

Pacific
Salmon
Commission



1997/98
Thirteenth Annual
Report

Pacific Salmon Commission

**Established by Treaty between Canada
and the United States March 18, 1985**

for the

**conservation, management and
optimum production of Pacific salmon**

Thirteenth Annual Report 1997/98

**Vancouver, B.C.
Canada**

May 1998



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:

Your File:

Letter of Transmittal

In compliance with Article II, Paragraph 14 of the Treaty between the Government of Canada and the Government of the United States of America concerning Pacific salmon, it is my pleasure as Chair of the Pacific Salmon Commission to present my compliments to the Parties and to transmit herewith the Thirteenth Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 1997 to March 31, 1998.

Reports on the results of the 1997 fishing season presented by the Parties and on meetings of the Commission and the Standing Committee on Finance and Administration are presented in summary. Executive summaries of documents prepared by Pacific Salmon Commission staff and the joint technical committees during the period covered by this report are also presented.

The Auditors' report on financial activities of the Commission during the fiscal year April 1, 1997 to March 31, 1998, as approved by the Commission, is also included in this report.

Discussion by the Commission on fishery regimes for 1998 and beyond were limited during the 1997/98 meeting cycle. The Parties first appointed Dr. David Strangway (Canada) and Mr. William Ruckelshaus (United States) to determine whether or not the stakeholders process could or should be reinstated. They recommended, instead, that negotiations be conducted at the government-to-government level with the objective of reaching a two-year agreement on interim fishing measures. As at May 31, 1998 these efforts have not produced agreement on fishing arrangements for 1998.

Yours truly,

J. Pipkin
Chair

PACIFIC SALMON COMMISSION

OFFICERS for 1997/98

Chair	Mr. Patrick S. Chamut (to December 3, 1997) Mr. James Pipkin (from December 3, 1997)
Vice-Chair	Mr. David Benton (to December 3, 1997) Mr. Patrick S. Chamut (from December 3, 1997)

COMMISSIONERS

United States

Mr. James Pipkin (Chair)
Mr. David Benton
Mr. Curt Smitch (from August 4, 1997)
Mr. Robert Turner (to August 4, 1997)
Mr. W. Ron Allen
Mr. Jev Shelton
Mr. Rollie Rousseau
Mr. Larry Rutter (from January 15, 1998)
Mr. Ted Strong
Mr. Rollie Schmitten (to January 15, 1998)

Canada

Mr. Patrick S. Chamut (Vice-Chair)
Mr. Dennis Brown
Mr. Gerry Kristianson (from December 3, 1997)
Mr. Robert Wright (to November 25, 1997)
Mr. C.C. (Bud) Graham
Mr. Hubert Haldane
Mr. Michael Hunter
Mr. Bill Valentine

SECRETARIAT STAFF

Executive Secretary
Administrative Officer
Chief Biologist

Mr. Ian Todd
Mr. Ken Medlock
Dr. Jim C. Woodey

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INTRODUCTION

Interception of Pacific salmon bound for rivers of one country in fisheries of the other has been the subject of discussion between the Governments of Canada and the United States of America since the early part of this century. Intercepting fisheries were identified through research conducted by the two countries on species and stocks originating from Alaska, British Columbia, Washington and Oregon. The results of this research identified that Alaskan fishers were catching salmon bound for British Columbia, Oregon and Washington. Canadian fishers off the West Coast of Vancouver Island were capturing salmon bound for rivers of Washington and Oregon. Fishers in northern British Columbia were intercepting salmon returning to Alaska, Washington and Oregon, and United States fishers were catching Fraser River salmon as they travelled through the Strait of Juan de Fuca and the San Juan Islands towards the Fraser River.

Management of stocks subject to interception became a matter of common concern to both Canada and the United States. A mechanism to enable the countries to reap the benefits of their respective management and enhancement efforts was required. That mechanism is now provided through the Pacific Salmon Treaty, which entered into force upon the exchange of instruments of ratification by the President of the United States of America and the Prime Minister of Canada on March 18, 1985.

The Pacific Salmon Commission, guided by principles and provisions of the Treaty, establishes general fishery management regimes for international conservation and harvest sharing of intermingling salmon stocks. Each country retains jurisdictional management authority but must manage its fisheries in a manner consistent with the provisions of the Treaty. Implementation of the principles of the Treaty should enable the United States and Canada, through better conservation and enhancement, to prevent overfishing, increase production of salmon, and ensure that each country receives benefits equivalent to its own production. The Commission also serves as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The organizational structure of the Commission is focused on three geographically oriented panels. The Northern Panel's stocks of concern are those which originate in rivers situated between Cape Suckling in Alaska and Cape Caution in British Columbia, including the transboundary rivers. The Southern Panel's stocks of concern are those which originate in rivers located south of Cape Caution, other than Fraser River sockeye and pink salmon. The Fraser River Panel has special regulatory responsibilities for stocks of sockeye and pink salmon originating from the Fraser River.

The functions of panels are to review annual post-season reports, annual pre-season fishing plans, and ongoing and planned salmonid enhancement programs of each country and to provide recommendations to the Commission for development of annual fishery regimes in accordance with the objectives of the Treaty. These plans, once adopted by the Commission and the governments, are implemented by the management agencies in each country.

The Fraser River Panel, in addition, has been accorded special responsibility for in-season regulation of Fraser River sockeye and pink fisheries of Canada and the United States in southern British Columbia and northern Puget Sound, in an area designated as Fraser River Panel Area Waters. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

Negotiations designed to lead to agreed fishery regimes for 1997 were conducted by stakeholder

groups at several meetings during the period February through May 1997. These groups, while recording some progress, were unable to reach agreement and a final effort was made at the government-to-government level in June 1997 without success, and the stakeholders process was thereupon terminated. Consequently, no agreed regimes were established for the 1997 fishing season.

Subsequently, the Parties appointed two eminent personages, Dr. David Strangway (Canada) and Special Ambassador William Ruckelshaus (United States), to determine whether or not the stakeholder process should or could be reinstated. Their report was presented to the Prime Minister of Canada and the President of the United States on January 12, 1998 and discussed with the Commission on January 12, 1998.

Implementation of their recommendations (Appendix A), as of May 31, 1998, has not led to conclusion of interim fishing arrangements for 1998.

For the purpose of continuity with past Annual Reports, the last fully negotiated Annex IV from 1991 is included here as Appendix B.

The Commission meets at least once annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 1997 to March 31, 1998, the Commission met on three occasions:

1. Commission Executive Session
December 2-4, 1997 - Vancouver, B.C.
2. Post-Season Meeting of the Commission and Panels
January 12-16, 1998 – Seattle, Washington
3. Thirteenth Annual Meeting of the Commission
February 9-13, 1998 – Vancouver, B.C.

This, the Thirteenth Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its thirteenth fiscal year of operation, April 1, 1997 to March 31, 1998.

Activities of the Commission

PART I

ACTIVITIES OF THE COMMISSION

A. EXECUTIVE SESSION OF THE PACIFIC SALMON COMMISSION

December 2-4, 1997 – Vancouver, B.C.

The Commission met once in executive session during this meeting. The United States' and Canada's post-season fishery reports were exchanged. Detailed comments and questions concerning the conduct of fisheries during 1997 in the absence of agreed regimes were expressed by both sections.

The office of the Chair of the Commission was transferred to Mr. J. Pipkin of the United States and Mr. P.S. Chamut from Canada was appointed Vice-Chair. A consolidated list of most officers for 1997/98 was exchanged (Appendix C).

Draft terms of reference for an Ad Hoc Okanagan Basin Technical Working Group were reviewed but not finalized. The drafting group was instructed to try to resolve differences by the January 1998 meeting.

The Commission discussed the status of the Joint Interceptions Committee's assignment to update its report, particularly in the context of stakeholders potential requirements for scientific advice to facilitate their work. The Commission agreed that joint technical committees should be asked to list the work required and develop work plans to accomplish those tasks.

The Commission received a report from the Ad Hoc Selective Fishing Evaluation Committee on the Parties' plans for mass marking and selective fisheries and on 1997 field studies. The Ad Hoc Committee recommended, among other things, that the Commission formalize a Selective Fishery Evaluation Committee and adopt its proposed terms of reference.

In regard to the development of an agenda for the January 12-16, 1998 meeting, the Commission agreed that the outcome of the stakeholders' discussions will determine its shape. Items that will be included regardless are: receipt of the report of the Standing Committee on Finance and Administration, report on Technical Committees assignments, and a review by the Panels of the 1997 fishing season.

B. MEETING OF THE COMMISSION AND PANELS

January 12-16, 1998 – Seattle, Washington

The Commission met twice in bilateral executive session during this meeting. The first session consisted of a discussion with Messrs. Strangway and Ruckelshaus about their report and recommendations to the Prime Minister of Canada and the President of the United States on approaches to lead to resolution of short term fishery regimes and long term implementation of key Treaty principles. Recommendations presented by the special envoys are included as Appendix A to this report.

During the second sitting in bilateral executive session the Commission received and reviewed the report of the Standing Committee on Finance and Administration, and adopted its report which included the budget for FY 1998/99 (Appendix D).

The Commission again noted that terms of reference for the proposed Ad Hoc Okanagan Basin Technical Working Group were not agreed, and deferred final decision to the February meeting.

The Commission reviewed draft terms of reference for the Selective Fishery Evaluation Committee, its assignments and its proposed work plan. Adoption of the terms of reference was deferred until the February meeting, but the Committee was authorized to continue work on assignments during the intervening period.

The Commission discussed technical committees assignments in relation to a proposal to update the report of the Joint Interceptions Committee. Differences of approach between the two Parties remained unresolved.

C. THIRTEENTH ANNUAL MEETING OF THE COMMISSION

February 9-13, 1998 – Vancouver, B.C.

1. Executive Session

The Commission met once in bilateral executive session during the Thirteenth Annual Meeting. Items discussed and actions taken were:

- a) The Commission agreed to discontinue attempts to establish terms of reference for an Ad Hoc Okanagan Basin Technical Working Group.
- b) The Commission adopted terms of reference for the Selective Fishery Evaluation Committee (Appendix E).
- c) Canada tabled its 1997 Salmonid Enhancement Update Report.

The Commission entered into an off-the-record review of chinook position papers that had been exchanged between the Parties. No further bilateral discussions occurred during this meeting.

Activities of the Standing Committees

PART II

ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

1. Committee Activities

(a) Meeting of December 4, 1997 - Vancouver, B.C.

The Committee met on December 4, 1997 to consider a range of financial and administrative issues. The Committee's deliberations were focused primarily on a review of the Commission's current financial status, budget proposals for FY 1998/99, and a budget forecast for FY 1999/2000.

The financial review and projections prepared by staff for the current fiscal year indicates that expenditure by the end of March 1998 will be approximately \$124,000 lower than budgeted. This situation will occur primarily as a result of lower than forecast personnel salaries and secondary benefits costs. Net revenue from the Commission's test-fishing program will be at an all time low of approximately \$30,000. These two totals, when added to the approved reserve of \$328,000 brings the forecast grand total unencumbered balance to approximately \$488,000 for carry over into FY 1998/99.

The Committee recommend that these funds be carried over for application against program costs in FY 1998/99.

The Committee reviewed the budget proposed by staff for FY 1998/99. The assumptions staff has used to develop this budget include the expectation that the Secretariat will provide service to the Commission and the Fraser River Panel as has been done in the past, and that the Parties will provide base contributions at \$800,000 (\$Can) each. Application of the forecast operating balance from FY 1997/98 against program costs for FY1998/99 would result in a projected unencumbered operating balance of approximately \$38,000 at the end of FY 1998/99.

