

The AlaskaPoll



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Information for Solutions

- ❖ Market Research
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ALASKA SALMON QUALITY SURVEY IV

May 2006

Prepared for

Alaska Seafood Marketing Institute



Executive Summary i - iii

I. Methodology 1 - 2

II. Findings

Fishermen 3 - 34
On-Shore Processors 35 - 66
Off-Shore Processors 67 - 97

III. Verbatim Comments

Fishermen 98 - 147
On-Shore Processors 148 - 149
Off-Shore Processors 150 - 153
Non-Salmon Processors..... 154

IV. Crosstabulations

Fishermen 155 - 223
On-Shore Processors 224 - 266
Off-Shore Processors 267 - 304



Executive Summary



Executive Summary

FISHERMEN

- ◆ Overall, all indications are that major steps are being taken to improve quality. In fact, in nearly every case, the trend is toward more rapid delivery and improved fish handling.
- ◆ Although tenders still predominate (54%), the number of fishermen who deliver directly to the processing plant (34%) is increasing.
- ◆ Similarly, the number of fishermen who deliver promptly, within 6 hours, continues to increase (from 22% in 1991 to 32% currently).
- ◆ A majority of fishermen (59%) now report they chill all their fish, up from 34% in 1991.
- ◆ And among the few fishermen who use plastic totes with drainage holes, the same percentage (59%) report they insulate with ice, nearly double from 33% in 1991.
- ◆ Very few fishermen (4% or less) continue to allow their fish to be exposed to bilge water and other contaminants.
- ◆ And an increasing number of fishermen (72%) now remove their fish from the net by hand, up from 64% previously, and 80% also handle the fish by the head while loading and transferring their catch.
- ◆ In addition, the number of fishermen who now bleed their fish (49%) is up substantially from 27% in 2001.
- ◆ The use of brailers (62%) is increasing, and the average weight of a brailer load is decreasing (26% between 800-1200 pounds, down from 41%). Also, the use of knotless brailers is increasing (44%), up from 26% in 1991.
- ◆ There has also been a significant decrease in the depth in feet that fish are stored (38% three feet or more, down from 53% in 1991).
- ◆ And over three out of four (77%) report they clean their fish holds and totes after every delivery.
- ◆ As far as tenders are concerned, fishermen report that fairly few tenders check fish temperatures upon delivery (31%), while an additional 30% make “spot checks”.
- ◆ But over nine out of ten fishermen (92%) say their tenders take “good or excellent” care of their fish, and 80% of fishermen report they believe “market perceptions” of the quality of Alaskan salmon has changed for the better during the last 3-5 years, up from 51% in 2001.

Executive Summary

ON-SHORE PROCESSORS

- ◆ Similar to the results from Fishermen, the reports from On-Shore Processors indicate major steps to improve fish quality.
- ◆ On-shore processors report there has been a large increase in the numbers of gillnetters and seiners who chill their fish -- 57% of gillnetters, up from 16% in 1991; 100% of seiners, up from 59%.
- ◆ And by far, refrigerated sea water (RSW) is the chilling method of choice (90%), compared to ice (10%).
- ◆ On-shore processors also report requiring more frequent delivery by fishermen, 79% at least daily, up from 64%.
- ◆ Regarding types of gear, most on-shore processor respondents receive their fish from gillnetters (71% are currently gillnetters), up from 58% in 2001, while setnetters remain the same as in prior years (17%). The number of seiners (3%) and trollers (9%) have declined.
- ◆ On-shore processors report they provide instructions to fishermen regarding proper fish handling procedures (84%) and recommend chilling practices (84%), and nearly four out of five (79%) also provide ice for fishermen.
- ◆ On-shore processors also report they check fish history and reject fish if they suspect poor handling, or fish that are too old or haven't been kept cool enough.
- ◆ Fish quality when received is frequently evaluated (83% "all the time", 17% "most of the time"), and nearly all evaluators (94%) are considered to be experienced and familiar with regulatory requirements.

Executive Summary

OFF-SHORE PROCESSORS

- ◆ By far, most off-shore processor respondents are catcher-processors who catch most of their fish themselves.
- ◆ The reported usage of tenders has declined in every survey over the past 15 years (14% currently, down from 42% in 1991).
- ◆ Fish quality is improving -- all tenders (100%) are reported to chill their fish and to do it with RSW, and 80% of the off-shore processors require tenders to deliver their fish within one day or less.
- ◆ Most off-shore processors also provide information to tenders regarding proper fish handling and chilling, and tenders are required to reject fish that appear to be improperly handled.
- ◆ All off-shore processors (100%) gave “good” ratings to their tenders for the way they handle their fish, and the ratings are based on inspections of tender cleanliness and sanitation as well as observations of fish-handling practices.
- ◆ Regarding their own employees, nearly two out of three off-shore processors (63%) report they provide regular seafood quality education programs, and nearly all of the instruction (95-100%) includes how to handle fish properly and keep them cool and covered.
- ◆ Nearly nine out of ten processors (88%) “desire” their fish to be frozen the same day they are received, and four out of five (79%) report that one day is the maximum amount of time they will allow between receipt of fish and freezing them.
- ◆ Most of the fish are blast frozen (71% at least half), and kept very cold (94% at least -10° F or colder).
- ◆ However, similar to their on-shore counterparts, most off-shore processors don't monitor their fish after they have been turned over to the shipper and left the processing facility.

Methodology



◆ **Survey Procedure**

Similar to 1991, 1996 and 2001, the 2006 Alaska Salmon Quality Survey was performed by the Dittman Research & Communications Corporation and Graystar Pacific Seafood, Ltd.

Questionnaire booklets focusing on topics of vessel specification, handling and storage procedures, chilling procedures, sanitary procedures, tenders and quality perceptions were mailed by the Dittman Research & Communications Corporation to 3,197 fishermen holding a current salmon entry permit. Separate questionnaire booklets concentrating on similar topics were sent to all identifiable on-shore processors (103 mailed) and off-shore processors (467 mailed). In 2006 a separate tender survey was not completed; instead, questions regarding tenders were added to the other questionnaires. The booklets were mailed out on April 19-20, 2006. A follow-up reminder card was mailed on May 6, 2006 to thank respondents for participating and to encourage more participants to complete and return their questionnaire booklet.

In the 1991 and 1996 surveys, the Dittman-Graystar team obtained lists of fishermen and processors from the State of Alaska (Department of Fish & Game, Department of Environmental Conservation, and Commercial Fisheries Entry Commission). However, updated State of Alaska sources were used in 2001 and 2006.

<u>List of</u>	<u>1991 survey</u>	<u>1996 survey</u>	<u>2001 survey</u>	<u>2006 survey</u>
Fishermen	CFEC, permit file (CFEC provided labels)	CFEC, permit file (CFEC provided disc)	CFEC, permit file (on website)	CFEC, permit file (on website)
On-shore/ Off-shore Processors	ADFG, Intent-to-operate + ADEC, Plan of Operations	ADFG, Intent-to-operate (disc)	ADFG, Intent-to-operate (disc)	ADFG, Intent-to-operate (on website)

◆ **Incentive**

An incentive card was mailed with each questionnaire. The incentive card specified that each Alaskan fisheries participant who completed and returned their questionnaire would be entered in a drawing for 55 gallons of diesel fuel from Petro Marine. Five winners were drawn on June 5, 2006 by a notary public. ASMI was given the names and contact information for the winners.

◆ **Confidentiality**

All respondents were assured of complete confidentiality as outlined in the following statement provided in the cover letter of each questionnaire booklet:

*“Please be assured of complete confidentiality.
Your name will never be used, and data gathered in this survey will only
be reviewed in a tabulated summary form.”*

◆ **Response Data**

By the final cut-off date of July 19, 2006, a total of 682 completed questionnaire booklets had been returned to the Dittman Research & Communications Corporation headquarters.

	<u>Total Mailed</u>	<u>Undeliverable/ Not Salmon</u>	<u>Returned Complete</u>	<u>Response Rate</u>
Fishermen	3,197	16	628	20%
On-Shore	103	1	19	19%
Off-Shore	467	53	35	19%
TOTAL	3,767	70	682	20%

These returned questionnaires were included in the tabulations for this report.

◆ **Processing the Data**

Dittman Research & Communications Corporation employees completed coding, editing, data entry and verification, while data processing was completed through the in-house Dittman computer system featuring the Statistical Package for the Social Sciences (SPSS) program. The SPSS program is one of the most sophisticated research-oriented data processing and analytical systems available, and is designed specifically for the processing and analysis of survey research data.

II Findings



A. General Information

Over the past 15 years, the percentage of fishermen who deliver their catch to tenders has gradually declined (from 60% to 54%), while deliveries to a fish plant have increased (from 29% to 34%).

QUESTION:

“Generally, who do you most frequently deliver your catch to?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Tender	54%	58%	57%	60%
Plant	34%	31%	32%	29%
Tender and Plant	4%	4%	4%	6%
Market own catch	2%	1%	1%	1%
Floating processor	1%	1%	2%	3%
Fish buyer	1%	1%	1%	0%
Market own and other	1%	0%	0%	0%
Tender and Floater	0%	0%	1%	1%

B. Vessel Specifications - fish holds

The number of fishermen who deliver promptly, within 6 hours, continues to steadily rise (from 22% in 1991 to 32%)...

QUESTION:

“How often do you make deliveries?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Within 0–6 hours	32%	30%	28%	22%
Within 7–12 hours	22%	27%	29%	31%
Daily	24%	24%	23%	25%
Every other day	5%	6%	6%	6%
Varies/depends	14%	11%	12%	13%

...while fish hold capacities have remained basically consistent.

QUESTION:

“What is your vessel’s fish hold capacity in cubic feet?”

