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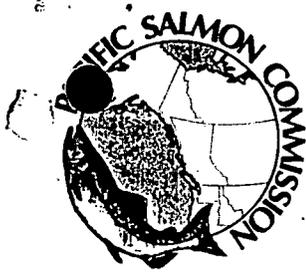
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PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 - 1155 ROBSON STREET
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TELEPHONE: (604) 684-8081
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February 20, 1992

952

FISHERIES & OCEANS
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1110-P9

NO 38

MEMORANDUM

TO: All members of the Pacific Salmon Commission
FROM: J. Abramson, Secretary
RE: Chinook Technical Report (92)-2



Please find enclosed the Chinook Technical Committee Report - Preliminary 1991 Catch and Escapement, (92)-2 dated February 13, 1992. Also, find enclosed "Canadian 1991 Catch and Sampling Report on Terminal Area Exclusions of Chinook Catches in Northern B.C."

J. Abramson
J. Abramson
Secretary

Encl.

Pat Chamut
26/2/92

full report in records.

CANADIAN 1991 CATCH AND SAMPLING REPORT on TERMINAL AREA EXCLUSIONS OF CHINOOK CATCHES in NORTHERN B.C.

February 6, 1991

SUMMARY

In compliance with the 1991 Letter of Transmittal (Attachment 2), Canada is providing this brief report on catch estimates of chinook caught in the three areas described in TCCHINOOK (91)-2 and the recovery of coded-wire tags in these areas. Methods used in this report are the same as reviewed by the Chinook Technical Committee and reported in TCCHINOOK (91)-2. The sport catch survey used in the Kitimat terminal area was expanded and the area further sub-divided to improve resolution on tag recoveries and biological sampling data. Efforts were made to increase the sampling for tags and biological samples in each exclusion area.

Terminal exclusions are proposed for the Skeena and Bella Coola areas, 4,383 and 1,674 chinook respectively. No terminal exclusion exists in the Kitimat area since the estimated catch of chinook over 12 lb. in June and July does not exceed the base catch level. The estimated catch for Kitimat Area 6-1 was 2,305. However, the base catch level for each exclusion area (as specified in Attachment 2) has been included in the all-gear catch for North/Central B.C. Tag recoveries and biological sampling again demonstrated that all tagged chinook recovered in these terminal areas were from mature chinook returning to the local river. Spawning escapements to the Skeena, Kitimat, and Bella Coola rivers all exceeded their escapement goals. Escapements to the smaller natural populations in Kitimat and Bella Coola areas were more variable, but within each area the spawning escapements improved relative to 1990.

REVIEWS BY TERMINAL AREA

Skeena River Area (River/Gap/Slough):

Procedures as outlined by Canada in the 1991 report to the Chinook Technical Committee were repeated, with the exception that samplers were placed aboard packers within the River/Gap/Slough (RGS) and proximal to this area. This sampling procedure was intended to increase the number of coded-wire tags recovered and to reduce possible contamination of RGS recoveries due to vessels reporting catch in this area that was caught elsewhere. The estimated RGS catch of chinook over 5 lb. was 7,283, resulting in a terminal exclusion of 4,383 (7,283 - 2,900) chinook (Table 1a). Of these, 1,883 were sampled (26% sampling rate) for adipose clips and 29 coded-wire tags were recovered. The mark rate (1.54%) in RGS was very similar to rates reported for 1989 and 1990, and all coded-wire tagged chinook over 5 lb. were from releases within the Skeena River (Table 1b).

Biological samples were collected from 635 chinook caught throughout Area 4. Most of these samples were collected in the RGS or in the adjacent fishing sub-area. Processing of these samples is incomplete but 86% of the chinook sampled in RGS exceeded 5.4 kilograms (Large Red chinook grade) and all chinook sampled in RGS were mature. Tag recoveries and biological sampling from all chinook recovered in Area 4 will be reported in June. A total of 93 coded-wire tags have been recovered throughout Area 4. Recoveries outside of the RGS were again from a wide variety of sources.

Kitimat Sub-Area 6-1:

A creel survey similar to the 1990 survey described in the 1991 Canadian report was conducted between June 9 and August 9. The catch estimate was based on effort distribution and daily patterns, plus ramp interviews for catch and biological sampling data. Six sampling areas within Sub-area 6-1 were identified (Figure 1) and data were collected by 3 size categories (>12 lb., 5-12 lb., and <5 lb.). The estimated total catch of chinook over 12 lb. was only 2305 but effort was reduced by 37% relative to 1990 (Table 2a). This estimated catch is less than the 2,400 base catch level specified in Attachment 2 and a terminal exclusion does not exist.

Mark sampling examined 20% of the total catch but the vast majority of the sampling occurred at the head of Kitimat Arm (Sub-area A, Figure 1), and 3.8% of the chinook had adipose clips. Due to the voluntary return of heads in Canadian sport fisheries we do not know the origin of each marked chinook observed. However, all marks returned from Sub-areas A and B were from the Kitimat Hatchery. Heads voluntarily returned from throughout Statistical Area 6 continue to indicate that this inlet contains a mix of chinook stocks. However, biological samples collected throughout Area 6-1 (n = 341) indicated that all chinook 12 lb. or larger were sexually mature (Table 2b).

Bella Coola Gillnet Area (BCGNA):

Procedures as outlined in the 1991 Canadian report were repeated in the BCGNA, except that the terminal exclusion has been calculated through the second week of July (Statistical week 7-2). This extension is proposed since the majority of the fishing and chinook catch occurred in the BCGNA and large mesh gill nets were still being used through this week. Following week 7-2, however, effort shifted to the outer portions of Area 8 and a substantial mix of chinook stocks is revealed by coded-wire tag recoveries. The estimated BCGNA catch of chinook over 5 lb. through week 7-2 was 4,624 (Table 3a), resulting in an exclusion of 1,674 (4,624 - 2,950) chinook. Sampling rates for mark incidence remained high (71%) as in previous years, and the mark incidence (2.2%) was similar to 1990. Seventy coded-wire tags were recovered from 3,242 samples (Table 3b). All but one tagged chinook was returning to the Snootli Hatchery in Bella Coola. All tagged fish were mature. One mature chinook from Kitimat Hatchery was recovered.

To protect natural chinook stocks in this Area, the upper portions of South Bentinck Arm and Dean Channel were closed to fishing. The two small chinook populations at the head of South Bentinck Arm are not well surveyed but the reported escapement (combined escapement of about 100) was similar to recent averages. The more important stock is the Dean River chinook at the head of Dean Channel. Escapement of Dean chinook increased compared to 1990 and late 1980 values (2400 vs. 2000, 1986-1990 average).

Note: Detailed lists of coded-wire tag recoveries will be provided in the June report but if desired the 1991 coded-wire tag data may be accessed directly via the Mark Recovery Database maintained at the Pacific Biological Station.

Starr D:\document\91TERMA4.WK1 Feb. 6, 1992

Table 1a. 1991 Chinook catch (>5lb.) in total Area 4 and the River/Gap/Slough exclusion area, and sampling rates for coded-wire tags in the R/G/S area.

| Stat. Week | Fishing Dates | Hailed Catch | | Reported Sales: | | Sample Size in R/G/S | Sample Rate | CWT's Recovered |
|------------|-------------------------|--------------|-------|-----------------|----------------|----------------------|-------------|-----------------|
| | | Total Area 4 | R/G/S | Total Area 4 | Prorated R/G/S | | | |
| 71 | July 1/2 | 1164 | 628 | 1219 | 658 | 395 | 60% | 6 |
| 72 | July 7/8,9,10 | 2825 | 1298 | 4009 | 1842 | 478 | 26% | 2 |
| 73 | July 14/15,16,17,20/21 | 5006 | 3609 | 3183 | 2295 | 193 | 8% | 0 |
| 74 | July 22,23,24,27/28 | 2193 | 1187 | 2027 | 1097 | 413 | 38% | 5 |
| 75 | July 29,30,31, Aug. 3/4 | 1646 | 732 | 1,458 | 648 | 190 | 29% | 4 |
| 81 | Aug. 5,6 | 321 | 279 | 383 | 333 | 79 | 24% | 4 |
| 82 | Aug. 11/12,13 | 125 | 77 | 172 | 106 | 97 | 92% | 4 |
| 83 | Aug. 18/19,20,21 | 163 | 15 | 43 | 4 | 37 | >100% | 4 |
| 84 | Aug. 25/26,27 | 20 | 0 | 36 | 0 | 1 | >100% | 0 |
| Totals | | 13463 | 7825 | 12530 | 6983 | 1883 | 26% | 29 |

Terminal Exclusion is estimated = 7283
 using the annual totals

Table 1b. 1991 Coded-wire tag recoveries in the RGS terminal exclusion area.

| Stat. Week | Total age of Chinook caught | | | | Total CWT's | No pins | Comments |
|------------|-----------------------------|-------|-------|-------|-------------|---------|--|
| | Age 3 | Age 4 | Age 5 | Age 6 | | | |
| 71 | 1 | 2 | 1 | 0 | 4 | 2 | All R/G/S recoveries were from Skeena River release sites: |
| 72 | 0 | 0 | 1 | 1 | 2 | 0 | |
| 73 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 74 | 0 | 1 | 3 | 0 | 4 | 1 | 5 Terrace CDP 2 Fort Babine CDP 17 Toboggan Cr. CDP |
| 75 | 0 | 0 | 4 | 0 | 4 | 0 | |
| 81 | 0 | 0 | 3 | 0 | 3 | 1 | |
| 82 | 0 | 0 | 3 | 1 | 4 | 0 | |
| 83 | 0 | 0 | 2 | 1 | 3 | 1 | |
| 84 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Total | | 1 | 3 | 17 | 3 | 24 | 5 |

Starr D:\Document\91termA6.wk1 Feb. 6, 1992

Table 2a. Estimated sport catch and effort in Kitimat Sub-area 6-1 based on the 1991 creel survey; plus the number of chinook sampled for mark incidence and the number of coded-wire tags observed.

| Sub-Area | Parameters: | Numbers of Chinook by size | | | Totals by Sub-Area | |
|----------|--------------|----------------------------|----------|--------|--------------------|------------------|
| | | >12 lb. | 5-12 lb. | <5 lb. | Chinook Numbers | Boat Days Effort |
| A | Catch | 1696 | 436 | 81 | 2213 | 5290 |
| | Samples obs. | 423 | 81 | 17 | 521 | |
| | CWT's | 14 | 4 | 1 | 19 | |
| B | Catch | 180 | 47 | 8 | 235 | 574 |
| | Samples obs. | 10 | 6 | 1 | 17 | |
| | CWT's | 1 | 0 | 0 | 1 | |
| C | Catch | 48 | 12 | 2 | 62 | 154 |
| | Samples obs. | 0 | 0 | 0 | 0 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| D | Catch | 63 | 16 | 2 | 81 | 201 |
| | Samples obs. | 6 | 7 | 1 | 14 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| E | Catch | 87 | 22 | 4 | 113 | 274 |
| | Samples obs. | 4 | 18 | 3 | 25 | |
| | CWT's | 1 | 0 | 0 | 1 | |
| F | Catch | 138 | 35 | 6 | 179 | 431 |
| | Samples obs. | 0 | 3 | 0 | 3 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| G | Catch | 93 | 24 | 4 | 121 | 293 |
| | Samples obs. | 12 | 1 | 1 | 14 | |
| | CWT's | 2 | 0 | 0 | 2 | |
| Totals | Catch | 2305 | 592 | 107 | 3004 | 7217 |
| | Samples obs. | 455 | 116 | 23 | 594 | |
| | CWT's | 18 | 4 | 1 | 23 | |

Table 2b. Numbers of biological samples collected and distribution of samples by body size (weight) and maturity state of the samples.

| Sub-Area | # of Biological Samples | Numbers of Samples by size | | | Maturity State | |
|--------------|-------------------------|----------------------------|----------|--------|----------------|----------|
| | | >12 lb. | 5-12 lb. | <5 lb. | Mature | Immature |
| A | 294 | 245 | 39 | 10 | 293 | 1 |
| B | 9 | 6 | 3 | 0 | 6 | 3 |
| C | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 5 | 4 | 1 | 0 | 5 | 0 |
| E | 15 | 5 | 9 | 1 | 6 | 9 |
| F | 7 | 6 | 1 | 0 | 7 | 0 |
| G | 11 | 8 | 2 | 1 | 11 | 0 |
| Total | 341 | 274 | 55 | 12 | 328 | 13 |
| % of Samples | | 80.4% | 16.1% | 3.5% | 96.2% | 3.8% |

(Starr D:\document\91TERMA8.WK1 Feb. 6, 1992)

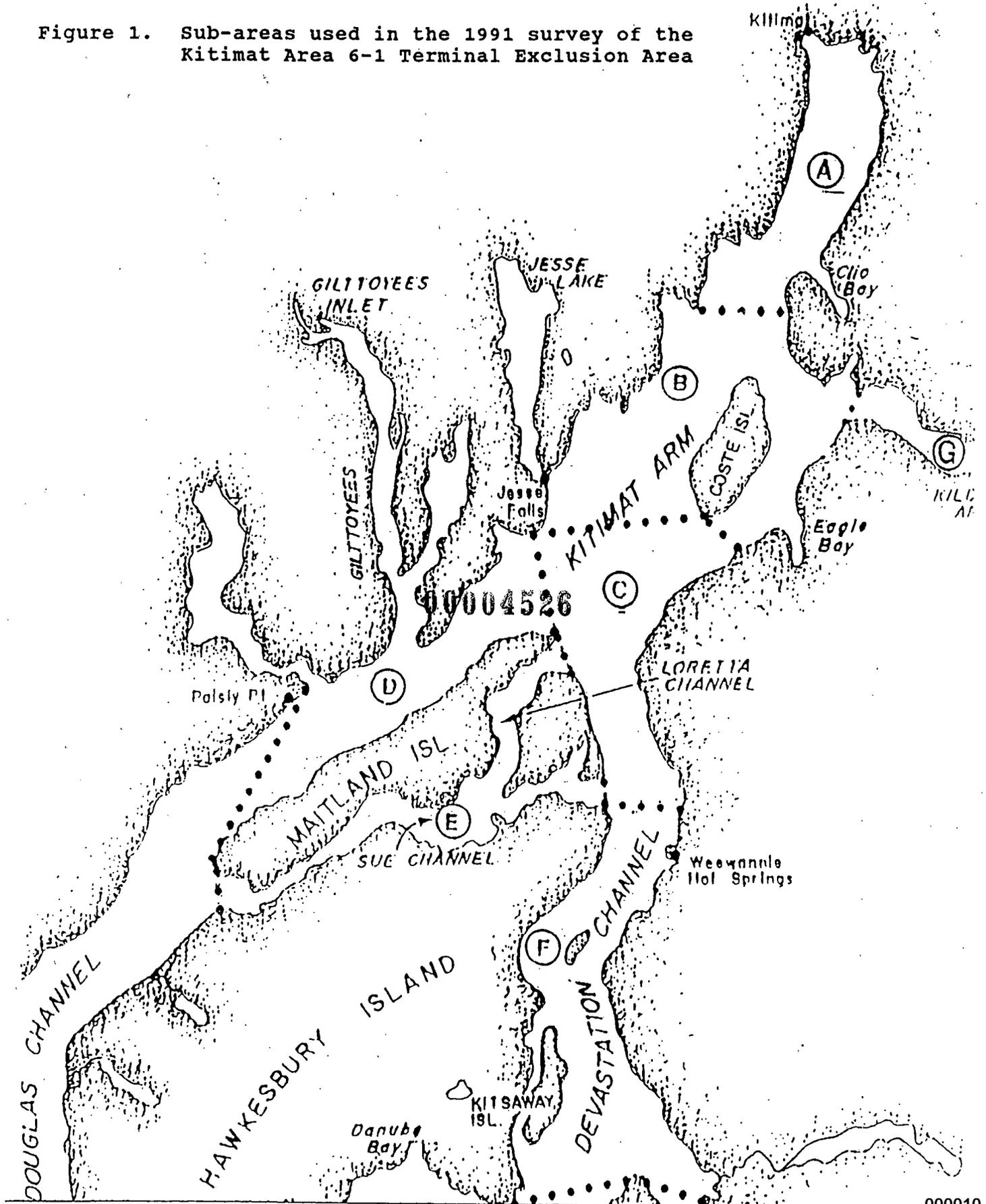
Table 3a. 1991 Chinook catch (>5lb.) in total Area 8 Gillnet and BCGNA, and sampling rates for coded-wire tag sampling.

| Stat. Week | Fishing Dates | Hailed Catch | | Reported Sales: | | Prorated BCGNA | % Large Mesh | Catch by large mesh | Sample Size | Sample Rate |
|--|---------------|--------------|-------|-----------------|-------|----------------|--------------|---------------------|-------------|-------------|
| | | Total Area 8 | BCGNA | Total Area 8 | BCGNA | | | | | |
| 062 | June 11 | 524 | 524 | 588 | 588 | 100 | 588 | 396 | 67.3 | |
| 063 | June 18 | 1,000 | 1,000 | 1,143 | 1,143 | 100 | 1,143 | 786 | 68.8 | |
| 064 | June 25 | 888 | 888 | 1,049 | 1,049 | 100 | 1,049 | 865 | 82.5 | |
| 071 | July 01 | 741 | 601 | 896 | 727 | 67 | 487 | 702 | 96.6 | |
| 072 | July 8,9 | 1,277 | 1,005 | 1,422 | 1,119 | 25 | 280 | 493 | 44.1 | |
| Total to Week 072: | | 4,430 | 4,018 | 5,098 | 4,626 | | 3,547 | 3,242 | 71.8 | |
| Terminal area exclusion = estimated using totals | | | | | | 4,624 | | | | |

Table 3b. 1991 Coded-wire tag recoveries in Area 8 previous to Statistical week 072. All recoveries were from the Snootli Hatchery (Bella Coola) unless otherwise stated.

| Stat. Week | Total age of Chinook recovered | | | | | Total CWT's | No pins | Comments |
|---------------|--------------------------------|-------|-------|-------|----|-------------|---------------------------|----------|
| | Age 3 | Age 4 | Age 5 | Age 6 | | | | |
| 062 | 0 | 4 | 4 | 2 | 10 | 0 | | |
| 063 | 0 | 10 | 11 | 0 | 21 | 1 | (1 Age 5 Kitimat Chinook) | |
| 064 | 0 | 3 | 7 | 2 | 12 | 1 | | |
| 071 | 1 | 7 | 7 | 1 | 16 | 0 | | |
| 072 | 4 | 2 | 5 | 0 | 11 | 2 | | |
| Total by Age: | | 5 | 26 | 34 | 5 | 70 | 4 | |

Figure 1. Sub-areas used in the 1991 survey of the Kitimat Area 6-1 Terminal Exclusion Area





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PACIFIC SALMON COMMISSION

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MARCH 18, 1985

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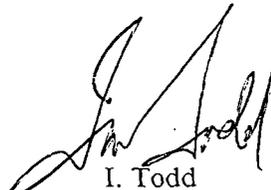
MEMO

To: Canadian members Trans-Boundary Technical Committee
Canadian members TBR Enhancement Sub-Committee

From: I. Todd, Executive Secretary

Re: Meeting of the TBR Technical Committee April 7-10, 1992 Juneau, Alaska

Attached for your information is a copy of a draft agenda prepared for the April 7-10, 1992 Management Planning Meeting of the Transboundary River Technical Committee.



I. Todd
Executive Secretary

TRANSBOUNDARY TECHNICAL COMMITTEE
Management Planning Meeting
April 7 - 10, 1992
ADF&G Regional Office, Juneau, AK

Preliminary Agenda

1. Review/approve minutes of the last two meetings.
2. Review the Stikine Management Model.
Norma to give initial presentation.
3. Review in-season stock id programs.
Kathleen to give initial presentation.
4. Determine preseason forecast of Stikine sockeye runs (Tahltan and mainstem) for 1993.
5. Review status of possible revisions to sockeye escapement goals. (e.g. Klukshu, Tahltan).
6. Present management plans for each river by each Party.
7. Determine the egg-take levels and the fry-plant distributions on the Stikine and Taku for 1992. This information will now be included in the Management Plan.
8. Finalize the 1992 Management Plan utilizing above information.
9. Finalize the 1990 Brood-Year Enhancement Report.
Ken and Cam will see that a copy is distributed to members before the meeting.
10. Finalize our 1992 research lists.
11. Time and place of next meeting.

FIELD TRIP TO SNETTISHAM

We are planning an excursion to the Port Snettisham Central Incubation Facility for Wednesday, with possibility of doing it on Thursday if weather is bad Wednesday. The excursion will involve chartering Beavers to take us out to the facility and then retrieve us 2 or 3 hours later. The trip out takes about half an hour. The cost of chartering each Beaver is about \$600 and each Beaver takes up to 5 passengers. We are currently looking into ways to finance this.

The hatchery manager is very happy to receive us and show us around the facility. Changes in the facility are currently underway to convert chum facilities to sockeye facilities to be used by both U.S./Canada projects and Alaska projects involving thermal marking.

PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 17, 1985

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TO: J. Chamuk

File: 72802

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March 3, 1992

MEMORANDUM

TO: Commissioners and Alternate Commissioners
National Correspondents
Panel Chairs and Vice-Chairs
Northern Panel Members and Alternates
Technical Committee Co-Chairs

FROM: J. Abramson, Secretary

RE: Transboundary Technical Committee Report TCTR (92)-1

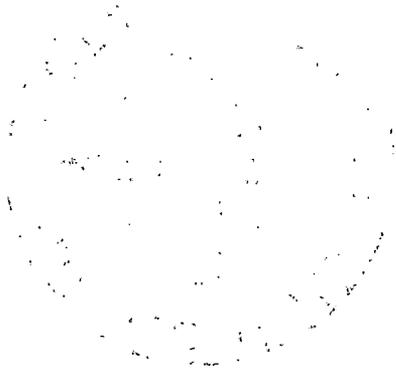


Please find enclosed the Transboundary Technical Committee Report - Transboundary River Salmon Production, Harvest and Escapement Estimates, 1990 (TCTR 92-1), dated January 1992.

J. Abramson
J. Abramson
Secretary

Encl.

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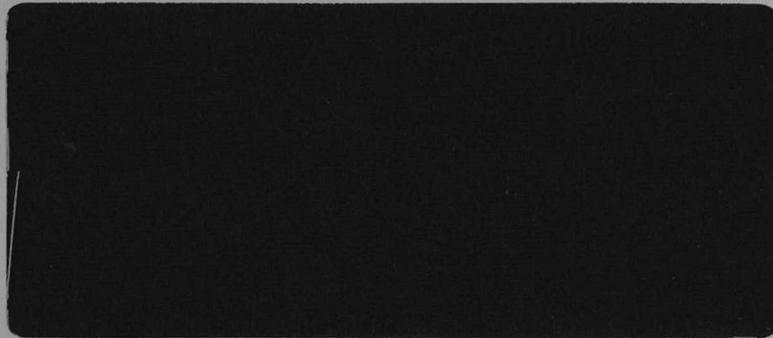
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PACIFIC SALMON COMMISSION
TRANSBOUNDARY TECHNICAL COMMITTEE

REPORT TCTR (92)-1

TRANSBOUNDARY RIVER SALMON PRODUCTION,
HARVEST AND ESCAPEMENT ESTIMATES, 1990

JANUARY, 1992

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EXECUTIVE SUMMARY

Estimates of catches and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek Rivers for 1990 are presented and compared with historical patterns. Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of in-season management models is discussed.

The 1990 Stikine sockeye run was estimated at 67,200 fish, of which 29,800 fish were harvested in various fisheries and 37,400 escaped to spawn. The estimated U.S. marine commercial and test fishery catches of Stikine sockeye salmon were 9,400 and 400 fish, respectively; the Canadian inriver commercial, Indian food, and test fishery catches were 15,000, 3,000, and 1,900 fish, respectively. The preseason forecast of 94,000 sockeye salmon overestimated the actual run. In-season, the Stikine Management Model also overestimated the Stikine sockeye run, predicting a total run size of 140,700 fish the week of July 1 and between 95,700 to 125,000 thereafter. This overestimation was due in large part to misclassification problems of the in-season stock composition analysis which, compared to post season estimates, overestimated the catch of Stikine sockeye salmon in the U.S. catches. The model, however, did correctly predict a smaller than average portion of the run being from the Tahltan stock. Estimates of the total allowable catch (TAC) are derived from predictions of the total Stikine River run. Both Canada and the U.S. harvested less than the TAC allowed by the management model but were slightly over the allowable harvest range estimated from the postseason analysis. Due to the low run size of the Tahltan stock (26,200 fish) and, in spite of a low exploitation rate (40%) on this stock (2,200 fish in marine catches and 8,100 fish in inriver catches), the resulting spawning escapement to Tahltan Lake (14,900 fish) was below the 20,000 to 40,000 goal range established by the Transboundary Technical Committee. The escapement of 22,500 non-Tahltan Stikine sockeye salmon fell within the escapement goal range for that stock group.

The chinook catch in Canadian fisheries in the Stikine River was a record 3,200 fish (including the second highest catch of jacks on record; 1,000), approximately 49% more than the 1980 to 1989 average, with approximately 72% harvested in commercial fisheries and 28% harvested in the Indian food fishery. The U.S. marine catch in the District 106 and 108 mixed stock fisheries was 2,700 fish, approximately 80% more than the 1980 to 1989 average catch. Chinook spawning escapements were near average in 1990, with a count of 4,400 large adults through Little Tahltan weir and a total inriver escapement estimate of 17,600 large fish. The total escapement was near the 1985 to 1989 average of 18,200 fish but was below the escapement goal range of 19,800 to 25,000 fish.

The Stikine coho run was relatively strong in 1990. The U.S. marine harvest of Stikine River coho salmon is not known since there is no stock identification program in place; however, total coho gill net catch in District 106 was more than twice the 1980 to 1989 average. The Canadian coho catch was just over 4,000 fish, near the Treaty entitlement. Coho aerial survey escapement counts were above average.

The Stikine River runs of pink and chum salmon are typically very small. In 1990, Canadian catches of these two species were approximately 500 fish each.

This is approximately half the 1980 to 1989 average for pink salmon and near average for chum salmon.

The 1990 total Taku sockeye run was estimated at 224,300 fish and included a catch of 131,500 fish and an escapement of 92,800 fish. The estimated U.S. marine commercial and inriver personal use catches were 108,500 and 1,600 fish, respectively, records in both fisheries. Canadian commercial, Indian food fishery, and test fishery catches were 21,100, 100, and 300 fish, respectively. The Pacific Salmon Treaty defines harvest sharing of Taku River sockeye salmon as 18% of the TAC to Canada and 82% to the U.S. Since the escapement goal set by the Transboundary Technical Committee is expressed as a range, 71,000 to 80,000 fish, the resulting TAC is also determined as a range. In 1990, Canada took 14% to 15% and the U.S. took 72% to 76% of the TAC. The estimated spawning escapement for Taku sockeye salmon exceeded the upper level of the escapement goal range.

The chinook catch in the Canadian commercial fishery in the Taku River was 1,400 fish, more than three times the 1980 to 1989 average. The catch in the U.S. District 111 mixed stock fishery was 3,500 fish, approximately 67% higher than the 1980 to 1989 average. Above average escapements were observed in most of the Taku chinook tributaries surveyed in 1990. The estimated escapement of chinook salmon to the entire drainage was 21,300 to 24,500, the largest since the methodology was standardized in 1974, but still less than the escapement goal range of 25,600 to 30,000 fish.

The Taku coho run was strong in 1990. The U.S. harvest of coho salmon in the District 111 mixed stock fishery was a record 67,300 fish, 81% greater than the 1980 to 1989 average. The Canadian coho catch was 3,200, close to the Treaty limit of 3,000 fish. The above-border run size was estimated to be 75,000 to 85,000 coho salmon.

The catches of pink and chum salmon in the U.S. District 111 fishery were 153,000 and 145,500 fish, respectively, below the 1980 to 1989 average for pink salmon and above average for chum salmon. The catch of summer run chum salmon, comprised of coastal Alaskan wild and hatchery stocks, was a record, while the fall run of chum salmon, typically comprised of Taku River and Port Snettisham stocks, was weak. Canadian inriver catches included 400 pink and 12 chum salmon, a fraction of the 1980 to 1989 averages for both species.

The sockeye run to the Alsek River was above average as indicated by average U.S. terminal and Canadian catches and above average escapement counts. The U.S. Dry Bay catch was 17,000 sockeye salmon, near the 1980 to 1989 average catch. The Canadian sport fishery catch of 400 fish and Indian food fishery catch of 2,000 sockeye salmon were near the 1980 to 1989 averages. The count of 26,000 sockeye salmon through Klukshu weir was approximately 40% more than the 1980 to 1989 average, although the early run component was weak.

The chinook run to the Alsek River was about average. The U.S. Dry Bay catch of 100 fish was approximately one-fifth of the 1980 to 1989 average catch. The Canadian sport and Indian food fishery catch of 700 fish was approximately 60% greater than the 1980 to 1989 average. The chinook count through the Klukshu River weir; 1,900 fish, was below the 1984 to 1989 average of 2,300 fish.

The coho run to the Alsek River was poor. The U.S. Dry Bay coho catch of 1,400 fish was one-fourth the 1980 to 1989 average and the Canadian food and sport fishery catch of 100 fish was near average. The Klukshu weir count of 300 fish was less than one-third the 1980 to 1989 average.

The U.S. Dry Bay pink and chum salmon catches of zero and 500 fish, respectively, were near average for pink salmon and 55% of the 1980 to 1989 average for chum salmon. There are no recorded Canadian catches of pink or chum salmon in the Alsek River.

INTRODUCTION

This report presents the 1990 catch and escapement data for Pacific salmon runs to the transboundary Stikine, Taku, and Alsek Rivers and discusses management actions taken during the season. Catch and effort data are presented by management week (U.S. statistical week) for each river for both U.S. and Canadian fisheries. Spawning escapement data for most species are reported from weir counts or other escapement monitoring techniques. Sockeye runs to the three rivers are reconstructed using harvest data and spawning escapement estimates.

STIKINE RIVER

Stikine River salmon are harvested by U.S. gill net fisheries in Alaskan Districts 106 and 108, by Canadian commercial gill net fisheries located in the lower and upper Stikine River, and by a Canadian Indian food fishery in the upper portion of the river (Figure 1). Additional catches of unknown quantity are taken in Alaskan troll and seine fisheries and in Alaskan sport fisheries near Wrangell and Petersburg. A small sport fishery also exists in the Canadian portion of the Stikine drainage.

Harvest Regulations and the Joint Management Model

The harvest and management of Stikine River salmon stocks for the period 1988 to 1992 is governed by Annex IV, Chapter I, of the Pacific Salmon Treaty as negotiated by the Pacific Salmon Commission in February of 1988. Sharing arrangements for sockeye salmon are:

| Total Sockeye Allowable Catch | | Canadian Allowable Catch | |
|-------------------------------|----------|--------------------------|---------|
| From | To | Minimum | Maximum |
| 0 | 0 | 4,000 | 4,000 |
| 1 | 20,000 | 10,000 | 15,000 |
| 20,001 | 60,000 | 15,000 | 20,000 |
| 60,001 | infinity | 20,000 | 30,000 |

Under this annex the U.S. is allowed to catch the remainder of the total allowable sockeye catch after the Canadian allowable catch is subtracted from the total. However, even when the calculated total allowable catch (TAC) for the U.S. is low or zero, incidental catches of Stikine sockeye salmon are allowed in District 106. In addition, Canada is restricted to an annual catch of 4,000 coho salmon. This schedule, which is conditionally in effect until 1992, is tied to a commitment by the Parties to undertake a cooperative sockeye enhancement program commencing in 1989.

Prior to the 1990 season, the Transboundary Technical Committee updated the management plan and determined new parameters for input into the in-season run forecast model, referred to as the Stikine Management Model. Details regarding these subjects appear in "Salmon Management Plan for the Transboundary Rivers", Pacific Salmon Commission Transboundary Technical Committee Report TCTR (90)-2, April 1990. As required by the annex, a preseason forecast of the total Stikine sockeye run was made to guide the initial fishing patterns of U.S. and Canadian fisheries. The preseason forecast for 1990 was 94,000 sockeye salmon. Beginning the first week of July, in-season forecasts of total run size and TAC produced by the Stikine Management Model and based on catch-per-unit-effort (CPUE) data were used to assist in determining weekly fishing plans (Table 1).

Table 1. Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as determined in-season by the Stikine Management Model, 1990. The run size is estimated from the preseason forecast in weeks 25 and 26, from the average model predicted run size (district and inriver predictions) for week 27, and from the inriver cumulative CPUE of all sockeye salmon for the remaining weeks.

| Stat. Week | Start Date | Forecasts | | U.S. Fishing Regime | | | Canada TAC | Cumulative Catch | |
|-------------------------|------------|-----------|--------|---------------------|-----------------|--------|------------|----------------------|--------|
| | | Run Size | TAC | 6 | 8 | TAC | | U.S. | Canada |
| Model Generated by U.S. | | | | | | | | | |
| 25 | 17-Jun | 94,000 | 34,000 | I | D | 14,000 | 20,000 | 2,688 | 0 |
| 26 | 24-Jun | 94,000 | 34,000 | I | D | 14,000 | 20,000 | 6,808 | 285 |
| 27 | 01-Jul | 140,690 | 80,690 | I | D | 50,690 | 30,000 | 11,614 | 1,580 |
| 28 | 08-Jul | 95,671 | 35,671 | I | D | 15,671 | 20,000 | 19,215 | 2,560 |
| 29 | 15-Jul | 106,106 | 46,106 | I | D | 26,106 | 20,000 | 35,241 | 9,223 |
| 30 | 22-Jul | 110,962 | 50,962 | I | D | 30,962 | 20,000 | 28,904 ^{a/} | 10,445 |
| 31 | 29-Jul | 105,128 | 45,128 | I | D ^{b/} | 25,128 | 20,000 | 35,273 | 13,104 |
| 32 | 05-Aug | 104,970 | 44,970 | I | D ^{b/} | 24,970 | 20,000 | 38,332 | 16,827 |

Model Generated by Canada

| | | | | | | | | | |
|----|--------|---------|--------|---|---|--------|--------|----------------------|--------|
| 25 | 17-Jun | 94,000 | 34,000 | I | D | 14,000 | 20,000 | 2,781 | 0 |
| 26 | 24-Jun | 94,000 | 34,000 | I | D | 14,000 | 20,000 | 6,808 | 285 |
| 27 | 01-Jul | 140,690 | 80,690 | I | D | 50,960 | 30,000 | 12,571 | 1,580 |
| 28 | 08-Jul | 95,671 | 35,671 | I | D | 15,671 | 20,000 | 19,127 | 4,298 |
| 29 | 15-Jul | 125,048 | 65,048 | I | D | 35,048 | 30,000 | 35,103 | 9,606 |
| 30 | 22-Jul | 111,381 | 51,381 | I | D | 31,381 | 20,000 | 35,103 ^{c/} | 12,285 |
| 31 | 29-Jul | 105,635 | 45,635 | I | I | 25,635 | 20,000 | 45,091 | 13,837 |
| 32 | 05-Aug | 105,841 | 45,841 | I | I | 25,841 | 20,000 | 48,574 | 16,704 |
| 33 | 12-Aug | 102,707 | 42,707 | I | I | 22,707 | 20,000 | 38,268 ^{a/} | 17,150 |
| 34 | 19-Aug | 98,827 | 38,827 | I | I | 18,827 | 20,000 | 38,268 ^{c/} | 17,646 |
| 35 | 26-Aug | 97,770 | 37,770 | I | I | 17,770 | 20,000 | 57,881 | 17,848 |
| 36 | 02-Sep | 108,848 | 48,848 | I | I | 28,848 | 20,000 | 57,881 ^{c/} | 17,848 |

I indicates indirect fishery allowed; D indicates directed fishery allowed.

a/ Cumulative U.S. catch decrease due to use of a modified analytical technique to estimate the Stikine component of the catch to minimize misclassification problems.

b/ The U.S. fishing regime for District 108 as written in the annex is based on TAC and the cumulative catch in District 106. By week 30 the U.S. total cumulative catch was estimated as being greater than the TAC. Therefore, although the Treaty says directed fisheries may take place in District 108 after this time, the remaining TAC is zero and no more Stikine sockeye salmon should be taken.

c/ Where U.S. cumulative catch is the same in succeeding weeks, catch data was not available in the succeeding week when the model was run.

The preseason forecast of 94,000 Stikine sockeye salmon indicated a slightly below average run (1980 to 1989 average was 99,602 fish). In-season predictions of total run ranged from 95,671 to 140,690 sockeye salmon; U.S. and Canadian weekly predictions differed because different updates of catch and stock composition estimates were used by each country (Table 1). The high prediction in week 27 was due largely to a high catch estimate for Stikine stocks in District 106-41. After week 27, the run forecasts were based on inriver CPUE only and stabilized in the 96,000 to 125,000 range. By the end of the fishing season, the Stikine Management Model predicted a total run of 108,848 Stikine sockeye salmon with a total TAC of 48,848 fish, a Canadian TAC of 20,000 sockeye salmon, and a U.S. TAC of 28,848 sockeye salmon.

At the end of the season, the model predicted a cumulative catch of 57,881 and 17,848 Stikine sockeye salmon in the U.S. and Canadian fisheries, respectively; the final postseason catch estimates are 9,420 Stikine sockeye salmon in the U.S. fisheries and 18,024 in the Canadian fisheries. The in-season estimates of stock composition in the U.S. catches in 1990 were not accurate due to large differences in the scale growth patterns between 1989, used as in-season standards, and 1990 returns. During the early part of the season, it was obvious the Stikine component of the U.S. catch was being overestimated and adjustments to the in-season analysis were made that partially corrected this. This adjustment was applied in week 30 in the U.S. model runs and in week 33 in the Canadian model runs as seen by the decrease in cumulative catch (Table 1).

An in-season examination of age composition and brain parasite (*Myxobolus neurobius*) occurrence both indicated a lower proportion of Stikine sockeye than was estimated by scale pattern analysis. Had the non-Tahltan Stikine stock group been a major component of the District 106 catch, as the SPA indicated, then age-0.+ fish, which normally make up 9% to 20% of the non-Tahltan Stikine component, should have been present in more than the trace amounts that were found in the catch samples. Tahltan fish have a zero parasitism rate, non-Tahltan Stikine fish, a 30% rate, and Alaskan fish, nearly 100%. The rate observed in a sample of 150 sockeye salmon from the Sub-district 106-41 catch was 40%, indicating a substantial number of Alaskan fish. In-season SPA was apparently misclassifying Alaskan fish as Stikine fish. This was obvious in a test analysis where the in-season SPA was applied to a catch sample from the District 101, where Stikine fish are not present in significant numbers. Results showed a 40% occurrence of Stikine fish in the District 101 catch. An adjustment to the in-season SPA was obviously warranted. Quadratic analysis of scale patterns was used with discriminant functions built from the scale patterns of age-1.2 fish from 1989 escapement samples. Use of these functions to classify the age-1.3 fish in the 1990 catch resulted in much lower estimates of Stikine River fish in the District 101 catch and in estimates of the contribution of Alaska stocks in the District 106 catches which were closer to those supported by the brain parasite and age composition data. Therefore, the stock compositions were re-estimated for previous weeks and the quadratic analysis was used for the remainder of the in-season analysis.

U.S. Fisheries

In 1990, the District 106 commercial gill net fishery catch was 2,107 chinook, 185,805 sockeye, 164,211 coho, 319,186 pink, and 73,232 chum salmon (Appendix A.7). The catch in the District 108 fishery was 557 chinook, 11,574 sockeye, 8,218 coho, 13,822 pink, and 9,382 chum salmon (Appendix A.10). Catches of chinook, sockeye, coho, and chum salmon were above the 1980 to 1989 averages and pink salmon catches were below average (Figure 2). Test fisheries were conducted in Subdistrict 106-41 and District 108 to help managers ascertain in-season the run strength of various salmon species. Test fisheries catch low numbers of fish compared to commercial fisheries (Appendices A.12 and A.13). Annual commercial and test fishery catches from 1964 for these districts are provided in Appendix Tables B.1 through B.16. Catches of each species in District 106 and 108 fisheries consist of fish from several stocks; the contribution of Stikine River stocks is estimated only for sockeye salmon.

Postseason analysis of stock compositions in U.S. marine catches was based on linear discriminant function analysis of scale patterns with functions derived from 1990 escapement standards. The in-season estimate of the contribution of Stikine River sockeye salmon to the District 106 catch was approximately nine times higher than that of the postseason analysis (18.6% compared to 2.1%) (Figure 3). The Sumner Strait fishery (Subdistricts 106-41 and 106-42) harvested 2,712 Stikine sockeye salmon (Appendix A.3), which was 2.6% of the total sockeye harvest in that fishery. The Clarence Strait fishery (Subdistrict 106-30) harvested 1,189 Stikine sockeye salmon (Appendix A.6), which was 1.5% of the total sockeye catch. The terminal area fishery near the mouth of the Stikine (District 108) harvested 5,519 Stikine fish (Appendix A.11), which was 47.7% of the total sockeye catch. Thus, an estimated total of 9,420 Stikine sockeye salmon was taken in U.S. gill net fisheries in Districts 106 and 108.

The 1990 fishing season in Districts 106 and 108 was open from June 17 to September 24. During the first three weeks of the fishery, both District 106 and 108 were restricted to a two-day fishery each week due to the average to below average CPUE in both districts. During this time period, the Stikine Management Model indicated a strong run to the Stikine River and District 108 remained open. After the first two days of fishing during the fourth week, the sockeye CPUE was 10% above the 1980 to 1989 average despite the poor weather. The Stikine Management Model continued to indicate a good run to the Stikine River and a 24-hour extension was given. Sockeye catches during the fifth through the eighth week of fishing were average or above average in both districts. Fishing pressure in District 106 during weeks five through eight was 17% to 37% above average, so fishing time was limited to two days each week except during the sixth week, when the fishing time was extended for one day. The extension was given because the sockeye CPUE was 35% to 40% above average. The District 106 and 108 sockeye harvests of 185,805 and 11,574 fish, respectively, exceeded the 1980 to 1989 averages of 145,666 and 4,943 fish, respectively.

During the 1990 season, the District 106 drift gill net fishery was open for 34 days from June 17 to September 24, 17% above the 1980 to 1989 average of 29 days. Subdistricts 106-41, 106-42, and 106-30 were all open simultaneously each week throughout the season with an area restriction for Salmon Bay used during part of the fishery. In 1990, the District 108 openings coincided with District 106

openings and totaled 34 days, more than twice the 1980 to 1989 average of 16 days. Area restrictions were used for the first two weeks around the mouth of the Stikine River to protect the Stikine chinook run. Area restrictions were also used during portions of the fishery in Frederick Sound to protect chinook stocks. Fishing effort in District 106 started out above average and generally remained above the 1980 to 1989 average throughout the entire fishery.

Canadian Fisheries

The catches in the combined Canadian commercial and Indian food fisheries in the Stikine River in 1990 included: 2,250 large chinook, 959 jack chinook (fish which weigh less than 2.27 kg), 18,024 sockeye, 4,037 coho, 496 pink, and 499 chum salmon and 199 steelhead trout (Figure 4 and Appendices A.15- A.18). Catches of chinook salmon were above the 1980 to 1989 average while catches of all other species designated were below average (Appendices B.17-B.22). A test fishery to determine migratory timing and stock composition of the sockeye run and run timing and relative abundance of coho salmon was conducted again in the lower Stikine River. The test fishery was located just upstream from the Canada/U.S. border. Test fishery catches included: 231 chinook, 1,940 sockeye, 405 coho, 47 pink, and 77 chum salmon and 24 steelhead trout (Appendices A.19-A.21).

Lower Stikine Commercial Fishery

The Canadian commercial fishery catch in the lower Stikine River was 1,569 large chinook, 680 jack chinook, 14,530 sockeye, 4,020 coho, 496 pink, and 499 chum salmon and 188 steelhead trout in 1990 (Appendix A.15). The sockeye catch was 96% of the 1980 to 1989 average of 15,168 fish (Appendix B.17).

The fishery commenced at noon on Monday, June 25 (statistical week 26), for a two-day opening. The sockeye catch and CPUE for the first week of the season was below average. However, fish availability improved over the subsequent three weeks and weekly catches and CPUE values were above average for each of statistical weeks 27 through 29. Preliminary catch and effort inputs to the Stikine Management Model for week 29 resulted in a predicted run of 125,048 sockeye salmon, which translated into a Canadian catch quota of 30,000 fish. In response, fishing time for week 29 (July 15 to 21) was increased to three days. The forecast for this week using updated catch numbers for that week declined to 119,195 sockeye salmon and the Canadian quota decreased to 20,000 sockeye salmon.

By statistical week 30 (July 22-28), the run forecasts began to decline and the lower Stikine commercial fishery was reduced to one day per week for weeks 30 and 31. Thereafter, and until the end of the sockeye fishery, fishing times were adjusted according to the guideline weekly catch quotas and run strength. A precipitous drop in the CPUE in week 33 (August 12-18) marked a somewhat early end to the sockeye season. Generally, the weekly sockeye CPUE was below the 1980 to 1989 average for the latter half of the season. With a final in-season sockeye run forecast of approximately 108,400 fish, the TAC for Canadian fisheries was 20,000 sockeye salmon (according to Annex provisions). Allowing for the sockeye catch in the upper Stikine fisheries, the total allowable lower

Stikine catch was 16,506 fish. The actual catch of 14,530 sockeye salmon in the lower Stikine commercial catch was 1,976 fish below this target.

Management emphasis switched to coho towards the end of August and the fishery was restricted to two days per week during the early part of the coho season (weeks 34 and 35, August 19 to September 1) due to below average coho CPUE. Additional time was fished in the subsequent two weeks as the run strength improved and CPUE values approached and exceeded average values. The final fishing period (week 38, September 16 to 22) was reduced to two days, in spite of a coho CPUE that was 47% above average, to keep the total harvest in line with the 4,000 coho allocation; a total of 4,020 coho salmon was harvested in the lower Stikine commercial fishery.

Twenty license holders participated in the fishery throughout the season with an average of 11 present each week. Effort was similar to the previous two years, 328 boat-days in 1990 compared to 325 in 1989 and 320 in 1988, well below the 1980 to 1989 average of 455 boat-days. Each license holder was allowed the use of one gill net with a maximum length of 135 meters. A maximum mesh size restriction of 146 mm (to July 15) was implemented to reduce the incidental catch of chinook salmon. As in past years, both drift and set netting techniques were utilized.

Upper Stikine Commercial Fishery

A small commercial fishery has existed near Telegraph Creek on the upper Stikine River since 1975. The catch recorded in 1990 included 472 sockeye (approximately 77% of the 1980 to 1989 average catch of 613 sockeye salmon), and 68 chinook salmon, including 20 jack (compared to the 1980 to 1989 average of 110 chinook salmon). Fishing effort was similar to that in previous years with one to four people fishing one day per week from late June through the second week of August.

Indian Food Fishery

The catch taken at the Indian food fishery, centered around Telegraph Creek, was 892 chinook (including 259 jacks), 3,022 sockeye, and 17 coho salmon. The chinook catch was below the 1980 to 1989 average of 1,013 fish, and the sockeye catch was 73% of the 1980 to 1989 average of 4,134 fish and reflected the below average run of Tahltan sockeye salmon. Weekly catches in 1990 and annual catches since 1975 are listed in Appendices A.18 and B.20.

Escapement

Sockeye

A total of 14,927 sockeye was counted through the Tahltan Lake weir in 1990. The count was 71% of the 1985 to 1989 average count of 21,083 fish and below the escapement goal range of 20,000 to 40,000 fish (Appendix B.25). The final in-season Stikine Management Model prediction of the Tahltan escapement was 24,701 sockeye salmon, 9,774 above the weir count.

The total spawning escapement for the non-Tahltan stock group is estimated indirectly by computing the ratio of Tahltan to non-Tahltan stocks in the total inriver sockeye run using the stock compositions, estimated with egg diameter analysis, from the inriver test fishery. The ratio is then applied to the estimated inriver Tahltan run size which results in an estimate of the total non-Tahltan run size. The non-Tahltan escapement is estimated by subtracting the estimated catches of non-Tahltan sockeye in the Canadian fisheries. The postseason estimate of non-Tahltan escapement was 22,495 fish, while the final estimate derived in-season from the Stikine Management Model was 34,327 sockeye salmon. Aerial surveys of non-Tahltan sockeye escapement index areas indicated near average numbers of spawners in 1990 (Appendix B.26).

Chinook

For the sixth consecutive year, an enumeration weir was utilized in 1990 to assess the total Little Tahltan River chinook escapement. The 1990 count of 4,392 large adults was slightly below the 1985 to 1989 average of 4,559 while the jack count of 417 was above the 1985 to 1989 average of 375 fish. The chinook escapement (large adults) to the entire Stikine drainage, estimated by multiplying the Little Tahltan Weir count by a factor of 4, was 17,568 fish (Figure 5), near the 1985 to 1989 average of 18,236 fish, but still below the escapement goal range of 19,800 to 25,000 fish. Results from aerial surveys conducted on other tributaries also indicated an average chinook escapement in 1990. Counts for 1990 were: Little Tahltan River, 1,755; Beatty Creek, 271; Tahltan River, 2,134; and Andrew Creek, 664 chinook salmon. The index counts were above the 1985 to 1989 average for Tahltan River and Andrew Creek and below average for Little Tahltan River and Beatty Creek.

Coho

As indicated by the coho catch in the lower Stikine commercial fishery, coho run strength was below average early in the season, was greatest during week 38 (September 16-22), and remained strong during the middle and late season. The CPUE was above the 1980 to 1989 average at the close of the fishery when the quota of 4,000 fish was caught. As in 1986 through 1989, the lower Stikine test fishery was extended to cover the coho migration to determine run timing and relative abundance. If one assumes equal catchability of sockeye and coho salmon in the test fishery nets (unproven assumption), the relative magnitude of the coho run was 36% of the sockeye run. This technique indicated an inriver coho run of 20,659 fish, which was approximately 77% of the 1986 to 1989 average of 26,800 fish. However, aerial surveys of coho index streams indicated an above average run.

Sockeye Run Reconstruction

The postseason estimate of the total run of Stikine sockeye salmon was 67,242 fish of which 41,013 were non-Tahltan stocks and 26,230 were of Tahltan origin (Table 2). This total run size is 68% of the 1980 to 1989 average run size of 99,602 sockeye salmon. The postseason estimate is based on catch and escapement

data, inriver egg-diameter stock composition data, inriver test fishery run timing data, and scale pattern stock composition data from Districts 106 and 108. The Stikine Management Model, which predicts run size from in-season CPUE and stock composition data, overestimated the total run size by 62%; the final estimate from the model was 108,848.

The Tahltan escapement, counted at a weir, was 14,927 sockeye salmon, 42% below the final in-season Model prediction of 25,673 fish. The postseason estimate of the total escapement to the Stikine River was 37,422 sockeye salmon, 58% of the 1980 to 1989 average.

The estimated smolt-to-adult 1990 return for Tahltan sockeye salmon was 4.0%, slightly below the 1986 to 1989 average of 4.5%. The smolt count in 1990 totalled 607,645 fish, roughly 90% of which originated from the 1988 escapement of 2,536 sockeye salmon. This represents an estimated egg-to-smolt survival of 17% (assumed average fecundity and equal sex ratio), approximately seven times the assumed standard for wild sockeye salmon.

Table 2. Run reconstruction for Stikine River sockeye salmon, 1990. The run includes those stocks which spawn above the U.S./Canada border.

| | Tahltan | non-Tahltan | Total |
|-----------------------|---------|-------------|--------|
| Escapement | 14,927 | 22,495 | 37,422 |
| Canadian Harvest | | | |
| Indian Food | 2,720 | 302 | 3,022 |
| Upper Commercial | 425 | 47 | 472 |
| Lower Commercial | 5,029 | 9,501 | 14,530 |
| Total | 8,174 | 9,850 | 18,024 |
| % Harvest | 78.8% | 57.7% | 65.7% |
| Test Fishery Catch | 822 | 1,118 | 1,940 |
| Inriver Run | 23,923 | 33,464 | 57,386 |
| U.S. Harvest | | | |
| 106-41&42 | 801 | 1,911 | 2,712 |
| 106-30 | 114 | 1,075 | 1,189 |
| 108 | 1,280 | 4,239 | 5,519 |
| Total | 2,195 | 7,225 | 9,420 |
| % Harvest | 21.2% | 42.3% | 34.3% |
| Test Fishery Catch | 112 | 324 | 436 |
| Total Run | 26,230 | 41,013 | 67,242 |
| Escapement Goal | | | |
| Minimum | 20,000 | 20,000 | 40,000 |
| Maximum | 40,000 | 40,000 | 80,000 |
| Total Allowable Catch | | | |
| Minimum | 0 | 1,013 | 0 |
| Maximum | 6,230 | 21,013 | 27,242 |
| Actual Catch | 11,303 | 18,517 | 29,820 |

TAKU RIVER

Taku River salmon are harvested in the U.S. gill net fishery in Alaskan District 111, in northern Southeast Alaska seine and troll fisheries, and in the Juneau area sport fishery and inriver personal use fishery (Figure 6). Canadian fisheries for Taku River salmon include a commercial gill net fishery located in the river near the U.S./Canada border, a sport fishery, and an Indian food fishery.

Harvest Regulations

The 1988 to 1992 harvest and management of Taku River salmon stocks is governed by Annex IV, Chapter 1, of the Pacific Salmon Treaty as negotiated at the February 1988 meeting of the Pacific Salmon Commission. The annex allows Canada to harvest 18% of the TAC of Taku sockeye salmon, 3,000 coho salmon, and incidental catches of other species. This regime is conditional on the Parties proceeding with a cooperative sockeye enhancement program which began in 1990.

Prior to the 1990 fishing season, the Transboundary Technical Committee met to exchange management plans for the Taku River. The results from this exchange are documented in: "Salmon Management Plan for the Transboundary Rivers", Pacific Salmon Commission Transboundary Technical Committee Report TCTR (90)-2, April 1990.

U.S. Fisheries

Catches in the District 111 drift gill net fishery in 1990 totaled 3,480 chinook, 126,884 sockeye, 67,310 coho, 153,036 pink, and 145,530 chum salmon (Appendix C.1). Catches of sockeye and coho salmon were comprised primarily of mixed wild stocks from the Taku River, Port Snettisham, and other drainages. Catches of chinook, pink, and chum salmon were comprised of both wild and local hatchery stocks. Catches of sockeye and coho salmon were the highest ever recorded in the District 111 gill net fishery (Figure 7 and Appendix D.1). The 1990 sockeye and coho catches were 78% and 81%, respectively, above the 1980 to 1989 averages. The chinook harvest was 67% above the 1980 to 1989 average, a reflection of the presence of a large number of small, immature chinook salmon during the early weeks of the fishery. Pink salmon catches were about average for even years, while chum harvests varied according to the major stocks fished. The summer chum salmon catch (prior to August 19, statistical week 34) was exceptional. The record catch of 112,260 fish was three times the 1980 to 1989 average and is believed to have been primarily comprised of Alaskan coastal wild and hatchery stocks. On the other hand, wild fall chum salmon from Port Snettisham and the Taku River contributed 33,270 fish to the District 111 gill net catch, 65% of the 1980 to 1989 average.

The majority of the sockeye salmon harvest in District 111 (an estimated 86% or 108,499 fish) was of Taku River origin and 14% (18,385 fish) was of Port Snettisham origin, based on scale pattern analysis (Appendices C.3 and C.4). By

stock, the catches were 42,676 (33.6%) Mainstem, 36,332 (28.6%) Tatsamenie, 24,952 (19.7%) Trapper, 14,242 (11.2%) Crescent, 4,539 (3.6%) Kuthai, and 4,143 (3.3%) Speel sockeye salmon. The estimated combined marine commercial and inriver personal use catch of 110,059 Taku sockeye salmon was 72% to 76% of the TAC, approximately 8,278 to 15,658 fish less than the level allowed for in the Annex.

As a result of above average sockeye salmon catches in the District 111 drift gill net fishery and subsequent above average sockeye CPUE recorded at the Canyon Island fish wheels, the weekly fishing time was maintained at three days for the duration of the summer season. An additional 24 hours of fishing was allowed during statistical week 30 (July 22-28), because district catches were high as were fish wheel catches and inriver run size estimates generated by the mark-recapture program. In order to reduce the harvest of immature chinook salmon, the District 111 gill net fishery was closed from 10 pm to 4 am from July 8 to July 18. In addition, portions of Stephens Passage were closed from July 8 to August 1, to provide chum salmon brood stock for the Snettisham Hatchery. This closure also protected Port Snettisham sockeye salmon and was primarily responsible for the minor contribution of these stocks to the District 111 sockeye salmon catch. Despite the closure and the lack of additional fishing time allowed to harvest fish, the summer chum catch was triple the 1980 to 1989 average. Fall management was initiated on August 19 (statistical week 34), when the District 111 gill net fishery was opened for three days. By this time it became clear that the Taku River and Port Snettisham coho runs were above average, but wild chum runs were below average. Consequently, beginning August 26 (statistical week 35), fishing time and area were increasingly reduced to provide protection for the weak chum stocks. The 24-hour extension during the last week of the fishery was in response to extremely poor weather conditions. Because Taku Inlet was closed in the protected waters above Greeley to Cooper points, very little fishing occurred during the initial 24-hour opening.

Several fisheries, other than the commercial fisheries, harvest salmon including transboundary river stocks in District 111. The U.S. personal use fishery located in U.S. portions of the Taku River harvested approximately 52 chinook, 1,560 sockeye, 206 coho, 130 pink, and 92 chum salmon. A small test fishery was again operated in Port Snettisham for one day each week during the month of July and the first week of August. Catches totaled 21 chinook, 57 sockeye, 0 coho, 38 pink, and 217 chum salmon and are believed to be of Port Snettisham origin. The ADF&G Division of Sport Fish estimated that the spring sport fishery near the mouth of the Taku River, open from mid-April to mid-June, caught approximately 700 large mature chinook salmon; although estimates are not made for that area specifically. Several stocks are thought to contribute to the sport fishery, including Taku, Chilkat, King Salmon, and Unuk River stocks and local hatchery stocks, but the majority are believed to be of Taku River origin.

Canadian Fisheries

The Taku River commercial fishery catch was 1,258 large chinook, 128 jack chinook (fish less than 2.27 kg), 21,100 sockeye, 3,207 coho, 378 pink, and 12 chum salmon and 22 steelhead trout (Appendix C.5). Catches of chinook and sockeye were above the 1980 to 1989 averages of 422 and 15,406 fish, respectively, while

catches of the remaining species were below average (Figure 7, Appendix D.5). The fishery was open for 28 days, near the 1980 to 1989 average. The seasonal fishing effort was 295 boat-days in 1990 compared to the 1980 to 1989 average of 250 boat-days.

In addition to the commercial catches, an Indian food fishery existed in the river in 1990 which took 15 chinook, 74 sockeye, and 74 coho salmon. The inriver test fishery catch was 48 chinook, 285 sockeye, and 472 coho salmon and 20 steelhead trout.

The commercial fishery commenced at noon on Monday, June 25 (statistical week 26). The CPUE for the first two weeks (combined) was more than 40% above average; the CPUE for the first opening was a record. The CPUE values dropped to near average values after these first two weeks; however, the CPUE value recorded for the week of August 6 was the lowest on record for that week. Unusually high water conditions persisted throughout the fishing season. The fishery was closed for the season August 21, when the Treaty limit of 3,000 coho salmon was attained.

Forecasts of the total sockeye return were made on a regular basis using data collected from the Canada/U.S. tagging program and catch statistics reported from U.S. District 111 and Canadian gill net fisheries. The forecasts were used in conjunction with historical timing information to develop both seasonal and weekly cumulative catch guidelines for the Canadian fishery (Table 3); weekly fishing times were adjusted according to these guidelines. The first in-season run forecast was made in week 27 at which time a total run of 183,000 to 281,000 sockeye salmon was predicted. A wide range is typical for the initial weeks of the season due to uncertainty over run timing; the range narrows as the season progresses. The run projections increased from week 27 to a maximum forecast of 255,000 to 309,000 fish in weeks 31 and 32 and, thereafter, decreased to a final in-season estimate of 229,000 in week 34. The forecasts used in weeks 33 and 34 were the lower numbers in the ranges since it was obvious by this time that the run timing was earlier than normal. The predicted season allowable catch for the Canadian fishery ranged from 23,000 fish predicted in week 28 to approximately 36,000 fish in weeks 30 through 32. By the end of the season, the TAC had dropped to about 27,000 sockeye salmon.

Table 3. Canadian in-season forecasts of total run size, TAC, and Canadian TAC of Taku sockeye salmon, 1990.

| Stat. Week | Run Forecast | | | Total TAC | Canada TAC | Escapement |
|------------|--------------|---------|---------|-----------|------------|------------|
| | Lower | Upper | Used | | | |
| 27 | 183,000 | 281,000 | 232,000 | 152,000 | 27,000 | 80,000 |
| 28 | 170,000 | 245,000 | 208,000 | 128,000 | 23,000 | 80,000 |
| 29 | 238,000 | 306,000 | 272,000 | 192,000 | 35,000 | 80,000 |
| 30 | 253,000 | 307,000 | 280,000 | 200,000 | 36,000 | 80,000 |
| 31 | 255,000 | 309,000 | 282,000 | 202,000 | 36,000 | 80,000 |
| 32 | 255,000 | 309,000 | 282,000 | 202,000 | 36,000 | 80,000 |
| 33 | 244,000 | 274,000 | 244,000 | 164,000 | 30,000 | 80,000 |
| 34 | 229,000 | 257,000 | 229,000 | 149,000 | 27,000 | 80,000 |

The final Canadian in-season estimate of TAC was approximately 149,000 to 154,000 sockeye salmon excluding any allowance for District 112 seine interceptions. Canadian fishermen caught 21,174 sockeye salmon (commercial plus IFF catch), or roughly 14% of the aforementioned estimates of the sockeye TAC, which was 4,802 to 6,422 fish less than allowed under the Annex.

The combined commercial and Indian food fishery catch of coho salmon totaled 3,281 fish which slightly exceeded the Annex provision of 3,000 fish.

As in recent years, both set and drift gillnetting techniques were utilized with the majority of the commercial catch taken in drift gill nets. Mesh sizes were restricted to less than 146 mm through July 15 to minimize the incidental catch of chinook salmon.

Escapement

Sockeye

Total spawning escapement in the above-border is estimated from the joint U.S./Canada mark-recapture program. The estimated escapement of 92,795 fish was 6% above the 1985 to 1989 average of 87,390 fish (Figure 8 and Appendix D.8) and was over the upper limit of the escapement goal range of 71,000 to 80,000 sockeye salmon.

Escapement counts are made at several weirs throughout the Taku drainage. The escapement of 9,443 fish through the Little Trapper Lake weir was below the 1985 to 1989 average of 12,180 sockeye salmon and the escapement through Little Tatsamenie Lake weir of 5,706 fish was slightly below the 1985 to 1989 average of 6,456 sockeye salmon. A weir was also operated at the Nahlin River in 1990 and a total of 2,515 sockeye salmon was counted. Helicopter surveys of the mainstem Taku River were made during the fall of 1990 and good spawning demislies of fish were observed at several spawning locations. The escapements of Port Snettisham stocks were mixed. A record total of 18,064 sockeye salmon was counted through the Speel Lake weir, 48% higher than that observed in the next highest year (1989), and over twice the 1985 to 1989 average of 7,089 fish. The sockeye count at the Crescent Lake weir was 1,262 fish, below the 1985 to 1989 average of 4,162 fish. However, the actual escapement to Crescent Lake in 1990 is unknown because the weir was underwater for extended periods of time after several heavy rainstorms allowing fish to pass uncounted.

Chinook

Above average escapements were observed in most of the Taku chinook tributaries surveyed in 1990. The total chinook escapement estimates of 21,278 (U.S.) and 24,498 (Canada) fish were generated from aerial survey counts expanded to account for the entire drainage escapement. The U.S. estimate is made by expanding the combined Nahlin and Nakina counts by a factor of 1/0.45 and the Canadian estimate is made by expanding the combined Nahlin, Nakina, Kowatua, Tatsatua, Tseta, and Dudidontu counts by a factor of two. These estimates were the largest observed since the aerial survey indices were standardized in 1974, but were still below

escapement goals of 25,600 (U.S.) and 30,000 (Canada). Escapement estimates for 1979 to 1990 are shown in Figure 9.

Coho

Water conditions at Canyon Island in the Taku River in late summer and fall remained suitable for fish wheel operation, allowing a substantial but unknown portion of the coho run to be tagged. Mark-recapture and test fishery information indicated that the interim above-border escapement goal of 27,500 to 35,000 fish was exceeded and that the overall coho escapement was strong.

The mark-recapture estimate of run size through the end of the inriver commercial fishery (statistical week 34, August 23) was 22,454 fish. This is similar to run size estimates for comparable time periods from 1987 to 1989. Tag-recovery after the end of the commercial fishery was limited to the test fishery catches; few tags were recovered and the precision of the resulting run size estimates for this time period was poor. The mark-recapture estimate of inriver run size through the end of the test fishery (September 29) was 75,036 fish. A second method of estimating the above-border run size was made by expanding the inriver estimate through week 34 by the proportion of the cumulative test fishery CPUE that occurred after this time; the estimate was 85,053 fish. A total of 3,753 coho salmon were harvested from the above-border run.

Only limited, comparable, index escapement data exists for Taku coho salmon. A total of 907 coho salmon was counted through the Yehring Creek weir. The weir was inundated by high water on several occasions which presumably allowed fish to pass uncounted. A mark-recapture estimate of the total coho escapement to this index system was 2,522 fish. The escapement count of coho salmon at the Little Tatsamenie Lake was 529 fish counted through the weir and 140 fish counted holding below the weir when it was removed. The aerial counts of coho salmon in Flannigan Slough were 414 fish, 28% of the 1986 to 1989 average of 1,475 fish; however, surveyors felt that the count occurred late in the run and was not an accurate reflection of run strength. Survey counts for the Dudidontu River and upper portions of the Nahlin River were 25 and 256 fish, respectively. Both counts were below the respective 1986 to 1989 averages, an indication that early run coho stocks may not have been as strong as the rest of the Taku River coho run.

Pink

Mark-recapture techniques were not used in 1990 to estimate the escapement of pink salmon to the Taku River because the magnitude of the even-year run is typically very small. Therefore, no estimate of system-wide escapement is available. Catches in the lower river ADF&G/DFO fish wheels totaled 13,358 fish, over twice the recent (1986 and 1988) even-year average of 5,628 fish; however, it is not known how accurately these catches reflect true abundance.

Chum

A system-wide escapement estimate for chum salmon is not available. Limited aerial survey observations of the principal known spawning areas revealed that below-average numbers of fish were present. If one assumes equal catchability of coho and chum salmon in the test fishery nets (unproven assumption), the relative magnitude of the chum salmon run was approximately 40% of the coho run.

Sockeye Run Reconstruction

The estimated total Taku sockeye salmon run was 224,313 fish (Table 4). This represents the largest run since total run statistics have been tabulated (1984) and is 42% above the 1985 to 1989 average of 158,279 fish. The total catch of Taku sockeye salmon in the U.S. District 111 and U.S. and Canadian inriver fisheries was 131,518 fish and the escapement was 92,795 fish. The escapement was above the upper level of the escapement goal range of 71,000 to 80,000 sockeye salmon. The U.S. District 111 harvest and inriver personal use harvest of 110,059 fish was 83.9% of the total harvest and the Canadian commercial and food fishery harvest of 21,174 fish was 16.1%. The Canadian test fishery catch of 285 sockeye salmon is not included in these calculations. Based on the escapement goal range, the TAC was 144,313 to 153,313 sockeye salmon. The U.S. harvested 71.8% to 76.3% of the TAC and Canada harvested 13.8% to 14.7% of the TAC. In addition, an estimated total of 18,385 Port Snettisham sockeye salmon were harvested in District 111, while at least 19,326 fish escaped into Crescent and Speel Lakes.

Table 4. Taku sockeye salmon run reconstruction, 1990. Run reconstructions is for Taku sockeye stocks that spawn above the border as they enter District 111 off the mouth of the Taku River.

| | Taku | Snettisham |
|--------------------|---------|------------|
| Escapement | 92,795 | 19,326 a/ |
| Canadian Harvest | | |
| Commercial | 21,100 | |
| Food Fishery | 74 | |
| Total | 21,174 | |
| % Harvest | 16.1% | |
| Test Fishery Catch | 285 | |
| Above Border Run | 114,254 | |
| U.S. Harvest | | |
| District 111 | 108,499 | 18,385 |
| Personal Use | 1,560 | |
| Total | 110,059 | |
| % Harvest | 83.9% | |
| Test Fishery Catch | none | 85 |
| Total Run | 224,313 | 37,796 |
| Taku Harvest Plan | Minimum | Maximum |
| Escapement Goal | 71,000 | 80,000 |
| TAC | 153,313 | 144,313 |
| Canadian Portion | 0.138 | 0.147 |
| U.S. Portion | 0.718 | 0.763 |

a/ Count incomplete due to water over weir.

ALSEK RIVER

Alsek River salmon stocks contribute to the U.S. commercial gill net fisheries located in Dry Bay, at the mouth of the Alsek River (Figure 10). Some salmon of Alsek origin may also be taken in U.S. commercial gill net and troll fisheries in the Yakutat area. No commercial fishery exists in the Canadian portions of the Alsek River drainage, although Indian food and sport fisheries occur in the Tatshenshini River and some of its headwater tributaries (Figure 10).

Harvest Regulations

Although catch sharing of Alsek salmon stocks between Canada and the U.S. has not been specified, Annex IV does call for a cooperative attempt to rebuild depressed chinook and early-run sockeye stocks. Interim escapement goals for Alsek chinook, sockeye, and coho salmon have been set by the Transboundary Technical Committee at 7,200 to 12,500 chinook, 33,000 to 58,000 sockeye, and 5,400 to 25,000 coho salmon.

U.S. Fisheries

Catch and Effort

The U.S. Dry Bay set gill net fishery catch was 78 chinook, 17,013 sockeye, 1,437 coho, 0 pink, and 495 chum salmon (Appendix E.1). Catches of all species were below the 1980 to 1989 averages in this fishery (Figure 11, Appendix E.4).

The Dry Bay commercial gill net fishery opened for the season on June 18 and closed on September 20. Fishing effort was slightly above average through mid-July but fell below average through late August and returned to average levels late in the season. In 1990 the entire catch was made inriver; no catch was made in the surf fishery at the mouth of the Alsek River.