The Committee wishes to note that the budget proposal for FY 1998/99 does not contain any provision for Secretariat support of a "stakeholders" process, if such is agreed to by the Parties. The Committee also wishes to note that costs to the Secretariat of supporting meetings of the stakeholders during the current fiscal year totalled approximately \$43,000. Representatives of the Parties have agreed to investigate ways of reimbursing the Secretariat for these unexpectedly high and unbudgeted costs.

The Committee recommended adoption of the proposed budget for FY 1998/99 as detailed in Appendix D.

The Committee reviewed staff's budget forecast for FY 1999/2000. The Committee notes with great concern that staff has forecast a funding shortfall of approximately \$665,000 if contributions are maintained at the \$800,000 level from each Party. While there are some adjustments that could be made to the staff's program elements, it appears highly unlikely that those by themselves will offset a short fall of such major proportions. Similarly, it is considered highly unlikely that the test-fishing program in 1998 will contribute significantly to the unencumbered balance currently forecast by staff. The Committee is encouraged that representatives of the Parties have agreed to explore the possibility of increasing core funding.

The Committee will review this situation in June, 1998 upon receipt of a final report from the Secretariat on current year operations, and will inform the Commission of its views at that time.

The Committee also reviewed a proposal by staff to adjust the Commission's long standing policy of complete separation from the affairs of the IPSFC (International Pacific Salmon Fisheries Commission). Changes which are occurring in the International Fisheries Commissions Pension Society will require each Commission to bear its own costs of administering the Society's benefit plans. Costs of administration for IPSFC pensioners will be approximately \$750 per annum. In addition the PSC has been paying the employer's share of B.C. medical insurance coverage on behalf of the IPSFC pensioners totalling approximately \$4,000 per year. These charges should be the direct responsibility of the two governments if the existing PSC policy was being adhered to strictly. The Committee has taken this question under advisement and will provide its recommendations to the Commission at a later date.

The Commission, at its January 14, 1998 executive session, adopted the recommendations of the Standing Committee on Finance and Administration.

2. Secretariat Staffing Activities

Dr. Yunbo Xie was appointed as a Research Scientist (continuing) on May 1, 1997 in charge of hydroacoustic research at Mission.

Mr. Andrew Gray was appointed as a hydroacoustic biologist (temporary) effective June 24, 1997.

A list of Secretariat staff employees as of March 31, 1998 is presented in Appendix F.

An updated membership list for panels, standing committees, joint technical committees and ad hoc working groups as of March 31, 1998 is presented in Appendix G.

B. MEETINGS OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS

The Standing Committee on Research and Statistics did not meet during the fiscal year 1997/98.

Activities of the Panels

PART III

ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

In the absence of an agreed fishery regime for 1997 the Panel was unable to carry out its in-season fishery management responsibilities. Commission staff conducted its regular in-season assessment programs and reported results to fishery managers in both countries.

The Panel met in bilateral session during the January 1998 meeting of the Commission, and again during the February 1998 meeting, to review the results of the 1997 fishing season and receive reports from Canada on spawning escapements. The Panel also agreed to conduct a further post-season review (held May 7 and 8, 1998) after thorough technical analyses had been completed by Commission staff.

B. NORTHERN PANEL

The Northern Panel met in bilateral session to review the conduct of 1997 fisheries. No negotiations for future fishery regimes occurred at the Panel level.

C. SOUTHERN PANEL

The Southern Panel met in bilateral session to review the conduct of fisheries in 1997. No negotiations for future fishery regimes occurred at the Panel level.

Review of 1997 Fisheries and Treaty-Related Performance

PART IV

REVIEW OF 1997 FISHERIES AND TREATY-RELATED PERFORMANCE

The following review has been drawn from a number of reports prepared by Commission staff, joint technical committees, and domestic agencies for presentation to the Commission. Source documents are referenced for each part of this review. All figures are preliminary and will be updated in future reports as more complete tabulations become available.

A. FRASER RIVER SOCKEYE AND PINK SALMON

Canada and the United States did not agree on a catch sharing arrangement for Fraser River sockeye salmon, so each Party managed its own fisheries in the Panel Area in 1997. Consequently, the Fraser River Panel did not establish pre-season regulations and a management plan, did not manage the sockeye fisheries in the Fraser River Panel Area, and was not responsible for achieving catch allocation and escapement goals. The Parties agreed that PSC staff would conduct normal in-season run size assessment, catch assessment, test fishing, racial analysis and hydroacoustic activities. PSC staff reported the results of their assessments to the national sections of the Panel frequently during the season. The two sections developed domestic regulations and exchanged information on fishing plans.

Pre-season forecasts provided by Canada were for total runs of 18,230,000 Fraser sockeye and 11,387,000 Fraser pink salmon. Corresponding spawning escapement goals were 4,072,000 adult sockeye and 6,000,000 pink salmon.

The 1997 season was marked by unprecedented migration behaviour of all Fraser sockeye runs. A strong El Nino produced record coastal sea surface temperatures and brought sub-tropical fish species into coastal B.C. waters, e.g., ocean sun fish, mackerel and pilchards. The sockeye migration was characterized by an extreme northern landfall, very high Johnstone Strait diversion rates and late and extended timing. The fish themselves were among the smallest on record. Early Stuart and Early Summer sockeye that entered the river in mid-July were blocked in the Fraser Canyon by high river discharges. Many of these fish entered non-natal tributaries from Hope, B.C., to near the spawning grounds. A record en-route mortality of Early Stuart sockeye (681,000) resulted. Summer-run and some Late-run sockeye arrived later than normal and in very extended migrations. Fish arriving in the latter part of the migration were already sexually mature in coastal waters. Some of these fish spawned in tributaries entering Johnstone Strait, the Strait of Georgia and, to a lesser extent, in streams tributary to the west coast of Vancouver Island. Late-timed Summer-run sockeye also spawned in non-natal streams within the Fraser such as Weaver Creek.

Post-season estimates of actual run sizes were 16,427,000 adult sockeye and 8,197,000 pink salmon. This sockeye return was 1,802,000 less than forecast, but was the third largest on the 1997 cycle since 1913. The pink return was 3,190,000 less than forecast and the third smallest since 1977.

Catches of Fraser River sockeye salmon totalled 11,453,000 fish in all fisheries. Canadian catches amounted to 9,724,000 fish, of which 8,435,000 were caught in commercial fisheries, 1,196,000 in First Nations fisheries and 93,000 in recreational and charter fisheries. United States fishers caught 1,584,000 Fraser sockeye, 1,337,000 in Washington and 247,000 in Alaska fisheries. Catches in test fisheries authorized by the Fraser River Panel totalled 142,000 sockeye.

Catches of Fraser River pink salmon in all fisheries totalled 5,319,000 fish. The Canadian catch of 3,727,000 fish comprised 3,569,000 caught in commercial fisheries and 39,000 and 119,000 caught in the First Nations and recreational fisheries, respectively. United States fishers caught 1,560,000 Fraser pink salmon, with 1,546,000 caught in the commercial fisheries and 14,000 taken in recreational catches. Test fishing catches of Fraser pink salmon in fisheries approved by the Fraser River Panel totalled 32,000 fish.

The Stock Monitoring program provided in-season assessments of abundance, run timing and Johnstone Strait diversion rate of Fraser River sockeye stocks throughout the fishing season. Early Stuart and Summer-run sockeye abundances were initially underestimated, in part due to the extended nature of the runs. In-season over-estimation of Late-run sockeye abundance was traced post-season to elevated harvest rates in migratory area fisheries. Arrival timing was seven and twelve days later than normal for Early Stuart and Summer-run stocks, respectively, while Late-run stocks were approximately four days later than normal. Johnstone Strait diversion rates for the 1997 season were estimated to total 77% for Fraser sockeye and 57% for Fraser pinks.

The Racial Analysis program used discriminant function analysis (DFA) of scale patterns to provide estimates of stock proportions in commercial and test fishing catches. A post-season review of the accuracy of DFA models found that in-season models overestimated the proportions of Fennell/Bowron and Birkenhead because of misclassifications from other stock groups. As a result, post-season catch and Mission escapement estimates are substantially lower than in-season estimates for these two stock groups. In contrast, in-season models underestimated the proportions of the Early Stuart and Late Stuart/Stellako stock groups.

Genetic stock identification (GSA) techniques were used to identify the proportion of Fraser River pink salmon in mixed-stock fisheries where fish from this stock group were believed to be present.

Current estimates of gross escapements are 1,310,000 Early Stuart, 181,000 Early Summer, 4,518,000 Summer and 106,000 Late-run sockeye, for a total of 6,115,000 adults. Included in these totals are estimates of 681,000 Early Stuart and 48,000 Early Summer sockeye that died en-route due to a combination of late arrival timing, small body size and difficult passage conditions in the Fraser Canyon. Pink salmon gross escapements totalled 2,907,000.

Spawning escapements to streams in the Fraser River watershed totalled 4,252,000 adult sockeye and 2,878,000 pink salmon. Declines from brood year levels were observed in the Early Stuart, Summer-run and Late-run stock groups. The decline in the Late-run sockeye escapement was associated with the overestimation of run size and with high catch rates on fish that entered the lower Fraser River in August.

(Source Document) *Draft Report of the Fraser River Panel to the Pacific Salmon Commission on the 1997 Fraser River Sockeye Salmon Fishing Season.* PSC Staff. June 1998.

B. PRELIMINARY 1997 POST-SEASON REPORT FOR UNITED STATES FISHERIES OF RELEVANCE TO THE PACIFIC SALMON TREATY

Northern Boundary Area Fisheries

District 104 Purse Seine Fishery

For the 1997 purse seine fishing season, no formal agreement had been reached with Canada on

the conduct of the District 104 fishery. The management intent was to allow Alaska the opportunity to harvest domestic stocks, to allow for standard fishing periods, to distribute the fishing fleet, and to coordinate purse seine fishing opportunities throughout Southeast Alaska.

In order to achieve these objectives, openings in District 104 were based on the observed run strength of southern Southeast pink salmon and the number of vessels fishing in the district. For the 1997 season fishing time allowed in the district would not exceed the amount of fishing time allowed in District 101, and to the extent possible conform to the 1985-96 average hours fished in District 104 prior to Statistical Week 31.

In 1997 there were three weeks of fishing prior to Statistical Week 31. By State of Alaska regulation, the District 104 purse seine season began on July 6 (Statistical Week 28) with a 15-hour opening. During this opening 65 boats harvested 137,900 pink, 72,400 sockeye, 47,700 chum, and 3,900 coho salmon. A second opening of 15 hours was allowed on July 9 and 78 boats harvested 220,900 pink, 130,000 sockeye, 94,700 chum and 6,100 coho salmon.

Although pink salmon Catch Per Unit of Effort (CPUE) and early season pink salmon escapement were at high levels, the department felt that the high catches of pink, sockeye, and chum salmon would increase the effort in the district beyond what was needed at that time of the season. Therefore, during the first opening of Statistical Week 29 the fishing time was reduced to 8 hours in District 104, while inside districts were open for 15 hours. During that opening on July 13, 114 boats harvested 181,500 pink, 88,900 chum, 73,300 sockeye, and 1,600 coho salmon.