RESPONSE:

	<u>2006</u>		<u>2001</u>		<u>1996</u>		<u>1991</u>	
200 cu ft and less	29%	(41%)	27%	(39%)	21%	(20%)	26%	(32%)
201–400 cu ft	17%	(24%)	16%	(23%)	19%	(27%)	26%	(32%)
401–600 cu ft	10%	(14%)	11%	(15%)	12%	(17%)	11%	(14%)
601–800 cu ft	4%	(6%)	5%	(7%)	6%	(9%)	7%	(9%)
801–1000 cu ft	3%	(5%)	4%	(6%)	4%	(6%)	4%	(5%)
More than 1000 cu ft	8%	(11%)	7%	(10%)	8%	(11%)	7%	(9%)
No response	27%		31%		29%		20%	

*NOTE: Numbers in parentheses are adjusted for “no response”.

Vessel Specifications - fish holds (cont'd)

By far, most respondents (78%) continue to report having fish holds located below deck, but the percentage has declined and the number using plastic totes with drainage holes is increasing.

QUESTION:

“Where is the fish hold located?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Below Deck	78%	82%	83%	83%
On Deck	11%	9%	7%	12%
Plastic tote with drainage holes	9%	7%	6%	4%

Among the increasing number who use “plastic totes with drainage holes”, a majority (59%) now have insulated totes with ice.

QUESTION:

“Is the tote insulated?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes, with ice	59%	43%	38%	33%
Yes, without ice	7%	11%	10%	0%
Not insulated	34%	46%	52%	67%

Vessel Specifications - fish holds (cont'd)

Fish hold characteristics have basically tended to remain consistent; however, the use of insulation has been increasing, while the use of pumps and sumps, and bin boards have been decreasing.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Does vessel have hatch covers?	86%	87%	89%	88%
Does vessel have hatch combings?	81%	84%	83%	82%
Does fish hold have pumps or sumps to pump fish hold dry?	78%	83%	82%	85%
Does vessel have watertight bulkhead for fish hold?	74%	73%	76%	76%
Is the fish hold insulated?	64%	57%	58%	51%
Do you use bin boards to separate fish in your fish hold?	55%	60%	65%	67%

Vessel Specifications - fish holds (cont'd)

Fiberglass (61%) remains the material that lines most fish holds, followed by aluminum (16%); however, plastic (14%) is becoming increasingly common and may soon overtake aluminum...

QUESTION:

“What kind of material lines the surface in your fish hold?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Fiberglass	61%	58%	64%	61%
Aluminum	16%	18%	16%	18%
Plastic	14%	12%	8%	6%
Wood	4%	8%	8%	11%
Metal	2%	4%	3%	3%
Fabric	1%	1%	1%	0%

...on the other hand, other fish contact surface materials are evenly distributed among plastic coating, marine grade paint, and non-corroding metal -- each used by approximately one-fourth of the respondents.

QUESTION:

“What kind of material covers other fish contact surfaces?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Plastic Coating	27%	24%	29%	35%
Marine grade paint*	25%	28%	24%	25%
Non-corroding metal	23%	26%	26%	21%
Food grade paint	9%	11%	9%	8%
Wood	2%	3%	2%	2%
Fabric	4%	2%	3%	1%
Non-food grade paint	1%	1%	1%	0%

*Note: The volunteered response “gel coat” has been included in “marine grade paint” for this and prior surveys.

C. Handling and storage procedures

Only a small percentage of fishermen (0-4%) report that their fish are exposed to bilge water and other contaminants...

QUESTION:

“Are fish ever exposed to any of the following...?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Bilge water	4%	6%	4%	7%
Fuel or fuel lines	2%	2%	3%	3%
Hydraulic fluids or lines	2%	2%	3%	3%
Exhaust system	0%	1%	1%	1%
Combination*	2%	1%	n/a	n/a

*Note: Combination response includes the following: bilge & exhaust, fuel, lubricants & exhaust, all of the above, fuel & bilge.

...while more than one-quarter of the fishermen report their fish are at times exposed to the sun.

QUESTION:

“Are fish ever exposed to any of the following heat sources...?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Sun	28%	26%	29%	29%
Engine heat	2%	3%	3%	5%
Exhaust heat	0%	1%	0%	1%
Heat from quarters	0%	0%	0%	1%
Combination**	1%	1%	n/a	n/a

**Note: Combination responses include the following: exhaust & engine heat, sun & exhaust heat.

Handling and storage procedures (cont'd)

Nearly three out of four fishermen (72%) now report removing fish by hand, up from less than two out of three (64%) in 1991...

QUESTION:

"Most of the time, how do you remove fish from the net or hook?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
By hand	72%	70%	64%	64%
Picking hook	9%	9%	11%	9%
Brailing	7%	7%	7%	7%
Strapping/rolling	4%	6%	5%	5%
By hand & other methods	4%	5%	5%	12%
Shaking	2%	2%	3%	1%

...and nearly nine out of ten (87%) report they most often handle the fish by the head when removing from the net or hook.

QUESTION:

"What part of the fish do you most frequently handle when removing it from the net or the hook?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Head	87%	87%	88%	85%
Tail	6%	5%	5%	5%
Mid-section	4%	4%	3%	2%
Pump	0%	0%	0%	4%
None/Don't touch	1%	1%	n/a	n/a

Handling and storage procedures (cont'd)

Again, most fishermen (80%) report they handle fish by the head when loading or transferring their catch.

QUESTION:

“When loading or transferring your catch, what part of the fish do you handle most often?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Head	80%	76%	79%	n/a
Tail	7%	7%	7%	n/a
Mid-section	5%	7%	8%	n/a
Pump	0%	1%	0%	n/a
None	2%	4%	n/a	n/a

And nearly half of all fishermen (49%) report they bleed their fish -- a dramatic increase from prior measurements between 1991 and 2001.

QUESTION:

“What other practices do you use in the handling of your fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Bleeding the fish	49%	27%	30%	21%
Dressing the fish	41%	48%	42%	24%
Stunning the fish	27%	22%	22%	25%
Cleaning the fish	26%	19%	22%	20%
Freezing at sea	2%	2%	2%	1%

Handling and storage procedures (cont'd)

Of those who dress their fish, approximately nine out of ten (88%) store them separately from fish in the round.

QUESTION:

“Are round and dressed fish stored separately from one another?”

RESPONSE:

(% YES)			
<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
88%	66%	71%	81%

Handling and storage procedures (cont'd)

The number of fishermen who store their fish in fish holds has increased slightly...

QUESTION:

“How do you store fish on your boat?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
In fish hold	71%	67%	69%	n/a
In totes	21%	20%	19%	n/a
On deck	4%	9%	7%	n/a

...but the use of brailers is consistently increasing.

QUESTION:

“Do you use brailers to hold fish in fish hold?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	62%	56%	56%	45%

Handling and storage procedures (cont'd)

The reported use of knotless brailers continues to consistently increase (44% from 26% in 1991).

QUESTION:

“If yes, what kind of brailers do you use?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Knotless	44%	34%	31%	26%
Fabric/NoMar	32%	42%	46%	0%
Knotless, less than 2”	9%	13%	10%	38%
Less than 2” mesh	5%	3%	4%	7%
Knotted	1%	3%	2%	6%
Knotted, less than 2”	1%	2%	0%	0%
Knotless, more than 2”	1%	0%	1%	4%
Knotted, more than 2”	0%	1%	1%	6%
More than 2” mesh	0%	0%	1%	1%

The number of fishermen indicating they average 500-799 pounds per brailer load continues to increase (45% from 33%), while those with heavier loads have been decreasing.

QUESTION:

“How many pounds of fish do you average per brailer load?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 300 lbs	4%	5%	3%	6%
300–499 lbs	19%	13%	16%	15%
500–799 lbs	45%	42%	36%	33%
800–1200 lbs	26%	39%	41%	41%
Over 1200 lbs	1%	1%	3%	4%

Handling and storage procedures (cont'd)

About one-quarter (26%) of fishermen who use brailers in their fish hold continue to use shelving to separate stacked brailers.

QUESTION:

“Do you use shelving between brailers to separate the brailers from being stacked on top of one another in fish hold?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	26%*	26%*	34%	27%

*Note: In 2006, 17% of respondents volunteered that they do not stack their brailers. This “N/A” was 14% in 2001.

And again, consistent with prior years, approximately one out of ten fishermen use a chute to move fish into the fish hold.

QUESTION:

“Do you use a chute to move fish from deck into fish hold?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	11%	10%	13%	10%
No	57%	53%	54%	59%
No hold	29%	33%	31%	27%

Handling and storage procedures (cont'd)

Of those fishermen who do use a chute, there has been a major decline in the number whose fish fall three feet or more.

QUESTION:

“How far do the fish drop?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than two feet	51%	60%	47%	37%
Two to three feet	37%	26%	39%	35%
Three feet or more	1%	12%	11%	21%

...and there's also been a significant decline in the number of fishermen who store their fish three feet deep or more.

QUESTION:

“What is the maximum depth in feet your fish are stored?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than two feet	14%	18%	18%	8%
Two to three feet	42%	36%	38%	34%
Three feet or more	38%	37%	38%	53%
Use RSW (volunteered)	1%	3%	n/a	n/a

D. Chilling procedures

The number of fishermen who report chilling all their fish continues to increase -- in 2006, nearly three out of five (59%) said they chill all their fish, and the number who don't chill has declined by half.

QUESTION:

"Do you chill all your fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes, all	59%	48%	48%	34%
Yes, some	11%	10%	7%	10%
Don't chill	30%	42%	45%	57%

The method of chilling appears to be changing somewhat -- with ice declining, while CSW is increasing.

QUESTION:

"What method do you use to chill your fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Ice	44%	45%	47%	53%
CSW	32%	26%	23%	28%
RSW	22%	27%	27%	19%
FAS	1%	0%	1%	0%
Other*	1%	2%	n/a	n/a

*Note: Volunteered "Other" chilling methods include the following: cool fresh water, wet burlap, splash with sea water.

Chilling procedures (cont'd)

Over three out of four fishermen (79%) continue to layer ice their fish...

QUESTION:

“When using ice do you...”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
...Layer ice the product?	79%	74%	76%	n/a
...Top ice only?	9%	8%	7%	n/a
...Bottom, belly & top ice the product	7%	13%	11%	n/a
...Ice hold only?	4%	6%	1%	n/a

...and the majority obtain their ice from the plant/cannery.