The preseason forecast indicated poor runs of chinook, early-run sockeye, and coho salmon in 1990, but an average run of late-run sockeye salmon. The fishing season opening in Dry Bay was delayed two weeks relative to historical patterns because of the expectations of poor early runs. The fishing season opened on June 18 with normal effort levels and was limited to a one-day opening in order to conserve chinook and early sockeye stocks. Fishing success was better than expected; consequently, the fishing periods for the next two weeks were increased to two days per week. Because above average CPUE levels and initial predictions generated by two ADF&G sockeye salmon management models indicated an above average run of sockeye salmon, weekly fishing periods were increased to three days per week for the remainder of the season. The total harvest of 17,013 sockeye salmon was slightly less than the 1980 to 1989 average (Figure 11), but better than in the last three years.

The U.S. Dry Bay gill net fishery typically catches few Alsek chinook salmon (Figure 13). With the delayed opening of the fishery in recent years, most of

the chinook run passes through the fishery prior to the opening date. In addition, a 6-inch maximum mesh size restriction through early July has been in effect since 1987, effectively eliminating the use of chinook gear. The total catch of 78 chinook salmon was the second lowest catch since 1964.

Fishing success for coho salmon in the fall was poor. As a result, the fishing season was terminated on September 20. The total coho catch of 1,437 fish was the second lowest catch since 1964.

A total of 495 chum salmon was taken in the fishery, 55% of the 1980 to 1989 average. No pink salmon were caught in 1990.

Sockeye Management Model

ADF&G managers have used a model for managing the sockeye harvest since 1984. This model worked well in predicting the total season catch and escapement during the years 1984 through 1988. It did not work well in 1989, but a postseason review indicated that the model had not been correctly updated. Two management models, an updated original harvest rate model and a multiple regression model, produced highly accurate predictions of the Alsek River sockeye salmon run in 1990 (Table 5) and proved valuable in managing the fishery.

Table 5. In-season U.S. forecasts of the total 1990 Alsek River catch, Klukshu River escapement, and total (Alsek River catch + Klukshu escapement) using two predictive models.

| Stat. Week | Start Date | Harvest Rate Model | | | Multiple Regression Model | | |
|------------|------------|--------------------|--------------------|--------|---------------------------|--------------------|--------|
| | | Total Catch | Klukshu Escapement | Total | Total Catch | Klukshu Escapement | Total |
| 27 | 01-Jul | 17,653 | 24,198 | 41,851 | 13,326 | 25,985 | 39,311 |
| 28 | 08-Jul | 22,786 | 31,700 | 54,486 | 14,494 | 37,633 | 52,127 |
| 29 | 15-Jul | 21,169 | 27,765 | 48,934 | 15,253 | 27,885 | 43,138 |
| 30 | 22-Jul | 19,829 | 26,199 | 46,028 | 17,107 | 28,248 | 45,355 |
| 31 | 29-Jul | 17,813 | 22,525 | 40,338 | 16,784 | 26,627 | 43,411 |
| Actual | | 16,852 | 25,995 | 42,847 | 16,852 | 25,995 | 42,847 |

Canadian Fisheries

The center of Indian food fishing activity in the Alsek drainage occurs at the Champagne/Aishihik Indian village of Klukshu, on the Haines Road, approximately 60km south of Haines Junction, Yukon Territory. Fish are harvested by means of gaff and traditional fish traps as the fish migrate up the Klukshu River into Klukshu Lake. As in 1989, the Indian fish trap fishery remained closed until mid-July at which time, and until August 15, only trapping by elders was permitted for one day each week. A catch ceiling of 10% to 15% of the weir count was in effect during this period; however, it was not needed since effort was minimal. The early season restrictions were implemented to conserve chinook and

early run sockeye salmon. After August 15, fishing with traps was allowed four days per week. The gaff fishery was managed as follows:

Prior to August 15, only elders were allowed to fish with a gaff in the Klukshu River system. Other designated tributaries, such as Village Creek and the Blanchard River, were open for gaffing to other band members for three days each week.

After August 15, gaffing was permitted by all band members for four days per week in all systems.

After September 20 the fishery was opened for unlimited time.

The Indian food fishery catch was 173 chinook and 2,012 sockeye salmon. The food fishery catch data was summarized weekly from daily catch statistics gathered during the fishing periods.

The majority of the sport fishing effort on the drainage occurs on the Tatshenshini River, at and just downstream of the mouth of the Klukshu River in the vicinity of the abandoned settlement of Dalton Post. The retention of sockeye salmon in the recreational fishery was prohibited prior to August 15 to protect early runs. The daily salmon catch limit was two fish and only one could be a chinook salmon. The possession limit was twice the daily unit. Sport fishing in the area where effort traditionally concentrates, i.e. Dalton Post, was open from 6:00 am Saturday to 12:00 noon Tuesday each week. After September 20, the sport fishery was open 7 days per week.

The sport fishery catch was approximately 555 chinook, 392 sockeye, and 75 coho salmon. These catches represent a 96% increase in the chinook catch and 15% and 27% decreases, respectively, in the sockeye and coho catches from the 1980 to 1989 averages. The increase in the chinook catch may be attributable to the above normal contribution of Takhanne bound chinook salmon to the fishery. The catch data was derived from a creel census program conducted in the Dalton Post area by the Klukshu weir personnel. Additional catch data was collected in other areas/tributaries by a DFO patrol officer.

Escapement

It is currently not possible to accurately assess whether Alsek escapement goals are being met because total drainage enumeration programs are not established. A large, but unknown and presumably variable proportion of the escapement of each species is enumerated at the weir on the Klukshu River. Current escapement monitoring programs including the Klukshu weir and aerial surveys do, however, allow annual comparisons of escapement indices. The most reliable comparative escapement index for Alsek drainage salmon stocks is the Klukshu River weir count.

Sockeye

A total of 25,995 sockeye salmon was counted through the Klukshu weir in 1990 (Figure 12), consisting of 1,316 early run (prior to August 16) and 24,679 late run sockeye salmon. The early run component was below the 1985 to 1989 average of 1,642 fish, while the late run component was well above the average of 15,730 fish. For the second consecutive year, an excellent run of sockeye salmon was recorded in Village Creek, where 7,500 fish passed through an electronic counter (Appendix E.8). Aerial surveys of tributaries on the U.S. side of the border (Appendix E.8) gave mixed results but the Tanis River count of 3,500 was more than twice the 1985 to 1989 average for this system.

Chinook

A total of 1,915 chinook salmon was counted through the Klukshu weir in 1990 (Figure 13). This count was close to the 1984 to 1989 average of 2,039 fish (Appendix E.7). The escapement through the upstream food fishery was 1,742 chinook salmon. Estimates of the escapement to the entire Alsek River drainage have been generated by expanding the Klukshu weir count by a factor of 1/0.64 (U.S.) and by a factor of 2.0 (Canada) and subtracting the upriver Canadian catches. These expansion factors represent professional judgement; their accuracy is poorly understood and they are currently under review by the Transboundary Technical Committee. For 1990, these expansions yield estimates of escapement to the entire drainage of 2,264 (U.S.) and 3,102 (Canada) fish. The escapement goal range is from 7,200 (U.S.) to 12,500 (Canada) fish. Aerial surveys were again conducted in 1990 for several other index streams. The count of 325 fish in the Takhanne River exceeded the 1984 to 1989 average of 220 fish, while the count of 32 chinook salmon in Goat Creek was less than the average count of 69 fish.

Coho

The coho run to the Alsek River was poor. A total of 315 coho salmon was counted through Klukshu River weir (Figure 14). The count was below the 1986 to 1989 average of 1,317 fish (Appendix E.7); however, this is not a total count since the weir is removed prior to the end of the coho migration. Results of aerial surveys conducted on U.S. coho index streams were above average.

Run Reconstruction

Expectations for the sockeye run in 1990 were for a poor early-run and average late-run. The run developed as expected with a total sockeye harvest near average but an excellent escapement of 25,995 fish through the Klukshu weir (Table 6). The early portion of the escapement through the Klukshu weir was below average.

Estimates of the Klukshu contribution to the total sockeye run to the Alsek drainage vary from 37%, as estimated from an ADF&G mark-recapture study in 1983, to 60%, based on Canadian fishery managers' professional judgement. Total

escapement to the Alsek River is estimated by dividing the Klukshu weir count by the estimated Klukshu percent contribution and then subtracting the sport and Indian food fishery catches. The estimated escapement added to the U.S. commercial and subsistence catches yields an estimate of the entire Alsek run. Using the 37% to 60% contribution range, the estimated sockeye escapement in the Alsek River was on the order of 41,000 to 68,000 fish and the estimated total Alsek sockeye run was on the order of 58,000 to 85,000 sockeye salmon. The interim escapement goal for the Alsek River is from 33,000 (U.S.) to 58,000 (Canada) fish.

Table 6. Catch and Klukshu index escapement data for Alsek sockeye, chinook, and coho salmon for 1990.

| | Sockeye | Chinook | Coho |
|----------------------------------|---------|---------|-------|
| Escapement Index ^{a/} | | | |
| Klukshu Weir Count | 25,995 | 1,915 | 315 |
| Klukshu Escapement ^{b/} | 24,607 | 1,742 | |
| Harvest | | | |
| U.S. Commercial | 17,013 | 78 | 1,437 |
| U.S. Subsistence | 144 | 85 | 12 |
| Canadian Sport | 392 | 555 | 75 |
| Canadian Indian Food | 2,012 | 173 | 0 |
| Total | 19,561 | 891 | 1,524 |

a/ Klukshu River salmon stocks represent an assumed large and variable portion of the total Alsek River salmon escapement.

b/ Some of the Canadian Indian food fishery occurs above Klukshu weir, so these catches are subtracted from weir counts to represent the spawning escapement.

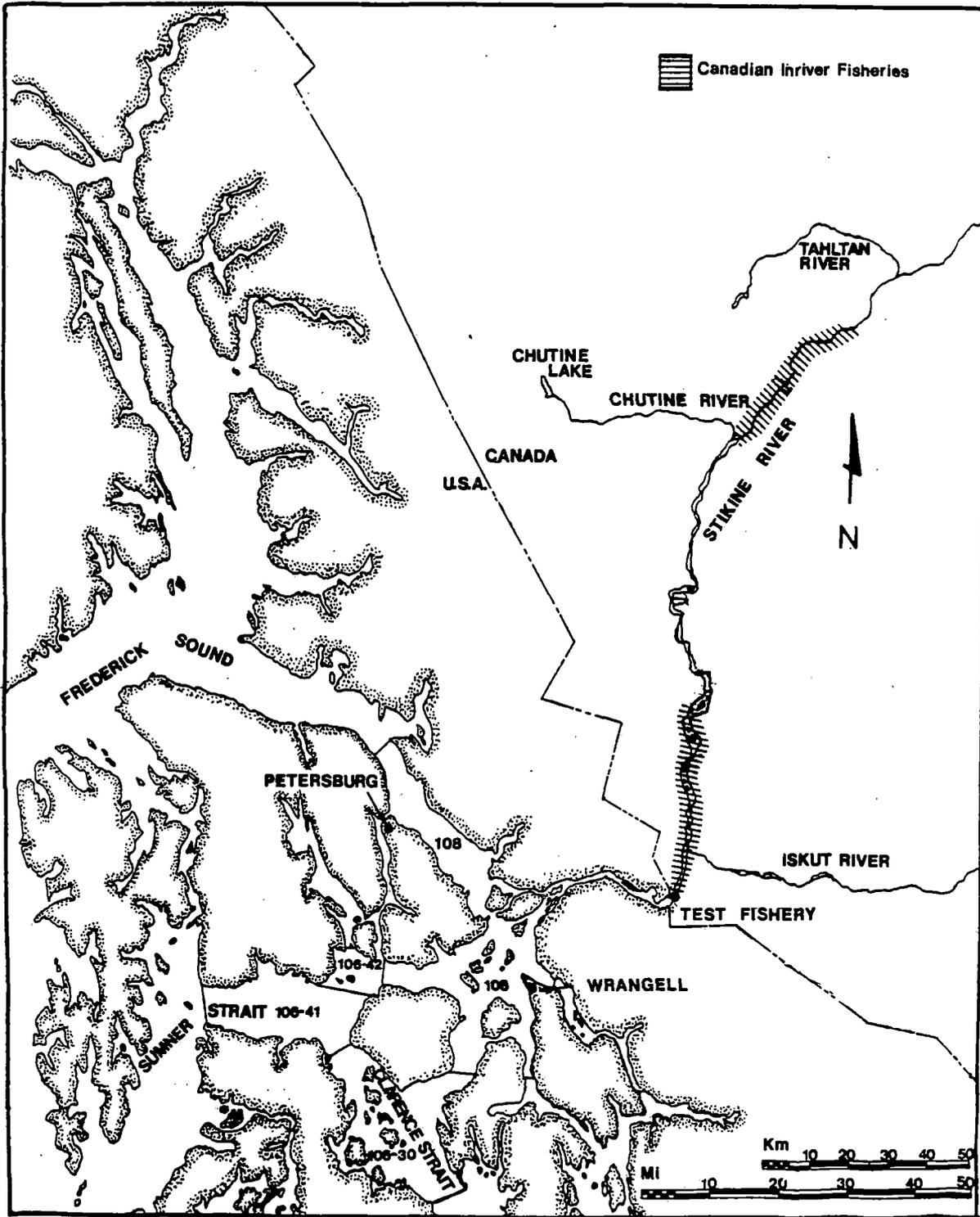


Figure 1. The Stikine River and principal U.S. and Canadian fishing areas.

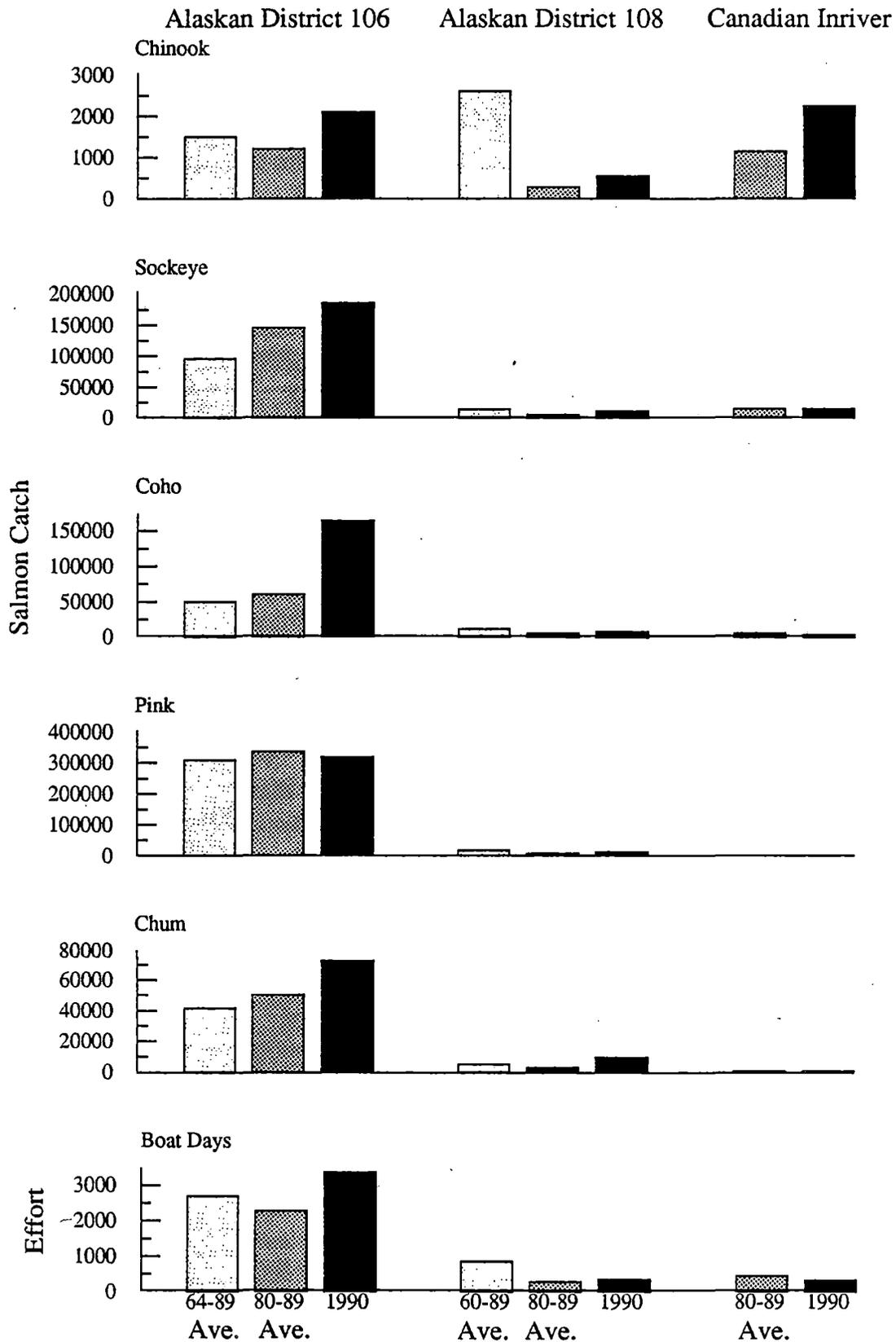


Figure 2. Average catches and fishing efforts compared with 1990 values for the Alaskan Districts 106 and 108 and for the Canadian commercial fisheries in the Stikine River.

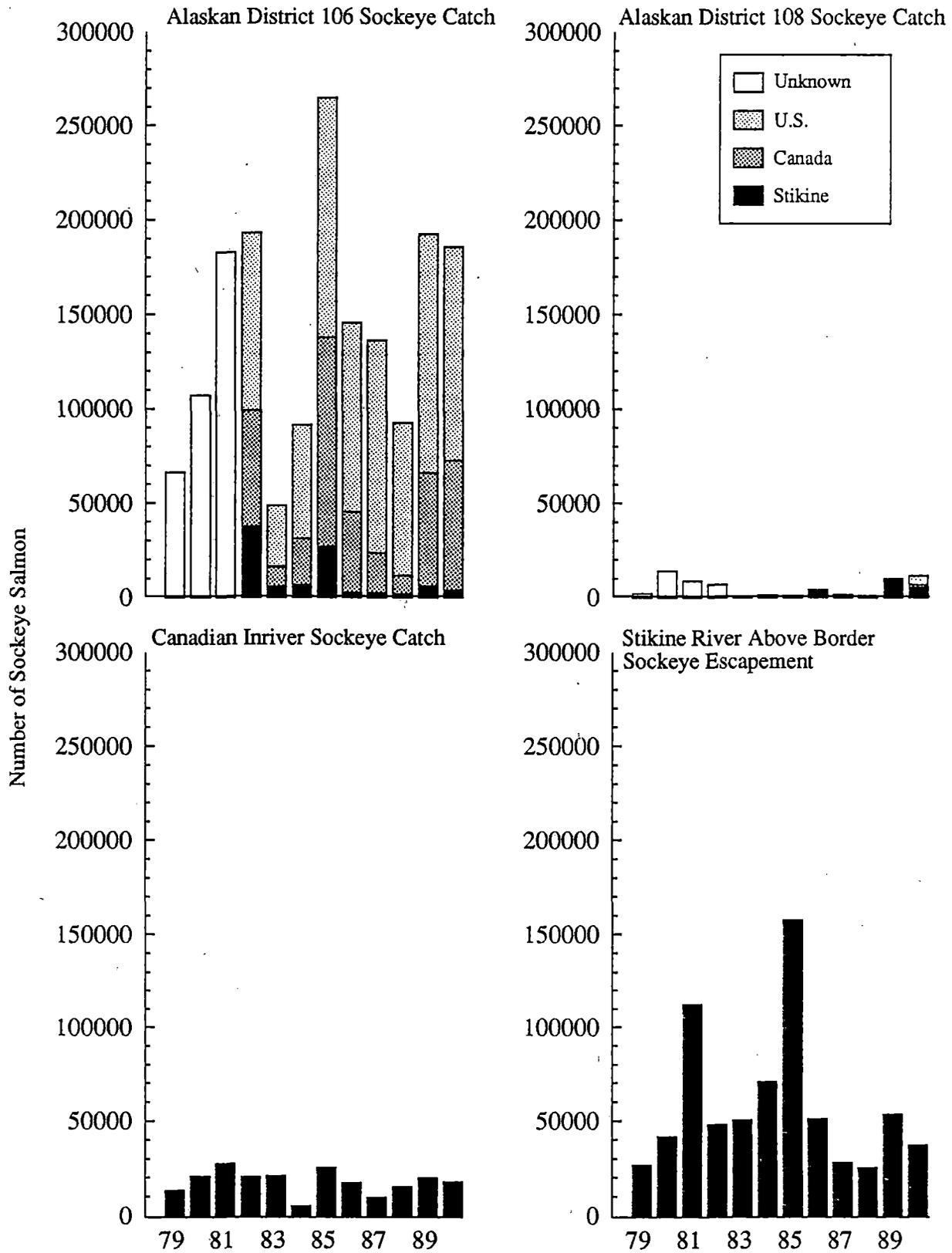


Figure 3. Sockeye catches for the Alaskan Districts 106 and 108 and the combined Canadian fisheries in the Stikine River and Stikine sockeye escapements, 1979-1990. Effort is for commercial fisheries only.

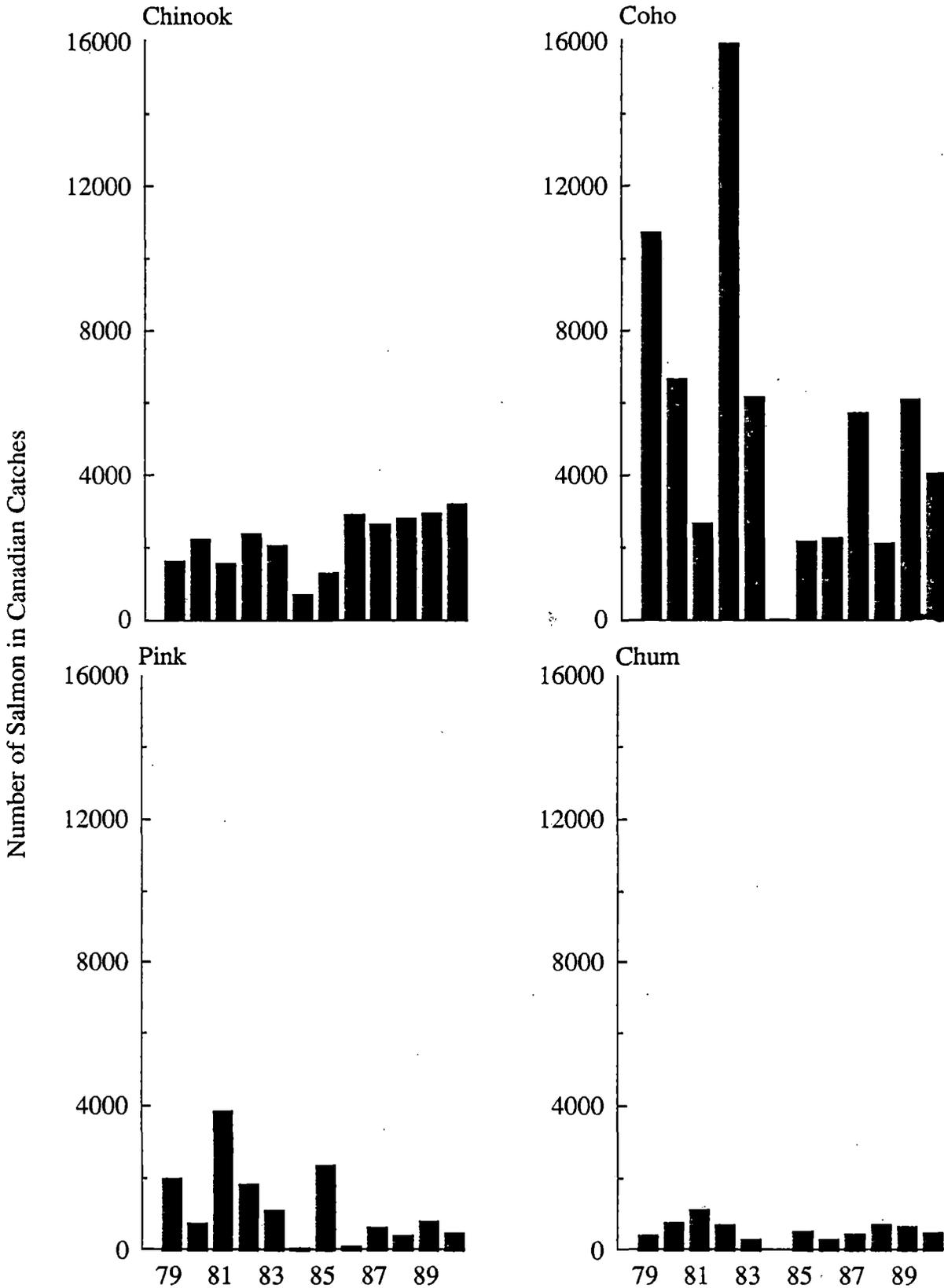


Figure 4. Catches of chinook, coho, pink, and chum salmon in the combined Canadian fisheries in the Stikine River, 1979-1990.

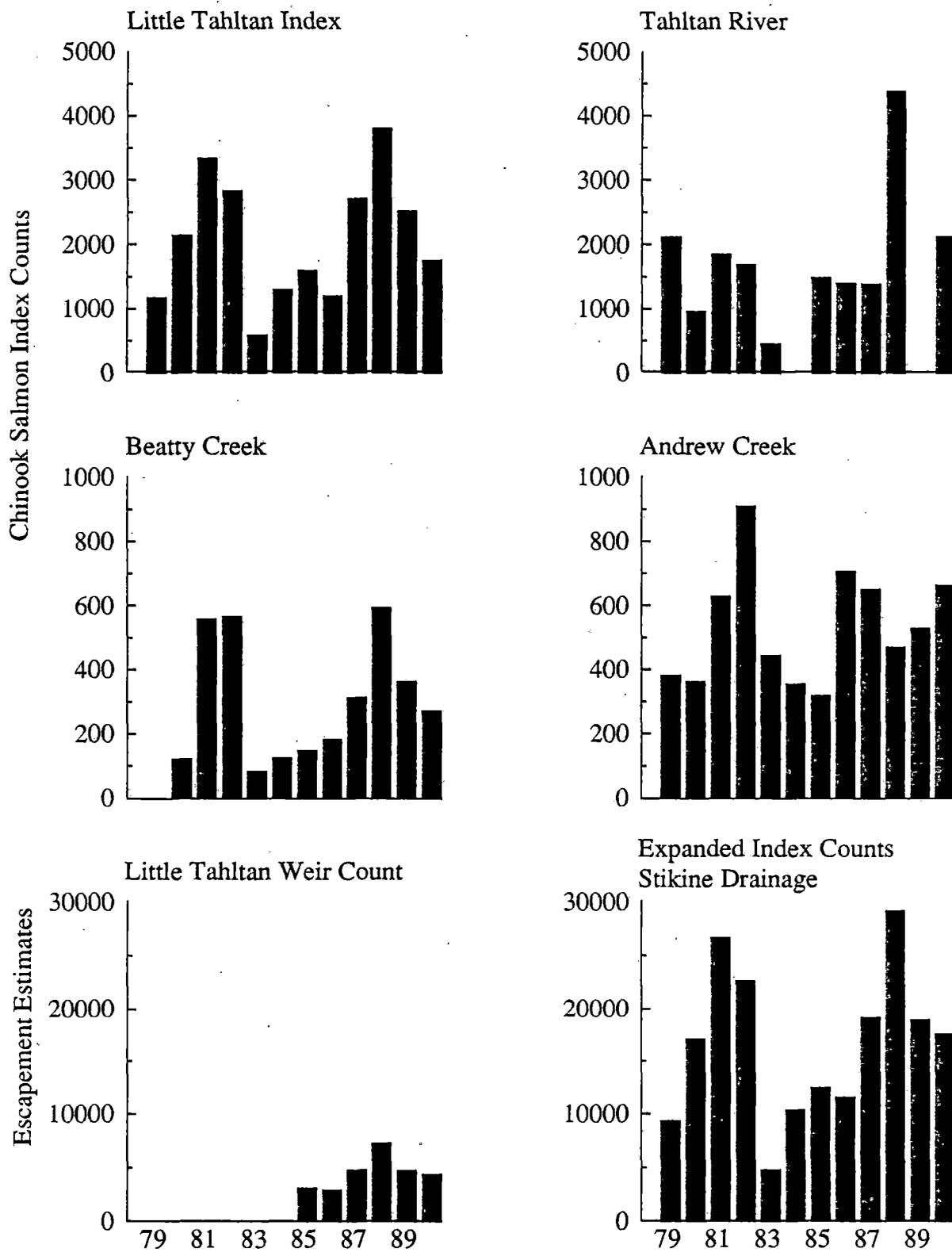


Figure 5. Chinook salmon weir counts and index escapement estimates for major spawning areas and for the entire Stikine River, 1979-1990.

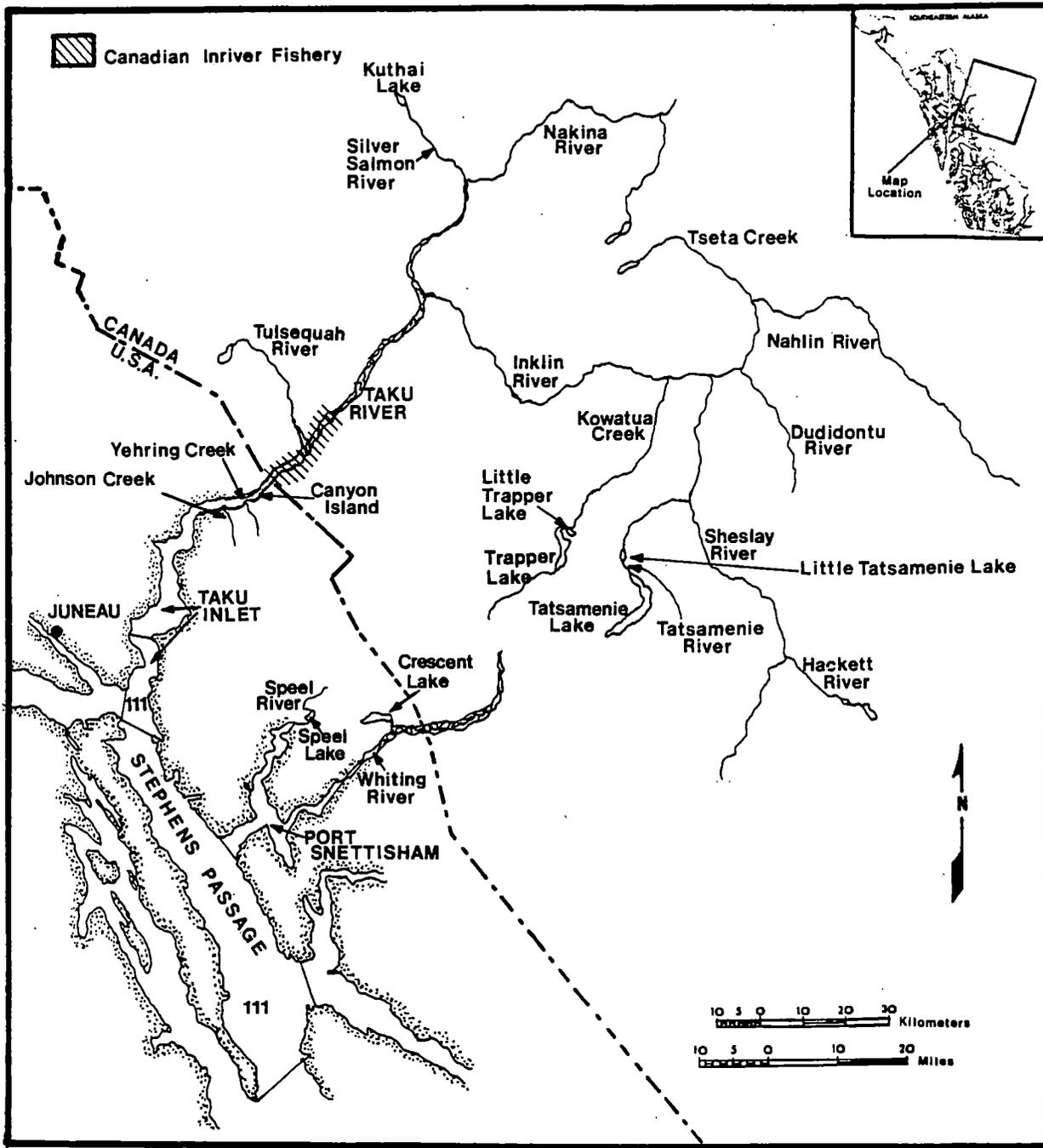


Figure 6. The Taku River and principal U.S. and Canadian fishing areas.

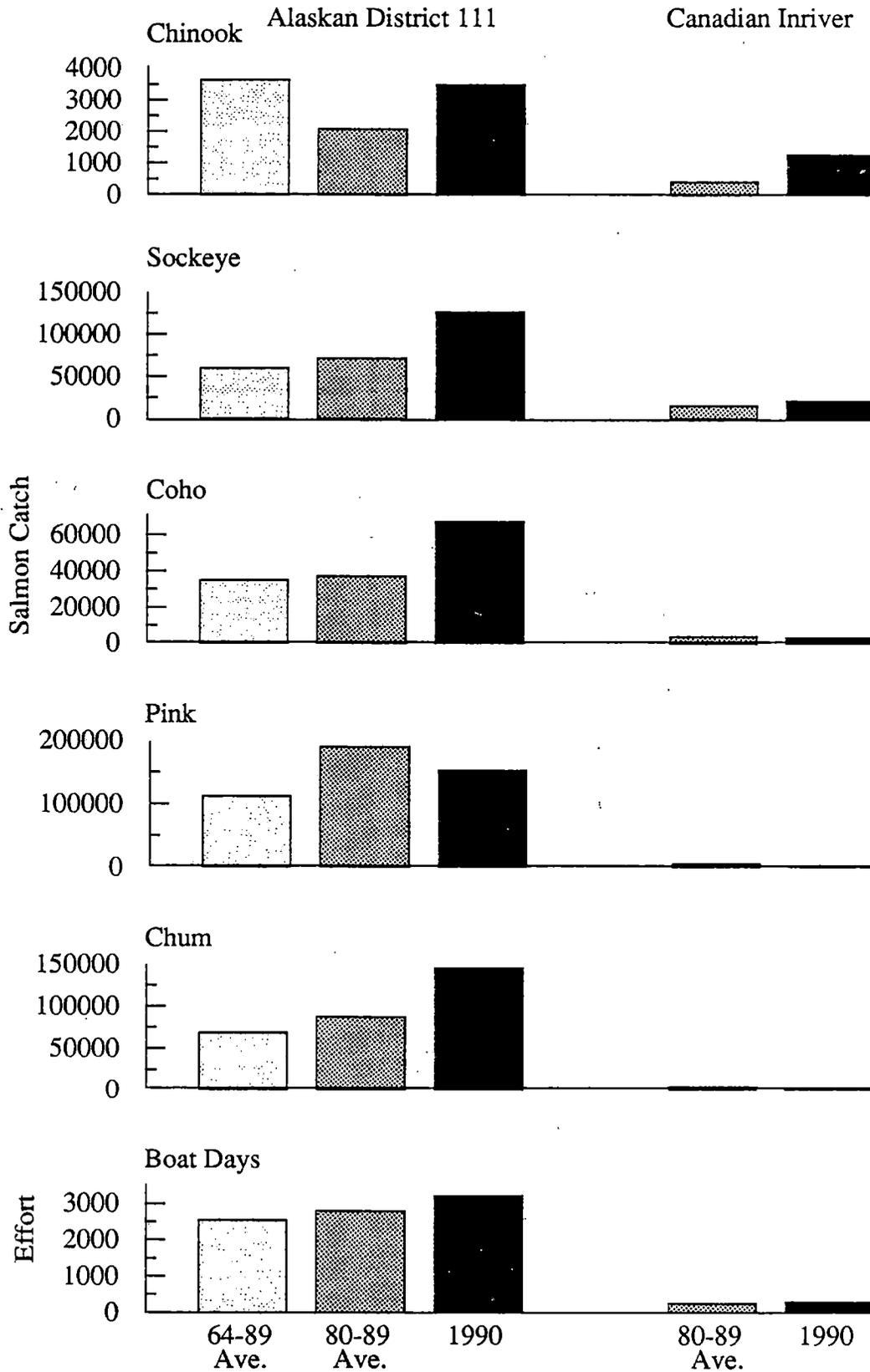


Figure 7. Average catches and fishing efforts compared with 1990 values for the Alaskan District 111 commercial fishery and the Canadian commercial fishery in the Taku River.

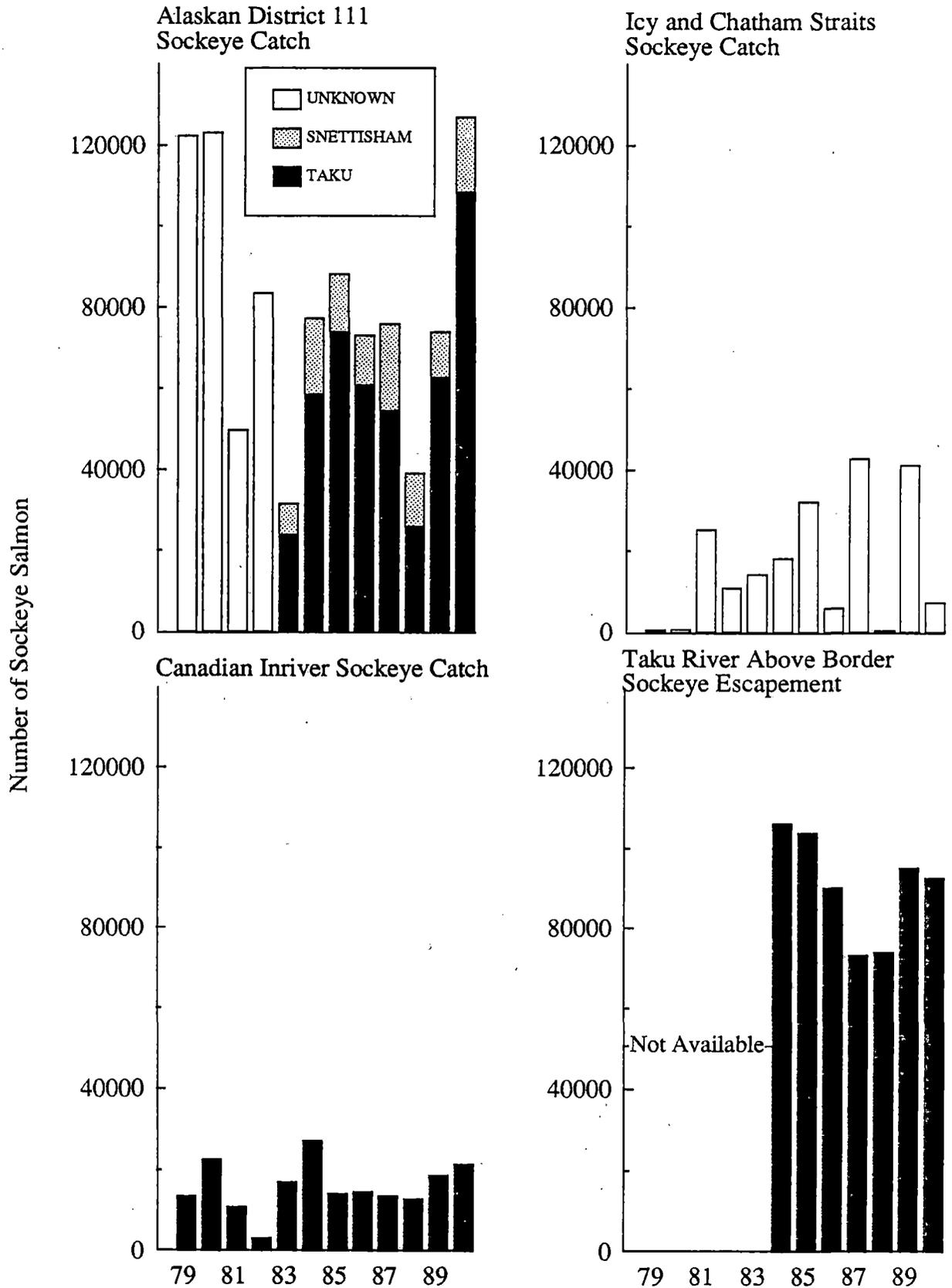


Figure 8. Sockeye catches for the Alaskan District 111, the Icy and Chatham Straits, and the combined Canadian fisheries in the Taku River and Taku sockeye escapements, 1979-1990.

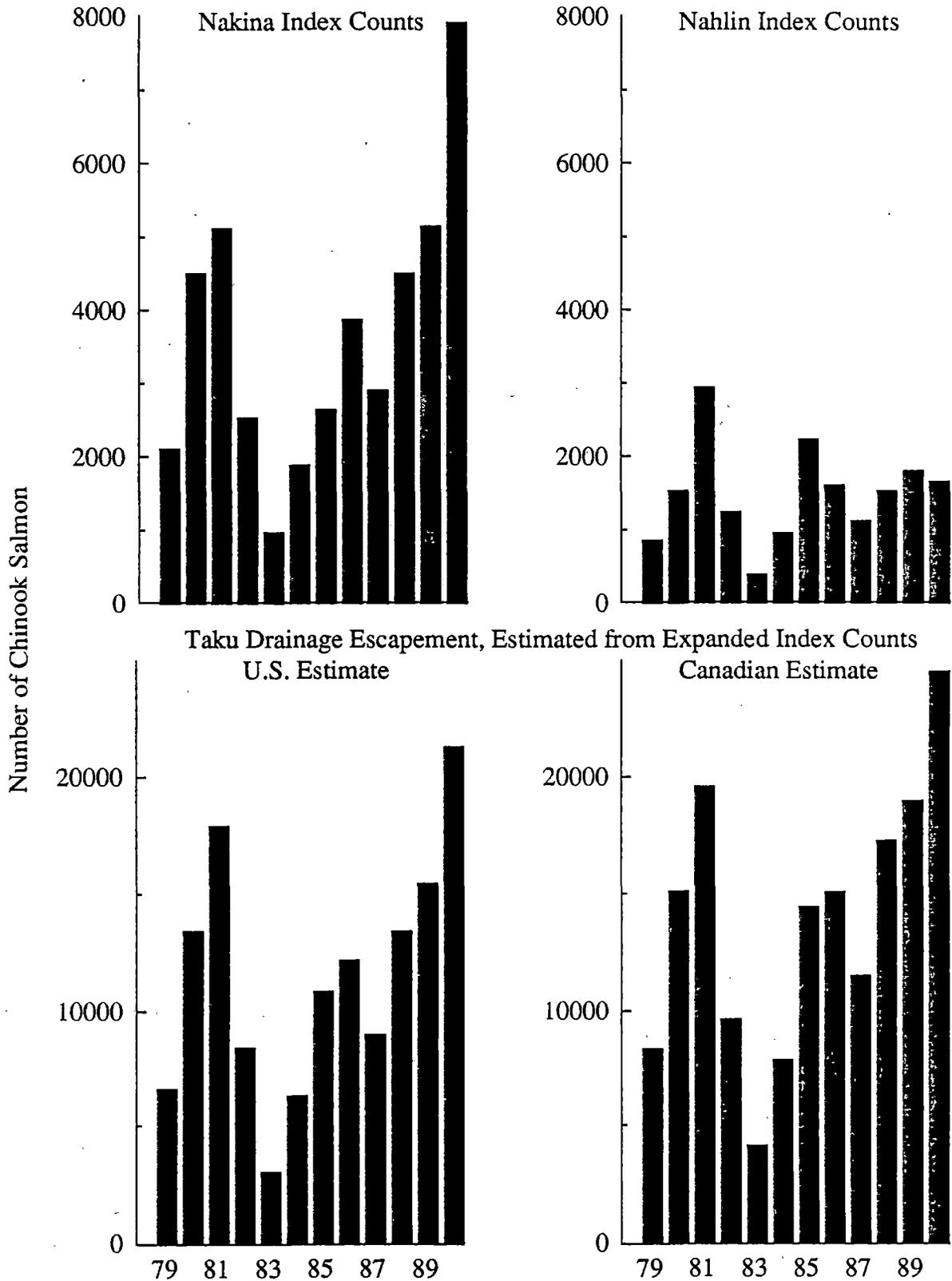


Figure 9. Chinook index escapement estimates for major spawning areas and for the entire Taku River, 1979-1990.

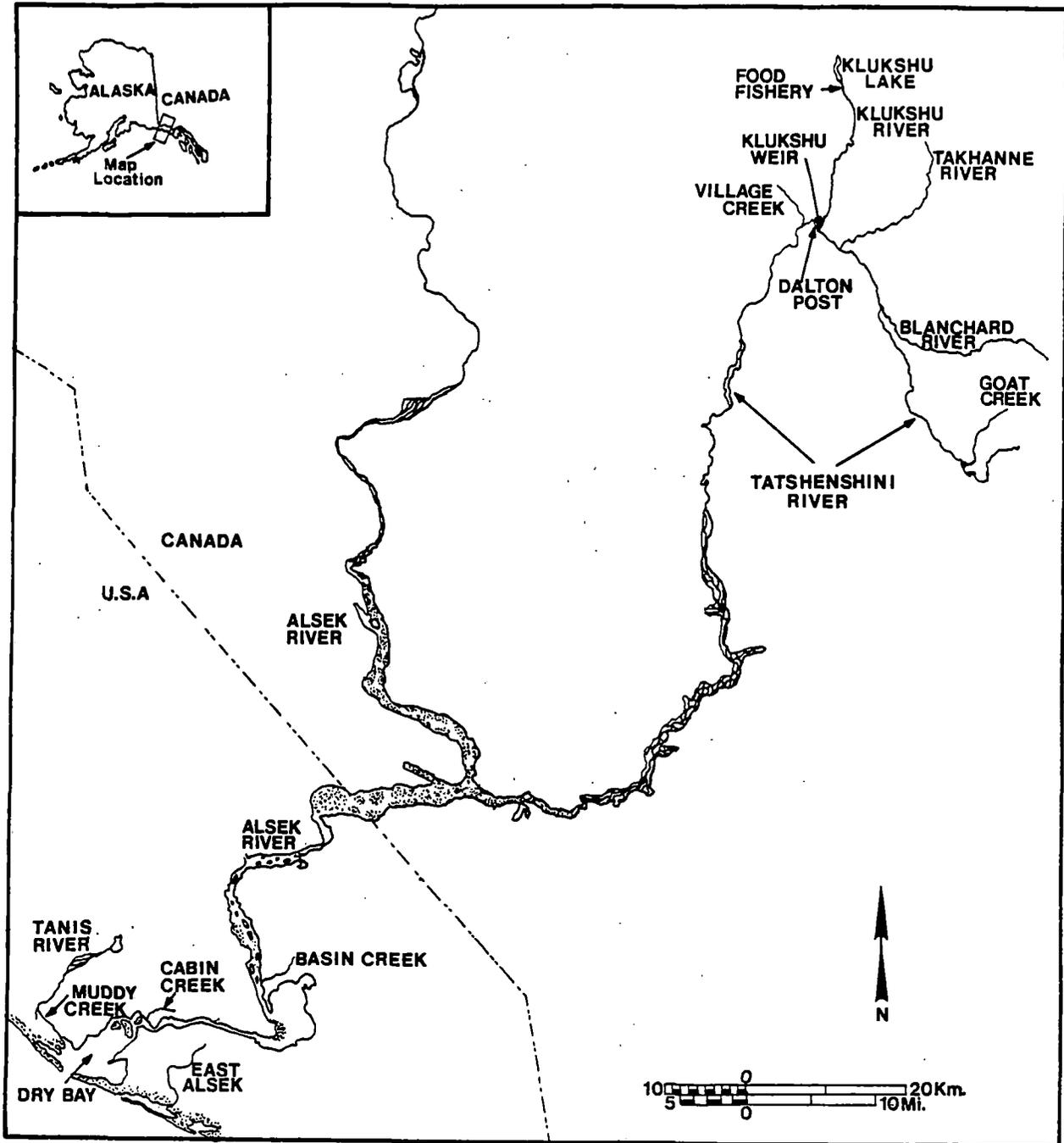


Figure 10. The Alsek River and principal U.S. and Canadian fishing areas.

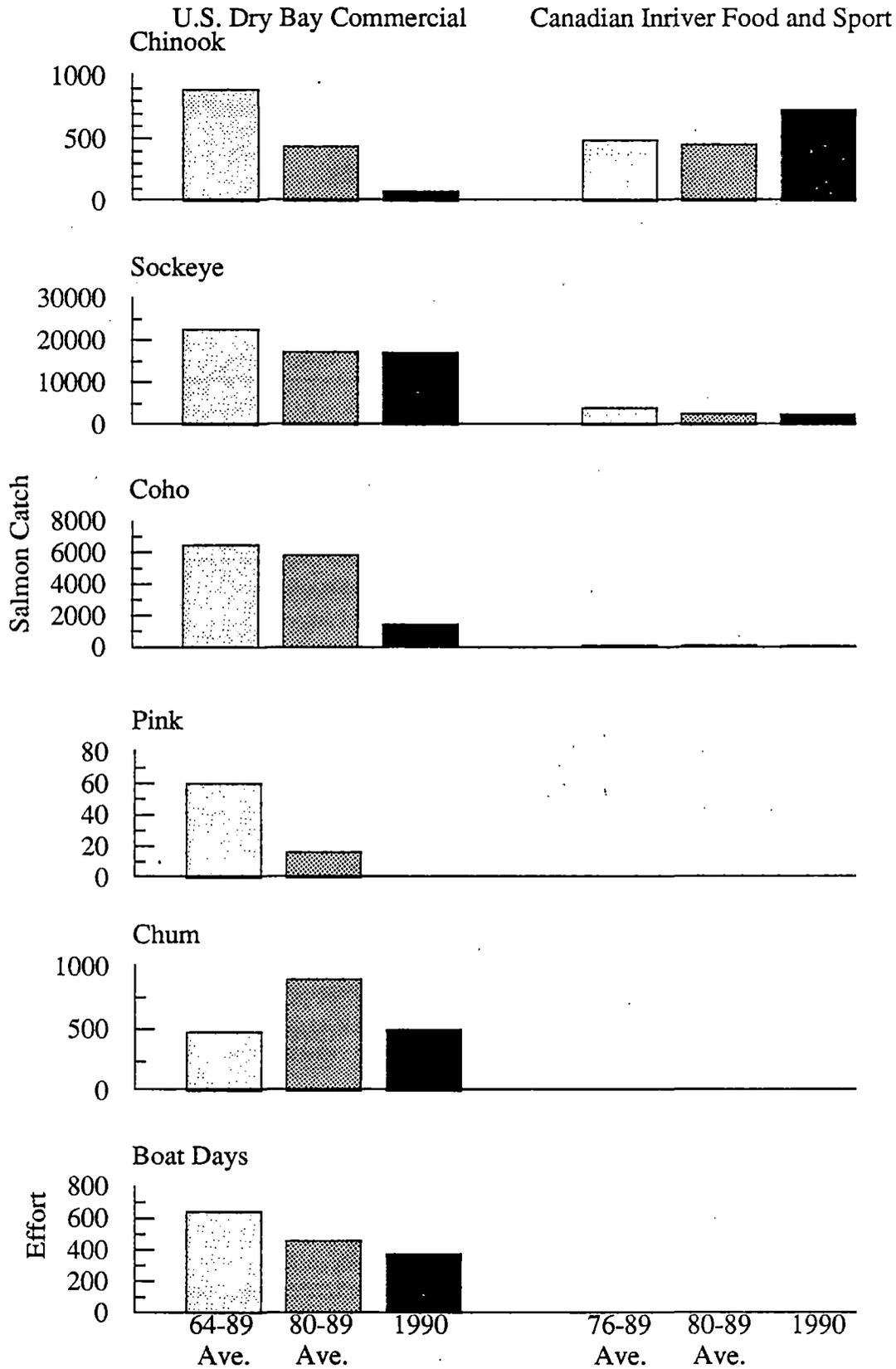


Figure 11. Average catches and fishing efforts compared with 1990 values for the Alaskan Dry Bay commercial fishery and the Canadian combined food and recreational fisheries in the Alsek River.

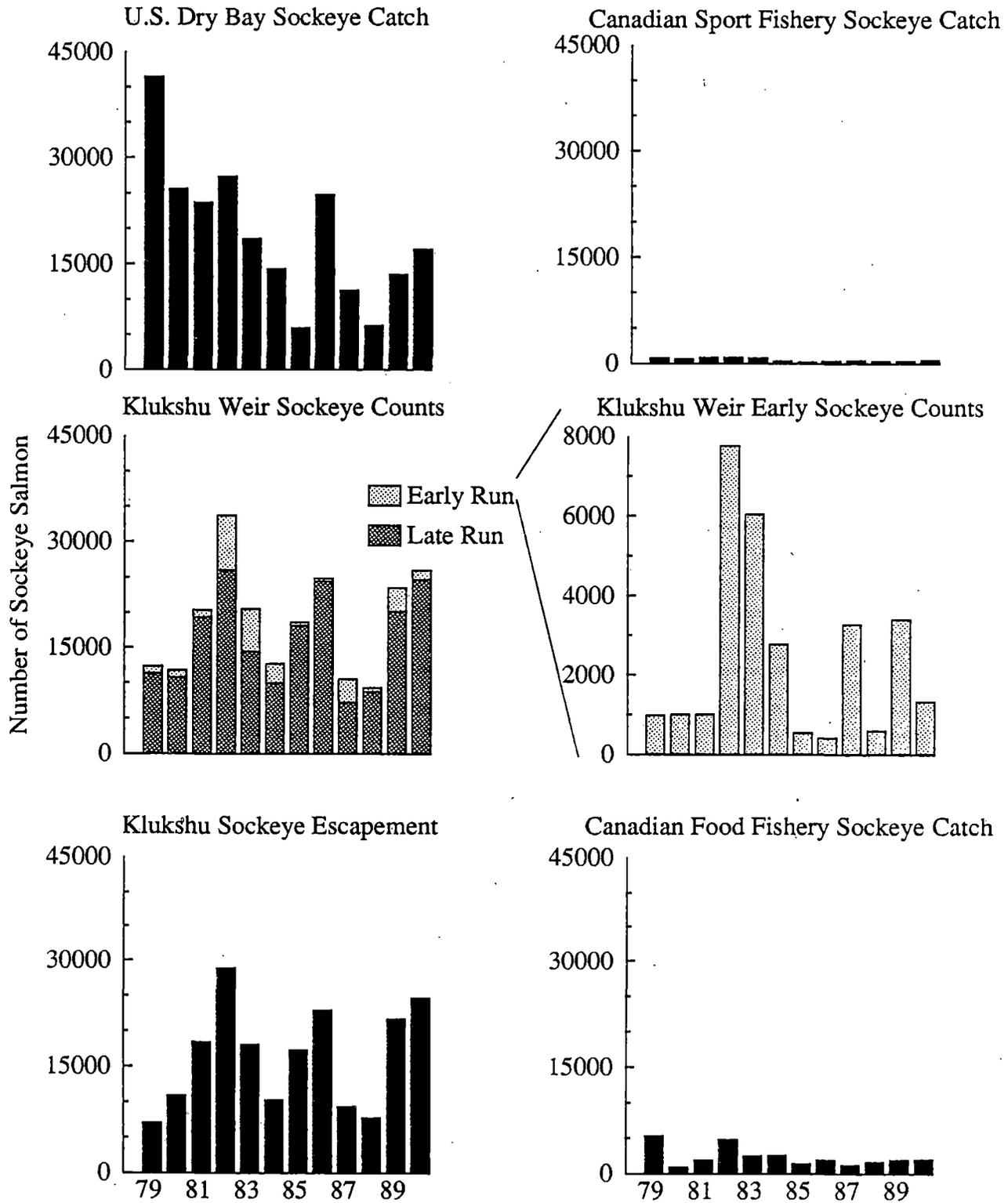


Figure 12. Alesek sockeye catches and weir counts, 1979-1990.

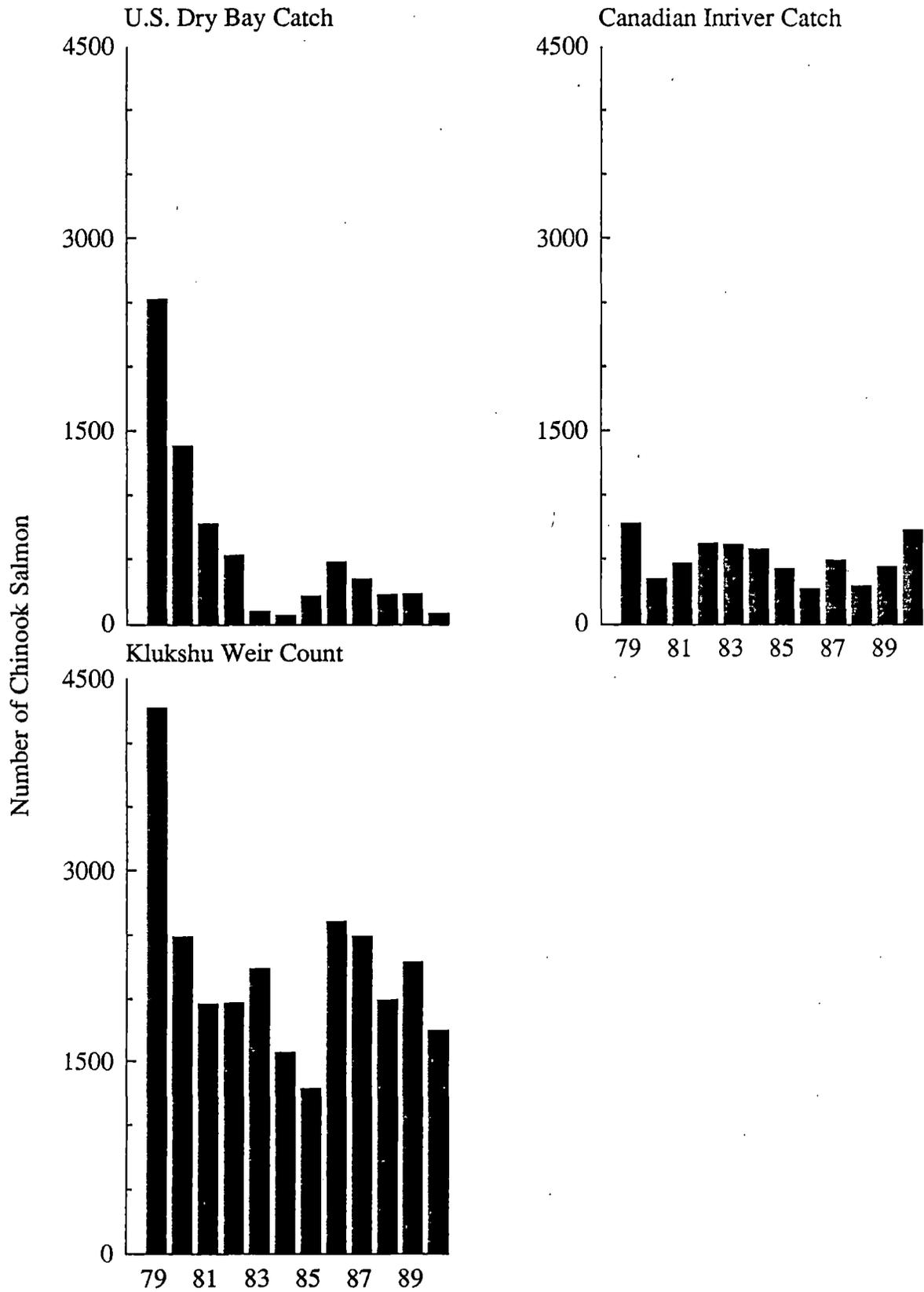


Figure 13. Alesek chinook catches and weir counts, 1979-1990.

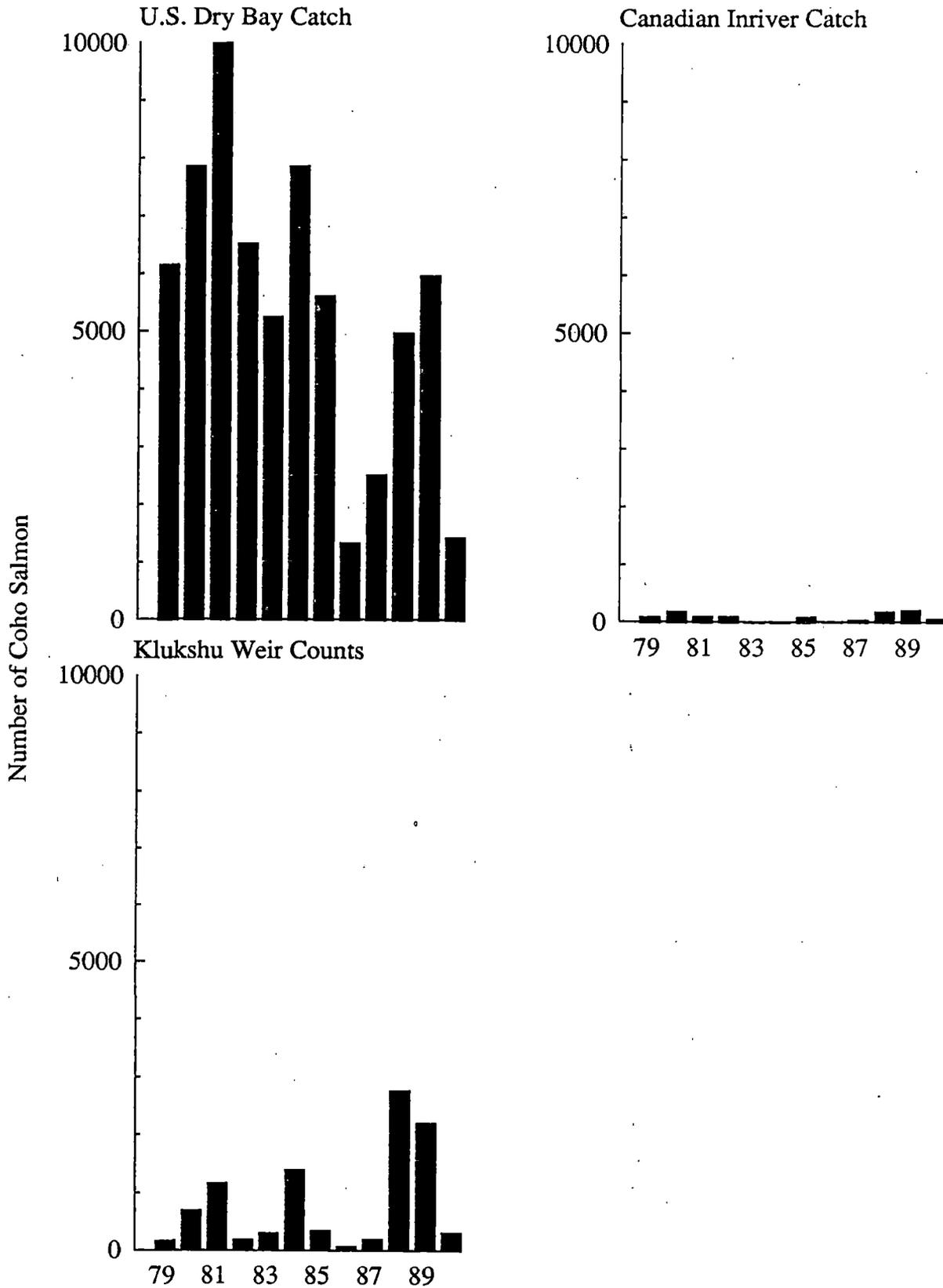


Figure 14. Alsek coho catches and weir counts, 1979-1990. The weir count for coho is incomplete since the weir is dismantled before the entire coho run has passed.