Management continued to discourage seine effort in District 104 for the remainder of the time prior to Statistical Week 31. Six-hour openings were allowed in District 104 on July 16, 20, and 21, while inside districts were open for 15 hours on July 16, 39 hours on July 20-21, and 15 hours on July 24. During these openings in District 104, a total of 1,136,000 pink, 297,000 sockeye, 242,000 chum, and 10,000 coho salmon were caught. Effort ranged from a low of 61 boats on July 20 to a high of 137 purse seine boats on July 21. The District 104 purse seine fishery did not open on July 24, the date of the last general seine opening in Statistical Week 30.

Thus, in 1997, in District 104 pre-Statistical Week 31, 1,676,000 pink, 573,000 sockeye, 473,000 chum and 21,000 coho were harvested. District 104 was opened a total of 56 hours in Weeks 28-30 compared to the 1985-1996 average of 63 hours. District 101 was opened for 114 hours during this pre-Week 31 period in 1997.

By late July pink salmon returns to the inside waters of southern Southeast Alaska were not as strong in some areas as in recent years. In order to pass fish into the inside waters, and into the escapement, District 104 was only opened for two fifteen-hour periods in Statistical Week 31. The inside waters were opened for a fifteen and a thirty-nine hour opening. During these two 15-hour openings in District 104, 1,611,000 pink, 253,000 sockeye, 106,000 chum, 17,000 coho were harvested. On the Monday, July 28 opening 172 boats fished and on the Friday, August 1 opening 146 purse seine vessels fished in the district.

During the initial 39-hour opening in Statistical Week 32 the majority of purse seine boats in the region did not fish due to a price dispute with the processors. Effort in District 104 was only 28 boats but these boats caught 510,000 pink salmon, i.e., approximately 18,215 pinks-per-boat. For the next three openings the district was managed on a 2-day-on/2-day-off fishing schedule. Catches in District 104 diminished as August progressed. The final District 104 fishery of fifteen hours occurred on August 21. This was the earliest closure of the fishery since 1987.

A total of 5.5 million pink salmon were caught in District 104 during the 1997 season (Table 1). This represents 36% of the 15.3 million pink salmon harvested in southern Southeast Alaska. District harvests also totaled 1,245,000 sockeye, 685,000 chum, 63,000 coho, and 2,700 chinook salmon.

Table 1. Catch and effort in the Alaska District 104 purse seine fishery by opening, 1997.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Total	Boats	Hours
28	6-Jul	0	72,427	3,876	137,935	47,733	261,971	65	15
28B	9-Jul	0	129,954	6,080	220,867	94,744	451,645	78	15
29	13-Jul	0	73,304	1,614	181,481	88,875	345,274	114	8
29B	16-Jul	0	122,859	3,033	424,795	104,391	655,078	86	6
30	20-Jul	0	43,801	1,644	191,496	43,486	280,427	61	6
30B	21-Jul	2	130,597	5,271	519,283	94,015	749,168	137	6
31	28-Jul	11	160,388	9,927	793,653	58,242	1,022,221	172	15
31B	1-Aug	0	92,630	6,986	816,576	47,875	964,067	146	15
32	5-Aug	0	62,143	4,368	510,091	18,598	595,200	28	39
32B	9-Aug	1,538	162,268	8,754	899,824	35,197	1,107,581	124	39
33	13-Aug	279	28,189	2,763	385,954	18,514	435,699	62	39
34	17-Aug	679	118,649	4,798	309,259	22,085	455,470	91	39
34B	21-Aug	162	47,471	3,986	146,036	11,461	209,116	87	15
Total Wks 28-30		2	572,942	21,518	1,675,857	473,244	2,743,563	541	56
Total Wks 31-34		2,669	671,738	41,582	3,861,393	211,972	4,789,354	710	201
Total Season		2,671	1,244,680	63,100	5,537,250	685,216	7,532,917	1,251	257

The average number of hours, days, and boat-days fished pre-Week 31 in years 1985-1997 is down 33 to 68% compared to the 1980-1994 period (Table 2). The sockeye harvest is also down 10% despite an increase in sockeye availability in recent years; the average sockeye catch-per-boat-day has increased 219% since 1984.

Table 2. Fishing opportunity, effort, and sockeye harvests prior to Week 31 in the District 104 purse seine fishery, 1980 to 1997.

Year	Hours Fished	Days Fished (1d=1+hr)	Fraction Days Fished (1d=15hr)	Boat-Days Fished (Fraction Boats and Fraction Days)	Sockeye Harvest	Sockeye Catch/ Boat Day (Cumulative Weeks. 28-30)
1980	207	10	9.750	1,897	266,198	415
1981	132	7	6.625	787	185,188	707
1982	117	6	6.000	1,034	212,851	636
1983	108	6	6.000	889	168,806	606
1984	108	7	7.000	513	103,319	793
1985	84	5	5.000	378	100,590	815
1986	108	6	6.000	694	91,320	397
1987	75	5	5.000	317	72,385	599
1988	108	6	6.000	673	248,759	1,066
1989	84	5	5.000	368	157,034	1,371
1990	42	4	3.250	307	169,943	2,467
1991	41	4	3.209	193	98,583	2,180
1992	29	3	2.330	162	79,643	1,705
1993	45	4	3.376	307	163,189	1,568
1994	55	6	4.542	174	158,524	2,402
1995	58	5	4.292	202	71,376	1,735
1996	31	4	2.793	133	215,144	3,968
1997	56	6	3.733	317	572,942	5,868
Ave. 80-84	134	7	7.075	1,024	187,272	631
Ave. 85-97	63	5	4.194	325	169,187	2,011
% Change	-53%	-33%	-41%	-68%	-10%	219%

Tree Point Drift Gillnet Fishery

The Tree Point drift gillnet fishery opens by regulation on the third Sunday of June. During the early stages of the fishery, management is based on the run strength of Alaska wild stock chum and sockeye salmon and on the strength of the Nass River sockeye salmon. Beginning in the third week of July, when pink salmon stocks begin to enter the fishery in large numbers, management emphasis shifts by regulation to that species. The District 101 Pink Salmon Management Plan sets gillnet fishing time at Tree Point in relation to the District 101 purse seine fishing time when both fleets are concurrently harvesting the same pink salmon stocks. The U.S./Canada Pacific Salmon Treaty calls for an average annual harvest of 130,000 sockeye salmon.

In 1997, the gillnet fishery at Tree Point was opened for a 4-day fishing week on June 15 (Week 25). Catches of both sockeye and chum salmon were below average since the signing of the Treaty, as was the effort level. During a four day fishing week in Statistical Week 26 catches of

chum salmon remained low while the sockeye salmon harvest increased. Eighty-seven gillnet vessels fished, which is below the 1985-1996 Treaty average of 108 boats.

For two out of the next three weeks, fishing time at Tree Point was reduced to three days in response to below average returns of chum salmon to Portland Canal and sockeye salmon to the Nass River. Effort levels also remained low.

The fishery was managed according to the Pink Salmon Management Plan from Week 30 through Week 35. From Week 30 through Week 34 Tree Point was opened for five days, in Week 35 Tree Point was opened for 3 days. During this time period, the harvest of chum and sockeye salmon were generally above Treaty averages and harvests of pink and coho salmon were below average. Effort levels remained well below average.

In Weeks 30 and 31 the lower portion of Tree Point was closed during a 24-hour extension due to conservation concerns for Nass River sockeye. At that time the Nass River escapement was projected to be approximately 150,000 sockeye, with a goal of 200,000 sockeye. Total escapement of sockeye salmon into the Nass River was estimated to be 239,000 fish as of August 24, 1997.

Starting on August 31 (Week 36) and continuing through the close of the fishery on September 16 (Week 34), the fishery was managed on the strength of the fall chum and coho returns. While chum catches were above average, coho catches were below average. Only 2-day fishing periods per week were allowed over this time period. Approximately 60 boats fished on a weekly basis during the final three weeks of the Tree Point season.

A total of 169,474 sockeye salmon were harvested in the District 101 drift gillnet fishery in 1997 (Table 3). This brings the 1985-1997 average annual harvest of sockeye salmon to 168,442 (Table 4).

Table 3. Weekly catch and effort in the Alaska District 101 commercial drift gillnet fishery, 1997.

Week/ Opening	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Total	Boats	Hours
25	15-Jun	558	7,323	13	79	1,651	9,624	93	96
26	22-Jun	529	17,459	85	1,917	3,098	23,088	87	96
27	29-Jun	222	15,277	180	6,718	15,319	37,716	95	72
28	6-Jul	81	13,172	223	27,355	37,368	78,199	72	96
29	13-Jul	40	26,635	307	26,684	32,101	85,767	73	72
30	20-Jul	49	23,945	499	77,709	58,091	160,293	95	120
31	27-Jul	59	28,579	761	101,085	41,118	171,602	96	120
32	3-Aug	18	11,797	992	59,873	19,836	92,516	91	120
33	10-Aug	30	6,952	1,862	50,925	25,992	85,761	75	120
34	17-Aug	14	5,291	2,993	19,377	37,969	65,644	62	120
35	24-Aug	2	3,555	1,605	4,965	22,022	32,149	56	72
36	31-Aug	3	5,274	3,013	2,484	20,015	30,789	66	48
37	7-Sep	1	3,366	6,983	1,343	20,254	31,947	59	48
38	14-Sep	0	849	6,171	179	16,396	23,595	55	48
Total		1,606	169,474	25,687	380,693	351,230	928,690	1,075	1,248

Table 4. Annual harvest, and average annual harvest, of sockeye salmon in the Alaska District 101 drift gillnet fishery, 1985 to 1997.

Year	Annual Harvest	Average Annual Harvest	Deviation from 130,000 Annex Average
1985	172,863	172,863	42,863
1986	145,657	159,260	29,260
1987	107,595	142,038	12,038
1988	116,240	135,589	5,589
1989	144,936	137,458	7,458
1990	85,690	128,830	(1,170)
1991	131,492	129,210	(790)
1992	244,649	143,640	13,640
1993	394,098	171,469	41,469
1994	100,377	164,360	34,360
1995	164,277	164,352	34,352
1996	212,403	168,356	38,356
1997	169,474	168,442	38,442

Escapements

Pink salmon escapement indices were at the lower end of the goal ranges in all southern Southeast Alaska districts (Districts 101 – 108) in 1997. Escapement indices totalled 6.8 million, or 0.8 million above the lower goal of 6.0 million.

Programs to estimate escapements of sockeye salmon are only in place for two systems in southern Southeast Alaska, Hugh Smith and McDonald Lakes. The sockeye escapement to Hugh Smith Lake was 12,180 fish, based on weir and mark-recapture estimates. The escapement of sockeye salmon into McDonald Lake was estimated to be approximately 70,000 based on expanded foot surveys. Approximately 45,000 McDonald Lake sockeye were harvested in a directed seine fishery in Yes Bay.

Escapements of summer and fall run chum salmon were generally well distributed and at acceptable levels in southern Southeast Alaska. However, escapements were well below the record number observed in 1996. The escapement of chum salmon into Fish Creek at the head of Portland Canal was the lowest on record.

Aerial and foot surveys for coho salmon indicated escapements were within acceptable ranges throughout southern Southeast Alaska. The Ketchikan area coho escapement index of 5,143 was the second lowest since the index program began in 1987. Only the early pre-peak survey was conducted as weather conditions after early October prevented personnel from conducting an effective peak survey. The escapement to Hugh Smith Lake was 732 coho which, although the third lowest estimate since 1982, was within the goal range.