QUESTION:

“Where do you usually obtain your ice for chilling?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Plant/canneries	53%	50%	52%	60%
Tender	24%	27%	23%	20%
Both	16%	14%	14%	14%
Other	1%	5%	1%	2%

Chilling procedures (cont'd)

More than four out of five fishermen (83%) report they usually can get enough ice...

QUESTION:

"Can you usually get an adequate amount of ice for chilling?"

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	83%	86%	88%	86%

...but those who cannot say it is primarily because ice is unavailable (28%) or the tenders run out (25%).

QUESTION:

"If no, why not?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Ice unavailable	28%	44%	13%	36%
Tenders run out	25%	32%	67%	25%
Plants run out	13%	0%	7%	18%
Ice melts too quickly	15%	3%	0%	0%
Too many fishermen	8%	3%	0%	14%

Chilling procedures (cont'd)

Of fishermen with RSW, nearly nine out of ten (87%) use plain sea water...

QUESTION:

“Do you add salt or use plain sea water?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Add salt	3%	5%	4%	6%
Use plain sea water	87%	92%	89%	94%

...and nearly all (99%) continue to report their refrigeration is functional and adequate.

QUESTION:

“Is refrigeration functional and adequate?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	99%	97%	95%	97%

Chilling procedures (cont'd)

Most RSW users (74%) have had a refrigeration professional look at the system within the last year; however, the percentage has been in decline over the past 15 years.

QUESTION:

“When did a refrigeration professional last look at the system?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Within the past year	74%	74%	78%	88%
1–2 years ago	19%	17%	14%	6%
3–4 years ago	4%	3%	3%	3%
5 + years ago	3%	4%	0%	3%

Chilling procedures (cont'd)

The number of fishermen who check the temperature of their fish hourly is increasing, but consistent with previous years, more than one-third of the fishermen who chill (36%) do not check the temperature of their fish.

QUESTION:

“How frequently do you check the temperature of your fish under normal conditions?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Every half hour	8%	6%	8%	5%
Every hour	13%	11%	11%	8%
Every 2 hours	10%	10%	12%	12%
Every 4 hours	6%	9%	7%	6%
Every 6+ hours	17%	18%	15%	16%
Automated thermometer	1%	4%	1%	0%
Never	36%	37%	36%	41%

The number of fishermen who keep their fish above freezing (34-50 degrees) has increased each survey period since 1991, while the number who freeze their catch (7%) has declined dramatically.

QUESTION:

“What temperature do you keep your catch at most of the time?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
1–31 degrees F	7%	7%	12%	63%
32–33 degrees F	21%	30%	36%	11%
34–50 degrees F	33%	27%	21%	6%

Chilling procedures (cont'd)

Among fishermen who do not currently chill, the percentage who plan to begin chilling remains consistently low * ...

QUESTION:

*“If you don’t chill, do you plan to modify your boat in order to chill fish?”**

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	12%	15%	19%	17%

*Note: The questionnaire contained an error. Instead of directing fishermen who do not chill to answer this question, it indicated they should skip to “Sanitary Procedures”. These results contain data from n=43 fishermen who answered the questions despite the erroneous instructions. The n=147 fishermen who should have answered this question but did not were marked “no response”, thus the actual percentage who plan to modify their boat is likely much higher.

...but of those who *do* intend to begin chilling, most say they would either install RSW (48%) or use ice (43%).

QUESTION:

*“Which form of chilling do you plan to install?”**

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
RSW	48%	49%	57%	37%
Ice	43%	36%	23%	36%
CSW	4%	11%	18%	17%

E. Sanitary procedures

Regarding fish contact surfaces, two out of three fishermen (64-68%) rinse with clean water, scrub with a brush, and use a detergent solution.

QUESTION:

“When cleaning fish contact surfaces, do you...”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
...rinse with clean water?	68%	64%	63%	73%
...scrub with a brush?	65%	60%	60%	68%
...use a detergent solution?	64%	65%	70%	50%
...sanitize with chlorine/iodine?	44%	44%	42%	41%

Sanitary procedures (cont'd)

Among fishermen who do use a detergent cleaning solution, *Clorox/bleach* or a *bleach and detergent combination* are most widely used. *Joy* continues to be used by one out of ten fishermen, but its use has decreased significantly since 1991 when it was the primary detergent cleaning solution in use.

QUESTION:

*“What brand name of detergent cleaning solution is used on fish contact surfaces, fish holds and totes, and fish handling equipment?”**

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Clorox/bleach	15%	11–12%	13–14%	2–3%
Detergent & chlorine	14%	11–12%	n/a	n/a
Joy	11%	14–17%	19–21%	21–23%
Household soap	4%	0%	0%	0%
Simple Green	3%	2%	2–3%	1–2%
Dawn	1%	2%	1–2%	2%
Pinesol	1%	1%	0–1%	0–1%
Misc./Varies	12%	7–12%	13–17%	6–7%
Don't Use	36%	36–37%	30%	50%

*NOTE: In previous years this question was asked as 3 separate questions for “fish contact surfaces,” “fish holds and totes,” and “fish handling equipment, rain gear, gloves, etc.”

Sanitary procedures (cont'd)

Most fishermen (77%) report they clean their fish holds and other fish storage and cleaning areas after every delivery...

QUESTION:

"How often are fish holds, totes or other areas where fish are held cleaned?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
After every delivery	77%	74%	81%	81%
At end of fishing period	18%	22%	15%	13%
At end of fishing season	0%	0%	1%	0%
Seldom or never	0%	0%	0%	0%
No answer	4%	4%	0%	5%

...however, fishermen with RSW are a little more likely to wait and clean their system at the end of the fishing period (38%).

QUESTION:

"How often are refrigerated sea water systems cleaned?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
After every delivery	51%	54%	49%	n/a
At end of fishing period	38%	31%	33%	n/a
At end of fishing season	8%	12%	13%	n/a
Seldom or never	0%	1%	1%	n/a
No answer	3%	2%	0%	n/a

Sanitary procedures (cont'd)

Three out of four of fishermen (75%) continue to buy their cleaning solutions at a retail store...

QUESTION:

“Where do you usually purchase the detergent cleaning solutions you use?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Retail store	75%	72%	67%	71%
Processors	16%	18%	24%	17%
Retail & Processors	5%	7%	7%	9%
Tender	2%	1%	1%	1%

...and more fishermen report consulting a list of recommended cleaning and sanitizing products than in previous years.

QUESTION:

“When selecting a cleaning and sanitizing agent for fish contact surfaces, do you refer to a government or professional authority’s list of recommended products (such as USDA, Alaska Department of Environmental Conservation, or the Marine Advisory Program) when deciding what to use?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	26%	22%	13%*	n/a

*NOTE: In 1996 the question was worded, “When selecting a cleaning and sanitizing agent for fish contact surfaces, do you first refer to the USDA’s ‘List of proprietary substances and non-food compounds’?”

F. Tenders (not asked of fishermen prior to 2006)

Over half of the fishermen who use tenders use brailers to transfer the fish to the tender...

QUESTION:

“How do you transfer fish to the tender?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Brailers	54%	n/a	n/a	n/a
Pitched by Hand	15%	n/a	n/a	n/a
Pumps	8%	n/a	n/a	n/a
Totes	6%	n/a	n/a	n/a
Brailers & pumps	4%	n/a	n/a	n/a
Brailers & hand	4%	n/a	n/a	n/a
Other Combinations	7%	n/a	n/a	n/a

...and of those, approximately one-third (32%) have an average of 500-799 pounds of fish per brailer.

QUESTION:

“If you use brailers, how many pounds of fish per brailer (average)?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 300 lbs	4%	n/a	n/a	n/a
300–499 lbs	14%	n/a	n/a	n/a
500–799 lbs	32%	n/a	n/a	n/a
800–1200 lbs	17%	n/a	n/a	n/a
Over 1200 lbs	1%	n/a	n/a	n/a

Tenders (not asked of fishermen prior to 2006)

Of fishermen who use tenders, most (82%) do not use a pump, but of those who do, the vast majority use wet pumps.

QUESTION:

“If a pump is used, is the pump wet or dry?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Wet	16%	n/a	n/a	n/a
Dry	1%	n/a	n/a	n/a
Don't use pumps, N/A	82%	n/a	n/a	n/a

Nearly half of fishermen delivering to tenders (48%) say that fish are handled individually at some point.

QUESTION:

“When delivering to a tender, are fish handled individually at any point?”

RESPONSE:

(% YES)			
<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
48%	n/a	n/a	n/a

Tenders (not asked of fishermen prior to 2006)

There does not appear to be any dominant pattern that dictates when tenders take the temperature of the fish...

QUESTION:

“Does the tender take the temperature of your fish upon delivery?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Never	31%	n/a	n/a	n/a
Spot checks	30%	n/a	n/a	n/a
Every delivery	29%	n/a	n/a	n/a
If vessel misses scheduled delivery	1%	n/a	n/a	n/a

...and one out of ten respondents (11%) say there is no limit as to when fish are not acceptable.

QUESTION:

“At what temperature are fish not acceptable?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
32 degrees F	1%	n/a	n/a	n/a
34 degrees F	5%	n/a	n/a	n/a
36 degrees F	9%	n/a	n/a	n/a
38 degrees F	15%	n/a	n/a	n/a
40 degrees F	14%	n/a	n/a	n/a
45 degrees F	5%	n/a	n/a	n/a
50 degrees F	5%	n/a	n/a	n/a
No limit	11%	n/a	n/a	n/a
No response	34%	n/a	n/a	n/a

Tenders (not asked of fishermen prior to 2006)

More than one out of three fishermen (36%) report delivering to 5 or more different tenders.