APPENDICES

Appendix A.1. Weekly salmon catch and effort in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) commercial drift gill net fishery, 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|--------------|------------|------------|----------------|---------------|---------------|---------------|------------|-----------|--------------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 17-Jun | 215 | 3,151 | 559 | 317 | 563 | 54 | 2 | 108 |
| 26 | 24-Jun | 122 | 4,567 | 1,550 | 260 | 1,194 | 68 | 2 | 136 |
| 27 | 01-Jul | 92 | 9,691 | 2,134 | 647 | 4,600 | 62 | 2 | 124 |
| 28 | 08-Jul | 80 | 19,262 | 2,906 | 2,147 | 7,732 | 76 | 3 | 228 |
| 29 | 15-Jul | 30 | 18,113 | 3,491 | 3,022 | 5,504 | 78 | 2 | 156 |
| 30 | 22-Jul | 51 | 30,256 | 4,913 | 6,865 | 6,858 | 57 | 3 | 171 |
| 31 | 29-Jul | 26 | 10,197 | 6,580 | 7,251 | 2,837 | 65 | 2 | 130 |
| 32 | 05-Aug | 14 | 4,240 | 6,232 | 9,946 | 1,656 | 47 | 2 | 94 |
| 33 | 12-Aug | 17 | 2,573 | 5,218 | 20,434 | 1,754 | 42 | 2 | 84 |
| 34 | 19-Aug | 22 | 2,072 | 18,342 | 25,975 | 3,101 | 55 | 3 | 165 |
| 35 | 26-Aug | 30 | 696 | 20,002 | 6,392 | 4,424 | 55 | 3 | 165 |
| 36 | 02-Sep | 38 | 99 | 13,745 | 1,243 | 1,359 | 50 | 3 | 150 |
| 37 | 09-Sep | 22 | 5 | 6,592 | 43 | 605 | 26 | 2 | 52 |
| 38 | 16-Sep | 0 | 0 | 1,870 | 1 | 244 | 29 | 2 | 58 |
| 39 | 23-Sep | 0 | 0 | 368 | 0 | 43 | 6 | 1 | 6 |
| Total | | 759 | 104,922 | 94,502 | 84,543 | 42,474 | 770 | 34 | 1,827 |

Appendix A.2. Weekly stock proportions of sockeye salmon harvested in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) commercial drift gill net fishery, 1990. Data based on scale pattern analysis (SPA).

| Week | Stikine | | | | | Total |
|--------------|--------------|--------------|--------------|--------------|--------------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| 25 | 0.516 | 0.411 | 0.018 | 0.055 | 0.073 | |
| 26 | 0.409 | 0.544 | 0.026 | 0.022 | 0.048 | |
| 27 | 0.444 | 0.511 | 0.025 | 0.020 | 0.045 | |
| 28 | 0.536 | 0.430 | 0.012 | 0.022 | 0.034 | |
| 29 | 0.653 | 0.334 | 0.008 | 0.005 | 0.013 | |
| 30 | 0.608 | 0.383 | 0.001 | 0.008 | 0.009 | |
| 31 | 0.625 | 0.336 | 0.000 | 0.039 | 0.039 | |
| 32 | 0.642 | 0.308 | 0.000 | 0.049 | 0.049 | |
| 33 | 0.658 | 0.338 | 0.000 | 0.004 | 0.004 | |
| 34 | 0.581 | 0.403 | 0.000 | 0.016 | 0.016 | |
| 35 | 0.581 | 0.403 | 0.000 | 0.016 | 0.016 | |
| 36 | 0.581 | 0.403 | 0.000 | 0.016 | 0.016 | |
| 37 | 0.581 | 0.403 | 0.000 | 0.016 | 0.016 | |
| Total | 0.579 | 0.395 | 0.008 | 0.018 | 0.026 | |

Appendix A.3. Weekly stock-specific catch of sockeye salmon in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) commercial drift gill net fishery, 1990. Data based on SPA.

| Week | Stikine | | | | | Total |
|--------------|---------------|---------------|------------|--------------|--------------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| 25 | 1,625 | 1,296 | 58 | 172 | 230 | |
| 26 | 1,866 | 2,484 | 117 | 100 | 217 | |
| 27 | 4,303 | 4,951 | 239 | 198 | 437 | |
| 28 | 10,318 | 8,288 | 225 | 431 | 656 | |
| 29 | 11,824 | 6,055 | 142 | 92 | 234 | |
| 30 | 18,403 | 11,581 | 20 | 252 | 272 | |
| 31 | 6,371 | 3,426 | 0 | 400 | 400 | |
| 32 | 2,724 | 1,307 | 0 | 209 | 209 | |
| 33 | 1,692 | 870 | 0 | 11 | 11 | |
| 34 | 1,204 | 835 | 0 | 33 | 33 | |
| 35 | 404 | 280 | 0 | 11 | 11 | |
| 36 | 58 | 40 | 0 | 2 | 2 | |
| 37 | 3 | 2 | 0 | 0 | 0 | |
| Total | 60,795 | 41,415 | 801 | 1,911 | 2,712 | |

Appendix A.4. Weekly salmon catch and effort in the Alaskan Subdistrict 106-30 (Clarence Strait) commercial drift gill net fishery, 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|-------|------------|---------|---------|--------|---------|--------|---------|------|-------------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 17-Jun | 194 | 1,886 | 233 | 109 | 187 | 30 | 2 | 60 |
| 26 | 24-Jun | 40 | 1,727 | 532 | 1,367 | 579 | 42 | 2 | 84 |
| 27 | 01-Jul | 41 | 3,031 | 584 | 1,465 | 1,310 | 32 | 2 | 64 |
| 28 | 08-Jul | 60 | 6,284 | 881 | 1,392 | 1,532 | 37 | 3 | 111 |
| 29 | 15-Jul | 54 | 8,920 | 1,148 | 2,009 | 2,434 | 44 | 2 | 88 |
| 30 | 22-Jul | 403 | 20,625 | 2,924 | 8,110 | 5,781 | 59 | 3 | 177 |
| 31 | 29-Jul | 94 | 16,992 | 6,707 | 15,005 | 3,707 | 78 | 2 | 156 |
| 32 | 05-Aug | 98 | 10,262 | 6,236 | 31,160 | 5,389 | 58 | 2 | 116 |
| 33 | 12-Aug | 29 | 6,785 | 5,797 | 62,896 | 2,171 | 78 | 2 | 156 |
| 34 | 19-Aug | 87 | 2,637 | 6,028 | 57,026 | 1,887 | 63 | 3 | 189 |
| 35 | 26-Aug | 73 | 1,458 | 12,673 | 40,745 | 2,152 | 54 | 3 | 162 |
| 36 | 02-Sep | 50 | 233 | 12,834 | 12,271 | 2,108 | 54 | 3 | 162 |
| 37 | 09-Sep | 99 | 36 | 9,186 | 1,041 | 864 | 37 | 2 | 74 |
| 38 | 16-Sep | 16 | 7 | 3,736 | 47 | 552 | 36 | 2 | 72 |
| 39 | 23-Sep | 10 | 0 | 210 | 0 | 105 | 5 | 1 | 5 |
| Total | | 1,348 | 80,883 | 69,709 | 234,643 | 30,758 | 707 | 34 | 1,676 |

Appendix A.5. Weekly stock proportions of sockeye salmon harvested in the Alaskan Subdistrict 106-30 (Clarence Strait) commercial drift gill net fishery, 1990. Data based on SPA.

| Week | Alaska | Canada | Stikine | | Total | |
|-------|--------|--------|---------|-------------|-------|-------|
| | | | Tahltan | non-Tahltan | | |
| 25 | 0.698 | 0.286 | 0.015 | 0.000 | 0.015 | |
| 26 | 0.642 | 0.280 | 0.008 | 0.071 | 0.079 | |
| 27 | 0.435 | 0.539 | 0.000 | 0.026 | 0.026 | |
| 28 | 0.434 | 0.544 | 0.007 | 0.015 | 0.022 | |
| 29 | 0.583 | 0.414 | 0.003 | 0.000 | 0.003 | |
| 30 | 0.666 | 0.334 | 0.000 | 0.000 | 0.000 | |
| 31 | 0.667 | 0.308 | 0.000 | 0.025 | 0.025 | |
| 32 | 0.724 | 0.254 | 0.000 | 0.022 | 0.022 | |
| 33 | 0.767 | 0.231 | 0.000 | 0.002 | 0.002 | |
| 34 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| 35 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| 36 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| 37 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| 38 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| Total | | 0.645 | 0.340 | 0.001 | 0.013 | 0.015 |

Appendix A.6. Weekly stock-specific catch of sockeye salmon in the Alaskan Subdistrict 106-30 (Clarence Strait) commercial drift gill net fishery, 1990. Data based on SPA.

| Week | Alaska | Canada | Stikine | | Total | |
|-------|--------|--------|---------|-------------|-------|-------|
| | | | Tahltan | non-Tahltan | | |
| 25 | 1,317 | 540 | 29 | 0 | 29 | |
| 26 | 1,108 | 483 | 14 | 122 | 136 | |
| 27 | 1,318 | 1,635 | 0 | 78 | 78 | |
| 28 | 2,726 | 3,419 | 45 | 94 | 139 | |
| 29 | 5,203 | 3,691 | 26 | 0 | 26 | |
| 30 | 13,743 | 6,882 | 0 | 0 | 0 | |
| 31 | 11,335 | 5,226 | 0 | 431 | 431 | |
| 32 | 7,434 | 2,602 | 0 | 226 | 226 | |
| 33 | 5,205 | 1,566 | 0 | 14 | 14 | |
| 34 | 1,689 | 882 | 0 | 66 | 66 | |
| 35 | 934 | 488 | 0 | 37 | 37 | |
| 36 | 149 | 78 | 0 | 6 | 6 | |
| 37 | 23 | 12 | 0 | 1 | 1 | |
| 38 | 4 | 2 | 0 | 0 | 0 | |
| Total | | 52,188 | 27,506 | 114 | 1,075 | 1,189 |

Appendix A.7. Weekly salmon catch in the Alaskan District 106 commercial drift gill net fisheries, 1990. Catches do not include Blind Slough terminal area harvests. Effort may be less than the sum of effort from 106-41 & -42 and 106-30 since some boats fished in more than one subdistrict.

| Week | Start Date | Catch | | | | | Effort | | |
|--------------|------------|--------------|----------------|----------------|----------------|---------------|--------------|-----------|--------------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 17-Jun | 409 | 5,037 | 792 | 426 | 750 | 84 | 2 | 168 |
| 26 | 24-Jun | 162 | 6,294 | 2,082 | 1,627 | 1,773 | 110 | 2 | 220 |
| 27 | 01-Jul | 133 | 12,722 | 2,718 | 2,112 | 5,910 | 94 | 2 | 188 |
| 28 | 08-Jul | 140 | 25,546 | 3,787 | 3,539 | 9,264 | 113 | 3 | 339 |
| 29 | 15-Jul | 84 | 27,033 | 4,639 | 5,031 | 7,938 | 122 | 2 | 244 |
| 30 | 22-Jul | 454 | 50,881 | 7,837 | 14,975 | 12,639 | 116 | 3 | 348 |
| 31 | 29-Jul | 120 | 27,189 | 13,287 | 22,256 | 6,544 | 143 | 2 | 286 |
| 32 | 05-Aug | 112 | 14,502 | 12,468 | 41,106 | 7,045 | 105 | 2 | 210 |
| 33 | 12-Aug | 46 | 9,358 | 11,015 | 83,330 | 3,925 | 120 | 2 | 240 |
| 34 | 19-Aug | 109 | 4,709 | 24,370 | 83,001 | 4,988 | 118 | 3 | 354 |
| 35 | 26-Aug | 103 | 2,154 | 32,675 | 47,137 | 6,576 | 109 | 3 | 327 |
| 36 | 02-Sep | 88 | 332 | 26,579 | 13,514 | 3,467 | 104 | 3 | 312 |
| 37 | 09-Sep | 121 | 41 | 15,778 | 1,084 | 1,469 | 63 | 2 | 126 |
| 38 | 16-Sep | 16 | 7 | 5,606 | 48 | 796 | 65 | 1 | 65 |
| 39 | 23-Sep | 10 | 0 | 578 | 0 | 148 | 11 | 1 | 11 |
| Total | | 2,107 | 185,805 | 164,211 | 319,186 | 73,232 | 1,477 | 33 | 3,438 |

Appendix A.8. Weekly stock proportions of sockeye salmon harvested in the Alaskan District 106 commercial drift gill net fisheries, 1990. Data based on SPA.

| Week | Stikine | | | | | Total |
|--------------|--------------|--------------|--------------|--------------|--------------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| 25 | 0.584 | 0.365 | 0.017 | 0.034 | 0.051 | |
| 26 | 0.473 | 0.471 | 0.021 | 0.035 | 0.056 | |
| 27 | 0.442 | 0.518 | 0.019 | 0.022 | 0.040 | |
| 28 | 0.511 | 0.458 | 0.011 | 0.021 | 0.031 | |
| 29 | 0.630 | 0.361 | 0.006 | 0.003 | 0.010 | |
| 30 | 0.632 | 0.363 | 0.000 | 0.005 | 0.005 | |
| 31 | 0.651 | 0.318 | 0.000 | 0.031 | 0.031 | |
| 32 | 0.700 | 0.270 | 0.000 | 0.030 | 0.030 | |
| 33 | 0.737 | 0.260 | 0.000 | 0.003 | 0.003 | |
| 34 | 0.614 | 0.365 | 0.000 | 0.021 | 0.021 | |
| 35 | 0.621 | 0.357 | 0.000 | 0.022 | 0.022 | |
| 36 | 0.623 | 0.355 | 0.000 | 0.022 | 0.022 | |
| 37 | 0.633 | 0.343 | 0.000 | 0.024 | 0.024 | |
| 38 | 0.640 | 0.334 | 0.000 | 0.025 | 0.025 | |
| Total | 0.608 | 0.371 | 0.005 | 0.016 | 0.021 | |

Appendix A.9. Weekly stock-specific catch of sockeye salmon in the Alaskan District 106 commercial drift gill net fisheries, 1990. Catches do not include Blind Slough terminal area harvests. Data based on SPA.

| Week | Stikine | | | | | Total |
|--------------|----------------|---------------|------------|--------------|--------------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| 25 | 2,942 | 1,836 | 87 | 172 | 259 | |
| 26 | 2,974 | 2,967 | 131 | 222 | 353 | |
| 27 | 5,621 | 6,586 | 239 | 276 | 515 | |
| 28 | 13,044 | 11,707 | 270 | 525 | 795 | |
| 29 | 17,027 | 9,746 | 168 | 92 | 260 | |
| 30 | 32,146 | 18,463 | 20 | 252 | 272 | |
| 31 | 17,706 | 8,652 | 0 | 831 | 831 | |
| 32 | 10,158 | 3,909 | 0 | 435 | 435 | |
| 33 | 6,897 | 2,436 | 0 | 25 | 25 | |
| 34 | 2,893 | 1,717 | 0 | 100 | 100 | |
| 35 | 1,338 | 768 | 0 | 48 | 48 | |
| 36 | 207 | 118 | 0 | 7 | 7 | |
| 37 | 26 | 14 | 0 | 1 | 1 | |
| 38 | 4 | 2 | 0 | 0 | 0 | |
| Total | 112,983 | 68,921 | 915 | 2,986 | 3,901 | |

Appendix A.10. Weekly salmon catch and effort in the Alaskan District 108 commercial drift gill net fishery, 1990. Catches do not include Ohmer Creek terminal area harvests.

| Week | Start Date | Catch | | | | | Effort | | |
|--------------|------------|------------|---------------|--------------|---------------|--------------|------------|-----------|-------------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 17-Jun | 373 | 369 | 4 | 1 | 26 | 14 | 2 | 28 |
| 26 | 24-Jun | 38 | 467 | 4 | 0 | 106 | 7 | 2 | 14 |
| 27 | 01-Jul | 34 | 1,573 | 49 | 25 | 619 | 20 | 2 | 40 |
| 28 | 08-Jul | 31 | 2,823 | 220 | 387 | 1,440 | 20 | 3 | 60 |
| 29 | 15-Jul | 15 | 2,068 | 41 | 687 | 2,353 | 14 | 2 | 28 |
| 30 | 22-Jul | 20 | 2,816 | 73 | 6,115 | 2,915 | 12 | 3 | 36 |
| 31 | 29-Jul | 6 | 906 | 216 | 2,029 | 741 | 6 | 2 | 12 |
| 32 | 05-Aug | 21 | 306 | 593 | 2,117 | 533 | 7 | 2 | 14 |
| 33 | 12-Aug | 0 | 172 | 293 | 1,402 | 116 | a/ | a/ | a/ |
| 34 | 19-Aug | 0 | 15 | 278 | 576 | 40 | a/ | a/ | a/ |
| 35 | 26-Aug | 7 | 39 | 1,692 | 374 | 109 | 8 | 3 | 24 |
| 36 | 02-Sep | 3 | 18 | 2,576 | 67 | 164 | 11 | 3 | 33 |
| 37 | 09-Sep | 6 | 2 | 1,258 | 36 | 74 | 10 | 2 | 20 |
| 38 | 16-Sep | 1 | 0 | 579 | 6 | 63 | 12 | 2 | 24 |
| 39 | 23-Sep | 2 | 0 | 342 | 0 | 83 | 8 | 1 | 8 |
| Total | | 557 | 11,574 | 8,218 | 13,822 | 9,382 | 157 | 34 | 359 |

a/ Effort not recorded by week, effort for these weeks is included in the total.

Appendix A.11. Weekly stock proportions and stock-specific catch of sockeye salmon in the Alaskan District 108 commercial drift gill net fishery, 1990. Catches do not include Ohmer Creek terminal area harvests. Data based on SPA.

| Week | Alaska | Canada | Stikine | | Total |
|--------------------|--------------|--------------|--------------|--------------|--------------|
| | | | Tahltan | non-Tahltan | |
| Proportions | | | | | |
| 25 | 0.502 | 0.370 | 0.050 | 0.078 | 0.128 |
| 26 | 0.502 | 0.370 | 0.050 | 0.078 | 0.128 |
| 27 | 0.343 | 0.201 | 0.178 | 0.278 | 0.456 |
| 28 | 0.540 | 0.121 | 0.085 | 0.254 | 0.339 |
| 29 | 0.415 | 0.205 | 0.025 | 0.355 | 0.381 |
| 30 | 0.272 | 0.007 | 0.004 | 0.717 | 0.721 |
| 31 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 32 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 33 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 34 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 35 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 36 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| 37 | 0.320 | 0.049 | 0.448 | 0.183 | 0.631 |
| Total | 0.395 | 0.128 | 0.111 | 0.366 | 0.477 |
| Catch | | | | | |
| 25 | 185 | 136 | 19 | 29 | 47 |
| 26 | 235 | 173 | 23 | 36 | 60 |
| 27 | 540 | 316 | 280 | 437 | 717 |
| 28 | 1,524 | 341 | 241 | 717 | 958 |
| 29 | 858 | 423 | 52 | 735 | 787 |
| 30 | 767 | 19 | 12 | 2,018 | 2,030 |
| 31 | 290 | 44 | 406 | 166 | 572 |
| 32 | 98 | 15 | 137 | 56 | 193 |
| 33 | 55 | 8 | 77 | 31 | 109 |
| 34 | 5 | 1 | 7 | 3 | 9 |
| 35 | 12 | 2 | 17 | 7 | 25 |
| 36 | 6 | 1 | 8 | 3 | 11 |
| 37 | 1 | 0 | 1 | 0 | 1 |
| Total | 4,576 | 1,479 | 1,280 | 4,239 | 5,519 |

Appendix A.12. Weekly salmon catch and effort in the Alaskan Subdistrict 106-41 test fishery, 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|-------|------------|---------|---------|------|------|------|--------|-------|-----------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Boats | Hours | Boat Days |
| 25 | 17-Jun | 5 | 285 | 54 | 3 | 54 | 1 | 1.00 | 1.00 |
| 26 | 24-Jun | 3 | 268 | 66 | 3 | 89 | 1 | 1.00 | 1.00 |
| 27 | 01-Jul | 1 | 420 | 40 | 16 | 101 | 1 | 1.00 | 1.00 |
| 28 | 08-Jul | 3 | 210 | 37 | 25 | 80 | 1 | 1.00 | 1.00 |
| 29 | 15-Jul | 1 | 609 | 45 | 84 | 67 | 1 | 1.00 | 1.00 |
| 30 | 22-Jul | 0 | 249 | 105 | 100 | 87 | 1 | 1.00 | 1.00 |
| 31 | 29-Jul | 0 | 215 | 85 | 141 | 74 | 1 | 1.00 | 1.00 |
| Total | | 13 | 2256 | 432 | 372 | 552 | 7 | 7 | 7 |

Appendix A.13. Weekly salmon catch and effort in the Alaskan District 108 test fishery, 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|-------|------------|---------|---------|------|------|------|--------|-------|-----------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Boats | Hours | Boat Days |
| 25 | 17-Jun | 7 | 52 | 0 | 2 | 5 | 1 | 1 | 0.04 |
| 26 | 24-Jun | 8 | 124 | 0 | 3 | 56 | 1 | 1 | 0.04 |
| 27 | 01-Jul | 3 | 159 | 0 | 9 | 26 | 1 | 1 | 0.04 |
| 28 | 08-Jul | 0 | 153 | 0 | 53 | 163 | 1 | 1 | 0.04 |
| 29 | 15-Jul | 1 | 167 | 2 | 274 | 238 | 1 | 1 | 0.04 |
| 30 | 22-Jul | 0 | 147 | 5 | 446 | 108 | 1 | 1 | 0.04 |
| 31 | 29-Jul | 0 | 64 | 38 | 155 | 47 | 1 | 1 | 0.04 |
| Total | | 19 | 866 | 45 | 942 | 643 | 7 | 7.00 | 0.29 |

Appendix A.14. Stock compositions and stock-specific catch of sockeye salmon in the Alaskan District 106 and 108 test fisheries, 1990. Stock compositions from weekly commercial fishery catches were applied to weekly test fishery catches. Data based on SPA.

| District | Stikine | | | | |
|--------------------|---------|--------|---------|-------------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | Total |
| Proportions | | | | | |
| Subdistrict 106-41 | 0.548 | 0.416 | 0.014 | 0.022 | 0.035 |
| District 108 | 0.417 | 0.172 | 0.094 | 0.318 | 0.411 |
| Catches | | | | | |
| Subdistrict 106-41 | 1,237 | 939 | 31 | 49 | 80 |
| District 108 | 361 | 149 | 81 | 275 | 356 |
| Total | 1,598 | 1,088 | 112 | 324 | 436 |

Appendix A.15. Weekly salmon and steelhead trout catch and effort in the Canadian commercial fishery in the lower Stikine River, 1990.

| Week | Start Date | Catch | | | | | | Effort | | | |
|--------------|------------|------------|--------------|---------------|--------------|------------|------------|------------|----------|-----------|--------------|
| | | Chinook | | Sockeye | Coho | Pink | Chum | Steel-head | Licenses | Days | Boat Days |
| | | Jacks | Large | | | | | | | | |
| 26 | 24-Jun | 400 | 715 | 285 | 0 | 0 | 1 | 1 | 11.00 | 2.0 | 22.0 |
| 27 | 01-Jul | 150 | 477 | 1,338 | 0 | 0 | 9 | 0 | 13.50 | 2.0 | 27.0 |
| 28 | 08-Jul | 76 | 193 | 2,357 | 2 | 0 | 18 | 0 | 15.00 | 2.0 | 30.0 |
| 29 | 15-Jul | 45 | 139 | 4,863 | 1 | 17 | 120 | 8 | 14.70 | 3.0 | 44.1 |
| 30 | 22-Jul | 4 | 22 | 1,221 | 1 | 16 | 28 | 1 | 15.00 | 1.0 | 15.0 |
| 31 | 29-Jul | 2 | 12 | 870 | 1 | 50 | 43 | 3 | 14.00 | 1.0 | 14.0 |
| 32 | 05-Aug | 3 | 10 | 2,501 | 36 | 278 | 140 | 26 | 15.33 | 3.0 | 46.0 |
| 33 | 12-Aug | 0 | 0 | 323 | 40 | 30 | 21 | 1 | 10.00 | 2.0 | 20.0 |
| 34 | 19-Aug | 0 | 1 | 260 | 283 | 36 | 19 | 10 | 10.50 | 2.0 | 21.0 |
| 35 | 26-Aug | 0 | 0 | 328 | 706 | 42 | 65 | 51 | 12.50 | 2.0 | 25.0 |
| 36 | 02-Sep | 0 | 0 | 139 | 1,536 | 24 | 27 | 45 | 12.00 | 3.0 | 36.0 |
| 37 | 09-Sep | 0 | 0 | 43 | 1,053 | 3 | 8 | 33 | 5.00 | 4.0 | 20.0 |
| 38 | 16-Sep | 0 | 0 | 2 | 361 | 0 | 0 | 9 | 4.00 | 2.0 | 8.0 |
| Total | | 680 | 1,569 | 14,530 | 4,020 | 496 | 499 | 188 | | 29 | 328.1 |

Appendix A.16. Weekly sockeye salmon stock proportions and catch by stock in the Canadian commercial fishery in the lower Stikine River, 1990. Data based on egg diameter analysis.

| Week | Proportion Tahltan | Catch | | | | CPUE | | Total |
|--------------|--------------------|--------------|--------------|----------------|----------------|----------------|-------------|-------|
| | | Tahltan | non-Tahltan | Tahltan | non-Tahltan | Tahltan | non-Tahltan | |
| | | | | | | | | |
| 26 | 0.698 | 199 | 86 | 9.045 | 3.909 | 12.955 | | |
| 27 | 0.786 | 1,051 | 287 | 38.926 | 10.630 | 49.556 | | |
| 28 | 0.666 | 1,570 | 787 | 52.333 | 26.233 | 78.567 | | |
| 29 | 0.351 | 1,708 | 3,155 | 38.730 | 71.542 | 110.272 | | |
| 30 | 0.242 | 295 | 926 | 19.667 | 61.733 | 81.400 | | |
| 31 | 0.082 | 71 | 799 | 5.071 | 57.071 | 62.143 | | |
| 32 | 0.037 | 92 | 2,409 | 2.000 | 52.381 | 54.381 | | |
| 33 | 0.037 | 12 | 311 | 0.600 | 15.550 | 16.150 | | |
| 34 | 0.027 | 7 | 253 | 0.333 | 12.048 | 12.381 | | |
| 35 | 0.047 | 15 | 313 | 0.615 | 12.505 | 13.120 | | |
| 36 | 0.047 | 7 | 132 | 0.181 | 3.680 | 3.861 | | |
| 37 | 0.047 | 2 | 41 | 0.101 | 2.049 | 2.150 | | |
| 38 | 0.047 | 0 | 2 | 0.012 | 0.238 | 0.250 | | |
| Total | Proportion | 5,029 | 9,501 | 167.615 | 329.570 | 497.185 | | |
| | | 0.346 | 0.654 | | | | | |

Appendix A.17. Weekly salmon and steelhead trout catch and effort in the Canadian commercial fishery in the upper Stikine River, 1990. It is assumed that 90% of the sockeye catch is of Tahltan origin.

| Week | Start Date | Catch | | | | | | Effort | | | |
|--------------|------------|-----------|-----------|------------|----------|----------|----------|------------|-----------|----------|-----------|
| | | Chinook | | Sockeye | Coho | Pink | Chum | Steel-head | Licenses | Days | Boat Days |
| | | Jacks | Large | | | | | | | | |
| 26 | 24-Jun | 2 | 12 | 0 | 0 | 0 | 0 | 0 | 1.0 | 1.0 | 1.0 |
| 27 | 01-Jul | 4 | 11 | 0 | 0 | 0 | 0 | 0 | 2.0 | 1.0 | 2.0 |
| 28 | 08-Jul | 7 | 13 | 12 | 0 | 0 | 0 | 0 | 2.0 | 1.0 | 2.0 |
| 29 | 15-Jul | 4 | 2 | 154 | 0 | 0 | 0 | 0 | 2.0 | 1.0 | 2.0 |
| 30 | 22-Jul | 2 | 6 | 178 | 0 | 0 | 0 | 0 | 4.0 | 1.0 | 4.0 |
| 31 | 29-Jul | 0 | 4 | 84 | 0 | 0 | 0 | 0 | 2.0 | 1.0 | 2.0 |
| 32 | 05-Aug | 1 | 0 | 44 | 0 | 0 | 0 | 0 | 2.0 | 1.0 | 2.0 |
| Total | | 20 | 48 | 472 | 0 | 0 | 0 | 0 | 15 | 7 | 15 |

Appendix A.18. Weekly salmon and steelhead trout catch and effort in the Canadian Indian food fishery located at Telegraph Creek, on the Stikine River, 1990. It is assumed that 90% of the sockeye catch is of Tahltan origin.

| Week | Start Date | Catch | | | | | | Effort | | | |
|-------|------------|------------------|-------|---------|------|------|------|----------------|----------|------|--------------|
| | | Chinook Jacks | Large | Sockeye | Coho | Pink | Chum | Steel- head | Licenses | Days | Boat Days |
| 24 | 10-Jun | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1.0 | 4 | 4.0 |
| 25 | 17-Jun | 3 | 49 | 1 | 0 | 0 | 0 | 0 | 2.0 | 6 | 12.0 |
| 26 | 24-Jun | 52 | 90 | 8 | 0 | 0 | 0 | 0 | 2.3 | 7 | 16.1 |
| 27 | 01-Jul | 79 | 167 | 13 | 0 | 0 | 0 | 0 | 3.6 | 7 | 25.2 |
| 28 | 08-Jul | 75 | 137 | 414 | 0 | 0 | 0 | 0 | 6.9 | 7 | 48.3 |
| 29 | 15-Jul | 32 | 75 | 1,390 | 0 | 0 | 0 | 0 | 13.1 | 7 | 91.7 |
| 30 | 22-Jul | 12 | 74 | 622 | 0 | 0 | 0 | 0 | 8.9 | 7 | 62.3 |
| 31 | 29-Jul | 6 | 25 | 413 | 5 | 0 | 0 | 0 | 6.4 | 7 | 44.8 |
| 32 | 05-Aug | 0 | 6 | 110 | 1 | 0 | 0 | 0 | 2.3 | 7 | 16.1 |
| 33 | 12-Aug | 0 | 3 | 36 | 3 | 0 | 0 | 1 | 0.4 | 4 | 1.6 |
| 34 | 19-Aug | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0 | 0 |
| 35 | 26-Aug | 0 | 0 | 14 | 6 | 0 | 0 | 6 | 0.6 | 5 | 3.0 |
| 36 | 02-Sep | 0 | 0 | 1 | 2 | 0 | 0 | 4 | 0.4 | 3 | 1.2 |
| Total | | 259 | 633 | 3,022 | 17 | 0 | 0 | 11 | 47.9 | 71 | 326.3 |

Appendix A.19. Weekly salmon and steelhead trout catch and effort in the Canadian test fishery in the Stikine River, 1990.

| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Steel- head | # Drifts/ Set Hours |
|----------------|------------|---------|---------|------|------|------|----------------|------------------------|
| Drift gill net | | | | | | | | |
| 25 | 17-Jun | 49 | 2 | 0 | 0 | 0 | 0 | 60 |
| 26 | 24-Jun | 61 | 19 | 0 | 0 | 4 | 0 | 50 |
| 27 | 01-Jul | 39 | 64 | 0 | 0 | 0 | 0 | 50 |
| 28 | 08-Jul | 16 | 109 | 0 | 0 | 2 | 0 | 50 |
| 29 | 15-Jul | 1 | 68 | 1 | 0 | 2 | 0 | 40 |
| 30 | 22-Jul | 1 | 106 | 0 | 0 | 4 | 0 | 60 |
| 31 | 29-Jul | 0 | 54 | 1 | 0 | 0 | 1 | 60 |
| 32 | 05-Aug | 0 | 16 | 0 | 0 | 2 | 0 | 23 |
| 33 | 12-Aug | | | | | | | 0 |
| 34 | 19-Aug | 0 | 9 | 19 | 3 | 12 | 1 | 50 |
| 35 | 26-Aug | 0 | 0 | 34 | 1 | 3 | 1 | 50 |
| 36 | 02-Sep | 0 | 0 | 36 | 1 | 0 | 1 | 40 |
| 37 | 09-Sep | 0 | 0 | 17 | 0 | 0 | 0 | 20 |
| 38 | 16-Sep | 0 | 0 | 18 | 0 | 0 | 1 | 50 |
| 39 | 23-Sep | 0 | 0 | 8 | 0 | 0 | 1 | 70 |
| Total | | 167 | 447 | 134 | 5 | 29 | 6 | 673 |
| Set gill net | | | | | | | | |
| 25 | 17-Jun | 23 | 14 | 0 | 0 | 0 | 0 | 168 |
| 26 | 24-Jun | 28 | 184 | 0 | 0 | 1 | 0 | 120 |
| 27 | 01-Jul | 8 | 260 | 0 | 0 | 1 | 0 | 120 |
| 28 | 08-Jul | 5 | 264 | 0 | 0 | 8 | 1 | 120 |
| 29 | 15-Jul | 0 | 163 | 0 | 0 | 2 | 0 | 96 |
| 30 | 22-Jul | 0 | 308 | 0 | 1 | 9 | 0 | 144 |
| 31 | 29-Jul | 0 | 218 | 6 | 0 | 4 | 2 | 144 |
| 32 | 05-Aug | 0 | 43 | 3 | 4 | 4 | 0 | 36 |
| 33 | 12-Aug | | | | | | | 0 |
| 34 | 19-Aug | 0 | 32 | 112 | 29 | 8 | 10 | 120 |
| 35 | 26-Aug | 0 | 7 | 132 | 3 | 11 | 5 | 120 |
| 36 | 02-Sep | 0 | 0 | 18 | 5 | 0 | 0 | 24 |
| Total | | 64 | 1,493 | 271 | 42 | 48 | 18 | 1,212 |

a/ The test fishery was not conducted during week 33.

Appendix A.20. Weekly sockeye salmon stock proportions in the Stikine River test fishery, 1990. Data based on egg diameter analysis.

| Week | Sample Size | Tahltan | non-Tahltan |
|------|-------------|---------|-------------|
| 25 | 12 | 0.563 | 0.437 |
| 26 | 96 | 0.906 | 0.094 |
| 27 | 151 | 0.821 | 0.179 |
| 28 | 175 | 0.625 | 0.375 |
| 29 | 106 | 0.407 | 0.593 |
| 30 | 217 | 0.143 | 0.857 |
| 31 | 144 | 0.103 | 0.897 |
| 32 | 31 | 0.119 | 0.881 |
| 33a | 0 | 0.080 | 0.920 |
| 34 | 27 | 0.024 | 0.976 |
| 35 | 1 | 0.000 | 1.000 |
| 960 | | | |

a/ Data for week 33 is interpolated from weeks 32 and 34.

Appendix A.21. Weekly catch, CPUE, and migratory timing of Tahltan and non-Tahltan sockeye stocks in the Stikine River test fishery, 1990. Data based on egg diameter analysis. Data for week 33 interpolated from 32 and 34.

| Week | Catch | | CPUE | | | Migratory Timing | | |
|-----------------------|---------|-------------|-------------------|-------------|--------|------------------|-------------|-------|
| | Tahltan | non-Tahltan | Tahltan | non-Tahltan | Total | Tahltan | non-Tahltan | |
| Drift gill net | | | | | | | | |
| 25 | 1 | 1 | 0.019 | 0.015 | 0.033 | 0.002 | 0.002 | |
| 26 | 17 | 2 | 0.344 | 0.036 | 0.380 | 0.037 | 0.004 | |
| 27 | 53 | 11 | 1.051 | 0.229 | 1.280 | 0.112 | 0.024 | |
| 28 | 68 | 41 | 1.363 | 0.818 | 2.180 | 0.145 | 0.087 | |
| 29 | 28 | 40 | 0.692 | 1.008 | 1.700 | 0.073 | 0.107 | |
| 30 | 15 | 91 | 0.253 | 1.514 | 1.767 | 0.027 | 0.161 | |
| 31 | 6 | 48 | 0.093 | 0.807 | 0.900 | 0.010 | 0.086 | |
| 32 | 2 | 14 | 0.083 | 0.613 | 0.696 | 0.009 | 0.065 | |
| 33a | 0 | 0 | 0.009 | 0.290 | 0.299 | 0.003 | 0.029 | |
| 34 | 0 | 9 | 0.004 | 0.176 | 0.180 | 0.000 | 0.019 | |
| Total | | | | | | | | |
| | 190 | 257 | 3.910 | 5.505 | 9.415 | | | |
| Proportion | 0.424 | 0.576 | Proportion of run | | | | 0.417 | 0.583 |
| Set gill net | | | | | | | | |
| 25 | 8 | 6 | 0.047 | 0.036 | 0.083 | 0.003 | 0.003 | |
| 26 | 167 | 17 | 1.389 | 0.144 | 1.533 | 0.101 | 0.011 | |
| 27 | 213 | 47 | 1.779 | 0.388 | 2.167 | 0.130 | 0.028 | |
| 28 | 165 | 99 | 1.375 | 0.825 | 2.200 | 0.100 | 0.060 | |
| 29 | 66 | 97 | 0.691 | 1.007 | 1.698 | 0.050 | 0.073 | |
| 30 | 44 | 264 | 0.306 | 1.833 | 2.139 | 0.022 | 0.134 | |
| 31 | 22 | 196 | 0.156 | 1.358 | 1.514 | 0.011 | 0.099 | |
| 32 | 5 | 38 | 0.142 | 1.052 | 1.194 | 0.010 | 0.077 | |
| 33a/ | 0 | 0 | 0.025 | 0.823 | 0.849 | 0.005 | 0.057 | |
| 34 | 1 | 31 | 0.006 | 0.260 | 0.267 | 0.000 | 0.019 | |
| 35 | 0 | 7 | 0.000 | 0.058 | 0.058 | 0.000 | 0.004 | |
| Total | | | | | | | | |
| | 692 | 801 | 5.916 | 7.785 | 13.702 | 0.435 | 0.565 | |
| Proportion | 0.463 | 0.537 | | | | | | |

a/ CPUEs for week 33 were calculated from the regression of the commercial CPUE vs the drift or set test CPUE for weeks 26-32,34,35, stock composition is from the commercial catch.

Appendix A.22. Daily counts of adult sockeye salmon passing through Tahltan weir, 1990. The weir was installed on July 6, but no fish passed through prior to July 15.

| Date | Count | Cumulative | | Date | Count | Cumulative | |
|----------------|-------|------------|---------|--------|-------|------------|---------|
| | | Count | Percent | | | Count | Percent |
| 15-Jul | 1 | 1 | 0.0 | 09-Aug | 114 | 14,373 | 96.3 |
| 16-Jul | 0 | 1 | 0.0 | 10-Aug | 14 | 14,387 | 96.4 |
| 17-Jul | 0 | 1 | 0.0 | 11-Aug | 24 | 14,411 | 96.5 |
| 18-Jul | 0 | 1 | 0.0 | 12-Aug | 2 | 14,413 | 96.6 |
| 19-Jul | 0 | 1 | 0.0 | 13-Aug | 51 | 14,464 | 96.9 |
| 20-Jul | 1 | 2 | 0.0 | 14-Aug | 34 | 14,498 | 97.1 |
| 21-Jul | 27 | 29 | 0.2 | 15-Aug | 2 | 14,500 | 97.1 |
| 22-Jul | 829 | 858 | 5.7 | 16-Aug | 41 | 14,541 | 97.4 |
| 23-Jul | 3076 | 3,934 | 26.4 | 17-Aug | 28 | 14,569 | 97.6 |
| 24-Jul | 1723 | 5,657 | 37.9 | 18-Aug | 7 | 14,576 | 97.6 |
| 25-Jul | 1743 | 7,400 | 49.6 | 19-Aug | 7 | 14,583 | 97.7 |
| 26-Jul | 1673 | 9,073 | 60.8 | 20-Aug | 5 | 14,588 | 97.7 |
| 27-Jul | 792 | 9,865 | 66.1 | 21-Aug | 1 | 14,589 | 97.7 |
| 28-Jul | 1074 | 10,939 | 73.3 | 22-Aug | 0 | 14,589 | 97.7 |
| 29-Jul | 763 | 11,702 | 78.4 | 23-Aug | 91 | 14,680 | 98.3 |
| 30-Jul | 670 | 12,372 | 82.9 | 24-Aug | 201 | 14,881 | 99.7 |
| 31-Jul | 401 | 12,773 | 85.6 | 25-Aug | 38 | 14,919 | 99.9 |
| 01-Aug | 322 | 13,095 | 87.7 | 26-Aug | 1 | 14,920 | 100.0 |
| 02-Aug | 286 | 13,381 | 89.6 | 27-Aug | 4 | 14,924 | 100.0 |
| 03-Aug | 188 | 13,569 | 90.9 | 28-Aug | 3 | 14,927 | 100.0 |
| 04-Aug | 20 | 13,589 | 91.0 | 29-Aug | 0 | 14,927 | 100.0 |
| 05-Aug | 20 | 13,609 | 91.2 | 30-Aug | 0 | 14,927 | 100.0 |
| 06-Aug | 80 | 13,689 | 91.7 | 31-Aug | 0 | 14,927 | 100.0 |
| 07-Aug | 194 | 13,883 | 93.0 | 01-Sep | 0 | 14,927 | 100.0 |
| 08-Aug | 376 | 14,259 | 95.5 | | | | |
| Total Counted | | | | | | 14927 | |
| Adjustments | | | | | | -3302 a/ | |
| Total Spawners | | | | | | 11625 | |

a/ A total of 1615 females and 1687 males were taken for broodstock.

Appendix A.23. Daily counts of sockeye salmon smolt migrating through Tahltan Lake smolt weir, 1990.

| Date | Count | Cumulative | | Date | Count | Cumulative | |
|--------|---------|------------|---------|----------|--------|------------|---------|
| | | Count | Percent | | | Count | Percent |
| 05-May | weir in | | | 26-May | 542 | 295,383 | 48.6 |
| 06-May | 0 | 0 | 0.0 | 27-May | 1,778 | 297,161 | 48.9 |
| 07-May | 0 | 0 | 0.0 | 28-May | 4,816 | 301,977 | 49.7 |
| 08-May | 0 | 0 | 0.0 | 29-May | 6,226 | 308,203 | 50.7 |
| 09-May | 0 | 0 | 0.0 | 30-May | 13,815 | 322,018 | 53.0 |
| 10-May | 0 | 0 | 0.0 | 31-May | 6,777 | 328,795 | 54.1 |
| 11-May | 0 | 0 | 0.0 | 01-Jun | 11529 | 340,324 | 56.0 |
| 12-May | 0 | 0 | 0.0 | 02-Jun | 196252 | 536,576 | 88.3 |
| 13-May | 0 | 0 | 0.0 | 03-Jun | 935 | 537,511 | 88.5 |
| 14-May | 0 | 0 | 0.0 | 04-Jun | 1,001 | 538,512 | 88.6 |
| 15-May | 153 | 153 | 0.0 | 05-Jun | 12,831 | 551,343 | 90.7 |
| 16-May | 1,113 | 1,266 | 0.2 | 06-Jun | 1,158 | 552,501 | 90.9 |
| 17-May | 63,184 | 64,450 | 10.6 | 07-Jun | 4,169 | 556,670 | 91.6 |
| 18-May | 5,311 | 69,761 | 11.5 | 08-Jun | 7,396 | 564,066 | 92.8 |
| 19-May | 9,671 | 79,432 | 13.1 | 09-Jun | 3,567 | 567,633 | 93.4 |
| 20-May | 39,799 | 119,231 | 19.6 | 10-Jun | 2,022 | 569,655 | 93.7 |
| 21-May | 5,267 | 124,498 | 20.5 | 11-Jun | 294 | 569,949 | 93.8 |
| 22-May | 3,877 | 128,375 | 21.1 | 12-Jun | 91 | 570,040 | 93.8 |
| 23-May | 4,326 | 132,701 | 21.8 | 13-Jun | 23,710 | 593,750 | 97.7 |
| 24-May | 151,907 | 284,608 | 46.8 | 14-Jun | 1,397 | 595,147 | 97.9 |
| 25-May | 10,233 | 294,841 | 48.5 | Total a/ | | 607,645 | 100.0 |

a/ Based on historical migratory timing, 97.9% of the smolt outmigration has occurred by June 14. The estimated total smolt run in 1990 was 607,645 fish.

Appendix A.24. Daily counts of adult chinook salmon passing through Little Tahltan weir, 1990.

| Date | Large Chinook | | | Chinook Jacks | | | |
|--------|---------------|--------------------------|---------|---------------|------------|---------|--|
| | Count | Cumulative | | Count | Cumulative | | |
| | | Count | Percent | | Count | Percent | |
| 22-Jun | | -----weir installed----- | | | | | |
| 23-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 24-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 25-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 26-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 27-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 28-Jun | 0 | 0 | 0.00 | 0 | 0 | 0.00 | |
| 29-Jun | 4 | 4 | 0.09 | 0 | 0 | 0.00 | |
| 30-Jun | 11 | 15 | 0.34 | 0 | 0 | 0.00 | |
| 01-Jul | 2 | 17 | 0.39 | 0 | 0 | 0.00 | |
| 02-Jul | 0 | 17 | 0.39 | 0 | 0 | 0.00 | |
| 03-Jul | 0 | 17 | 0.39 | 0 | 0 | 0.00 | |
| 04-Jul | 0 | 17 | 0.39 | 0 | 0 | 0.00 | |
| 05-Jul | 22 | 39 | 0.89 | 3 | 3 | 0.72 | |
| 06-Jul | 0 | 39 | 0.89 | 0 | 3 | 0.72 | |
| 07-Jul | 61 | 100 | 2.28 | 6 | 9 | 2.16 | |
| 08-Jul | 6 | 106 | 2.41 | 1 | 10 | 2.40 | |
| 09-Jul | 11 | 117 | 2.66 | 1 | 11 | 2.64 | |
| 10-Jul | 3 | 120 | 2.73 | 1 | 12 | 2.88 | |
| 11-Jul | 66 | 186 | 4.23 | 16 | 28 | 6.71 | |
| 12-Jul | 104 | 290 | 6.60 | 4 | 32 | 7.67 | |
| 13-Jul | 11 | 301 | 6.85 | 0 | 32 | 7.67 | |
| 14-Jul | 90 | 391 | 8.90 | 2 | 34 | 8.15 | |
| 15-Jul | 135 | 526 | 11.98 | 6 | 40 | 9.59 | |
| 16-Jul | 268 | 794 | 18.08 | 7 | 47 | 11.27 | |
| 17-Jul | 82 | 876 | 19.95 | 38 | 85 | 20.38 | |
| 18-Jul | 127 | 1,003 | 22.84 | 8 | 93 | 22.30 | |
| 19-Jul | 362 | 1,365 | 31.08 | 33 | 126 | 30.22 | |
| 20-Jul | 62 | 1,427 | 32.49 | 15 | 141 | 33.81 | |
| 21-Jul | 102 | 1,529 | 34.81 | 33 | 174 | 41.73 | |
| 22-Jul | 224 | 1,753 | 39.91 | 42 | 216 | 51.80 | |
| 23-Jul | 499 | 2,252 | 51.28 | 49 | 265 | 63.55 | |
| 24-Jul | 352 | 2,604 | 59.29 | 66 | 331 | 79.38 | |
| 25-Jul | 225 | 2,829 | 64.41 | 8 | 339 | 81.29 | |
| 26-Jul | 143 | 2,972 | 67.67 | 6 | 345 | 82.73 | |
| 27-Jul | 170 | 3,142 | 71.54 | 9 | 354 | 84.89 | |
| 28-Jul | 25 | 3,167 | 72.11 | 6 | 360 | 86.33 | |
| 29-Jul | 146 | 3,313 | 75.43 | 9 | 369 | 88.49 | |
| 30-Jul | 201 | 3,514 | 80.01 | 10 | 379 | 90.89 | |
| 31-Jul | 304 | 3,818 | 86.93 | 7 | 386 | 92.57 | |
| 01-Aug | 26 | 3,844 | 87.52 | 3 | 389 | 93.29 | |
| 02-Aug | 70 | 3,914 | 89.12 | 3 | 392 | 94.00 | |
| 03-Aug | 40 | 3,954 | 90.03 | 1 | 393 | 94.24 | |
| 04-Aug | 155 | 4,109 | 93.56 | 5 | 398 | 95.44 | |
| 05-Aug | 20 | 4,129 | 94.01 | 2 | 400 | 95.92 | |
| 06-Aug | 66 | 4,195 | 95.51 | 5 | 405 | 97.12 | |
| 07-Aug | 75 | 4,270 | 97.22 | 2 | 407 | 97.60 | |
| 08-Aug | 20 | 4,290 | 97.68 | 3 | 410 | 98.32 | |
| 09-Aug | 2 | 4,292 | 97.72 | 1 | 411 | 98.56 | |
| 10-Aug | 40 | 4,332 | 98.63 | 3 | 414 | 99.28 | |
| 11-Aug | 16 | 4,348 | 99.00 | 2 | 416 | 99.76 | |
| 12-Aug | 5 | 4,353 | 99.11 | 1 | 417 | 100.00 | |
| 13-Aug | 0 | 4,353 | 99.11 | 0 | 417 | 100.00 | |
| 14-Aug | 20 | 4,373 | 99.57 | 0 | 417 | 100.00 | |
| 15-Aug | 0 | 4,373 | 99.57 | 0 | 417 | 100.00 | |
| 16-Aug | 17 | 4,390 | 99.95 | 0 | 417 | 100.00 | |
| 17-Aug | 2 | 4,392 | 100.00 | 0 | 417 | 100.00 | |
| 18-Aug | 0 | 4,392 | 100.00 | 0 | 417 | 100.00 | |
| 19-Aug | 0 | 4,392 | 100.00 | 0 | 417 | 100.00 | |

Appendix B.1. Salmon catch and effort in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) commercial drift gill net fishery, 1964-1990.

| Year | Catch | | | | | Effort | |
|----------|---------|---------|---------|---------|--------|-------------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Permit Days | Days Open |
| 1964 | 316 | 52,943 | 27,338 | 183,402 | 22,913 | 2,344 | 49 |
| 1965 | 679 | 58,736 | 30,570 | 162,271 | 15,763 | 1,658 | 51 |
| 1966 | 690 | 65,721 | 30,792 | 96,287 | 24,235 | 2,080 | 74 |
| 1967 | 668 | 60,148 | 10,573 | 52,284 | 19,626 | 1,463 | 27 |
| 1968 | 1,010 | 50,212 | 46,111 | 82,012 | 39,001 | 2,997 | 52 |
| 1969 | 747 | 46,282 | 6,557 | 92,102 | 6,395 | 1,147 | 31 |
| 1970 | 420 | 26,812 | 15,153 | 29,102 | 18,092 | 905 | 41 |
| 1971 | 671 | 33,991 | 24,727 | 283,739 | 19,329 | 1,619 | 50 |
| 1972 | 1,747 | 74,745 | 60,827 | 40,644 | 46,511 | 2,152 | 41 |
| 1973 | 1,540 | 55,254 | 24,921 | 160,297 | 62,486 | 2,253 | 26 |
| 1974 | 1,342 | 46,760 | 28,889 | 57,296 | 38,045 | 1,579 | 28 |
| 1975 | 467 | 19,319 | 4,650 | 29,340 | 7,762 | 515 | 17 |
| 1976 | 237 | 9,319 | 10,367 | 20,251 | 2,301 | 366 | 19 |
| 1977 | 202 | 47,408 | 1,819 | 51,038 | 4,240 | 447 | 17 |
| 1978 | 274 | 1,422 | 26,762 | 9,546 | 3,142 | 389 | 27 |
| 1979 | 458 | 34,807 | 12,087 | 176,395 | 16,816 | 952 | 25 |
| 1980 | 205 | 48,430 | 10,826 | 16,966 | 15,162 | 596 | 16 |
| 1981 | 598 | 132,359 | 13,158 | 218,359 | 25,994 | 1,732 | 25 |
| 1982 | 648 | 121,220 | 21,387 | 10,343 | 11,896 | 1,083 | 22 |
| 1983 | 268 | 28,153 | 41,196 | 74,347 | 13,001 | 875 | 32 |
| 1984 | 136 | 27,372 | 19,124 | 99,807 | 28,461 | 587 | 32 |
| 1985 | 549 | 172,088 | 50,655 | 319,379 | 45,566 | 1,726 | 38 |
| 1986 | 421 | 85,247 | 104,328 | 105,347 | 48,471 | 1,896 | 32 |
| 1987 | 441 | 79,165 | 17,776 | 117,059 | 25,877 | 978 | 20 |
| 1988 | 452 | 57,337 | 6,349 | 10,894 | 42,210 | 815 | 18 |
| 1989 | 581 | 107,886 | 55,671 | 418,044 | 40,156 | 1,716 | 34 |
| <hr/> | | | | | | | |
| Averages | | | | | | | |
| 64-89 | 606 | 59,351 | 27,024 | 112,175 | 24,748 | 1,341 | 32 |
| 80-89 | 430 | 85,926 | 34,047 | 139,055 | 29,679 | 1,200 | 27 |
| <hr/> | | | | | | | |
| 1990 | 759 | 104,922 | 94,502 | 84,543 | 42,474 | 1,827 | 34 |

Appendix B.2. Stock proportions and catches of sockeye salmon in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) commercial drift gill net fishery, 1985-1990. Data based on SPA.

| Year | Stikine | | | | | Total |
|-------------|---------|--------|---------|-------------|--------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| <hr/> | | | | | | |
| Proportions | | | | | | |
| 1985 | 0.480 | 0.401 | 0.109 | 0.010 | 0.119 | |
| 1986 | 0.662 | 0.308 | 0.024 | 0.006 | 0.030 | |
| 1987 | 0.816 | 0.166 | 0.015 | 0.003 | 0.018 | |
| 1988 | 0.868 | 0.112 | 0.019 | 0.001 | 0.020 | |
| 1989 | 0.653 | 0.303 | 0.009 | 0.036 | 0.044 | |
| 1990 | 0.579 | 0.395 | 0.008 | 0.018 | 0.026 | |
| <hr/> | | | | | | |
| Catches | | | | | | |
| 1985 | 82,563 | 68,962 | 18,801 | 1,762 | 20,563 | |
| 1986 | 56,462 | 26,214 | 2,070 | 501 | 2,571 | |
| 1987 | 64,582 | 13,170 | 1,155 | 258 | 1,413 | |
| 1988 | 49,776 | 6,426 | 1,071 | 64 | 1,135 | |
| 1989 | 70,436 | 32,663 | 957 | 3,830 | 4,787 | |
| 1990 | 60,795 | 41,415 | 801 | 1,911 | 2,712 | |

Appendix B.3. Salmon catch and effort in the Alaskan Subdistrict 106-30 (Clarence Strait) commercial drift gill net fishery, 1964-1990.

| Year | Catch | | | | | Effort | |
|-----------------|---------|---------|--------|---------|--------|-------------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Permit Days | Days Open |
| 1964 | 1,766 | 23,598 | 37,316 | 259,684 | 21,305 | 3,039 | 49.00 |
| 1965 | 1,123 | 29,013 | 45,158 | 463,577 | 11,895 | 2,849 | 50.75 |
| 1966 | 975 | 24,126 | 32,031 | 304,645 | 16,521 | 2,898 | 74.25 |
| 1967 | 650 | 26,237 | 7,097 | 39,325 | 6,744 | 1,048 | 27.00 |
| 1968 | 306 | 14,459 | 21,040 | 87,095 | 22,365 | 1,968 | 52.00 |
| 1969 | 289 | 24,061 | 4,191 | 104,998 | 4,511 | 1,026 | 31.00 |
| 1970 | 365 | 15,966 | 20,317 | 65,790 | 14,139 | 1,025 | 41.00 |
| 1971 | 665 | 19,211 | 23,358 | 244,236 | 18,351 | 1,517 | 50.00 |
| 1972 | 826 | 26,593 | 32,600 | 48,823 | 25,871 | 1,276 | 41.00 |
| 1973 | 391 | 16,741 | 13,526 | 143,324 | 25,243 | 1,303 | 26.00 |
| 1974 | 696 | 10,482 | 16,825 | 47,041 | 12,258 | 712 | 28.00 |
| 1975 | 2,120 | 12,732 | 26,312 | 173,675 | 16,206 | 1,159 | 8.50 |
| 1976 | 147 | 6,162 | 8,759 | 119,188 | 4,567 | 527 | 21.00 |
| 1977 | 469 | 19,615 | 6,582 | 368,069 | 9,060 | 940 | 21.00 |
| 1978 | 2,408 | 40,152 | 28,816 | 215,169 | 13,403 | 1,148 | 16.00 |
| 1979 | 2,262 | 31,566 | 15,996 | 471,817 | 18,691 | 1,848 | 25.00 |
| 1980 | 375 | 58,988 | 5,754 | 28,594 | 11,107 | 749 | 25.00 |
| 1981 | 967 | 50,546 | 9,453 | 216,909 | 8,577 | 1,321 | 26.00 |
| 1982 | 1,000 | 72,140 | 10,284 | 15,141 | 6,719 | 647 | 21.00 |
| 1983 | 299 | 20,789 | 21,234 | 133,820 | 7,143 | 589 | 37.00 |
| 1984 | 756 | 64,281 | 22,235 | 243,448 | 41,797 | 1,236 | 24.00 |
| 1985 | 1,141 | 92,899 | 40,565 | 265,567 | 24,095 | 1,372 | 36.00 |
| 1986 | 1,283 | 60,462 | 90,584 | 203,137 | 33,818 | 1,664 | 31.00 |
| 1987 | 395 | 57,262 | 16,758 | 126,423 | 16,148 | 799 | 20.00 |
| 1988 | 652 | 35,192 | 6,754 | 58,605 | 27,410 | 682 | 19.00 |
| 1989 | 963 | 84,848 | 36,715 | 683,150 | 27,195 | 1,583 | 34.00 |
| Averages | | | | | | | |
| 64-89 | 896 | 36,082 | 23,087 | 197,356 | 17,121 | 1,343 | 32.10 |
| 80-89 | 783 | 59,741 | 26,034 | 197,479 | 20,401 | 1,064 | 27.30 |
| 1990 | 1,348 | 80,883 | 69,709 | 234,643 | 30,758 | 1,676 | 34.00 |

Appendix B.4. Stock proportions and catches of sockeye salmon in the Alaskan Subdistrict 106-30 (Clarence Strait) commercial drift gill net fishery, 1985-1990. Data based on SPA. Data for 1990 is preliminary.

| Year | Stikine | | | | | Total |
|--------------------|---------|--------|---------|-------------|-------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| Proportions | | | | | | |
| 1985 | 0.477 | 0.453 | 0.056 | 0.013 | 0.070 | |
| 1986 | 0.726 | 0.272 | 0.000 | 0.002 | 0.002 | |
| 1987 | 0.844 | 0.140 | 0.004 | 0.012 | 0.016 | |
| 1988 | 0.883 | 0.095 | 0.021 | 0.000 | 0.021 | |
| 1989 | 0.662 | 0.322 | 0.002 | 0.015 | 0.016 | |
| 1990 | 0.645 | 0.340 | 0.001 | 0.013 | 0.015 | |
| Catch | | | | | | |
| 1985 | 44,351 | 42,053 | 5,244 | 1,251 | 6,495 | |
| 1986 | 43,875 | 16,471 | 11 | 105 | 116 | |
| 1987 | 48,311 | 8,020 | 221 | 710 | 931 | |
| 1988 | 31,092 | 3,358 | 742 | 0 | 742 | |
| 1989 | 56,167 | 27,296 | 154 | 1,231 | 1,385 | |
| 1990 | 52,188 | 27,506 | 114 | 1,075 | 1,189 | |

Appendix B.5. Salmon catch and effort in the Alaskan District 106 commercial drift gill net fisheries, 1964-1990. Catches do not include Blind Slough terminal area harvests.

| Year | Catch | | | | | Effort | |
|-----------------|---------|---------|---------|---------|---------|-------------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Permit Days | Days Open |
| | 1964 | 2,082 | 76,541 | 64,654 | 443,086 | 44,218 | 5,383 |
| 1965 | 1,802 | 87,749 | 75,728 | 625,848 | 27,658 | 4,507 | 50.75 |
| 1966 | 1,665 | 89,847 | 62,823 | 400,932 | 40,756 | 4,978 | 74.25 |
| 1967 | 1,318 | 86,385 | 17,670 | 91,609 | 26,370 | 2,511 | 27.00 |
| 1968 | 1,316 | 64,671 | 67,151 | 169,107 | 61,366 | 4,965 | 52.00 |
| 1969 | 1,036 | 70,343 | 10,748 | 197,100 | 10,906 | 2,173 | 31.00 |
| 1970 | 785 | 42,778 | 35,470 | 94,892 | 32,231 | 1,930 | 41.00 |
| 1971 | 1,336 | 53,202 | 48,085 | 527,975 | 37,680 | 3,136 | 50.00 |
| 1972 | 2,573 | 101,338 | 93,427 | 89,467 | 72,382 | 3,428 | 41.00 |
| 1973 | 1,931 | 71,995 | 38,447 | 303,621 | 87,729 | 3,556 | 26.00 |
| 1974 | 2,038 | 57,242 | 45,714 | 104,337 | 50,303 | 2,291 | 28.00 |
| 1975 | 2,587 | 32,051 | 30,962 | 203,015 | 23,968 | 1,674 | 17.00 |
| 1976 | 384 | 15,481 | 19,126 | 139,439 | 6,868 | 893 | 21.00 |
| 1977 | 671 | 67,023 | 8,401 | 419,107 | 13,300 | 1,387 | 21.00 |
| 1978 | 2,682 | 41,574 | 55,578 | 224,715 | 16,545 | 1,537 | 26.50 |
| 1979 | 2,720 | 66,373 | 28,083 | 648,212 | 35,507 | 2,800 | 25.00 |
| 1980 | 580 | 107,418 | 16,580 | 45,560 | 26,269 | 1,345 | 25.00 |
| 1981 | 1,565 | 182,905 | 22,611 | 435,268 | 34,571 | 3,053 | 26.00 |
| 1982 | 1,648 | 193,360 | 31,671 | 25,484 | 18,615 | 1,730 | 22.00 |
| 1983 | 567 | 48,942 | 62,430 | 208,167 | 20,144 | 1,464 | 37.00 |
| 1984 | 892 | 91,653 | 41,359 | 343,255 | 70,258 | 1,823 | 32.00 |
| 1985 | 1,690 | 264,987 | 91,220 | 584,946 | 69,661 | 3,098 | 38.00 |
| 1986 | 1,704 | 145,709 | 194,912 | 308,484 | 82,289 | 3,560 | 32.00 |
| 1987 | 836 | 136,427 | 34,534 | 243,482 | 42,025 | 1,777 | 20.00 |
| 1988 | 1,104 | 92,529 | 13,103 | 69,499 | 69,620 | 1,497 | 19.00 |
| 1989 | 1,544 | 192,734 | 92,386 | 1101194 | 67,351 | 3,299 | 34.00 |
| Averages | | | | | | | |
| 64-89 | 1,502 | 95,433 | 50,111 | 309,531 | 41,869 | 2,684 | 33.29 |
| 80-89 | 1,213 | 145,666 | 60,081 | 336,534 | 50,080 | 2,265 | 28.50 |
| 1990 | 2,107 | 185,805 | 164,211 | 319,186 | 73,232 | 3,503 | 34.00 |

Appendix B.6. Stock proportions and catches of sockeye salmon in the Alaskan District 106 commercial drift gill net fisheries, 1982-1990. Catches do not include Blind Slough terminal area harvests. Data based on SPA.

| Year | Stikine | | | | | Total |
|--------------------|---------|---------|---------|-------------|--|--------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| Proportions | | | | | | |
| 1982 | 0.486 | 0.319 | | | | 0.194 |
| 1983 | 0.668 | 0.217 | 0.103 | 0.013 | | 0.116 |
| 1984 | 0.658 | 0.269 | 0.029 | 0.044 | | 0.074 |
| 1985 | 0.479 | 0.419 | 0.091 | 0.011 | | 0.102 |
| 1986 | 0.689 | 0.293 | 0.014 | 0.004 | | 0.018 |
| 1987 | 0.827 | 0.155 | 0.010 | 0.007 | | 0.017 |
| 1988 | 0.874 | 0.106 | 0.020 | 0.001 | | 0.020 |
| 1989 | 0.657 | 0.311 | 0.006 | 0.026 | | 0.032 |
| Averages | | | | | | |
| 1983-1989 | 0.693 | 0.253 | 0.039 | 0.015 | | 0.054 |
| 1990 | 0.608 | 0.371 | 0.005 | 0.016 | | 0.021 |
| Catches | | | | | | |
| 1982 | 94,061 | 61,714 | | | | 37,585 |
| 1983 | 32,670 | 10,611 | 5,030 | 632 | | 5,662 |
| 1984 | 60,278 | 24,624 | 2,673 | 4,078 | | 6,751 |
| 1985 | 126,914 | 111,015 | 24,045 | 3,013 | | 27,058 |
| 1986 | 100,337 | 42,685 | 2,081 | 606 | | 2,687 |
| 1987 | 112,893 | 21,190 | 1,376 | 968 | | 2,344 |
| 1988 | 80,868 | 9,784 | 1,813 | 64 | | 1,877 |
| 1989 | 126,603 | 59,959 | 1,111 | 5,061 | | 6,172 |
| Averages | | | | | | |
| 1983-1989 | 91,509 | 39,981 | 5,447 | 2,060 | | 7,507 |
| 1990 | 112,983 | 68,921 | 915 | 2,986 | | 3,901 |

Appendix B.7. Salmon catch and effort in the Alaskan District 108 commercial drift gill net fishery, 1964-1990. Catches do not include Ohmer Creek terminal area harvests.

| Year | Catch | | | | | Effort | |
|-----------------|---------|---------|--------|---------|--------|-------------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Permit Days | Days Open |
| 1964 | 2,911 | 20,299 | 29,388 | 114,555 | 10,771 | 3,416 | 62 |
| 1965 | 3,106 | 21,419 | 8,301 | 4,729 | 2,480 | 960 | 48 |
| 1966 | 4,516 | 36,710 | 16,493 | 61,908 | 17,730 | 1,841 | 62 |
| 1967 | 6,372 | 29,226 | 6,747 | 4,713 | 5,955 | 1,193 | 40 |
| 1968 | 4,604 | 14,594 | 36,407 | 91,028 | 14,537 | 3,114 | 61 |
| 1969 | 5,023 | 19,210 | 5,823 | 11,884 | 2,312 | 858 | 37 |
| 1970 | 3,207 | 15,120 | 18,403 | 20,523 | 12,305 | 1,180 | 41 |
| 1971 | 3,717 | 18,143 | 14,876 | 21,806 | 4,665 | 892 | 42 |
| 1972 | 9,332 | 51,734 | 38,520 | 17,153 | 17,363 | 1,922 | 49 |
| 1973 | 9,254 | 21,387 | 5,837 | 6,585 | 6,680 | 1,042 | 21 |
| 1974 | 8,199 | 2,428 | 16,021 | 4,188 | 2,107 | 550 | 16 |
| 1975 | 1,534 | 0 | 0 | 0 | 1 | | 8 |
| 1976 | 1,123 | 18 | 6,056 | 722 | 124 | 130 | 10 |
| 1977 | 1,443 | 48,374 | 14,405 | 16,253 | 4,233 | 740 | 19 |
| 1978 | 531 | 56 | 32,650 | 1,157 | 1,001 | 608 | 12 |
| 1979 | 91 | 2,158 | 234 | 13,478 | 1,064 | 100 | 5 |
| 1980 | 631 | 14,053 | 2,946 | 7,224 | 6,910 | 327 | 22 |
| 1981 | 283 | 8,833 | 1,403 | 1,466 | 3,594 | 177 | 9 |
| 1982 | 1,033 | 6,886 | 19,971 | 16,988 | 741 | 508 | 21 |
| 1983 | 47 | 178 | 15,484 | 4,171 | 675 | 266 | 17 |
| 1984 | 14 | 1,290 | 5,141 | 4,960 | 1,892 | 34 | 5 |
| 1985 | 20 | 1,060 | 1,926 | 5,325 | 1,892 | 50 | 14 |
| 1986 | 102 | 4,185 | 7,439 | 4,901 | 5,928 | 216 | 25 |
| 1987 | 149 | 1,620 | 1,015 | 3,331 | 949 | 81 | 13 |
| 1988 | 206 | 1,246 | 12 | 144 | 3,109 | 60 | 8 |
| 1989 | 310 | 10,083 | 4,261 | 27,640 | 3,375 | 223 | 29 |
| Averages | | | | | | | |
| 64-89 | 2,606 | 13,473 | 11,914 | 17,955 | 5,092 | 820 | 27 |
| 80-89 | 280 | 4,943 | 5,960 | 7,615 | 2,907 | 194 | 16 |
| 1990 | 557 | 11,574 | 8,218 | 13,822 | 9,382 | 359 | 34 |

Appendix B.8. Stock proportions and catches of sockeye salmon in the Alaskan District 108 commercial drift gill net fishery, 1985-1990. Catches do not include Ohmer Creek terminal area harvests. Data based on SPA.

| Year | Stikine | | | | | Total |
|--------------------|---------|--------|---------|-------------|-------|-------|
| | Alaska | Canada | Tahltan | non-Tahltan | | |
| Proportions | | | | | | |
| 1985 | 0.064 | 0.000 | 0.292 | 0.644 | 0.936 | |
| 1986 | 0.206 | 0.017 | 0.094 | 0.683 | 0.777 | |
| 1987a | 0.125 | 0.000 | 0.438 | 0.437 | 0.875 | |
| 1988 | 0.213 | 0.039 | 0.178 | 0.571 | 0.749 | |
| 1989 | 0.117 | 0.054 | 0.034 | 0.795 | 0.829 | |
| Averages | | | | | | |
| 1985-1989 | 0.145 | 0.022 | 0.207 | 0.626 | 0.833 | |
| 1990 | 0.395 | 0.128 | 0.111 | 0.366 | 0.477 | |
| Catch | | | | | | |
| 1985 | 68 | 0 | 310 | 683 | 992 | |
| 1986 | 862 | 71 | 393 | 2,858 | 3,252 | |
| 1987 | 203 | 0 | 710 | 708 | 1,418 | |
| 1988 | 265 | 48 | 222 | 711 | 933 | |
| 1989 | 1,180 | 545 | 341 | 8,017 | 8,358 | |
| Averages | | | | | | |
| 1985-1989 | 515 | 133 | 395 | 2,595 | 2,990 | |
| 1990 | 4,576 | 1,479 | 1,280 | 4,239 | 5,519 | |

a/ There was no data available to determine the ratio of Tahltan to non-Tahltan Stikine stocks; a 1:1 ratio was assumed.

Appendix B.9. Salmon catch in the Alaskan Subdistrict 106-41 (Sumner Strait) test fishery, 1984-1990.

| Year | Catch | | | | | Boat Hours |
|------|---------|---------|------|-------|------|------------|
| | Chinook | Sockeye | Coho | Pink | Chum | |
| 1984 | 13 | 1,370 | 101 | 975 | 793 | 142.51 |
| 1985 | 16 | 4,345 | 301 | 3,230 | 746 | 156.31 |
| 1986 | 23 | 982 | 177 | 60 | 248 | 99.45 |
| 1987 | 24 | 2,659 | 799 | 4,117 | 741 | 508.10 |
| 1988 | 11 | 1,020 | 89 | 137 | 772 | 121.00 |
| 1989 | 11 | 2,043 | 275 | 6,069 | 856 | 60.20 |
| 1990 | 13 | 2,256 | 432 | 372 | 552 | 7.00 |

Appendix B.10. Stock proportions and catches of sockeye salmon in the Alaskan Subdistrict 106-41 and -42 (Sumner Strait) test fishery, 1984-1990. Data based on SPA.

| Year | Alaska | Canada | Stikine | | Total |
|--------------------|--------|--------|---------|-------------|-------|
| | | | Tahltan | non-Tahltan | |
| Proportions | | | | | |
| 1984 | 0.658 | 0.269 | 0.029 | 0.044 | 0.074 |
| 1985 | 0.480 | 0.401 | 0.109 | 0.010 | 0.119 |
| 1986 | 0.834 | 0.149 | 0.008 | 0.009 | 0.017 |
| 1987 | 0.816 | 0.166 | 0.015 | 0.003 | 0.018 |
| 1988 | 0.868 | 0.098 | 0.034 | 0.000 | 0.034 |
| 1989 | 0.561 | 0.430 | 0.000 | 0.008 | 0.008 |
| 1990 | 0.548 | 0.416 | 0.014 | 0.022 | 0.035 |
| Catch | | | | | |
| 1984 | 901 | 368 | 40 | 61 | 101 |
| 1985 | 2,085 | 1,741 | 475 | 44 | 519 |
| 1986 | 819 | 146 | 8 | 9 | 17 |
| 1987 | 2,169 | 442 | 39 | 9 | 47 |
| 1988 | 886 | 100 | 35 | 0 | 35 |
| 1989 | 1,147 | 879 | 0 | 17 | 17 |
| 1990 | 1,237 | 939 | 31 | 49 | 80 |

Appendix B.11. Salmon catch and effort in the Alaskan Subdistrict 106-30 (Clarence Strait) test fishery, 1986-1990.

| Year | Catch | | | | | Boat Hours |
|------|-----------------|---------|------|-------|------|------------|
| | Chinook | Sockeye | Coho | Pink | Chum | |
| 1986 | 24 | 363 | 95 | 80 | 58 | 23.25 |
| 1987 | 1 | 899 | 589 | 1,705 | 467 | 384.00 |
| 1988 | 10 | 16 | 412 | 112 | 598 | 119.70 |
| 1989 | 4 | 37 | 464 | 431 | 329 | |
| 1990 | No Test Fishery | | | | | |

Appendix B.12. Stock proportions and catches of sockeye salmon in the Alaskan Subdistrict 106-30 (Clarence Strait) test fishery, 1986-1990. Data based on SPA.

| Year | Alaska | Canada | Stikine | | Total |
|--------------------|-----------------|--------|---------|-------------|-------|
| | | | Tahltan | non-Tahltan | |
| Proportions | | | | | |
| 1986 | 0.726 | 0.272 | 0.000 | 0.002 | 0.002 |
| 1987 | 0.844 | 0.140 | 0.004 | 0.012 | 0.016 |
| 1988 | 0.746 | 0.254 | 0.000 | 0.000 | 0.000 |
| 1989 | 0.514 | 0.486 | 0.000 | 0.000 | 0.000 |
| 1990 | No Test Fishery | | | | |
| Catches | | | | | |
| 1986 | 263 | 99 | 0 | 1 | 1 |
| 1987 | 758 | 126 | 3 | 11 | 15 |
| 1988 | 12 | 4 | 0 | 0 | 0 |
| 1989 | 19 | 18 | 0 | 0 | 0 |
| 1990 | No Test Fishery | | | | |

Appendix B.13. Salmon catch and effort in the Alaskan District 106 test fisheries 1984-1990.

| Year | Catch | | | | | Boat Hours |
|------|---------|---------|-------|-------|-------|------------|
| | Chinook | Sockeye | Coho | Pink | Chum | |
| 1984 | 13 | 1,370 | 101 | 975 | 793 | 142.51 |
| 1985 | 16 | 4,345 | 301 | 3,230 | 746 | 156.31 |
| 1986 | 47 | 1,345 | 272 | 140 | 306 | 122.70 |
| 1987 | 25 | 3,558 | 1,388 | 5,822 | 1,208 | 892.10 |
| 1988 | 21 | 1,036 | 501 | 249 | 1,370 | 240.70 |
| 1989 | 15 | 2,080 | 739 | 6,500 | 1,185 | 60.20 |
| 1990 | 13 | 2,256 | 432 | 372 | 552 | 7.00 |

Appendix B.14. Stock proportions and catches of sockeye salmon in the Alaskan District 106 test fisheries, 1984-1990. Data based on SPA.

| Year | Alaska | Canada | Stikine | | Total |
|--------------------|--------|--------|---------|-------------|-------|
| | | | Tahltan | non-Tahltan | |
| Proportions | | | | | |
| 1984 | 0.658 | 0.269 | 0.029 | 0.044 | 0.074 |
| 1985 | 0.480 | 0.401 | 0.109 | 0.010 | 0.119 |
| 1986 | 0.805 | 0.182 | 0.006 | 0.007 | 0.013 |
| 1987 | 0.823 | 0.160 | 0.012 | 0.006 | 0.017 |
| 1988 | 0.867 | 0.100 | 0.033 | 0.000 | 0.033 |
| 1989 | 0.561 | 0.431 | 0.000 | 0.008 | 0.008 |
| 1990 | 0.548 | 0.416 | 0.014 | 0.022 | 0.035 |
| Catch | | | | | |
| 1984 | 901 | 368 | 40 | 61 | 101 |
| 1985 | 2,085 | 1,741 | 475 | 44 | 519 |
| 1986 | 1,082 | 245 | 8 | 9 | 17 |
| 1987 | 2,928 | 568 | 42 | 20 | 62 |
| 1988 | 898 | 104 | 35 | 0 | 35 |
| 1989 | 1,166 | 897 | 0 | 17 | 17 |
| 1990 | 1,237 | 939 | 31 | 49 | 80 |

Appendix B.15. Salmon catch and effort in the Alaskan District 108 test fishery 1984-1990.

| Year | Catch | | | | | Boat Hours |
|------|---------|---------|------|-------|-------|------------|
| | Chinook | Sockeye | Coho | Pink | Chum | |
| 1984 | 37 | 641 | 11 | 822 | 813 | |
| 1985 | 33 | 1,258 | 11 | 465 | 381 | 71.67 |
| 1986 | 79 | 564 | 3 | 36 | 315 | 72.15 |
| 1987 | 30 | 290 | 13 | 1,957 | 488 | 76.87 |
| 1988 | 65 | 451 | 9 | 1,091 | 1,009 | 126.83 |
| 1989 | 15 | 1,038 | 45 | 2,459 | 283 | 63.47 |
| 1990 | 19 | 866 | 45 | 942 | 643 | 7.00 |

Appendix B.16. Stock proportions and catches of sockeye salmon in the Alaskan District 108 test fishery, 1985-1990. Data based on SPA.

| Year | Alaska | Canada | Stikine | | Total |
|--------------------|--------|--------|---------|-------------|-------|
| | | | Tahltan | non-Tahltan | |
| Proportions | | | | | |
| 1985 | 0.064 | 0.000 | 0.292 | 0.644 | 0.936 |
| 1986 | 0.134 | 0.044 | 0.486 | 0.336 | 0.822 |
| 1987 | 0.125 | 0.000 | 0.438 | 0.437 | 0.875 |
| 1988 | 0.205 | 0.049 | 0.132 | 0.614 | 0.746 |
| 1989 | 0.136 | 0.105 | 0.100 | 0.659 | 0.759 |
| 1990 | 0.417 | 0.172 | 0.094 | 0.318 | 0.411 |
| Catch | | | | | |
| 1985 | 81 | 0 | 367 | 810 | 1,177 |
| 1986 | 76 | 25 | 274 | 190 | 464 |
| 1987 | 36 | 0 | 127 | 127 | 254 |
| 1988 | 93 | 22 | 59 | 277 | 336 |
| 1989 | 141 | 109 | 104 | 684 | 788 |
| 1990 | 361 | 149 | 81 | 275 | 356 |

Appendix B.17. Salmon and steelhead trout catch and effort in the Canadian commercial fishery in the lower Stikine River, 1979-1990.

| Year | Catch | | | | | | Effort | | |
|----------------------|---------|-------|---------|--------|-------|-------|-----------|---------|------|
| | Chinook | | Sockeye | Coho | Pink | Chum | Steelhead | Boat | |
| | Jacks | Large | | | | | | Days | Days |
| 1979a/ | 63 | 712 | 10,534 | 10,720 | 1,994 | 424 | 264 | b/ | 42.0 |
| 1980 | | 1,488 | 18,119 | 6,629 | 736 | 771 | 362 | 701.0 | 41.0 |
| 1981 | | 664 | 21,551 | 2,667 | 3,713 | 1,128 | 280 | 522.0 | 32.0 |
| 1982 | | 1,693 | 15,397 | 15,904 | 1,782 | 722 | 828 | 1,093.0 | 71.0 |
| 1983 | 430 | 492 | 15,857 | 6,170 | 1,043 | 274 | 667 | 458.0 | 54.0 |
| 1984c/ | | | | | | | | | |
| 1985 | 91 | 256 | 17,093 | 2,172 | 2,321 | 532 | 231 | 145.5 | 22.5 |
| 1986 | 365 | 806 | 12,411 | 2,278 | 107 | 295 | 192 | 239.0 | 13.5 |
| 1987 | 242 | 909 | 6,138 | 5,728 | 646 | 432 | 217 | 287.0 | 20.0 |
| 1988 | 201 | 1,007 | 12,766 | 2,112 | 418 | 730 | 258 | 320.0 | 26.5 |
| 1989 | 157 | 1,537 | 17,179 | 6,092 | 825 | 674 | 127 | 325.0 | 23.0 |
| Averages d/ 80-89 | | 1,149 | 15,168 | 5,528 | 1,288 | 618 | 351 | 454.5 | 33.7 |
| 1990 | 680 | 1,569 | 14,530 | 4,020 | 496 | 499 | 188 | 328.1 | 29.0 |

a/ The lower river commercial catch in 1979 includes the upper river commercial catch.
 b/ Effort data not available
 c/ There was no commercial fishery in 1984.
 d/ Chinook average is for jacks and large fish combined.