Transboundary Area Fisheries

Stikine River Area Fisheries

The 1997 harvest in the District 106 commercial gillnet fishery included 1,075 chinook, 168,518 sockeye, 77,550 coho, 789,051 pink, and 186,456 chum salmon (Table 5). District 106 catches of sockeye and coho salmon were below the 1987 to 1996 average, while the catches of pink and chum salmon were above the average. However, seven of the largest sockeye catches since statehood have occurred during the past 10 years. The pink salmon catch was the second highest since statehood and the chum salmon catch was the third highest since statehood. An estimated 22.6% of the coho catch was of Alaskan hatchery origin. The U.S./Canada joint Tahltan and Tuya lakes enhancement project contributed an estimated 16,701 sockeye to the catch.

Table 5. Weekly salmon catch in the Alaskan District 106 commercial drift gillnet fisheries, 1997. Catches do not include Blind Slough terminal area harvests.

Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Permits	Days	Permit Days
25	15-Jun	277	3,288	95	138	454	41	2	82
26	22-Jun	326	21,217	828	4,496	2,765	79	3	237
27	29-Jun	258	28,549	1,151	28,093	12,397	103	3	309
28	6-Jul	96	20,792	1,809	51,286	19,959	109	3	327
29	13-Jul	32	17,203	2,096	60,445	43,275	135	2	270
30	20-Jul	19	17,942	2,203	71,269	47,741	124	2	248
31	27-Jul	20	17,750	2,253	130,583	27,924	112	3	336
32	3-Aug	13	8,766	4,464	127,029	10,038	99	4	396
33	10-Aug	11	9,849	5,385	160,608	7,203	92	4	368
34	17-Aug	11	13,706	9,928	98,237	4,680	107	4	428
35	24-Aug	3	6,389	11,393	32,926	4,480	101	2	202
36	31-Aug	1	2,344	10,109	22,322	2,312	109	2	218
37	7-Sep	0	285	3,513	1,025	518	45	1	45
38	14-Sep	6	399	17,860	572	2,092	61	2	122
39	21-Sep	2	39	4,463	22	618	40	2	80
Total		1,075	168,518	77,550	789,051	186,456		39	3668

In the District 108 fishery, 2,566 chinook, 93,039 sockeye, 2,140 coho, 65,745 pink, and 38,913 chum salmon were harvested (Table 6). Catches of all salmon species except coho were above the 1987-1996 average with both the sockeye and chum catch being the third highest on record and the pink catch being the second highest on record. The coho catch was the lowest since 1988. However, the district was closed on 7 September (Statistical Week 37). An estimated 7.2% of the coho catch was of Alaskan hatchery origin. The U.S./Canada joint Tahltan and Tuya lakes enhancement project contributed an estimated 33,786 sockeye to the catch.

Table 6. Weekly salmon catch and effort in the Alaskan District 108 commercial drift gillnet fishery, 1997. Catches do not include Ohmer Creek terminal area harvests. The permit days are adjusted for boats which did not fish the entire opening and are less than the sum of the permits times days open.

Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Permits	Days	Permit Days
24	8-Jun	168	100	0	0	1	25	1	25
25	15-Jun	683	7,225	31	20	72	53	4	202
26	22-Jun	565	14,189	19	267	223	90	5	376
27	29-Jun	710	33,718	73	2,252	2,149	125	5	631
28	6-Jul	359	24,024	272	17,173	9,750	136	5	636
29	13-Jul	49	5,993	114	6,495	6,028	46	2	92
30	20-Jul	12	2,345	256	7,815	6,134	24	2	48
31	27-Jul	9	3,930	357	18,687	9,634	33	3	99
32	3-Aug	7	1,149	391	7,985	3,994	25	4	100
33	10-Aug	3	276	226	4,241	522	11	4	44
34	17-Aug	0	8	35	69	36	2	4	8
35	24-Aug	1	40	82	408	310	5	2	10
36	31-Aug	0	42	284	333	60	7	2	14
Total		2,566	93,039	2,140	65,745	38,913		44	2,285

Harvest sharing of Stikine sockeye stocks is based on in-season abundance forecasts produced by the Stikine Management Model (SMM) (Table 7). Average stock proportions from the postseason analysis in previous years were assumed for weekly catches; the averages used each week depended upon whether the run was judged to be below average, average, or above average. Based on average stock compositions in years of large Stikine River sockeye runs, the Sumner Strait fishery (Subdistricts 106-41 & 42) harvested 30,467 Stikine sockeye salmon, 25.7% of the total sockeye harvest in that subdistrict; the Clarence Strait fishery (Subdistrict 106-30) took 2,735 Stikine fish, 5.5% of the catch in that subdistrict; and the District 108 fishery, near the mouth of the Stikine River, harvested 81,877 Stikine fish, 88% of the District 108 catch. An estimated 115,079 Stikine sockeye salmon were harvested in commercial gillnet fisheries from both districts, representing 44% of the total sockeye catch. Of these 115,079 Stikine sockeye salmon, 50,487 fish were estimated to be produced by the joint U.S./Canada transboundary enhancement project.

Table 7. Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as determined in-season by the Stikine Management Model, 1997.

Stat. Week	Start Date	Forecasts Run Size	TAC	TAC		Cumulative Catch	
				U.S.	Canada	U.S.	Canada
Model Runs Generated by the U.S.							
25	15-Jun	210,896	156,896	78,448	78,448	4,000	100
26	22-Jun	210,896	156,896	78,448	78,448	15,765	1,676
27	29-Jun	217,527	163,527	81,764	81,764	46,688	9,475
28	6-Jul	232,677	178,677	89,339	89,339	72,111	21,763
29	13-Jul	232,639	178,639	89,320	89,320	92,087	31,168
30	20-Jul	234,684	180,684	90,342	90,342	106,143	41,622
31	27-Jul	237,804	183,804	91,902	91,902	109,058	54,780
32	3-Aug	237,524	183,524	91,762	91,762	110,493	60,331
33	10-Aug	238,110	184,110	92,055	92,055	112,999	61,140
34	17-Aug	231,988	177,988	88,994	88,994		

^a U.S. forecast were as follows: the preseason forecast was used for weeks 25, and 26; the in-river test fishery CPUE data for week 27, and the forecast based on in-river commercial fishery CPUE was used for the remainder of the sockeye season. (Canada independently generates forecasts that may use different criteria in some weeks.)

The estimated Stikine sockeye run was 231,227 fish (Table 8); the estimated spawning escapements of 12,525 Tahltan and 21,055 Mainstem were below the respective escapement goals.

Table 8. Preliminary run reconstruction for Stikine sockeye salmon, 1997.

	Tahltan	Tuya	Mainstem	Total
Escapement	12,525	16,950	21,055	50,530
Broodstock	2,070			
ESSR	0	1,950		
Enhanced, non-spawning		15,000		
Spawning	10,455		21,055	31,510
Canadian Harvest				
Indian Food	2,795	2,795	621	6,210
Upper Commercial	990	990	220	2,199
Lower Commercial	17,986	17,986	21,021	56,993
Total	21,770	21,770	21,862	65,402
% Harvest	0.380	0.363	0.346	0.362
Test Fishery Catch	65	65	86	216
In-river Run	34,360	38,785	43,003	116,148
U.S. Harvest				
106-41&42	11,922	12,826	5,719	30,467
106-30	663	1,647	425	2,735
108	22,956	23,676	35,245	81,877
Total	35,541	38,149	41,389	115,079
% Harvest	0.620	0.637	0.654	0.638
Total Run	69,901	76,934	84,392	231,227
Escapement Goal	24,000		30,000	54,000
TAC	45,901	76,934	54,392	177,227
Canada TAC	22,951	38,467	27,196	88,614
Actual Catch	21,770	21,770	21,862	65,402
% of TAC	0.474	0.283	0.402	0.369
U.S. TAC	22,951	38,467	27,196	88,614
Actual Catch	35,541	38,149	41,389	115,079
% of TAC	0.774	0.496	0.761	0.649

In-season run size and catch estimates showed that the U.S. catch was within the 50:50 share allocation through statistical week 28. The preliminary postseason estimates indicate the U.S. catch was above 50% of the TAC at approximately 65%. The postseason estimates are likely to change somewhat as stock identification analyses are completed.

Taku River Area Fisheries

The 1997 commercial salmon harvests in the District 111 fishery totaled 2,804 chinook, 94,745 sockeye, 3,515 coho, 51,424 pink, and 176,864 chum salmon (Table 9). Catches of all species ranged from slightly below to well below average. Hatchery fish contributed significantly to the harvests of all species except pink salmon. The chinook salmon harvest of 2,804 fish was 17% below the 1987 to 1996 average. Alaskan hatchery fish contributed approximately 17% (474 fish) of the harvest (CWT estimate). The sockeye salmon harvest of 94,745 fish was 17% below the previous 10-year average of 113,994. Estimated contributions of sockeye salmon from joint U.S./Canada

Taku River fry planting programs totaled 1,033 Trapper Lake and 1,007 Tatsamenie Lake fish. Additionally, 11,390 domestic U.S. hatchery sockeye salmon were taken in the fishery. The coho catch of 3,515 fish was only 4% of the previous 10-year average and the lowest harvest since 1975. The catch includes a combination of wild runs to the Taku River, Port Snettisham, Stephens Passage, and local Juneau area streams. Alaskan hatchery coho salmon contributed an estimated 13% (464 fish) of the catch. The summer chum catch of 173,804 exceeded the previous 10-year average of 155,390 by 12%, but was substantially below harvest levels of the last three years. Alaska hatchery chum salmon contributed the majority of the summer chum catch. The catch of 3,042 fall chum salmon (i.e. chum salmon caught after statistical week 33) was only 12% of the previous 10-year average and the lowest since 1975. The low catch was a result of poor runs but also to the early closure of the District 111 fishery. The District 111 pink salmon harvest of 51,424 was 30% of the 1987 to 1996 average of 171,606 fish. This was a result of a poor run to the Taku River and low prices paid for pink salmon. Escapements to District 111 streams other than the Taku River varied from fair to excellent from this opening.

Several other fisheries in the Juneau area harvested Taku river salmon stocks in 1997. Estimates of harvest in the U.S. personal use fishery are 30 chinook, 1,500 sockeye, 30 coho, 150 pink, and 0 chum salmon. The spring Juneau-area sport fishery harvested an estimated 5,986 chinook salmon. An estimated 4,648 were mature wild spawners, 40 were immature wild chinook, and an additional 1,338 (22%) were of Alaska hatchery origin (CWT estimate). A number of wild stocks are thought to contribute to the sport fishery, including those from the Taku, Chilkat, and King Salmon rivers, but the major contributor of mature fish is believed to be the Taku River. The July Hawk Inlet shoreline purse seine fishery north of Point Marsden in Chatham Strait was not opened this year due to poor runs of early run pink salmon to the Juneau area.

Table 9. Weekly catch and effort in the Alaskan District 111 commercial drift gillnet fishery, 1997.

Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Boats	Days Open	Boat Days
25	15-Jun	1,270	3,988	0	0	335	58	3	174
26	22-Jun	659	5,840	1	144	1,490	56	3	168
27	29-Jun	508	8,682	3	4,993	4,665	63	3	189
28	6-Jul	149	10,827	15	14,017	18,812	70	3	210
29	13-Jul	59	17,251	13	9,725	44,125	73	4	292
30	20-Jul	97	16,181	58	2,832	46,049	81	3	243
31	27-Jul	27	19,705	205	7,667	40,051	78	3	234
32	3-Aug	17	6,404	248	6,330	14,037	81	2	162
33	10-Aug	9	2,541	638	4,057	4,240	44	2	88
34	17-Aug	3	1,929	835	1,425	1,744	31	2	62
35	24-Aug	6	1,397	1,499	234	1,316	33	2	66
Total		2,804	94,745	3,515	51,424	176,864		30	1,888

Efforts to re-negotiate harvest shares of Taku River salmon during the Pacific Salmon Commission and government-to-government negotiations prior to the 1997 season were not successful. As a result, the Parties unilaterally developed fishing plans for Taku River salmon stocks. The U.S. management plan reflected the provisions that were in effect for 1993, namely to provide for Canadian harvests of 18% of the TAC of wild Taku River sockeye salmon, 50% of the TAC for planted sockeye salmon, and 3,000 coho salmon.