QUESTION:

“In a normal season, how many different tenders take delivery of your fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
1	13%	n/a	n/a	n/a
2	22%	n/a	n/a	n/a
3	16%	n/a	n/a	n/a
4	9%	n/a	n/a	n/a
5 or more	36%	n/a	n/a	n/a

Half of the fishermen (52%) report that the tenders they deliver to use RSW, while another one-fourth (24%) say the tenders use ice in totes.

QUESTION:

“What type of tenders usually take your fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
RSW (refrigerated sea water)	52%	n/a	n/a	n/a
Ice in totes	24%	n/a	n/a	n/a
CSW (chilled sea water/slush ice)	8%	n/a	n/a	n/a
Totes and RSW/CSW	5%	n/a	n/a	n/a
Other combination without totes	4%	n/a	n/a	n/a
Other combination with totes	2%	n/a	n/a	n/a
Champagne-type system	1%	n/a	n/a	n/a

Tenders (not asked of fishermen prior to 2006)

Over nine out of ten fishermen (92%) rate the tenders' treatment of their fish as good or excellent.

QUESTION:

"How would you rate the way the tenders take care of your fish?"

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Excellent	92% {	44%	n/a	n/a	n/a
Good		48%	n/a	n/a	n/a
Not too good		5%	n/a	n/a	n/a
Poor		1%	n/a	n/a	n/a

G. Quality Perceptions

Four out of five fishermen (80%) think that market perceptions of Alaska salmon quality have changed for the better in recent years...

QUESTION:

"Have market perceptions regarding the quality of Alaskan salmon changed for the better or worse during the past 3-5 years?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Changed for better	80%	51%	62%	63%
Changed for worse	4%	15%	15%	16%
No change	11%	24%	14%	15%

...and two out of three fishermen (69%) report that the quality of their catch has improved during the same period.

QUESTION:

"Has the quality of your catch improved over the same period of time?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	69%	67%	75%	n/a
No*	25%	28%	20%	n/a
No response	6%	5%	5%	n/a

* Note: Some fishermen clarified that their quality was already at a high level 3-5 years ago, thus there was no need/room for improvement.

Quality Perceptions (cont'd)

When asked why their catch has improved, fishermen were most likely to indicate better handling (16%), bleeding fish (13%) and more frequent deliveries (11%).

QUESTION:

“If yes, what did you do to improve the quality of your catch?”

RESPONSE:

<u>2006</u>	<u>2001</u>	
16%	21%	Handle more carefully (i.e. keep covered/moist)
13%	6%	Bleed fish
11%	17%	Deliver more frequently
6%	8%	Upgraded/Installed RSW
6%	*	Better icing (i.e. layer ice)
5%	12%	Use more ice
5%	8%	Brailer improvement (i.e. smaller, knotless)
4%	*	Use slush ice/CSW
4%	*	Boat improvement (i.e. upgraded/insulated hold, bin boards)
4%	*	More quality conscious
3%	*	Started chilling
3%	*	Chill faster (i.e. shorter trips, slow fishing)
2%	*	Improve cleanliness
5%	*	Miscellaneous**
13%	7%	No response

* Note: For these responses, 2001 results were each less than 6%.

** Note: Miscellaneous includes “improved equipment”, “use better totes”, “process on-board”.

Quality Perceptions (cont'd)

For seafood quality education, fishermen indicate that they continue to rely primarily on the plant/cannery, ASMI and themselves/past experience.

QUESTION:

“Who do you depend on to supply you with seafood quality education?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Plant/Cannery	22% (34%)	24% (39%)	25% (34%)	n/a
ASMI	11% (17%)	12% (21%)	18% (24%)	n/a
Self	11% (17%)	10% (17%)	13% (18%)	n/a
Other fishermen	4% (6%)	2% (4%)	2% (3%)	n/a
Fisheries Association	4% (5%)	1% (1%)	1% (1%)	n/a
Seafood publications	3% (5%)	3% (5%)	5% (7%)	n/a
University of Anchorage	2% (4%)	1% (1%)	2% (3%)	n/a
State of AK/Fish & Game	1% (2%)	2% (3%)	3% (4%)	n/a
Fishing journals	1% (2%)	2% (3%)	2% (3%)	n/a
No one	1% (2%)	2% (3%)	2% (3%)	n/a
Mailings	1% (1%)	2% (3%)	1% (1%)	n/a
Tenders	1% (2%)	1% (1%)	2% (3%)	n/a
Health Agency-FDA/DEC	1% (2%)	0% 0%	0% 0%	0%
Internet	1% (1%)	0% 0%	0% 0%	0%
No response	35%	39%	26%	n/a

*NOTE: Numbers in parentheses are adjusted for “no response.”

On-Shore Processors



A. General Information

On-shore processors tend to get most of their fish equally from fishermen (43% “over half”) and tenders (42% “over half”); however, some are catcher-processors, and other processors are also sources. [See next page.]

QUESTION:

“What percentage of your fish do you get from...?”

RESPONSE:

FISHERMEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	37%	8%	7%	13%
1–24%	21%	28%	39%	19%
25–49%	0%	8%	7%	9%
50–74%	11%	15%	14%	10%
75–99%	11%	15%	7%	12%
100%	21%	28%	25%	38%

TENDERS

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	47%	44%	36%	51%
1–24%	5%	12%	11%	4%
25–49%	5%	5%	7%	6%
50–74%	11%	7%	7%	9%
75–99%	26%	29%	34%	20%
100%	5%	3%	5%	10%

General Information (cont'd)

SELF/CATCHER-PROCESSOR

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	79%	n/a	n/a	n/a
1–24%	0%	n/a	n/a	n/a
25–49%	0%	n/a	n/a	n/a
50–74%	5%	n/a	n/a	n/a
75–99%	0%	n/a	n/a	n/a
100%	16%	n/a	n/a	n/a

ANOTHER PROCESSOR

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	79%	85%	95%	86%
1–24%	11%	2%	0%	4%
25–49%	5%	2%	2%	4%
50–74%	5%	5%	0%	0%
75–99%	0%	0%	3%	3%
100%	0%	5%	0%	3%

B. Information on Fishermen

In 2006, on-shore processors tended to move in opposite directions, with substantial increases in both the numbers who did not accept fish from any fishermen (18%), and those who accepted fish from a large number of fishermen (54% from 100 or more fishermen).

QUESTION:

“In total, how many separate individual fishermen delivered to your plant or to your tenders during the last salmon season?”

RESPONSE:

	<u>2006*</u>	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None/Catcher-Processor	18%	16%	0%	0%	7%
Less than 20	6%	5%	32%	21%	23%
Between 20–49	12%	11%	15%	4%	17%
Between 50–99	12%	11%	17%	23%	13%
Between 100–199	54% {	24%	21%	17%	20%
Between 200–499		24%	21%	17%	29%
500 +	6%	5%	0%	0%	5%
No answer		11%	0%	4%	1%

* Note: 2006 results adjusted for 11% “no response”.

Information on Fishermen (cont'd)

Processors on-shore have reported increased percentages of gillnetters, and decreased seiners and trollers, while setnetters have remained fairly constant over the past 10 years.

QUESTION:

“How many were there in each of the following gear types?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Gillnetters	71%	58%	43%	61%
Seiners	3%	12%	23%	14%
Trollers	9%	13%	17%	15%
Setnetters	17%	17%	17%	10%

On-shore processors report there has been a huge increase in the number of gillnetters and seiners who chill their fish.

QUESTION:

“How many _____ chill their fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Gillnetters	57%	43%	35%	16%
Seiners	100%	79%	76%	59%
Trollers	93%	94%	100%	91%
Setnetters	26%	34%	36%	15%

Information on Fishermen (cont'd)

And by far, the largest number of on-shore processors (79%) require fishermen to deliver their catch at least daily.

QUESTION:

“How often do you require fishermen to deliver their catch?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Twice/day	79%	21%	22%	30%	20%
Daily		58%	48%	46%	44%
Every other day		0%	15%	7%	14%
Every 3 days		11%	8%	9%	6%
More than 3 days		5%	2%	5%	8%
No answer		5%	5%	2%	8%

For the most part, processors' instructions for fishermen have not changed much over the past 15 years.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you provide instructions to the fishermen on proper fish handling practices?	84%	88%	84%	83%
Do you instruct fishermen on recommended chilling practices?	84%	83%	71%	n/a
Do you provide cleaners and sanitizers to the fishermen?	53%	54%	48%	48%
Do you provide ice for the fishermen?	79%	78%	70%	n/a

C. Information on Tenders

The number of processors who use tenders has also remained consistent, with the exception of an upward “spike” ten years ago.

QUESTION:

“Do you use tenders?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
53%	54%	66%	54%

Similar to increases in the number of fishermen served, on-shore processors who use tenders also report an increase in the number of tenders under contract.

QUESTION:

“During the last salmon season, how many tenders worked under contract for you in your area?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>	
Five or less	60% {	50%	50%	35%	16%
6-10		10%	23%	32%	61%
11-15	30% {	20%	0%	14%	10%
16-20		0%	14%	3%	6%
21+		10%	9%	11%	7%
No response		10%	6%	5%	0%

Information on Tenders (cont'd)

On-shore processors have strongly reduced the amount of time allowed between when fish are captured and when they will be accepted at the plant.

QUESTION:

“What is the maximum amount of days you allow between the time fish are captured and the time they arrive at the plant?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than one day	70%	30%	14%	16%	11%
One day		40%	18%	11%	11%
Two days		30%	50%	43%	41%
Three days		0%	14%	22%	19%
Four days		0%	5%	3%	14%
Five + days		0%	0%	5%	6%

The use of fish pumps to offload from tenders is reported to be gradually decreasing, while the use of totes has substantially increased since 1996.

QUESTION:

“Do you use _____ to offload the fish from the tenders?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Fish pumps	70%	77%	78%	84%
Totes	40%	41%	24%	27%
Brailer bags	20%	27%	46%	24%
By hand	20%	23%	27%	24%
Fish ladders	10%	9%	8%	11%
Fish buckets	10%	5%	35%	19%
Conveyors	0%	0%	3%	0%

Information on Tenders (cont'd)

By far, the largest number of tenders chill their fish with refrigerated sea water.