Appendix B.18. Sockeye salmon stock proportions and catch by stock in the Canadian commercial fishery in the lower Stikine River, 1979-1990. Stock compositions based on: scale circuli counts 1979-1983, SPA in 1985; average of SPA and GPA 1986; SPA in 1987 and 1988; and egg diameter in 1989 and 1990.

| Year | Proportions | | Catch | |
|----------------|-------------|-------------|---------|-------------|
| | Tahltan | non-Tahltan | Tahltan | non-Tahltan |
| 1979 | 0.433 | 0.567 | 4,561 | 5,973 |
| 1980 | 0.309 | 0.691 | 5,599 | 12,520 |
| 1981 | 0.476 | 0.524 | 10,258 | 11,293 |
| 1982 | 0.624 | 0.376 | 9,608 | 5,789 |
| 1983 | 0.422 | 0.578 | 6,692 | 9,165 |
| 1984a/ | | | | |
| 1985 | 0.623 | 0.377 | 10,649 | 6,444 |
| 1986 | 0.489 | 0.511 | 6,069 | 6,342 |
| 1987 | 0.225 | 0.775 | 1,380 | 4,758 |
| 1988 | 0.161 | 0.839 | 2,062 | 10,704 |
| 1989 | 0.164 | 0.836 | 2,813 | 14,366 |
| Averages 80-89 | 0.388 | 0.612 | 6,125 | 9,042 |
| 1990 | 0.346 | 0.654 | 5,029 | 9,501 |

a/ There was no commercial fishery in 1984.

Appendix B.19. Salmon and steelhead trout catch and effort in the Canadian commercial fishery in the upper Stikine River, 1975-1990.

| Year | Catch | | | | | | Effort | |
|-------------|---------|------|---------|------|------|----------------|--------|--------|
| | Chinook | | Sockeye | Coho | Pink | Chum Steelhead | Boat | Days |
| Jacks | Large | Days | | | | | Days | |
| 1975 | | 178 | 270 | 45 | 0 | 0 | | |
| 1976 | | 236 | 733 | 13 | 0 | 0 | | |
| 1977 | | 62 | 1,975 | 0 | 0 | 0 | | |
| 1978 | | 100 | 1,500 | 0 | 0 | 0 | | |
| 1979 a/ | | | | | | | | |
| 1980 | | 156 | 700 | 40 | 20 | 0 | | |
| 1981 | | 154 | 769 | 0 | 0 | 0 | 11 | 5.0 |
| 1982 | | 76 | 195 | 0 | 0 | 0 | 8 | 4.0 |
| 1983 | | 75 | 614 | 0 | 0 | 4 | 10 | 8.0 |
| 1984 b/ | | | | | | | | |
| 1985 | | 62 | 1,084 | 0 | 0 | 0 | 14 | 6.0 |
| 1986 | 41 | 104 | 815 | 0 | 0 | 0 | 19 | 7.0 |
| 1987 | 19 | 109 | 498 | 0 | 0 | 19 | 20 | 7.0 |
| 1988 | 46 | 185 | 348 | 0 | 0 | 0 | 4 | 6.5 |
| 1989 | 17 | 54 | 493 | 0 | 0 | 0 | 14 | 7.0 |
| Averages c/ | | | | | | | | |
| 75-89 | | 120 | 769 | 8 | 2 | 2 | 0 | |
| 80-89 | | 110 | 613 | 4 | 2 | 3 | 0 | 13 6.3 |
| 1990 | 20 | 48 | 472 | 0 | 0 | 0 | 15 | 7.0 |

a/ Catches in 1979 were included in the lower river commercial catches.

b/ There was no commercial fishery in 1984.

c/ Chinook averages are for jacks and large fish combined.

Appendix B.20. Salmon and steelhead trout catch in the Canadian Indian food fishery located at Telegraph Creek, on the Stikine River, 1972-1990.

| Year | Catch | | | | | | |
|-------------|---------|-------|---------|------|------|------|-----------|
| | Chinook | | Sockeye | Coho | Pink | Chum | Steelhead |
| | Jacks | Large | | | | | |
| 1972 | | 0 | 230 | 0 | 0 | 0 | 0 |
| 1973 | | 200 | 3,670 | 0 | 0 | 0 | 0 |
| 1974 | | 0 | 3,500 | 0 | 0 | 0 | 0 |
| 1975 | | 1,024 | 1,982 | 5 | 0 | 0 | 0 |
| 1976 | | 924 | 2,911 | 0 | 0 | 0 | 0 |
| 1977 | | 100 | 4,335 | 0 | 0 | 0 | 0 |
| 1978 | | 400 | 3,500 | 0 | 0 | 0 | 0 |
| 1979 | | 850 | 3,000 | 0 | 0 | 0 | 0 |
| 1980 | | 587 | 2,100 | 0 | 0 | 0 | 0 |
| 1981 | | 740 | 5,304 | 8 | 144 | 0 | 4 |
| 1982 | | 618 | 4,948 | 40 | 60 | 0 | 0 |
| 1983 | | 1,066 | 4,649 | 3 | 77 | 26 | 46 |
| 1984 | | 702 | 5,327 | 1 | 62 | 0 | 2 |
| 1985 | 94 | 793 | 7,287 | 3 | 35 | 4 | 9 |
| 1986 | 569 | 1,026 | 4,208 | 2 | 0 | 12 | 2 |
| 1987 | 183 | 1,183 | 2,979 | 3 | 0 | 8 | 2 |
| 1988 | 197 | 1,178 | 2,177 | 5 | 0 | 3 | 3 |
| 1989 | 115 | 1,078 | 2,360 | 6 | 0 | 0 | 0 |
| Averages a/ | | | | | | | |
| 72-89 | | 757 | 3,582 | 4 | 21 | 3 | 4 |
| 80-89 | | 1,013 | 4,134 | 7 | 38 | 5 | 7 |
| 1990 | 259 | 633 | 3,022 | 17 | 0 | 0 | 11 |

a/ Chinook averages are for jacks and large fish combined.

Appendix B.21. Salmon and steelhead trout catch in the combined Canadian net fisheries in the Stikine River, 1972-1990.

| Year | Chinook | | Sockeye | Coho | Pink | Chum | Steel-head |
|-------------|---------|-------|---------|--------|-------|-------|------------|
| | Jacks | Large | | | | | |
| 1972 | 0 | 0 | 230 | 0 | 0 | 0 | 0 |
| 1973 | 0 | 200 | 3,670 | 0 | 0 | 0 | 0 |
| 1974 | 0 | 0 | 3,500 | 0 | 0 | 0 | 0 |
| 1975 | 0 | 1,202 | 2,252 | 50 | 0 | 0 | 0 |
| 1976 | 0 | 1,160 | 3,644 | 13 | 0 | 0 | 0 |
| 1977 | 0 | 162 | 6,310 | 0 | 0 | 0 | 0 |
| 1978 | 0 | 500 | 5,000 | 0 | 0 | 0 | 0 |
| 1979 | 63 | 1,562 | 13,534 | 10,720 | 1,994 | 424 | 264 |
| 1980 | 0 | 2,231 | 20,919 | 6,669 | 756 | 771 | 362 |
| 1981 | 0 | 1,558 | 27,624 | 2,675 | 3,857 | 1,128 | 284 |
| 1982 | 0 | 2,387 | 20,540 | 15,944 | 1,842 | 722 | 828 |
| 1983 | 430 | 1,633 | 21,120 | 6,173 | 1,120 | 304 | 714 |
| 1984a/ | 0 | 702 | 5,327 | 1 | 62 | 0 | 2 |
| 1985 | 185 | 1,111 | 25,464 | 2,175 | 2,356 | 536 | 240 |
| 1986 | 975 | 1,936 | 17,434 | 2,280 | 107 | 307 | 194 |
| 1987 | 444 | 2,201 | 9,615 | 5,731 | 646 | 459 | 219 |
| 1988 | 444 | 2,370 | 15,291 | 2,117 | 418 | 733 | 261 |
| 1989 | 289 | 2,669 | 20,032 | 6,098 | 825 | 674 | 127 |
| Averages b/ | | | | | | | |
| 72-89 | | 1,467 | 12,306 | 3,369 | 777 | 337 | 194 |
| 80-89 | | 2,157 | 18,337 | 4,986 | 1,199 | 563 | 323 |
| 1990 | 959 | 2,250 | 18,024 | 4,037 | 496 | 499 | 199 |

a/ There was no commercial fishery in 1984.

b/ Chinook averages are for jacks and large fish combined.

Appendix B.22. Salmon and steelhead trout catches and effort in Canadian test fisheries in the Stikine River, 1985-1990.

| Year | Fishery | Catch | | | | | Effort Drift=# Set=hr. |
|------|----------|---------|---------|------|------|----------------|------------------------------|
| | | Chinook | Sockeye | Coho | Pink | Chum Steelhead | |
| 1985 | C. Set | | 1,340 | | | | |
| 1986 | C. Drift | 27 | 412 | 226 | 8 | 25 | 405 |
| 1987 | J. Drift | 128 | 385 | 162 | 111 | 61 | 845 |
| | J. Set | 61 | 1,283 | 620 | 587 | 193 | 109 |
| 1988 | J. Drift | 168 | 325 | 75 | 9 | 33 | 720 |
| | J. Set | 101 | 922 | 130 | 23 | 65 | 702 |
| 1989 | C. Drift | 116 | 364 | 242 | 41 | 46 | 870 |
| | C. Set | 101 | 1,243 | 502 | 249 | 103 | 1,392 |
| 1990 | C. Drift | 167 | 447 | 134 | 5 | 29 | 673 |
| | C. Set | 64 | 1,493 | 271 | 42 | 48 | 1,212 |

Appendix B.23. Sockeye salmon stock proportions and catch by stock in the test fishery in the lower Stikine River, 1985-1990. Stock compositions based on: SPA 1985; average of SPA and GPA 1986-1988; Egg diameter 1989 and 1990.

| Year | Catch Tahltan | | Proportion Tahltan | | Average Proportion a/ Tahltan | |
|------|------------------|--------|-----------------------|--------|----------------------------------|---------|
| | U.S. | Canada | U.S. | Canada | Tahltan | non- |
| | | | | | | Tahltan |
| 1985 | 560 | 439 | 0.418 | 0.328 | 0.372 | 0.628 |
| 1986 | 164 | 127 | 0.398 | 0.308 | 0.352 | 0.648 |
| 1987 | 513 | 397 | 0.308 | 0.238 | 0.273 | 0.727 |
| 1988 | 408 | 295 | 0.327 | 0.237 | 0.282 | 0.718 |
| 1989 | | 414 | | 0.258 | 0.258 | 0.742 |
| 1990 | | 822 | | 0.454 | 0.454 | 0.546 |

a/ Average proportions are from averages of weekly estimates.

Appendix B.24. Estimated proportion of inriver run comprised of Tahltan and non-Tahltan sockeye stocks, 1979-1990. Stock compositions based on: scale circuli counts 1979-1983, SPA in 1985; average of SPA and GPA 1986-1988; and egg diameter analysis in 1989 and 1990.

| Year | Tahltan | | Average a/ Tahltan | |
|------|---------|--------|-----------------------|---------|
| | U.S. | Canada | Tahltan | non- |
| | | | | Tahltan |
| 1979 | 0.433 | | 0.433 | 0.567 |
| 1980 | 0.305 | | 0.305 | 0.695 |
| 1981 | 0.475 | | 0.475 | 0.525 |
| 1982 | 0.618 | | 0.618 | 0.382 |
| 1983 | 0.489 | 0.423 | 0.456 | 0.544 |
| 1984 | 0.635 | 0.394 | 0.493 | 0.507 |
| 1985 | 0.621 | 0.363 | 0.466 | 0.534 |
| 1986 | 0.398 | 0.500 | 0.449 | 0.551 |
| 1987 | 0.338 | 0.257 | 0.304 | 0.696 |
| 1988 | 0.209 | 0.122 | 0.172 | 0.828 |
| 1989 | | 0.188 | 0.188 | 0.812 |
| 1990 | | 0.417 | 0.417 | 0.583 |

a/ Average proportions are from averages of weekly stock composition and migratory timing (from drift test fishery) estimates.

Appendix B.25. Counts of adult sockeye salmon migrating through Tahltan Lake weir, 1959-1990.

| | Weir Year Installed | Date of Arrival | | | No. Taken | |
|----------|------------------------|-----------------|--------|--------|-------------------------------|---------------------|
| | | First | 50% | 90% | Total for Count Broodstock | Natural Spawners |
| 1959 | 30-Jun | 02-Aug | 12-Aug | 16-Aug | 4,311 | |
| 1960 | 15-Jul | 02-Aug | 24-Aug | 27-Aug | 6,387 | |
| 1961 | 20-Jul | 09-Aug | 11-Aug | 15-Aug | 16,619 | |
| 1962a/ | 01-Aug | 02-Aug | 05-Aug | 08-Aug | 14,508 | |
| 1963b/ | 03-Aug | | | | 1,780 | |
| 1964 | 23-Jul | 26-Jul | 14-Aug | 25-Aug | 18,353 | |
| 1965c/ | 19-Jul | 18-Jul | 02-Sep | 07-Sep | 1,471 | |
| 1966 | 12-Jul | 03-Aug | 13-Aug | 21-Aug | 21,580 | |
| 1967 | 11-Jul | 14-Jul | 21-Jul | 28-Jul | 38,801 | |
| 1968 | 11-Jul | 21-Jul | 25-Jul | 08-Aug | 19,726 | |
| 1969 | 07-Jul | 11-Jul | 18-Jul | 31-Jul | 11,805 | |
| 1970 | 05-Jul | 25-Jul | 01-Aug | 11-Aug | 8,419 | |
| 1971 | 12-Jul | 19-Jul | 28-Jul | 12-Aug | 18,523 | |
| 1972 | 13-Jul | 13-Jul | 19-Jul | 31-Aug | 52,545 | |
| 1973 | 10-Jul | 24-Jul | 30-Jul | 07-Aug | 2,877 | |
| 1974 | 03-Jul | 28-Jul | 03-Aug | 17-Aug | 8,101 | |
| 1975 | 10-Jul | 25-Jul | 08-Aug | 17-Aug | 8,159 | |
| 1976 | 16-Jul | 29-Jul | 01-Aug | 06-Aug | 24,111 | |
| 1977 | 06-Jul | 11-Jul | 16-Jul | 10-Aug | 42,960 | |
| 1978 | 10-Jul | 10-Jul | 20-Jul | 29-Jul | 22,788 | |
| 1979 | 09-Jul | 23-Jul | 01-Aug | 11-Aug | 10,211 | |
| 1980 | 04-Jul | 15-Jul | 22-Jul | 12-Aug | 11,018 | |
| 1981 | 30-Jun | 16-Jul | 26-Jul | 03-Aug | 50,790 | |
| 1982 | 02-Jul | 10-Jul | 19-Jul | 29-Jul | 28,257 | |
| 1983 | 27-Jun | 05-Jul | 22-Jul | 05-Aug | 21,256 | |
| 1984 | 20-Jun | 19-Jul | 24-Jul | 03-Aug | 32,777 | |
| 1985 | 28-Jun | 18-Jul | 31-Jul | 06-Aug | 67,326 | |
| 1986 | 10-Jul | 26-Jul | 04-Aug | 11-Aug | 20,280 | |
| 1987 | 14-Jul | 21-Jul | 04-Aug | 13-Aug | 6,958 | |
| 1988 | 16-Jul | 16-Jul | 06-Aug | 14-Aug | 2,536 | |
| 1989 | 07-Jul | 09-Jul | 01-Aug | 14-Aug | 8,316 | 2,210 6,106 |
| Averages | | | | | | |
| 59-89 | 10-Jul | 20-Jul | 31-Jul | 11-Aug | 19,469 | |
| 85-89 | 09-Jul | 18-Jul | 03-Aug | 11-Aug | 21,083 | |
| 1990 | 06-Jul | 15-Jul | 26-Jul | 03-Aug | 14,927 | 3,302 11,625 |

- a/ Question as to date weir installed.
- b/ Daily counts unavailable.
- c/ A slide occurred blocking the entrance for a while.

Appendix B.26. Aerial survey counts of non-Tahltan sockeye stocks in the Stikine River drainage, 1984-1990. The index represents the combined counts from eight spawning areas.

| Year | Escapement Index |
|----------|---------------------|
| 1984 | 2,329 |
| 1985 | 1,136 |
| 1986 | 571 |
| 1987 | 691 |
| 1988 | 376 |
| 1989 | 809 |
| Averages | |
| 84-89 | 986 |
| 85-89 | 718 |
| 1990 | 743 |

Appendix B.27. Count of sockeye salmon smolt migrating through Tahltan Lake smolt weir, 1984-1990.

| Weir Year Installed | Date of Arrival | | | | Total Count |
|------------------------|-----------------|--------|--------|--------|----------------|
| | First | 50% | 90% | | |
| 1984 | 10-May | 11-May | 23-May | 06-Jun | 219,702 |
| 1985 | 25-Apr | 23-May | 31-May | 28-May | 613,531 |
| 1986 | 08-May | 10-May | 31-May | 07-Jun | 244,330 |
| 1987 | 07-May | 15-May | 23-May | 24-May | 810,432 |
| 1988 | 01-May | 08-May | 20-May | 06-Jun | 1,170,136 |
| 1989 | 05-May | 08-May | 22-May | 06-Jun | 580,574 |
| Averages | | | | | |
| 84-89 | 04-May | 12-May | 25-May | 02-Jun | 606,451 |
| 85-89 | 03-May | 12-May | 25-May | 01-Jun | 683,801 |
| 1990a | 05-May | 15-May | 29-May | 05-Jun | 607,645 a/ |

a/ Actual count of 595,147 on June 14 expanded by average % of outmigration by date (97.9%) from historical data.

Appendix B.28. Weir counts of chinook salmon at Little Tahltan River, 1985-1990. Jacks are fish of less than 600 mm postorbital-hypural length.

| Weir Year Installed | Large Chinook | | | | Total Count | Jacks | | | Total All Chinook | |
|------------------------|------------------|----------------|----------------|--------|----------------|------------------|----------------|----------------|-------------------------|-------|
| | First Arrival | 50% Arrival | 90% Arrival | | | First Arrival | 50% Arrival | 90% Arrival | | |
| 1985 | 03-Jul | 04-Jul | 30-Jul | 06-Aug | 3,114 | 04-Jul | 31-Jul | 10-Aug | 413 | 3,527 |
| 1986 | 28-Jun | 29-Jun | 21-Jul | 05-Aug | 2,891 | 03-Jul | 25-Jul | 06-Aug | 572 | 3,463 |
| 1987 | 28-Jun | 04-Jul | 24-Jul | 02-Aug | 4,783 | 03-Jul | 26-Jul | 06-Aug | 365 | 5,148 |
| 1988 | 26-Jun | 27-Jun | 18-Jul | 03-Aug | 7,292 | 27-Jun | 17-Jul | 02-Aug | 327 | 7,619 |
| 1989 | 25-Jun | 26-Jun | 23-Jul | 02-Aug | 4,715 | 26-Jun | 23-Jun | 02-Aug | 199 | 4,914 |
| Averages | | | | | | | | | | |
| 85-89 | 28-Jun | 30-Jun | 23-Jul | 03-Aug | 4,559 | 30-Jun | 18-Jul | 05-Aug | 375 | 4,934 |
| 1990 | 22-Jun | 29-Jun | 23-Jul | 04-Aug | 4,392 | 05-Jul | 22-Jun | 30-Jul | 417 | 4,809 |

Appendix B.29. Index counts of Stikine chinook escapements, 1979-1990. Counts do not include jacks. Total Stikine escapement estimated by Little Tahltan aerial counts * 8 (1979-1984), since 1985 by Little Tahltan weir * 4.

| Year | Little Tahltan Weir | Little Tahltan (Aerial) | Tahltan (Aerial) | Beatty (Aerial) | a/ Andrew (Foot) | Total Stikine |
|----------|---------------------------|-------------------------------|---------------------|--------------------|------------------------|------------------|
| 1979 | | 1,166 | 2,118 | | 382 | 9,328 |
| 1980 | | 2,137 | 960 | 122 | 362 | 17,096 |
| 1981 | | 3,334 | 1,852 | 558 | 629 | 26,672 |
| 1982 | | 2,830 | 1,690 | 567 | 910 | 22,640 |
| 1983 | | 594 | 453 | 83 | 444 | 4,752 |
| 1984 | | 1,294 | | 126 | 355 | 10,352 |
| 1985 | 3,114 | 1,598 | 1,490 | 147 | 319 | 12,456 |
| 1986 | 2,891 | 1,201 | 1,400 | 183 | 707 | 11,564 |
| 1987 | 4,783 | 2,706 | 1,390 | 312 | 651 | 19,132 |
| 1988 | 7,292 | 3,796 | 4,384 | 593 | 470 | 29,168 |
| 1989 | 4,715 | 2,515 | b/ | 362 | 530 | 18,860 |
| Averages | | | | | | |
| 80-89 | | 2,201 | 1,513 | 305 | 538 | 17,269 |
| 85-89 | 4,559 | 2,363 | 1,733 | 319 | 535 | 18,236 |
| 1990 | 4,392 | 1,755 | 2,134 | 271 | 664 | 17,568 |

a/ Andrew Creek counts in 1983 and 1984 are from a weir.
 b/ Not surveyed due to poor visibility.

Appendix B.30. Index counts of Stikine coho salmon escapements, 1984, 1985, 1988, 1989, and 1990.

| Index Area | Year and Survey Date | | | | |
|----------------|----------------------|---------------|---------------|---------------|---------------|
| | 1990 10/30 | 1989 10/27 | 1988 10/28 | 1985 10/25 | 1984 10/30 |
| Katete (south) | 94 | 336 | 32 | 590 | 460 |
| Katete (north) | 548 | 896 | 227 | 1,217 | |
| Craig | 810 | 992 | a/ | 735 | 0 |
| Jekill | NS | a/ | a/ | | 0 |
| Verret | 494 | 848 | 175 | 39 | 15 |
| Bronson Slough | NS | 120 | | 0 | 42 |
| Scud Slough | 664 | 707 | 97 | | |
| Porcupine | 430 | 90 | 53 | | |
| Christina | NS | 55 | 0 | | |
| Total | 3,040 | 4,044 | 584 | 2,581 | 517 |

a/ Poor observation conditions
 b/ Surveys not completed for 1990.

Appendix B.31. Stikine River sockeye salmon run size, 1979-1990. Catches include test fishery catches.

| Year | Inriver run size estimates | | | Inriver Catch | Escapement | Marine Catch | Total Run |
|---------------------------------|----------------------------|---------|----------------------|------------------|------------|-----------------|--------------|
| | Canada | U.S. | Average ^a | | | | |
| 1979 | | 40,353 | 40,353 | 13,534 | 26,819 | 8,299 | 48,652 |
| 1980 | | 62,743 | 62,743 | 20,919 | 41,824 | 23,206 | 85,949 |
| 1981 | | 140,029 | 140,029 | 27,624 | 112,405 | 27,538 | 167,567 |
| 1982 | | 68,761 | 68,761 | 20,540 | 48,221 | 43,329 | 112,090 |
| 1983 | 77,260 | 66,838 | 71,683 | 21,120 | 50,563 | 5,810 | 77,493 |
| 1984 | 95,454 | 59,168 | 76,211 | 5,327 | 70,884 | 7,928 | 84,139 |
| 1985 | 237,261 | 138,498 | 184,747 | 26,804 | 157,943 | 29,747 | 214,494 |
| 1986 | | | 69,036 | 17,846 | 51,190 | 6,420 | 75,456 |
| 1987 | | | 39,264 | 11,283 | 27,981 | 4,077 | 43,342 |
| 1988 | | | 41,915 | 16,538 | 25,377 | 3,181 | 45,096 |
| 1989 | | | 75,054 | 21,639 | 53,415 | 15,335 | 90,389 |
| Averages | | | | | | | |
| 79-89 | | | 79,072 | 18,470 | 60,602 | 15,897 | 94,970 |
| 80-89 | | | 82,944 | 18,964 | 63,980 | 16,657 | 99,602 |
| 1990 | | | 57,386 | 19,964 | 37,422 | 9,856 | 67,242 |
| Tahltan sockeye run size | | | | | | | |
| 1979 | | | 17,472 | 7,261 | 10,211 | 5,076 | 22,548 |
| 1980 | | | 19,137 | 8,119 | 11,018 | 11,239 | 30,376 |
| 1981 | | | 66,514 | 15,724 | 50,790 | 16,189 | 82,703 |
| 1982 | | | 42,493 | 14,236 | 28,257 | 24,785 | 67,278 |
| 1983 | | | 32,684 | 11,428 | 21,256 | 5,104 | 37,788 |
| 1984 | | | 37,571 | 4,794 | 32,777 | 3,251 | 40,822 |
| 1985 | | | 86,008 | 18,682 | 67,326 | 25,197 | 111,205 |
| 1986 | | | 31,015 | 10,735 | 20,280 | 2,757 | 33,771 |
| 1987 | | | 11,923 | 4,965 | 6,958 | 2,255 | 14,178 |
| 1988 | | | 7,222 | 4,686 | 2,536 | 2,129 | 9,351 |
| 1989 | | | 14,110 | 5,794 | 8,316 | 1,556 | 15,666 |
| Averages | | | | | | | |
| 79-89 | | | 33,286 | 9,675 | 23,611 | 9,049 | 42,335 |
| 80-89 | | | 34,868 | 9,916 | 24,951 | 9,446 | 44,314 |
| 1990 | | | 23,923 | 8,996 | 14,927 | 2,307 | 26,230 |

a/ The average is an average of weekly run timing estimates as well as stock composition estimates and is not a simple average of total estimates for the season.

Appendix C.1. Weekly salmon catch and effort in the Alaskan District 111 commercial drift gill net fishery, 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|-------|------------|---------|---------|--------|---------|---------|--------|-------------|-----------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Boats | Days Opena/ | Boat Days |
| 25 | 17-Jun | 487 | 3,287 | 3 | 7 | 311 | 56 | 3.0 | 168 |
| 26 | 24-Jun | 547 | 8,370 | 18 | 456 | 3,850 | 77 | 3.0 | 231 |
| 27 | 01-Jul | 1,361 | 11,100 | 36 | 2,171 | 17,565 | 71 | 3.0 | 213 |
| 28 | 08-Jul | 348 | 18,704 | 483 | 6,968 | 29,991 | 94 | 2.7 | 254 |
| 29 | 15-Jul | 113 | 25,381 | 645 | 9,515 | 27,761 | 113 | 2.7 | 305 |
| 30 | 22-Jul | 195 | 26,245 | 1,205 | 26,842 | 17,716 | 99 | 4.0 | 396 |
| 31 | 29-Jul | 91 | 6,724 | 1,350 | 27,680 | 6,560 | 52 | 3.0 | 156 |
| 32 | 05-Aug | 52 | 12,585 | 3,000 | 31,915 | 4,209 | 87 | 3.0 | 261 |
| 33 | 12-Aug | 165 | 9,234 | 7,090 | 29,054 | 4,297 | 78 | 3.0 | 234 |
| 34 | 19-Aug | 35 | 3,976 | 9,863 | 17,429 | 8,853 | 162 | 3.0 | 486 |
| 35 | 26-Aug | 15 | 704 | 10,629 | 797 | 8,292 | 57 | 2.0 | 114 |
| 36 | 02-Sep | 33 | 390 | 14,226 | 196 | 8,447 | 78 | 2.0 | 156 |
| 37 | 09-Sep | 16 | 136 | 9,886 | 6 | 6,079 | 64 | 2.0 | 128 |
| 38 | 16-Sep | 15 | 47 | 7,673 | 0 | 1,526 | 68 | 1.0 | 68 |
| 39 | 23-Sep | 7 | 1 | 1,203 | 0 | 73 | 23 | 2.0 | 46 |
| Total | | 3,480 | 126,884 | 67,310 | 153,036 | 145,530 | 1,179 | 39.4 | 3,216 |

a/ Night closures to minimize chinook catch were in effect during weeks 28 and 29.

Appendix C.2. Weekly salmon catch and effort in the Alaskan District 111 test gill net fishery, 1990. The test fishery was operated in Port Snettisham.

| Week | Start Date | Catch | | | | | Effort | | |
|----------|------------|---------|---------|------|------|------|--------|-----------|-----------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Boats | Days Open | Boat Days |
| 27 | 01-Jul | 6 | 3 | 0 | 1 | 28 | 1 | 0.362 | 0.36 |
| 28 | 08-Jul | 5 | 9 | 0 | 2 | 52 | 1 | 0.130 | 0.13 |
| 29 | 15-Jul | 5 | 17 | 0 | 11 | 104 | 1 | 0.336 | 0.34 |
| 30 | 22-Jul | 2 | 10 | 0 | 10 | 20 | 1 | 0.518 | 0.52 |
| 31 | 29-Jul | 3 | 18 | 0 | 14 | 13 | 1 | 0.197 | 0.20 |
| Total a/ | | 21 | 57 | 0 | 38 | 217 | 5 | 1.543 | 1.543 |

a/ Not all fish caught were sold, therefore, fish ticket catch totals are incorrect.

Appendix C.3. Weekly stock proportions of sockeye salmon harvested in the Alaskan District 111 commercial drift gill net fishery, 1990. Data based on scale pattern analysis (SPA).

| Week | Kuthai | Little Trapper | Mainstem | Little Tatsamenie | Total Taku | Crescent | Total Speel | Snettisham |
|-------|--------|----------------|----------|-------------------|------------|----------|-------------|------------|
| 25 | 0.360 | 0.112 | 0.316 | 0.086 | 0.874 | 0.126 | 0.000 | 0.126 |
| 26 | 0.148 | 0.295 | 0.290 | 0.203 | 0.935 | 0.065 | 0.000 | 0.065 |
| 27 | 0.047 | 0.306 | 0.541 | 0.011 | 0.904 | 0.089 | 0.006 | 0.096 |
| 28 | 0.050 | 0.285 | 0.215 | 0.223 | 0.773 | 0.218 | 0.009 | 0.227 |
| 29 | 0.011 | 0.297 | 0.101 | 0.374 | 0.782 | 0.206 | 0.012 | 0.218 |
| 30 | 0.013 | 0.163 | 0.226 | 0.462 | 0.863 | 0.101 | 0.036 | 0.137 |
| 31 | 0.002 | 0.133 | 0.473 | 0.335 | 0.943 | 0.011 | 0.046 | 0.057 |
| 32 | 0.001 | 0.049 | 0.687 | 0.202 | 0.939 | 0.006 | 0.055 | 0.061 |
| 33 | 0.000 | 0.004 | 0.612 | 0.263 | 0.878 | 0.000 | 0.122 | 0.122 |
| 34 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| 35 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| 36 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| 37 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| 38 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| 39 | 0.000 | 0.011 | 0.615 | 0.236 | 0.862 | 0.037 | 0.102 | 0.138 |
| Total | 0.036 | 0.197 | 0.336 | 0.286 | 0.855 | 0.112 | 0.033 | 0.145 |

Appendix C.4. Weekly stock-specific catch of Taku sockeye salmon harvested in the Alaskan District 111 commercial drift gill net fishery, 1990. Data based on SPA.

| Week | Kuthai | Little Trapper | Mainstem | Little Tatsamenie | Total Taku | Crescent | Speel | Total Snettisham |
|--------------|--------------|----------------|---------------|-------------------|----------------|---------------|--------------|------------------|
| 25 | 1,183 | 367 | 1,039 | 283 | 2,872 | 415 | 0 | 415 |
| 26 | 1,236 | 2,465 | 2,425 | 1,697 | 7,823 | 547 | 0 | 547 |
| 27 | 527 | 3,392 | 6,002 | 117 | 10,038 | 990 | 72 | 1,062 |
| 28 | 940 | 5,327 | 4,022 | 4,173 | 14,462 | 4,070 | 172 | 4,242 |
| 29 | 290 | 7,530 | 2,554 | 9,480 | 19,854 | 5,235 | 292 | 5,527 |
| 30 | 338 | 4,269 | 5,926 | 12,123 | 22,656 | 2,644 | 945 | 3,589 |
| 31 | 11 | 894 | 3,182 | 2,255 | 6,342 | 76 | 306 | 382 |
| 32 | 14 | 613 | 8,648 | 2,541 | 11,816 | 72 | 697 | 769 |
| 33 | 0 | 37 | 5,648 | 2,424 | 8,109 | 0 | 1,125 | 1,125 |
| 34 | 0 | 44 | 2,444 | 938 | 3,426 | 146 | 404 | 550 |
| 35 | 0 | 8 | 433 | 166 | 607 | 26 | 72 | 97 |
| 36 | 0 | 4 | 240 | 92 | 336 | 14 | 40 | 54 |
| 37 | 0 | 1 | 84 | 32 | 117 | 5 | 14 | 19 |
| 38 | 0 | 1 | 29 | 11 | 40 | 2 | 5 | 7 |
| 39 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Total | 4,539 | 24,952 | 42,676 | 36,332 | 108,499 | 14,242 | 4,143 | 18,385 |

Appendix C.5. Weekly salmon and steelhead trout catch and effort in the Canadian commercial fishery in the Taku River, 1990.

| Week | Start Date | Catch | | | | | | Effort | | | |
|--------------|------------|------------|--------------|---------------|--------------|------------|-----------|------------|------------------|-------------|--------------|
| | | Chinook | | Sockeye | Coho | Pink | Chum | Steel-head | Average Licenses | Days Open | Boat Days |
| | | Jacks | Large | | | | | | | | |
| 26 | 24-Jun | 69 | 735 | 2,217 | 0 | 1 | 0 | 1 | 11.0 | 2.3 | 25.3 |
| 27 | 01-Jul | 29 | 230 | 1,508 | 2 | 4 | 0 | 2 | 10.0 | 2.0 | 20.0 |
| 28 | 08-Jul | 24 | 153 | 3,709 | 10 | 95 | 1 | 0 | 13.0 | 4.0 | 52.0 |
| 29 | 15-Jul | 4 | 86 | 2,922 | 57 | 89 | 1 | 0 | 11.0 | 3.0 | 33.0 |
| 30 | 22-Jul | 1 | 39 | 4,394 | 361 | 125 | 2 | 1 | 13.0 | 4.0 | 52.0 |
| 31 | 29-Jul | 1 | 14 | 3,478 | 913 | 39 | 5 | 5 | 11.9 | 4.0 | 47.6 |
| 32 | 05-Aug | 0 | 1 | 1,453 | 512 | 25 | 3 | 2 | 10.7 | 3.0 | 32.1 |
| 33 | 12-Aug | 0 | 0 | 474 | 202 | 0 | 0 | 0 | 5.0 | 2.0 | 10.0 |
| 34 | 19-Aug | 0 | 0 | 945 | 1,150 | 0 | 0 | 11 | 5.8 | 4.0 | 23.2 |
| Total | | 128 | 1,258 | 21,100 | 3,207 | 378 | 12 | 22 | 91.4 | 28.3 | 295.2 |

Appendix C.6. Weekly stock proportions of sockeye salmon harvested the Canadian commercial fishery in the Taku River, 1990. Data based on SPA.

| Week | Kuthai | Little Trapper | Mainstem | Little Tatsamenie |
|--------------|--------------|----------------|--------------|-------------------|
| 26 | 0.459 | 0.278 | 0.188 | 0.074 |
| 27 | 0.197 | 0.666 | 0.052 | 0.085 |
| 28 | 0.135 | 0.478 | 0.387 | 0.000 |
| 29 | 0.054 | 0.466 | 0.429 | 0.052 |
| 30 | 0.059 | 0.519 | 0.165 | 0.257 |
| 31 | 0.034 | 0.244 | 0.376 | 0.347 |
| 32 | 0.003 | 0.106 | 0.653 | 0.238 |
| 33 | 0.002 | 0.063 | 0.738 | 0.196 |
| 34 | 0.002 | 0.123 | 0.652 | 0.223 |
| 35 | 0.002 | 0.123 | 0.652 | 0.223 |
| 36 | 0.002 | 0.123 | 0.652 | 0.223 |
| 37 | 0.002 | 0.123 | 0.652 | 0.223 |
| 38 | 0.002 | 0.123 | 0.652 | 0.223 |
| Total | 0.112 | 0.388 | 0.338 | 0.163 |

Appendix C.7. Weekly stock-specific catch of sockeye salmon in the Canadian commercial fishery in the Taku River, 1990. Data based on SPA.

| Week | Kuthai | Little Trapper | Mainstem | Little Tatsamenie |
|-------|--------|----------------|----------|-------------------|
| 26 | 1,018 | 617 | 417 | 165 |
| 27 | 297 | 1,004 | 79 | 128 |
| 28 | 499 | 1,772 | 1,437 | 1 |
| 29 | 157 | 1,361 | 1,253 | 151 |
| 30 | 258 | 2,282 | 724 | 1,130 |
| 31 | 119 | 847 | 1,306 | 1,206 |
| 32 | 4 | 154 | 949 | 346 |
| 33 | 1 | 30 | 350 | 93 |
| 34 | 2 | 116 | 616 | 211 |
| Total | 2,355 | 8,183 | 7,131 | 3,431 |

Appendix C.8. Weekly salmon and steelhead trout catch in the Canadian test fishery in the Taku River, 1990.

| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Steelhead |
|-------|------------|---------|---------|------|------|------|-----------|
| 25 | 17-Jun | 19 | 16 | 0 | 0 | 0 | 0 |
| 26 | 24-Jun | 22 | 51 | 0 | 0 | 0 | 0 |
| 27 | 01-Jul | 6 | 53 | 1 | 0 | 0 | 0 |
| 28 | 08-Jul | 1 | 25 | 0 | 0 | 0 | 0 |
| 29 | 15-Jul | 0 | 17 | 0 | 0 | 0 | 0 |
| 30 | 22-Jul | 0 | 21 | 4 | 0 | 0 | 0 |
| 31 | 29-Jul | 0 | 9 | 2 | 0 | 0 | 0 |
| 32 | 05-Aug | 0 | 13 | 6 | 0 | 0 | 0 |
| 33 | 12-Aug | 0 | 6 | 6 | 0 | 0 | 0 |
| 34 | 19-Aug | 0 | 7 | 23 | 0 | 0 | 0 |
| 35 | 26-Aug | 0 | 40 | 131 | 0 | 0 | 1 |
| 36 | 02-Sep | 0 | 23 | 132 | 0 | 0 | 3 |
| 37 | 09-Sep | 0 | 4 | 93 | 0 | 0 | 12 |
| 38 | 16-Sep | 0 | 0 | 71 | 0 | 0 | 4 |
| 39 | 23-Sep | 0 | 0 | 3 | 0 | 0 | 0 |
| Total | | 48 | 285 | 472 | 0 | 0 | 20 |

Appendix C.9. Weekly stock specific-catch of sockeye salmon in the Canadian test fishery in the Taku River, 1990. Data based on SPA, weekly stock proportions assumed the same as the commercial catch.

| Week | Kuthai | Little Trapper | Mainstem | Little Tatsamenie |
|-------|--------|----------------|----------|-------------------|
| 25 | 7 | 4 | 3 | 1 |
| 26 | 23 | 14 | 10 | 4 |
| 27 | 10 | 35 | 3 | 4 |
| 28 | 3 | 12 | 10 | 0 |
| 29 | 1 | 8 | 7 | 1 |
| 30 | 1 | 11 | 3 | 5 |
| 31 | 0 | 2 | 3 | 3 |
| 32 | 0 | 1 | 8 | 3 |
| 33 | 0 | 0 | 4 | 1 |
| 34 | 0 | 1 | 5 | 2 |
| 35 | 0 | 5 | 26 | 9 |
| 36 | 0 | 3 | 15 | 5 |
| 37 | 0 | 0 | 3 | 1 |
| Total | 47 | 98 | 100 | 40 |

Appendix C.10. Mark-recapture estimate of above border run of sockeye and coho salmon in the Taku River, 1990.

| Recovery Week | Start Date | Above Border Run | Canadian Harvests | | Above Border b/ Fooda/Escapement | |
|-----------------|------------|------------------|-------------------|------------|-------------------------------------|------------------|
| | | | Commercial | Test | | |
| Sockeye | | | | | | |
| 25 | 17-Jun | 283 | | 16 | 267 | |
| 26 | 24-Jun | 19,643 | 2,217 | 51 | 17,375 | |
| 27 | 01-Jul | 14,756 | 1,508 | 53 | 13,195 | |
| 28 | 08-Jul | 18,857 | 3,709 | 25 | 15,123 | |
| 29 | 15-Jul | 16,223 | 2,922 | 17 | 13,284 | |
| 30 | 22-Jul | 16,907 | 4,394 | 21 | 12,492 | |
| 31 | 29-Jul | 9,163 | 3,478 | 9 | 5,676 | |
| 32 | 05-Aug | 3,182 | 1,453 | 13 | 1,716 | |
| 33 | 12-Aug | 5,402 | 474 | 6 | 4,922 | |
| 34 | 19-Aug | 7,324 | 945 | 7 | 6,372 | |
| 35 | 26-Aug | 1,353 | 0 | 40 | 1,313 | |
| 36 | 02-Sep | 1,161 | 0 | 23 | 1,138 | |
| Total c/ | | 114,254 | 21,100 | 285 | 74 | 92795 |
| Coho | | | | | | |
| 27-28 | 01-Jul | 52 | 12 | 1 | 39 | |
| 29 | 15-Jul | 314 | 57 | 0 | 257 | |
| 30 | 22-Jul | 852 | 361 | 4 | 487 | |
| 31 | 29-Jul | 2,429 | 913 | 2 | 1,514 | |
| 32 | 05-Aug | 1,685 | 512 | 6 | 1,167 | |
| 33 | 12-Aug | 1,070 | 202 | 6 | 862 | |
| 34 | 19-Aug | 16,053 | 1,150 | 23 | 14,880 | |
| 35 | 26-Aug | 9,768 | 0 | 131 | 9,637 | |
| 36 | 02-Sep | 18,760 | 0 | 132 | 18,628 | |
| 37-39 | 09-Sep | 24,054 | 0 | 167 | 23,887 | |
| Total | | 75,037 | 3,207 | 472 | 74 | 71,284 d/ |

- a/ Food fishery catch by week not available.
- b/ Total above border escapement equals the sum of the period escapements minus the food fishery catch and test fishery catch after week 36.
- c/ Test fishery total includes fish caught after week 36.
- d/ A second method of estimating the above-border run size by expanding the test fishery CPUE indicated an above-border run of 85,053 coho salmon.

Appendix C.11. Daily counts of salmon passing through Nahlin River weir, 1990.

| Date | Jack a/ Chinook Count | Large Chinook | | | Sockeye | | |
|--------|-----------------------------|---------------|-------|---------|---------|-------|---------|
| | | Count | Cum. | Percent | Count | Cum. | Percent |
| 18-Jun | | | | | | | |
| 19-Jun | 0 | 1 | 1 | 0.1 | 0 | 0 | 0.0 |
| 20-Jun | 0 | 0 | 1 | 0.1 | 0 | 0 | 0.0 |
| 21-Jun | 0 | 1 | 2 | 0.1 | 0 | 0 | 0.0 |
| 22-Jun | 0 | 0 | 2 | 0.1 | 0 | 0 | 0.0 |
| 23-Jun | 0 | 1 | 3 | 0.2 | 0 | 0 | 0.0 |
| 24-Jun | 0 | 2 | 5 | 0.3 | 0 | 0 | 0.0 |
| 25-Jun | 0 | 4 | 9 | 0.5 | 0 | 0 | 0.0 |
| 26-Jun | 0 | 1 | 10 | 0.5 | 0 | 0 | 0.0 |
| 27-Jun | 0 | 0 | 10 | 0.5 | 0 | 0 | 0.0 |
| 28-Jun | 0 | 1 | 11 | 0.6 | 0 | 0 | 0.0 |
| 29-Jun | 2 | 7 | 18 | 0.9 | 3 | 3 | 0.1 |
| 30-Jun | 3 | 6 | 24 | 1.3 | 2 | 5 | 0.2 |
| 01-Jul | 3 | 42 | 66 | 3.5 | 23 | 28 | 1.1 |
| 02-Jul | 0 | 14 | 80 | 4.2 | 92 | 120 | 4.8 |
| 03-Jul | 0 | 0 | 80 | 4.2 | 200 | 320 | 12.7 |
| 04-Jul | 6 | 14 | 94 | 4.9 | 417 | 737 | 29.3 |
| 05-Jul | 6 | 27 | 121 | 6.3 | 207 | 944 | 37.5 |
| 06-Jul | 11 | 29 | 150 | 7.8 | 139 | 1,083 | 43.1 |
| 07-Jul | 14 | 31 | 181 | 9.5 | 90 | 1,173 | 46.6 |
| 08-Jul | 11 | 30 | 211 | 11.0 | 74 | 1,247 | 49.6 |
| 09-Jul | 8 | 17 | 228 | 11.9 | 61 | 1,308 | 52.0 |
| 10-Jul | 14 | 29 | 257 | 13.4 | 84 | 1,392 | 55.3 |
| 11-Jul | 12 | 32 | 289 | 15.1 | 27 | 1,419 | 56.4 |
| 12-Jul | 6 | 32 | 321 | 16.8 | 20 | 1,439 | 57.2 |
| 13-Jul | 2 | 25 | 346 | 18.1 | 21 | 1,460 | 58.1 |
| 14-Jul | 8 | 14 | 360 | 18.8 | 15 | 1,475 | 58.6 |
| 15-Jul | 14 | 141 | 501 | 26.2 | 20 | 1,495 | 59.4 |
| 16-Jul | 23 | 105 | 606 | 31.7 | 19 | 1,514 | 60.2 |
| 17-Jul | 18 | 119 | 725 | 37.9 | 37 | 1,551 | 61.7 |
| 18-Jul | 22 | 145 | 870 | 45.5 | 44 | 1,595 | 63.4 |
| 19-Jul | 22 | 193 | 1,063 | 55.6 | 30 | 1,625 | 64.6 |
| 20-Jul | 13 | 83 | 1,146 | 60.0 | 57 | 1,682 | 66.9 |
| 21-Jul | 17 | 57 | 1,203 | 63.0 | 63 | 1,745 | 69.4 |
| 22-Jul | 18 | 88 | 1,291 | 67.6 | 82 | 1,827 | 72.6 |
| 23-Jul | 8 | 31 | 1,322 | 69.2 | 133 | 1,960 | 77.9 |
| 24-Jul | 10 | 80 | 1,402 | 73.4 | 141 | 2,101 | 83.5 |
| 25-Jul | 11 | 77 | 1,479 | 77.4 | 89 | 2,190 | 87.1 |
| 26-Jul | 2 | 6 | 1,485 | 77.7 | 78 | 2,268 | 90.2 |
| 27-Jul | 1 | 75 | 1,560 | 81.6 | 66 | 2,334 | 92.8 |
| 28-Jul | 5 | 130 | 1,690 | 88.4 | 56 | 2,390 | 95.0 |
| 29-Jul | 7 | 83 | 1,773 | 92.8 | 44 | 2,434 | 96.8 |
| 30-Jul | 3 | 45 | 1,818 | 95.1 | 33 | 2,467 | 98.1 |
| 31-Jul | 6 | 34 | 1,852 | 96.9 | 29 | 2,496 | 99.2 |
| 01-Aug | 2 | 17 | 1,869 | 97.8 | 8 | 2,504 | 99.6 |
| 02-Aug | 0 | 10 | 1,879 | 98.3 | 10 | 2,514 | 100.0 |
| 03-Aug | 5 | 21 | 1,900 | 99.4 | 1 | 2,515 | 100.0 |
| 04-Aug | 0 | 11 | 1,911 | 100.0 | 0 | 2,515 | 100.0 |
| | 313 | 1,911 | | | 2,515 | | |

a/ Jack chinook are defined as fish of less than 660 MEF length.

Appendix C.12. Daily counts of salmon passing through Little Tatsamenie weir, 1990.

| Date | Jack Chinook Count | Large Chinook | | | Sockeye | | | Coho | | |
|--------|--------------------------|---------------|------|---------|---------|-------|---------|-------|------|---------|
| | | Count | Cum. | Percent | Count | Cum. | Percent | Count | Cum. | Percent |
| 29-Jul | | 0 | 0 | 0.0 | 1 | 1 | 0.0 | 0 | 0 | 0.0 |
| 30-Jul | 1 | | | | | | | | | |
| 31-Jul | 14 | 12 | 12 | 2.8 | 1 | 2 | 0.0 | 0 | 0 | 0.0 |
| 01-Aug | 5 | 13 | 25 | 5.8 | 1 | 3 | 0.1 | 0 | 0 | 0.0 |
| 02-Aug | 4 | 6 | 31 | 7.1 | 4 | 7 | 0.1 | 0 | 0 | 0.0 |
| 03-Aug | 3 | 0 | 31 | 7.1 | 0 | 7 | 0.1 | 0 | 0 | 0.0 |
| 04-Aug | 0 | 6 | 37 | 8.5 | 0 | 7 | 0.1 | 0 | 0 | 0.0 |
| 05-Aug | 8 | 3 | 40 | 9.2 | 3 | 10 | 0.2 | 0 | 0 | 0.0 |
| 06-Aug | 6 | 6 | 46 | 10.6 | 4 | 14 | 0.2 | 0 | 0 | 0.0 |
| 07-Aug | 5 | 19 | 65 | 15.0 | 5 | 19 | 0.3 | 0 | 0 | 0.0 |
| 08-Aug | 7 | 13 | 78 | 18.0 | 4 | 23 | 0.4 | 0 | 0 | 0.0 |
| 09-Aug | 4 | 5 | 83 | 19.1 | 6 | 29 | 0.5 | 0 | 0 | 0.0 |
| 10-Aug | 0 | 4 | 87 | 20.0 | 3 | 32 | 0.6 | 0 | 0 | 0.0 |
| 11-Aug | 1 | 3 | 90 | 20.7 | 2 | 34 | 0.6 | 0 | 0 | 0.0 |
| 12-Aug | 26 | 22 | 112 | 25.8 | 47 | 81 | 1.4 | 0 | 0 | 0.0 |
| 13-Aug | 30 | 38 | 150 | 34.6 | 31 | 112 | 2.0 | 0 | 0 | 0.0 |
| 14-Aug | 18 | 49 | 199 | 45.9 | 33 | 145 | 2.5 | 0 | 0 | 0.0 |
| 15-Aug | 8 | 22 | 221 | 50.9 | 15 | 160 | 2.8 | 0 | 0 | 0.0 |
| 16-Aug | 3 | 21 | 242 | 55.8 | 6 | 166 | 2.9 | 0 | 0 | 0.0 |
| 17-Aug | 0 | 21 | 263 | 60.6 | 7 | 173 | 3.0 | 0 | 0 | 0.0 |
| 18-Aug | 0 | 4 | 267 | 61.5 | 4 | 177 | 3.1 | 0 | 0 | 0.0 |
| 19-Aug | 1 | 25 | 292 | 67.3 | 6 | 183 | 3.2 | 0 | 0 | 0.0 |
| 20-Aug | 1 | 14 | 306 | 70.5 | 3 | 186 | 3.3 | 0 | 0 | 0.0 |
| 21-Aug | 4 | 14 | 320 | 73.7 | 16 | 202 | 3.5 | 0 | 0 | 0.0 |
| 22-Aug | 5 | 11 | 331 | 76.3 | 35 | 237 | 4.2 | 0 | 0 | 0.0 |
| 23-Aug | 3 | 5 | 336 | 77.4 | 30 | 267 | 4.7 | 0 | 0 | 0.0 |
| 24-Aug | 5 | 22 | 358 | 82.5 | 44 | 311 | 5.5 | 0 | 0 | 0.0 |
| 25-Aug | 0 | 24 | 382 | 88.0 | 32 | 343 | 6.0 | 0 | 0 | 0.0 |
| 26-Aug | 7 | 6 | 388 | 89.4 | 94 | 437 | 7.7 | 0 | 0 | 0.0 |
| 27-Aug | 2 | 11 | 399 | 91.9 | 172 | 609 | 10.7 | 0 | 0 | 0.0 |
| 28-Aug | 1 | 10 | 409 | 94.2 | 198 | 807 | 14.1 | 0 | 0 | 0.0 |
| 29-Aug | 2 | 6 | 415 | 95.6 | 249 | 1,056 | 18.5 | 0 | 0 | 0.0 |
| 30-Aug | 2 | 7 | 422 | 97.2 | 275 | 1,331 | 23.3 | 0 | 0 | 0.0 |
| 31-Aug | 3 | 5 | 427 | 98.4 | 172 | 1,503 | 26.3 | 2 | 2 | 0.4 |
| 01-Sep | 0 | 1 | 428 | 98.6 | 135 | 1,638 | 28.7 | 0 | 2 | 0.4 |
| 02-Sep | 1 | 1 | 429 | 98.8 | 191 | 1,829 | 32.1 | 1 | 3 | 0.6 |
| 03-Sep | 1 | 2 | 431 | 99.3 | 357 | 2,186 | 38.3 | 1 | 4 | 0.8 |
| 04-Sep | 0 | 1 | 432 | 99.5 | 517 | 2,703 | 47.4 | 1 | 5 | 0.9 |
| 05-Sep | 0 | 1 | 433 | 99.8 | 307 | 3,010 | 52.8 | 1 | 6 | 1.1 |
| 06-Sep | 0 | 0 | 433 | 99.8 | 520 | 3,530 | 61.9 | 3 | 9 | 1.7 |
| 07-Sep | 0 | 1 | 434 | 100.0 | 267 | 3,797 | 66.5 | 1 | 10 | 1.9 |
| 08-Sep | 0 | 0 | 434 | 100.0 | 61 | 3,858 | 67.6 | 0 | 10 | 1.9 |
| 09-Sep | 0 | 0 | 434 | 100.0 | 75 | 3,933 | 68.9 | 3 | 13 | 2.5 |
| 10-Sep | 0 | 0 | 434 | 100.0 | 141 | 4,074 | 71.4 | 1 | 14 | 2.6 |
| 11-Sep | 0 | 0 | 434 | 100.0 | 50 | 4,124 | 72.3 | 0 | 14 | 2.6 |
| 12-Sep | 0 | 0 | 434 | 100.0 | 191 | 4,315 | 75.6 | 2 | 16 | 3.0 |
| 13-Sep | 0 | 0 | 434 | 100.0 | 203 | 4,518 | 79.2 | 8 | 24 | 4.5 |
| 14-Sep | 0 | 0 | 434 | 100.0 | 109 | 4,627 | 81.1 | 4 | 28 | 5.3 |
| 15-Sep | 0 | 0 | 434 | 100.0 | 132 | 4,759 | 83.4 | 5 | 33 | 6.2 |
| 16-Sep | 0 | 0 | 434 | 100.0 | 122 | 4,881 | 85.5 | 7 | 40 | 7.6 |
| 17-Sep | 0 | 0 | 434 | 100.0 | 97 | 4,978 | 87.2 | 0 | 40 | 7.6 |
| 18-Sep | 0 | 0 | 434 | 100.0 | 116 | 5,094 | 89.3 | 1 | 41 | 7.8 |
| 19-Sep | 0 | 0 | 434 | 100.0 | 107 | 5,201 | 91.1 | 8 | 49 | 9.3 |
| 20-Sep | 0 | 0 | 434 | 100.0 | 40 | 5,241 | 91.9 | 3 | 52 | 9.8 |
| 21-Sep | 0 | 0 | 434 | 100.0 | 72 | 5,313 | 93.1 | 8 | 60 | 11.3 |
| 22-Sep | 0 | 0 | 434 | 100.0 | 95 | 5,408 | 94.8 | 16 | 76 | 14.4 |
| 23-Sep | 0 | 0 | 434 | 100.0 | 52 | 5,460 | 95.7 | 16 | 92 | 17.4 |
| 24-Sep | 0 | 0 | 434 | 100.0 | 50 | 5,510 | 96.6 | 12 | 104 | 19.7 |
| 25-Sep | 0 | 0 | 434 | 100.0 | 29 | 5,539 | 97.1 | 5 | 109 | 20.6 |
| 26-Sep | 0 | 0 | 434 | 100.0 | 31 | 5,570 | 97.6 | 24 | 133 | 25.1 |
| 27-Sep | 0 | 0 | 434 | 100.0 | 8 | 5,578 | 97.8 | 8 | 141 | 26.7 |
| 28-Sep | 0 | 0 | 434 | 100.0 | 9 | 5,587 | 97.9 | 15 | 156 | 29.5 |
| 29-Sep | 0 | 0 | 434 | 100.0 | 3 | 5,590 | 98.0 | 9 | 165 | 31.2 |
| 30-Sep | 0 | 0 | 434 | 100.0 | 3 | 5,593 | 98.0 | 11 | 176 | 33.3 |
| 01-Oct | 0 | 0 | 434 | 100.0 | 5 | 5,598 | 98.1 | 13 | 189 | 35.7 |
| 02-Oct | 0 | 0 | 434 | 100.0 | 6 | 5,604 | 98.2 | 18 | 207 | 39.1 |
| 03-Oct | 0 | 0 | 434 | 100.0 | 1 | 5,605 | 98.2 | 2 | 209 | 39.5 |
| 04-Oct | 0 | 0 | 434 | 100.0 | 9 | 5,614 | 98.4 | 32 | 241 | 45.6 |
| 05-Oct | 0 | 0 | 434 | 100.0 | 0 | 5,614 | 98.4 | 0 | 241 | 45.6 |
| 06-Oct | 0 | 0 | 434 | 100.0 | 8 | 5,622 | 98.5 | 14 | 255 | 48.2 |
| 07-Oct | 0 | 0 | 434 | 100.0 | 4 | 5,626 | 98.6 | 12 | 267 | 50.5 |
| 08-Oct | 0 | 0 | 434 | 100.0 | 8 | 5,634 | 98.7 | 18 | 285 | 53.9 |
| 09-Oct | 0 | 0 | 434 | 100.0 | 5 | 5,639 | 98.8 | 17 | 302 | 57.1 |
| 10-Oct | 0 | 0 | 434 | 100.0 | 11 | 5,650 | 99.0 | 25 | 327 | 61.8 |
| 11-Oct | 0 | 0 | 434 | 100.0 | 3 | 5,653 | 99.1 | 5 | 332 | 62.8 |
| 12-Oct | 0 | 0 | 434 | 100.0 | 4 | 5,657 | 99.1 | 5 | 337 | 63.7 |
| 13-Oct | 0 | 0 | 434 | 100.0 | 2 | 5,659 | 99.2 | 7 | 344 | 65.0 |
| 14-Oct | 0 | 0 | 434 | 100.0 | 2 | 5,661 | 99.2 | 11 | 355 | 67.1 |
| 15-Oct | | | | | 4 | 5,665 | 99.3 | 5 | 360 | 68.1 |
| 16-Oct | | | | | 4 | 5,669 | 99.4 | 5 | 365 | 69.0 |
| 17-Oct | | | | | 2 | 5,671 | 99.4 | 1 | 366 | 69.2 |
| 18-Oct | | | | | 3 | 5,674 | 99.4 | 8 | 374 | 70.7 |
| 19-Oct | | | | | 2 | 5,676 | 99.5 | 3 | 377 | 71.3 |

--Continued--

Appendix C.12. (Page 2 of 2.)

| Date | Jack Chinook Count | Large Chinook | | | Sockeye | | | Coho | | |
|-------------|--------------------------|----------------------|------|---------|------------------|-------|---------|--------|------|---------|
| | | Count | Cum. | Percent | Count | Cum. | Percent | Count | Cum. | Percent |
| 20-Oct | | | | | 3 | 5,679 | 99.5 | 9 | 386 | 73.0 |
| 21-Oct | | | | | 4 | 5,683 | 99.6 | 8 | 394 | 74.5 |
| 22-Oct | | | | | 6 | 5,689 | 99.7 | 11 | 405 | 76.6 |
| 23-Oct | | | | | 3 | 5,692 | 99.8 | 41 | 446 | 84.3 |
| 24-Oct | | | | | 11 | 5,703 | 99.9 | 4 | 450 | 85.1 |
| 25-Oct | | | | | 0 | 5,703 | 99.9 | 21 | 471 | 89.0 |
| 26-Oct | | | | | 0 | 5,703 | 99.9 | 23 | 494 | 93.4 |
| 27-Oct | | | | | 2 | 5,705 | 100.0 | 9 | 503 | 95.1 |
| 28-Oct | | | | | 1 | 5,706 | 100.0 | 13 | 516 | 97.5 |
| 29-Oct | | | | | 0 | 5,706 | 100.0 | 10 | 526 | 99.4 |
| 30-Oct | | --- Weir Removed --- | | | | | | 3 | 529 | 100.0 |
| Counts | 181 | 434 | | | 5,706 | | | 529 | | |
| Adjustments | | | | | 30 a/ -807 b/ | | | 140 a/ | | |
| Spawners | 181 | 434 | | | 4,929 | | | 669 | | |

a/ Totals of 30 sockeye and 140 coho salmon were holding below the weir when it was dismantled.
 b/ The adjustment for broodstock (-807 fish) includes 280 female and 280 male sockeye salmon spawned and 182 female and 65 male sockeye holding mortalities.

Appendix C.13. Daily counts of salmon passing through Little Trapper Lake weir, 1990.

| Sockeye | | | |
|-----------------------|------------------------|-------|---------|
| Date | Count | Cum. | Percent |
| 21-Jul | --- Weir Installed --- | | |
| 22-Jul | 0 | 0 | 0.0 |
| 23-Jul | 0 | 0 | 0.0 |
| 24-Jul | 0 | 0 | 0.0 |
| 25-Jul | 69 | 69 | 0.7 |
| 26-Jul | 450 | 519 | 5.5 |
| 27-Jul | 557 | 1,076 | 11.4 |
| 28-Jul | 375 | 1,451 | 15.4 |
| 29-Jul | 530 | 1,981 | 21.0 |
| 30-Jul | 586 | 2,567 | 27.2 |
| 31-Jul | 389 | 2,956 | 31.3 |
| 01-Aug | 178 | 3,134 | 33.2 |
| 02-Aug | 295 | 3,429 | 36.3 |
| 03-Aug | 198 | 3,627 | 38.4 |
| 04-Aug | 581 | 4,208 | 44.6 |
| 05-Aug | 324 | 4,532 | 48.0 |
| 06-Aug | 312 | 4,844 | 51.3 |
| 07-Aug | 336 | 5,180 | 54.9 |
| 08-Aug | 294 | 5,474 | 58.0 |
| 09-Aug | 530 | 6,004 | 63.6 |
| 10-Aug | 706 | 6,710 | 71.1 |
| 11-Aug | 565 | 7,275 | 77.0 |
| 12-Aug | 561 | 7,836 | 83.0 |
| 13-Aug | 293 | 8,129 | 86.1 |
| 14-Aug | 208 | 8,337 | 88.3 |
| 15-Aug | 206 | 8,543 | 90.5 |
| 16-Aug | 60 | 8,603 | 91.1 |
| 17-Aug | 52 | 8,655 | 91.7 |
| 18-Aug | 91 | 8,746 | 92.6 |
| 19-Aug | 93 | 8,839 | 93.6 |
| 20-Aug | 48 | 8,887 | 94.1 |
| 21-Aug | 15 | 8,902 | 94.3 |
| 22-Aug | 41 | 8,943 | 94.7 |
| 23-Aug | 46 | 8,989 | 95.2 |
| 24-Aug | 56 | 9,045 | 95.8 |
| 25-Aug | 33 | 9,078 | 96.1 |
| 26-Aug | 20 | 9,098 | 96.3 |
| 27-Aug | 22 | 9,120 | 96.6 |
| 28-Aug | 9 | 9,129 | 96.7 |
| 29-Aug | 22 | 9,151 | 96.9 |
| 30-Aug | 34 | 9,185 | 97.3 |
| 31-Aug | 29 | 9,214 | 97.6 |
| 01-Sep | 11 | 9,225 | 97.7 |
| 02-Sep | 20 | 9,245 | 97.9 |
| 03-Sep | 11 | 9,256 | 98.0 |
| 04-Sep | 21 | 9,277 | 98.2 |
| 05-Sep | 7 | 9,284 | 98.3 |
| 06-Sep | 7 | 9,291 | 98.4 |
| 07-Sep | 12 | 9,303 | 98.5 |
| 08-Sep | 47 | 9,350 | 99.0 |
| 09-Sep | 11 | 9,361 | 99.1 |
| 10-Sep | 13 | 9,374 | 99.3 |
| 11-Sep | 14 | 9,388 | 99.4 |
| 12-Sep | 13 | 9,401 | 99.6 |
| 13-Sep | 34 | 9,435 | 99.9 |
| 14-Sep | 8 | 9,443 | 100.0 |
| 15-Sep | 0 | 9,443 | 100.0 |
| 16-Sep | Weir Dismantled | | |
| Counted | 9,443 | | |
| Adjust.a/ Spawners | -1,666 7,777 | | |

a/ The adjustment for broodstock includes 761 female and 761 male sockeye salmon which were spawned and 65 female and 79 male sockeye holding mortalities.

