish floated in slush ice is probably the highest quality.
No, it depends on the operator.
RSW & Slush ice are comparable to a certain extent. Deliveries with slush ice are usually not as high a volume as the RSW deliveries; consequently because of the lower volume the quality is higher.

Source: Northern Economics, Inc. 2009

[9] All of the responses in this section have been repeatedly randomized between the tables to prevent comments from being linked together.

[10] The survey infers that this comment is a pro-ice comment based on the respondent's subsequent call for increasing the availability of ice.

The second open-ended questions asked respondents how the BBRSDA could enhance the quality and health of the fishery. Respondents' answers broke down into four general areas: increase the availability of ice, increase permit holder education on proper icing techniques, ban round hauling, and lobby for continued scientific data collection.

Table 13. Enhancing the Quality and Health of the Fishery

Comment
The RSDA could do best by helping promote the purchase and maintenance of ice machines in the Bristol Bay. Promoting a single purchase of an ice machine for $150k can provide ice for 50 boats. Maintenance and operating fees are often passed to the processors making it a fast and cheap way to increase quality in Bristol Bay.
Both suggestion pertain to proper operations of the chilling systems: Emphasis needs to be made to the RSW operators that their refrigeration systems must be in operation as soon as fish begin to arrive in the fish holds; some of the operators are prone to delaying start-up until they have a build up of product. The slush ice operators need to have an adequate supply of ice to bring fish temperatures down to an acceptable range in a timely manner.
Build a larger Ice infrastructure. Supply educational material (Brochures and Videos) to fisherman on the best practices for handling, bleeding and chilling. Encourage Bleeding
Health of Bristol Bay sockeye: maintain status quo of spawning & rearing habitat, i.e., protect all watersheds. Pay attention to ocean acidification issues (see 2009 U of AK research) and lobby accordingly.
Increase Ice Availability. Flush the decking of vessel to minimize bruising. Elimination of the use of brailer bags. Pump unloosing (sp).
Outlaw round hauling
Promote using ice. Bleeding when possible. Stop Round Hauling
The continued promotion of ice and its availability is a worthy cause. Continued education of the various aspects of quality and its importance to the end value of ones production.
Training fishermen the proper steps in icing and refrigerating fish. Fish that is mishandled before icing or refrigerated does not improve quality.

Source: Northern Economics, Inc. 2009

The survey asked respondents "what questions aren't we asking that we should be asking?" Respondents provided a mix of suggestions including some that the BBRSDA should be asking of permit holders.

Table 14. Questions We Aren't Asking

Comment
You could make a clear delineation between RSW and floating RSW. Boats that deliver RSW fish in our fleet are all floating. RSW operating in a spray only fashion does significantly less to improve quality of fish when compared to floating.
None that we are aware of....
Chilling with ice is still "work in progress." It might be good to understand what methods are being used to chill fish (Layer, slush, ice/RSW combined, etc) and what seems to be the most efficient.
You may want to determine if processors believe they are recuperating their added cost of RSW and ice premiums through increased sales revenue due to chilling.
Why don't some fishermen chill fish? Do they fish in a particular district with awkward ice logistics? Are their boats hard to outfit for slush brailers or RSW? Is the $ incentive inadequate? Why don't some highly productive dry boats convert to RSW?

9 Conclusions and Recommendations

We draw several conclusions from this year's survey:

- We believe that the survey is picking up a shift in how some processors process their Bristol Bay product. The survey and post-survey discussions with respondents indicated that some processors may be continuing or starting a move from a focus on canned products to a focus on frozen fillets and H&G frozen product forms. As this move continues, the Bay's portfolio of product forms and processor combination continues to diversify.
- This change has the potential to exacerbate the tension associated with permit holder harvest limits as it will be in the best interest of processors who are focusing on quality to place their permit holders on daily limits to ensure high quality products, while processors who focus on canned goods may be less likely to use limits. We note that limits are not universally positive or negative for permit holders and that tension is likely to be lower if permit holders operating on limits that result in an increase in wholesale price receive a portion of those increased wholesale prices and that these increases compensate for the lower volumes.
- This diversification in processor style and focus could be good for permit holders if they can match their fishing style (volume vs. value) to the processing style (volume vs. value) of individual processors. In theory, well matched permit holders operating under limits and focusing on quality might receive higher base prices or end-of-the year bonuses while permit holders matched to processors focusing on cans would make money off of greater volume with lower end of the year bonuses. How well permit holders can match themselves to processors is an open question.
- We believe that this year's survey establishes/affirms a link between quality and higher relative wholesale prices. However, the survey is unable to make the final link between higher relative wholesale prices and higher permit holder bonus payments. We are unable to provide this link because it was not an immediate goal of the survey.
- We believe that this year's substantial increase in the amount of chilled product purchased from the drift fleet arose from a combination of larger run size, individual investments in RSW systems, and group investments in ice barges. Continued individual and group investment will be necessary to maintain this momentum.
- We note a clear call from processors for the BB-RSDA to focus on permit holder education and research into how, and under what conditions, chilling systems are most effective. A number of processors indicated that these systems are most effective when operators use them with a series of best practices.