QUESTION:

“How do your tenders chill the fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
RSW	90%	n/a	n/a	n/a
Ice in totes	10%	n/a	n/a	n/a
CSW	0%	n/a	n/a	n/a
Champagne-type system	0%	n/a	n/a	n/a
No chilling	0%	n/a	n/a	n/a

Overall, it appears there has been a decline in record-keeping requirements expected of tenders by on-shore processors.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you instruct tenders on proper fish handling and chilling procedures?	80%	100%	97%	100%
(IF YES) Have you referred to the <u>Salmon Quality Almanac</u> ?	50%	77%	83%	n/a
Do you require tenders to keep records such as:				
temperature of fish?	80%	86%	84%	81%
time fish are delivered?	70%	82%	73%	84%
time fish are caught?	30%	50%	54%	62%
Do you require tenders to inspect the fishermen’s fish holds?	20%	59%	46%	68%

Information on Tenders (cont'd)

But tenders are required to reject fish who have been handled roughly, or are too old or not kept cold enough.

	(% YES)			
Do you require your tenders to keep high-quality fish separate from poor-quality fish?	70%	n/a	n/a	n/a
Do you require tenders to <u>reject some</u> fish due to:				
poor handling by the fisherman?	80%	n/a	n/a	n/a
fish that are too old?	80%	n/a	n/a	n/a
high temperature?	70%	n/a	n/a	n/a
(IF YES) At what temperature are the fish not acceptable?				
32 degrees F	0%	n/a	n/a	n/a
34 degrees F	0%	n/a	n/a	n/a
36 degrees F	0%	n/a	n/a	n/a
38 degrees F	14%	n/a	n/a	n/a
40 degrees F	14%	n/a	n/a	n/a
45 degrees F	29%	n/a	n/a	n/a
50 degrees F	14%	n/a	n/a	n/a
No limit	14%	n/a	n/a	n/a
No response	15%	n/a	n/a	n/a

D. At the Processing Facility

Fish history remains frequently checked (84%), but only half (50%) report they actually observe tenders' fish handling practices.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you check <u>fish history</u> when they arrive at the "front door"?	84%	88%	91%	86%
Do you provide cleaners and sanitizers to the tenders?	60%	91%	89%	97%
Do you inspect your tenders for cleanliness and sanitation?	80%	n/a	n/a	n/a
Do you observe your tenders' fish handling practices?	50%	n/a	n/a	n/a

Nevertheless, processors are highly confident tenders take good or excellent care of their fish before they're delivered.

QUESTION:

"How would you rate the way the tenders take care of your fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Excellent	80% {	20%	n/a	n/a
Good		60%	n/a	n/a
Not too good	0%	n/a	n/a	n/a
Poor	0%	n/a	n/a	n/a
No response	20%	n/a	n/a	n/a

At the Processing Facility (cont'd)

The number of processors with insulated totes with ice has continually increased with each measurement, surpassing iced totes in 2006.

QUESTION:

“Do you have _____ available for in-plant holding/chilling facilities?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Insulated totes with ice	74%	68%	63%	52%
Iced totes	68%	68%	63%	68%
Brine tanks	26%	17%	18%	32%
Refrigerated bins	21%	29%	20%	20%
Non-insulated totes without ice	5%	17%	11%	13%
Cold room/freezer (volunteered)	0%	2%	7%	4%
No chilled holding facilities	9%	2%	2%	6%

At the Processing Facility (cont'd)

The use of plastic is increasing, while aluminum is decreasing at fish-contact points.

QUESTION:

“What kind of material is used for cutting boards at butchering and sliming tables?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Plastic	85%	78%	73%	71%
Aluminum	5%	10%	11%	15%
Fiberglass	5%	10%	7%	4%
Metal	5%	2%	4%	4%
Wood	0%	0%	0%	3%

Nearly all processors (95%) report they evaluate fish quality as fish are received...

QUESTION:

“Is the fish quality evaluated as the fish are received at the processing plant?”

RESPONSE:

(% YES)			
<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
95%	100%	95%	94%

At the Processing Facility (cont'd)

...with the evaluation of the fish generally on going (83% "all the time")...

QUESTION:

"How often is fish quality evaluated?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
All of the time	83%	90%	92%	85%
Most of the time	17%	8%	6%	11%
About half the time	0%	2%	0%	0%

...by evaluators reported to be experienced and familiar with regulatory requirements.

QUESTION:

"Are fish evaluated by experienced personnel familiar with regulatory agency requirements?"

RESPONSE:

(% YES)			
<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
94%	93%	98%	89%

At the Processing Facility (cont'd)

Fish quality evaluators are generally trained in-house (41%) or "on the floor" (35%).

QUESTION:

"Where did they receive their training?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
In-house "classroom" training	41%	39%	37%	43%
"On the floor" only	35%	8%	17%	29%
Schools/seminars	18%	13%	17%	5%
Other	0%	3%	4%	5%
Customer instructions	0%	0%	0%	5%
No response	6%	37%	25%	13%

*Note: In 2006 this question offered response options "On the floor" only", "In-house 'classroom' training" and "Other (specify) _____". In previous years it was asked as an open-ended question. The question type was changed to reduce the "no response", which was 37% in 2001. "No response" was 6% in 2006.

Opinions regarding strategies to increase fish quality are approximately equally divided -- a little over one-third (37%) recommend higher prices for higher quality, approximately one-third (32%) recommend lower prices for lower quality, and a similar percentage (32%) recommend buying only chilled fish.

QUESTION:

"Which would be the best way to provide incentive to deliver higher quality fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Raise price for high quality	36%	44%	27%	28%
Buy only iced/refrigerated fish	32%	29%	34%	33%
Lower price for low quality	32%	17%	20%	28%
Educate	0%	0%	7%	0%

At the Processing Facility (cont'd)

The number of on-shore processors with regular seafood quality education programs has declined to the lowest level recorded so far...

QUESTION:

“Do you have regular seafood quality education programs for employees?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
53%	78%	86%	68%

...but the source or location of the instruction may have improved -- now instruction includes more emphasis on combined on the floor and classroom instruction, as opposed to only on the floor.

QUESTION:

“Are employees instructed on the floor, in the classroom, or both?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
On the floor only	50%	53%	67%	62%
Both floor and classroom	50%	38%	33%	36%
In the classroom	0%	6%	0%	2%

At the Processing Facility (cont'd)

The education programs clearly cover the most important fish handling practices.

QUESTION:

“Does your education program cover such topics as _____?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
...handling fish gently?	100%	100%	100%	100%
...not handling fish by the tail?	100%	100%	100%	98%
...keeping the fish cool?	100%	100%	96%	100%
...not throwing, stepping on, or in any way abusing fish?	100%	100%	100%	100%
...keeping fish covered?	90%	100%	94%	98%

Nearly all on-shore processors (89%) report they have written procedures that dictate proper cleaning procedures.

QUESTION:

“Does the facility have a written cleaning program which includes the use of appropriate detergents and bactericides?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	89%	88%	88%	77%

At the Processing Facility (cont'd)

And for the most part (76%), the plans have been updated within the past year.

QUESTION:

“How long ago was your written program updated?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Within the past year	76%	86%	82%	81%
Two to three years	6%	14%	16%	15%
Four to five years	6%	0%	2%	4%

At the Processing Facility (cont'd)

All on-shore processors report at least some of their fish are frozen, with 74% saying they freeze at least half.

QUESTION:

“What percentage of fish go into fresh/frozen/canned products?”

RESPONSE:

FRESH PRODUCTS

	<u>2006</u>	<u>2001*</u>	<u>1996*</u>	<u>1991*</u>
None	11%	5%	9%	9%
1–24%	42%	5%	16%	7%
25–49%	21%	7%	4%	9%
50–74%	26%	7%	5%	3%
75–99%	0%	7%	7%	7%
100%	0%	68%	59%	65%

FROZEN PRODUCTS

	<u>2006</u>	<u>2001*</u>	<u>1996*</u>	<u>1991*</u>
None	0%	5%	9%	9%
1–24%	16%	5%	16%	7%
25–49%	11%	7%	4%	9%
50–74%	58%	7%	5%	3%
75–99%	11%	7%	7%	7%
100%	5%	68%	59%	65%

* Note: Prior to 2006 “fresh/frozen” was a single response option.

At the Processing Facility (cont'd)

CANNED PRODUCTS

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	58%	68%	64%	68%
1–24%	16%	7%	5%	4%
25–49%	5%	0%	0%	1%
50–74%	16%	15%	7%	9%
75–99%	5%	5%	16%	9%
100%	0%	5%	7%	9%

E. Processing Operations

There is a major difference between the amount of time desired between when fish are received and frozen, compared to how much time is actually allowed -- nearly all on-shore processors (95%) desire no more than a day to pass between receipt and freezing...

QUESTION:

“What amount of time is desired between when fish are received and when they are frozen?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 12 hours	95%	42%	41%	46%	56%
Daily		53%	46%	44%	33%
Every 2 days		5%	8%	10%	3%
Every 3 days		0%	0%	0%	0%
More than 3 days		0%	0%	0%	2%

...however, nearly half (47%) would actually allow two days or more.

QUESTION:

“What is the maximum amount of time allowed between when fish are received and when they are frozen?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 12 hours	53%	11%	15%	12%	13%
Daily		42%	36%	46%	44%
Every 2 days	47%	31%	31%	19%	22%
Every 3 days		11%	13%	8%	8%
More than 3 days		5%	0%	15%	5%

Processing Operations (cont'd)

Approximately three out of four (74%) on-shore processors report they monitor the core temperature of the fish while in the freezer...

QUESTION:

“Is the core temperature of fish monitored in the freezer?”

RESPONSE:

(% YES)			
<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
74%	72%	92%	73%

...and the monitoring generally takes place at the time the fish are ready to glaze (64%).