Appendix C.14. Daily counts of salmon passing through Nakina River weir, 1990. These counts represent only a portion of the run above the Nakina River weir because the weir is installed after an unknown portion of the escapement has already passed.

| Date | Jack a/ Chinook Count | Large Chinook | | | Sockeye | | | Pink | | |
|--------|-----------------------------|---------------|------|---------|---------|------|---------|-------|------|---------|
| | | Count | Cum. | Percent | Count | Cum. | Percent | Count | Cum. | Percent |
| 28-Jul | | 58 | 58 | 6.0 | 0 | 0 | 0.0 | 3 | 3 | 2.8 |
| 29-Jul | | 72 | 130 | 13.4 | 0 | 0 | 0.0 | 3 | 6 | 5.6 |
| 30-Jul | | 49 | 179 | 18.5 | 0 | 0 | 0.0 | 6 | 12 | 11.1 |
| 31-Jul | | 95 | 274 | 28.3 | 0 | 0 | 0.0 | 7 | 19 | 17.6 |
| 01-Aug | | 6 | 280 | 28.9 | 0 | 0 | 0.0 | 2 | 21 | 19.4 |
| 02-Aug | | 81 | 361 | 37.3 | 0 | 0 | 0.0 | 8 | 29 | 26.9 |
| 03-Aug | | 86 | 447 | 46.2 | 2 | 2 | 0.3 | 0 | 29 | 26.9 |
| 04-Aug | | 126 | 573 | 59.2 | 2 | 4 | 0.5 | 4 | 33 | 30.6 |
| 05-Aug | | 78 | 651 | 67.3 | 1 | 5 | 0.6 | 20 | 53 | 49.1 |
| 06-Aug | | 48 | 699 | 72.2 | 9 | 14 | 1.8 | 6 | 59 | 54.6 |
| 07-Aug | | 63 | 762 | 78.7 | 1 | 15 | 1.9 | 10 | 69 | 63.9 |
| 08-Aug | | 62 | 824 | 85.1 | 8 | 23 | 3.0 | 5 | 74 | 68.5 |
| 09-Aug | | 38 | 862 | 89.0 | 8 | 31 | 4.0 | 5 | 79 | 73.1 |
| 10-Aug | | 34 | 896 | 92.6 | 8 | 39 | 5.0 | 5 | 84 | 77.8 |
| 11-Aug | | 21 | 917 | 94.7 | 13 | 52 | 6.7 | 7 | 91 | 84.3 |
| 12-Aug | | 29 | 946 | 97.7 | 59 | 111 | 14.3 | 7 | 98 | 90.7 |
| 13-Aug | | 12 | 958 | 99.0 | 86 | 197 | 25.3 | 6 | 104 | 96.3 |
| 14-Aug | | 0 | 958 | 99.0 | 83 | 280 | 36.0 | 1 | 105 | 97.2 |
| 15-Aug | | 0 | 958 | 99.0 | 43 | 323 | 41.5 | 0 | 105 | 97.2 |
| 16-Aug | | 5 | 963 | 99.5 | 63 | 386 | 49.6 | 2 | 107 | 99.1 |
| 17-Aug | | 1 | 964 | 99.6 | 53 | 439 | 56.4 | 1 | 108 | 100.0 |
| 18-Aug | | 4 | 968 | 100.0 | 62 | 501 | 64.4 | 0 | 108 | 100.0 |
| 19-Aug | | 0 | 968 | 100.0 | 93 | 594 | 76.3 | 0 | 108 | 100.0 |
| 20-Aug | | 0 | 968 | 100.0 | 75 | 669 | 86.0 | 0 | 108 | 100.0 |
| 21-Aug | | 0 | 968 | 100.0 | 69 | 738 | 94.9 | 0 | 108 | 100.0 |
| 22-Aug | | 0 | 968 | 100.0 | 0 | 738 | 94.9 | 0 | 108 | 100.0 |
| 23-Aug | | 0 | 968 | 100.0 | 27 | 765 | 98.3 | 0 | 108 | 100.0 |
| 24-Aug | | 0 | 968 | 100.0 | 0 | 765 | 98.3 | 0 | 108 | 100.0 |
| 25-Aug | | 0 | 968 | 100.0 | 13 | 778 | 100.0 | 0 | 108 | 100.0 |
| 26-Aug | | 0 | 968 | 100.0 | 0 | 778 | 100.0 | 0 | 108 | 100.0 |
| Totals | | 968 | | | 778 | | | 108 | | |

a/ Jack chinook are defined as fish of less than 650 MEF length.

Appendix C.15. Daily counts of salmon passing through Speel Lake weir, 1990.

| Date | Sockeye | | |
|----------|----------------|--------|---------|
| | Count | Cum. | Percent |
| 12-Jul | Weir Installed | | |
| 13-Jul | 0 | 0 | 0.00 |
| 14-Jul | 0 | 0 | 0.00 |
| 15-Jul | 3 | 3 | 0.02 |
| 16-Jul | 10 | 13 | 0.07 |
| 17-Jul | 9 | 22 | 0.12 |
| 18-Jul | 24 | 46 | 0.25 |
| 19-Jul | 40 | 86 | 0.48 |
| 20-Jul | 19 | 105 | 0.58 |
| 21-Jul | 15 | 120 | 0.66 |
| 22-Jul | 21 | 141 | 0.78 |
| 23-Jul | 36 | 177 | 0.98 |
| 24-Jul | 46 | 223 | 1.23 |
| 25-Jul | 55 | 278 | 1.54 |
| 26-Jul | 39 | 317 | 1.75 |
| 27-Jul | 580 | 897 | 4.97 |
| 28-Jul | 140 | 1,037 | 5.74 |
| 29-Jul | 524 | 1,561 | 8.64 |
| 30-Jul | 3,331 | 4,892 | 27.08 |
| 31-Jul | 94 | 4,986 | 27.60 |
| 01-Aug | 93 | 5,079 | 28.12 |
| 02-Aug | 123 | 5,202 | 28.80 |
| 03-Aug | 101 | 5,303 | 29.36 |
| 04-Aug | 2,912 | 8,215 | 45.48 |
| 05-Aug | 37 | 8,252 | 45.68 |
| 06-Aug | 65 | 8,317 | 46.04 |
| 07-Aug | 53 | 8,370 | 46.34 |
| 08-Aug | 56 | 8,426 | 46.65 |
| 09-Aug | 2,239 | 10,665 | 59.04 |
| 10-Aug | 23 | 10,688 | 59.17 |
| 11-Aug | 522 | 11,210 | 62.06 |
| 12-Aug | 305 | 11,515 | 63.75 |
| 13-Aug | 56 | 11,571 | 64.06 |
| 14-Aug | 1,042 | 12,613 | 69.82 |
| 15-Aug | 415 | 13,028 | 72.12 |
| 16-Aug | 825 | 13,853 | 76.69 |
| 17-Aug | 176 | 14,029 | 77.66 |
| 18-Aug | 208 | 14,237 | 78.81 |
| 19-Aug | 818 | 15,055 | 83.34 |
| 20-Aug | 677 | 15,732 | 87.09 |
| 21-Aug | 93 | 15,825 | 87.61 |
| 22-Aug | 170 | 15,995 | 88.55 |
| 23-Aug | 476 | 16,471 | 91.18 |
| 24-Aug | 488 | 16,959 | 93.88 |
| 25-Aug | 162 | 17,121 | 94.78 |
| 26-Aug | 139 | 17,260 | 95.55 |
| 27-Aug | 91 | 17,351 | 96.05 |
| 28-Aug | 713 | 18,064 | 100.00 |
| Total a/ | | 18,064 | |

a/ The total is not a complete count since an unknown but assumed small number of fish passed uncounted.

Appendix C.16. Daily counts of salmon passing through Crescent Lake weir, 1990. The actual escapements are unknown because a number of fish passed uncounted during high water.

| Date | Sockeye | | | Coho | | | Chum | | |
|--------|----------------|-------|---------|-------|------|---------|-------|------|---------|
| | Count | Cum. | Percent | Count | Cum. | Percent | Count | Cum. | Percent |
| 11-Jul | Weir Installed | | | | | | | | |
| 12-Jul | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 13-Jul | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 14-Jul | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 15-Jul | 2 | 2 | 0.2 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 16-Jul | 0 | 2 | 0.2 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 17-Jul | 0 | 2 | 0.2 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 18-Jul | 0 | 2 | 0.2 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 19-Jul | 0 | 2 | 0.2 | 0 | 0 | 0.0 | 0 | 0 | 0.0 |
| 20-Jul | 23 | 25 | 2.0 | 0 | 0 | 0.0 | 2 | 2 | 0.3 |
| 21-Jul | 143 | 168 | 13.3 | 0 | 0 | 0.0 | 0 | 2 | 0.3 |
| 22-Jul | 64 | 232 | 18.4 | 0 | 0 | 0.0 | 1 | 3 | 0.4 |
| 23-Jul | 85 | 317 | 25.1 | 0 | 0 | 0.0 | 3 | 6 | 0.9 |
| 24-Jul | 45 | 362 | 28.7 | 0 | 0 | 0.0 | 3 | 9 | 1.3 |
| 25-Jul | 52 | 414 | 32.8 | 0 | 0 | 0.0 | 8 | 17 | 2.5 |
| 26-Jul | 49 | 463 | 36.7 | 0 | 0 | 0.0 | 2 | 19 | 2.8 |
| 27-Jul | 17 | 480 | 38.0 | 0 | 0 | 0.0 | 13 | 32 | 4.7 |
| 28-Jul | 8 | 488 | 38.7 | 0 | 0 | 0.0 | 3 | 35 | 5.1 |
| 29-Jul | 32 | 520 | 41.2 | 0 | 0 | 0.0 | 5 | 40 | 5.9 |
| 30-Jul | 97 | 617 | 48.9 | 0 | 0 | 0.0 | 1 | 41 | 6.0 |
| 31-Jul | 11 | 628 | 49.8 | 0 | 0 | 0.0 | 6 | 47 | 6.9 |
| 01-Aug | 14 | 642 | 50.9 | 0 | 0 | 0.0 | 0 | 47 | 6.9 |
| 02-Aug | 5 | 647 | 51.3 | 0 | 0 | 0.0 | 8 | 55 | 8.1 |
| 03-Aug | 9 | 656 | 52.0 | 0 | 0 | 0.0 | 2 | 57 | 8.4 |
| 04-Aug | 144 | 800 | 63.4 | 0 | 0 | 0.0 | 9 | 66 | 9.7 |
| 05-Aug | 56 | 856 | 67.8 | 0 | 0 | 0.0 | 8 | 74 | 10.9 |
| 06-Aug | 15 | 871 | 69.0 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 07-Aug | 7 | 878 | 69.6 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 08-Aug | 38 | 916 | 72.6 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 09-Aug | 48 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 10-Aug | 0 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 11-Aug | 0 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 12-Aug | 0 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 13-Aug | 0 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 14-Aug | 0 | 964 | 76.4 | 0 | 0 | 0.0 | 0 | 74 | 10.9 |
| 15-Aug | 2 | 966 | 76.5 | 0 | 0 | 0.0 | 1 | 75 | 11.0 |
| 16-Aug | 15 | 981 | 77.7 | 0 | 0 | 0.0 | 9 | 84 | 12.4 |
| 17-Aug | 36 | 1,017 | 80.6 | 0 | 0 | 0.0 | 44 | 128 | 18.8 |
| 18-Aug | 68 | 1,085 | 86.0 | 1 | 1 | 4.3 | 39 | 167 | 24.6 |
| 19-Aug | 7 | 1,092 | 86.5 | 0 | 1 | 4.3 | 8 | 175 | 25.7 |
| 20-Aug | 0 | 1,092 | 86.5 | 3 | 4 | 17.4 | 0 | 175 | 25.7 |
| 21-Aug | 0 | 1,092 | 86.5 | 0 | 4 | 17.4 | 0 | 175 | 25.7 |
| 22-Aug | 3 | 1,095 | 86.8 | 0 | 4 | 17.4 | 0 | 175 | 25.7 |
| 23-Aug | 36 | 1,131 | 89.6 | 4 | 8 | 34.8 | 70 | 245 | 36.0 |
| 24-Aug | 37 | 1,168 | 92.6 | 2 | 10 | 43.5 | 100 | 345 | 50.7 |
| 25-Aug | 39 | 1,207 | 95.6 | 2 | 12 | 52.2 | 76 | 421 | 61.9 |
| 26-Aug | 27 | 1,234 | 97.8 | 3 | 15 | 65.2 | 109 | 530 | 77.9 |
| 27-Aug | 19 | 1,253 | 99.3 | 8 | 23 | 100.0 | 107 | 637 | 93.7 |
| 28-Aug | 9 | 1,262 | 100.0 | | 23 | 100.0 | 43 | 680 | 100.0 |
| Totals | 1,262 | | | 23 | | | 680 | | |

a/ The weir was not fishing during August 10 through August 14 and August 21 and 22 due to high water.

Appendix D.1. Salmon catches and effort in the Alaskan District 111 commercial drift gill net fishery, 1964-1990.

| Year | Catch | | | | | Effort | |
|-----------------|---------|---------|--------|---------|---------|-----------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Boat Days | Days Open |
| 1964 | 2,509 | 34,140 | 29,315 | 26,593 | 12,853 | 1,752 | 56.00 |
| 1965 | 4,170 | 27,569 | 32,667 | 2,768 | 11,533 | 1,461 | 63.00 |
| 1966 | 4,829 | 33,925 | 26,065 | 23,833 | 35,133 | 1,708 | 64.00 |
| 1967 | 5,417 | 17,735 | 40,391 | 12,372 | 22,834 | 1,792 | 53.00 |
| 1968 | 4,904 | 19,501 | 39,103 | 67,365 | 21,890 | 2,686 | 60.00 |
| 1969 | 6,986 | 41,169 | 10,802 | 73,927 | 15,049 | 1,552 | 41.50 |
| 1970 | 3,357 | 50,922 | 44,960 | 197,017 | 110,390 | 3,214 | 53.00 |
| 1971 | 6,958 | 66,181 | 41,830 | 31,484 | 91,145 | 3,004 | 55.00 |
| 1972 | 10,955 | 80,404 | 49,780 | 144,339 | 147,957 | 3,831 | 50.00 |
| 1973 | 9,799 | 85,317 | 35,453 | 58,186 | 109,245 | 3,532 | 38.00 |
| 1974 | 2,905 | 38,676 | 38,661 | 57,732 | 86,687 | 2,710 | 27.50 |
| 1975 | 2,182 | 32,513 | 1,185 | 9,567 | 2,678 | 1,240 | 15.50 |
| 1976 | 1,757 | 61,749 | 41,729 | 14,962 | 81,803 | 2,152 | 25.00 |
| 1977 | 1,068 | 70,097 | 54,917 | 88,578 | 61,102 | 2,603 | 27.00 |
| 1978 | 1,926 | 55,398 | 31,944 | 51,385 | 36,254 | 2,406 | 24.00 |
| 1979 | 3,702 | 122,376 | 16,192 | 152,410 | 61,200 | 2,493 | 28.83 |
| 1980 | 2,422 | 123,117 | 41,515 | 295,553 | 192,750 | 4,451 | 30.92 |
| 1981 | 1,720 | 49,765 | 26,803 | 255,029 | 76,092 | 2,862 | 30.00 |
| 1982 | 3,057 | 83,479 | 29,072 | 109,385 | 37,310 | 2,639 | 35.50 |
| 1983 | 888 | 31,627 | 21,443 | 66,080 | 15,188 | 1,411 | 34.00 |
| 1984 | 1,773 | 77,233 | 33,836 | 145,949 | 86,741 | 3,139 | 66.50 |
| 1985 | 2,651 | 88,192 | 55,597 | 311,248 | 106,720 | 3,888 | 48.00 |
| 1986 | 2,606 | 73,061 | 30,512 | 16,568 | 58,792 | 2,164 | 32.50 |
| 1987 | 2,105 | 74,457 | 35,173 | 355,725 | 121,862 | 3,009 | 35.75 |
| 1988 | 1,778 | 39,168 | 45,179 | 157,424 | 139,704 | 2,322 | 31.00 |
| 1989 | 1,811 | 74,019 | 51,812 | 180,597 | 36,977 | 2,121 | 36.00 |
| Averages | | | | | | | |
| 64-89 | 3,624 | 59,684 | 34,844 | 111,772 | 68,457 | 2,544 | 40.83 |
| 80-89 | 2,081 | 71,412 | 37,094 | 189,356 | 87,214 | 2,801 | 38.02 |
| 1990 | 3,480 | 126,884 | 67,310 | 153,036 | 145,530 | 3,216 | 39.40 |

Appendix D.2. Stock proportions and catches of sockeye salmon in the Alaskan District 111 commercial drift gill net fishery, 1983-1990. Data based on SPA.

| Year | Little Kuthai | Little Trapper | Mainstem | Little Tatsamenie | Total Taku | Crescent | Total Speel | Total Snettisham |
|--------------------|---------------|----------------|----------|-------------------|------------|----------|-------------|------------------|
| Proportions | | | | | | | | |
| 1983 | | | | | 0.755 | | | 0.245 |
| 1984 | | | | | 0.758 | | | 0.242 |
| 1985 | | | | | 0.838 | | | 0.162 |
| 1986 | 0.061 | 0.266 | 0.303 | 0.204 | 0.834 | 0.090 | 0.076 | 0.166 |
| 1987 | 0.078 | 0.234 | 0.376 | 0.031 | 0.720 | 0.157 | 0.123 | 0.280 |
| 1988 | 0.118 | 0.158 | 0.305 | 0.082 | 0.663 | 0.266 | 0.071 | 0.337 |
| 1989 | 0.077 | 0.616 | 0.000 | 0.156 | 0.848 | 0.051 | 0.100 | 0.152 |
| Averages | 0.084 | 0.318 | 0.246 | 0.118 | 0.774 | 0.141 | 0.092 | 0.234 |
| 1990 | 0.036 | 0.197 | 0.336 | 0.286 | 0.855 | 0.112 | 0.033 | 0.145 |
| Catches | | | | | | | | |
| 1983 | | | | | 23,878 | | | 7,749 |
| 1984 | | | | | 58,543 | | | 18,690 |
| 1985 | | | | | 73,905 | | | 14,287 |
| 1986 | 4,489 | 19,441 | 22,104 | 14,900 | 60,934 | 6,610 | 5,516 | 12,127 |
| 1987 | 5,834 | 17,418 | 28,002 | 2,328 | 53,581 | 11,695 | 9,181 | 20,876 |
| 1988 | 4,627 | 6,192 | 11,940 | 3,214 | 25,973 | 10,430 | 2,765 | 13,195 |
| 1989 | 5,696 | 45,573 a/ | | 11,536 | 62,805 | 3,789 | 7,425 | 11,214 |
| Averages b/ | 4,983 | 14,350 | 20,682 | 6,814 | 49,469 | 9,579 | 5,821 | 15,399 |
| 1990 | 4,539 | 24,952 | 42,676 | 36,332 | 108,499 | 14,242 | 4,143 | 18,385 |

a/ The Trapper and Mainstem groups were combined in the 1989 analysis.
 b/ Averages do not include 1989.

Appendix D.3. Proportion of Taku River sockeye salmon in the Alaskan District 111 commercial drift gill net catch, 1983-1990. Data based on SPA.

| Week | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 25 | | 0.970 | 0.999 | 0.938 | | | 0.943 | 0.874 |
| 26 | 0.996 | 0.956 | 0.986 | 0.953 | 0.982 | 0.964 | 0.989 | 0.935 |
| 27 | 0.842 | 0.843 | 0.928 | 0.873 | 0.901 | 0.886 | 0.979 | 0.904 |
| 28 | 0.819 | 0.670 | 0.974 | 0.880 | 0.884 | 0.889 | 0.852 | 0.773 |
| 29 | 0.663 | 0.588 | 0.868 | 0.852 | 0.948 | 0.510 | 0.835 | 0.782 |
| 30 | 0.527 | 0.712 | 0.706 | 0.777 | 0.414 | 0.643 | 0.641 | 0.863 |
| 31 | 0.836 | 0.728 | 0.737 | 0.851 | 0.619 | 0.677 | 0.681 | 0.943 |
| 32 | 0.534 | 0.809 | 0.826 | 0.757 | 0.689 | 0.528 | 0.919 | 0.939 |
| 33 | 0.719 | 0.726 | 0.801 | 0.893 | 0.841 | 0.478 | 0.676 | 0.878 |
| 34 | 0.759 | | | 0.739 | 0.731 | 0.346 | | 0.862 |
| Total | 0.755 | 0.758 | 0.838 | 0.834 | 0.718 | 0.663 | 0.848 | 0.855 |

Appendix D.4. Salmon catch in the U.S. subsistence and personal use fisheries in the Taku River (1967-1990). The subsistence fishery was open 1967 to 1976 and 1985 and the personal use fishery was open 1989 and 1990. Data for 1990 is expanded from a 50% return rate for permits.

| Year | Catch | | | | |
|------|---------|---------|------|------|------|
| | Chinook | Sockeye | Coho | Pink | Chum |
| 1967 | 0 | 103 | 221 | 9 | 25 |
| 1968 | 3 | 41 | 196 | 19 | 10 |
| 1969 | 0 | 122 | 8 | 11 | 0 |
| 1970 | 0 | 304 | 0 | 20 | 8 |
| 1971 | 0 | 512 | 0 | 42 | 0 |
| 1972 | 0 | 554 | 0 | 103 | 7 |
| 1973 | 0 | 1,227 | 0 | 64 | 14 |
| 1974 | 0 | 1,431 | 0 | 118 | 5 |
| 1975 | 0 | 170 | 0 | 3 | 0 |
| 1976 | 0 | 351 | 4 | 22 | 0 |
| 1985 | 0 | 924 | 35 | 19 | 1 |
| 1989 | 33 | 749 | 73 | 765 | 25 |
| 1990 | 52 | 1,560 | 206 | 130 | 92 |

Appendix D.5. Salmon and steelhead trout catch and effort in the Canadian commercial fishery in the Taku River, 1979-1990.

| Year | Catch | | | | | | Effort | | |
|-------------|---------|-------|---------|-------|--------|--------|-----------|-----------|-----------|
| | Chinook | | Sockeye | Coho | Pink | Chum | Steelhead | Boat Days | Days Open |
| | Jacks | Large | | | | | | | |
| 1979 | | 97 | 13,578 | 6,006 | 13,661 | 15,474 | 254 | 599.0 | 50.00 |
| 1980 | | 225 | 22,602 | 6,405 | 26,821 | 18,516 | 457 | 479.0 | 39.00 |
| 1981 | | 159 | 10,922 | 3,607 | 10,771 | 5,591 | 108 | 243.0 | 31.25 |
| 1982 | | 54 | 3,144 | 51 | 202 | 3 | 1 | 38.0 | 13.00 |
| 1983 | 400 | 156 | 17,056 | 8,390 | 1,874 | 1,760 | 213 | 390.0 | 64.00 |
| 1984 | 221 | 294 | 27,242 | 5,357 | 6,964 | 2,492 | 367 | 288.0 | 30.00 |
| 1985 | 24 | 326 | 14,244 | 1,770 | 3,373 | 136 | 32 | 178.0 | 16.00 |
| 1986 | 77 | 275 | 14,739 | 1,783 | 58 | 110 | 48 | 148.0 | 17.00 |
| 1987 | 106 | 127 | 13,554 | 5,599 | 6,250 | 2,270 | 223 | 281.0 | 26.00 |
| 1988 | 186 | 555 | 12,014 | 3,123 | 1,030 | 733 | 86 | 185.4 | 14.70 |
| 1989 | 139 | 895 | 18,545 | 2,876 | 695 | 42 | 24 | 270.6 | 25.30 |
| Averages a/ | | | | | | | | | |
| 79-89 | | 392 | 15,240 | 4,088 | 6,518 | 4,284 | 165 | 281.8 | 29.66 |
| 80-89 | | 422 | 15,406 | 3,896 | 5,804 | 3,165 | 156 | 250.1 | 27.63 |
| 1990 | 128 | 1,258 | 21,100 | 3,207 | 378 | 12 | 22 | 295.2 | 28.30 |

a/ Chinook averages are for large fish and jacks combined.

Appendix D.6. Sockeye salmon stock proportions and catch by stock in the Canadian commercial fishery on the Taku River, 1986-1990. Data based on SPA.

| Year | Kuthai | Little Trapper | Mainstem | Little Tatsamenie |
|-------------|--------|----------------|----------|-------------------|
| Proportions | | | | |
| 1986 | 0.111 | 0.397 | 0.350 | 0.143 |
| 1987 | 0.062 | 0.201 | 0.649 | 0.088 |
| 1988 | 0.143 | 0.417 | 0.343 | 0.098 |
| 1989 a/ | 0.053 | 0.744 | | 0.203 |
| Averages | | | | |
| 86-88 b/ | 0.092 | 0.440 | 0.335 | 0.133 |
| 1990 | 0.112 | 0.388 | 0.338 | 0.163 |
| Catch | | | | |
| 1986 | 1,629 | 5,855 | 5,152 | 2,103 |
| 1987 | 834 | 2,728 | 8,793 | 1,199 |
| 1988 | 1,715 | 5,005 | 4,122 | 1,172 |
| 1989 a/ | 990 | 13,792 | | 3,763 |
| Averages | | | | |
| 86-88 b/ | 1,292 | 6,845 | 4,517 | 2,059 |
| 1990 | 2,355 | 8,183 | 7,131 | 3,431 |

a/ The Trapper and Mainstem groups were combined in the 1989 analysis.
 b/ Averages do not include 1989.

Appendix D.7. Salmon and steelhead trout catch in the Canadian test fishery in the Taku River, 1987-1990.

| Year | Catch | | | | | |
|------|---------|---------|-------|------|------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Steelhead |
| 1987 | | 237 | 807 | | | |
| 1988 | 72 | 708 | 422 | 52 | 222 | 14 |
| 1989 | 31 | 207 | 1,011 | 0 | 13 | 26 |
| 1990 | 48 | 285 | 472 | 0 | 0 | 20 |

Appendix D.8. Sockeye salmon escapement counts of Taku River and Port Snettisham stocks, 1983-1990.

| Year | Taku Above Border | | Little Trapper | Little Tatsamenie | Hackett | Crescent | Speel |
|----------|-------------------|------------|----------------|-------------------|---------|----------|-------------|
| | Run | Escapement | Weir | Weir | Weir | Weir | Weir |
| 1983 | | | 7,402 b/ | | | 19,422 | 10,484 |
| 1984 | 133,414 | 106,172 | 13,084 | | | 6,707 | 9,764 |
| 1985 | 118,160 | 103,916 | 14,889 | b/13,015 | 2,308 | 7,249 | 7,073 |
| 1986 | 105,109 | 90,370 | 13,820 | 11,368 | 1,004 | 3,414 | 5,857 |
| 1987 | 87,130 | 73,339 | 12,007 | b/ 2,794 | 910 | 7,839 | 9,319 |
| 1988 | 87,028 | 74,061 | 10,629 | 2,063 | 516 | 1,199 | 969 |
| 1989 | 114,068 | 95,263 | 9,556 | 3,039 | | 1,109 | c/12,229 |
| Averages | | | | | | | |
| 83-89 | 107,485 | 90,520 | 11,627 | 6,456 | 1,185 | 6,706 | 7,956 |
| 85-89 | 102,299 | 87,390 | 12,180 | 6,456 | | 4,162 | 7,089 |
| 1990 | 114,254 | 92,795 | 9,443 d/ | 5,706 d/ | | 1,262 | c/18,064 c/ |

a/ Tag-recovery estimates.
 b/ Weir count plus spawning ground survey.
 c/ Count may be low due to fish passage over weir during high water.
 d/ Totals of 761 male and 761 female sockeye salmon from Little Trapper Lake and 280 female and 280 male sockeye salmon from Little Tatsamenie Lake were taken for broodstock. Holding mortality at Little Tatsamenie Lake included 182 female and 65 male sockeye salmon. A total of 30 sockeye salmon was holding below Little Tatsamenie weir when the weir was removed.

Appendix D.9. Aerial survey index escapement counts of large (3-ocean and older) Taku River chinook salmon and estimated escapements of large chinook salmon to the entire Taku drainage, 1977-1990.

| Year | Kowatua | Tatsamenie | Dudidontu | Tseta | Nakina | Nahlin | Taku Drainage | |
|----------|---------|------------|-----------|--------|--------|--------|---------------|-----------|
| | | | | | | | U.S. a/ | Canada b/ |
| 1975 | NS | NS | 15 | NS | 1,800 | 274 | 4,609 | 4,178 |
| 1976 | 341 | 620 | 40 | NS | 3000 | 725 | 8,278 | 9,452 |
| 1977 | 580 | 573 | 18 | NS | 3,850 | 650 | 10,000 | 11,342 |
| 1978 | 490 | 550 | 0 | 21 | 1,620 | 624 | 4,987 | 6,610 |
| 1979 | 430 | 750 | 9 | NS | 2,110 | 857 | 6,593 | 8,312 |
| 1980 | 450 | 905 | 158 | NS | 4,500 | 1,531 | 13,402 | 15,088 |
| 1981 | 560 | 839 | 74 | 258 | 5,110 | 2,945 | 17,900 | 19,572 |
| 1982 | 289 | 387 | 130 | 228 | 2,533 | 1,246 | 8,398 | 9,626 |
| 1983 | 171 | 236 | 117 | 179 | 968 | 391 | 3,020 | 4,124 |
| 1984 | 279 | 616 | NS | 176 c/ | 1,887 | 951 d/ | 6,307 | 7,818 |
| 1985 | 699 | 848 | 475 | 303 | 2,647 | 2,236 | 10,851 | 14,416 |
| 1986 | 548 | 886 | 413 | 193 | 3,868 | 1,612 | 12,178 | 15,040 |
| 1987 | 570 | 678 | 287 | 180 | 2,906 | 1,122 | 8,951 | 11,486 |
| 1988 | 1,010 | 1,272 | 243 | 66 | 4,500 | 1,535 | 13,411 | 17,252 |
| 1989 | 601 | 1,228 | 204 | 494 | 5,141 | 1,812 | 15,451 | 18,960 |
| Averages | | | | | | | | |
| 77-89 | | | | | 3,096 | 1,234 | 9,622 | 11,552 |
| 84-89 | 618 | 921 | 270 | 235 | 3,492 | 1,545 | 11,191 | 14,162 |
| 1990 | 614 | 1,068 | 820 | 172 | 7,917 | 1,658 | 21,278 | 24,498 |

- a/ U.S. estimate: combined Nakina and Nahlin aerial escapement counts, expanded by 1/.45.
- b/ Canadian estimate: combined survey counts of Nakina, Nahlin, Kowatua, Tatsamenie, Tseta, and Dudidontu Rivers, expanded by 2.0.
- c/ Partial survey
- d/ Extrapolated results.

Appendix D.10. Taku River (above border) coho salmon salmon run size, 1987-1990.

| Year | Canadian Catch | | Above Border | | |
|----------|----------------|------|--------------|------------|-----------|
| | Commercial | Food | Test | Escapement | Run |
| 1987 | 5,599 | | 807 | 55,570 | 61,976 a/ |
| 1988 | 3,123 | 98 | 422 | 39,450 | 43,093 b/ |
| 1989 | 2,876 | 146 | 1,011 | 56,808 | 60,841 c/ |
| Averages | | | | | |
| 87-89 | 3,866 | 122 | 747 | 50,609 | 55,303 |
| 1990 | 3,207 | 74 | 472 | 71,284 | 75,037 d/ |

- a/ Mark-recapture estimate through 9/20 was 43,570, run through 10/05 estimated using inriver test fish CPUE.
- b/ Mark-recapture estimate through 9/18.
- c/ Mark-recapture estimate through 10/01.
- d/ A second method of estimating the above border run by expanding test fishery CPUE yielded an estimate of 85,053 coho salmon.

Appendix D.11. Escapement counts of Taku River coho salmon, 1984-1990. Counts are for age-.1 fish and do not include jacks.

| Year | Yehring Creek | Flannigan Slough | Tatsamenie River | Hackett River | Dudidontu River | Upper Nahlin River |
|----------|---------------|------------------|------------------|---------------|-----------------|--------------------|
| | Weir | (Aerial) | Weir a/ | Weir | (Aerial) | (Aerial) |
| 1984 | | 1,480 | | | | |
| 1985 | | 2,320 | 201b/ | 1,031 | | |
| 1986 | 2,116a/ | 1,095 | 344b/ | 2,723 | 108 | 318 |
| 1987 | 1,627a/ | 2,100 | 173b/ | 1,715 | 276 | 165 |
| 1988 | 1,423 | 1,241c/ | 663a/ | 1,260 | 367 | 694d/ |
| 1989 | 1,570e/ | 1,464 | 712a/ | e/ | 115 | 322 |
| Averages | | | | | | |
| 84-89 | 1,804 | 1,617 | 419 | 1,346 | 217 | 375 |
| 86-89 | 1,804 | 1,475 | 473 | 1,425 | 217 | 375 |
| 1990 | 2,522e/ | 414c/ | 669a/ | f/ | 25 | 256 |

- a/ Weir count combined with spawning ground count.
- b/ Incomplete count.
- c/ Count is an average of surveys by different observers. Flan 88,90
- d/ Weir count of 1,322. Nah 88
- e/ Includes markrecapture estimate.
- f/ Weir discontinued in 1988.

Appendix D.12. Taku River sockeye salmon run size, 1984-1990. Run estimate does not include spawning escapements below the U.S./Canada border.

| Year | Canadian Catch | | | Escapement | Above Border Run | U.S. Catcha/ | Total Run |
|----------|----------------|------|------|------------|------------------|--------------|-----------|
| | Commercial | Food | Test | | | | |
| 1984 | 27,242 | | | 106,172 | 133,414 | 58,543 | 191,957 |
| 1985 | 14,244 | | | 103,916 | 118,160 | 74,829 | 192,989 |
| 1986 | 14,739 | | | 90,370 | 105,109 | 60,934 | 166,043 |
| 1987 | 13,554 | | 237 | 73,339 | 87,130 | 54,611 | 141,741 |
| 1988 | 12,014 | 245 | 708 | 74,061 | 87,028 | 25,973 | 113,001 |
| 1989 | 18,545 | 53 | 207 | 95,263 | 114,068 | 63,554 | 177,622 |
| Averages | | | | | | | |
| 84-89 | 16,723 | | | 90,520 | 107,485 | 56,407 | 163,892 |
| 85-89 | 14,619 | | | 87,390 | 102,299 | 55,980 | 158,279 |
| 1990 | 21,100 | 74 | 285 | 92,795 | 114,254 | 110,059 | 224,313 |

- a/ Includes subsistence and personal use catches in District 111 but does include catches of Taku River fish which may occur in other districts.
- b/ Includes test fishery catch of 1,030 Taku sockeye salmon in 1987.

Appendix E.1. Weekly salmon catch and effort in the U.S. commercial fishery in the Alsek River, 1990. There was no effort in the surf fishery in 1990.

| Week | Start Date | Catch | | | | | Effort | | |
|-------|------------|---------|---------|-------|------|------|--------|-----------|-----------|
| | | Chinook | Sockeye | Coho | Pink | Chum | Boats | Days Open | Boat Days |
| 25 | 17-Jun | 43 | 571 | 0 | 0 | 0 | 23 | 1 | 23 |
| 26 | 24-Jun | 26 | 1,339 | 0 | 0 | 0 | 21 | 2 | 42 |
| 27 | 01-Jul | 6 | 3,075 | 0 | 0 | 0 | 21 | 2 | 42 |
| 28 | 08-Jul | 3 | 4,663 | 0 | 0 | 0 | 24 | 3 | 72 |
| 29 | 15-Jul | 0 | 2,717 | 1 | 0 | 2 | 16 | 3 | 48 |
| 30 | 22-Jul | 0 | 2,160 | 0 | 0 | 0 | 7 | 3 | 21 |
| 31 | 29-Jul | 0 | 1,178 | 0 | 0 | 0 | 8 | 3 | 24 |
| 32 | 05-Aug | 0 | 971 | 0 | 0 | 2 | 4 | 3 | 12 |
| 33 | 12-Aug | 0 | 189 | 2 | 0 | 0 | a/ | 3 | a/ |
| 34 | 19-Aug | 0 | 61 | 6 | 0 | 0 | a/ | 3 | a/ |
| 35 | 26-Aug | 0 | 50 | 115 | 0 | 78 | a/ | 3 | a/ |
| 36 | 02-Sep | 0 | 33 | 211 | 0 | 115 | 8 | 3 | 24 |
| 37 | 09-Sep | 0 | 3 | 458 | 0 | 129 | 6 | 3 | 18 |
| 38 | 16-Sep | 0 | 3 | 644 | 0 | 169 | 9 | 3 | 27 |
| Total | | 78 | 17,013 | 1,437 | 0 | 495 | 154 | 38.0 | 374 |

a/ Effort not reported by week; effort for these weeks is included in the total.

Appendix E.2. Weekly salmon catch and effort in the Canadian food and sport fisheries in the Alsek River, 1990.

| Week | Date | Chinook | | | | Sockeye | | | | Coho | | | |
|--------|--------|---------|---------|------|--------|---------|---------|-------|--------|-------|---------|------|---------|
| | | Sport | Release | Food | Totala | Sport | Release | Food | Totala | Sport | Release | Food | Totala/ |
| 25 | 17-Jun | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 24-Jun | 17 | 6 | 0 | 17 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 01-Jul | 76 | 40 | 1 | 77 | 8 | 6 | 4 | 4 | 0 | 0 | 0 | 0 |
| 28 | 08-Jul | 188 | 91 | 25 | 213 | 0 | 9 | 1 | 1 | 0 | 0 | 0 | 0 |
| 29 | 15-Jul | 251 | 80 | 111 | 362 | 0 | 11 | 12 | 12 | 0 | 0 | 0 | 0 |
| 30 | 22-Jul | 16 | 9 | 20 | 36 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 29-Jul | 3 | 1 | 11 | 14 | 0 | 3 | 23 | 23 | 0 | 0 | 0 | 0 |
| 32 | 05-Aug | 0 | 0 | 2 | 2 | 0 | 0 | 175 | 175 | 0 | 0 | 0 | 0 |
| 33 | 12-Aug | 0 | 0 | 2 | 2 | 0 | 0 | 175 | 175 | 0 | 0 | 0 | 0 |
| 34 | 19-Aug | 0 | 0 | 0 | 0 | 5 | 1 | 65 | 70 | 0 | 0 | 0 | 0 |
| 35 | 26-Aug | 0 | 0 | 0 | 0 | 11 | 2 | 120 | 131 | 0 | 0 | 0 | 0 |
| 36 | 02-Sep | 0 | 0 | 1 | 1 | 53 | 11 | 305 | 358 | 0 | 0 | 0 | 0 |
| 37 | 09-Sep | 0 | 0 | 0 | 0 | 50 | 38 | 539 | 589 | 0 | 0 | 0 | 0 |
| 38 | 16-Sep | 0 | 0 | 0 | 0 | 57 | 26 | 320 | 377 | 0 | 0 | 0 | 0 |
| 39 | 23-Sep | 0 | 0 | 0 | 0 | 23 | 24 | 182 | 205 | 0 | 2 | 0 | 0 |
| 40 | 30-Sep | 0 | 0 | 0 | 0 | 91 | 67 | 91 | 182 | 10 | 3 | 0 | 10 |
| 41 | 07-Oct | 0 | 0 | 0 | 0 | 52 | 112 | 0 | 52 | 25 | 41 | 0 | 25 |
| 42 | 14-Oct | 0 | 0 | 0 | 0 | 20 | 28 | 0 | 20 | 20 | 30 | 0 | 20 |
| 43 | 21-Oct | 0 | 0 | 0 | 0 | 30 | 15 | 0 | 30 | 20 | 10 | 0 | 20 |
| Totals | | 555 | 227 | 173 | 728 | 392 | 366 | 2,012 | 2,404 | 75 | 86 | 0 | 75 |

a/ Does not include released fish.

Appendix E.3. Daily counts of salmon passing through Klukshu River weir, 1990.

| Date | Chinook a/ | | | Sockeye | | | Coho | | |
|--------|------------|------------|-------|---------|------------|-------|-------|------------|-------|
| | Daily | Cumulative | | Daily | Cumulative | | Daily | Cumulative | |
| | | Daily | Prop. | | Daily | Prop. | | Daily | Prop. |
| 05-Jun | 1 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 06-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 07-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 08-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 09-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 10-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 11-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 12-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 13-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 14-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 15-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 16-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 17-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 18-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 19-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 20-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 21-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 22-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 23-Jun | 0 | 1 | 0.001 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 24-Jun | 0 | 1 | 0.001 | 1 | 1 | 0.000 | 0 | 0 | 0.000 |
| 25-Jun | 0 | 1 | 0.001 | 0 | 1 | 0.000 | 0 | 0 | 0.000 |
| 26-Jun | 2 | 3 | 0.002 | 0 | 1 | 0.000 | 0 | 0 | 0.000 |
| 27-Jun | 4 | 7 | 0.004 | 0 | 1 | 0.000 | 0 | 0 | 0.000 |
| 28-Jun | 1 | 8 | 0.004 | 0 | 1 | 0.000 | 0 | 0 | 0.000 |
| 29-Jun | 6 | 14 | 0.007 | 4 | 5 | 0.000 | 0 | 0 | 0.000 |
| 30-Jun | 6 | 20 | 0.010 | 1 | 6 | 0.000 | 0 | 0 | 0.000 |
| 01-Jul | 7 | 27 | 0.014 | 1 | 7 | 0.000 | 0 | 0 | 0.000 |
| 02-Jul | 11 | 38 | 0.020 | 2 | 9 | 0.000 | 0 | 0 | 0.000 |
| 03-Jul | 15 | 53 | 0.028 | 3 | 12 | 0.000 | 0 | 0 | 0.000 |
| 04-Jul | 10 | 63 | 0.033 | 11 | 23 | 0.001 | 0 | 0 | 0.000 |
| 05-Jul | 19 | 82 | 0.043 | 0 | 23 | 0.001 | 0 | 0 | 0.000 |
| 06-Jul | 265 | 347 | 0.181 | 26 | 49 | 0.002 | 0 | 0 | 0.000 |
| 07-Jul | 14 | 361 | 0.189 | 19 | 68 | 0.003 | 0 | 0 | 0.000 |
| 08-Jul | 43 | 404 | 0.211 | 1 | 69 | 0.003 | 0 | 0 | 0.000 |
| 09-Jul | 195 | 599 | 0.313 | 5 | 74 | 0.003 | 0 | 0 | 0.000 |
| 10-Jul | 51 | 650 | 0.339 | 5 | 79 | 0.003 | 0 | 0 | 0.000 |
| 11-Jul | 38 | 688 | 0.359 | 0 | 79 | 0.003 | 0 | 0 | 0.000 |
| 12-Jul | 68 | 756 | 0.395 | 7 | 86 | 0.003 | 0 | 0 | 0.000 |
| 13-Jul | 50 | 806 | 0.421 | 15 | 101 | 0.004 | 0 | 0 | 0.000 |
| 14-Jul | 740 | 1,546 | 0.807 | 71 | 172 | 0.007 | 0 | 0 | 0.000 |
| 15-Jul | 17 | 1,563 | 0.816 | 0 | 172 | 0.007 | 0 | 0 | 0.000 |
| 16-Jul | 125 | 1,688 | 0.881 | 4 | 176 | 0.007 | 0 | 0 | 0.000 |
| 17-Jul | 20 | 1,708 | 0.892 | 2 | 178 | 0.007 | 0 | 0 | 0.000 |
| 18-Jul | 20 | 1,728 | 0.902 | 1 | 179 | 0.007 | 0 | 0 | 0.000 |
| 19-Jul | 12 | 1,740 | 0.909 | 0 | 179 | 0.007 | 0 | 0 | 0.000 |
| 20-Jul | 8 | 1,748 | 0.913 | 1 | 180 | 0.007 | 0 | 0 | 0.000 |
| 21-Jul | 1 | 1,749 | 0.913 | 1 | 181 | 0.007 | 0 | 0 | 0.000 |
| 22-Jul | 3 | 1,752 | 0.915 | 1 | 182 | 0.007 | 0 | 0 | 0.000 |
| 23-Jul | 9 | 1,761 | 0.920 | 2 | 184 | 0.007 | 0 | 0 | 0.000 |
| 24-Jul | 6 | 1,767 | 0.923 | 2 | 186 | 0.007 | 0 | 0 | 0.000 |
| 25-Jul | 4 | 1,771 | 0.925 | 5 | 191 | 0.007 | 0 | 0 | 0.000 |
| 26-Jul | 4 | 1,775 | 0.927 | 0 | 191 | 0.007 | 0 | 0 | 0.000 |
| 27-Jul | 1 | 1,776 | 0.927 | 0 | 191 | 0.007 | 0 | 0 | 0.000 |
| 28-Jul | 1 | 1,777 | 0.928 | 0 | 191 | 0.007 | 0 | 0 | 0.000 |
| 29-Jul | 1 | 1,778 | 0.928 | 0 | 191 | 0.007 | 0 | 0 | 0.000 |
| 30-Jul | 3 | 1,781 | 0.930 | 1 | 192 | 0.007 | 0 | 0 | 0.000 |
| 31-Jul | 25 | 1,806 | 0.943 | 43 | 235 | 0.009 | 0 | 0 | 0.000 |
| 01-Aug | 6 | 1,812 | 0.946 | 0 | 235 | 0.009 | 0 | 0 | 0.000 |
| 02-Aug | 9 | 1,821 | 0.951 | 1 | 236 | 0.009 | 0 | 0 | 0.000 |
| 03-Aug | 4 | 1,825 | 0.953 | 1 | 237 | 0.009 | 0 | 0 | 0.000 |
| 04-Aug | 7 | 1,832 | 0.957 | 41 | 278 | 0.011 | 0 | 0 | 0.000 |
| 05-Aug | 4 | 1,836 | 0.959 | 1 | 279 | 0.011 | 0 | 0 | 0.000 |
| 06-Aug | 9 | 1,845 | 0.963 | 8 | 287 | 0.011 | 0 | 0 | 0.000 |
| 07-Aug | 5 | 1,850 | 0.966 | 6 | 293 | 0.011 | 0 | 0 | 0.000 |
| 08-Aug | 2 | 1,852 | 0.967 | 20 | 313 | 0.012 | 0 | 0 | 0.000 |
| 09-Aug | 4 | 1,856 | 0.969 | 17 | 330 | 0.013 | 0 | 0 | 0.000 |
| 10-Aug | 18 | 1,874 | 0.979 | 637 | 967 | 0.037 | 0 | 0 | 0.000 |
| 11-Aug | 4 | 1,878 | 0.981 | 19 | 986 | 0.038 | 0 | 0 | 0.000 |
| 12-Aug | 4 | 1,882 | 0.983 | 9 | 995 | 0.038 | 0 | 0 | 0.000 |
| 13-Aug | 5 | 1,887 | 0.985 | 110 | 1,105 | 0.043 | 0 | 0 | 0.000 |
| 14-Aug | 7 | 1,894 | 0.989 | 205 | 1,310 | 0.050 | 0 | 0 | 0.000 |
| 15-Aug | 2 | 1,896 | 0.990 | 6 | 1,316 | 0.051 | 0 | 0 | 0.000 |
| 16-Aug | 4 | 1,900 | 0.992 | 211 | 1,527 | 0.059 | 0 | 0 | 0.000 |
| 17-Aug | 3 | 1,903 | 0.994 | 0 | 1,527 | 0.059 | 0 | 0 | 0.000 |
| 18-Aug | 1 | 1,904 | 0.994 | 51 | 1,578 | 0.061 | 0 | 0 | 0.000 |
| 19-Aug | 0 | 1,904 | 0.994 | 9 | 1,587 | 0.061 | 0 | 0 | 0.000 |
| 20-Aug | 0 | 1,904 | 0.994 | 115 | 1,702 | 0.065 | 0 | 0 | 0.000 |
| 21-Aug | 2 | 1,906 | 0.995 | 4 | 1,706 | 0.066 | 0 | 0 | 0.000 |
| 22-Aug | 0 | 1,906 | 0.995 | 8 | 1,714 | 0.066 | 0 | 0 | 0.000 |
| 23-Aug | 1 | 1,907 | 0.996 | 19 | 1,733 | 0.067 | 0 | 0 | 0.000 |
| 24-Aug | 3 | 1,910 | 0.997 | 15 | 1,748 | 0.067 | 0 | 0 | 0.000 |
| 25-Aug | 3 | 1,913 | 0.999 | 215 | 1,963 | 0.076 | 0 | 0 | 0.000 |
| 26-Aug | 1 | 1,914 | 0.999 | 11 | 1,974 | 0.076 | 0 | 0 | 0.000 |

--Continued--

Appendix E.3. (Page 2 of 2.)

| Date | Chinook a/ | | | Sockeye | | | Coho | | |
|--------|------------|------------|-------|---------|------------|-------|-------|------------|-------|
| | Daily | Cumulative | | Daily | Cumulative | | Daily | Cumulative | |
| | | Daily | Prop. | | Daily | Prop. | | Daily | Prop. |
| 27-Aug | 0 | 1,914 | 0.999 | 14 | 1,988 | 0.076 | 0 | 0 | 0.000 |
| 28-Aug | 0 | 1,914 | 0.999 | 26 | 2,014 | 0.077 | 0 | 0 | 0.000 |
| 29-Aug | 0 | 1,914 | 0.999 | 19 | 2,033 | 0.078 | 0 | 0 | 0.000 |
| 30-Aug | 0 | 1,914 | 0.999 | 4 | 2,037 | 0.078 | 0 | 0 | 0.000 |
| 31-Aug | 1 | 1,915 | 1.000 | 134 | 2,171 | 0.084 | 0 | 0 | 0.000 |
| 01-Sep | 0 | 1,915 | 1.000 | 15 | 2,186 | 0.084 | 0 | 0 | 0.000 |
| 02-Sep | 0 | 1,915 | 1.000 | 72 | 2,258 | 0.087 | 0 | 0 | 0.000 |
| 03-Sep | 0 | 1,915 | 1.000 | 203 | 2,461 | 0.095 | 0 | 0 | 0.000 |
| 04-Sep | 0 | 1,915 | 1.000 | 3,292 | 5,753 | 0.221 | 0 | 0 | 0.000 |
| 05-Sep | 0 | 1,915 | 1.000 | 936 | 6,689 | 0.257 | 0 | 0 | 0.000 |
| 06-Sep | 0 | 1,915 | 1.000 | 1,763 | 8,452 | 0.325 | 0 | 0 | 0.000 |
| 07-Sep | 0 | 1,915 | 1.000 | 601 | 9,053 | 0.348 | 0 | 0 | 0.000 |
| 08-Sep | 0 | 1,915 | 1.000 | 56 | 9,109 | 0.350 | 0 | 0 | 0.000 |
| 09-Sep | 0 | 1,915 | 1.000 | 894 | 10,003 | 0.385 | 0 | 0 | 0.000 |
| 10-Sep | 0 | 1,915 | 1.000 | 187 | 10,190 | 0.392 | 0 | 0 | 0.000 |
| 11-Sep | 0 | 1,915 | 1.000 | 1,578 | 11,768 | 0.453 | 0 | 0 | 0.000 |
| 12-Sep | 0 | 1,915 | 1.000 | 3,221 | 14,989 | 0.577 | 0 | 0 | 0.000 |
| 13-Sep | 0 | 1,915 | 1.000 | 1,645 | 16,634 | 0.640 | 0 | 0 | 0.000 |
| 14-Sep | 0 | 1,915 | 1.000 | 873 | 17,507 | 0.673 | 0 | 0 | 0.000 |
| 15-Sep | 0 | 1,915 | 1.000 | 479 | 17,986 | 0.692 | 1 | 1 | 0.003 |
| 16-Sep | 0 | 1,915 | 1.000 | 366 | 18,352 | 0.706 | 0 | 1 | 0.003 |
| 17-Sep | 0 | 1,915 | 1.000 | 653 | 19,005 | 0.731 | 0 | 1 | 0.003 |
| 18-Sep | 0 | 1,915 | 1.000 | 1,432 | 20,437 | 0.786 | 0 | 1 | 0.003 |
| 19-Sep | 0 | 1,915 | 1.000 | 780 | 21,217 | 0.816 | 2 | 3 | 0.010 |
| 20-Sep | 0 | 1,915 | 1.000 | 1,585 | 22,802 | 0.877 | 1 | 4 | 0.013 |
| 21-Sep | 0 | 1,915 | 1.000 | 1,754 | 24,556 | 0.945 | 1 | 5 | 0.016 |
| 22-Sep | 0 | 1,915 | 1.000 | 201 | 24,757 | 0.952 | 1 | 6 | 0.019 |
| 23-Sep | 0 | 1,915 | 1.000 | 277 | 25,034 | 0.963 | 0 | 6 | 0.019 |
| 24-Sep | 0 | 1,915 | 1.000 | 16 | 25,050 | 0.964 | 0 | 6 | 0.019 |
| 25-Sep | 0 | 1,915 | 1.000 | 9 | 25,059 | 0.964 | 0 | 6 | 0.019 |
| 26-Sep | 0 | 1,915 | 1.000 | 14 | 25,073 | 0.965 | 1 | 7 | 0.022 |
| 27-Sep | 0 | 1,915 | 1.000 | 31 | 25,104 | 0.966 | 2 | 9 | 0.029 |
| 28-Sep | 0 | 1,915 | 1.000 | 28 | 25,132 | 0.967 | 3 | 12 | 0.038 |
| 29-Sep | 0 | 1,915 | 1.000 | 11 | 25,143 | 0.967 | 1 | 13 | 0.041 |
| 30-Sep | 0 | 1,915 | 1.000 | 24 | 25,167 | 0.968 | 4 | 17 | 0.054 |
| 01-Oct | 0 | 1,915 | 1.000 | 13 | 25,180 | 0.969 | 3 | 20 | 0.063 |
| 02-Oct | 0 | 1,915 | 1.000 | 45 | 25,225 | 0.970 | 14 | 34 | 0.108 |
| 03-Oct | 0 | 1,915 | 1.000 | 41 | 25,266 | 0.972 | 8 | 42 | 0.133 |
| 04-Oct | 0 | 1,915 | 1.000 | 58 | 25,324 | 0.974 | 4 | 46 | 0.146 |
| 05-Oct | 0 | 1,915 | 1.000 | 73 | 25,397 | 0.977 | 5 | 51 | 0.162 |
| 06-Oct | 0 | 1,915 | 1.000 | 144 | 25,541 | 0.983 | 8 | 59 | 0.187 |
| 07-Oct | 0 | 1,915 | 1.000 | 15 | 25,556 | 0.983 | 8 | 67 | 0.213 |
| 08-Oct | 0 | 1,915 | 1.000 | 45 | 25,601 | 0.985 | 22 | 89 | 0.283 |
| 09-Oct | 0 | 1,915 | 1.000 | 135 | 25,736 | 0.990 | 53 | 142 | 0.451 |
| 10-Oct | 0 | 1,915 | 1.000 | 47 | 25,783 | 0.992 | 39 | 181 | 0.575 |
| 11-Oct | 0 | 1,915 | 1.000 | 81 | 25,864 | 0.995 | 9 | 190 | 0.603 |
| 12-Oct | 0 | 1,915 | 1.000 | 41 | 25,905 | 0.997 | 12 | 202 | 0.641 |
| 13-Oct | 0 | 1,915 | 1.000 | 16 | 25,921 | 0.997 | 9 | 211 | 0.670 |
| 14-Oct | 0 | 1,915 | 1.000 | 12 | 25,933 | 0.998 | 47 | 258 | 0.819 |
| 15-Oct | 0 | 1,915 | 1.000 | 5 | 25,938 | 0.998 | 38 | 296 | 0.940 |
| 16-Oct | 0 | 1,915 | 1.000 | 6 | 25,944 | 0.998 | 13 | 309 | 0.981 |
| 17-Oct | 0 | 1,915 | 1.000 | 11 | 25,955 | 0.998 | 6 | 315 | 1.000 |
| 18-Oct | 0 | 1,915 | 1.000 | 40 | 25,995 | 1.000 | 0 | 315 | 1.000 |
| Totals | 1,915 | | | 25,995 | | | 315 | | |

a/ Jack chinook included in the counts.

Appendix E.4. Salmon catch and effort in the U.S. commercial fishery in the Alsek River, 1964-1990.

| Year | Catch | | | | | Effort | |
|-----------------|---------|---------|--------|------|-------|-----------|-----------|
| | Chinook | Sockeye | Coho | Pink | Chum | Boat Days | Days Open |
| 1964 | 591 | 14,127 | 9,760 | 144 | 367 | 592 | 72.00 |
| 1965 | 719 | 28,487 | 9,638 | 10 | 72 | 1,016 | 72.00 |
| 1966 | 934 | 29,091 | 2,688 | 22 | 240 | 500 | 68.00 |
| 1967 | 225 | 11,108 | 10,090 | 107 | 30 | 600 | 68.00 |
| 1968 | 215 | 26,918 | 10,586 | 82 | 240 | 664 | 68.00 |
| 1969 | 685 | 29,259 | 2,493 | 38 | 61 | 807 | 61.00 |
| 1970 | 1,128 | 22,654 | 2,188 | 6 | 26 | 670 | 52.25 |
| 1971 | 1,222 | 25,314 | 4,730 | 3 | 120 | 764 | 60.50 |
| 1972 | 1,827 | 18,717 | 7,296 | 37 | 280 | 640 | 65.00 |
| 1973 | 1,757 | 26,523 | 4,395 | 26 | 283 | 894 | 52.00 |
| 1974 | 1,162 | 16,747 | 7,046 | 13 | 107 | 699 | 46.00 |
| 1975 | 1,379 | 13,842 | 2,230 | 16 | 261 | 738 | 58.00 |
| 1976 | 512 | 19,741 | 4,883 | 0 | 368 | 550 | 58.50 |
| 1977 | 1,402 | 40,780 | 11,817 | 689 | 483 | 893 | 57.00 |
| 1978 | 2,441 | 50,580 | 13,913 | 59 | 233 | 948 | 57.00 |
| 1979 | 2,525 | 41,449 | 6,158 | 142 | 263 | 1,146 | 51.00 |
| 1980 | 1,382 | 25,589 | 7,863 | 21 | 1,005 | 794 | 42.00 |
| 1981 | 779 | 23,697 | 10,096 | 65 | 816 | 500 | 41.00 |
| 1982 | 532 | 27,389 | 6,534 | 6 | 358 | 497 | 36.00 |
| 1983 | 94 | 18,546 | 5,253 | 20 | 432 | 466 | 38.00 |
| 1984 | 60 | 14,326 | 7,868 | 24 | 1,610 | 455 | 33.00 |
| 1985 | 213 | 5,940 | 5,622 | 3 | 427 | 271 | 33.00 |
| 1986 | 478 | 24,791 | 1,344 | 13 | 462 | 517 | 34.00 |
| 1987 | 347 | 11,281 | 2,517 | 0 | 1,924 | 388 | 40.50 |
| 1988 | 223 | 6,286 | 4,986 | 7 | 907 | 324 | 34.00 |
| 1989 | 228 | 13,513 | 5,972 | 2 | 1,031 | 355 | 35.50 |
| Averages | | | | | | | |
| 64-89 | 887 | 22,565 | 6,460 | 60 | 477 | 642 | 51.28 |
| 80-89 | 434 | 17,136 | 5,806 | 16 | 897 | 457 | 36.70 |
| 1990 | 78 | 17,013 | 1,437 | 0 | 495 | 374 | 38.00 |

Appendix E.5. Salmon catch in the U.S. subsistence fishery in the Alsek River, 1976-1990.

| Year | Catch | | |
|-----------------|---------|---------|------|
| | Chinook | Sockeye | Coho |
| 1976 | 13 | 51 | 5 |
| 1977 | 18 | 113 | 0 |
| 1978 | | | |
| 1979 | 80 | 35 | 70 |
| 1980 | 57 | 41 | 62 |
| 1981 | 32 | 50 | 74 |
| 1982 | 87 | 75 | 50 |
| 1983 | 31 | 25 | 50 |
| 1984 | | | |
| 1985 | 16 | 95 | 0 |
| 1986 | 22 | 241 | 45 |
| 1987 | 27 | 173 | 31 |
| 1988 | 13 | 148 | 9 |
| 1989 | 10 | 97 | 54 |
| Averages | | | |
| 76-89 | 34 | 95 | 38 |
| 80-89 | 33 | 105 | 42 |
| 1990 | 85 | 144 | 12 |

Appendix E.6. Salmon catches in the Canadian Indian food and sport fisheries in the Alsek River, 1976-1990.

| Year | Chinook | | | Sockeye | | | Coho | | |
|----------|---------|-------|-------|---------|-------|--------|------|-------|-------|
| | Food | Sport | Total | Food | Sport | Total | Food | Sport | Total |
| 1976 | 125 | 200 | 325 | 3,750 | 600 | 4,350 | 0 | 100 | 100 |
| 1977 | 250 | 300 | 550 | 11,350 | 500 | 11,850 | 0 | 200 | 200 |
| 1978 | 300 | 300 | 600 | 7,850 | 500 | 8,350 | 0 | 200 | 200 |
| 1979 | 130 | 650 | 780 | 5,260 | 750 | 6,010 | 0 | 100 | 100 |
| 1980 | 150 | 200 | 350 | 900 | 600 | 1,500 | 0 | 200 | 200 |
| 1981 | 150 | 315 | 465 | 1,900 | 808 | 2,708 | 0 | 109 | 109 |
| 1982 | 400 | 224 | 624 | 4,800 | 755 | 5,555 | 0 | 109 | 109 |
| 1983 | 300 | 312 | 612 | 2,475 | 732 | 3,207 | 0 | 16 | 16 |
| 1984 | 100 | 475 | 575 | 2,500 | 289 | 2,789 | 0 | 20 | 20 |
| 1985 | 175 | 250 | 425 | 1,361 | 100 | 1,461 | 50 | 100 | 150 |
| 1986 | 102 | 165 | 267 | 1,914 | 307 | 2,221 | 0 | 9 | 9 |
| 1987 | 125 | 367 | 492 | 1,158 | 383 | 1,541 | 0 | 49 | 49 |
| 1988 | 43 | 249 | 292 | 1,604 | 322 | 1,926 | 0 | 192 | 192 |
| 1989 | 167 | 272 | 439 | 1,906 | 319 | 2,225 | 0 | 227 | 227 |
| Averages | | | | | | | | | |
| 76-89 | 180 | 306 | 485 | 3,481 | 498 | 3,978 | 4 | 117 | 120 |
| 80-89 | 171 | 283 | 454 | 2,052 | 462 | 2,513 | 5 | 103 | 108 |
| 1990 | 173 | 555 | 728 | 2,012 | 392 | 2,404 | 0 | 75 | 75 |

Appendix E.7. Klukshu River weir counts of chinook, sockeye, and coho salmon, 1976-1990. The escapement count equals the weir count minus the Indian food fishery catch that occurred above the weir.

| Year | Chinook a/ | | Sockeye | | | | Coho Count c/ |
|-------------|------------|---------|----------|--------|--------|-----------|---------------|
| | Count | Escape. | Early b/ | Late | Total | Escape. | |
| 1976 | 1,278 | 1,153 | 181 | 11,510 | 11,691 | 7,941 | 1,572 |
| 1977 | 3,144 | 2,894 | 8,931 | 17,860 | 26,791 | 15,441 | 2,758 |
| 1978 | 2,976 | 2,676 | 2,508 | 24,359 | 26,867 | 19,017 | 30 |
| 1979 | 4,404 | 4,274 | 977 | 11,334 | 12,311 | 7,051 | 175 |
| 1980 | 2,637 | 2,487 | 1,008 | 10,742 | 11,750 | 10,850 | 704 |
| 1981 | 2,113 | 1,963 | 997 | 19,351 | 20,348 | 18,448 | 1,170 |
| 1982 | 2,369 | 1,969 | 7,758 | 25,941 | 33,699 | 28,899 | 189 |
| 1983 | 2,537 | 2,237 | 6,047 | 14,445 | 20,492 | 18,017 | 303 |
| 1984 | 1,672 | 1,572 | 2,769 | 9,958 | 12,727 | 10,227 | 1,402 |
| 1985 | 1,458 | 1,283 | 539 | 18,081 | 18,620 | 17,259 | 350 |
| 1986 | 2,709 | 2,607 | 416 | 24,434 | 24,850 | 22,936 | 71 |
| 1987 | 2,616 | 2,491 | 3,269 | 7,235 | 10,504 | 9,346 | 202 |
| 1988 | 2,037 | 1,994 | 585 | 8,756 | 9,341 | 7,737 | 2,774 |
| 1989 | 2,456 | 2,289 | 3,400 | 20,142 | 23,542 | 21,636 | 2,219 |
| Averages d/ | | | | | | | |
| 76-89 | 2,458 | 2,278 | 2,813 | 16,011 | 18,824 | 15,343 | 994 |
| 84-89 | 2,158 | 2,039 | | | | | |
| 85-89 | | | 1,642 | 15,730 | 17,371 | 15,783 | |
| 86-89 | | | | | | | 1,317 |
| 1990 | 1,915 | 1,742 | 1,316 | 24,679 | 25,995 | 24,607 e/ | 315 |

- a/ Counts include jack chinook salmon.
- b/ Includes sockeye counts up to and including August 15.
- c/ Weir was removed prior to the end of the coho run.
- d/ Six-year averages are given for chinook five-year for sockeye, and four-year for coho salmon to best represent the life span of each species.
- e/ The sockeye escapement into Klukshu Lake is calculated from the weir count - 1,388 fish which were harvested above the weir site. The remainder of the food fishery harvest occurred below the weir and at Village Creek.

Appendix E.8. Alesek River sockeye counts from U.S. and Canadian aerial surveys and from the electronic counter at Village Creek, 1985-1990.

| Year | U.S. Aerial Surveys a/ | | | | Canadian Aerial Surveys b/ | | Village Creek Counter |
|------|------------------------|-------------|-------------|--------------|----------------------------|------------------|-----------------------|
| | Basin Creek | Cabin Creek | Muddy Creek | Tanlis River | Tatshenshini River | Neskataheen Lake | |
| 1985 | 2,600 | | | 2,200 | | | |
| 1986 | 100 | | 300 | 2,700 | 536 | 750 | 1,490 |
| 1987 | 350 | 220 | | 1,600 | | | 1,875 |
| 1988 | 500 | | | 750 | 433 | 456 | 433 c/ |
| 1989 | 320 | | | 680 | 1,689 | 1,700 | 9,569 |
| 1990 | 275 | 300 | | 3,500 | | | 7,500 |

- a/ Surveys not made every year at each tributary.
- b/ Included several streams from Lo-Fog to Goat Creek.
- c/ Incomplete count due to machine malfunction.

Appendix E.9. Aerial survey index counts of Alesek chinook salmon escapements, 1984-1990.

| Year | Blanchard River | Takhanne River | Goat Creek |
|------|-----------------|----------------|------------|
| 1984 | 304 | 158 | 28 |
| 1985 | 232 | 184 | |
| 1986 | 556 | 358 | 142 |
| 1987 | 624 | 295 | 85 |
| 1988 | 437 | 169 | 54 |
| 1989 | a/ | 158 | 34 |
| 1990 | a/ | 325 | 32 |

- a/ Not surveyed due to poor visiblilty.

Appendix E.10. Aerial survey counts of coho salmon from U.S. lower Alesek River tributaries, 1984-1990.

| Year | Combined U.S. Tributary Counts |
|------|--------------------------------|
| 1985 | 450 |
| 1986 | 1,100 |
| 1987 | 100 |
| 1988 | 1,900 |
| 1989 | 1,990 |
| 1990 | 1,600 |



Fisheries and Oceans Pêches et Océans

Pacific Biological Station
Nanaimo, B.C.
V9R 5K6

TO: C.C. Graham
Your file / Votre référence
Our file / Notre référence

003026 FEB 26 P1:44

February 25, 1992

FISHERIES & OCEANS
FISHERIES PACIFIC

1110-P9

Janice Abramson
Pacific Salmon Commission
1155 Robson Street, Suite 600
Vancouver, British Columbia
V6E 1B9

Dear Ms. Abramson:

RE: P.S.C. Work Group on Catch Data Exchange.

Brian Kuhn is no longer with the Department of Fisheries and Oceans. We request that he be removed from the membership of the above group and that his name be removed from the Pacific Salmon Commission mailing list.

At this time, we do not wish to name a replacement member.

Sincerely,

M. Hamer
Canadian Chair
P.S.C. Data Sharing Committee

cc: C.C. Graham



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 - 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE: (604) 684-8081
FAX: (604) 666-8707

TO: *G. Faulkner*

Our File: 68001

009778 MAR -2 14:12 Your File:

FISHERIES & OCEANS
FISHERIES PACIFIC

February 25, 1992

FILE: 1110-P9.

Mr. Wayne Saito
Management Biologist
Department of Fisheries & Oceans
610 Derwent Way, Annacis Island
New Westminster, B.C.
V3M 5P8

Dear Wayne:

Enclosed are the results of the scale analysis for the 1991 Nechako River adult sockeye samples. The age composition of the 50 fish sampled is 98% 4₂'s and 2% 5₂'s. Please note the age composition is based on scale analysis, and due to resorption of scales and lack of otoliths to confirm the aging, the 5₂'s may be underestimated. However, I am reasonably confident in the age composition because ten scales were sampled from each fish giving good double checks on age and the length frequency distributions do not suggest that many more 5₂'s were present.

The mean freshwater circuli count without spring growth for 4₂'s is 11.51 and including spring growth is 13.69. The spacing between circuli is average compared to other Fraser River stocks. The Nechako River sample is very similar in circulus counts and spacing to the 1991 Chilko River spawning ground sample. No other spawning population within the Nechako watershed showed strong similarities to the Nechako River sample. The mean circuli count for Stellako River is approximately 4.3 circuli greater without and with spring growth, and the spacing is closer than Nechako River. The mean circuli count for Late Nadina River is approximately 7.2 circuli greater without spring growth and 4.2 greater with spring growth, and the spacing is wider than Nechako River.

Finally, enclosed is the length, weight and scale analysis data of three smolts sampled in May, 1991 from the Nechako River. The circuli counts are a bit higher than the adults but may simply indicate interannual variation in growth.

Please contact me if you need additional information.