The total Taku River sockeye run was an estimated 163,803 fish, which was 74% of the 1987-1996 average run size of 220,958 fish. Based on the escapement goal range of 71,000 to 80,000 fish, the TAC was 83,803 to 92,803 sockeye salmon of which the U.S. harvested 74% to 82%. The estimated escapement of 72,369 sockeye salmon in 1997 was within the escapement goal range.

Taku River sockeye salmon have comprised an average of 82% of the District 111 sockeye catch from 1983 to 1996. This average was used in the preliminary run reconstruction (Table 10).

Table 10. Preliminary Taku sockeye salmon run reconstruction, 1997. Estimates do not include spawning escapements below the U.S./Canada border.

	Taku	Snettisham Stocks
Escapement	72,369	Not Available
Canadian Harvest		
Commercial		
Wild	23,589	
Enhanced	657	
Food Fishery	NA	
Total	24,246	
% Harvest	26.1%	
Test Fishery Catch	0	
Above Border Run	96,615	
U.S. Harvest		
District 111		
Wild	65,149	16,167
Enhanced	2,039	11,390
Personal Use	1,500	
Total	68,688	
% Harvest	73.9%	
Test Fishery Catch	0	
Total Run	163,803	
Taku Harvest Plan	Minimum	Maximum
Escapement Goal	71,000	80,000
TAC	92,803	83,803
Canadian portion	26.1%	28.9%
U.S. Portion	74.0%	82.0%

Alsek River Area Fisheries

Although catch sharing of Alsek salmon stocks between Canada and the U.S. has not been specified, Annex IV of the Pacific Salmon Treaty does call for a co-operative attempt to rebuild depressed chinook and early-run sockeye stocks. Preseason expectations were for an above average run of early sockeye salmon, an average run of late run sockeye and an average run of chinook salmon. These expectations were based on parent-year escapements to the Klukshu River. The Alsek River was opened to commercial fishing on week 24, the second Monday in

June (June 9). The initial opening was limited to 24 hours in order to evaluate the effectiveness of chinook conservation measures. Fishery performance indicated that the early segment of the sockeye run was above average and that the chinook harvest was below expected levels. Fishing time was extended to 48 hours during the initial opening. CPUE was well above average during the second week of the season and fishing time was extended to 72 hours. As the season progressed it appeared that the early run of sockeye was well above average and the late run was below average and the fishery was managed accordingly.

The Dry Bay commercial set gillnet fishery harvested 568 chinook, 25,879 sockeye, 11,427 coho, no pink, and 34 chum salmon (Table 11). The sockeye harvest of 25,879 fish was about 50% above the 1987-1996 average of 17,278. The chinook harvest of 568 fish was about 48% above the 1987-1996 average of 384 fish, but was well below the 1961-1996 average of 851 chinook salmon. The coho harvest of 11,427 was 160% higher than the 1987-1996 average of 4,401 coho; the pink and chum catches were below average.

The apparent above average run size of early sockeye and below average run size of late sockeye based on CPUE in the Dry Bay gillnet fishery was confirmed by sockeye counts at the Klukshu weir. The early sockeye count of 6,649 fish was 42% above the 1987 to 1996 average and the late sockeye count of 4,847 fish was 64% below average.

Table 11. Weekly catch and effort in the U.S. commercial fishery in the Alsek River, 1997.

Week	Start Date	Catch					Effort		
		Chinook	Sockeye	Coho	Pink	Chum	Boats	Days Open	Boat Days
24	8-Jun	278	2,652	0	0	0	20	2.0	40.0
25	15-Jun	193	5,403	2	0	0	22	3.0	66.0
26	22-Jun	76	4,630	0	0	0	25	4.0	100.0
27	29-Jun	16	2,160	0	0	0	24	2.0	48.0
28	6-Jul	4	2,655	0	0	0	22	2.0	44.0
29	13-Jul	0	1,341	0	0	0	10	2.0	20.0
30	20-Jul	0	1,421	0	0	0	15	2.0	30.0
31	27-Jul	1	802	0	0	0	17	1.0	17.0
32	3-Aug	0	2,503	12	0	0	19	2.0	38.0
33	10-Aug	0	340	4	0	0	13	1.0	13.0
34	17-Aug	0	905	166	0	0	12	3.0	36.0
35	24-Aug	0	525	790	0	0	11	3.0	33.0
36	31-Aug	0	304	1,717	0	2	6	4.0	24.0
37	7-Sep	0	125	2,004	0	14	5	4.0	20.0
38	14-Sep	0	93	4,155	0	8	7	6.5	45.5
39	21-Sep	0	17	2,046	0	7	6	7.0	42.0
40 & 41	28-Sep	0	3	531	0	3	8	7.5	33.0
42	12-Oct	0	0	0	0	0	0	3.0	0
Total		568	25,879	11,427	0	34	35	59.0	649.5

^a Effort is not listed by week, but is included in the season total.

Transboundary River Joint Enhancement Activities

In 1997, fry were outplanted to Tahltan, Tuya, and Tatsamenie Lakes over the periods June 16 to 27, June 24 to July 1, and June 16 to 27, respectively. Egg survivals and numbers of fry outplanted are summarized in Table 12.

Table 12. Green egg to outplanted fry survival rates for 1996 brood year transboundary river sockeye salmon enhancement projects.

Lake	Green Eggs	Eyed Eggs	Fry Planted	Survival
Tahltan	3,170,000	2,920,000	2,250,000	71%
Tuya	3,230,000	3,010,000	2,610,000	81%
Tatsamenie	4,930,000	4,190,000	3,940,000	80%

Green egg to fry survivals for outplant groups were generally above average. For the Tahltan fry planted in both Tahltan and Tuya the loss of three incubators due to the IHN virus (682,000 fry/eggs) reduced survivals.

Eggs were collected from the 1997 sockeye escapements to Tahltan and Tatsamenie Lakes. A total of 3.2 million eggs were collected at Tahltan Lake, well below the 6.0 million egg-take goal. This was the fewest number of eggs collected at Tahltan Lake since the project began in 1989. The low escapement was largely responsible for the reduced number of eggs. The Tatsamenie Lake egg-take goal of 5.0 million was met.

Changes in the outplant method at Tatsamenie Lake took place in 1997. The fry were held in a nearshore net pen to allow for post-transport acclimation and to assess any possible mortality. The fry were then released under the cover of darkness along the shore. Formerly fry were released in the center of the lake immediately after transport. It is hoped that the new method will better simulate the natural fry behavior and improve survival.

Alaska Department of Fish and Game's Otolith Processing Laboratory was able to meet the objectives identified as part of the US/Canada agreements in enhancing sockeye production. The lab provided managers with an in-season estimate of the proportion of thermal marked sockeye in over 60 commercial openings over a 10-week period. In 1997, 4,753 otoliths were extracted from the District 106 and 108 fisheries near the Stikine River, and 4,005 otoliths were taken from the District 111 fisheries near the Taku River. On a weekly basis for each fishery, a portion of the otoliths collected was immediately processed to provide fisheries managers an estimate of stock composition. Most of the remaining otoliths were processed later to increase precision around the initial estimates. For the first time in-season processing of approximately 60 otoliths per week from the Canadian in-river fishery on the Taku provided U.S. and Canadian managers additional data to aid in estimating stock composition. Numerous other juvenile and adult sockeye salmon samples were processed by the lab in 1997 in connection with assessment of outplant survivals in transboundary river lakes and domestic projects.

Southeast Alaska Chinook Salmon Fishery

All Gear Harvest

The 1997 chinook salmon harvest level was based on bilateral estimates of chinook abundance and the U.S. Letter of Agreement on chinook management in Southeast Alaska. The preliminary estimate of the 1997 chinook salmon catch by all Southeast Alaska fisheries was 339,200 (Table

13). The base catch (total minus the add-on) was 291,600. The 1997 fishery was managed to achieve a base catch of between 277,182 to 302,320 chinook. The add-on may increase pending an adjustment for lost tags from the Medviejie and Hidden Falls facilities.

Table 13. Chinook all-gear catches in Southeast Alaska, 1987 to 1997, and deviation from the ceiling for years for which there were ceilings. Catches in thousands.

Year	Total Catch	Add-on Catch	Ceiling	Base Catch	Deviation Number	Deviation Percent
1987	281.9	16.7	263	265.2	2.2	0.8%
1988	278.9	23.7	263	255.2	-7.8	-3.0%
1989	291.1	26.7	263	264.4	1.4	0.5%
1990	366.9	53.7	302	313.2	11.2	3.7%
1991	357.0	61.4	273	295.6	22.6	8.3%
1992	260.0	38.3	263	221.7	-41.3	-15.7%
1993	301.9	33.7	263	268.2	5.2	2.0%
1994	261.9	30.9		231.0		
1995	231.1	56.6		174.5		
1996	217.2	68.2		149.0		
1997	339.2	47.6		291.6		

Troll Fishery

The winter troll fishery harvested 20,900 chinook salmon from October 11, 1996 through April 14, 1997. A total of 1,700 fish were from Alaska hatcheries.

Terminal and experimental fisheries were conducted prior to the July general summer opening. The experimental fisheries are designed to increase the harvest of Alaskan hatchery produced chinook salmon by allowing trolling in small areas of the migratory path close to the hatchery. Terminal fisheries occurred directly in front of hatcheries or at remote release sites.

There is no limit on the number of chinook salmon harvested in the terminal and experimental fisheries. However, the experimental fisheries limit the take of Treaty chinook salmon according to the percentage of the Alaskan hatchery fish taken in the fishery. The catches in 1997 were: 9,500 in the terminal fishery and 33,200 in the experimental fishery. A total of 54% of the chinook salmon landed in these fisheries were from Alaska hatcheries. The department is working with the operators of the Medviejie and Hidden Falls facilities to adjust the tagging ratios for broods returning to these facilities. Abnormally high tag loss was noted in experimental and terminal fisheries targeting on these fish.

The summer fishery began on July 1 and continued through July 7. The fishery harvested 122,500 chinook salmon of which 3,500 fish were from Alaska hatcheries. A second opening occurred on August 18 through August 24. A total of 37,900 chinook salmon were harvested with 500 fish from Alaska hatcheries. A third opening occurred August 30 through September 5. A total of 22,400 chinook salmon were harvested, with 200 fish from Alaska hatcheries. The total summer troll harvest was 182,800 fish.

Net Fisheries

Net fisheries have a guideline harvest of 8,600 chinook salmon, plus 4.3% of the annual harvest ceiling established by the Pacific Salmon Commission, plus Alaska hatchery add-on chinook.

Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and only constitute a small fraction (<1.0%) of the total net harvest of all species. In 1997, the net fisheries harvested 25,100 chinook salmon of which 11,800 were from Alaska hatcheries.

Recreational Fisheries

The recreational fishery had a harvest of 67,700 chinook salmon of which 14,000 were from Alaska hatcheries.