QUESTION:

“How often do you monitor fish temperature while they are in the freezer?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
When ready to glaze	64%	71%	65%	59%
Hourly	21%	14%	8%	24%
One to four hours	0%	4%	6%	7%
Other	7%	11%	17%	4%

Processing Operations (cont'd)

Nearly all of the fish (93%) are -10° F or colder at the time they're removed from the freezer.

QUESTION:

“What is the average core temperature of the fish at the time they are removed from the freezer?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Colder than -20 degrees F	0%	14%	19%	9%
-20 degrees F	93% {	36%	29%	21%
-10 degrees F		57%	29%	33%
-5 degrees F	7%	14%	21%	22%
0 degrees F	0%	11%	6%	9%
+5 degrees F	0%	0%	0%	2%

Processing Operations (cont'd)

And for the vast majority (74%), the freezers themselves are monitored at least every two hours...

QUESTION:

"How often do you monitor freezer temperature?"

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Hourly	74%	37%	36%	62%	56%
Every 2 hours		37%	23%	17%	14%
Every 2.5 hours		0%	3%	0%	0%
Every 3 hours		16%	26%	13%	16%
Over 3 hours/Daily		5%	5%	0%	0%

...most often by referring to a remote temperature probe.

QUESTION:

"What method do you use to monitor freezer temperature?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Remote temperature probe	84%	87%	87%	81%
Opening freezer door	11%	3%	10%	8%
Checking stiffness	0%	3%	0%	2%

Processing Operations (cont'd)

By a wide margin, on-shore processors report they blast freeze their product (63% blast freeze all of their product) -- IQF and pan freezing is declining, while plate freezing has increased a small amount. [See next page.]

QUESTION:

“How much of your product goes through _____?”

RESPONSE:

BLAST FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	21%	41%	17%	19%
1–24%	0%	0%	0%	2%
25–49%	0%	10%	2%	0%
50–74%	5%	3%	0%	10%
75–99%	11%	5%	17%	6%
100%	63%	41%	64%	63%

IQF FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	79%	74%	77%	84%
1–24%	5%	0%	2%	0%
25–49%	11%	3%	0%	0%
50–74%	0%	8%	2%	2%
75–99%	0%	0%	0%	2%
100%	5%	15%	19%	13%

Processing Operations (cont'd)

PLATE FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	84%	79%	81%	84%
1–24%	5%	5%	15%	5%
25–49%	0%	3%	0%	5%
50–74%	0%	5%	0%	2%
75–99%	0%	0%	0%	0%
100%	11%	8%	4%	5%

PAN FROZEN

	2006	2001	1996	1991
None	100%	92%	94%	98%
1–24%	0%	0%	2%	0%
25–49%	0%	3%	2%	0%
50–74%	0%	0%	0%	0%
75–99%	0%	0%	0%	0%
100%	0%	5%	2%	2%

Processing Operations (cont'd)

On-shore processors' freezers appear to be increasingly efficient -- one out of four (26%) report they could freeze a full freezer of fish in four hours or less, and none said it would require over 12 hours.

QUESTION:

"If your freezer was full to capacity, how long would it take to freeze fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Four hours or less	26%	13%	8%	13%
Five to eight hours	42%	49%	50%	46%
Nine to twelve hours	21%	21%	19%	14%
Thirteen to sixteen hours	0%	3%	4%	6%
Seventeen to twenty hours	0%	3%	4%	0%
Twenty-one to twenty-four hours	0%	3%	4%	2%
More than 24 hours	0%	0%	4%	6%

F. Shipping

As far as shipping is concerned, most processors continue to ship their fish by container (58% over half), but the use of air is increasing substantially (37% over half).

QUESTION:

“How much of your product is shipped by _____?”

RESPONSE:

BY CONTAINER

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	32%	31%	19%	37%
1–24%	5%	3%	2%	6%
25–49%	5%	0%	8%	8%
50–74%	37%	23%	12%	5%
75–99%	16%	33%	42%	21%
100%	5%	10%	17%	24%

BY AIR

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	16%	36%	27%	54%
1–24%	32%	33%	46%	27%
25–49%	16%	13%	12%	5%
50–74%	16%	10%	8%	2%
75–99%	16%	3%	4%	6%
100%	5%	5%	4%	6%

Shipping (cont'd)

BY TRUCK

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	74%	54%	69%	81%
1–24%	11%	18%	15%	6%
25–49%	5%	8%	10%	2%
50–74%	11%	13%	4%	0%
75–99%	0%	5%	0%	5%
100%	0%	3%	2%	6%

BY TRAMPER

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	95%	92%	90%	78%
1–24%	0%	3%	4%	3%
25–49%	5%	3%	2%	0%
50–74%	0%	3%	2%	5%
75–99%	0%	0%	2%	11%
100%	0%	0%	0%	3%

Shipping (cont'd)

SELL LOCALLY *

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	68%	n/a	n/a	n/a
1–24%	21%	n/a	n/a	n/a
25–49%	0%	n/a	n/a	n/a
50–74%	11%	n/a	n/a	n/a
75–99%	0%	n/a	n/a	n/a
100%	0%	n/a	n/a	n/a

* Note: 2006 was the first year “sell locally” was a response option for this question.

When shipping “bottlenecks” occur, on-shore processors report it’s generally due to a lack of shipping space.

QUESTION:

“If it occurs, which one most often causes a bottleneck in shipping?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Lack of shipping space	68%	39%	46%	51%
Lack of infrastructure	11%	20%	13%	15%
Does not occur	11%	22%	32%	13%
Other	10%	7%	0%	0%
Do not ship	0%	0%	0%	4%
No response	0%	12%	9%	17%

Shipping (cont'd)

Once the fish are loaded and out the door, processor responsibility basically ends as far as monitoring fish temperature is concerned.

QUESTION:

“How do you monitor fish temperature after it leaves the plant?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Rely on shipping company	84%	47%	53%	52%	38%
Don't monitor		37%	18%	21%	35%
Use continuous temp. device		5%	16%	13%	17%
Take core temp. upon shipment and rely on shipper to monitor		0%	5%	10%	5%
Take core temp. at beginning of shipment		5%	8%	2%	3%

G. Inspections

Few on-shore processors (10%) reported having more than one ADEC inspection last season.

QUESTION:

“How many inspection visits did you have this past salmon season from the ADEC?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	16%	24%	2%	n/a
One	74%	20%	14%	n/a
Two	0%	37%	27%	n/a
Three	5%	5%	5%	n/a
Four	0%	5%	7%	n/a
Five	0%	0%	13%	n/a
Six	5%	2%	13%	n/a
Seven	0%	0%	2%	n/a
Eight	0%	0%	7%	n/a
Nine	0%	0%	0%	n/a
Ten +	0%	6%	11%	n/a

10% {

Inspections (cont'd)

The majority of on-shore respondents think ADEC inspections focus mostly on methods.

QUESTION:

“Overall, do you think the inspection focused mostly on methods or mostly on outcome?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Methods	63%	63%	66%	n/a
Outcome	21%	15%	29%	n/a
No visit last season	11%	20%	2%	n/a

Most on-shore processors (63%) consider the inspection(s) useful...

QUESTION:

“Were the inspection(s) useful to the operation of the plant?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	63%	66%	70%	n/a
No	16%	12%	27%	n/a
No visit last season	11%	20%	2%	n/a

...and beneficial.

QUESTION:

“Did the inspection(s) benefit you by showing you things you could use or follow to improve your operation?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	63%	61%	45%	n/a
No	21%	17%	54%	n/a
No visit last season	11%	20%	2%	n/a

Off-Shore Processors



A. General Information

The vast majority of off-shore processors who responded to this survey are catcher-processors who catch most of their fish themselves (83% “over half”). Another 11% get all of their fish from fishermen, while very few (6%) accept fish from tenders.

QUESTION:

“What percentage of your fish do you get from...?”

RESPONSE:

SELF/CATCHER-PROCESSOR

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	17%	27%	43%	47%
1–24%	0%	0%	0%	0%
25–49%	0%	0%	0%	0%
50–74%	3%	0%	0%	0%
75–99%	3%	0%	0%	0%
100%	77%	73%	57%	53%

FISHERMEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	80%	79%	66%	61%
1–24%	3%	3%	8%	19%
25–49%	6%	0%	0%	3%
50–74%	0%	0%	0%	3%
75–99%	0%	0%	0%	0%
100%	11%	18%	26%	14%

General Information (cont'd)

TENDERS

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	94%	91%	82%	67%
1–24%	0%	0%	0%	0%
25–49%	0%	0%	0%	3%
50–74%	0%	0%	0%	3%
75–99%	3%	3%	9%	19%
100%	3%	6%	9%	8%

B. Information on Fishermen

Most off-shore processors report they basically do not accept fish from individual fishermen (74% “none”, 17% “less than twenty”).

QUESTION:

“In total, how many separate individual fishermen delivered to your processing facility or to your tenders during the last salmon season?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 20*	17%	70%	77%	11%
20–49	0%	3%	9%	8%
50–99	3%	0%	0%	11%
100-199	0%	6%	6%	8%
200-499	3%	0%	3%	6%
None/catcher-processor	74%	21%	3%	56%

*Note: Statistics on this question may require some adjustment, due to potential miscommunication whether a processor operates alone—as a catcher/processor—or receives fish from other fishermen.

Information on Fishermen (cont'd)

The fish that off-shore processors accept from fishermen generally come from gillnetters (90%)...

QUESTION:

“How many were there in each of the following gear types?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Gillnetters	90%	93%	68%	80%
Setnetters	5%	3%	<1%	17%
Trollers	5%	3%	2%	0%
Seiners	0%	1%	29%	2%

...and the reported percentage of gillnetters who chill their fish has increased since 1991, but decreased in the last five years.

QUESTION:

“How many _____ chill their fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Gillnetters	26%	37%	30%	12%
Setnetters	69%	0%	100%	0%
Trollers	69%	90%	77%	0%
Seiners	n/a	100%	68%	39%

Information on Fishermen (cont'd)

The largest number of off-shore processors report they require fishermen to deliver their catch at least daily (46%) -- but the actual percentage is most likely much higher because nearly half of the respondents didn't answer this question -- most likely because they don't accept fish from individual fishermen.