Yours truly,

PACIFIC SALMON COMMISSION

J.C.W. for
Carol Arffman
Senior Scale Analyst

Encl.

cc: Gail Faulkner, Project Biologist,
Habitat Management Division,
Department of Fisheries & Oceans

Updated 10-Jan-92

TITLE: NECHAKO RIVER 1991 ADULTS - SPECIAL DFO SAMPLE 04:27 PM
 FILENAME: 91ANECRA.PRN
 ANALYST: JULLIE & CAROL
 GEAR: DEAD RECOVERY
 AREA: NECHAKO RIVER SPAWNING GROUNDS
 DATE: SEPTEMBER 15, 16, 22
 NOS FROM: 1 TO: 50

4/2 CIRCULUS COUNTS
 Without Spring Growth

4/2 CIRCULUS COUNTS
 With Spring Growth

AGED BY SCALES

| Count | Smooth | | |
|-------|--------|------|-------|
| | Freq | Freq | Pct |
| 5 | 0 | 0 | 0.00 |
| 6 | 0 | 0 | 0.00 |
| 7 | 0 | 0 | 0.00 |
| 8 | 0 | 1 | 0.51 |
| 9 | 1 | 16 | 8.16 |
| 10 | 14 | 41 | 20.92 |
| 11 | 12 | 49 | 25.00 |
| 12 | 11 | 39 | 19.90 |
| 13 | 5 | 26 | 13.27 |
| 14 | 5 | 15 | 7.65 |
| 15 | 0 | 6 | 3.06 |
| 16 | 1 | 2 | 1.02 |
| 17 | 0 | 1 | 0.51 |
| 18 | 0 | 0 | 0.00 |
| 19 | 0 | 0 | 0.00 |
| 20 | 0 | 0 | 0.00 |
| 21 | 0 | 0 | 0.00 |
| 22 | 0 | 0 | 0.00 |
| 23 | 0 | 0 | 0.00 |
| 24 | 0 | 0 | 0.00 |
| 25 | 0 | 0 | 0.00 |
| 26 | 0 | 0 | 0.00 |
| 27 | 0 | 0 | 0.00 |
| 28 | 0 | 0 | 0.00 |
| 29 | 0 | 0 | 0.00 |
| 30 | 0 | 0 | 0.00 |
| 31 | 0 | 0 | 0.00 |
| 32 | 0 | 0 | 0.00 |
| 33 | 0 | 0 | 0.00 |
| 34 | 0 | 0 | 0.00 |
| 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | 0.00 |

| Count | Smooth | | |
|-------|--------|------|-------|
| | Freq | Freq | Pct |
| 5 | 0 | 0 | 0.00 |
| 6 | 0 | 0 | 0.00 |
| 7 | 0 | 0 | 0.00 |
| 8 | 0 | 0 | 0.00 |
| 9 | 0 | 0 | 0.00 |
| 10 | 0 | 2 | 1.02 |
| 11 | 2 | 13 | 6.63 |
| 12 | 9 | 32 | 16.33 |
| 13 | 12 | 47 | 23.98 |
| 14 | 14 | 47 | 23.98 |
| 15 | 7 | 31 | 15.82 |
| 16 | 3 | 14 | 7.14 |
| 17 | 1 | 5 | 2.55 |
| 18 | 0 | 2 | 1.02 |
| 19 | 1 | 2 | 1.02 |
| 20 | 0 | 1 | 0.51 |
| 21 | 0 | 0 | 0.00 |
| 22 | 0 | 0 | 0.00 |
| 23 | 0 | 0 | 0.00 |
| 24 | 0 | 0 | 0.00 |
| 25 | 0 | 0 | 0.00 |
| 26 | 0 | 0 | 0.00 |
| 27 | 0 | 0 | 0.00 |
| 28 | 0 | 0 | 0.00 |
| 29 | 0 | 0 | 0.00 |
| 30 | 0 | 0 | 0.00 |
| 31 | 0 | 0 | 0.00 |
| 32 | 0 | 0 | 0.00 |
| 33 | 0 | 0 | 0.00 |
| 34 | 0 | 0 | 0.00 |
| 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | 0.00 |

| Age | Freq | Pct |
|-------------|------|-----------|
| 3/1 | 0 | 0.00 |
| 4/1 | 0 | 0.00 |
| 4/2 | 49 | 98.00 |
| 5/2 | 1 | 2.00 |
| 5/3 | 0 | 0.00 |
| 3/2 | 0 | 0.00 |
| 4/3 | 0 | 0.00 |
| GRAND TOTAL | 6/2 | 0 0.00 |
| 50 | 6/3 | 0 0.00 |
| Subtotal | | 50 100.00 |

SCALE SUMMARY

| UNREADABLE | | READABLE | |
|--------------|---|-----------|----|
| Condition | # | Condition | # |
| Regenerated | 0 | 1 | 50 |
| Missing | 0 | 2 | 0 |
| Unreadable | 0 | 3 | 0 |
| Not Sockeye | 0 | 4 | 0 |
| Lateral Line | 0 | | |

TOTAL UNREADABLE: 0 TOTAL READ: 50

OTOLITH SUMMARY

| | |
|------------|---|
| Unreadable | 0 |
| Missing | 0 |

TOTAL: 0

BREAKDOWN OF INDIVIDUAL SCALES

AGE FIRST SECOND PLUS

TOTAL 49 196 100.00
 MEAN 11.51 SD 1.64

TOTAL 49 196 100.00
 MEAN 13.69 SD 1.69

Updated 10-Jan-92

TITLE: NECHAKO RIVER 1991 ADULTS - SPECIAL DFO SAMPLE 04:27 PM
 FILENAME: 91ANECRA.PRN
 ANALYST: JULLIE & CAROL
 GEAR: DEAD RECOVERY
 AREA: NECHAKO RIVER SPAWNING GROUNDS
 DATE: SEPTEMBER 15, 16, 22
 NOS FROM: 1 TO: 50

5/2 CIRCULUS COUNTS
 Without Spring Growth

5/2 CIRCULUS COUNTS
 With Spring Growth

| Count | Smooth | | Pct | Count | Smooth | | Pct |
|-------|--------|------|--------|-------|--------|------|--------|
| | Freq | Freq | | | Freq | Freq | |
| 5 | 0 | 0 | 0.00 | 5 | 0 | 0 | 0.00 |
| 6 | 0 | 0 | 0.00 | 6 | 0 | 0 | 0.00 |
| 7 | 0 | 0 | 0.00 | 7 | 0 | 0 | 0.00 |
| 8 | 0 | 0 | 0.00 | 8 | 0 | 0 | 0.00 |
| 9 | 0 | 0 | 0.00 | 9 | 0 | 0 | 0.00 |
| 10 | 0 | 1 | 25.00 | 10 | 0 | 0 | 0.00 |
| 11 | 1 | 2 | 50.00 | 11 | 0 | 0 | 0.00 |
| 12 | 0 | 1 | 25.00 | 12 | 0 | 0 | 0.00 |
| 13 | 0 | 0 | 0.00 | 13 | 0 | 0 | 0.00 |
| 14 | 0 | 0 | 0.00 | 14 | 0 | 1 | 25.00 |
| 15 | 0 | 0 | 0.00 | 15 | 1 | 2 | 50.00 |
| 16 | 0 | 0 | 0.00 | 16 | 0 | 1 | 25.00 |
| 17 | 0 | 0 | 0.00 | 17 | 0 | 0 | 0.00 |
| 18 | 0 | 0 | 0.00 | 18 | 0 | 0 | 0.00 |
| 19 | 0 | 0 | 0.00 | 19 | 0 | 0 | 0.00 |
| 20 | 0 | 0 | 0.00 | 20 | 0 | 0 | 0.00 |
| 21 | 0 | 0 | 0.00 | 21 | 0 | 0 | 0.00 |
| 22 | 0 | 0 | 0.00 | 22 | 0 | 0 | 0.00 |
| 23 | 0 | 0 | 0.00 | 23 | 0 | 0 | 0.00 |
| 24 | 0 | 0 | 0.00 | 24 | 0 | 0 | 0.00 |
| 25 | 0 | 0 | 0.00 | 25 | 0 | 0 | 0.00 |
| 26 | 0 | 0 | 0.00 | 26 | 0 | 0 | 0.00 |
| 27 | 0 | 0 | 0.00 | 27 | 0 | 0 | 0.00 |
| 28 | 0 | 0 | 0.00 | 28 | 0 | 0 | 0.00 |
| 29 | 0 | 0 | 0.00 | 29 | 0 | 0 | 0.00 |
| 30 | 0 | 0 | 0.00 | 30 | 0 | 0 | 0.00 |
| 31 | 0 | 0 | 0.00 | 31 | 0 | 0 | 0.00 |
| 32 | 0 | 0 | 0.00 | 32 | 0 | 0 | 0.00 |
| 33 | 0 | 0 | 0.00 | 33 | 0 | 0 | 0.00 |
| 34 | 0 | 0 | 0.00 | 34 | 0 | 0 | 0.00 |
| 35 | 0 | 0 | 0.00 | 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | 0.00 | 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | 0.00 | 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | 0.00 | 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | 0.00 | 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | 0.00 | 40 | 0 | 0 | 0.00 |
| TOTAL | 1 | 4 | 100.00 | TOTAL | 1 | 4 | 100.00 |
| MEAN | 11.00 | SD | 0.82 | MEAN | 15.00 | SD | 0.82 |

Updated 10-Jan-92

TITLE: NECHAKO RIVER 1991 ADULTS - SPECIAL DFO SAMPLE
 FILENAME: 91ANECRA.PRN
 ANALYST: JULLIE & CAROL
 GEAR: DEAD RECOVERY
 AREA: NECHAKO RIVER SPAWNING GROUNDS
 DATE: SEPTEMBER 15, 16, 22
 NOS FROM: 1 TO: 50

04:27 PM

LENGTH FREQUENCY DIST'N
 Age 4/2 Males

LENGTH FREQUENCY DIST'N
 Age 4/2 Females

| Age 4/2 Males | | | | Age 4/2 Females | | | |
|---------------|-------------|------------|--------|-----------------|-------------|------------|--------|
| POH Length | Smooth Freq | Dist'n Pct | | POH Length | Smooth Freq | Dist'n Pct | |
| 35 | 0 | 0 | 0.00 | 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | 0.00 | 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | 0.00 | 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | 0.00 | 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | 0.00 | 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | 0.00 | 40 | 0 | 5 | 3.91 |
| 41 | 0 | 1 | 1.47 | 41 | 5 | 13 | 10.16 |
| 42 | 1 | 4 | 5.88 | 42 | 3 | 14 | 10.94 |
| 43 | 2 | 7 | 10.29 | 43 | 3 | 15 | 11.72 |
| 44 | 2 | 10 | 14.71 | 44 | 6 | 20 | 15.63 |
| 45 | 4 | 13 | 19.12 | 45 | 5 | 22 | 17.19 |
| 46 | 3 | 15 | 22.06 | 46 | 6 | 18 | 14.06 |
| 47 | 5 | 13 | 19.12 | 47 | 1 | 11 | 8.59 |
| 48 | 0 | 5 | 7.35 | 48 | 3 | 7 | 5.47 |
| 49 | 0 | 0 | 0.00 | 49 | 0 | 3 | 2.34 |
| 50 | 0 | 0 | 0.00 | 50 | 0 | 0 | 0.00 |
| 51 | 0 | 0 | 0.00 | 51 | 0 | 0 | 0.00 |
| 52 | 0 | 0 | 0.00 | 52 | 0 | 0 | 0.00 |
| 53 | 0 | 0 | 0.00 | 53 | 0 | 0 | 0.00 |
| 54 | 0 | 0 | 0.00 | 54 | 0 | 0 | 0.00 |
| 55 | 0 | 0 | 0.00 | 55 | 0 | 0 | 0.00 |
| 56 | 0 | 0 | 0.00 | 56 | 0 | 0 | 0.00 |
| 57 | 0 | 0 | 0.00 | 57 | 0 | 0 | 0.00 |
| 58 | 0 | 0 | 0.00 | 58 | 0 | 0 | 0.00 |
| 59 | 0 | 0 | 0.00 | 59 | 0 | 0 | 0.00 |
| 60 | 0 | 0 | 0.00 | 60 | 0 | 0 | 0.00 |
| 61 | 0 | 0 | 0.00 | 61 | 0 | 0 | 0.00 |
| 62 | 0 | 0 | 0.00 | 62 | 0 | 0 | 0.00 |
| 63 | 0 | 0 | 0.00 | 63 | 0 | 0 | 0.00 |
| 64 | 0 | 0 | 0.00 | 64 | 0 | 0 | 0.00 |
| 65 | 0 | 0 | 0.00 | 65 | 0 | 0 | 0.00 |
| 66 | 0 | 0 | 0.00 | 66 | 0 | 0 | 0.00 |
| 67 | 0 | 0 | 0.00 | 67 | 0 | 0 | 0.00 |
| 68 | 0 | 0 | 0.00 | 68 | 0 | 0 | 0.00 |
| 69 | 0 | 0 | 0.00 | 69 | 0 | 0 | 0.00 |
| 70 | 0 | 0 | 0.00 | 70 | 0 | 0 | 0.00 |
| 71 | 0 | 0 | 0.00 | 71 | 0 | 0 | 0.00 |
| 72 | 0 | 0 | 0.00 | 72 | 0 | 0 | 0.00 |
| 73 | 0 | 0 | 0.00 | 73 | 0 | 0 | 0.00 |
| 74 | 0 | 0 | 0.00 | 74 | 0 | 0 | 0.00 |
| 75 | 0 | 0 | 0.00 | 75 | 0 | 0 | 0.00 |
| TOTAL | 17 | 68 | 100.00 | TOTAL | 32 | 128 | 100.00 |
| MEANS: LN | 45.24 | WT | ERR | LN | 44.25 | WT | ERR |
| SD: | LN 1.55 | WT | ERR | LN | 2.12 | WT | ERR |

TITLE: NECHAKO RIVER 1991 ADULTS - SPECIAL DFO SAMPLE
 LENAME: 91ANECRA.FRN
 ANALYST: JULLIE & CAROL
 GEAR: DEAD RECOVERY
 AREA: NECHAKO RIVER SPAWNING GROUNDS
 DATE: SEPTEMBER 15, 16, 22
 NOS FROM: 1 TO: 50

04:27 PM

| LENGTH FREQUENCY DIST'N Age 5/2 Males | | | | LENGTH FREQUENCY DIST'N Age 5/2 Females | | | |
|--|----------------|----|-----|--|----------------|----|--------|
| POH Length | Smooth Freq | | Pct | POH Length | Smooth Freq | | Pct |
| 35 | 0 | 0 | ERR | 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | ERR | 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | ERR | 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | ERR | 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | ERR | 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | ERR | 40 | 0 | 0 | 0.00 |
| 41 | 0 | 0 | ERR | 41 | 0 | 0 | 0.00 |
| 42 | 0 | 0 | ERR | 42 | 0 | 0 | 0.00 |
| 43 | 0 | 0 | ERR | 43 | 0 | 0 | 0.00 |
| 44 | 0 | 0 | ERR | 44 | 0 | 0 | 0.00 |
| 45 | 0 | 0 | ERR | 45 | 0 | 1 | 25.00 |
| 46 | 0 | 0 | ERR | 46 | 1 | 2 | 50.00 |
| 47 | 0 | 0 | ERR | 47 | 0 | 1 | 25.00 |
| 48 | 0 | 0 | ERR | 48 | 0 | 0 | 0.00 |
| 49 | 0 | 0 | ERR | 49 | 0 | 0 | 0.00 |
| 50 | 0 | 0 | ERR | 50 | 0 | 0 | 0.00 |
| 51 | 0 | 0 | ERR | 51 | 0 | 0 | 0.00 |
| 52 | 0 | 0 | ERR | 52 | 0 | 0 | 0.00 |
| 53 | 0 | 0 | ERR | 53 | 0 | 0 | 0.00 |
| 54 | 0 | 0 | ERR | 54 | 0 | 0 | 0.00 |
| 55 | 0 | 0 | ERR | 55 | 0 | 0 | 0.00 |
| 56 | 0 | 0 | ERR | 56 | 0 | 0 | 0.00 |
| 57 | 0 | 0 | ERR | 57 | 0 | 0 | 0.00 |
| 58 | 0 | 0 | ERR | 58 | 0 | 0 | 0.00 |
| 59 | 0 | 0 | ERR | 59 | 0 | 0 | 0.00 |
| 60 | 0 | 0 | ERR | 60 | 0 | 0 | 0.00 |
| 61 | 0 | 0 | ERR | 61 | 0 | 0 | 0.00 |
| 62 | 0 | 0 | ERR | 62 | 0 | 0 | 0.00 |
| 63 | 0 | 0 | ERR | 63 | 0 | 0 | 0.00 |
| 64 | 0 | 0 | ERR | 64 | 0 | 0 | 0.00 |
| 65 | 0 | 0 | ERR | 65 | 0 | 0 | 0.00 |
| 66 | 0 | 0 | ERR | 66 | 0 | 0 | 0.00 |
| 67 | 0 | 0 | ERR | 67 | 0 | 0 | 0.00 |
| 68 | 0 | 0 | ERR | 68 | 0 | 0 | 0.00 |
| 69 | 0 | 0 | ERR | 69 | 0 | 0 | 0.00 |
| 70 | 0 | 0 | ERR | 70 | 0 | 0 | 0.00 |
| 71 | 0 | 0 | ERR | 71 | 0 | 0 | 0.00 |
| 72 | 0 | 0 | ERR | 72 | 0 | 0 | 0.00 |
| 73 | 0 | 0 | ERR | 73 | 0 | 0 | 0.00 |
| 74 | 0 | 0 | ERR | 74 | 0 | 0 | 0.00 |
| 75 | 0 | 0 | ERR | 75 | 0 | 0 | 0.00 |
| TOTAL | 0 | 0 | ERR | TOTAL | 1 | 4 | 100.00 |
| MEANS: LN | ERR | WT | ERR | LN | 46.00 | WT | ERR |
| SD: LN | ERR | WT | ERR | LN | 0.00 | WT | ERR |

TITLE: NECHAKO RIVER 1991 ADULTS - SPECIAL DFO SAMPLE 04:27 PM
 FILENAME: 91ANECRA.PRN
 ANALYST: JULLIE & CAROL
 GEAR: DEAD RECOVERY
 AREA: NECHAKO RIVER SPAWNING GROUNDS
 DATE: SEPTEMBER 15, 16, 22
 NOS FROM: 1 TO: 50

| SCALE NO. | COND | AGE | | LENGTH | | WEIGHT | | CIRCULUS COUNT | | | DIST ANNUL | DIST FIFTH | W |
|-----------|------|-----|-----|--------|------|--------|-----|----------------|------|--------|------------|------------|----|
| | | SCL | OTO | STD | POH | KGS | SEX | FIRST | PLUS | SECOND | | | |
| 1 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 1 | 10 | 3 | 0 | 58 | 38 | 28 |
| 2 | 1 | 42 | 0 | 0.0 | 45.5 | 0 | 2 | 10 | 2 | 0 | 61 | 40 | 28 |
| 3 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 2 | 13 | 0 | 0 | 68 | 40 | 29 |
| 4 | 1 | 42 | 0 | 0.0 | 43.0 | 0 | 2 | 9 | 2 | 0 | 49 | 35 | 27 |
| 5 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 2 | 12 | 2 | 0 | 67 | 38 | 27 |
| 6 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 1 | 12 | 0 | 0 | 59 | 36 | 24 |
| 7 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 1 | 11 | 2 | 0 | 65 | 43 | 30 |
| 8 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 2 | 12 | 3 | 0 | 74 | 45 | 29 |
| 9 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 2 | 10 | 3 | 0 | 67 | 44 | 32 |
| 10 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 2 | 10 | 3 | 0 | 57 | 37 | 28 |
| 11 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 1 | 11 | 3 | 0 | 57 | 36 | 25 |
| 12 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 10 | 2 | 0 | 55 | 37 | 27 |
| 13 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 2 | 12 | 0 | 0 | 66 | 36 | 27 |
| 14 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 10 | 3 | 0 | 59 | 40 | 30 |
| 15 | 1 | 42 | 0 | 0.0 | 42.0 | 0 | 1 | 10 | 3 | 0 | 63 | 42 | 28 |
| 16 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 1 | 10 | 2 | 0 | 60 | 42 | 32 |
| 17 | 1 | 42 | 0 | 0.0 | 42.0 | 0 | 2 | 12 | 4 | 0 | 65 | 36 | 25 |
| 18 | 1 | 42 | 0 | 0.0 | 41.0 | 0 | 2 | 11 | 3 | 0 | 63 | 39 | 26 |
| 19 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 12 | 3 | 0 | 74 | 43 | 32 |
| 20 | 1 | 42 | 0 | 0.0 | 42.0 | 0 | 2 | 12 | 2 | 0 | 73 | 42 | 28 |
| 21 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 10 | 2 | 0 | 58 | 39 | 28 |
| 22 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 11 | 2 | 0 | 60 | 39 | 28 |
| 23 | 1 | 42 | 0 | 0.0 | 41.0 | 0 | 2 | 11 | 3 | 0 | 62 | 36 | 27 |
| 24 | 1 | 42 | 0 | 0.0 | 43.0 | 0 | 2 | 11 | 3 | 0 | 63 | 42 | 29 |
| 25 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 1 | 11 | 0 | 0 | 66 | 44 | 31 |
| 26 | 1 | 42 | 0 | 0.0 | 42.0 | 0 | 2 | 13 | 1 | 0 | 77 | 45 | 32 |
| 27 | 1 | 42 | 0 | 0.0 | 41.0 | 0 | 2 | 12 | 3 | 0 | 74 | 42 | 32 |
| 28 | 1 | 42 | 0 | 0.0 | 41.0 | 0 | 2 | 11 | 3 | 0 | 62 | 39 | 30 |
| 29 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 2 | 13 | 2 | 0 | 73 | 40 | 31 |
| 30 | 1 | 42 | 0 | 0.0 | 43.0 | 0 | 2 | 16 | 0 | 0 | 84 | 39 | 32 |
| 31 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 1 | 14 | 3 | 0 | 66 | 35 | 25 |
| 32 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 1 | 10 | 2 | 0 | 54 | 35 | 27 |
| 33 | 1 | 42 | 0 | 0.0 | 43.0 | 0 | 1 | 10 | 3 | 0 | 58 | 36 | 24 |
| 34 | 1 | 42 | 0 | 0.0 | 41.0 | 0 | 2 | 14 | 1 | 0 | 77 | 37 | 29 |
| 35 | 1 | 42 | 0 | 0.0 | 43.0 | 0 | 1 | 12 | 0 | 0 | 60 | 35 | 29 |
| 36 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 1 | 14 | 0 | 0 | 62 | 42 | 28 |
| 37 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 1 | 13 | 3 | 0 | 69 | 39 | 31 |
| 38 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 2 | 10 | 3 | 0 | 59 | 36 | 29 |
| 39 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 1 | 12 | 3 | 0 | 74 | 38 | 32 |
| 40 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 2 | 12 | 2 | 0 | 65 | 39 | 29 |
| 41 | 1 | 42 | 0 | 0.0 | 47.5 | 0 | 2 | 11 | 4 | 0 | 66 | 42 | 30 |
| 42 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 1 | 10 | 2 | 0 | 61 | 39 | 28 |
| 43 | 1 | 52 | 0 | 0.0 | 46.0 | 0 | 2 | 11 | 4 | 0 | 58 | 35 | 27 |
| 44 | 1 | 42 | 0 | 0.0 | 48.0 | 0 | 2 | 11 | 2 | 0 | 67 | 43 | 31 |
| 45 | 1 | 42 | 0 | 0.0 | 45.0 | 0 | 2 | 13 | 0 | 0 | 71 | 37 | 27 |
| 46 | 1 | 42 | 0 | 0.0 | 44.0 | 0 | 1 | 10 | 3 | 0 | 59 | 39 | 29 |
| 47 | 1 | 42 | 0 | 0.0 | 46.0 | 0 | 2 | 14 | 0 | 0 | 79 | 41 | 32 |
| 48 | 1 | 42 | 0 | 0.0 | 48.0 | 0 | 2 | 11 | 3 | 0 | 55 | 34 | 25 |
| 49 | 1 | 42 | 0 | 0.0 | 47.0 | 0 | 1 | 11 | 3 | 0 | 74 | 44 | 32 |
| 50 | 1 | 42 | 0 | 0.0 | 44.5 | 0 | 2 | 14 | 0 | 0 | 72 | 36 | 31 |

Updated 20-Feb-92

TITLE: NECHAKO RIVER 1991 SMOLTS
 FILENAME: 91SNECHR.PRN
 ANALYST: CAROL
 GEAR: PRESERVED SMOLT MIGRANTS
 AREA: NECHAKO RIVER
 DATE: MAY 21-22
 NOS FROM: 1 TO: 3

02:24 PM

| 1-YEAR OLD SMOLTS CIRCULUS COUNTS | | | | | | | |
|-----------------------------------|--------|------|--------|--------------------|--------|------|--------|
| Without Spring Growth | | | | With Spring Growth | | | |
| Count | Smooth | | | Count | Smooth | | |
| | Freq | Freq | Pct | | Freq | Freq | Pct |
| 5 | 0 | 0 | 0.00 | 5 | 0 | 0 | 0.00 |
| 6 | 0 | 0 | 0.00 | 6 | 0 | 0 | 0.00 |
| 7 | 0 | 0 | 0.00 | 7 | 0 | 0 | 0.00 |
| 8 | 0 | 0 | 0.00 | 8 | 0 | 0 | 0.00 |
| 9 | 0 | 0 | 0.00 | 9 | 0 | 0 | 0.00 |
| 10 | 0 | 0 | 0.00 | 10 | 0 | 0 | 0.00 |
| 11 | 0 | 0 | 0.00 | 11 | 0 | 0 | 0.00 |
| 12 | 0 | 1 | 8.33 | 12 | 0 | 0 | 0.00 |
| 13 | 1 | 2 | 16.67 | 13 | 0 | 0 | 0.00 |
| 14 | 0 | 2 | 16.67 | 14 | 0 | 0 | 0.00 |
| 15 | 1 | 3 | 25.00 | 15 | 0 | 0 | 0.00 |
| 16 | 1 | 3 | 25.00 | 16 | 0 | 0 | 0.00 |
| 17 | 0 | 1 | 8.33 | 17 | 0 | 1 | 8.33 |
| 18 | 0 | 0 | 0.00 | 18 | 1 | 3 | 25.00 |
| 19 | 0 | 0 | 0.00 | 19 | 1 | 3 | 25.00 |
| 20 | 0 | 0 | 0.00 | 20 | 0 | 2 | 16.67 |
| 21 | 0 | 0 | 0.00 | 21 | 1 | 2 | 16.67 |
| 22 | 0 | 0 | 0.00 | 22 | 0 | 1 | 8.33 |
| 23 | 0 | 0 | 0.00 | 23 | 0 | 0 | 0.00 |
| 24 | 0 | 0 | 0.00 | 24 | 0 | 0 | 0.00 |
| 25 | 0 | 0 | 0.00 | 25 | 0 | 0 | 0.00 |
| 26 | 0 | 0 | 0.00 | 26 | 0 | 0 | 0.00 |
| 27 | 0 | 0 | 0.00 | 27 | 0 | 0 | 0.00 |
| 28 | 0 | 0 | 0.00 | 28 | 0 | 0 | 0.00 |
| 29 | 0 | 0 | 0.00 | 29 | 0 | 0 | 0.00 |
| 30 | 0 | 0 | 0.00 | 30 | 0 | 0 | 0.00 |
| 31 | 0 | 0 | 0.00 | 31 | 0 | 0 | 0.00 |
| 32 | 0 | 0 | 0.00 | 32 | 0 | 0 | 0.00 |
| 33 | 0 | 0 | 0.00 | 33 | 0 | 0 | 0.00 |
| 34 | 0 | 0 | 0.00 | 34 | 0 | 0 | 0.00 |
| 35 | 0 | 0 | 0.00 | 35 | 0 | 0 | 0.00 |
| 36 | 0 | 0 | 0.00 | 36 | 0 | 0 | 0.00 |
| 37 | 0 | 0 | 0.00 | 37 | 0 | 0 | 0.00 |
| 38 | 0 | 0 | 0.00 | 38 | 0 | 0 | 0.00 |
| 39 | 0 | 0 | 0.00 | 39 | 0 | 0 | 0.00 |
| 40 | 0 | 0 | 0.00 | 40 | 0 | 0 | 0.00 |
| ----- | | | | ----- | | | |
| TOTAL | 3 | 12 | 100.00 | TOTAL | 3 | 12 | 100.00 |
| MEAN | 14.67 | SD | 1.50 | MEAN | 19.33 | SD | 1.50 |

| AGED BY SCALES | | |
|----------------|------|--------|
| Age | Freq | Pct |
| | 0 | 0.00 |
| | 0 | 0.00 |
| 1-YR | 3 | 100.00 |
| | 0 | 0.00 |
| 2-YR | 0 | 0.00 |
| | 0 | 0.00 |
| | 0 | 0.00 |
| GRAND TOTAL | 0 | 0.00 |
| 3 | 0 | 0.00 |
| ----- | | |
| Subtotal | 3 | 100.00 |

| SCALE SUMMARY | | | |
|-------------------|---|-------------|---|
| UNREADABLE | | READABLE | |
| Condition | # | Condition | # |
| Regenerated | 0 | 1 | 3 |
| Missing | 0 | 2 | 0 |
| Unreadable | 0 | 3 | 0 |
| Not Sockeye | 0 | 4 | 0 |
| Lateral Line | 0 | | |
| ----- | | | |
| TOTAL UNREADABLE: | 0 | TOTAL READ: | 3 |

| OTOLITH SUMMARY | |
|-----------------|---|
| Unreadable | 0 |
| Missing | 0 |
| ----- | |
| TOTAL: | 0 |

BREAKDOWN OF INDIVIDUAL SCALES

AGE FIRST SECOND PLUS

Updated 20-Feb-92

TITLE: NECHAKO RIVER 1991 SMOLTS
 FILENAME: 91SNECHR.PRN
 ANALYST: CAROL
 GEAR: PRESERVED SMOLT MIGRANTS
 AREA: NECHAKO RIVER
 DATE: MAY 21-22
 NOS FROM: 1 TO: 3

02:24 PM

LENGTH FREQUENCY DIST'N
 1-YEAR OLD SMOLTS

| Fork Length | Smooth Freq | Fork Freq | Pct | Fork |
|-------------|-------------|-----------|-------|------|
| 60 | 0 | 0 | 0.00 | 0 |
| 62 | 0 | 0 | 0.00 | 0 |
| 64 | 0 | 0 | 0.00 | 0 |
| 66 | 0 | 0 | 0.00 | 0 |
| 68 | 0 | 0 | 0.00 | 0 |
| 70 | 0 | 0 | 0.00 | 0 |
| 72 | 0 | 0 | 0.00 | 0 |
| 74 | 0 | 0 | 0.00 | 0 |
| 76 | 0 | 0 | 0.00 | 0 |
| 78 | 0 | 0 | 0.00 | 0 |
| 80 | 0 | 1 | 8.33 | 0 |
| 82 | 1 | 2 | 16.67 | 0 |
| 84 | 0 | 1 | 8.33 | 0 |
| 86 | 0 | 0 | 0.00 | 0 |
| 88 | 0 | 0 | 0.00 | 0 |
| 90 | 0 | 1 | 8.33 | 0 |
| 92 | 1 | 2 | 16.67 | 0 |
| 94 | 0 | 1 | 8.33 | 0 |
| 96 | 0 | 0 | 0.00 | 0 |
| 98 | 0 | 0 | 0.00 | 0 |
| 100 | 0 | 1 | 8.33 | 0 |
| 102 | 1 | 2 | 16.67 | 0 |
| 104 | 0 | 1 | 8.33 | 0 |
| 106 | 0 | 0 | 0.00 | 0 |
| 108 | 0 | 0 | 0.00 | 0 |
| 110 | 0 | 0 | 0.00 | 0 |
| 112 | 0 | 0 | 0.00 | 0 |
| 114 | 0 | 0 | 0.00 | 0 |
| 116 | 0 | 0 | 0.00 | 0 |
| 118 | 0 | 0 | 0.00 | 0 |
| 120 | 0 | 0 | 0.00 | 0 |
| 122 | 0 | 0 | 0.00 | 0 |
| 124 | 0 | 0 | 0.00 | 0 |
| 126 | 0 | 0 | 0.00 | 0 |
| 128 | 0 | 0 | 0.00 | 0 |
| 130 | 0 | 0 | 0.00 | 0 |
| 132 | 0 | 0 | 0.00 | 0 |
| 134 | 0 | 0 | 0.00 | 0 |
| 136 | 0 | 0 | 0.00 | 0 |
| 138 | 0 | 0 | 0.00 | 0 |
| 140 | 0 | 0 | 0.00 | 0 |

TOTAL 3 12 100.00
 MEANS: LN 92.00 WT 6.29
 SD: LN 8.16 WT 0.45

02:24 PM

TITLE: NECHAKO RIVER 1991 SMOLTS
 FILENAME: 91SNECHR.PRN
 ANALYST: CAROL
 GEAR: PRESERVED SMOLT MIGRANTS
 AREA: NECHAKO RIVER
 DATE: MAY 21-22
 NOS FROM: 1 TO: 3

| SCALE NO. | COND | AGE | | LENGTH | | WEIGHT | | CIRCULUS COUNT | | | DIST ANNUL | DIST FIFTH | W |
|--------------|------|-----|-----|--------|-------|--------|-------|----------------|--------|---|---------------|---------------|----|
| | | SCL | OTO | POF | FORK | GMS | FIRST | PLUS | SECOND | | | | |
| 1 | 1 | 42 | 0 | 0.0 | 102.0 | 6.93 | 0 | 16 | 5 | 0 | 87 | 42 | 25 |
| 2 | 1 | 42 | 0 | 0.0 | 92.0 | 5.99 | 0 | 15 | 4 | 0 | 75 | 38 | 25 |
| 3 | 1 | 42 | 0 | 0.0 | 82.0 | 5.96 | 0 | 13 | 5 | 0 | 57 | 34 | 26 |



00001363



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 - 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE: (604) 684-8081
FAX: (604) 666-8707

TO: *B. Graham*

Our File: 75001

009779 MAR -2 14:13

Your File:

FISHERIES & OCEANS
FISHERIES PACIFIC
FILE: 1110-P9.

February 25, 1992

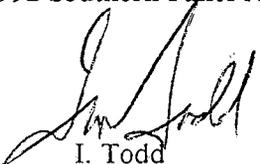
MEMORANDUM

TO: Southern Panel Area Coho Workshop Participants
National Sections Correspondents

FROM: I. Todd, Executive Secretary

RE: Draft Summary Minutes - Southern Panel Coho Workshop

Attached for your record and comment, if desired, is a draft summary of the discussions which took place during the February 16-18, 1992 Southern Panel Area Coho Workshop.


I. Todd
Executive Secretary



Gouvernement du Canada

MESSENGER SERVICE
ENVELOPE

ENVELOPPE EXPÉDIÉE
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MOULÉES DANS LA CASE SUIVANTE

| | | |
|--|--|----|
| 1 Martha Newthorntwaite | 6 Mark Saunders | 11 |
| 2 A. Harrow | 7 Mike Smith | 12 |
| 3 SALLY MORTON CULTUS LAKE | 8 DALE RICH Don Noakes / PBS | 13 |
| 4 Calvin Lewis | 9 A. Lill - Stn # 422 | 14 |
| 5 RJ Beavis PBS | 10 | 15 |

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| 16 | 17 | 18 | 19 | 20 | 21 |



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 - 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE: (604) 684-8081
FAX: (604) 666-8707

TO: Pat Chanut

Our File: 72001

002967 FEB 24 P1:14

Your File:

February 20, 1992

92-2

FISHERIES & OCEANS
FISHERIES PACIFIC

1110-P9

MEMORANDUM



TO: All members of the Pacific Salmon Commission
FROM: J. Abramson, Secretary
RE: Chinook Technical Report (92)-2

Please find enclosed the Chinook Technical Committee Report - Preliminary 1991 Catch and Escapement, (92)-2 dated February 13, 1992. Also, find enclosed "Canadian 1991 Catch and Sampling Report on Terminal Area Exclusions of Chinook Catches in Northern B.C.".

J. Abramson
J. Abramson
Secretary

Pat Chanut
26/2/92

Encl.

MESSENGER SERVICE ENVELOPE

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1 ~~Kelley Churley,~~
~~West Van Dist.~~

6 ~~[Redacted]~~
Pat Baglo

11 F. CAGGS
[Signature]

2 MIKE ROMAINE
ITSD
555 W. HASTINGS.

7 ~~Grant Johnson~~
~~Rosewall Creek~~

12 Steele
422

3 Personnel
#408

8 ~~PURCHASING~~
~~P.B.S.~~
(MAUREEN FAHR)

13 D. Rossford
P. Hubert

4 Kate Glover
Comm.
Stn. 412

9 BROSS

14 Al Wood
317

5 Kelly Francis
P.B.S.

10 N. Seigel
Personnel Branch
555 W. Hastings
Vancouver, B.C.

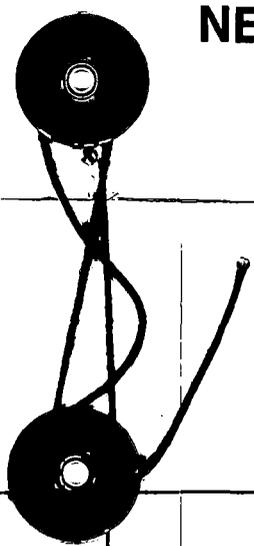
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REEMPLIR D'ABORD LE VERSO



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| 22 | 23 | 24 | 25 | 26 | 27 |
| 16 | 17 | 18 | 19 | 20 | 21 |

CANADIAN 1991 CATCH AND SAMPLING REPORT on TERMINAL AREA EXCLUSIONS of CHINOOK CATCHES in NORTHERN B.C.

February 6, 1991

SUMMARY

In compliance with the 1991 Letter of Transmittal (Attachment 2), Canada is providing this brief report on catch estimates of chinook caught in the three areas described in TCCHINOOK (91)-2 and the recovery of coded-wire tags in these areas. Methods used in this report are the same as reviewed by the Chinook Technical Committee and reported in TCCHINOOK (91)-2. The sport catch survey used in the Kitimat terminal area was expanded and the area further sub-divided to improve resolution on tag recoveries and biological sampling data. Efforts were made to increase the sampling for tags and biological samples in each exclusion area.

Terminal exclusions are proposed for the Skeena and Bella Coola areas, 4,383 and 1,674 chinook respectively. No terminal exclusion exists in the Kitimat area since the estimated catch of chinook over 12 lb. in June and July does not exceed the base catch level. The estimated catch for Kitimat Area 6-1 was 2,305. However, the base catch level for each exclusion area (as specified in Attachment 2) has been included in the all-gear catch for North/Central B.C. Tag recoveries and biological sampling again demonstrated that all tagged chinook recovered in these terminal areas were from mature chinook returning to the local river. Spawning escapements to the Skeena, Kitimat, and Bella Coola rivers all exceeded their escapement goals. Escapements to the smaller natural populations in Kitimat and Bella Coola areas were more variable, but within each area the spawning escapements improved relative to 1990.

REVIEWS BY TERMINAL AREA

Skeena River Area (River/Gap/Slough):

Procedures as outlined by Canada in the 1991 report to the Chinook Technical Committee were repeated, with the exception that samplers were placed aboard packers within the River/Gap/Slough (RGS) and proximal to this area. This sampling procedure was intended to increase the number of coded-wire tags recovered and to reduce possible contamination of RGS recoveries due to vessels reporting catch in this area that was caught elsewhere. The estimated RGS catch of chinook over 5 lb. was 7,283, resulting in a terminal exclusion of 4,383 (7,283 - 2,900) chinook (Table 1a). Of these, 1,883 were sampled (26% sampling rate) for adipose clips and 29 coded-wire tags were recovered. The mark rate (1.54%) in RGS was very similar to rates reported for 1989 and 1990, and all coded-wire tagged chinook over 5 lb. were from releases within the Skeena River (Table 1b).

Biological samples were collected from 635 chinook caught throughout Area 4. Most of these samples were collected in the RGS or in the adjacent fishing sub-area. Processing of these samples is incomplete but 86% of the chinook sampled in RGS exceeded 5.4 kilograms (Large Red chinook grade) and all chinook sampled in RGS were mature. Tag recoveries and biological sampling from all chinook recovered in Area 4 will be reported in June. A total of 93 coded-wire tags have been recovered throughout Area 4. Recoveries outside of the RGS were again from a wide variety of sources.

Kitimat Sub-Area 6-1:

A creel survey similar to the 1990 survey described in the 1991 Canadian report was conducted between June 9 and August 9. The catch estimate was based on effort distribution and daily patterns, plus ramp interviews for catch and biological sampling data. Six sampling areas within Sub-area 6-1 were identified (Figure 1) and data were collected by 3 size categories (>12 lb., 5-12 lb., and <5 lb.). The estimated total catch of chinook over 12 lb. was only 2305 but effort was reduced by 37% relative to 1990 (Table 2a). This estimated catch is less than the 2,400 base catch level specified in Attachment 2 and a terminal exclusion does not exist.

Mark sampling examined 20% of the total catch but the vast majority of the sampling occurred at the head of Kitimat Arm (Sub-area A, Figure 1), and 3.8% of the chinook had adipose clips. Due to the voluntary return of heads in Canadian sport fisheries we do not know the origin of each marked chinook observed. However, all marks returned from Sub-areas A and B were from the Kitimat Hatchery. Heads voluntarily returned from throughout Statistical Area 6 continue to indicate that this inlet contains a mix of chinook stocks. However, biological samples collected throughout Area 6-1 (n = 341) indicated that all chinook 12 lb. or larger were sexually mature (Table 2b).

Bella Coola Gillnet Area (BCGNA):

Procedures as outlined in the 1991 Canadian report were repeated in the BCGNA, except that the terminal exclusion has been calculated through the second week of July (Statistical week 7-2). This extension is proposed since the majority of the fishing and chinook catch occurred in the BCGNA and large mesh gill nets were still being used through this week. Following week 7-2, however, effort shifted to the outer portions of Area 8 and a substantial mix of chinook stocks is revealed by coded-wire tag recoveries. The estimated BCGNA catch of chinook over 5 lb. through week 7-2 was 4,624 (Table 3a), resulting in an exclusion of 1,674 (4,624 - 2,950) chinook. Sampling rates for mark incidence remained high (71%) as in previous years, and the mark incidence (2.2%) was similar to 1990. Seventy coded-wire tags were recovered from 3,242 samples (Table 3b). All but one tagged chinook was returning to the Snootli Hatchery in Bella Coola. All tagged fish were mature. One mature chinook from Kitimat Hatchery was recovered.

To protect natural chinook stocks in this Area, the upper portions of South Bentinck Arm and Dean Channel were closed to fishing. The two small chinook populations at the head of South Bentinck Arm are not well surveyed but the reported escapement (combined escapement of about 100) was similar to recent averages. The more important stock is the Dean River chinook at the head of Dean Channel. Escapement of Dean chinook increased compared to 1990 and late 1980 values (2400 vs. 2000, 1986-1990 average).

Note: Detailed lists of coded-wire tag recoveries will be provided in the June report but if desired the 1991 coded-wire tag data may be accessed directly via the Mark Recovery Database maintained at the Pacific Biological Station.

Starr D:\document\91TERMA4.WK1 Feb. 6, 1992

Table 1a. 1991 Chinook catch (>5lb.) in total Area 4 and the River/Gap/Slough exclusion area, and sampling rates for coded-wire tags in the R/G/S area.

| Stat. Week | Fishing Dates | Hailed Catch | | Reported Sales: Total Area 4 | Prorated R/G/S | Sample Size in R/G/S | Sample Rate | CWT's Recovered |
|---------------|-------------------------|--------------|-------------|------------------------------|----------------|----------------------|-------------|-----------------|
| | | Total Area 4 | R/G/S | | | | | |
| 71 | July 1/2 | 1164 | 628 | 1219 | 658 | 395 | 60% | 6 |
| 72 | July 7/8,9,10 | 2825 | 1298 | 4009 | 1842 | 478 | 26% | 2 |
| 73 | July 14/15,16,17,20/21 | 5006 | 3609 | 3183 | 2295 | 193 | 8% | 0 |
| 74 | July 22,23,24,27/28 | 2193 | 1187 | 2027 | 1097 | 413 | 38% | 5 |
| 75 | July 29,30,31, Aug. 3/4 | 1646 | 732 | 1,458 | 648 | 190 | 29% | 4 |
| 81 | Aug. 5,6 | 321 | 279 | 383 | 333 | 79 | 24% | 4 |
| 82 | Aug. 11/12,13 | 125 | 77 | 172 | 106 | 97 | 92% | 4 |
| 83 | Aug. 18/19,20,21 | 163 | 15 | 43 | 4 | 37 | >100% | 4 |
| 84 | Aug. 25/26,27 | 20 | 0 | 36 | 0 | 1 | >100% | 0 |
| Totals | | 13463 | 7825 | 12530 | 6983 | 1883 | 26% | 29 |

Terminal Exclusion is estimated = 7283
 using the annual totals

Table 1b. 1991 Coded-wire tag recoveries in the RGS terminal exclusion area.

| Stat. Week | Total age of Chinook caught | | | | Total CWT's | No pins | Comments |
|--------------|-----------------------------|----------|-----------|----------|-------------|----------|--|
| | Age 3 | Age 4 | Age 5 | Age 6 | | | |
| 71 | 1 | 2 | 1 | 0 | 4 | 2 | All R/G/S recoveries were from Skeena River release sites: |
| 72 | 0 | 0 | 1 | 1 | 2 | 0 | |
| 73 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 74 | 0 | 1 | 3 | 0 | 4 | 1 | |
| 75 | 0 | 0 | 4 | 0 | 4 | 0 | 5 Terrace CDP |
| 81 | 0 | 0 | 3 | 0 | 3 | 1 | 2 Fort Babine CDP |
| 82 | 0 | 0 | 3 | 1 | 4 | 0 | 17 Toboggan Cr. CDP |
| 83 | 0 | 0 | 2 | 1 | 3 | 1 | |
| 84 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Total | 1 | 3 | 17 | 3 | 24 | 5 | |

Starr D:\Document\91termA6.wk1 Feb. 6, 1992

Table 2a. Estimated sport catch and effort in Kitimat Sub-area 6-1 based on the 1991 creel survey; plus the number of chinook sampled for mark incidence and the number of coded-wire tags observed.

| Sub-Area | Parameters: | Numbers of Chinook by size | | | Totals by Sub-Area | |
|----------|--------------|----------------------------|----------|--------|--------------------|------------------|
| | | >12 lb. | 5-12 lb. | <5 lb. | Chinook Numbers | Boat Days Effort |
| A | Catch | 1696 | 436 | 81 | 2213 | 5290 |
| | Samples obs. | 423 | 81 | 17 | 521 | |
| | CWT's | 14 | 4 | 1 | 19 | |
| B | Catch | 180 | 47 | 8 | 235 | 574 |
| | Samples obs. | 10 | 6 | 1 | 17 | |
| | CWT's | 1 | 0 | 0 | 1 | |
| C | Catch | 48 | 12 | 2 | 62 | 154 |
| | Samples obs. | 0 | 0 | 0 | 0 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| D | Catch | 63 | 16 | 2 | 81 | 201 |
| | Samples obs. | 6 | 7 | 1 | 14 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| E | Catch | 87 | 22 | 4 | 113 | 274 |
| | Samples obs. | 4 | 18 | 3 | 25 | |
| | CWT's | 1 | 0 | 0 | 1 | |
| F | Catch | 138 | 35 | 6 | 179 | 431 |
| | Samples obs. | 0 | 3 | 0 | 3 | |
| | CWT's | 0 | 0 | 0 | 0 | |
| G | Catch | 93 | 24 | 4 | 121 | 293 |
| | Samples obs. | 12 | 1 | 1 | 14 | |
| | CWT's | 2 | 0 | 0 | 2 | |
| Totals | Catch | 2305 | 592 | 107 | 3004 | 7217 |
| | Samples obs. | 455 | 116 | 23 | 594 | |
| | CWT's | 18 | 4 | 1 | 23 | |

Table 2b. Numbers of biological samples collected and distribution of samples by body size (weight) and maturity state of the samples.

| Sub-Area | # of Biological Samples | Numbers of Samples by size | | | Maturity State | |
|--------------|-------------------------|----------------------------|----------|--------|----------------|----------|
| | | >12 lb. | 5-12 lb. | <5 lb. | Mature | Immature |
| A | 294 | 245 | 39 | 10 | 293 | 1 |
| B | 9 | 6 | 3 | 0 | 6 | 3 |
| C | 0 | 0 | 0 | 0 | 0 | 0 |
| D | 5 | 4 | 1 | 0 | 5 | 0 |
| E | 15 | 5 | 9 | 1 | 6 | 9 |
| F | 7 | 6 | 1 | 0 | 7 | 0 |
| G | 11 | 8 | 2 | 1 | 11 | 0 |
| Total | 341 | 274 | 55 | 12 | 328 | 13 |
| % of Samples | | 80.4% | 16.1% | 3.5% | 96.2% | 3.8% |

(Starr D:\document\91TERMA8.WK1 Feb. 6, 1992)

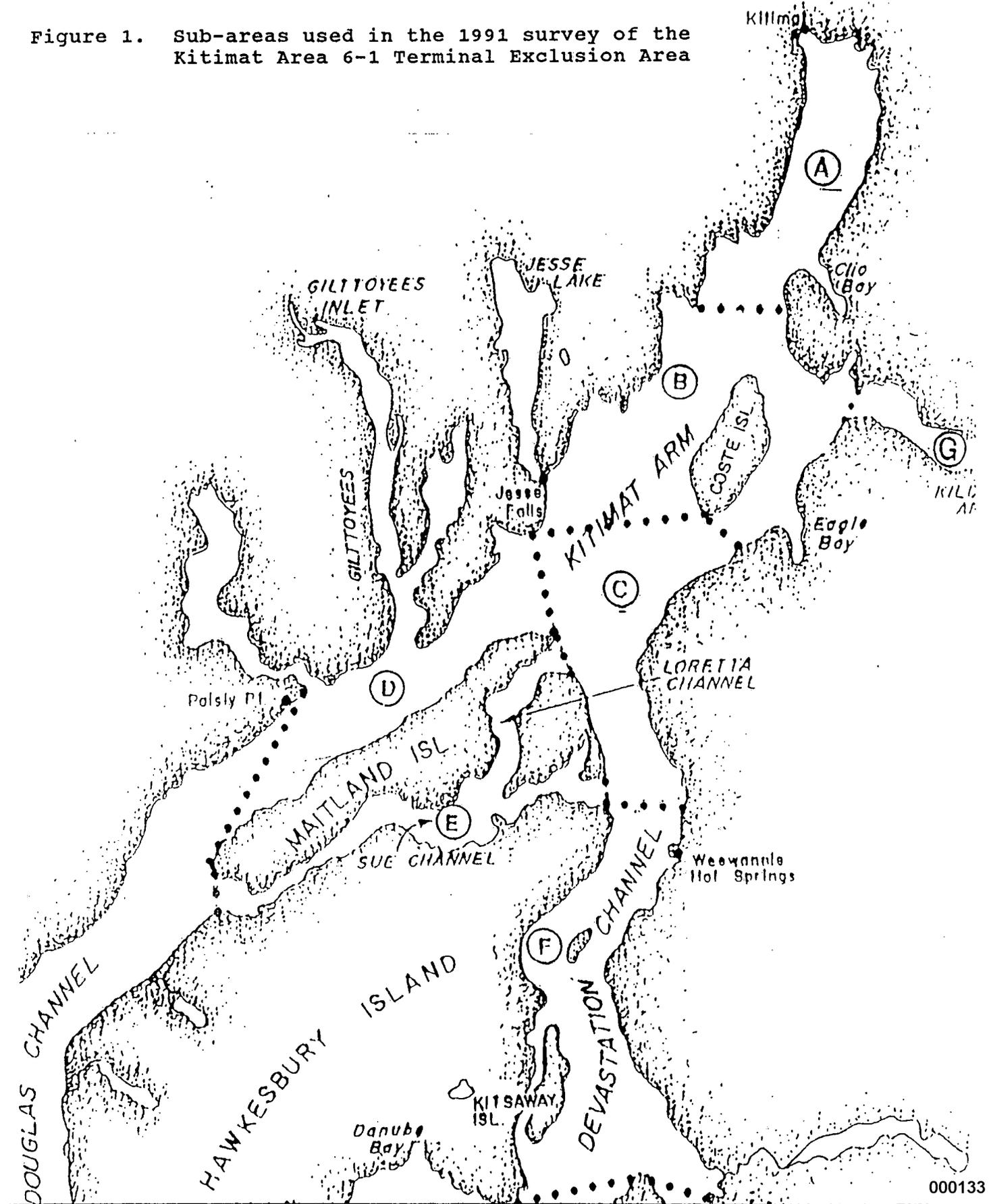
Table 3a. 1991 Chinook catch (>5lb.) in total Area 8 Gillnet and BCGNA, and sampling rates for coded-wire tag sampling.

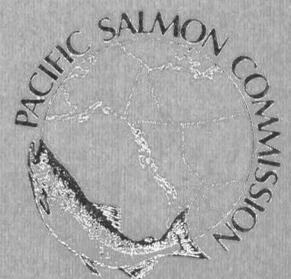
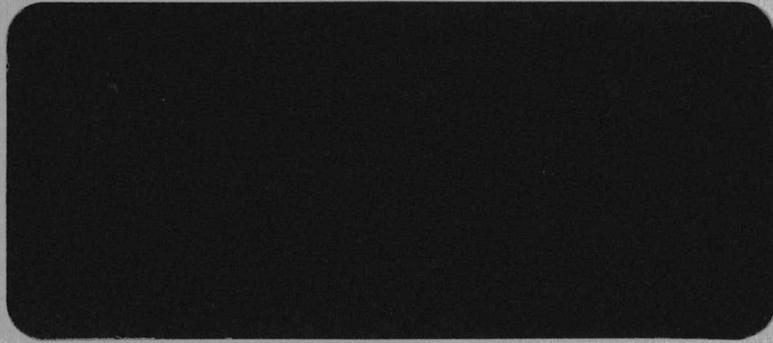
| Stat. Week | Fishing Dates | Hailed Catch | | Reported Sales: | | % Large Mesh | Catch by large mesh | Sample Size | Sample Rate |
|---------------------------|---------------|--------------|-------|-----------------|-------|------------------------|---------------------|-------------|-------------|
| | | Total Area 8 | BCGNA | Total Area 8 | BCGNA | | | | |
| 062 | June 11 | 524 | 524 | 588 | 588 | 100 | 588 | 396 | 67.3 |
| 063 | June 18 | 1,000 | 1,000 | 1,143 | 1,143 | 100 | 1143 | 786 | 68.8 |
| 064 | June 25 | 888 | 888 | 1,049 | 1,049 | 100 | 1049 | 865 | 82.5 |
| 071 | July 01 | 741 | 601 | 896 | 727 | 67 | 487 | 702 | 96.6 |
| 072 | July 8,9 | 1,277 | 1,005 | 1,422 | 1,119 | 25 | 280 | 493 | 44.1 |
| Total to Week 072: | | 4,430 | 4,018 | 5,098 | 4,626 | | 3,547 | 3,242 | 71.8 |
| Terminal area exclusion = | | | | | 4,624 | estimated using totals | | | |

Table 3b. 1991 Coded-wire tag recoveries in Area 8 previous to Statistical week 072. All recoveries were from the Snootli Hatchery (Bella Coola) unless otherwise stated.

| Stat. Week | Total age of Chinook recovered | | | | | Total CWT's | No pins | Comments |
|---------------|--------------------------------|-------|-------|-------|----|-------------|---------------------------|----------|
| | Age 3 | Age 4 | Age 5 | Age 6 | | | | |
| 062 | 0 | 4 | 4 | 2 | 10 | 0 | | |
| 063 | 0 | 10 | 11 | 0 | 21 | 1 | (1 Age 5 Kitimat Chinook) | |
| 064 | 0 | 3 | 7 | 2 | 12 | 1 | | |
| 071 | 1 | 7 | 7 | 1 | 16 | 0 | | |
| 072 | 4 | 2 | 5 | 0 | 11 | 2 | | |
| Total by Age: | | 5 | 26 | 34 | 5 | 70 | 4 | |

Figure 1. Sub-areas used in the 1991 survey of the Kitimat Area 6-1 Terminal Exclusion Area





**PACIFIC SALMON COMMISSION
CHINOOK TECHNICAL COMMITTEE**

REPORT TCCHINOOK (92)-2

**CHINOOK TECHNICAL REPORT ON
PRELIMINARY 1991 CATCH AND
ESCAPEMENT**

FEBRUARY 13, 1992

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1.0 1991 CHINOOK SALMON CATCHES IN FISHERIES WITH CEILINGS

Estimates of 1991 catch for each fishery managed under a harvest ceiling established by the Pacific Salmon Commission (PSC) are presented below. These data are preliminary, but major changes are not expected. Catches in all chinook fisheries of interest to the PSC are documented in Table 1.

(numbers x 1,000) Compiled with information available as of February 3, 1992.

| Area/Fisheries a/ | Ceiling | Catch | Difference | |
|---------------------------------|---------|-------|------------|---------|
| | | | Numbers | Percent |
| S.E. Alaska (T,N,S) b/ | 273 | 299.3 | +26.3 | +9.6% |
| North/Central B.C. (T,N,S) c/ | 273 | 301.4 | +28.4 | +10.4% |
| West Coast Vancouver Island (T) | 360 | 195.7 | -164.3 | -45.6% |
| Strait of Georgia (T,S) | 275 | 144.3 | -130.7 | -47.5% |

a/ T=Troll; N=Net; S=Sport

b/ The actual total catch was 364,900 chinook, including a hatchery add-on of 65,500.

c/ Excludes 6,057 chinook caught in terminal areas in 1991, which Canada proposes to exclude from the ceiling.

2.0 CUMULATIVE DEVIATIONS FROM CATCH CEILINGS

A 7.5% cumulative management range was established by the PSC in 1987. Annual catches (without add-on) and deviations from catch ceilings since 1987 are as follows:

(numbers x 1,000) Compiled with information available as of February 3, 1992.

| Area/Fisheries | Ceiling | Catch | | | | | Total Deviation | Cumulative Deviation | |
|---------------------------------|---------|-------|-------|-------|-------|-------|-----------------|----------------------|-----------|
| | | 1987 | 1988 | 1989 | 1990 | 1991 | | Numbers | Percent |
| S.E. Alaska (T,N,S) a/ | 263 b/ | 265.2 | 255.2 | 264.4 | 318.5 | 299.3 | +38.6 | +38.6 | +14.7% c/ |
| North/Central B.C. (T,N,S) d/ | 263 b/ | 283.0 | 245.6 | 303.0 | 254.0 | 301.4 | +23.0 | +23.0 | +8.7% c/ |
| West Coast Vancouver Island (T) | 360 | 378.9 | 408.7 | 203.7 | 295.5 | 195.7 | -318.0 | -27.0 | -7.5% c/ |
| St. of Georgia (T,S) | 275 | 159.0 | 138.7 | 162.0 | 144.3 | 147.5 | -623.5 | -20.6 | -7.5% c/ |

a/ S.E. Alaska catches exclude hatchery add-ons of 16,700, 23,700, 26,700, 48,300, and 65,500 for 1987, 1988, 1989, 1990, and 1991 respectively.

b/ The 1990 ceiling was 302,000, and the 1991 ceiling was 273,000.

c/ These overages exceed the 7.5% management range.

d/ Catches exclude 4,819, 5,549, and 6,057 chinook caught in terminal areas in 1989, 1990, and 1991, respectively, for a total of 16,425.

e/ Negative deviations below the 7.5% management range can not be accumulated.

3.0 REVIEW OF FISHERIES WITH CATCH CEILINGS

3.1 S.E. Alaska Fisheries

In 1991, S.E. Alaska fisheries were managed under the following provisions established by the Pacific Salmon Commission:

- (1) an all gear base catch ceiling of 263,000 plus 10,000 chinook salmon;
- (2) an Alaska hatchery add-on calculated on the basis of coded wire tag sampling;
- (3) a 7.5% management range, calculated in numbers of fish, for cumulative deviations from the base catch ceiling since 1987; this is equivalent to +/- 19,700 chinook salmon for a 263,000 base catch ceiling; and
- (4) a limit of 40,000 chinook, excluding Alaska hatchery add-on, to be taken in June fisheries.

Preliminary data for 1991 indicate the following:

- (1) The total all gear catch (commercial and recreational) was 364,900 chinook salmon, including a hatchery add-on of 65,500.
- (2) The preliminary estimate of the 1991 Alaska hatchery add-on, calculated on the basis of coded-wire-tag recoveries, was 65,500. The add-on was calculated as the estimated total Alaska hatchery harvest of 79,500 reduced by 5,000 for pre-Treaty hatchery harvest and by 9,000 (preliminary) for the risk adjustment.
- (3) The deviation of the 1991 S.E. Alaska chinook salmon catch from the catch ceiling was +26,300. The total cumulative deviation is +38,600 (+14.7% of the catch ceiling). This overage exceeds the 7.5% management range.

Troll Fisheries: The 1991 total troll harvest of chinook salmon was 263,700 of which 38,200 were of Alaskan hatchery origin.

The winter troll fishery was open from October 1, 1990 to April 14, 1991; 42,400 chinook salmon were harvested. A total of 10,100 (23.8%) of these chinook were produced by Alaskan hatcheries. The winter troll fishery takes place entirely within the surfline. Both effort and catch have been low, often due to poor weather and the short number of hours available each day for trolling. The catch has averaged less than 15% of the total annual troll harvest.

During June, experimental, hatchery access, and terminal troll fisheries were conducted. The experimental fisheries are designed to increase the harvest of chinook salmon

produced in Alaskan hatcheries by allowing trolling for 2 to 3 days per week in small areas in the migratory path close to the hatchery. The hatchery access fishery was designed to increase the harvest of Alaskan hatchery chinook salmon while providing general access to wild S.E. Alaska stocks. Terminal fisheries occurred directly in front of hatcheries or remote release sites.

The June fisheries were managed in-season to maximize the catch of Alaskan hatchery chinook and to comply with a limit of 40,000 non-Alaskan hatchery chinook.

Eight different areas were open 9 days each for the experimental fishery. A total of 13,900 chinook salmon were harvested of which 6,600 (47.5%) were produced in Alaskan hatcheries. This was the largest catch since the inception of the fishery in 1986.

The first hatchery access opening in 1991 occurred from June 5 through 7. However, those waters just east of the surfline (in Districts 103 and 113) were open only 2 days. A total of 22,500 chinook salmon were caught during this period, of which 6,000 (26.7%) were from Alaskan hatcheries. The second opening was scheduled for just 1.5 days in all waters. During this period, a total of 23,900 fish were harvested, of which only 3,100 (13.0%) were from Alaskan hatcheries.

A total of 6,000 chinook salmon were harvested in terminal areas. All of these fish are assumed to be of Alaskan hatchery origin.

The total June catch was 66,300 of which 21,700 (32.7%) were from Alaskan hatcheries. A total of 44,600 chinook salmon harvested in June were not of Alaskan hatchery origin. This was 4,600 chinook over the 40,000 limit stipulated in the Treaty.

The general summer troll season began on July 1 and continued through noon on July 8 (7.5 days). A total of 154,000 chinook salmon were harvested, of which 6,400 (4.2%) were from Alaskan hatcheries. Following the closure of the chinook salmon harvest, areas of high chinook salmon abundance were closed. There was also a 10 day closure of all trolling in mid-August. Trolling for all species closed on September 20. There were a total of 64.5 days of chinook non-retention.

An additional 1,000 chinook were taken in the Annette Island troll fishery, throughout the October 1 through September 30 catch accounting period.

Net Fisheries: Net fisheries had a guideline harvest of 20,000 chinook salmon plus Alaska hatchery add-on. Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and constitute only a fraction (< 1%) of the total net harvest. Purse seine and set net fisheries are managed by non-retention periods. Retention in the purse seine fishery occurs during periods of expected high pink salmon abundance. Night closures are used in the drift fill net fishery to slow down the harvest. In 1991, the net fisheries harvested a total of 32,700 chinook salmon of which 10,900

were Alaskan hatchery chinook harvested in terminal fisheries and 3,800 were Alaskan hatchery chinook harvested in non-terminal fisheries.

Recreational Fisheries: There is no guideline harvest level established for recreational fisheries. These fisheries are managed under a 2 fish-per-day bag limit and a 28" minimum size limit. An estimate of the final harvest will not be available until mid-1992; however, the preliminary projection is 68,400 chinook salmon, of which 26,700 are estimated to be from Alaskan hatcheries. The recreational harvest has increased tremendously during the last several years with harvests of 26,200, 31,100, and 51,200 in 1988, 1989 and 1990, respectively.

3.2 Canadian Fisheries

The minimum size limit for troll fisheries remained at 62 cm fork length in the Strait of Georgia and at 67 cm fork length in all other areas. Catch statistics for commercial fisheries are based on sales slips accumulated through December 31, 1991. These data are preliminary.

North/Central B.C.: The 1991 North/Central B.C. fisheries were managed under the following provisions:

- (1) an all gear base catch ceiling of 263,000 plus 10,000 chinook salmon; and
- (2) a 7.5% management range, with cumulative deviations calculated since 1987. Based on preliminary 1990 catch estimates and terminal exclusion calculation procedures, the cumulative deviation at the beginning of the 1991 season was estimated at -5,400.

The preliminary 1991 all-gear catch was 301,400, excluding terminal exclusions of 6,057. These preliminary catch statistics indicate a 1991 catch deviation of +28,400, and a cumulative deviation through 1991 of +23,000 chinook (+8.7% of the catch ceiling). This overage exceeds the 7.5% management range.

Terminal exclusions, as allowed in the Letter of Transmittal, are calculated as follows:

| Area | Base | 1991 Catch | 1991 Exclusion |
|-------------|-------|------------|----------------|
| Skeena | 2,900 | 7,283 | 4,383 |
| Bella Coola | 2,950 | 4,624 | 1,674 |
| Kitimat | 2,400 | 2,305 | 0 |
| Total | | | 6,057 |

Troll Fisheries: The 1991 troll fishery opened for all species on June 28. There was a four day closure from August 7 through August 10, prior to opening for retention of Fraser River bound sockeye. The management objective for the troll fishery in 1991 was a chinook catch ceiling of 203,300. A number of management actions were taken during the troll fishery to meet this objective, including:

- (1) The west coast of Queen Charlotte Islands south of Buck Point and Areas 107-2, 107-3, 108-111 and 11 were closed to all trolling August 20-24.
- (2) On August 27 all of Area 2W, Area 142, and the area known as the "Red Line" in Area 1 were closed to trolling to slow the chinook catch rate.
- (3) On September 3, the entire North Coast (Areas 1-11, 30) was closed to possession and retention of chinook.
- (4) Also, on September 3 a large portion of Hecate Strait was closed to prevent chinook shaking problems.

Trolling for all species closed on September 30, for a total of 27 days of chinook non-retention. The preliminary catch of chinook in North/Central B.C. troll fisheries was 219,967 (data to Dec. 1, 1991).

Net Fisheries: Catch of chinook in North/Central areas was 54,750. Catches by fishery were 6,430 in the Queen Charlotte Islands, 31,870 for the Skeena/Nass and 16,450 in the Central Coast. These catches are the preliminary total catches of chinook >5 lb. including the catch eligible for terminal exclusion.

Recreational Fisheries: The tidal water sport fishery catch of chinook was 32,700. Catch by fishery was 15,200 for the Queen Charlotte Islands, 4,300 for the Skeena/Nass and 13,200 for the Central Coast.

West Coast Vancouver Island (WCVI) Troll:

In light of the below average forecast of chinook abundance to the WCVI troll fishery in 1991, Canada's main objective for the WCVI troll fishery was to manage the fishery in a manner consistent with the intent of the treaty and the rebuilding program. In addition, due to Canada's concern for the Harrison River chinook stock, the intent was to manage the fishery to maintain the 1985-87 average harvest rate. It was estimated that a fishery of approximately 77 days open for chinook retention would maintain the 1985-87 average harvest rate. The fishery opened on June 28 with all areas open except Areas F1, G and S (same areas as Fig. 1, page 11, TCCHINOOK (91)-3). There were four major area/time closures on the west coast of Vancouver Island in 1991:

- (1) Areas F1 and G closed from June 28 to July 14. This area closure was implemented in order to moderate the coho catch rate early in the fishery. Area F1 opened July 14. Area G opened for the duration of the sockeye fishery only (August 11 through August 20).
- (2) Complete closure to all trolling from August 7 through August 10 (4 days) prior to the sockeye fishery.
- (3) Complete closure to all trolling from August 21 through August 23 (3 days) following the sockeye fishery.
- (4) Areas F1, G and the waters easterly of Loran-C line 5990-Z-14740 closed August 24. This action was taken initially to slow coho catch rate. Following closure for coho retention on September 6, the area closure was maintained in order to prevent coho shaking problems.

Trolling closed on September 18, for a total of 76 days open to chinook fishing. There was no chinook non-retention period in 1991. Chinook catch in 1991 for the WCVI troll fishery was 195,700.

Strait of Georgia:

Troll: The management objective was a domestic catch ceiling of 31,000 chinook. The ceiling was reduced to this level in 1988 to achieve a 20% harvest rate reduction, relative to 1987 levels, as part of a conservation plan for lower Strait of Georgia chinook.

The troll fishery opened for chinook retention on June 27 and continued until August 1 without interruption. When an early season troll ceiling of 29,000 was reached, chinook non-retention and non-possession with single barbless hooks was implemented (August 2 through August 9). While the sockeye fishery was open, August 10 through August 19, barbed hooks were allowed, but non-retention and non-possession of chinook was still in effect. On August 20, retention of chinook salmon was again permitted. The objective was to allow for incidental chinook catch during the remainder of the 1991 season. The chinook catch rate proceeded at a faster rate than anticipated and the ceiling of 31,000 was obtained September 12. Beginning September 13 and continuing until the season closed September 30, chinook non-possession and non-retention was in effect. There were a total of 36 chinook non-retention days. Chinook catch by trollers was 32,000.

Recreational: The 1991 management objective for the Strait of Georgia recreational fishery was to maintain a 20% harvest rate reduction, relative to 1987 levels, on lower Strait of Georgia chinook. Consequently, the management plan implemented in 1989 was continued in 1991. This plan consists of the following management actions:

- (1) An annual bag limit of 15 chinook and a size limit of 62 cm was implemented for the area north of Cadboro Point (north of Victoria in Statistical area 19B), including Johnstone Strait. These measures represent an increase in the bag limit (from 8 to 15) for the Strait of Georgia recreational fishery compared to 1988.
- (2) For Johnstone Strait, the daily bag limit was reduced from 4 to 2 chinook, the season limit was reduced from 30 to 15, and the size limit was increased from 45 cm to 62 cm, relative to 1988.

The estimated 1991 catch in the creel survey area (including the Victoria area but excluding Johnstone Strait) was 115,500. Effort in 1991 totalled 466,700 boat trips, which is about 20% less than the 1986-90 average effort level.

An evaluation of the lower Strait of Georgia chinook conservation program is currently in progress.

4.0 REVIEW OF OTHER FISHERIES

4.1 Canadian Fisheries

Transboundary Rivers: Chinook catch in the Canadian gillnet fishery was: Taku River, 1,177 chinook adults and 432 jacks, and Stikine River, 850 chinook adults and 400 jacks. The catch of chinook in these rivers is limited to incidental catch during catch of the allowed harvest of sockeye salmon.

Southern B.C. Commercial Net:

| Area (Stat. Area) | Catch (chinook > 5 lb.) |
|---------------------------|-------------------------|
| Johnstone Strait (11-13) | 13,000 |
| Strait of Georgia (14-19) | 1,200 |
| Fraser River (28,29) | 13,100 |
| Juan de Fuca Strait (20) | 7,000 |
| Barkley Sound (23) | 54,000 |
| Other WCVI (21,22,24-27) | 200 |

The catch of chinook in all of these net fisheries is limited to their incidental catch during fisheries on sockeye, pink, or chum, with the exception of the August/September

gillnet fishery in Alberni Inlet (Area 23). This fishery is a terminal gillnet fishery for returns to the Robertson Creek Hatchery. Small numbers of chinook may also be harvested incidentally during gillnet and seine fisheries on sockeye salmon in Barkley Sound in July. Management of southern B.C. net fisheries has an objective to reduce the base period harvest rate on chinook by 25% (an obligation in the PSC chinook rebuilding program). Further, the Johnstone Strait net fisheries have the added objective of reducing harvest rates since 1987 by an additional 20% as part of the conservation program for chinook stocks in the lower Strait of Georgia.