Southeast Alaska Coho Salmon Fisheries

There are no specific provisions in the Annex IV chapter on coho salmon that apply to Southeast Alaska fisheries. These fisheries are managed by the Alaska Department of Fish and Game to achieve coho salmon conservation objectives and gear allocation objectives established by the Alaska Board of Fisheries. No catch ceilings are used, rather fisheries are managed based on in-season assessment of run strength.

In 1997, the season opened by regulation on June 15, but few coho salmon were caught until the general summer season began on July 1. The late July assessment indicated that the run was projected to be greater than the conservation threshold of 1.12 million. A second assessment in early August indicated that a closure was necessary to move fish into the inside areas for harvest and escapement. Normally, the closure (usually 10 days) occurs beginning about August 13. However, tag recovery data indicated weak or late returns to southern Southeast Alaska, so the closure period was moved up to the August 8 through August 17 period to reduce the harvest rate on these stocks. By late August, the coho run to northern Southeast Alaska appeared lower than expected. For the Taku River, escapement to the Taku River, catch rates in the Taku River drift gillnet fishery (District 111), and catch rates in the Juneau sport fishery were all well below average. As a result, the commercial troll fishery was closed along the primary migratory route of Taku River coho stocks as a conservation measure on August 27. The commercial drift gillnet fishery in District 111 was also closed August 27, and the sport fishery restricted to protect Taku River stocks. Coho returns to the Berners, Chilkat and Chilkoot Rivers, all located in Lynn Canal (District 115), were also weak. The commercial drift gillnet fishery in District 115 was closed September 9, trolling was closed in District 115 on September 12, and sport fishing was restricted. Near Sitka, coho salmon systems in Salisbury Sound and Sitka Sound were weak as well. Waters in these areas were closed to trolling on September 13 and the sport fishery was restricted. The troll season closed on September 20. The 1997 total coho harvest was 1.92 million (Table 14).

Table 14. Coho salmon harvest in Southeast Alaska in 1997 by gear type.

Gear Type	Harvest
Troll	1,170,400
Purse Seine	183,700
Drift Gill net	131,100
Set Gillnet	322,700
Recreational	116,000
Total	1,923,900

The biological escapement goals were met or exceeded for all four wild coded-wire-tagged indicator stocks. In addition, surveys and estimates for other systems indicated that escapements

were very strong on the outer coast from north of Sitka to west of Yakutat. Escapements to most other systems in the remainder of the region were near or below the recent average.

Southern U.S. Chinook and Coho Fisheries

Ocean Fisheries off Central Oregon

The chinook harvest of fisheries off the Oregon coast is primarily comprised of stocks that do not significantly migrate into Canada. The Northern Oregon Coastal (NOC) is far north migrating and contributes substantially to southeast Alaskan and Canadian fisheries. This stock group is taken only to a minor degree by Oregon coastal fisheries (probably <5% of total catch). The Mid-Oregon Coastal (MOC) stock aggregate is harvested primarily along the west coast of Vancouver Island. Oregon ocean fisheries are believed to account for a much larger percentage of the total mortality of the stock, but catch data are readily available for only one population of this group in a pre-terminal fishery near the mouth of the Elk River. Both the NOC and MOC stock groups are harvested by recreational fisheries in estuary and freshwater areas as mature fish return to spawn.

The 1997 recreational fishery is currently underway; in-season estimates are not made. Catch of the far north migrating chinook is estimated at 800 for the 1996 troll fishery; estimates for the recreational fishery are not yet available.

Columbia River

The state of Washington, in cooperation with other state, federal, and tribal fish managers in the Columbia River signed three-year (1996-1998) Management Agreements for in-river fisheries on upper Columbia River spring/summer and fall chinook stocks. These agreements were signed in 1996 and work in conjunction with the requirements of the Endangered Species Act to protect depressed chinook stocks while allowing for harvest of healthy stocks of chinook. Forecasts for 1997 hatchery stocks of spring chinook in the lower river were well below average and provided very little harvestable surplus. There were no targeted commercial spring chinook fisheries in 1997, and a reduced sport fishery in the mainstem Columbia River. Less than 100 spring chinook were caught in both sport and commercial non-Indian fisheries. Treaty Indian fisheries occurred in the traditional time frame of February to mid-march, targeting steelhead and sturgeon. Only 14 spring chinook were harvested in this fishery in 1997. There have been no directed summer chinook commercial fisheries since 1964.

Fall season commercial fisheries in the Columbia River consisted of non-Indian fisheries below Bonneville Dam and treaty Indian fisheries above Bonneville Dam. Because of ESA limitations and the desire of the treaty fishers to harvest 50% of the harvestable surplus, the non-Indian fisheries were severely constrained in 1997, resulting in very small chinook fisheries. A ten-hour fishery occurred in the area just below Bonneville Dam (Area 2S) in August targeting healthy upriver stocks of fall chinook. Only 1,100 fall chinook were harvested. Additional non-Indian commercial fisheries, which occurred in late September and October, harvested a total of 3,400 chinook and 3,700 coho. Coho returns in 1997 were less than projected, below average, and provided little harvest opportunity.

Treaty Indian fisheries above Bonneville Dam occurred during the month of September for a total of 18 days. A total of 70,900 fall chinook and 600 coho were harvested in the commercial fishery. As in 1996, many of the chinook caught were not sold to commercial fish buyers but to the public, in an effort to maximize the economic benefits to the treaty fishers. The fall chinook catch of 70,900 compares with the 1996 catch of 61,600 fish, and is due primarily to the increased return of the Upriver Bright stock of fall chinook in 1997.

Sport fisheries in the Columbia River in 1997 consisted of a very minimal spring chinook season and a larger fall season. The spring season was reduced because of poor returns of lower river hatchery spring chinook stocks. The fall season fishery targeting primarily on fall chinook was a very popular fishery with record-high boat counts and the largest catch of chinook since 1988. The Buoy 10 and mainstem Columbia River sport fisheries both opened on August 1 and included retention of both chinook and coho. The Buoy 10 fishery harvested 13,450 chinook and 19,700 coho. The mainstem Columbia River sport fishery harvested 10,600 chinook and 600 coho. The fall season chinook catch by sport fisheries totalled 24,000 fish, the highest since 1988 and more than double that of 10,700 in 1996.

Ocean Fisheries North of Cape Falcon

The U.S. ocean fisheries operating north of Cape Falcon, OR are typically constrained by coho and chinook ceilings developed through the domestic regulatory process of the Pacific Fisheries Management Council (PFMC).

Washington Coast

Ocean escapements of northern Washington coastal stocks were predicted above minimum spawning levels, allowing both commercial and recreational fisheries. Preliminary year-to-date 1997 estimates of combined Grays Harbor and Willapa Bay net catch, including the Humptulips and Chehalis rivers, total 21,700 chinook, compared to 45,800 in 1996. The preliminary estimate of the non-tribal 1997 Willapa Bay and Grays Harbor net fisheries harvested 1,700 coho to date compared to a catch of 48,000 in 1996. Tribal net fisheries in Grays Harbor, including the Humptulips and Chehalis rivers, landed an estimated 5,400 coho to date in 1997 compared to 54,800 coho in 1996 fisheries. There is no tribal catch in Willapa Bay.

The North Coastal River Net harvest includes catch for the Waatch, Sooes, Quillayute, Hoh, Queets, Quinault, Moclips, and Copalis rivers. The 1997 commercial net fisheries in north coastal rivers have harvested an estimated 4,700 chinook to date, compared to 9,000 in 1996. Coho returns to Washington's north coastal rivers were expected to be low in 1997, so tribal net fisheries were designed to minimize coho retention by using large mess. The 1997 tribal net fisheries in Washington's north coastal rivers have harvested approximately 4,900 coho to date compared to 46,000 in 1996.

Strait of Juan de Fuca Net Fishery

The preliminary estimate of the 1997 chinook and coho catch in Strait of Juan de Fuca net fisheries are 400 chinook and 5,200 coho, compared to 600 chinook and 1,500 coho in 1996.

Strait of Juan de Fuca Recreational Fishery

Estimates of 1997 recreational harvest for most catch areas are not yet available. The 1996 Area 4B preliminary catches are 37 chinook and 6,000 coho. The 1996 preliminary recreational chinook catch estimate for Areas 5 and 6 is 7,600; the chinook catch estimate for 1997 is not available at this time. Preliminary estimates of recreational coho catch for Areas 5 and 6 are 46,100 in 1996 and 43,800 in 1997.

Strait of Juan de Fuca Troll Fishery

The 1997 Strait of Juan de Fuca tribal troll fishery harvested an estimated 400 chinook through November 1, compared to 2,600 chinook caught during 1996. The tribal troll catch estimates

from this area do not include tribal catches in Area 4B during the May 1-September 30 PFMC management period, which have been included in the North of Cape Falcon troll summary.

San Juan Islands Net Fisheries

Preliminary 1997 estimates of the incidental chinook catch in the San Juan Islands net fisheries total 32,600, compared to 3,900 in 1996. The preliminary estimate of tribal net fishery catches in Areas 6, 7 and 7A is 8,300 coho during 1997, compared to 100 in 1996; no harvest occurred in Area 6A during these years. The non-tribal net fisheries are estimated to have harvested 5,200 coho in 1997 and 200 in 1996. The majority of the non-tribal harvest was taken in 7/7A in these years.

San Juan Islands Recreational

Catch estimates for the 1997 Area 7 recreational fishery are not available at this time. Preliminary estimates of recreational harvest for 1996 in Area 7 total 12,700 chinook and 3,000 coho, compared with 7,900 chinook and 3,600 coho in 1995.

Puget Sound Marine Net

Preliminary estimates of the 1997 tribal net fishery harvests in Puget Sound marine areas other than 4B, 5, 6, 6A, 7, and 7A are 22,100 chinook and 110,200 coho. This compares to a tribal harvest of 33,100 chinook and 98,800 coho in 1996. The non-tribal net fishery harvested 10,700 chinook and 5,000 coho, compared to 1996 harvests of 7,600 chinook and 17,900 coho.

Puget Sound River Net

Preliminary harvest estimates for tribal river net fisheries in Puget Sound are 12,400 chinook and 18,400 coho in 1997, compared to 18,200 chinook and 41,500 coho in 1996. Coho catches decreased from 1996 levels in fisheries on the Elwha, Nooksack, Duwamish/Green, Puyallup, and Nisqually rivers. Coho harvest levels increased slightly from 1996 on the Skagit and Skokomish rivers and McAllister Creek.

Puget Sound Recreational

Puget Sound recreational catch estimates for Areas 8-13 in 1997 are not available at the present time. Preliminary estimates of 1996 recreational chinook harvest for Areas 8-13 total 60,800. The 1996 coho catch estimate of 26,500 in Area 8-13 compares to an estimated catch of 28,400 in 1995.

Chum Salmon Fisheries

Preliminary Review of 1997 Washington Chum Fisheries of Interest to the Pacific Salmon Commission

This summary report provides a preliminary review of the 1997 chum fishing season and is subject to correction and revision as additional information becomes available. Some Washington chum fisheries are still underway, and catch and run size information provided are preliminary data reported through late-November. This report addresses in detail only those fisheries of concern under the Pacific Salmon Treaty. The mixed-stock fisheries in United States (U.S.) waters that had been addressed in the chum annex of the Pacific Salmon Treaty are those in the western Strait of Juan de Fuca (areas 4B,5 and 6C), the San Juan Islands (area 7) and

Point Roberts (area 7A). Other chum fisheries in Washington waters are primarily terminal fisheries which harvest runs of local origin.