QUESTION:

"How often do you require fishermen to deliver their catch?"

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Twice/day	46%	17%	27%	20%	50%
Daily		29%	27%	31%	50%
Every other day		3%	3%	6%	0%
Every 3 days		0%	6%	0%	0%
More than 3 days		6%	0%	3%	0%
No answer (& n/a)		45%	36%	40%	0%

Processor instructions to fishermen regarding chilling practices is increasing (80%), and although not a large percentage, the number of processors who provide ice to fishermen is also increasing (31%).

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you instruct fishermen on recommended chilling practices?	80%	76%	74%	n/a
Do you provide instructions to the fishermen on proper fish handling practices?	71%	70%	69%	88%
Do you provide cleaners and sanitizers to the fishermen?	63%	52%	66%	69%
Do you provide ice for the fishermen?	31%	24%	17%	25%

C. Information on Tenders

The reported usage of tenders by off-shore processors has declined in every survey...

QUESTION:

“Do you use tenders?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
14%	18%	23%	42%

...but among the few who do use tenders, the number under contract has increased.

QUESTION:

“During the last salmon season, how many tenders worked under contract for you in your area?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Five or less	20%	50%	25%	22%
6-10	40%	33%	38%	72%
11-15	40% {	20%	0%	13%
16-20		20%	0%	13%
21+	0%	0%	13%	0%

Information on Tenders (cont'd)

As far as fish quality is concerned, off-shore processors report tight guidelines regarding the length of time allowed between when fish are captured and when they will be accepted for delivery...

QUESTION:

“What is the maximum amount of days you allow between the time fish are captured and the time they arrive at the plant?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than one day	80% {	20%	33%	25%	13%
One day		60%	0%	25%	47%
Two days		20%	33%	25%	27%
Three days		0%	17%	13%	7%
No response		0%	17%	12%	6%

...and all tenders used are reported to chill their fish using RSW.

QUESTION:

“How do your tenders chill the fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
RSW	100%	n/a	n/a	n/a
CSW	0%	n/a	n/a	n/a
Champagne-type system	0%	n/a	n/a	n/a
Ice in totes	0%	n/a	n/a	n/a
No chilling	0%	n/a	n/a	n/a

Information on Tenders (cont'd)

Brailer bags are now the clearly predominant means of off-loading fish from tenders.

QUESTION:

“Do you use _____ to offload the fish from the tenders?”

RESPONSE:

(% YES)

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Brailer bags	80%	40%	13%	20%
Fish pumps	40%	80%	88%	60%
Totes	20%	20%	13%	20%
By hand	0%	20%	0%	7%
Fish buckets	0%	0%	0%	7%
Fish ladders	0%	0%	0%	7%
Conveyors	0%	0%	0%	0%

Information on Tenders (cont'd)

And off-shore processors report substantial communications with the tenders they work with, but there appears to be relatively little record-keeping required of tenders regarding when fish are caught.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you instruct <u>tenders</u> on proper fish handling and chilling procedures?	80%	100%	88%	93%
(IF YES) Have you referred to the <u>Salmon Quality Almanac</u> ?	75%	80%	86%	n/a
Do you require tenders to keep records such as:				
temperature of fish?	100%	83%	75%	93%
time fish are delivered?	100%	60%	88%	80%
time fish are caught?	60%	80%	63%	47%
Do you require tenders to inspect the fishermen's fish holds?	80%	20%	50%	47%
Do you require your tenders to keep high-quality fish separate from poor-quality fish?	80%	n/a	n/a	n/a

Information on Tenders (cont'd)

Among the communications between off-shore processors and tenders are instructions for tenders to reject fish which have been treated roughly or not delivered promptly.

(% YES)

Do you require tenders to reject some fish due to:

poor handling by the fisherman?	80%	n/a	n/a	n/a
fish that are too old?	80%	n/a	n/a	n/a
high temperature?	60%	n/a	n/a	n/a

(IF YES) At what temperature are the fish not acceptable?

32 degrees F	0%	n/a	n/a	n/a
34 degrees F	33%	n/a	n/a	n/a
36 degrees F	33%	n/a	n/a	n/a
38 degrees F	0%	n/a	n/a	n/a
40 degrees F	33%	n/a	n/a	n/a
45 degrees F	0%	n/a	n/a	n/a
50 degrees F	0%	n/a	n/a	n/a
No limit	0%	n/a	n/a	n/a

Information on Tenders (cont'd)

Off-shore processors also report observing and inspecting tenders' facilities and practices (100%); however, fewer than half (46%) report confirming or checking the fish history at the time they are loaded on-board.

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Do you inspect your tenders for cleanliness and sanitation?	100%	n/a	n/a	n/a
Do you observe your tenders' fish handling practices?	100%	n/a	n/a	n/a
Do you provide cleaners and sanitizers to the tenders?	60%	20%	88%	87%
Do you check <u>fish history</u> when they arrive "on-board"?	46%	52%	57%	86%

In response to their observations and inspections, all processors (100%) give good ratings to the tenders for the way they take care of their fish.

QUESTION:

"How would you rate the way the tenders take care of your fish?"

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Excellent	0%	n/a	n/a	n/a
Good	100%	n/a	n/a	n/a
Not too good	0%	n/a	n/a	n/a
Poor	0%	n/a	n/a	n/a

D. At the Processing Facility

Processors increasingly report having iced totes and insulated totes with ice on board, while the use of brine tanks is declining.

QUESTION:

“Do you have _____ available for on-board holding/chilling facilities?”

RESPONSE:

(% YES)

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Insulated totes with ice	43%	33%	17%	25%
Iced totes	37%	15%	20%	31%
Refrigerated bins	20%	9%	9%	8%
Cold room/freezer (volunteered)	14%	18%	6%	11%
Brine tanks	11%	27%	29%	28%
Non-insulated totes without ice	6%	9%	0%	8%
No chilled holding facilities	9%	n/a	n/a	n/a

Plastic remains the material of choice for fish-contact surfaces at butchering and sliming tables.

QUESTION:

“What kind of material is used for cutting boards at butchering and sliming tables?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Plastic	46%	48%	49%	47%
Fiberglass	17%	9%	17%	22%
Aluminum	14%	33%	17%	14%
Metal	6%	0%	0%	11%
Wood	0%	0%	6%	3%
Combination	9%	0%	0%	0%

At the Processing Facility (cont'd)

Over three out of four off-shore processors (77%) report they evaluate the quality of fish as they are received...

QUESTION:

“Is fish quality evaluated as the fish are received “on-board”?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
77%	79%	74%	89%

...and the evaluation is nearly constant (93% “all of the time”) during the receiving process.

QUESTION:

“How often is fish quality evaluated?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
All of the time	93%	92%	96%	91%
Most of the time	7%	8%	4%	9%

At the Processing Facility (cont'd)

The evaluations are reported to be conducted by experienced personnel (93%)...

QUESTION:

“Are fish evaluated by experienced personnel familiar with regulatory agency requirements?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
93%	85%	81%	81%

...however, most of the training (60%) is on-the-job training acquired on the floor only (56%).

QUESTION:

“Where did they receive their training?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
On the floor only (on-the-job)	60%	23%	24%	38%
In-house training	20%	27%	14%	12%
Schools/seminars	16%	9%	0%	8%
In-house and on the floor	4%	0%	0%	0%
Quality Assurance Manager	0%	0%	0%	15%
Industry Literature	0%	0%	10%	15%
DEC	0%	0%	10%	8%
Customer instructions	0%	0%	10%	0%
Other	0%	5%	0%	0%

At the Processing Facility (cont'd)

Most processors would recommend incentives to encourage higher quality fish (54% “higher prices for higher quality”) as opposed to penalties (14% “lower prices for lower quality”).

QUESTION:

“Which would be the best way to provide incentive to deliver higher quality fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Raise price for high quality	54%	55%	46%	44%
Buy only iced/refrigerated fish	17%	15%	23%	31%
Lower price for low quality	14%	9%	14%	19%

Nearly two out of three off-shore processors (63%) report regular education programs for employees regarding seafood quality...

QUESTION:

“Do you have regular seafood quality education programs for employees?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	63%	45%	49%	56%

At the Processing Facility (cont'd)

...but again, most instruction (68%) takes place on the floor.

QUESTION:

“Are employees instructed on the floor, in the classroom, or both?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
On the floor only	68%	67%	71%	70%
In the classroom	0%	0%	0%	0%
Both	32%	33%	29%	25%

Nevertheless, the instruction appears to be thorough and covers the most important aspects of improving fish quality.

QUESTION:

“Does your education program cover such topics as _____?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
...handling fish gently?	100%	100%	100%	100%
...not throwing, stepping on, or in any way abusing fish?	100%	100%	100%	100%
...not handling fish by the tail?	95%	100%	100%	100%
...keeping the fish cool?	95%	100%	100%	100%
...keeping fish covered?	95%	100%	88%	100%

At the Processing Facility (cont'd)

Approximately three out of four off-shore processors report they have a written cleaning program...

QUESTION:

“Does the facility have a written cleaning program which includes the use of appropriate detergents and bactericides?”

RESPONSE:

(% YES)

<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
74%	85%	66%	58%

...and for the most part (69%), the cleaning program has been updated within the past year.

QUESTION:

“How long ago was your written program updated?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Within the past year	69%	86%	83%	86%
Two to three years	31%	11%	13%	10%
Four to five years	0%	4%	0%	4%

E. Processing Operations

With few exceptions, nearly all off-shore processor product is either fresh or frozen, as opposed to canned.

QUESTION:

“What percentage of fish go into fresh/frozen/canned products?”