In all the fisheries, regulations and research programs are attempting to limit the incidental mortality of juvenile chinook and coho. Fishing time, location, and gear are limited in southern B.C. net fisheries to conserve juvenile and adult chinook salmon. In Johnstone and Juan de Fuca Straits, known areas of high chinook vulnerability are closed and minimum depth strata are set to reduce the catch of juvenile chinook and coho. In Juan de Fuca, a maximum number of juvenile chinook and coho salmon per set has been established, beyond which the fishing area is further restricted or even closed. Chinook catch in the Fraser River area is usually limited to gillnet fishing and chinook catch is incidental.

Exploitation rate analyses reported by the Chinook Technical Committee in 1991 (TCCHINOOK (91)-1, Feb. 8, 1991) indicated that southern B.C. net fisheries (i.e., non-ceiling B.C. fisheries) have successfully reduced their aggregate exploitation rate on indicator chinook stocks.

Area 12 Troll: Catch is reported as 1,200 chinook. This fishery is a small localized group of trollers at the southern limit of Queen Charlotte Sound. The fishery is limited to a catch ceiling of 2,000 chinook.

Tidal Recreational: The catch estimate for the 1991 Barkley Sound recreational fishery is 80,200, of which 43,400 were taken in the terminal fishery inside Alberni Canal and 36,800 in Barkley Sound. The survey period covered from July 15 through September 30. The early to mid-summer fishery primarily occurs in outer Barkley Sound and is limited by size limit, catch per day, and possession limits. The Alberni Canal portion occurs primarily in August and is directed on returns to the Robertson Creek hatchery. Catch estimates for sport fisheries in Johnstone Strait are not yet available, although a creel survey was conducted last year. Catch estimates for sport fisheries off WCVI are not available.

Non-tidal Recreational: Non-tidal recreational fisheries occur in most B.C. rivers, including the Alsek, Skeena, Nass, Kitimat, Bella Coola, Somass and Fraser Rivers and various streams on the east coast of Vancouver Island. Most of these fisheries are small, localized fisheries to provide the local public with some access to salmon fishing. Recent fisheries in the upper Fraser have been limited to the larger chinook populations which

have responded well to the chinook rebuilding program. Each localized fishery in the Fraser has an established catch ceiling.

Chinook catch was estimated at 388 in the Alsek, 8,000 in northern B.C. rivers (Areas 1-10), and 1,500 in the Upper Fraser only. Chinook fisheries occurred in 7 areas of the Upper Fraser River (Bowron, Quesnel, Bridge, Clearwater, Shuswap, South Thompson, Thompson). Sport catches also occur in the Vedder-Chilliwack River and Lower Fraser mainstem, but were not assessed in 1991 due to inadequate resources.

Indian Food Fisheries:

| Fishing Area | Adult Catches | Jack Catch |
|--------------------|---------------|------------|
| North/Central B.C. | 23,800 | - |
| Somass River | 23,800 | - |
| Fraser River | 16,854 | - |
| Stikine | 753 | 310 |
| Alsek | 336 | - |
| Cowichan | 200 | - |
| Squamish | 1,095 | - |

The 1991 Fraser River catch was equal to the 1980-89 average of 16,700. Catches in the Cowichan and Squamish Rivers were down 23% from the 1,676 reported for 1990 and about equal to the 1989 catch level.

Each of these fisheries involves directed chinook fishing periods and the incidental catch of chinook during fisheries on other species. Small portions of the catch may be taken in marine waters, with the exception of the Stikine and Alsek catches. Catch in these fisheries is mostly limited by fishing time, but allocation to meet Native food fishing requirements is the first priority use of allowable catches.

4.2 U.S. Fisheries

Strait of Juan de Fuca: As in previous years, management measures were taken in the Strait of Juan de Fuca and other mixed stock areas to protect depressed spring chinook stocks. No directed spring chinook fisheries were permitted and no commercial fisheries were permitted during the spring chinook management period (April 15-June 15). Recreational fisheries were also restricted by a maximum size limit of 30 inches. Further actions were taken in all mixed stock areas to protect depressed summer/fall stocks from Puget Sound. It was recognized that the combined actions for chinook salmon should

also serve to protect depressed Canadian-origin chinook stocks (primarily Fraser River runs).

Preliminary estimates of 1991 net catch in the Strait of Juan de Fuca total 3,100 chinook, compared to 5,200 in 1990. These fisheries take chinook incidental to harvest of other species. Preliminary estimates of 1991 tribal troll catch in the Straits (Areas 4B, 5, and 6C) total 34,800 chinook compared to 45,700 caught in 1990. This is a chinook directed fishery. Note that tribal troll catch estimates from this area do not include tribal catch in Area 4B during the May 1-September 30 PFMC management period; catches during this period are included in the North of Cape Falcon troll summary.

Recreational catch estimates for 1991 and 1990 in Areas 5 and 6 are not available at this time. In 1991, about 400 chinook were caught in the Area 4B state waters fishery, after the PFMC fishery, compared to 400 in 1990. Preliminary 1989 recreational chinook catch for Areas 5 and 6 is estimated at 52,300, compared to 39,300 in 1988.

San Juan Islands: Preliminary 1991 estimates of chinook net catch in the San Juan Islands total 13,700, compared to 9,300 in 1990. Recreational catch estimates for 1991 and 1990 in Area 7 are not available at this time. Preliminary 1989 recreational chinook catch for Area 7 is estimated at 9,500, compared to 9,400 in 1988.

Puget Sound: The status of Puget Sound spring chinook stocks continued to be poor in 1991. As in past years, recreational and commercial fisheries in Puget Sound were regulated by time and area closures to avoid all direct harvest and minimize incidental harvest of these depressed stocks. Some directed harvest was allowed on a few Puget Sound summer/fall stocks. However, several terminal areas, including Area 8 (located near the mouth of the Stillaguamish and Snohomish Rivers), did not have directed chinook net fisheries in order to protect depressed summer/fall stocks.

Preliminary estimates of 1991 net catch in Puget Sound marine areas total 69,100 chinook, compared to 150,300 in 1990. Preliminary estimates of 1991 catch in Puget Sound freshwater areas total 18,100 chinook, compared to 28,700 in 1990.

Puget Sound recreational catch estimates for 1991 and 1990 are not available at this time. Recreational fisheries were managed in the same general manner as in recent years. Preliminary recreational chinook catch for 1989 in Areas 8-13 is estimated at 66,500, compared to 59,600 in 1988.

Washington Coast: In 1991, terminal runs of northern Washington coastal stocks were above minimum spawning levels, allowing both commercial and recreational directed chinook fisheries in terminal areas. Preliminary 1991 estimates of Grays Harbor and Willapa Bay net catch total 42,300 chinook, compared to 41,600 in 1990. Preliminary 1991 estimates of commercial net fisheries in north coastal rivers total 11,800 chinook, compared to 16,300 in 1990.

A small recreational fishery has historically occurred in the Grays Harbor estuary. In 1991, effort and catch in this fishery increased significantly in response to the large coho run returning to Grays Harbor. This fishery was sampled through September 29, and the estimated catch is approximately 400 chinook. Catch from this fishery is not included in Table 1.

Ocean Fisheries North of Cape Falcon: In 1991, ocean commercial and recreational fisheries operating in the Pacific Fisheries Management Council (PFMC) region north of Cape Falcon were constrained by domestic quotas for both chinook and coho salmon. Chinook quotas were established taking into account the need to protect several severely depressed chinook stocks, particularly Upper Columbia River runs. Separate quotas were established for the tribal troll and non-tribal fisheries.

Under PFMC quota management, ocean fisheries are terminated either when coho or chinook quotas are achieved or when seasons expire. Overall, in 1991, chinook catch success was poor, consistent with 1991 pre-season expectations for low abundance of key stocks. Fisheries closed when coho quotas were reached and chinook quotas were not fully harvested. Preliminary estimates of 1991 tribal troll chinook catch total 21,400, 65% of the 33,000 chinook quota and down from 31,400 in 1990. Preliminary recreational catches are estimated at 13,500 (1,000 Oregon and 12,500 Washington), about 34% of the 40,000 chinook quota and down from 33,100 in 1990. Preliminary estimates of non-tribal troll chinook catch total 29,700 (900 Oregon and 28,800 Washington), about 74% of the 40,000 chinook quota and down from 33,100 in 1990. Approximately 27,300 of these non-tribal troll caught chinook were taken during the early season chinook fishery (May 1 through June 15, 1991).

In 1991, there was no experimental fishery conducted in the inside ocean waters north of Destruction Island to Cape Alava. In 1990, this fishery harvested a total of 11 chinook.

Columbia River: Since 1988, all in-river management of Columbia River fish runs and fisheries has been directly based on the Columbia River Fish Management Plan (CRFMP). "The purpose of this management plan is to provide a framework....to protect, rebuild, and enhance upper Columbia River fish runs while providing harvest for both treaty Indian and non-Indian fisheries" (CRFMP, 1988, p.2). The CRFMP specifies management goals, season timing, catch limits, and maximum incidental impacts for all depressed upriver runs of anadromous fish in the Columbia River.

The preliminary 1991 in-river commercial catch of spring and fall chinook is 109,834, compared to 147,000 in 1990 and 274,500 in 1989. Total freshwater recreational catch in 1991 (including a Buoy 10 catch of 11,600) is estimated to be 80,220 compared to 94,820 in 1990 and 96,878 in 1989.

The 1991 total catch of upriver spring chinook was 6,427 fish, consisting of 2,433 caught in the non-Indian sport and commercial fisheries and 3,994 caught in tribal Ceremonial

and Subsistence (C&S) fisheries. The CRFMP limits harvest impacts on upriver spring chinook run sizes between 50,000 and 128,800 to 4.1% of the run in the lower river non-Indian catch and 7.0% of the run in tribal C&S fisheries. The estimated 1991 impacts were 4.1% and 6.7% respectively.

There has not been a targeted in-river fishery on upriver summer chinook since 1964. In the past, incidental harvest of summer chinook has occurred during commercial sockeye fisheries. However, no commercial sockeye fisheries have occurred since 1988. There is a very small C&S catch of summer chinook. The total catch in 1991 is believed to be less than 50 fish.

Commercial catch of fall chinook in 1991 totaled 93,220 (41,550 in lower river non-Indian fisheries above Bonneville Dam). Management constraints imposed by the CRFMP included achieving the Spring Creek hatchery escapement goal of 8,200 adult chinook, an adult escapement of 40,000 Upriver Bright (including a Snake River component) chinook over McNary Dam, and providing a 50% share of the harvestable portion of the upriver fall chinook run to the treaty Indian fisheries. The Upriver Bright escapement goal for in-river management was increased by 5,000 chinook to 45,000 adults for 1990 and 1991 on an interim basis by agreement of the CRFMP parties to account for increased broodstock hatchery needs and because of concern for the Snake River wild component.

Ocean Fisheries Cape Falcon to Humbug Mountain: Ocean fisheries off Oregon's central coast primarily harvest a mixture of southern chinook stocks not involved in the PSC rebuilding program; these stocks do not migrate north into PSC jurisdiction to any great extent. Some stocks that spawn in Oregon coastal streams do migrate into PSC fisheries, including the Northern Oregon Coastal (NOC) stock aggregate. These north migrating stocks are harvested incidentally (probably <10%) in Oregon ocean fisheries. The only troll fishery that predominately harvests the NOC stock aggregate is the late season near-shore fishery off the mouth of the Elk River. In both 1990 and 1991, this Elk River fishery was not conducted due to conservation concerns. Recreational catch estimates for 1991 are not available at this time.

5.0 PRELIMINARY REVIEW OF 1991 ESCAPEMENTS

Many chinook escapement estimates are still being calculated at this time. A brief overview is presented below and in Table 2, summarizing the information that is currently available. This information should be considered very preliminary.

5.1 S.E. Alaska and Non-Annex Transboundary Rivers

In 1991, the ADF&G estimated the total escapement for 30 of the 31 chinook salmon systems in S.E. Alaska (does not include the 3 annex transboundary rivers and excludes

the Chilkat River this year, as the survey methods are under review). The total escapement in these systems in 1991 was 12,600 chinook salmon. This is 77% of the total escapement goal of 16,470 chinook salmon. Of the 30 stocks for which escapement is estimated, 7 are used as CTC indicator stocks.

The 5 S.E Alaska indicator stocks (Table 2) had a total escapement of 2,466 chinook salmon in 1991. This is 67% of the total escapement goal for these rivers. Of the 5 stocks, only the Situk was above the escapement goal, the remaining escapements ranged from 30% to 85% of their respective escapement goals.

The 2 non-annex transboundary indicator stocks (Table 2) were both below escapement goals in 1991. Estimated escapement in the Unuk River increased over 1990 while the escapement decreased in the Chickamin relative to 1990.

5.2 Annex Transboundary Rivers

Following the review of chinook spawning escapements by the Transboundary Technical Committee (TCTR(91)-4, 11/27/91), ADF&G and CDFO have revised the escapement goals for the Alsek, Taku, and Stikine Rivers. In each river, an index stream or streams (6 in the Taku) have been selected and rebuilding escapement goals established for these indices. The selection of the index streams was based on the availability of the most accurate and most consistently collected data on spawning escapement.

In the Alsek River, a counting weir on the Klukshu River is used. The number of spawners is estimated by subtracting the Native catch above the weir from the weir count. The escapement goal now used (4,700) is the average between previous U.S. and Canadian goals for this tributary.

In the Taku River, aerial surveys of escapement have been conducted fairly regularly on six tributaries. The Taku escapement index is now the sum of the counts on these six streams. When data are missing for one stream, the index sum would be increased based on the historical proportion of the index represented by the stream with the missing data. The escapement goal (13,200) was determined as the sum of the largest escapements recorded in each stream between 1965 and 1981.

In the Stikine River, chinook escapement to the Little Tahltan River was selected as the escapement index. Escapements have been counted by aerial surveys since 1975 and using a weir since 1985. The escapement goal now used (5,300) was determined as the average between previous U.S. and Canadian goals (following revision of the U.S. goal by applying the agreed expansion factor of 2.0 to convert aerial counts to weir counts).

The 1991 escapements to the Annex Transboundary Rivers were similar to recent years. Compared to 1990, slight increases occurred in the Klukshu and Little Tahltan Rivers and a decrease for the combined Taku index.

5.3 Northern B.C. (Areas 1, 3, and 4)

In 1991, a substantial decrease in chinook escapements was observed to the Nass area, dropping below even the base period average. The basis for this drop is being investigated but likely resulted from increased Native catch in the Nass River and other fisheries in Statistical Area 3. Skeena chinook stock escapement was also slightly down from 1990, but still well above the escapement goal.

5.4 Central B.C. (Areas 6-10)

Since 1988, index escapements for Area 6 and Area 8 have been adjusted by eliminating rivers with substantial hatchery contributions. The escapement goals for these systems have been adjusted accordingly. Chinook escapements to Kitimat area (Area 6 Index) streams increased compared to 1990 but was still below escapements previous to 1990. Escapement to the Bella Coola area (Area 8 Index) natural streams in 1991 was up slightly from 1990 but still well below the escapement goal. Rivers Inlet was up from 1990 levels but the estimation procedure was changed in 1991 (a mark-recovery program has been implemented). The mark-recovery estimate is being used since Departmental staff were confident that chinook abundance had increased. Further, escapement estimates for the past few years at Rivers and Smith Inlets are under review because of a change in the Fishery Officer collecting the data; the present officer does not expand his visual counts of chinook whereas previous officers had. Chinook escapement to Smith Inlet was about the same as in 1990.

5.5 Southern B.C. (outside the Fraser River)

Chinook escapement to upper Strait of Georgia was up for the Nimpkish and Devereux River indicator stocks in 1991. The Nimpkish River increased to 1,800 from the 1990 escapement level of 1,200 and the Devereux increased from 250 in 1990 to 500 in 1991. The Wakemen and Kakweiken two other Upper Strait of Georgia indicator stock remained at the same level as 1990 with 300 and 150 spawners, respectively. The final indicator streams from upper Strait of Georgia, Kingcome, decreased to 250 in 1991 from the 1990 level of 300. Overall, chinook escapements were up slightly in 1991 from the 1990 level for upper Strait of Georgia but were still below average escapements for the mid to late 1980's, only slightly greater than the base level, and well below the goal.

The estimates of returns to the Lower Strait of Georgia stock increased substantially in the Cowichan and Squamish rivers but were down in the Nanaimo River. The return to the Cowichan River was the largest since 1979. Escapement increased in the Squamish but was associated with increased returns of enhanced chinook. The proportion enhanced and their distribution in the river will be reviewed.

The 1991 reported returns to west coast of Vancouver Island stocks increased slightly from 1990. The primary reason for this increase was due to returns to the Burman and Tahsis Rivers. The 1991 escapement estimate to the Burman River was 2,500 compared to 1,100 in 1990, and for the Tahsis was 1,400 versus 300 in 1990. However, the Marble River was down considerably to 1,000 spawners compared to 2,000 in 1990 and 4,500 in 1989.

5.6 Fraser River

The escapement of Fraser River indicator stocks showed small decreases in 1991 compared to 1990, with the exception of the Harrison River stock which had a substantial drop in escapement from 177,375 in 1990 to 86,500 in 1991. The Middle Fraser escapement estimate remained slightly above its escapement goal, but the Upper Fraser and Thompson stocks were below their goals. Although returns to the Harrison were about one half of the 1990 return, they were better than expected pre-season.

5.7 Puget Sound

Preliminary 1991 spawning escapement estimates are not yet available for most stocks. In 1990, escapements were up slightly for most Puget Sound stocks but below goal for all but the Skagit summer/fall and Green River fall stocks. It is expected that 1991 escapements will continue to be depressed. The preliminary 1991 escapement estimate for Skagit spring chinook is below that for 1990 and only 50% of the goal.

5.8 Washington Coast

The northern Washington coastal chinook stocks from the Quillayute (except summer run), Hoh, and Queets Rivers are managed on the basis of escapement floors and terminal area fishery harvest rates. Terminal area abundance for these stocks in 1991 was sufficient to allow directed harvest. Preliminary indications are that spawning escapement levels exceeded the established floors. Final escapement estimates for most stocks are not available at this time. The preliminary 1991 estimate for Grays Harbor spring chinook is slightly below the goal.

5.9 Columbia River

Escapement of Upriver Spring chinook over Bonneville Dam (adjusted for Zone 6 and C&S catch above the dam) was 53,000 adults, the lowest since 1984. Separation of the run into hatchery and wild components has not yet been accomplished. As an approximation, applying the 1986-90 average percent wild (35.8%) yields an estimate of 19,100 wild spring chinook, slightly down from the 1990 escapement of 20,100.

Escapement of Upriver Summer chinook continued to decline in 1991 from the peak count of 31,800 in 1987. The Bonneville Dam count was 18,800 adults, the lowest count since 1983, and a 25% reduction from the 1990 escapement of 25,000.

Upriver Bright fall chinook escapement over McNary Dam, while above the escapement goal of 40,000, continued to decline from the 1987 high of 154,100. Escapement totaled 46,600 adults through October 31, down 19% from the 1990 escapement of 57,600.

5.10 Oregon Coast

Spawning escapements into the 10 standard Oregon Coastal index streams were lower than the last three years, as indicated by counts of the peak number of live and dead fish seen during foot surveys of the spawning grounds. The spawner abundance index for the aggregated north migrating stocks was 93 fish per mile in 1991. This compares with 125 fish per mile in 1990, 150 fish per mile in 1989, and 221 fish per mile in 1988. The abundant 1984 brood year of this stock aggregate has completed its life cycle and subsequent broods have not survived as well, resulting in decreased spawner abundance in 1990 and 1991. Continued lower stock sizes are anticipated

TABLE 1. Summary of the 1988-1991 Chinook catches in fisheries relevant to the U.S./Canada Pacific Salmon Treaty (numbers in thousands of fish). Note: Catches for 1991 are preliminary (estimates as of 3-Feb-92).

| Area | Troll | | | | Net | | | | Sport | | | | Total | | | |
|-----------------------|-------|------|------|------|------|------|------|------|-------|------|------|------|-------|------|------|------|
| | 1991 | 1990 | 1989 | 1988 | 1991 | 1990 | 1989 | 1988 | 1991 | 1990 | 1989 | 1988 | 1991 | 1990 | 1989 | 1988 |
| S.E. ALASKA a/ | 264 | 288 | 236 | 231 | 33 | 28 | 24 | 21 | 68 | 51 | 31 | 26 | 365 | 367 | 291 | 278 |
| BRITISH COLUMBIA b/c/ | | | | | | | | | | | | | | | | |
| North/Cent. Coast | 220 | 181 | 225 | 182 | 48 | 41 | 42 | 44 | 33 | 32 | 36 | 19 | 301 | 254 | 303 | 245 |
| W. Vanc. Island d/ | 196 | 296 | 204 | 409 | 55 | 29 | 40 | 15 | 80 | 61 | 48 | 33 | 331 | 386 | 292 | 457 |
| Georgia St./Fraser e/ | 32 | 32 | 29 | 20 | 14 | 15 | 24 | 8 | 116 | 112 | 133 | 119 | 162 | 159 | 186 | 147 |
| Johnstone St. | 1 | 2 | 2 | 2 | 13 | 18 | 29 | 6 | 10 | 10 | 10 | 10 | 24 | 30 | 41 | 18 |
| Juan de fuca Strait | 0 | 0 | 0 | 0 | 7 | 7 | 22 | 4 | | | | | 7 | 7 | 22 | 4 |
| sub-total | 449 | 511 | 460 | 613 | 147 | 110 | 157 | 77 | 239 | 215 | 227 | 181 | 825 | 836 | 844 | 871 |
| WASHINGTON INSIDE f/ | | | | | | | | | | | | | | | | |
| Strait (mar) g/ | 35 | 46 | 65 | 49 | 3 | 5 | 10 | 10 | NA | NA | 52 | 39 | NA | NA | 127 | 98 |
| San Juans (mar) h/ | 0 | 1 | 1 | 0 | 14 | 9 | 16 | 32 | NA | NA | 9 | 9 | NA | NA | 26 | 41 |
| Other PS (mar+fw) i/ | 0 | 0 | 0 | 0 | 130 | 179 | 156 | 133 | NA | NA | 70 | 63 | NA | NA | 226 | 196 |
| Coastal (mar+fw) i/ | 0 | 0 | 0 | 0 | 54 | 58 | 85 | 74 | NA | NA | 6 | 7 | NA | NA | 91 | 81 |
| sub-total | 35 | 47 | 66 | 49 | 201 | 251 | 267 | 249 | NA | NA | 137 | 118 | NA | NA | 470 | 416 |
| COLUMBIA RIVER j/k/ | - | - | - | - | 110 | 147 | 275 | 489 | 80 | 95 | 97 | 110 | 190 | 242 | 372 | 599 |
| WA/OR N OF FALCON l/ | 51 | 65 | 75 | 108 | 0 | 0 | 1 | 3 | 14 | 33 | 21 | 19 | 65 | 98 | 97 | 130 |
| OREGON | | | | | | | | | | | | | | | | |
| Inside Waters m/ | 0 | 0 | 5 | 4 | - | - | - | - | NA | 38 | 45 | 49 | NA | 38 | 50 | 53 |
| GRAND TOTAL | 799 | 911 | 842 | 1005 | 481 | 536 | 724 | 839 | NA | NA | 558 | 503 | NA | NA | 2124 | 2347 |

- a/ Southeast Alaska troll chinook catches shown for Oct. 1 - Sept. 30 catch counting year.
- b/ British Columbia net catches includes only fish over 5 lb. round weight. Native food fishery catches are not included. 1989, 1990, and 1991 exclude catch from terminal gillnet fisheries (3 year total of 16,425) which are excluded from the catch ceiling.
- c/ Sport catches are for tidal waters only.
- d/ Estimates of WCVI tidal sport catches are from creel surveys in Barkley Sound only. Survey times and areas may vary from year to year.
- e/ Georgia Strait sport catches include Juan de Fuca Strait sport catches.
- f/ All WA inside sport numbers adjusted for punch card bias. See "1988 WA State Sport Catch Report" for details.
- g/ Strait troll catch includes all catch in areas 5 and 6C and catch in area 4B outside of the PFMC management period (Jan.- May and Oct.- Dec.).
- h/ San Juan net catch includes catch in areas 6, 6A, 7 and 7A; sport catch includes area 7.
- i/ Coastal and Puget Sound sport catches include marine and freshwater, but only adults in freshwater.
- j/ Columbia River net catches include Oregon, Washington and treaty catches, but not ceremonial.
- k/ Columbia River sport catches include adults only, for Washington, Oregon, Idaho and Buoy 10 anglers.
- l/ North of Falcon troll catch includes catch in area 4B during the PFMC management period (May-Sept.).
- m/ Troll = late season troll off Elk River mouth (Cape Blanco); sport = estuary and inland (preliminary for 1990).

TABLE 2. Summary of the 1987-1991 escapement of Pacific Salmon Commission Chinook Escapement Indicator Stocks. Escapements for 1991 are very preliminary (estimates as of 3-Feb-92).

| Production Unit | Stock Type | Ave Esc. Base a/ | Esc. Goal | 1987 Esc. | 1988 Esc. | 1989 Esc. | 1990 Esc. | 1991 Esc. | 1991 % Base | 1991 % Goal |
|---|------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|
| S.E. Alaska | | | | | | | | | | |
| Situk | Spring | 1,299 | 600 | 1,884 | 885 | 652 | 700 | 875 | 67% | 146% |
| King Salmon | Spring | 92 | 250 | 193 | 206 | 238 | 168 | 134 | 146% | 54% |
| Andrew Creek | Spring | 379 | 750 | 1,042 | 752 | 848 | 1,062 | 640 | 169% | 85% |
| Blossom | Spring | 163 | 1,280 | 2,158 | 614 | 550 | 411 | 382 | 234% | 30% |
| Keta | Spring | 325 | 800 | 1,229 | 920 | 1,848 | 970 | 435 | 134% | 54% |
| Transboundary Rivers Not Addressed in Treaty Annexes | | | | | | | | | | |
| Unuk (U.S.) | Spring | 1,469 | 2,880 | 3,157 | 2,794 | 1,838 | 946 | 1,221 | 83% | 42% |
| Chickamin (U.S.) | Spring | 338 | 1,440 | 1,560 | 1,258 | 1,494 | 902 | 779 | 231% | 54% |
| Transboundary Rivers Addressed in Treaty Annexes | | | | | | | | | | |
| Klukshu R. (Aleak) | Spring | 2,696 | 4,700 | 2,615 | 2,018 | 2,456 | 1,915 | 2,489 | 92% | 53% |
| Taku Index | Spring | 4,582 | 13,200 | 5,743 | 8,626 | 9,480 | 12,249 | 10,153 | 222% | 77% |
| Little Tahltan (Stikine) | Spring | 1,945 | 5,300 | 4,783 | 7,292 | 4,715 | 4,392 | 4,500 | 230% | 85% |
| B.C. North Coast | | | | | | | | | | |
| Yakoun River | Summer | 788 | 1,580 | 2,000 | 2,000 | 2,800 | 2,000 | 1,900 | 241% | 120% |
| Nass area | Spr/Sum | 7,944 | 15,890 | 11,431 | 10,000 | 12,525 | 12,103 | 4,017 | 51% | 25% |
| Skeena area | Spr/Sum | 20,883 | 41,770 | 59,120 | 68,705 | 57,202 | 55,976 | 52,753 | 253% | 126% |
| B.C. Central Coast | | | | | | | | | | |
| Area 6 Index | Summer | 2,760 | 5,520 | 1,566 | 3,165 | 998 | 281 | 709 | 26% | 13% |
| Area 8 Index | Spring | 2,725 | 5,450 | 1,456 | 1,650 | 2,535 | 2,385 | 2,470 | 91% | 45% |
| Rivers Inlet | Spr/Sum | 2,475 | 4,950 | 5,239 | 4,429 | 3,265 | 4,039 | 6,500 | 263% | 131% |
| Smith Inlet | Summer | 1,055 | 2,110 | 1,050 | 1,050 | 225 | 510 | 500 | 47% | 24% |
| West Coast Vancouver Island | | | | | | | | | | |
| Indicator Stocks | Fall | 5,832 | 11,670 | 3,545 | 5,725 | 7,720 | 6,110 | 6,440 | 110% | 55% |
| Fraser River | | | | | | | | | | |
| Upper River | Spring | 12,229 | 24,460 | 39,420 | 34,248 | 25,310 | 35,907 | 21,757 | 178% | 89% |
| Middle River | Spr/Sum | 9,216 | 21,130 | 27,330 | 24,164 | 15,095 | 26,060 | 21,255 | 231% | 101% |
| Thompson River | Summer | 22,059 | 55,710 | 36,730 | 47,103 | 37,975 | 41,995 | 36,307 | 165% | 65% |
| Harrison River | Fall | 120,837 | 241,700 | 78,038 | 35,116 | 74,685 | 177,375 | 86,500 | 72% | 36% |
| Georgia Strait | | | | | | | | | | |
| Upper | Sum/Fall | 2,546 | 5,100 | 5,700 | 3,300 | 6,600 | 2,200 | 2,850 | 112% | 56% |
| Lower | Fall | 11,139 | 22,280 | 2,530 | 6,914 | 6,830 | 7,605 | 11,645 | 105% | 52% |
| Puget Sound | | | | | | | | | | |
| Skagit | Spring | 1,217 | 3,000 | 2,108 | 1,988 | 1,853 | 1,902 | 1,495 | 123% | 50% |
| Skagit | Sum/Fall | 13,265 | 14,900 | 9,647 | 11,954 | 6,776 | 17,206 | NA | | |
| Stillaguamish | Sum/Fall | 817 | 2,000 | 1,321 | 717 | 811 | 842 | NA | | |
| Snohomish | Sum/Fall | 5,028 | 5,250 | 4,689 | 4,513 | 3,138 | 4,209 | NA | | |
| Green | Fall | 5,723 | 5,800 | 10,338 | 7,994 | 11,512 | 7,035 | NA | | |
| Washington Coast | | | | | | | | | | |
| Hoh | Spr/Sum | 1,325 | NA b/ | 1,700 | 2,600 | 4,800 | 3,900 | NA | | |
| Queets | Spr/Sum | 925 | NA b/ | 600 | 1,800 | 2,600 | 1,800 | NA | | |
| Grays Harbor | Spring | 425 | 1,400 | 900 | 3,500 | 2,100 | 1,600 | 1,289 | 303% | 92% |
| Grays Harbor | Fall | 8,575 | 14,600 | 18,800 | 28,200 | 26,100 | 17,475 | NA | | |
| Quillayute | Summer | 1,275 | 1,200 | 600 | 1,300 | 2,200 | 1,300 | NA | | |
| Quillayute | Fall | 5,850 | NA b/ | 12,400 | 15,200 | 10,000 | 13,700 | NA | | |
| Hoh | Fall | 2,875 | NA b/ | 4,000 | 4,100 | 5,100 | 4,200 | NA | | |
| Queets | Fall | 3,875 | NA b/ | 6,000 | 7,600 | 8,900 | 10,100 | NA | | |

TABLE 2 continued.

| Production Unit | Stock Type | Ave Esc. Base a/ | Esc. Goal | 1987 Esc. | 1988 Esc. | 1989 Esc. | 1990 Esc. | 1991 Esc. | 1991 % Base | 1991 % Goal |
|--------------------|------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|-------------|-------------|
| Columbia River | | | | | | | | | | |
| Upper River | Spring | 28,050 | 84,000 | 41,400 | 35,100 | 27,000 | 20,100 | 19,100 | c/ 68% | 23% |
| Upper River | Summer | 23,100 | 85,000 | 31,800 | 30,100 | 28,700 | 25,000 | 18,800 | 81% | 22% |
| Lewis River | Fall | 13,021 | NA | 12,900 | 12,100 | 21,200 | 17,500 | 12,000 | 92% | |
| Upriver Bright | Fall | 28,325 | 40,000 | 154,100 | 114,700 | 96,500 | 57,600 | 46,600 | 165% | 117% |
| Oregon Coast | | | | | | | | | | |
| Aggregate Index d/ | Fall | 91 | NA | 131 | 221 | 151 | 125 | 93 | 101% | |

- a/ Base period for Alaskan and Transboundary stocks 1975-80; base for all other stocks 1979-82.
- b/ Stocks managed on the basis of an escapement floor and fixed harvest rates.
- c/ Based on average wild proportion of total adult escapement.
- d/ Oregon coastal north-migrating chinook stocks are assessed in terms of spawners-per mile survey units.

INTERIOR INDIAN FISHERIES COMMISSION

To: F. Fraser

February 17, 1992

002948

FEB 21 12:59

Mr. Fred Fraser
Chairman
Fraser River Panel
555 West Hastings Street
Vancouver B.C.
V6B 5G3

FISHERIES & OCEANS
FISHERIES PACIFIC

1110-F24

cc 1110-518

cc 1110-097

Re: Vacancy on the Fraser River Panel

Here is the copy of Peter Quaw's letter of resignation to the Fraser River Panel.

The IIFC will be having an assembly on the 24th of February, this vacancy will be dealt with at that meeting. I will be contacting you by February 26th with the name(s) of our respective nominees. I am hopeful that we can expedite the appointment process to fill this important position on the panel.

If you have any questions please contact me at 256-7523 or by fax at 256-7119.

Thank You

INTERIOR INDIAN FISHERIES COMMISSION


GARRY JOHN
COORDINATOR

s.19(1)



Fort George Band

Phone 963-8451



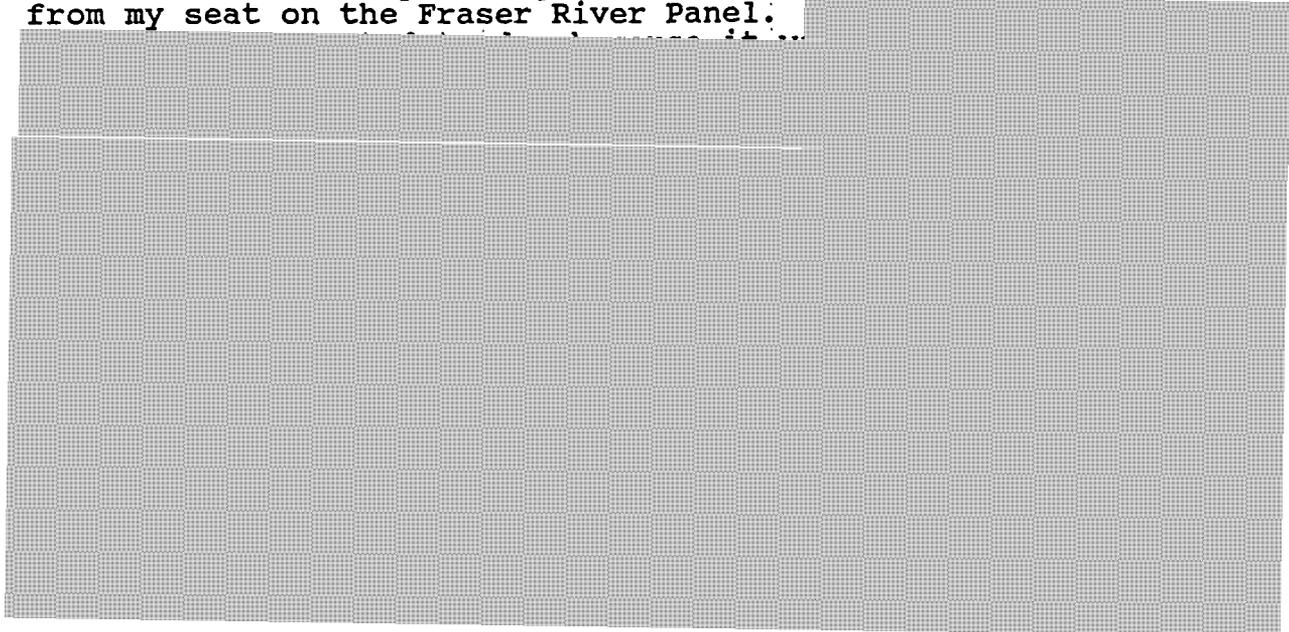
May 30, 1991

Mr. Ken Malloway
Interior Indian Fisheries Commission
Box 465
Lillooet, BC
V0K 1V0

Dear Mr. Malloway;

RE: "Resignation from the Pacific Salmon Commission"

It is with deepest regret that I tender my resignation
from my seat on the Fraser River Panel.



Yours in Friendship,

FORT GEORGE BAND

Peter Quaw
Chief

CC CSTC Chiefs
Justa Monk Tribal Chief
Gary John Co-ordinator IIFC

R.R. 1, SITE 27, COMP. 60, PRINCE GEORGE, B.C. V2N 2H8

000157



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA

600 - 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE (604) 684-8081
FAX: (604) 666-8707

MARCH 18, 1992

To: G. Berezan

Our File: 66001

JAN 30 1992

002734

FEB 10 1992 Your File: P12:13

January 30, 1992

FISHERIES & OCEANS
MEMORANDUM FISHERIES PACIFIC

1110-P9

TO: W. Saito, Sockeye and Pink Salmon Biologist, CDFO
FROM: J. Woodey, Chief, Fisheries Management Division
RE: 1991 Fraser River Pink Salmon Escapement Estimate

The 1991 pink salmon escapement estimate calculated from Duncan Bar (DB) tagging and spawning ground recovery data, presently indicated to be about 13.5 million fish, concerns the PSC staff for several reasons. First, if correct, this estimate indicates severe structural problems with our in-season total run-size and Georgia Strait escapement estimation models. These models must be based on valid assumptions and data. If the models are incorrect, they will have to be revised. Secondly, Cottonwood and Whonnock test fishing CPUE and Mission echo sounding target abundance are scaled to prior year data to obtain estimates of escapement. As such, those data must be correct for future in-season estimates to be within the bounds of the final escapement. I have undertaken the present analysis in order to ascertain whether problems exist within our respective escapement estimation programs.

After having reviewed the pink salmon tagging program results for 1991 with you and D. Hickey, I had P. Cheng tabulate tagging and recovery data for recent years searching for information which might direct your evaluation of the 1991 estimate. First, however, I will review the in-season estimates of escapement. Most of these estimates are indirect and depend upon the accuracy of past mark-recapture estimates of the pink salmon escapement. I will try to indicate the direction of the error that would occur if past escapement estimates are biased.

In-season run-size estimates

PSC staff analyze biological data and the in-season catch and effort data to obtain run-size estimates for use by the Panel in setting the TAC and international and domestic allocations. In 1991, we used scale measurement, peak week CPUE and cumulative normal curve models to estimate the return of Fraser River pink salmon. The best fits suggested runs of 15 to 17 million fish. Subtracting the recorded catch of 9.4 million would give a range of 5.6 to 7.7 million pinks in the spawning escapement (Table 1). These estimates depend on the accuracy of past year escapement estimates since the data used in the models, i.e. total runs via Juan de Fuca and Johnstone Straits, include the spawning escapements observed in prior years. If these latter estimates were biased to the high side, as would be the case with most mark-recapture estimates when biases do occur, then our estimates of the 1991 run size would tend to be high. After subtraction of catch, we would be left with an overestimate of escapement, rather than the apparent underestimate of escapement if the tagging estimate for 1991 is correct.

.../2



W. Saito
January 30, 1992
Page 2.

Tempering these results were the conditions under which the run size estimates were obtained. First, to the large catches in Area 20 and Areas 12 and 13 purse seine fisheries in August and the low interest in pinks by the troll fleet, Canada did not want to have additional pink salmon harvest by the purse seines because of domestic allocation problems. Our data for Area 20 CPUE were, thus, from late August and may have been a bit low as these catches were made prior to the peak of the run. Secondly, purse seine test fishing data from Areas 20 and 12 constituted a major part of the data used for the cumulative normal model. However, test fishing CPUE and United States catches of southern approach pinks did not indicate extraordinary levels of escapement through these areas during closed periods. The scale measurement data were independent of catches and, essentially, gave the same results.

Fish size was not used for in-season run-size estimation; however, we were aware that pinks were quite small. The mean weight in Area 20 appears to be about 3.9 lb, the smallest on record, indicating a large run size.

In-river migration estimates

The PSC operated test fisheries at Cottonwood and Whonnock and echo sounding at Mission in 1991. The test fishing at Whonnock was conducted with the variable-mesh net. We have data on this drift with the VMN only in 1979 and, hence, there was an inadequate data base from which to make estimates with accuracy. The Cottonwood drift using the standard net gave a CPUE-based estimate (using average expansion of 5,650) of 8.7 million pink salmon escapement (Table 1). The small size of pinks in 1991 would be expected to give low net efficiency; i.e. regression of net efficiency on mean weight ($r^2=0.378$) gave an expansion line of 8,300 and an escapement estimate of 12.8 million for 1991. However, above average water levels would have increased the net efficiency by forcing more fish toward the shore.

Echo sounding at Mission in past years has tended to underestimate the recorded pink salmon escapement. Various techniques have been tested to get around the apparent problem which has been attributed to the shoreline orientation of migrating pink salmon in the Fraser River. In 1991, we decided simply to correct for the apparent low bias. In order to obtain the daily estimates of pink salmon migration at Mission the total salmon abundance was apportioned to the five species using the unadjusted species composition data from test net catches at Cottonwood. The pink salmon estimate was then boosted by 1.69X to compensate for underestimates observed in the 1987 and 1989 programs using this procedure. The daily estimates total 7.4 million pink salmon. If past year spawning escapement estimates have been high, we would have overestimated the pink salmon escapement in 1991 due to the use of this factor, presuming the river distribution, etc. was not significantly different from previous years.

but the argument is that the pinks were much more shore oriented in '91; therefore, the echo sounding would be substantially lower than the '87-'89 est.

*- Leif, Neilson!
Chris also report subst. of 5x '91
under-est*

.../3



W. Saito
January 30, 1992
Page 3

P. Cheng has also calculated the pink salmon population without expansion but with an adjustment of species composition for the relative vulnerabilities of the five species to the test fishing nets. This analysis generated totally "independent" estimates of 5.1 and 5.4 million pink salmon and 1.3 and 1.4 million Adams and other late run sockeye. We think the pink salmon estimates are low due to shoreline orientation at Mission but this calculation gave late run sockeye escapement estimates only about 17% below recorded levels. If the pink salmon estimates were equally low, the total pink salmon escapement would have been in the order of 6.3 million fish.

We have also used the Duncan Bar beach seine catch per set as an indicator of abundance. The daily CPUE multiplied times an historically derived factor (mean = 1,400, range: 700 to 2600) gave a cumulative estimate of 14.5 million pink salmon escapement. The 41,000 total tags applied were approximately 50% above any previous year. High availability of small pink salmon migrating near shore may be the explanation for the high CPUE and large number of tags applied.

Hells Gate observations

Counts at Hells Gate during past pink salmon migrations have been compared to subsequent estimates of escapement above Hells Gate (Table 2). The cumulative daily estimates for 1971-1983, i.e. counts + hours counted X 12 (approx.) hours of daylight were close to the total escapements observed (average factor = 1.21; range: 0.79 to 1.85). In 1987 and 1989, lights were installed to improve passage at Hells Gate during night hours and, thus, avoid the accumulation of fish below the fishways. Theoretically, the use of lights should cause the expansion factor to increase since a lower fraction of the fish would be counted during the day hours. The average expansion was 2.33 in these two years. In 1991, lights were again operated during night hours and the factor was 1.93 based on an escapement of 2,000,000 fish above Hells Gate. The factor for 1991 is within the bounds of past data and, hence, suggests that the counting was comparable to past years.

In addition to total count, the observer recorded the number of red Duncan Bar tags he saw on pink salmon. He counted 1,612 tags, the second largest number observed to date. These counts have been used in the past to estimate the Duncan Bar tag ratio and, hence, track the passage of fish through the lower river, i.e. number of fish tagged at Duncan Bar times the estimated tag ratio at HG = cumulative escapement past Duncan Bar. In 1991, these data gave a tag ratio estimate of 1:148 ($594,431 \div 1,612 \div 2.5$), which when multiplied times the number of tags available for recovery (38,672) gave a total watershed population of 5.7 million pink salmon. The factor (2.5) is the historical (1971-1983) mean value for correction of observed ratio at Hells Gate to tag ratios obtained at spawning grounds above Hells Gate. Inclusion of 1987 and 1989 data increases the factor to 2.8 and reduces the population size to 5.1 million pinks.

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There are complicating factors, of course, which may compromise this analysis. First, the observer was new to the job and may have seen more or fewer tags than the average of past observers. He began counting sockeye in mid-August so he was not totally green at the job, but was not experienced with pink salmon counting. Second, we assume that the correction factor simply compensates for tags not seen due to the high turbidity of the river. However, the correction factor used may not simply measure the actual tagged:untagged ratio of fish at Hells Gate but may include the effects of tag loss/mortality upstream of Hells Gate. Since tag loss/mortality upstream should be random or, at least, similar from year to year, the calculation provides an estimate of the tag ratio which would be expected in the dead recovery upstream of Hells Gate.

Comparison of tag ratios at Hells Gate to dead recoveries above Hells Gate for the years of record shows 1991 to be an anomalous year (Table 1). The ratio of respective tag ratios (HG ratio + dead recovery ratio) averages 2.5 for 7 years (1971 - 1983). In 1991 the ratio was 0.92. The spawning ground dead recovery tagged:untagged ratio (1:400) was higher than the maximum at Hells Gate from the raw counts without correction (1:369). Assuming that counting was similar to past years, there appears to have been substantially greater tag loss/mortality above Hells Gate in 1991.

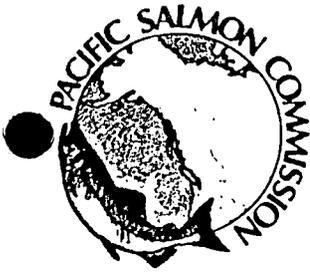
Duncan Bar tagging data

At least four sources of error can occur in mark-recapture (tagging) studies: (1) tagging mortality, (2) tag loss, (3) non-recognition of tagged fish and (4) non-random distribution of tagged fish in the population. The first three of these sources of error produce population estimates that are biased toward the high side. Due to the location of tagging vs. recovery areas and the method used to calculate the main Fraser population, non-random distribution is not considered to be a major concern. Also, since DFO personnel normally conduct a re-pitch of dead carcasses or cut each fish in half when pitching, non-recognition errors should also be minimal. We therefore concentrated on evidence for tagging mortality and tag loss.

Simpson (1984) tabulates mark-recovery experiment results for pink salmon where population size was known from weir counts, etc. Biases in the tagging studies were evident giving population estimates on average 43% higher than actual. J. Pella (pers. comm.) has found similar levels of bias in international marine tagging studies and has noted that some trunk stream tagging produced very high levels of bias. Source of bias (tag loss/mortality, etc.) was not evaluated in either study. Other studies of tag loss (shedding) suggest that the greater fraction of this overall bias is due to mortality, presumably from tagging injuries and stress. Pella does conclude from the available data that river tagging produced higher rates of mortality than tagging in the estuary.

Inevitably, some fish die immediately after tagging due to stress and injury. The procedure used for a number of years has been to accommodate these losses in a 5% tag loss/mortality factor. As large escapements in recent years have resulted in large catches at the Duncan Bar tagging site, we examined the recovery of tags in large sets to determine if there was evidence that holding fish for long periods contributed significantly to tagging mortality.

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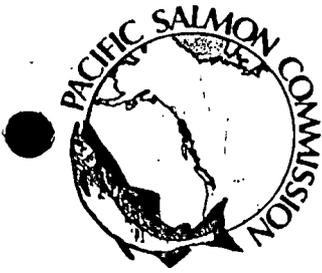
The tag numbers for each beach seine set at Duncan Bar in 1991 were divided into groups of 100 sequentially applied tags. Recoveries of tags within each group were tabulated and the percentage recovery calculated. The mean recovery rate for each 100 fish group, from the first 100 to the tenth 100 fish, averaged over all sets of 250 or more tagged fish showed no evidence of declining recovery rates up to approximately 800 fish in a set (Figure 1). Since only a few sets had more than 800 fish tagged, the bias associated with set size appears to be small. In fact, there appears to be an increase in recovery rate from the first 100 fish to the seventh 100 fish in the sets. The only explanation for this observation would be that the long holding time caused later tagged fish to be more docile, and, thus, less subject to injury from fighting the tagging. An estimate of minimum tagging mortality can be calculated from these data. The difference between the recovery of the first and second 100 tagged fish and the sixth and seventh 100 tagged fish is 21%. Although this may be an indication of tagging mortality, we have no way of assessing mortality that is random and independent of set size. In other words, even some of the later tagged fish may have died, thus, any of these calculations under-estimate the mortality.

Some tagged fish were recovered immediately downstream of the tagging site in test fishery catches and may indicate a degree of stress-related mortality. Drop-back is commonly observed in tagging programs. Tagging of sockeye in the Fraser River and at Lummi Island in the 1970's generally resulted in poor results, presumably from tagging mortality.

Tag loss can be estimated via double tagging programs but these were conducted only in 1989. Your data indicate a tag loss (shedding) rate of approximately 10.6% for fish tagged at Duncan Bar and from 4.7 to 15.3% tag loss in tributary tagging programs. Gathering more information on rate of tag loss and relating loss to distance travelled, etc. would be of great help in assessing tag loss.

In the Fraser River pink salmon enumeration program, tributary tagging programs capture Duncan Bar tagged fish along with untagged fish in the net or brail used to acquire fish for tagging at four streams (Seton, Thompson, Harrison, Chilliwack-Vedder). Tag numbers are recorded to ensure that these tags are Duncan Bar tags rather than recaptures of locally applied tags. The Duncan Bar tagged:untagged ratio from these local programs can be used to estimate of the overall watershed ratio. In 1991, the tributary dead recovery programs yielded Duncan Bar tagged to untagged ratios considerably different from the local tagging site capture ratios. The Seton Creek tagging site Duncan Bar tagged:untagged ratio was 1:217 while dead recovery recaptures were 1:364. At Thompson, the ratio changed from 1:156 to 1:577. Combining the Harrison and Chilliwack-Vedder data, the ratio changed from 1:120 to 1:255. If these changes were due to tag loss/mortality rather than selectivity for DB tagged fish in the local tagging catches, the amount of loss/mortality would be 40 to 73%, after the pink salmon had migrated into the tributary streams. The main Fraser tag ratio was 1:335, similar to the average for the rest of the watershed suggesting that tag loss/mortality was significant even there. The Coquihalla River system with a tag ratio in the dead recovery of 1:188 was similar to the tagging site ratio.

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We also examined recent past years of data on tag ratio changes (Table 3, Appendix 1). The change in tag ratio from tributary tagging site to dead recovery have varied considerably. All years show evidence of tag loss/mortality between sites. The 1979-89 average change was 36.3% (Range: 24.5% to 52.3%). The overall change indicated for 1991 was 55.0% which was higher than observed in any of the previous six years. The 1991 escapement would be approximately 6.4 million fish when this estimate of tag loss/mortality is used. Correction of the escapement estimate in 1991 by this method would not be reasonable unless all other years of escapement were similarly corrected. Two recent years where high tag loss/mortality was indicated in the data (1985 and 1989) were years when the mark-recapture population sizes were estimated to be larger than assessed in-season. This could be coincidence but could be the result of severe bias in the tagging estimate.

In the upriver spawning areas, Seton Creek and Thompson River, the local tagging program average DB tag ratios were similar (Seton Creek mean 1979-91 ratio=1:239, Thompson=1:242). However, in the dead recoveries the Thompson River ratios increased to a much greater extent than at Seton Creek. Overall average dead recovery ratios were 1:333 for Seton and 1:778 at Thompson River. From annual data, the average tag loss/mortality calculations were: Seton - 22.8% and Thompson - 62.4%. Pink salmon must travel farther from tagging site to spawning grounds in the Thompson than do Seton fish. More importantly, the elevation rise is much greater, making the migration more difficult. Tag loss/mortality may be occurring differentially in the two systems for these reasons. However, the evidence strongly suggests that substantial tag loss/mortality is occurring after the fish arrive in the tributary streams. Alternately, tagged fish may not be distributed randomly on the spawning grounds, and thus, could be under represented in the dead recovery.

Spawning ground dead recovery data

Dead recovery rates can also be compared between years (Table 4). Rate of dead recovery for tributary streams and the main Fraser depend upon the size of stream, crew size and escapement numbers. Rates are low (<15%) on the Thompson River, a large stream with limited access to carcasses, while the rate of recovery in Seton Creek frequently exceeds 20% of the estimated population. Large populations reduce recovery rates by saturation of the crew assigned to the dead pitch.

In 1991, the large population at Seton Creek appears to have reduced the recovery rate to 11.9% of the estimated population. Despite large populations in the Thompson and Harrison Rivers, recovery rates were at or above average. The Chilliwack-Vedder had a slightly below average recovery rate on a moderate population. The results indicate that these tributary populations had relatively normal tagging and recovery programs.

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At the main Fraser River spawning grounds the recovery rate based on a population of 10.5 million fish was 0.8%, well below the 5-year mean of 7.0% (range: 4.5 to 10.2%). Part of the lower recovery rate was due to the restriction of recovery to every fourth 100 ft. stretch of beach rather than recovery along the full length of the spawning area. I believe we would agree that, at most, three times the number of carcasses pitched and rate of recovery could have been achieved with full coverage. This would give approximately 2.5% recovery, still only about 1/2 the previous minimum rate of recovery. Again, we noted that 1985 and 1989 recoveries were calculated to be very low (4.6% and 4.5%, respectively). As indicated above, these two years showed the largest previous tag loss estimates and hence overestimates of escapement to the main Fraser population. My best estimate would be that the estimated recovery rate (2.5%) was about one-third that expected which would give a corrected rate of 7.5% and a population of 3.5 million for the main Fraser. Approximately 6.5 million pinks would be the estimate of the total watershed escapement.

Survival indicators

Egg to fry survival is measured annually for pink salmon via enumeration of adults and sampling of female fecundities to obtain potential egg deposition and estimation of fry numbers at Mission in the spring. Egg to fry survival averaged 13.7% (range: 9.2% to 18.7%) for 1961-77 brood years. Since 1979, larger escapements have produced larger numbers of fry but at apparent lower survival. The mean survival for 1979-89 broods was 9.0% (range: 4.3% to 12.3%). While some compensatory mortality would be expected, the two years of lowest estimated survival, i.e. 1985 and 1989, were years when the tag loss/mortality was apparently highest. This suggests that part of the low survival in 1985 and 1989 broods (4.3% and 5.0%) may have been the result of overestimates of the parental populations and, thus, egg deposition. Extenuating environmental circumstances in both these years have been blamed for the apparent low survivals. Even with correction for the estimated tag loss/mortality, the egg to fry survivals would still be low relative to other years.

Marine survival estimates have been above average in the past six returns (3.5%) compared to the previous eight returns (2.6%). If overestimates of spawner populations have occurred in recent years, the marine survivals would be overestimated by a small amount.

Racial estimates

Small differences in allelic frequencies appear to exist between the seven stocks (populations) of pink salmon spawners in the Fraser River watershed which have been screened by electrophoresis in the genetic stock identification (GSI) program. Lower river stocks (Main Fraser, Harrison, Vedder and Coquihalla) form a general grouping while upriver stocks (Seton, Thompson and Bridge) form a second group. B. White has tabulated the 1991 GSI classification data into these two groupings. He examined all commercial and test fishery samples (n=28) where Fraser stocks comprised about 80% or more (non-bias corrected) of the sample. On average, the upriver stocks formed 27% of the Fraser portion of the samples. Three of these samples were taken from Cottonwood test fishing catches at the peaks of the run. Upriver stocks were estimated at 23% of these three samples. Using an estimate of 2,000,000 fish escaping to upriver spawning grounds, at 27% the total escapement would have been 7.1 million.

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While the genetic differences between Fraser stocks is small, a mean value derived from 28 fishery samples gives some support to the use of these data. This analysis is independent of other years of escapement data but depends on the accuracy of 1991 upriver tributary escapement estimates.

Recommendations

In summary, we can generate a number of escapement estimates from indirect or lower river estimates (Table 1). The range on these estimates was 5.1 to 14.5 million, with a mean of 8.4 million. No individual factor can be objectively (and confidently) substituted for the mark-recapture estimate (DB) unless you consider the Mission echo sounding or GSI data estimates to be valid.

PSC staff suggest you consider using, temporarily, the in-season corrected Mission escapement number (7.4 million) for 1991, rather than the tagging estimate. We justify this on the basis that the estimates centre around this number and because some level of bias higher than normally recognized (5%) is indicated from the data. Reanalysis of all the 1991 information may allow you to adjust the tag loss/mortality factor to compensate for this bias.

While the present analysis indicates that escapement estimates in other years may need a thorough review, before making changes we suggest collecting additional data in 1993. We would encourage DFO to consider modifications to the pink salmon tagging program in order to collect data to analyze objectively the extent of tag loss and tagging mortality. First, extensive double tagging with two Petersen disk tags would prove valuable in the assessment of tag loss. Double tagging experiments should be conducted at Duncan Bar and at tributary tagging sites. We further suggest that tagging on the main Fraser spawning grounds be conducted to estimate the main Fraser population (although some upriver pinks passing through the area would also be tagged). Corrections for loss of tags to tributary populations would be required, as at present, but may reduce the bias related to upstream tag loss. The comparison of tagging estimates obtained from spawning ground tagging and from Duncan Bar tagging (with double tagging estimates of tag loss) would yield an estimate of tagging mortality at Duncan Bar. These data would generate a new tag loss/mortality correction for use at Duncan Bar if the program is continued in the future and could be used to reassess prior-year estimates.

Also, DFO has used observations of tagged:untagged ratio at a location on the Thompson River upstream of the tagging site to ascertain the tag ratio. This technique may be of value in local area tagging programs. Alternatively, counting of tags into an area through a weir, such as at Seton Creek, would allow evaluation of tagging mortality and tag loss. Using different colour tags from Duncan Bar (and the main Fraser) and the local tagging would permit evaluation of the relative losses.



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PSC staff are available to discuss these recommendations and to advise DFO on the design of programs. We will also be considering changes to our programs where problems are indicated from this analysis. Any changes to past escapements will affect our models which would be need to be updated for 1993. Observations at Hells Gate should also be reviewed in light of the apparent need to obtain more precise data on tag ratios at this point in the migration.

Jim
J.C. Woodey

Encl.

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Simpson, K. 1984. The accuracy of mark-recapture estimates of escapements. Can. Tech. Rept. Fish. Aquat. Sci. 1326: 209-225.

Table 1. Summary of 1991 pink salmon escapement estimates from direct and indirect sources (chronologically ordered).

| | | |
|---|---------------|------------|
| 1. In-season run size less catch (9.4 M): | | |
| | EST. | RANGE |
| Scale measurements | 7.7 M | 4.7-11.3 M |
| Peak CPUE | 5.6 M | 1.6-10.6 M |
| Cum. Norm. Model | 7.6 M | |
| 2. Lower River migration estimates: | | |
| Cottonwood Test Fishing | 8.7 M | 6.3-11.1 M |
| W/fish size regression estimate | 12.8 M | |
| Mission Echo Sounding | 7.4 M | |
| W/O Scaling | 5.1-5.4 M | |
| Duncan Bar CPUE | 14.5 M | 7.2-26.9 M |
| 3. Hells Gate Observations: | | |
| Tagged:untagged ratio | 5.7 M | 4.8-6.8 M |
| 4. Duncan Bar tagging/dead recovery: | | |
| Standard tagging estimate | 13.5 M | |
| Correction for local tagging | | |
| site ratio to dead rec. ratio | 6.4 M | |
| Dead recovery rates | approx. 6.5 M | |
| 5. GSI Data estimates: | 7.4 M | 6.6-8.3 M |
| | Average: | 8.4 M |

Table 2. Visual counts and daily estimates of pink salmon at Hells Gate and comparison with recorded escapements upstream.

| Year | (A) Cum. Daily Counts. | (B) Cum. Daily Estimates. | (C) Net Esc. Above HG. | C/A | C/B | (D) Duncan Tags Counted At HG. | (E)=(A/D) Tag Ratio At HG. | (F) Tag Ratio Of Dead Above HG. | E/F |
|-----------------------------|------------------------------|---------------------------------|------------------------------|------|------|---|----------------------------------|--|------|
| 1971 | 425,328 | 503,607 | 571,759 | 1.34 | 1.14 | 1,026 | 415 | 163 | 2.54 |
| 1973 | 302,248 | 421,751 | 532,562 | 1.76 | 1.26 | 420 | 720 | 335 | 2.15 |
| 1975 | 409,254 | 632,300 | 761,411 | 1.86 | 1.20 | 646 | 634 | 221 | 2.87 |
| 1977 | 515,573 | 761,912 | 1,408,282 | 2.73 | 1.85 | 664 | 776 | 283 | 2.74 |
| 1979 | 809,193 | 1,254,537 | 1,607,479 | 1.99 | 1.28 | 1,833 | 441 | 286 | 1.54 |
| 1981 | 1,162,425 | 1,873,300 | 1,801,667 | 1.55 | 0.96 | 1,028 | 1,131 | 339 | 3.34 |
| 1983 | 839,216 | 1,286,461 | 1,021,293 | 1.22 | 0.79 | 1,025 | 819 | 334 | 2.45 |
| 1985 | 324,688 | 525,719 | 473,519 | 1.46 | 0.90 | | | 852 | |
| 1987 | 262,825 | 456,400 | 998,344 | 3.80 | 2.19 | 149 | 1,764 | 469 | 3.76 |
| 1989 | 366,672 | 550,008 | 1,357,421 | 3.70 | 2.47 | 244 | 1,503 | 376 | 4.00 |
| 1991 | 594,431 | 1,036,170 | 2,000,000 | 3.36 | 1.93 | 1,612 | 369 | 400 | 0.92 |
| ===== | | | | | | | | | |
| 1971-83 Avg. | | | | 1.78 | 1.21 | | | | 2.52 |
| 1971-89 Avg. (without 1985) | | | | 2.22 | 1.46 | | | | 2.82 |

Table 3. Estimates of tributary Duncan Bar tagged:untagged ratios and calculated watershed tag loss.

| YEAR | <u>SETON/THOMPSON</u> | | | <u>HARRISON/VEDDER</u> | | | <u>WATERSHED TOTAL</u> | | |
|------|-------------------------|-------------------------|---------------------|-------------------------|-------------------------|---------------------|-------------------------|-------------------------|---------------------|
| | <u>AT LOCAL TAGGING</u> | <u>AT DEAD RECOVERY</u> | <u>% CALC. LOSS</u> | <u>AT LOCAL TAGGING</u> | <u>AT DEAD RECOVERY</u> | <u>% CALC. LOSS</u> | <u>AT LOCAL TAGGING</u> | <u>AT DEAD RECOVERY</u> | <u>% CALC. LOSS</u> |
| 1979 | 175 | 286 | 38.8% | | 298 | | 195 | 274 | 28.8% |
| 1981 | 157 | 339 | 53.7% | | 184 | | 170 | 272 | 37.5% |
| 1983 | 222 | 334 | 33.5% | 240 | 326 | 26.4% | 225 | 343 | 34.4% |
| 1985 | 142 | 852 | 83.3% | 134 | 266 | 49.6% | 139 | 233 | 40.3% |
| 1987 | 338 | 469 | 27.9% | 188 | 212 | 11.3% | 249 | 330 | 24.5% |
| 1989 | 324 | 376 | 13.8% | 102 | 212 | 51.9% | 163 | 342 | 52.3% |
| 1991 | 182 | 400 | 54.5% | 120 | 255 | 52.9% | 156 | 347 | 55.0% |

Table 4. Dead recovery rates for major pink salmon spawning grounds.

| YEAR | | MAIN FRASER | SETON CR. | THOMP.R. | HARRISON | CHILL-VED |
|----------------|-----------|-------------|-----------|-----------|-----------|-----------|
| 1979 | Pop. Est. | 1,521,856 | 498,574 | 885,402 | 271,925 | 132,930 |
| | Dead Rec. | 109,475 | 87,244 | 121,321 | 40,633 | 26,261 |
| | % Rec. | 7.2% | 17.5% | 13.7% | 14.9% | 19.8% |
| 1981 | Pop. Est. | 2,252,368 | 519,393 | 1,166,348 | 314,519 | 68,601 |
| | Dead Rec. | 164,126 | 106,719 | 67,450 | 49,604 | 15,578 |
| | % Rec. | 7.3% | 20.5% | 5.8% | 15.8% | 22.7% |
| 1983 | Pop. Est. | 3,307,834 | 408,628 | 512,398 | 146,014 | 99,646 |
| | Dead Rec. | 276,881 | 88,669 | 76,122 | 21,118 | 19,758 |
| | % Rec. | 8.4% | 21.7% | 14.9% | 14.5% | 19.8% |
| 1985 | Pop. Est. | 5,248,742 | 169,957 | 193,448 | 438,022 | 95,556 |
| | Dead Rec. | 243,708 | 42,261 | 14,695 | 56,080 | 17,394 |
| | % Rec. | 4.6% | 24.9% | 7.6% | 12.8% | 18.2% |
| 1987 | Pop. Est. | 1,065,710 | 627,966 | 253,109 | 1,028,892 | 106,410 |
| | Dead Rec. | 109,132 | 89,530 | 29,494 | 192,394 | 38,946 |
| | % Rec. | 10.2% | 14.3% | 11.7% | 18.7% | 36.6% |
| 1989 | Pop. Est. | 4,780,703 | 872,460 | 281,640 | 681,572 | 328,020 |
| | Dead Rec. | 213,422 | 203,275 | 36,456 | 72,393 | 48,207 |
| | % Rec. | 4.5% | 23.3% | 12.9% | 10.6% | 14.7% |
| 1991 | Pop. Est. | 10,500,000 | 921,000 | 715,000 | 788,000 | 228,000 |
| | Dead Rec. | 87,770 | 109,455 | 92,350 | 176,316 | 28,727 |
| | % Rec. | 0.8% | 11.9% | 12.9% | 22.4% | 12.6% |
| 1979 - 89 Avg. | | 7.0% | 20.4% | 11.1% | 14.6% | 22.0% |

1991 DUNCAN BAR TAGGING TAG AND RECOVERY ANALYSIS

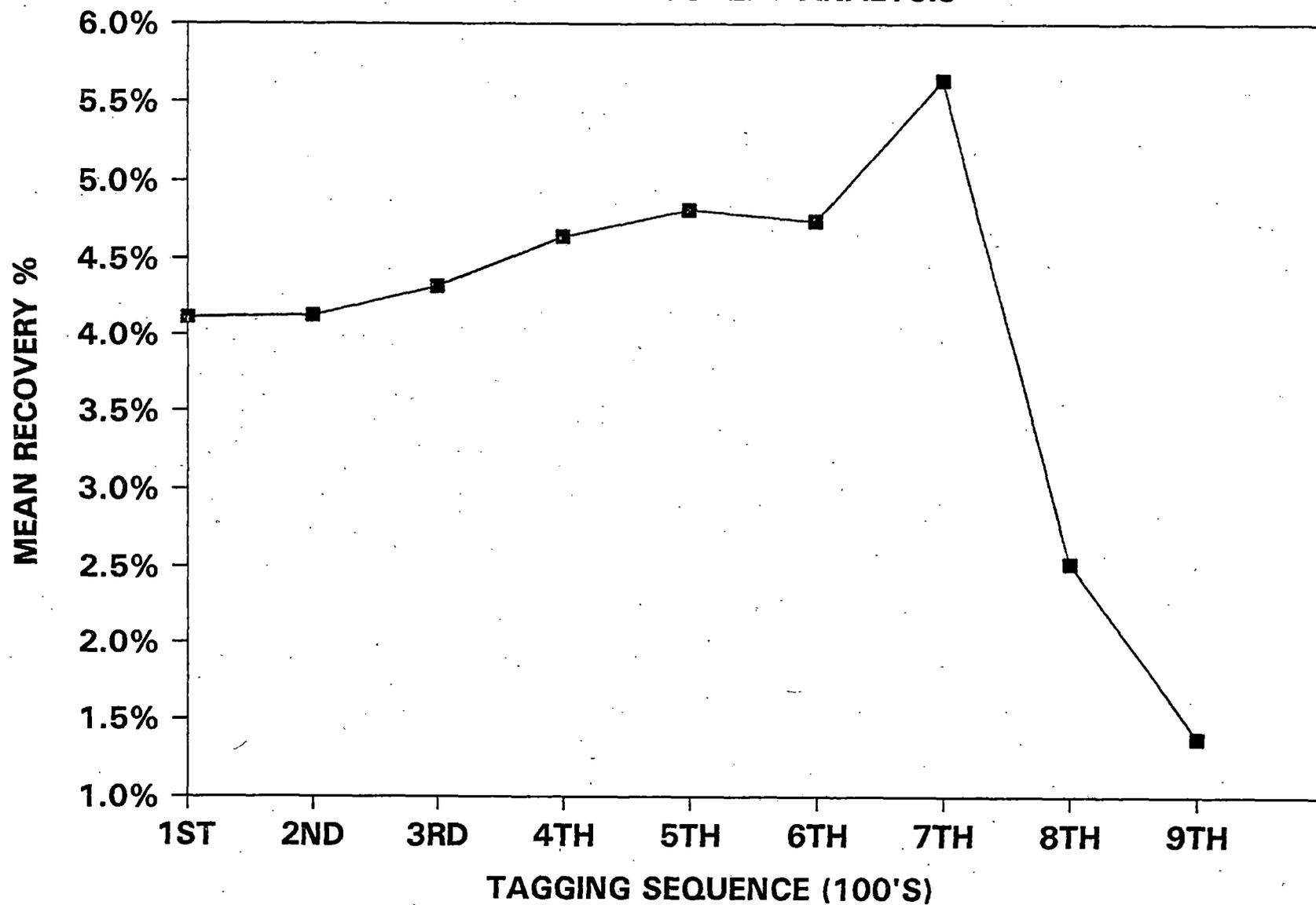


Figure 1. Rate of recovery of sequentially tagged lots of pink salmon in the 1991 Duncan Bar tagging program.