Mixed Stock Fisheries

Areas 4B, 5, 6C

As in previous years, the chum fishery in areas 4B, 5, 6C was restricted to Treaty Indian gillnet gear only. Chum fishing in these areas was delayed until the week of October 12 due to domestic coho conservation concerns. The commercial fishery began October 15 and remained open 7 days per week until November 15. No test fisheries for collection of GSI samples were conducted, and no samples for GSI analysis were collected from the commercial catch during 1997.

Incidental summer chum catches in fisheries, prior to the fall chum management period, totalled only 16 fish. Fall chum catches in the Strait of Juan de Fuca commercial fishery were significantly less than expected given the forecasted abundance of Puget Sound and Canadian chum runs. The total commercial harvest during the chum management period was 29,654 chum bringing the total chum catch in areas 4B, 5, 6C, reported through November 21, to 29,670.

Areas 7 and 7A

Preseason forecasts were for strong fall chum returns to both Southern B.C. and Puget Sound. In-season updates of abundance from Southern B.C. and many areas in Puget Sound were substantially less than expected. In many areas the in-season run size estimates are only about half of the preseason forecasts. The Johnstone Strait chum run size was updated in-season to only 2.5 million from a preseason forecast of approximately 5 million.

Due to the low run size estimate for the Canadian inside chum runs, the U.S. managers did not open any commercial chum fisheries in catch areas 7 and 7A in 1997. Only 293 chum salmon were harvested, primarily incidental in fisheries for sockeye and pink salmon prior to the chum management period. Test fisheries to collect chum GSI samples were not conducted in 1996.

Table 15. Preliminary 1997 chum harvest in selected Puget Sound catch reporting areas.

Week	Areas 4B,5,6C Treaty Indian	Areas 7 & 7A Treaty Indian	Areas 7 & 7A Non-Indian	Areas 7 & 7A Total
Prior to 10/5	16	45	186	231
10/5 - 10/11	0	0	0	0
10/12 - 10/18	5143	0	0	0
10/19 - 10/25	9726	0	0	0
10/26 - 11/1	3086	0	0	0
11/2 - 11/8	9234	0	0	0
11/9 - 11/15	2465	62	0	62
Season Totals	29,670	107	186	293

Puget Sound Terminal Area Fisheries and Run Strength

Preseason forecasts for chum returns to Puget Sound were for a fall chum run totalling about 1.7 million, which would have been an above average return. Most Puget Sound chum runs have been updated in-season with all areas except Hood Canal indicating much lower than expected returns. The Hood Canal return, which has a large hatchery component, appears to be somewhat

stronger than predicted. Some Puget Sound chum fisheries are still underway, and additional in-season estimates of abundance will be made in the coming weeks. At this time, it is far too early to assess spawning escapement.

(Source document) *Preliminary 1997 Post-Season Report for United States Fisheries of Relevance to the Pacific Salmon Treaty*. United States Section of the Pacific Salmon Commission. December, 1997.

C. 1997 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

Catches reported below are based on in-season estimates (hailed statistics), on-the-grounds counts by DFO management staff, dockside tallies and landing slips (aboriginal fisheries), fish slip data (commercial troll and net), and creel surveys/logbooks (sport). The preliminary 1997 commercial catches were obtained from fish slip information to November 18 (Transboundary), November 10 (North/Central chinook), November 1 (North pinks), October 31 (WCVI troll chinook and chum, and GSTR chinook), and in-season hails; sport catches are from creel survey data to October 31 (Georgia Strait) and logbooks (North/Central chinook). Annex fisheries are reported in the order of the Chapters of Annex IV. Comments begin with expectations and management objectives, followed by catch results by species, and where available and appropriate, escapements. The expectations, management objectives, catches and escapements are only for those stocks and fisheries covered by the Pacific Salmon Treaty (PST); domestic catch allocations have been excluded. The attached table (on two pages) summarize 1985-1997 catches in Canadian fisheries that have been under limits imposed by the Pacific Salmon Treaty.

Transboundary Rivers

Stikine River

No progress was made with respect to re-negotiating harvest shares of Stikine salmon during the Pacific Salmon Commission (PSC), Government/Government and stakeholder negotiations prior to or during the 1997 fishing season. As a result, Canada developed a fishing plan for the Stikine River which adopted the arrangements that had expired after 1992 for sockeye, but excluded the catch ceiling for coho salmon (4,000 pieces). Accordingly, the objectives of the 1997 management plan were: to harvest 50% of the total allowable catch (TAC) of Stikine River sockeye salmon; to allow Canadian fishers reasonable access to coho salmon subject to conservation requirements; and, to allow chinook salmon to be taken as an incidental catch in the directed fishery for sockeye salmon. The 1997 management plan differed from the management plans implemented in 1995 and 1996 in that the fishery was opened one week earlier than normal in order to maximize the harvest of the early component of the sockeye return.

The Transboundary Chapter of Annex IV requires the Transboundary Rivers Technical Committee (TRTC) to prepare a pre-season forecast to guide initial fishing patterns of both countries. Because of the failure of the PST negotiations, the annual TRTC meeting to discuss and develop joint management plans on transboundary salmon returns was cancelled. Canada developed a management plan independent of the US. Canada's expectation was for an above average run of approximately 210,900 sockeye in 1997, including 68,100 Tahltan Lake origin sockeye (55,600 wild and 12,500 enhanced), 48,900 enhanced Tuya Lake origin sockeye, and 93,900 non-Tahltan wild sockeye. For comparison, the previous ten-year average Tahltan sockeye run size was approximately 90,500 fish and the non-Tahltan stock aggregate averaged approximately 84,100 sockeye.

A total of 65,393 sockeye was caught in the combined Canadian commercial and aboriginal fishery; 88.6% of the catch occurred in the commercial fishery. The total catch was the second largest sockeye catch on record (the previous record was 74,281 sockeye taken in 1996), exceeding the 1987-1996 average of 32,200 sockeye by 103%. An additional 1,929 sockeye salmon was taken by the Tahltan First Nation under an "Excess Salmon to Spawning Requirements License" (ESSR) which permitted the terminal harvest of enhanced sockeye at the mouth of the Tuya River where no escapement is required. The preliminary estimate of the total contribution of sockeye from the Canada/U.S. enhancement program to Canadian fisheries is 38,300 fish, close to 60% of the catch.

The preliminary estimate of the terminal sockeye run size is 238,300 fish including 80,600 Tahltan Lake sockeye, 57,000 Tuya Lake sockeye, and 100,700 sockeye of the non-Tahltan stock aggregate. A Stikine run size of this magnitude is 40% above the 1987-1996 average terminal run size of 170,500 sockeye salmon. The preliminary estimate of the TAC for 1997 is 161,400 sockeye and of this, Canada was entitled to catch 80,700 sockeye (i.e. 50% of the TAC). The total Canadian harvest, excluding the ESSR catch, represents 81% of the preliminary estimate of the Canadian entitlement. The total escapement is estimated to be approximately 47,500 sockeye, 12% below the target of 54,000 fish.

The sockeye weir count at Tahltan Lake was 12,463 fish which was approximately 63% below the previous ten-year average of 33,732 sockeye. Of the total number of fish counted at the lake, 2,198 sockeye were taken for hatchery brood stock and 378 fish were sacrificed for sampling otoliths for thermal mark analysis. This leaves a spawning escapement of 9,887 which was approximately 50% below the spawning escapement goal of 20,000 sockeye for Tahltan Lake.

Poor returns resulted in lower effort and the lowest coho catch since 1985. The total coho catch for the season was 401 fish, 88% below the 1987-1996 average of 3,331 coho. Virtually all of the coho were taken in the lower Stikine commercial fishery. Aerial survey counts of six coho spawning index areas totalled 1,057 fish, approximately 67% below the previous ten-year average of 3,212 coho salmon.

The total 1997 gillnet catch of chinook consisted of 4,201 adults and 266 jacks compared to 1987-1996 averages of 2,054 large chinook and 497 jacks. The adult chinook count of 5,557 fish (50% female) at the Little Tahltan weir was 4% below the 1987-96 average of 5,804 and was above the escapement goal of 5,300 large chinook. The count of 54 jacks was 74% below the 1987-1996 average of 209 jacks. Aerial surveys of most of the other Stikine chinook index spawning areas encountered average numbers of spawners.

Joint Canada/U.S. enhancement activities continued in 1997 with approximately 2.7 million sockeye eggs collected at Tahltan Lake and flown to the Port Snettisham hatchery in Alaska for incubation and thermal marking. The egg collection target was 6.0 million eggs. Approximately 2.2 million fry were out-planted into Tahltan Lake and 2.5 million fry into Tuya Lake in June and July of 1997. The fry originated from the 1996 egg-take and were mass-marked in the hatchery with a thermally-induced otolith mark.

A total of 518,202 sockeye smolts was enumerated emigrating from Tahltan Lake in 1997, 59 % below the 1987-96 average smolt count of 1,276,552.

Taku River

As with Stikine River issues, no progress was made with respect to re-negotiating harvest shares of Taku River salmon prior to the 1997 fishing season. As a result, Canada developed a fishing plan which did not numerically constrain harvests of sockeye and coho salmon. The basic

objective of the management plan for each species was to manage according to conservation requirements, i.e. escapement goals which have been established for each species. This approach was similar to the plans implemented from 1994 to 1996. As with the Stikine River, chinook salmon were harvested as an incidental catch in the directed fishery for sockeye salmon; both Parties had previously agreed to rebuild chinook by 1995.

The Canadian pre-season forecast was for an above average return of approximately 270,900 sockeye, 19% higher than the previous ten-year average run size of approximately 228,500 sockeye.

In-season projections of the total run size, TAC and total escapement were made frequently throughout the season based on the joint Canada/U.S. mark-recapture program, the estimated interception of Taku sockeye in U.S. fisheries, the catch in the Canadian in-river fishery, and historical run timing information. The final in-season forecast was a total run of 146,500 sockeye, 36% below the previous 10-year average of 228,500 sockeye. The preliminary post season estimate of the terminal run size¹ is 170,600 sockeye with a TAC of 90,600 to 99,600 sockeye.

The 1997 Canadian sockeye catch was 25,442 sockeye, 24,246 of which was caught in the commercial fishery. The commercial catch was 5% below the 1987-1996 average of 25,604 sockeye. Preliminary analysis indicates that the total Canadian sockeye catch in 1997 represented 27% of the TAC. The preliminary estimate of the contribution of sockeye from the Canada/U.S. enhancement program to Canadian fisheries is 650 fish. Enhanced sockeye returns were not predicted as numbers were expected to be so low.

The estimated total escapement of 71,300 sockeye, derived from the Canada/U.S. mark-recapture program, was within the interim escapement goal of 71,000 to 80,000 fish. Based on weir counts, escapement to the Little Trapper and Tatsamenie lake systems was 5,924 and 9,900 sockeye, respectively. The Little Trapper count was the second lowest recorded since 1983 when the program began while the Little Tatsamenie count was well above the principal brood year escapement in 1992.

The commercial coho catch of 2,903 fish was approximately 50% below that 1987-1996 average catch of 5,852 coho salmon, but was close to the expired (1992) coho limit of 3,000. Preliminary mark-recapture data indicates a spawning escapement of 38,500 coho in 1997. This estimate exceeds the interim escapement goal range of 27,500 to 35,000 coho.

The commercial catch of large chinook, 2,732 fish, was roughly 2 times the 1987-1996 average of 1,405 fish; the catch of 84 chinook jacks was 58% lower than the average of 199 jack chinook. Chinook escapement counts were above average in five of the six Taku River aerial index areas surveyed by the Alaska Department of Fish and Game. The combined index count of 13,849 was 27% above the previous 10 year average of 10,896, and marked the third time that the index escapement goal was exceeded. The chinook index escapement goal is 13,200 fish.