RESPONSE:

FRESH PRODUCTS

	<u>2006</u>	<u>2001*</u>	<u>1996*</u>	<u>1991*</u>
None	34%	6%	9%	0%
1–24%	9%	0%	3%	0%
25–49%	20%	0%	0%	3%
50–74%	6%	3%	3%	0%
75–99%	6%	0%	3%	3%
100%	26%	91%	83%	94%

FROZEN PRODUCTS

	<u>2006</u>	<u>2001*</u>	<u>1996*</u>	<u>1991*</u>
None	31%	6%	9%	0%
1–24%	9%	0%	3%	0%
25–49%	3%	0%	0%	3%
50–74%	17%	3%	3%	0%
75–99%	14%	0%	3%	3%
100%	26%	91%	83%	94%

* Note: Prior to 2006 “fresh/frozen” was a single response option.

Processing Operations (cont'd)

CANNED PRODUCTS

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	83%	91%	91%	94%
1–24%	6%	0%	3%	3%
25–49%	0%	0%	0%	0%
50–74%	3%	3%	3%	3%
75–99%	3%	0%	3%	0%
100%	6%	6%	0%	0%

Processing Operations (cont'd)

Nearly nine out of ten off-shore processors (88%) “desire” their fish to be frozen the same day they are received...

QUESTION:

“What amount of time is desired between when fish are received and when they are frozen?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 12 hours	88%	67%	52%	54%	53%
Daily		21%	6%	20%	19%
Every 2 days		8%	6%	0%	3%
Every 3 days		0%	3%	0%	0%
More than 3 days		0%	0%	0%	0%

...and four out of five (79%) report that one day is the maximum amount of time they will allow; however, 17% say they will allow 2-3 days between when fish are received and when they are frozen.

QUESTION:

“What is the maximum amount of time allowed between when fish are received and when they are frozen?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Less than 12 hours	79%	46%	45%	43%	33%
Daily		33%	16%	20%	28%
Every 2 days		4%	3%	9%	11%
Every 3 days		13%	3%	0%	0%
More than 3 days		0%	0%	0%	0%

Processing Operations (cont'd)

A little over half (58%) of processors report they monitor the core temperature of their fish...

QUESTION:

“Is the core temperature of fish monitored in the freezer?”

RESPONSE:

	(% YES)			
	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
	58%	42%	49%	58%

...with most of the monitoring taking place as the fish are ready to glaze (50%) or hourly (36%).

QUESTION:

“How often do you monitor fish temperature while they are in the freezer?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
When ready to glaze	50%	54%	53%	54%
Hourly	36%	38%	41%	25%
One to four hours	7%	0%	6%	0%
Other *	7%	0%	0%	0%

* Note: “Other” includes “when needed”, “at delivery” and “two times per day”.

Processing Operations (cont'd)

The fish are described as being solidly and deeply frozen, with the warmest temperature reported to be -10° F.

QUESTION:

“What is the average core temperature of the fish at the time they are removed from the freezer?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Colder than -20 degrees F	94%	29%	62%	47%	25%
-20 degrees F		36%	15%	12%	13%
-10 degrees F		29%	0%	24%	13%
-5 degrees F		0%	8%	0%	13%
0 degrees F		0%	8%	18%	8%
+5 degrees F		0%	0%	0%	8%

And nearly two out of three off-shore processors (63%) say they monitor the temperature of their freezers at least every two hours.

QUESTION:

“How often do you monitor freezer temperature?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Hourly	63%	46%	45%	43%	56%
Every 2 hours		17%	6%	9%	8%
Every 2.5 hours		4%	3%	0%	0%
Every 3 hours		17%	6%	6%	6%

Processing Operations (cont'd)

An identical number (63%) also report they monitor their freezer accurately with a temperature probe as opposed to just opening the freezer door or handling the fish.

QUESTION:

“What method do you use to monitor freezer temperature?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Remote temperature probe	63%	55%	57%	58%
Opening freezer door	21%	3%	0%	8%
Checking stiffness	4%	0%	9%	6%

The efficiency and power of off-shore processor freezers seems to have remained basically the same over the past 15 years.

QUESTION:

“If your freezer was full to capacity, how long would it take to freeze fish?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>	
Four hours or less	42% {	17%	19%	37%	11%
Five to eight hours		25%	26%	9%	36%
Nine to twelve hours		4%	3%	6%	11%
Thirteen to sixteen hours		0%	0%	0%	3%
Seventeen to twenty hours		4%	0%	3%	0%
Twenty-one to twenty-four hours		17%	6%	0%	0%
More than twenty-four hours		4%	0%	3%	0%

Processing Operations (cont'd)

Similar to on-shore processors and by a huge margin, off-shore processors blast freeze their product (71% at least half), followed by 17% who report at least half of their product is plate frozen.

QUESTION:

“How much of your product goes through _____?”

RESPONSE:

BLAST FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	17%	52%	54%	50%
1–24%	4%	0%	3%	0%
25–49%	0%	0%	0%	3%
50–74%	13%	3%	0%	0%
75–99%	0%	0%	0%	3%
100%	58%	45%	43%	44%

IQF FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	88%	90%	91%	81%
1–24%	0%	0%	0%	6%
25–49%	0%	0%	0%	3%
50–74%	0%	6%	3%	3%
75–99%	4%	3%	0%	3%
100%	0%	0%	6%	6%

Processing Operations (cont'd)

PLATE FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	75%	87%	89%	94%
1–24%	0%	3%	0%	0%
25–49%	0%	0%	0%	0%
50–74%	4%	3%	0%	3%
75–99%	0%	0%	0%	0%
100%	13%	6%	11%	3%

PAN FROZEN

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	83%	97%	94%	94%
1–24%	4%	0%	0%	0%
25–49%	0%	3%	0%	0%
50–74%	0%	0%	3%	0%
75–99%	0%	0%	0%	6%
100%	4%	0%	3%	0%

F. Shipping

Off-shore processors report a broad variety of shipping options for their product -- 29% say they ship at least half by container, 29% say they ship at least half their product by air, and nearly one out of three (32%) say they sell at least half of their product locally and don't ship it in the traditional sense.

QUESTION:

"How much of your product is shipped by _____?"

RESPONSE:

BY CONTAINER

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	63%	48%	69%	61%
1–24%	6%	3%	3%	3%
25–49%	3%	3%	0%	6%
50–74%	6%	10%	3%	0%
75–99%	6%	0%	3%	0%
100%	17%	35%	23%	31%

BY TRAMPER

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	94%	87%	80%	22%
1–24%	0%	0%	0%	0%
25–49%	0%	6%	0%	3%
50–74%	0%	0%	0%	3%
75–99%	3%	3%	9%	6%
100%	3%	3%	11%	22%

Shipping (cont'd)

BY AIR

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	51%	77%	77%	28%
1–24%	9%	3%	3%	6%
25–49%	11%	6%	0%	0%
50–74%	9%	0%	6%	0%
75–99%	6%	3%	0%	0%
100%	14%	10%	14%	0%

BY TRUCK

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	88%	87%	94%	94%
1–24%	0%	3%	3%	0%
25–49%	3%	3%	0%	3%
50–74%	3%	0%	0%	0%
75–99%	3%	0%	0%	3%
100%	3%	6%	3%	0%

Shipping (cont'd)

SELL LOCALLY *

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	60%	n/a	n/a	n/a
1–24%	6%	n/a	n/a	n/a
25–49%	3%	n/a	n/a	n/a
50–74%	9%	n/a	n/a	n/a
75–99%	0%	n/a	n/a	n/a
100%	23%	n/a	n/a	n/a

* Note: 2006 was the first year “sell locally” was a response option for this question.

Shipping (cont'd)

Among off-shore processors who end up shipping their product, when “bottlenecks” occur, it’s generally due to lack of shipping space.

QUESTION:

“If it occurs, which one most often causes a bottleneck in shipping?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Lack of shipping space	26%	42%	29%	28%
Lack of infrastructure	11%	21%	23%	28%
Does not occur	26%	9%	20%	6%
Other	6%	6%	0%	0%
Do not ship	23%	3%	11%	6%
No response	8%	19%	17%	33%

And once again, also similar to their on-shore counterparts, most off-shore processors (77%) don’t monitor their fish after they have left the processing facility.

QUESTION:

“How do you monitor fish temperature after it leaves the processing facility?”

RESPONSE:

		<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Don’t monitor	77%	46%	19%	26%	42%
Rely on shipping company		31%	39%	37%	28%
Use continuous recording device		11%	10%	6%	6%
Time-temperature color indicator		0%	6%	0%	0%
Take core temp. at beginning		0%	3%	0%	8%
Take core temp. and rely on shipper		0%	0%	3%	8%

G. Inspections

Like on-shore processors, few off-shore processors (6%) report having more than one ADEC inspection last season.

QUESTION:

“How many inspection visits did you have this past salmon season from the ADEC?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
None	60%	45%	46%	n/a
One	34%	45%	43%	n/a
Two	3%	9%	6%	n/a
Three	3%	0%	6%	n/a
Four	0%	0%	0%	n/a
Five	0%	0%	0%	n/a
Six	0%	0%	0%	n/a
Seven	0%	0%	0%	n/a
Eight	0%	0%	0%	n/a
Nine	0%	0%	0%	n/a
Ten +	0%	0%	0%	n/a

6% {

Of those that did have an ADEC visit, respondents were nearly as likely to find it not useful (17%) as useful (23%)...

QUESTION:

“Were the inspection(s) useful to the operation of the vessel?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	23%	18%	34%	n/a
No	17%	36%	20%	n/a
No visit last season	51%	36%	46%	n/a

Inspections (cont'd)

...and nearly as likely to find it not beneficial (14%) as beneficial (26%).

QUESTION:

“Did the inspection(s) benefit you by showing you things you could use or follow to improve your operation?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Yes	26%	24%	31%	n/a
No	14%	27%	23%	n/a
No visit last season	51%	36%	46%	n/a

By a ratio of 3:1 off-shore processors think that the inspections focus more on methods than actual outcome.

QUESTION:

“Overall, do you think the inspection focused mostly on methods or mostly on outcome?”

RESPONSE:

	<u>2006</u>	<u>2001</u>	<u>1996</u>	<u>1991</u>
Methods	26%	33%	31%	n/a
Outcome	9%	9%	14%	n/a
No visit last season	54%	36%	46%	n/a