Appendix 1. Duncan Bar tag recaptures in local tagging programs and in dead recovery by stream.

| AREA | 1979 | | | 1979 | | |
|---------------------|--------------------|----------------|-------|--------------|-------------------|-------|
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 1,559 | 5 | 312 | 40,633 | 109 | 373 |
| CHILLIWACK - VEDDER | 1,000 | 0 | | 26,261 | 120 | 219 |
| SETON - CREEK | 3,537 | 15 | 236 | 87,244 | 326 | 268 |
| - CHANNEL | | | | 44,448 | 222 | 200 |
| THOMPSON | 10,441 | 65 | 161 | 121,321 | 382 | 318 |
| MAIN FRASER | | | | 109,475 | 435 | 252 |
| AREA | 1981 | | | 1981 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 1,799 | 2 | 900 | 49,604 | 256 | 194 |
| CHILLIWACK - VEDDER | 289 | 1 | 289 | 15,578 | 96 | 162 |
| SETON - CREEK | 5,994 | 50 | 120 | 106,719 | 476 | 224 |
| - CHANNEL | | | | 44,248 | 165 | 268 |
| THOMPSON | 13,308 | 73 | 182 | 67,450 | 132 | 511 |
| MAIN FRASER | | | | 164,126 | 633 | 259 |
| AREA | 1983 | | | 1983 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 1,797 | 4 | 449 | 21,118 | 41 | 515 |
| CHILLIWACK - VEDDER | 1,083 | 8 | 135 | 19,758 | 96 | 206 |
| SETON - CREEK | 4,090 | 12 | 341 | 88,669 | 323 | 275 |
| - CHANNEL | | | | 40,736 | 130 | 313 |
| THOMPSON | 10,800 | 55 | 196 | 76,122 | 183 | 416 |
| MAIN FRASER | | | | 276,881 | 782 | 354 |
| AREA | 1985 | | | 1985 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 1,990 | 11 | 181 | 56,080 | 179 | 313 |
| CHILLIWACK - VEDDER | 814 | 10 | 81 | 17,394 | 110 | 158 |
| SETON - CREEK | 2,701 | 26 | 104 | 42,261 | 80 | 528 |
| - CHANNEL | | | | 38,366 | 74 | 518 |
| THOMPSON | 1,700 | 5 | 340 | 14,695 | 7 | 2,099 |
| MAIN FRASER | | | | 243,708 | 1080 | 226 |
| AREA | 1987 | | | 1987 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 5,000 | 25 | 200 | 192,394 | 902 | 213 |
| CHILLIWACK - VEDDER | 1,200 | 8 | 150 | 38,946 | 191 | 204 |
| SETON - CREEK | 3,871 | 11 | 352 | 89,530 | 275 | 326 |
| - CHANNEL | | | | 49,201 | 163 | 302 |
| THOMPSON | 3,899 | 12 | 325 | 29,494 | 37 | 797 |
| MAIN FRASER | | | | 109,132 | 313 | 349 |
| AREA | 1989 | | | 1989 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 4,894 | 47 | 104 | 72,393 | 306 | 237 |
| CHILLIWACK - VEDDER | 2,639 | 27 | 98 | 48,207 | 279 | 173 |
| SETON - CREEK | 2,743 | 9 | 305 | 203,275 | 575 | 354 |
| - CHANNEL | | | | 61,563 | 221 | 279 |
| THOMPSON | 6,342 | 19 | 334 | 36,456 | 50 | 729 |
| MAIN FRASER | | | | 213,422 | 554 | 385 |
| AREA | 1991 | | | 1991 | | |
| | LOCAL TAGS APPLIED | GV TAGS RECAP. | RATIO | DEAD PITCHED | GV TAGS RECOVERED | RATIO |
| HARRISON | 7,373 | 55 | 134 | 176,316 | 665 | 265 |
| CHILLIWACK - VEDDER | 1,155 | 16 | 72 | 28,727 | 101 | 284 |
| SETON - CREEK | 9,093 | 42 | 217 | 109,455 | 308 | 355 |
| - CHANNEL | | | | 45,105 | 117 | 386 |
| THOMPSON | 8,598 | 55 | 156 | 92,350 | 160 | 577 |
| MAIN FRASER | | | | 87,770 | 262 | 335 |



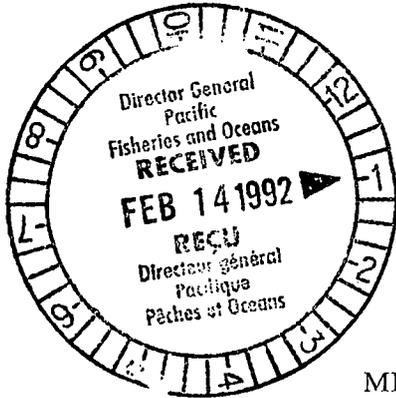
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MARCH 18, 1985

600 - 1155 ROBSON STREET
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009672 FEB 13 our File: 25



FISHERIES & OCEANS February 10, 1992
FISHERIES PACIFIC
FILE: 1110-19

MEMORANDUM

cc 8400-F6.
(Let only)

TO: Commissioners and Alternate Commissioners
National Section Correspondents
Fraser River Panel Members and Alternates
Fraser River Panel Technical Committee

FROM: J. Abramson, Secretary

RE: Attachments to Fraser River Panel Minutes

Enclosed for your files are the attachments which should be included with the signed minutes of the Fraser River Panel meetings dated June 10-12, 25, July 12, August 9, 16, 23, 30, and September 16 and 17.

J. Abramson
J. Abramson
Secretary

Encls.

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du Canada

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6 Bonnie R.
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11 Karen Hansen
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2 George Krzyzowski

7 ~~BOB GRAHAM~~
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12 Purchasing
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3 Steve Samis
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8 K. Pontus
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13 HAFEEM ITH
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4 ~~Mark Kaur~~
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9 ~~BOB~~

14 Giuseppe
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5 Robin Harrison
New West

10 Anthony Hernandez
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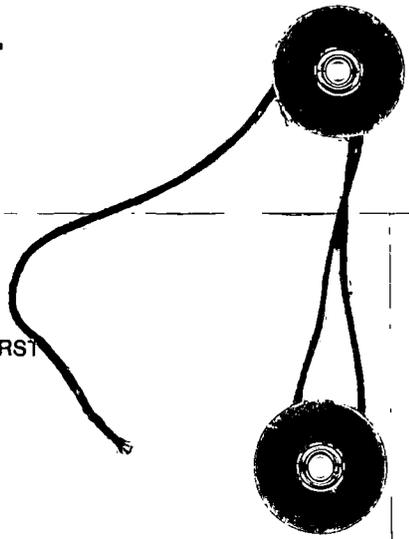
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Attachments for Fraser River Panel minutes dated: June 10-12, 1991



DRAFT

AGENDA

PACIFIC SALMON COMMISSION

FRASER RIVER PANEL

June 10 - 12, 1991

Hyatt Regency Hotel
Bellevue, Washington

1. Agenda
2. Minutes of February 5-8, 1991.
3. 1992 and 1993 Sampling programs. I. Todd
4. 1990 Alaska District 104 catch update. J. Woodey
5. 1987 & 1989 Pink salmon updates. J. Woodey
6. Current allocation status. J. Woodey
7. Responses to 1991 sampling requests. I. Todd
8. 1991 Management Plan development:
 - a) Canadian input F. Fraser
 - Domestic allocation goals
 - Concerns for other species/stocks
 - b) United States input L. Loomis
 - Domestic allocation
 - Concerns for other species/stocks
9. Draft Management Plan J. Woodey
10. In-season estimation of by-catch.
11. Other business
12. Next meeting

FRP FILE: 71007

LONG TERM COMMERCIAL SALMON ALLOCATION PLAN

Based on the best advice of industry, the following is a complete set of objectives and principles for long term allocation and the commercial allocation plans for the next four years, 1991 to 1994.

OBJECTIVES

CONSERVATION IS PARAMOUNT. It is vital to the fishery to ensure conservation of the salmon resource and to maintain the genetic integrity, diversity and viability of salmon stocks.

FAIR AND EQUITABLE ALLOCATIONS. It is important that the allocation process and decisions be fair and equitable. By definition this means that allocation decisions should be marked by impartiality and conform to some established rules and principles.

MINIMIZE UNCERTAINTY AND CONFLICT. Allocation is a fractious issue because it directly affects the catch, and therefore earnings, of fishermen. Having a long term allocation guideline in place can provide some certainty to fishermen in what has traditionally been a very uncertain environment.

MINIMIZE IMPACT ON TRADITIONAL FISHING PATTERNS. Allocations should, where possible, pose minimal disruption to historic and traditional fisheries.

CONSISTENT WITH PACIFIC SALMON TREATY AND OBLIGATIONS WITH RESPECT TO INDIAN FOOD FISHERIES. Allocations must be consistent with Canada's obligations with respect to the Pacific Salmon Treaty and the priority of Indian food fisheries.

MANAGEABLE AND COST EFFECTIVE. Allocations must be manageable and be implementable in a cost effective manner.

PRINCIPLES

1. Allocations will continue to be expressed as shares of catch of fish (pieces) to each gear sector of each of the major salmon runs, or failing that by species and geographic area.
2. Allocations will cover all five species of salmon.
3. Allocations for the next 4 years (1991-1994) will be based on:
 - a) Minister's allocations from the cycle year for 1987-1990 for all species and runs other than Fraser sockeye.
 - b) In combination with: 1) the Minister's allocation from 1987-1990 on a base amount of catch for Fraser River sockeye and 2) a different sharing arrangement for Fraser River sockeye catches over and above the base.
4. Base catches of Fraser River sockeye were defined on the basis of the highest commercial catch in the first four years of the treaty or other recent years (ie. 1978-1988).
5. Specific allocations will be set for Fraser River catches over and above the base for the next 4 years with a review for 1993 and adjustments to those allocations considered in 1993 or subsequent years only if Canadian commercial catch expectations or fleet composition changes substantially. A substantial change which would require a review of the allocations is defined as a change which results in a change in any gear's share of CPUE in sockeye equivalents exceeding 0.5% in two consecutive years.
6. These allocations for "incremental fish" will apply to the number of Fraser sockeye caught over and above the base. Within the share of Fraser sockeye allocated to the troll sector, inside trollers will be allocated 14% of the troll "incremental fish" share based on their proportion of the total troll fleet.
7. Catch-up/make-up is important in principle. The trial catch-up/make-up on Fraser River sockeye should be continued for 1991 with CFIC giving further consideration to expansion of catch-up/make-up to other stocks in 1992 and beyond. Post season evaluation of the need for adjustments due to shortfalls or overages will be based on DFO catch data. Any further expansion of catch-up/make-up will be based on overages and underages for specific allocations on specific runs.
8. DFO will strive to manage commercial salmon fisheries to meet allocations by providing sufficient opportunities for each gear type to catch their allocations.
9. Allocations should stabilize the CPUE (catch per unit of effort) or catch per vessel shares by each gear type. This stabilization can be measured on the basis of Sockeye Equivalents per vessel. For the purpose of this allocation plan, sockeye equivalents are units of measurement which allow for comparison of the five different species of

salmon on an equivalent basis. They are based on the average 1985-1988 relative landed value of each of the species expressed in terms of their relationship to the average 1985-88 landed value of sockeye.

10. Sockeye equivalents are to be used only as an initial basis for measuring fairness in allocations, not as a driver or target which must be met in the allocations, nor for catch-up/make-up in 1991 through 1994.
11. DFO will provide CFIC with comprehensive information as available for a complete annual accounting of the outcome of allocations for the previous year.
12. CFIC will review the outcome of allocations on an annual basis.
13. The Minister of Fisheries and Oceans reserves the right to make alterations to allocations as required.

LONG TERM SALMON ALLOCATION PLAN

| YEAR | 1991 | 1992 | 1993 | 1994 | |
|--------------------|-----------------|--|--------------------------------|--------------------------------|--------------------------------|
| <u>NORTH COAST</u> | | | | | |
| PINKS | TROLL | | | | |
| | Area 1 | Fishery will be managed in accordance with the Pacific Salmon Treaty. The Area 1 Pink troll catch for the four year period 1990-1993 will be limited to a total of 5.125 million. The maximum harvest in Area 1 in any one year is 1.95 million, of which no more than 300,000 can be taken in the A-B line sub-areas. | | | |
| | Areas 2 - 10 | Troll catch ceiling of 4% of the all gear catch in Areas 2-10, excluding Fraser River Pinks. | | | |
| | NET | | | | |
| | Areas 1,3,4 & 5 | GN 28% of net SN 72% of net | GN 22% of net SN 78% of net | GN 28% of net SN 72% of net | GN 22% of net SN 78% of net |
| | Areas 6 to 10 | Maintain traditional fishing patterns with the primary objective to harvest available surpluses and ensure that escapement goals are met. | | | |
| SOCKEYE | TROLL | | | | |
| | Areas 1,3,4 & 5 | Troll catch to remain incidental and not to exceed 5% of the total catch. | | | |
| | Areas 6 to 10 | The troll fishery on sockeye in these areas should not escalate. | | | |
| | NET | | | | |
| | Areas 1,3,4 & 5 | GN 75% of net SN 25% of net | GN 75% of net SN 25% of net | GN 76% of net SN 24% of net | GN 73% of net SN 27% of net |
| | Areas 6,7 & 8 | Traditional fishing patterns to be maintained with an incidental catch of sockeye expected. | | | |

| | | |
|---------|------------------------|---|
| | Areas 9 & 10 | Net fishing restricted to gillnets only. |
| CHUM | TROLL Areas 1 to 10 | Troll fisheries on this species should not escalate. |
| | NET Areas 1 to 10 | Traditional fishing patterns to be continued. |
| CHINOOK | Areas 1 to 11 | The commercial share of the Pacific Salmon treaty chinook ceiling (not including terminal exclusions) will be allocated 15.7% to net fisheries and 84.3% to troll (as in 1990). |

| | | 1991 | 1992 | 1993 | 1994 |
|--------------------|----------------|---|--|---|--|
| <u>SOUTH COAST</u> | | | | | |
| PINK | Southern Bound | GN 9% SN 58% OUTSIDE TR 29% INSIDE TR 4% | GN 9% SN 73% OUTSIDE TR 9% INSIDE TR 9% | GN 9% SN 58% OUTSIDE TR 29% INSIDE TR 4% | GN 9% SN 73% OUTSIDE TR 9% INSIDE TR 9% |
| SOCKEYE | AREA 23 | GN 40% of net SN 60% of net | GN 40% of net SN 60% of net | GN 40% of net SN 60% of net | GN 40% of net SN 60% of net |

| | 1991 | 1992 | 1993 | 1994 |
|--------------------------------------|--|---|--|--|
| SOCKEYE | FRASER BOUND | | | |
| | Fraser bound sockeye are allocated by a two part formula with: 1) base catches allocated according to the Minister's allocations for the previous cycle; and 2) any incremental catch above that base allocated as shown below.* | | | |
| 1 BASE CATCH OF: | 3.2 MILLION | 2.9 MILLION | 8.3 MILLION | 8.8 MILLION |
| ALLOCATED | GN 35% SN 52% OUTSIDE TR 10.8% INSIDE TR 2.2% | GN 38.4% SN 52.8% OUTSIDE TR 4.8% INSIDE TR 4% | GN 33% SN 55% OUTSIDE TR 10% INSIDE TR 2% | GN 28% SN 45.5% OUTSIDE TR 22.7% INSIDE TR 3.8% |
| 2 INCREMENTAL CATCH ALLOCATED | GN 31.5% SN 47% OUTSIDE TR 18.5% INSIDE TR 3% | GN 19% SN 66.5% OUTSIDE TR 12.5% INSIDE TR 2% | GN 23% SN 42% OUTSIDE TR 30% INSIDE TR 5% | GN 30% SN 44.5% OUTSIDE TR 22% INSIDE TR 3.5% |

* Allocations of catch incremental to the base will be reviewed after 1992 to ensure consistency with the principles of allocation outlined by the Minister.

The following are estimated combined allocations of Fraser sockeye using current catch expectations for the next four years. These predictions will be updated every January for that calendar year using up to date biological information and projected catches by other harvesters in Canada and the United States.

| | 1991 | 1992 | 1993 | 1994 |
|-------------------------------|--|---|--|--|
| EST CATCH | 8 MILLION | 4 MILLION | 12 MILLION | 17 MILLION |
| ESTIMATED CATCH SHARES | GN 33% SN 49% OUTSIDE TR 15.4% INSIDE TR 2.6% | GN 33% SN 56.5% OUTSIDE TR 6.9% INSIDE TR 3.6% | GN 30% SN 51% OUTSIDE TR 16.2% INSIDE TR 2.8% | GN 29% SN 45% OUTSIDE TR 22.4% INSIDE TR 3.6% |

| | | 1991 | 1992 | 1993 | 1994 |
|---------|------------------|---|------------------|------------------|------------------|
| CHUM | TROLL OUTSIDE | The outside troll fishery on this species should not escalate. | | | |
| | INSIDE | The troll fishery for fall chums will be limited, with a catch ceiling not to exceed 1% of the total commercial catch of inside stocks after Sept 1. | | | |
| CHUM | NET INSIDE | GN 35% SN 65% | GN 35% SN 65% | GN 35% SN 65% | GN 35% SN 65% |
| | OUTSIDE | An initial early season allocation of 50% gillnet and 50% seine. The South Coast Advisory Committee will set the pre-cleanup catch ceiling in early fall to which the 50:50 catch split will apply. Fishing times on subsequent fisheries will be determined by the West Coast Sub-committee of the South Coast Advisory Committee in conjunction with DFO. | | | |
| CHINOOK | TROLL OUTSIDE | The outside troll fishery will be managed in accordance with the Pacific Salmon Treaty. | | | |
| | INSIDE | The inside troll allocation will continue to be subject to the Pacific Salmon Treaty and conservation requirements. | | | |
| COHO | TROLL | The outside troll fishery will be managed in accordance with the Pacific Salmon Treaty. | | | |

Proposed U.S. Sockeye Catch Objectives
 for the 1991 Fraser Panel Fisheries

| WEEK ENDING | TREATY 4B/5/6C | TREATY 6/7/7A | NON-TREATY |
|--------------|----------------|---------------|-------------------------------------|
| 13-JULY | CLOSED | 23,000 | 23,000 |
| 20-JULY | CLOSED | CLOSED | CLOSED |
| 27-JULY | | CLOSED | CLOSED |
| 3-AUGUST | 45,000 | CLOSED | |
| 10-AUGUST | | | 509,000 |
| 17-AUGUST | | 340,000 | |
| 24-AUGUST | 44,000 | | |
| 31-AUGUST | | 337,000 | 383,000 |
| 7-SEPTEMBER | 1,000 | | |
| 14-SEPTEMBER | CLOSED | | |
| TOTAL | 90,000 | 700,000 | 915,000 (1,000,000) ¹ |

¹The non-treaty catch objective is 1,000,000 sockeye, but the anticipated catch is 915,000. Some of the potential increase of 85,000 sockeye in the non-treaty fishery could be taken in the w/e 3-Aug. to w/e 24-Aug. period if the U.S. share of summer runs can accomodate the increased catch.

U.S. SECTION FRASER PANEL: June 10, 1991

Proposed U.S. Fishing Schedule
 for 1991 Fraser Panel Fisheries

| WEEK ENDING | TREATY 4B/5/6C | 6/7/7A SCHEDULE | TREATY 6/7/7A | NON-TREATY |
|-------------|-------------------|--------------------|----------------------------|----------------------------------|
| 13-JULY | CLOSED | 1-1-0 | Short Hours (7/7A only) | Short Hours (7/7A only) |
| 20-JULY | CLOSED | CLOSED | | |
| 27-JULY | 5 day opening | CLOSED | | |
| 3-AUGUST | Open as needed | 0-1-0 | CLOSED | GN=Short Hours PS=Short Hours |
| 10-AUGUST | Open as needed | 1-1-0 | Short Hours | GN=Long Hours PS=Short Hours |
| 17-AUGUST | Open as needed | 1-1-0 | Long Hours | GN=Long Hours PS=Short Hours |
| 24-AUGUST | Open as needed | 1-1-0 | Long Hours | GN=Long Hours PS=CLOSED |
| 31-AUGUST | Open as needed | 1-1-1 | Long Hours | Long Hours |
| 7-SEPT. | Open as needed | 2-1-1 | Long Hours | Long Hours |
| 14-SEPT. | CLOSED | 2-1-1 | Long Hours | Long Hours |

U.S. Section Fraser Panel: June 10, 1991



Attachments for Fraser River Panel minutes dated: June 25, 1991



DRAFT

AGENDA

PACIFIC SALMON COMMISSION

FRASER RIVER PANEL

June 25, 1991

La Conner, Washington

1. Agenda
2. Minutes of February 5-8 and June 11, 1991.
3. 1992 and 1993 Sampling programs. I. Todd
4. 1989 & 1990 Alaska District 104 Fraser sockeye catch estimates. J. Woodey
5. 1987 & 1989 Pink salmon updates. J. Woodey
6. Responses to 1991 sampling requests. I. Todd
7. 1991 Management Plan development.
8. Regulatory action. J. Woodey
9. In-season estimation of by-catch. J. Woodey
10. Other business
11. Next meeting

FRP FILE: 71007

Attachment 2

Table 1. PSC estimates of Fraser River sockeye salmon contributions to 1990 District 104
 purse seine fisheries: Districts 104-10-20 and 104-30-40 separately estimated using all
 available age 4/2 fish.

| PSC 104-10-20 analysis | | | | | | | | | |
|------------------------|--------|-------------|------------------|-----------------|----------------|------------------------|-----------------------|----------------|----------------|
| Stat | Catch | Number Aged | Number digitized | Percent age-4/2 | Number age-4/2 | Percent age-4/2 FRASER | Number age-4/2 FRASER | Lower 90% C.L. | Upper 90% C.L. |
| 27 | 17839 | 298 | 57 | 20.20% | 3603 | 0.00% | 0 | -292 | 292 |
| 28 | 24077 | 333 | 65 | 20.12% | 4844 | 0.00% | 0 | -601 | 601 |
| 29 | 24643 | 300 | 69 | 24.00% | 5914 | 0.00% | 0 | -651 | 651 |
| 30 | 0 | 0 | 0 | 0.00% | 0 | 0.00% | 0 | 0 | 0 |
| 31 | 74302 | 205 | 84 | 43.90% | 32619 | 29.30% | 9557 | 3621 | 15494 |
| 32 | 103721 | 100 | 66 | 67.00% | 69493 | 62.10% | 43155 | 31202 | 55108 |
| 33 | 51626 | 176 | 123 | 78.98% | 40774 | 61.80% | 25198 | 19857 | 30540 |
| 34 | 21485 | 304 | 154 | 62.50% | 13428 | 40.80% | 5479 | 4002 | 6956 |
| 35 | 5044 | 98 | 68 | 72.45% | 3654 | 74.10% | 2708 | 2120 | 3296 |
| total | 322737 | 1814 | 686 | | 174330 | 49.39% | 86097 | 71605 | 100590 |
| PSC 104-30-40 analysis | | | | | | | | | |
| Stat | Catch | Number Aged | Number digitized | Percent age-4/2 | Number age-4/2 | Percent age-4/2 FRASER | Number age-4/2 FRASER | Lower 90% C.L. | Upper 90% C.L. |
| 27 | 6646 | 298 | 57 | 20.20% | 1342 | 0.00% | 0 | -109 | 109 |
| 28 | 17040 | 292 | 71 | 25.00% | 4260 | 0.00% | 0 | -524 | 524 |
| 29 | 40152 | 288 | 104 | 38.54% | 15475 | 0.00% | 0 | -1702 | 1702 |
| 30 | 39546 | 281 | 111 | 42.35% | 16748 | 35.40% | 5929 | 3149 | 8709 |
| 31 | 91699 | 312 | 137 | 46.15% | 42319 | 27.60% | 11680 | 5501 | 17859 |
| 32 | 64391 | 349 | 207 | 69.40% | 44684 | 55.50% | 24800 | 20376 | 29224 |
| 33 | 134174 | 268 | 185 | 73.51% | 98631 | 79.20% | 78116 | 67069 | 89163 |
| 34 | 71236 | 425 | 326 | 82.57% | 58819 | 80.00% | 47055 | 41761 | 52348 |
| 35 | 9161 | 98 | 78 | 79.59% | 7291 | 95.60% | 6970 | 5950 | 7991 |
| total | 474045 | 2611 | 1276 | | 289569 | 60.28% | 174550 | 159726 | 189374 |
| TOTAL | 796782 | 4425 | 1962 | | 463900 | 56.19% | 260647 | 239916 | 281379 |
| Other ages* | | | | | | | 9790 | | |
| Total Fraser | | | | | | | 270437 | | |

Models Used: Weeks 27-31 4-Way Fraser(N=200)/Skeena(N=200)/Nass(N=200)/Alaska(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,MR1) Mean Classification Accuracy = 68.13%
 Weeks 32-33 3-Way Fraser(N=200)/Skeena(N=200)/Alaska(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,PGC) Mean Classification Accuracy = 78.67%
 Weeks 34-35 2-Way Fraser(N=200)/Skeena(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,PGC) Mean Classification Accuracy = 81.75%

* Other Ages Calculation = (Area 12/20 Fraser %other * 260647)/(Area 12/20 Fraser %4/2)
 = (3.62%*260647)/(96.38%)= 9790

Table 2. PSC estimates of age 4/2 Fraser River sockeye salmon contributions to 1990 District 104 purse seine fisheries. PSC version of ADF&G analysis, 104-10-40 combined, using the same age 4/2 fish.

| PSC 104-10-40 comparison analysis | | | | | | | | | |
|-----------------------------------|--------|--------|-----------|-----------------|----------------|---------|--------|---------------|---------------|
| Week | Catch | Number | | Percent age-4/2 | Number age-4/2 | Percent | | Number | |
| | | Aged | digitized | | | FRASER | FRASER | Lower 90% C.L | Upper 90% C.L |
| 27 | 24485 | 600 | 87 | 18.67% | 4571 | 0.00% | 0 | -306 | 306 |
| 28 | 41117 | 643 | 100 | 20.84% | 8569 | 0.00% | 0 | -908 | 908 |
| 29 | 64795 | 716 | 95 | 31.01% | 20093 | 0.00% | 0 | -1828 | 1828 |
| 30 | 39546 | 691 | 97 | 42.11% | 16653 | 17.00% | 2831 | 150 | 5512 |
| 31 | 166001 | 629 | 91 | 46.58% | 77323 | 41.40% | 32012 | 20723 | 43301 |
| 32 | 168112 | 1446 | 94 | 66.87% | 112416 | 49.50% | 55646 | 39346 | 71947 |
| 33 | 185800 | 1226 | 98 | 72.84% | 135337 | 71.20% | 96360 | 77007 | 115713 |
| 34 | 92721 | 628 | 97 | 77.87% | 72202 | 92.50% | 66787 | 61372 | 72202 |
| 35 | 14205 | 644 | 95 | 78.57% | 11161 | 85.00% | 9487 | 7969 | 11005 |
| total | 796782 | 7223 | 854 | | 458325 | 57.41% | 263122 | 234775 | 291470 |

Models Used: Weeks 27,28,30: 4-Way Fraser(N=200)/Skeena(N=200)/Nass(N=200)/Alaska(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,MR1) Mean Classification Accuracy = 68.13%

Weeks 29,31,32, and 33: 3-Way Fraser(N=200)/Skeena(N=200)/Alaska(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,PGC) Mean Classification Accuracy = 78.67%

Weeks 34,35: 2-Way Fraser(N=200)/Skeena(N=200)
 (FW5,MEF,MRW,PGW,MR7,FWW,WMA,MR14,PGC) Mean Classification Accuracy = 81.75%

- 1) age composition is from ADF&G
- 2) Baseline standards and commercial samples are the same as used by ADF&G
- 3) differences in the number of scales digitized reflects the PSC's inability to read some of the scales read by ADF&G.

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Table 1. Estimated number of age-1.2 South-migrating sockeye salmon harvested in the 1990 District 104 purse seine fishery. (ADF&G, 6/5/91)

| Week | Catch | Number Aged | Number Digitized | Percent Age-1.2 | Number Age-1.2 | Percent Age-1.2 S. Mig. | Number Age-1.2 S. Mig. | Lower 90% C.I. | Upper 90% C.I. |
|--------------|----------------|--------------|------------------|-----------------|----------------|-------------------------|------------------------|----------------|----------------|
| 27 | 24,485 | 600 | 93 | 18.67% | 4,571 | 2.67% | 122 | 0 | 469 |
| 28 | 41,117 | 643 | 100 | 20.84% | 8,569 | 6.87% | 589 | 0 | 1,275 |
| 29 | 64,795 | 716 | 99 | 31.01% | 20,093 | 11.69% | 2,348 | 564 | 4,132 |
| 30 | 39,546 | 691 | 100 | 42.11% | 16,653 | 19.63% | 3,269 | 1,619 | 4,919 |
| 31 | 166,001 | 629 | 100 | 46.58% | 77,323 | 42.79% | 33,083 | 24,522 | 41,644 |
| 32 | 168,112 | 1,446 | 100 | 66.87% | 112,416 | 52.84% | 59,402 | 47,203 | 71,601 |
| 33 | 185,800 | 1,226 | 100 | 72.84% | 135,337 | 70.42% | 95,301 | 81,031 | 109,572 |
| 34 | 92,721 | 628 | 100 | 77.87% | 72,202 | 80.85% | 58,372 | 51,007 | 65,738 |
| 35 | 14,205 | 644 | 100 | 78.57% | 11,161 | 87.03% | 9,713 | 8,624 | 10,802 |
| Total | 796,782 | 7,223 | 892 | | 458,325 | | 262,199 | 240,115 | 284,282 |

Models Used

Weeks 27, 28, and 30:

4-Way Alaska (N=200), Nass (N=196), Skeena (N=198), South-migrating (N=200)
 9 Variables (5, 103, MEF-length, 12, 67, 79, 105, 95, 14)
 Mean Classification Accuracy = 75.93%

Weeks 29, 31, 32, and 33:

3-Way Alaska (N=200), Skeena (N=198), South-migrating (N=200)
 8 Variables (5, 103, 12, MEF-length, 79, 82, 66, 67)
 Mean Classification Accuracy = 87.12%

Weeks 34 and 35:

2-Way Skeena (N=198), South-migrating (N=200)
 5 Variables (26, 4, MEF-length, 82, 103)
 Mean Classification Accuracy = 90.46%

Comparison of scale-pattern based weekly stock composition proportions for Fraser River sockeye salmon harvested in the 1989 District 104 PS fishery.

| | PSC RACIAL ANALYSIS | ADF&G RACIAL ANALYSIS |
|-------------------------|--|---|
| Fraser River Standard | 1989 Area 12+20 PS | 1989 Area 12+20 PS |
| Nass Standard | 1989 Area 3 PS | 1989 Nass River GNTF |
| Skeena Standard | 1989 Area 4 PS | 1989 Skeena River GNTF |
| Alaska Standard | 1989 spawning ground | 1989 spawning ground |
| Variables Used In Model | 1st FW zone circuli count plus growth circuli count POF length | dist. to fifth in 1st FW POF length, width of 1st MR relative widths in 1st FW relative widths in 1st MR plus growth circuli count |
| Model Type | 3-way (AL, SK+NA, FR) | 4-way (AL,SK,NA,FR) |
| Model Accuracy | 67% | 72.8% |
| Samples analyzed | sub-district specific by week (104-10,20,30,40) | regional (all 104) by week |

| Fraser 4/2 estimate | Week end | Stat wk. | all age catch | # scales analyzed | % Fraser 4/2 | # Fraser 4/2 | # scales analyzed | % Fraser 4/2 | # Fraser 4/2 |
|---------------------|----------|----------|---------------|-------------------|--------------|--------------|-------------------|--------------|--------------|
| | Jul 8 | 27 | 8731 | 39 | 8.2% | 716 | 67 | 0.0% | 0 |
| | Jul 15 | 28 | 48252 | 122 | 6.4% | 3088 | 74 | 0.0% | 0 |
| | Jul 22 | 29 | 31346 | 113 | 5.2% | 1630 | 85 | 0.0% | 0 |
| | Jul 29 | 30 | 68705 | 131 | 9.5% | 6527 | 100 | 0.0% | 0 |
| | Aug 5 | 31 | 117238 | 137 | 21.0% | 24620 | 88 | 11.1% | 13014 |
| | Aug 12 | 32 | 85331 | 223 | 37.2% | 31743 | 100 | 22.4% | 19136 |
| | Aug 19 | 33 | 114948 | 85 | 74.0% | 85062 | 34 | 69.3% | 79602 |
| | Aug 26 | 34 | 26683 | 151 | 66.7% | 17798 | 69 | 59.8% | 15957 |
| | Sep 2 | 35 | 14835 | 122 | 51.8% | 7685 | 66 | 39.0% | 5790 |
| Totals | | | 516069 | 1123 | | | 683 | | |
| Total Fraser 4/2 | | | | | | 178868 | | | 133499 |
| Fraser other ages | | | | | | 9891 * | | | not est. |

TOTAL FRASER CATCH (all ages) 188759

* Calculation of Fraser other age catch

Area 12+20 weighted %4/2 = 94.76%

Area 12+20 weighted %other = 5.24%

PSC estimate of other age catch = (178868*.0524)/.9476 = 9891

if applied to ADF&G estimate = (133498*.0524)/.9476 = 7608

ESTIMATES FOR CANADIAN CATCHES OF FRASER RIVER PINK SALMON BY 07-Jun
 GEAR TYPE AND AREA DURING THE 1989 FISHING SEASON

| Areas | Troll | | Purse Seine | | Gillnet | | Total | |
|--------------|----------------|---------------|----------------|---------------|---------------|--------------|----------------|----------------|
| | Catch | % | Catch | % | Catch | % | Catch | % |
| 1-10 | 385000 | 5.51% | 22000 | 0.31% | 1000 | 0.01% | 408000 | 5.84% |
| 11-16* | 103000 | 1.47% | 2747000 | 39.30% | 181000 | 2.59% | 3031000 | 43.37% |
| 121-127** | 1826000 | 26.13% | 0 | 0.00% | 0 | 0.00% | 1826000 | 26.13% |
| 20 | 0 | 0.00% | 1354000 | 19.37% | 75000 | 1.07% | 1429000 | 20.45% |
| 17,18,29 | 94000 | 1.34% | 0 | 0.00% | 201000 | 2.88% | 295000 | 4.22% |
| TOTAL | 2408000 | 34.45% | 4123000 | 58.99% | 458000 | 6.55% | 6989000 | 100.00% |

*Includes Areas 13 to 16 troll only (inside troll).

** Area 11 and 12 troll are added to Areas 121-127 troll.

ESTIMATES FOR UNITED STATES CATCHES OF FRASER RIVER PINK SALMON BY USER GROUP, 07-Jun
 BEAR TYPE AND AREA DURING THE 1989 FISHING SEASON

| TREATY INDIAN | | | | | | | | | | |
|-----------------|---------|--------|-------------|--------|----------|-------|-------|-------|---------|---------|
| Area | Gillnet | | Purse Seine | | Reef Net | | Troll | | Total | |
| | Catch | % | Catch | % | Catch | % | Catch | % | Catch | % |
| Areas 4B, 5, 6C | 37000 | 3.10% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 37000 | 3.10% |
| Areas 6, 7 | 175000 | 14.64% | 682000 | 57.07% | 0 | 0.00% | 0 | 0.00% | 857000 | 71.72% |
| Area 7A | 123000 | 10.29% | 174000 | 14.56% | 0 | 0.00% | 0 | 0.00% | 297000 | 24.85% |
| Calif/Ore/Wash | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 4000 | 0.33% | 4000 | 0.33% |
| TOTALS | 335000 | 28.03% | 856000 | 71.63% | 0 | 0.00% | 4000 | 0.33% | 1195000 | 100.00% |

| NON-INDIAN | | | | | | | | | | |
|-----------------|---------|--------|-------------|--------|----------|-------|-------|-------|---------|---------|
| Area | Gillnet | | Purse Seine | | Reef Net | | Troll | | Total | |
| | Catch | % | Catch | % | Catch | % | Catch | % | Catch | % |
| Areas 4B, 5, 6C | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% |
| Areas 6, 7 | 100000 | 9.63% | 485000 | 46.72% | 53000 | 5.11% | 0 | 0.00% | 638000 | 61.46% |
| Area 7A | 60000 | 5.78% | 316000 | 30.44% | 0 | 0.00% | 0 | 0.00% | 376000 | 36.22% |
| Calif/Ore/Wash | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 24000 | 2.31% | 24000 | 2.31% |
| TOTAL | 160000 | 15.41% | 801000 | 77.17% | 53000 | 5.11% | 24000 | 2.31% | 1038000 | 100.00% |

GRAND TOTAL 495000 22.17% 1657000 74.21% 53000 2.37% 28000 1.25% 2233000 100.00%

ALASKA (DIST. 104) CATCH: 0

RECREATIONAL CATCH: 0

UNITED STATES TOTAL CATCH: 2233000

68001



Fisheries
and Oceans

Pêches
et Océans

Attachment 6

Pacific Region
Suite 400 - 555 West Hastings St.
Vancouver, B.C.
V6B 5G3

Région du Pacifique
Pièce 400 - 555 rue Hastings ouest
Vancouver (C.-B.)
V6B 5G3

Your file Votre référence

Our file Notre référence

RECEIVED

MAY - 6 1991
PACIFIC SALMON
COMMISSION

002103

Mr. Joseph R. Blum
Vice Chairman
Pacific Salmon Commission
600 - 1155 Robson Street
Vancouver, British Columbia
V6E 1B9

Dear Mr. Blum,

My staff and I have reviewed the Commission's requests for assistance in collecting 1991 data on Fraser river pink and sockeye salmon. I wish we could provide all that was requested but unfortunately budget restraints prohibit this.

TEST FISHING

1. Areas 125 to 127 troll test fishery.

As was the case for the last couple of years we are not able to provide assistance for this project.

2. Area 12 gillnet and seine test fishery.

We will provide similar assistance as in recent years. This does not include observer wages and expenses.

SOCKEYE SALMON COMMERCIAL CATCH SAMPLES

1. Catch sampling in northern British Columbia.

We will provide data which will be collected by J.O. Thomas and Associates. North coast terminal test fishing and spawning ground samples will be provided as in past years.

.../2



- 2 -

2. Scale samples from Winter harbour.

As in recent years we will not be able to collect these samples.

PINK SALMON COMMERCIAL CATCH SAMPLES

1. South coast.

We will collect samples from purse seine fisheries in Areas 12, 13, and 16, but we cannot provide troll samples from Areas 125, 127 and 111.

2. North coast.

We are not able to do this sampling and hope that P.S.C. staff will be able to contract the services of J.O. Thomas & Associates.

SOCKEYE SALMON INDIAN FISHERY SAMPLES

Although we recognize the needs for increased sampling as this fishery grows we do not have additional resources. We will be able to sample two sites only and I suggest that P.S.C. staff consult with my Fraser River Division staff to determine sampling details.

FORECAST OF TIMING AND MIGRATION ROUTES

Dr. Blackbourne's services will be available again in 1991...

SPAWNING GROUND SAMPLES

1. Fraser River sockeye.

We will be able to provide these samples.

.../3

- 3 -

2. Pink salmon tissue samples.

Bella Coola and Skeena rivers - we will be able to provide these samples as in past years.

Fraser river - our assistance will be similar to past years in which we provided verbal information to P.S.C. staff on timing and availability of the fish, but we did not collect the samples.

If there are questions on any of the above items I suggest the Commission's staff deal directly with the appropriate people on my staff.

Yours truly,



P.S. Chamut
Director-General
Pacific Region
Fisheries and Oceans

c.c. A.F. Lill
N.J. Lemmen
P. Sprout
G. Jaltema
R.J. Beamish
I. Todd



Northwest Indian Fisheries Commission

6730 Martin Way E., Olympia, WA 98506 Phone (206) 438-1180 FAX #456-3032 FTS #434-9476

RECEIVED

DEC 13 1990

PACIFIC SALMON
COMMISSION

01707

December 7, 1990

Ian Todd, Executive Secretary
Pacific Salmon Commission
600 - 1155 Robson Street
Vancouver, B.C. V6E 1R9

Dear Mr. Todd:

In response to your letter of November 29, 1990 we have discussed the request to sample the 1991 pink salmon catch of the Washington coastal troll fishery with the Washington Department of Fisheries (WDF).

The NWIFC will coordinate the sampling effort with WDF and the Tribes to assure that the tissue samples with sex and length data are provided as requested. Our staff will be in contact with your staff prior to the fishery to coordinate this sampling effort.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Anderson". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

JIM ANDERSON
Executive Director

cc: Sockeye Tribes
NWIFC Commissioners
Joe Blum
Lorraine Loomis
Fred Fraser

IANTODD.MG.1a:12690

63001



JOSEPH R. BLUM
Director

STATE OF WASHINGTON
DEPARTMENT OF FISHERIES

115 General Administration Building, M.S. AX-11 • Olympia, Washington 98504 • (206) 753-6600 • (SCAN) 234-6600

March 8, 1991

RECEIVED

MAR 13 1991

PACIFIC SALMON
COMMISSION

01971

Dr. J. Woodey
Pacific Salmon Commission
1155 Robson St., Suite 600
Vancouver, B.C. CANADA V6E1B9

Dear Jim:

This letter is simply to confirm that Washington Department of Fisheries will provide you with GSI samples from Washington's 1991 troll pink fisheries per your request. We plan to have GSI sampling staff in the outer Strait of Juan de Fuca during the July-August time frame, so it is simply a matter of Bruce White contacting Marc Miller to plan the specific collections.

I apologize for the delay in a direct written response to the Commission's request.

Sincerely,

Rich Lincoln
Research Program Leader
Research, Assessment, and Development
Planning, Research, and Harvest Management

cc: D. Austin
M. Miller
B. Tweit

68001



Department of Fish and Wildlife

2501 SW FIRST AVENUE, PO BOX 59, PORTLAND, OREGON 97207 PHONE (503) 229-5400

December 28, 1990

RECEIVED

JAN - 9 1991
PACIFIC SALMON
COMMISSION

001811

Mr. Ian Todd, Executive Secretary
Pacific Salmon Commission
600-1155 Robson Street
Vancouver, BC V6E1B9

Dear Mr. Todd:

If the Commission determines that genetic stock samples of pink salmon in the Oregon troll fishery are needed we will attempt to collect them as we did in 1987 and 1989. However, I would like to point out some sampling difficulties in the Oregon troll fishery.

We do not have a pink salmon fishing season in Oregon. Troll seasons are established to target on chinook and coho with a small incidental pink catch occurring in the odd years. Only 4,000 pinks were landed in Oregon in 1989 and we were unable to obtain GSI samples. Even with an incidental catch of 18,000 pinks in 1987, only 50 samples were obtained.

We would have difficulty achieving the desired sample of 300 pinks given the magnitude of the incidental catch during recent years.

However, if you desire our assistance, our staff contact would be as follows:

Laimons Osis, Ocean Salmon Management
Marine Region
Marine Science Drive, Building #3
Newport, OR 97365

Sincerely,

Burnie Bohn
Harvest Manager

bbt

c Jack Donaldson, CBFWA
Laimons Osis, ODFW

m123101t

Handwritten note:
To wooley
to discuss
JF

Attachment 7

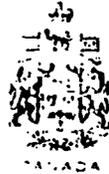
PROPOSED 1991 FISHING SCHEDULE

| <u>W/E DATE</u> | <u>AREA 20</u> | | <u>AREA 29</u> | <u>TREATY INDIAN</u> | | <u>NON-INDIAN</u> |
|-----------------|--------------------|----------------|----------------|----------------------|---------------------|-------------------|
| | <u>PS & GN</u> | <u>GN ONLY</u> | <u>GN ONLY</u> | <u>AREAS 4B.5 6C</u> | <u>AREAS 6.7.7A</u> | <u>AREAS 7.7A</u> |
| June 29 | Closed | Closed | Closed | Closed | Closed | Closed |
| July 06 | Closed | Closed | 1 | Closed | Closed | Closed |
| July 13 | Closed | Closed | Closed | Closed | 1 | 1 |
| July 20 | Closed | Closed | 1 | Closed | Closed | Closed |
| July 27 | Closed | Closed | 1 | 3 | Closed | Closed |
| August 03 | Closed | 2 | 1 | 2 | Closed | 1 |
| August 10 | 1 | 3 | 1 | 2 | 1 | 1 |
| August 17 | 3 | 1 | 1 | 2 | 1 | 1 |
| August 24 | 3 | 1 | 1 | 2 | 1 | 1 |
| August 31 | 1 | 3 | Closed | 2 | 1+1 | 1 |
| September 07 | Closed | Closed | Closed | 4 | 2+1 | 1 |
| September 14 | Closed | Closed | Closed | Closed | 2+1 | 1 |
| September 21 | Closed | Closed | Closed | Closed | Closed | Closed |

**Pages 204 to / à 206
are withheld pursuant to section
sont retenues en vertu de l'article**

20(1)(d)

**of the Access to Information Act
de la Loi sur l'accès à l'information**



JAN 20 1990

PRIME MINISTER · PREMIER MINISTRE

Ottawa, K1A 0A2
January 18, 1990

Dear Chief Erasmus:

Thank you for your letter regarding the South Island Tribal Council's efforts to negotiate the harvest of surplus chum salmon stock on the Goldstream River.

I understand that the Minister of Fisheries and Oceans, the Honourable Tom Siddon, and the Minister of State for Indian Affairs, the Honourable Kim Campbell, have issued a scientific permit to the Saanich Tribal Fishery for 1989. This authorized the harvesting of surplus chum stock while facilitating research that would improve future management of the fishery in the area. While this permit is a temporary measure, it provides some assistance to the Saanich Tribal Fishery.

In the longer term, the Minister of Fisheries and Oceans and the Minister of Indian Affairs and Northern Development are prepared to work with Indian representatives in developing a fishing agreement that would take into account any treaty fishing rights and the various interests involved in access to the fisheries stocks in the area.

Mr. Georges Erasmus,
National Chief,
Assembly of First Nations,
Suite 300,
47 Clarence Street,
Ottawa, Ontario.
K1N 9K1

- 2 -

I trust these measures will help to resolve
the issues raised in your letter.

Yours sincerely,

A handwritten signature in black ink, appearing to read "J. Paul Blais". The signature is written in a cursive style with a large initial "J" and a long horizontal stroke at the end.



Attachments for Fraser River Panel minutes dated: July 12, 1991

AGENDA FRASER RIVER PANEL

JULY 12, 1991
RICHMOND, B.C.

1. Agenda
2. MINUTES OF JUNE 10-11, 25, 1991
3. FISHERY review. J. Woodey
4. TOTAL ALLOWABLE CATCH
5. DEVELOPMENT OF REGULATIONS.
6. OTHER BUSINESS.
7. NEXT MEETING.



Fisheries
and Oceans

Pêches
et Océans

Attachment 2

Pacific Region
Suite 400 - 555 West Hastings St.
Vancouver, B.C.
V6B 5G3

Région du Pacifique
Pièce 400 - 555 rue Hastings ouest
Vancouver (C.-B.)
V6B 5G3

Your file Votre référence

Our file Notre référence

1110-F24

11 July 1991

Ms. Lorraine Loomis
Chair, Fraser Panel
Fish Manager
Swinomish Tribal Community
P.O.Box 817
950 Moorage Way
La Conner, WA 98257
U.S.A.

Dear Lorraine:

I am writing to provide you with Canada's intentions for the 1991 Fraser River sockeye and pink salmon seasons. Our preliminary expectations were provided informally to the U.S. in order for technical staff to develop fishing plans. There now has been some modification to that preliminary information because of the recent conclusion of consultations dealing with Native, commercial and sport allocations.

The Minister of Fisheries & Oceans announced on July 5, 1991 that the total Fraser sockeye run was expected to be 14.5 million and that the management plan would permit more than 3.4 million sockeye to spawn. Anticipated catches would be 800,000 for the Fraser River Indian Food Fishery (IFF), 125,000 for the Vancouver Island IFF, 8.2 million for the Canadian commercial industry and 40,000 for the sportfishery.

Since this announcement, the Panel approved a run size increase to the Early Stuart stock from 500,000 to 1,000,000 on July 8. As a consequence Canada increased the preliminary escapement goal for the Early Stuart based on the revised run size estimate. The net escapement goal was increased from 200,000 to 280,000 and the gross escapement goal was increased from 400,000 to 560,000.

Canada maintains the right to adjust escapement goals in-season as circumstances warrant. Canada will continue to notify the U.S. of any in-season adjustments to specific escapement goals. For informational purposes a more detailed description of specific escapement objectives for 1991 will be provided through the Technical Committee. These guidelines will be used by Canada to optimize escapement opportunities.

Based on the Minister's announcement and the Early Stuart run size update, the current sockeye and pink salmon forecasts and escapement goals for this year are as follows:

.../2

Canada



Attachments for Fraser River Panel minutes dated: August 9, 1991



D R A F T

AGENDA

PACIFIC SALMON COMMISSION

FRASER RIVER PANEL

**August 9, 1991
10:00 a.m.**

**Richmond Inn
Richmond, B.C.**

1. Agenda.
2. Minutes of June 25 and 27, July 5, 8, 9-10, 12 and 15, 1991.
3. Fishery update. J. Woodey
4. Development of regulations. L. Loomis
5. News release. I. Todd
6. Panel fall retreat. I. Todd
7. Other business.
8. Next meeting.



Attachments for Fraser River Panel minutes dated: August 16, 1991

Attachment 1



AGENDA
PACIFIC SALMON COMMISSION
FRASER RIVER PANEL

August 16, 1991
10:00 a.m.

Richmond Inn
Richmond, B.C.

1. Agenda.
2. Minutes of June 25 and 27, July 5, 8, 9-10, 12 and 15, 1991.
3. Spawning ground report.
4. Fishery review.
5. Development of regulations.
6. News release.
7. Other business.
8. Next meeting.

W. Saito

J. Woodey



Attachments for Fraser River Panel minutes dated: August 16, 1991

Attachment 1



AGENDA
PACIFIC SALMON COMMISSION
FRASER RIVER PANEL

August 16, 1991
10:00 a.m.

Richmond Inn
Richmond, B.C.

1. Agenda.
2. Minutes of June 25 and 27, July 5, 8, 9-10, 12 and 15, 1991.
3. Spawning ground report.
4. Fishery review.
5. Development of regulations.
6. News release.
7. Other business.
8. Next meeting.

W. Saito

J. Woodey



Attachments for Fraser River Panel minutes dated: August 23, 1991

Attachment 1



**D R A F T
AGENDA**

PACIFIC SALMON COMMISSION

FRASER RIVER PANEL

**August 23, 1991
9:30 a.m.**

**Richmond Inn
Richmond, B.C.**

1. Agenda.
2. Minutes of June 25 and 27, July 5, 8, 9-10, 12 and 15, 1991.
3. Fishery review. J. Woodey
4. Development of regulations.
5. News release. I. Todd
6. Other business.
7. Next meeting.



Attachments for Fraser River Panel minutes dated: August 30, 1991



**D R A F T
AGENDA**

PACIFIC SALMON COMMISSION

FRASER RIVER PANEL

**August 30, 1991
9:30 a.m.**

**Richmond Inn
Richmond, B.C.**

1. Agenda.
2. Minutes of June 25 and 27, July 5, 8, 9-10, 12 and 15, 1991.
3. Fishery report.
4. Development of regulations.
5. Other business.
6. Next meeting.

J. Woodey

**1991 FRASER RIVER SOCKEYE AND PINK SALMON
IN-SEASON TAC CALCULATIONS**

Using the forecasts, goals and estimates of run sizes, catches and escapements in effect at: 08:20 AM 30-Aug-91.

| | SOCKEYE | | | | | PINK |
|--------------------------------------|------------------|----------------|----------------|------------------|------------------|------------------|
| | Total | Early Stuart | Early Summer | Summer | Late | |
| TOTAL ALLOWABLE CATCH | | | | | | |
| Adult Run Size | 12,050,000 | 550,000 | 1,300,000 | 4,700,000 | 5,500,000 | 13,000,000 |
| Jack Run Size | 50,000 | 0 | 0 | 0 | 50,000 | 0 |
| Total Run Size | 12,100,000 | 550,000 | 1,300,000 | 4,700,000 | 5,550,000 | 13,000,000 |
| Canadian Add-on Benefit | 1,239,000 | 0 | 125,000 | 207,000 | 907,000 | n/a |
| Total Available to Share: | 10,861,000 | 550,000 | 1,175,000 | 4,493,000 | 4,643,000 | 13,000,000 |
| <u>Deductions</u> | | | | | | |
| Adult Escapement | 3,094,000 | 200,000 | 313,500 | 1,062,000 | 1,518,500 | 6,000,000 |
| Jack Escapement | 25,000 | 0 | 0 | 0 | 25,000 | 0 |
| Fraser River IFF Exemption | 400,000 | 82,000 | 62,000 | 212,000 | 44,000 | 0 |
| Test Fishing | 75,000 | 5,000 | 6,000 | 24,000 | 40,000 | 20,000 |
| Total Deductions: | 3,594,000 | 287,000 | 381,500 | 1,298,000 | 1,627,500 | 6,020,000 |
| TAC: | 7,267,000 | 263,000 | 793,500 | 3,195,000 | 3,015,500 | 6,980,000 |
| UNITED STATES (Washington) | | | | | | |
| Initial Allocation | 1,800,000 | 65,000 | 197,000 | 791,000 | 747,000 | 1,795,000 |
| Payback | n/a | n/a | n/a | n/a | n/a | 259,000 |
| SHARE: | 1,800,000 | 65,000 | 197,000 | 791,000 | 747,000 | 2,054,000 |
| % of TAC | 24.8% | | | | | 29.4% |
| <u>Treaty Indian Allocations</u> | | | | | | |
| Areas 4B, 5 and 6C | 90,000 | | | | | |
| Areas 6, 7 and 7A | 710,000 | | | | | |
| Total | 800,000 | | | | | 1,027,000 |
| <u>Non-Indian Allocations</u> | | | | | | |
| Purse Seine | 500,000 | | | | | |
| Gillnet | 450,000 | | | | | |
| Reefnet | 50,000 | | | | | |
| Total | 1,000,000 | | | | | 1,027,000 |
| CANADA | | | | | | |
| TAC - United States Share | 5,467,000 | 198,000 | 596,500 | 2,404,000 | 2,268,500 | 4,926,000 |
| Canadian Add-on Benefit | 1,239,000 | 0 | 125,000 | 207,000 | 907,000 | n/a |
| SHARE: | 6,706,000 | 198,000 | 721,500 | 2,611,000 | 3,175,500 | 4,926,000 |
| <u>Planned Non-Commercial Shares</u> | | | | | | |
| Fraser IFF Above Goal | 400,000 | 118,000 | 72,000 | 128,000 | 82,000 | 100,000 |
| Non-Fraser River IFF | 125,000 | 0 | 4,000 | 54,000 | 67,000 | 0 |
| Sport | 40,000 | 0 | 0 | 0 | 40,000 | 68,000 |
| Other (Charter, etc.) | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 565,000 | 118,000 | 76,000 | 182,000 | 189,000 | 168,000 |
| <u>Commercial Allocations</u> | | | | | | |
| Inside Troll | 177,000 | | | | | 190,000 |
| Outside Troll | 1,074,000 | | | | | 1,380,000 |
| Purse Seine | 3,048,000 | | | | | 2,760,000 |
| Gillnet | 1,842,000 | | | | | 428,000 |
| Total | 6,141,000 | | | | | 4,758,000 |

**1991 FRASER RIVER SOCKEYE SALMON
IN-SEASON CATCH AND ALLOCATION CALCULATIONS**

08:20 AM
30-Aug-91

CANADIAN CATCH

| Areas | Inside Troll | Outside Troll | Purse Seine | Gillnet | Total |
|------------------------------|----------------|------------------|------------------|------------------|------------------|
| 1-10 | 0 | 200,000 | 144,000 | 0 | 344,000 |
| 11-16 | 0 | 0 | 1,995,000 | 478,000 | 2,473,000 |
| 121-127 | 0 | 1,000,000 | 0 | 0 | 1,000,000 |
| 20 | 0 | 0 | 810,000 | 442,000 | 1,252,000 |
| 17, 18, 29 | 155,000 | 0 | 0 | 743,000 | 898,000 |
| TOTAL: | 155,000 | 1,200,000 | 2,949,000 | 1,663,000 | 5,967,000 |
| % of Catch | 2.6% | 20.1% | 49.4% | 27.9% | 100.0% |
| ALLOCATION: | 177,000 | 1,074,000 | 3,048,000 | 1,842,000 | 6,141,000 |
| % of Catch | 2.9% | 17.5% | 49.6% | 30.0% | 100.0% |
| BALANCE TO BE CAUGHT: | 22,000 | (126,000) | 99,000 | 179,000 | 174,000 |
| | <i>13,000</i> | <i>0</i> | <i>57,000</i> | <i>104,000</i> | <i>174,000</i> |

CANADA

UNITED STATES CATCH

| TREATY INDIAN | | | | | |
|------------------------------|----------------|----------------|-----------------|------------------|----------------|
| Areas | Ceremonial | Purse Seine | Gillnet | Other | Total |
| 4B, 5 and 6C TOTAL: | 100 | 0 | 93,000 | 0 | 93,100 |
| ALLOCATION: | | | | | 90,000 |
| BALANCE TO BE CAUGHT: | | | | | (3,100) |
| 6, 7 and 7A TOTAL: | 500 | 195,000 | 386,000 | 0 | 581,500 |
| ALLOCATION: | | | | | 710,000 |
| BALANCE TO BE CAUGHT: | | | | | 128,500 |
| NON-INDIAN | | | | | |
| Areas | Purse Seine | Gillnet | Reefnet | Total | |
| 4B, 5 and 6C | 0 | 6,000 | 0 | 6,000 | |
| 6, 7 and 7A | 462,000 | 377,000 | 47,000 | 886,000 | |
| TOTAL: | 462,000 | 383,000 | 47,000 | 892,000 | |
| % of Catch | 51.8% | 42.9% | 5.3% | 100.0% | |
| ALLOCATION: | 500,000 | 450,000 | 50,000 | 1,000,000 | |
| % of Catch | 50.0% | 45.0% | 5.0% | 100.0% | |
| BALANCE TO BE CAUGHT: | 38,000 | 67,000 | 3,000 | 108,000 | |
| UNITED STATES TOTAL * | | | | | |
| | Treaty Indian | Non-Indian | Washington | Alaska | Total |
| TOTAL: | 675,000 | 892,000 | 1,567,000 | 0 | 1,567,000 |
| CATCH GOAL: | 800,000 | 1,000,000 | 1,800,000 | | |
| BALANCE TO BE CAUGHT: | 125,000 | 108,000 | 233,000 | | |
| | Early Stuart | Early Summer | Summer | Late | Total |
| TOTAL: | 39,000 | 168,000 | 839,000 | 520,000 | 1,566,000 |
| CATCH GOAL: | 65,000 | 197,000 | 791,000 | 747,000 | 1,800,000 |
| BALANCE TO BE CAUGHT: | 26,000 | 29,000 | (48,000) | 227,000 | 234,000 |

T.I. 4B,5,6C

T.I. 6,7,7A

N.-I. WASH

U.S.

* The total United States catch by user-group and area may not match the total catch by stock-group because of differences in when the analyses are available. The former estimate is usually the more accurate in-season.

**1991 FRASER RIVER PINK SALMON
 IN-SEASON CATCH AND ALLOCATION CALCULATIONS**

08:20 AM
 30-Aug-91

CANADIAN CATCH

| Areas | Inside Troll | Outside Troll | Purse Seine | Gillnet | Total |
|------------------------------|----------------|------------------|------------------|----------------|------------------|
| 1-10 | 0 | 361,000 | 50,000 | 200 | 411,200 |
| 11-16 | 90,000 | 0 | 1,936,000 | 132,000 | 2,158,000 |
| 121-127 | 0 | 555,000 | 0 | 0 | 555,000 |
| 20 | 0 | 0 | 813,000 | 48,000 | 861,000 |
| 17, 18, 29 | 77,000 | 0 | 0 | 22,000 | 99,000 |
| TOTAL: | 167,000 | 916,000 | 2,799,000 | 202,200 | 4,084,200 |
| % of Catch | 4.1% | 22.4% | 68.5% | 5.0% | 100.0% |
| ALLOCATION: | 190,000 | 1,380,000 | 2,760,000 | 428,000 | 4,758,000 |
| % of Catch | 4.0% | 29.0% | 58.0% | 9.0% | 100.0% |
| BALANCE TO BE CAUGHT: | 23,000 | 464,000 | (39,000) | 226,000 | 674,000 |

CANADA

UNITED STATES CATCH

| TREATY INDIAN | | | | | |
|------------------------------|-------------|---------------|---------------|-------------|------------------|
| Areas | Ceremonial | Purse Seine | Gillnet | Other | Total |
| 4B, 5 and 6C | 0 | 0 | 11,000 | 0 | 11,000 |
| 6, 7 and 7A | 0 | 31,000 | 21,000 | 0 | 52,000 |
| TOTAL: | 0 | 31,000 | 32,000 | 0 | 63,000 |
| % of Catch | 0.0% | 49.2% | 50.8% | 0.0% | 100.0% |
| GOAL: | | | | | 1,027,000 |
| BALANCE TO BE CAUGHT: | | | | | 964,000 |

T.I. WASH.

| NON-INDIAN | | | | | |
|------------------------------|-----------------------|----------------|---------------|--------------|------------------|
| Areas | Ocean Troll and Sport | Purse Seine | Gillnet | Reefnet | Total |
| 3 and 4 | 31,000 | 0 | 0 | 0 | 31,000 |
| 4B, 5 and 6C | 0 | 0 | 2,000 | 0 | 2,000 |
| 6, 7 and 7A | 0 | 166,000 | 25,000 | 8,000 | 199,000 |
| TOTAL: | 31,000 | 166,000 | 27,000 | 8,000 | 232,000 |
| % of Catch | 13.4% | 71.6% | 11.6% | 3.4% | 100.0% |
| GOAL: | | | | | 1,027,000 |
| BALANCE TO BE CAUGHT: | | | | | 795,000 |

N.-I. WASH

| UNITED STATES TOTAL | | | | | |
|------------------------------|---------------|------------|------------|--------|---------|
| | Treaty Indian | Non-Indian | Washington | Alaska | Total |
| TOTAL: | 63,000 | 232,000 | 295,000 | 0 | 295,000 |
| CATCH GOAL: | 1,027,000 | 1,027,000 | 2,054,000 | | |
| BALANCE TO BE CAUGHT: | 964,000 | 795,000 | 1,759,000 | | |

U.S.

**1991 SOUTHERLY MIGRATING PINK SALMON
 IN-SEASON CATCH AND ALLOCATION CALCULATIONS**

08:27 AM
 30-Aug-91

CANADIAN CATCH

| <u>Areas</u> | <u>Inside Troll</u> | <u>Outside Troll</u> | <u>Purse Seine</u> | <u>Gillnet</u> | <u>Total</u> |
|------------------------------|-------------------------|--------------------------|--------------------|----------------|------------------|
| 1-10 | 0 | 494,000 | 110,000 | 3,000 | 607,000 |
| 11-16 | 123,000 | 0 | 2,611,000 | 184,000 | 2,918,000 |
| 121-127 | 0 | 738,000 | 0 | 0 | 738,000 |
| 20 | 0 | 0 | 1,115,000 | 73,000 | 1,188,000 |
| 17, 18, 29 | 77,000 | 0 | 0 | 22,000 | 99,000 |
| TOTAL: | 200,000 | 1,232,000 | 3,836,000 | 282,000 | 5,550,000 |
| % of Catch | 3.6% | 22.2% | 69.1% | 5.1% | 100.0% |
| ALLOCATION: | 250,000 | 1,815,000 | 3,630,000 | 563,000 | 6,258,000 |
| % of Catch | 4.0% | 29.0% | 58.0% | 9.0% | 100.0% |
| BALANCE TO BE CAUGHT: | 50,000 | 583,000 | (206,000) | 281,000 | 708,000 |

CANADA



Attachments for Fraser River Panel minutes dated: September 16, 1991

U.S. Commissioners

Joe Blum
Don Collinsworth
David Colson
Guy McMinds

**UNITED STATES SECTION
of the
PACIFIC SALMON COMMISSION**

**Office of the
U.S. Section Coordinator**
7600 Sand Point Way N.E.
Building 1, F/NWRx2
Seattle, WA 98115

RECEIVED

SEP 16 1991
PACIFIC SALMON
COMMISSION

September 16, 1991

U.S. STATEMENT ON 1991 FRASER PINK ALLOCATION STATUS

The U.S. believes that Canada has allowed domestic management considerations to reduce the U.S. share of Fraser pinks in 1991. Canada has chosen to not conduct fisheries that are necessary to harvest the full Canadian share of the Fraser pink run. The effect of that choice will be to pass those unharvested fish to the spawning escapement. The February 1991 Panel agreement on escapement goals and TAC stipulates that TAC is calculated on the basis of actual escapement, and not the goal. Therefore, the U.S. members of the Fraser Panel have no choice but to schedule remaining U.S. pink fisheries based on projected escapements resulting from the lack of Canadian fisheries, and not on the escapement goal established by Canada. The U.S. strongly objects to this manipulation of the U.S. share, since international allocation takes precedence over domestic allocation considerations.

The U.S. members of the Fraser Panel intend to raise this issue during the next round of Commission meetings, along with Canada's decision to raise the pink escapement goal above the level defined in the treaty background documents, and above levels that were discussed with the U.S. pre-season.

Lorraine Loomis
U.S. Fraser Panel Chair

Please include the above statement in the minutes of the Bilateral Fraser Panel teleconference which began at 11:10 on this date; Monday, September 16, 1991.



Attachments for Fraser River Panel minutes dated: September 17, 1991

71001



Fisheries
and Oceans

Pêches
et Océans

Attachment 1

Pacific Region
Suite 400 - 555 West Hastings St.
Vancouver, B.C.
V6B 5G3

Région du Pacifique
Pièce 400 - 555 rue Hastings ouest
Vancouver (C.-B.)
V6B 5G3

RECEIVED

Your file / Votre référence

Our file / Notre référence

SEP 23 1991

**PACIFIC SALMON
COMMISSION**

1110-F24

17 September 1991

**FRASER PANEL
CANADIAN POSITION STATEMENT OF RECORD
SEPTEMBER 17, 1991**

Canada accepts the Staff recommendation to maintain the Fraser River Pink Salmon run size estimate at 17.0 million. As a consequence, an overall TAC of 9.980 million exists on the basis of a 7.0 million spawner escapement goal.

On this basis a TAC of 9.812 million for commercial fisheries would be shared along the following lines:

| | | |
|-----------------------------|---|-----------------------------|
| U.S. Share | = | 2.841 (incl. payback) |
| Cdn. Share | = | <u>6.971</u> |
| TOTAL COMMERCIAL TAC | | <u>9.812</u> Million |

On the basis of catches to-date the uncaught balances remaining for each country are approximately:

| | | |
|--------------|---|-----------------------------|
| U.S. | = | 0.078 |
| Cdn. | = | <u>1.103</u> |
| TOTAL | | <u>1.181</u> Million |

In view of the concern expressed in the "US Statement on 1991 Fraser Pink Allocation Status" on September 16, 1991 about possible foregone opportunities because of the existence of the February 8, 1991 Bilateral Panel agreement entitled "The Establishment of Fraser Sockeye and Pink Escapement Goals for 1991 and 1992 For the Purpose of Computing the Total Allowable Catch", Canada is prepared, on a one-time only basis, and without prejudice to future TAC calculations, to agree to U.S. fisheries to the extent necessary to catch 78,000 Fraser bound Pink salmon. The catch of these fish by U.S. fishermen would not be affected by the final determination of TAC and run size, and regardless of that outcome, payback would not be incurred as a result of this single management action to catch 78,000 Fraser River Pink salmon.

In the event that the actual pink run size is calculated to be below 17.0 million, then the catch balance adjustment procedure will be applied as has occurred in previous years in similar circumstances.

Canada

Handwritten initials

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000230



PACIFIC SALMON COMMISSION

ESTABLISHED BY TREATY BETWEEN CANADA
AND THE UNITED STATES OF AMERICA
MARCH 18, 1985

600 - 1155 ROBSON STREET
VANCOUVER, B.C. V6E 1B5
TELEPHONE: (604) 684-8081
FAX: (604) 666-8707

Our File: 11252
x 72804

TO: *E. West*

Your File:

002614 JAN 29 12:07

January 28, 1992

**MEMO
FISHERIES & OCEANS
FISHERIES PACIFIC**

To: Transboundary Technical Committee
Enhancement Subcommittee of the Transboundary T.C.

1110-P9

From: Vicki Beck

Re: Notice of Meeting and Agenda

This notice will remind you of a meeting of the Transboundary Technical Committee scheduled to start at 9:00 a.m. on February 26th and continue into February 27th at the offices of the Pacific Salmon Commission. Attached is the proposed agenda which Robin Harrison requested the Commission distribute.

Guest room reservations have been made at the Pacific Palisades Hotel, 1277 Robson Street, telephone (604) 688-0461, at the rate of \$69.00 per night plus taxes, as follows:

| | | | | |
|--------|---|------------------|---|------------------|
| Canada | - | Robin Harrison | - | No Room Required |
| | - | Pat Milligan | - | Feb. 25, 26 & 27 |
| | - | Pete Etherton | - | Feb. 25, 26 & 27 |
| | - | Bruce Morley | - | Feb. 26 |
| U.S. | - | Ken Leon | - | Feb. 25 & 26 |
| | - | Norma Jean Sands | - | " |
| | - | John Eiler | - | " |
| | - | William Bergmann | - | " |
| | - | Andy McGregor | - | " |
| | - | Kathleen Jensen | - | " |
| | - | Keith Pahlke | - | " |
| | - | Jim Olsen | - | " |
| | - | Brian Lynch | - | " |

Remember all rooms are on a 6:00 p.m. hold unless you notify me or the hotel of your personal credit card number to guarantee for late arrival. See you soon!

Vicki Beck
Meeting Co-ordinator

Transboundary Technical Committee Meeting

Offices of the Pacific Salmon Commission

9:00 a.m.
February 26-27, 1992

Proposed Agenda

1. Approval of October 1991 meeting minutes.
2. Alsek River 1992 Management Projects
 - Klukshu weir and sampling
 - aerial escapement surveys
 - U.S. fishery management model
3. Taku River 1992 Management Projects
 - Canyon Island tagging
 - escapement weirs
 - coho test fishery
 - fishery sampling
 - Tatsamie coho CWT
 - coho and chinook CWT on U.S. side of border
 - coho radio tagging
 - steelhead radio tagging
4. Stikine River 1992 Management Projects
 - test fishing
 - fishery sampling
 - Tahltan Lake weir (sockeye adults)
 - aerial escapement surveys
 - fishery models
 - Tahltan smolt enumeration
 - radio tagging feasibility work (1993)
5. Enhancement
 - egg takes
 - Snettisham Hatchery modifications and operation
 - enhancement evaluation - observations to date
 - proposed 1992 lake studies
 - thermal marking and otolith processing
 - Tuya Lake update