Joint Canada/U.S. enhancement activities continued in 1997 with 5.0 million sockeye eggs taken from the Tatsamenie Lake stock. The eggs were flown to the Port Snettisham hatchery in Alaska for incubation and thermal marking. Approximately 3.9 million sockeye fry were out-planted into Tatsamenie Lake in June of 1997 from the 1996 egg-takes. The fry were mass-marked with a thermally-induced otolith mark. All fry were released in nearshore areas in 1997 to determine if this release strategy would improve the fry to smolt survival. Previous fry releases

¹ Terminal run size estimate excludes U.S. interceptions that occur outside of the District 111 gillnet fishery

have occurred offshore, in deeper parts of this lake. Egg-takes at another Taku drainage location, Little Trapper Lake, were suspended in 1995 because juvenile production from the fry plants into Trapper Lake appeared to be well below expectations.

Alsek River

Although catch sharing between Canada and the U.S. has not been specified for Alsek River salmon stocks, both countries have agreed to attempt to rebuild depressed chinook and early run sockeye stocks.

Commercial fisheries are not conducted in Canadian sections of the Alsek drainage; however, the area supports important aboriginal and sport fisheries.

The aboriginal fishery harvested an estimated 232 chinook, 486 sockeye and 5 coho salmon. The aboriginal catch of chinook was approximately 15% below the 1987-1996 average of 273 fish. The sockeye catch was 74% below the 1987-1996 average of 1,869 sockeye. Restrictions on the early component of the run were relaxed in an attempt to harvest some of the near record return of early run sockeye salmon. However, strict conservation measures were implemented in the aboriginal and recreational fisheries to protect sockeye salmon during the latter part of the run when it became apparent that the return was much weaker than expected. The 1987 to 1997 average coho harvest was 15 fish. Only 5 coho salmon were harvested by the aboriginal fishery in 1997.

The recreational fishery harvested an estimated 278 chinook and 35 sockeye salmon. Compared to 1987-1996 average sport catches, the chinook catch was 30% below average and the sockeye catch was 97% below average.

At the Klukshu River, an Alsek River tributary, total weir counts included: 2,988 chinook, the sixth highest on record and 2% above the 1987-1996 average of 2,919 fish. The sockeye salmon weir count was 11,370 fish, 33% below the 1987-96 average of 16,892. The early run count of 6,672 was 95% above the 1997-96 average of 3,424, while the late run count of 4,698 sockeye was 65% below the 1987-96 average of 13,468 fish. The coho count of 107 fish was 97% below the 1987-96 average of 3,112 fish. The estimated Village Creek sockeye escapement of 1,900 was 61% below the 1987-1996 average of 4,930 fish. Aerial surveys indicated that there was an average chinook escapement in other Alsek drainage tributaries in Canada.

Northern British Columbia Pink Salmon

Areas 3-1 to 3-4 and 5-11 Pink Catch by Nets

A well below average return of pink salmon was anticipated for Canadian northern boundary stocks. The actual return was similar to or less than forecast, producing an Area 3 to 5 pink net catch of only 0.8 million (4.6 million in 1995 brood year).

The Canadian pink catch in 1997 was 329,000 in subareas 3(1-4); the 1985-96 average catch is 1.8 million. The percentage of the 1997 Area 3 net catch taken in subareas (1-4) was 82 %, which is above both the 1985-96 average of 61% and the pre-Treaty average of 74%.

Pink escapements to rivers and streams in Areas 3, 4 and 5 were well below target for most systems.

Area 1 Pink Catch by Troll

The Canadian troll catch in the A-B line strip in 1997 was 187,000, and the total Area 1 pink troll catch was 261,000. The Area 1 troll fishery was closed on September 1 due to conservation concerns for Skeena coho.

Chinook Salmon

North and Central Coasts (Areas 1 to 10, 101 to 111, 30-3, and 142 for Net and Sport; Troll includes above Areas plus 11 and 111)

The net catch of North Coast chinook (>5lb.) to November 14, 1997 based on fish slips, was 21,211. This net catch, plus the troll catch of 93,800 and the preliminary sport catch of 36,500 gives a total North/Central coast catch of 151,511. Subtracting a terminal exclusion gillnet catch in Area 4 of 5,943 yields a total catch of 145,568. In 1997, there were no terminal exclusions for the Bella Coola Gillnet area as the net catch (1,595) did not exceed the base level (2,950). The chinook catch of 8,843 in the River/Gap/Slough (Area 4) accounts for the terminal exclusion of 5,943.

The 1997 North Coast total chinook catch of 151,511 is considerably greater than the total 1996 catch of 42,900 (in 1996 the troll fishery was closed for chinook and the terminal exclusion was 16,000). The 1997 catch is also above the total 1995 catch of 120,802 (including terminal exclusion of 1,702).

The troll fishery was open for chinook salmon from July 1 to October 31. Based on very preliminary information, chinook escapements to the Nass and Skeena were good in 1997 and continued at average for most other systems, similar to previous years in the North and Central coasts.

West Coast Vancouver Island Troll (Areas 21 to 27, 121 to 127 and 130-1)

There was no Pacific Salmon Treaty ceiling for chinook in 1997; however, Canada's principal management objective was to continue addressing conservation concerns for returning WCVI stocks, as in 1995 and 1996. The directed chinook fishery was managed as a pulse fishery regime with the daily catch closely monitored. The duration of openings was dependent on a combination of factors which included; coho encounter rates, associated mortality levels from non-retention of coho, and chinook stock abundance. Measures to protect coho, such as time and area closures, also protected chinook stocks. Non-retention of coho and limitations on coho mortalities considerably reduced the effectiveness of the chinook fishery, and the length of the chinook retention period.

The troll fishery opened on July 1 and closed three times during the season to close finally on October 24. The openings were as follows: July 1 to 4, July 11 to 13, July 30 to September 22, and from October 2 to 24. The first two openings targeted chinook and were restricted based on coho encounter/mortality levels. The third opening targeted sockeye and extended into Johnstone Strait (Area 12), where most of the fleet concentrated. Trollers were placed on non-retention of chinook in the upper portion of the latter Area. The final troll opening was for a chum fishery off WCVI with chinook allowed as an incidental catch.

The WCVI troll fishery area was divided into a series of zones (Fig. 1) which included the traditional Conservation Areas (Fig 2). Conservation Areas S (Swiftsure), G, and F1 were closed for the duration of the fishery. Conservation Area H was closed From July 1 to September 22, then opened from October 2-24. Zone closures were implemented to minimize coho encounters during chinook fisheries. These included zones 22b and 23b from July 1-29 (these were then reopened); zones 1,2, 8-11, 24-27, and 35 from July 30 to August 8 (these were then reopened); and zones 1,2 8-11, and 35 from August 9 to October 24.

The preliminary estimate of the 1997 WCVI troll catch is 51,400 chinook based on fish slips to October 31, 1997.

Strait of Georgia Troll and Sport (Areas 13 to 19, 20-5 to 20-7, 28 and 29)

In response to conservation concerns for the Lower Georgia Strait (LGS) chinook stocks, Canada continued a series of area and gear-specific management actions to reduce the LGS harvest rate by 20 percent. Therefore, the Canadian management objectives in the Strait of Georgia for 1997 were to manage sport and troll fisheries for catches below the expired Treaty ceiling.

The troll fishery was managed for incidental catches of chinook during some sockeye, pink and chum openings. Otherwise, Strait of Georgia trollers were on chinook non-retention/non-possession. The incidental troll catch of chinook, based on fish slips to October 31, is 796.

In the sport fishery, the chinook management plan implemented in 1989 in Georgia and Johnstone Straits, was continued in 1997. This plan included an annual bag limit of 15, a daily bag limit of 2 and a minimum size limit of 62 cm for Johnstone Strait and the Strait of Georgia north of Cadboro Point. For the Canadian portion of Juan de Fuca Strait (Sheringham Point to Cadboro Point), a daily bag limit of 2, a minimum size limit of 45 cm, and an annual bag of 20 were in effect.

The 1997 sport catch for the Strait of Georgia to the end of October was 56,332 based on creel survey results. The 1997 creel survey started April 1 and ended October 31. Sport effort in 1997 was 7% below the 1996 level of 289,086 boat trips, and 33% below the 1993-1996 average of 399,547.

Fraser River Sockeye and Pink Salmon

As in 1992 and 1994, the parties did not reach an agreement for bilateral catch sharing of Fraser River sockeye and pink salmon. The parties did agree that the PSC staff assess abundance, timing, and the diversion rate of Fraser River sockeye and pink salmon stocks and convey this information on a regular basis during the season to the national sections of the Fraser River Panel. The parties used this information for assistance in development of regulations for domestic fisheries.

Canada provided the following information, which formed the basis of a preseason fishing plan: a forecast return of 18,230,000 sockeye and 11,387,000 pink salmon, escapement targets of 4,083,000 sockeye and 6,000,000 pink salmon, a forecast of diversion through Johnstone Strait of 79%, and a forecast for delayed run timing for Early Stuart, Chilko, and Quesnel sockeye stocks and Fraser River pink salmon. Additional elements of the Canadian fishing plan addressed conservation concerns for other species, a commercial allocation structure established by DFO, provision of recreational fishing opportunities, provision for fulfilling obligations to First Nations, and a 'Canada First Fishing Plan' to increase Canadian benefits from Canadian stocks. Major net fishing opportunities were expected in Johnstone Strait and in the Fraser River, with opportunities also expected in Juan de Fuca Strait and Rennell Sound. Troll fisheries were planned for North Coast areas, Johnstone Strait and the West Coast of Vancouver Island.

To address a conservation concern for southern B.C. coho, a schedule of allowable coho mortalities by fishery was developed to guide fishing opportunities in all fisheries for target species. To restrict Nimpkish sockeye catch, closing boundaries were implemented in Johnstone Strait. The presence of Thompson River steelhead and Harrison River chinook were expected to preclude Fraser River gillnet fisheries for sockeye stocks after early September.

Based on preliminary estimates of catch and the PSC staff's in-season assessment of gross escapement to the Fraser River, the return was 17,246,000 sockeye and 13,000,000 pink salmon. The sockeye run was estimated to be comprised of 1,516,000 Early Stuart, 630,000 early summer, 13,800,000 summer, and 1,300,000 late-run sockeye. This return was the third largest on the 1997 cycle, exceeded only by the returns in 1989 and 1993. The pink salmon return of 13,000,000 fish was slightly greater than the 1995 return of 12,500,000 (in-season estimate).

Preliminary estimates of Fraser River sockeye catch totalled 11,688,000 fish: 8,737,000 fish in Canadian commercial fisheries (not including aboriginal pilot sales), 1,338,000 fish in U.S. Treaty Indian and non-Indian fisheries in Washington state, 240,000 in Alaska, and 1,191,000 fish in Canadian aboriginal fisheries. The remaining catch of 182,000 sockeye was accounted for in recreational fisheries (21,000), test fisheries (143,000), and charters (18,000).

The commercial pink salmon catch was 5,286,000, of which 3,660,000 were caught in Canada and 1,565,000 were caught in the U.S. The non-commercial pink catch was 61,000.

Management during the season was affected by several unanticipated events. High discharge levels in the Fraser River caused severe migration delays and blockages for sockeye in the early timing runs, particularly in the Fraser River canyon. In-season surveys produced estimates of en-route mortality, and gross escapement targets were increased for the Early Stuart run to compensate for such losses. To compensate for U.S. catches, adjustments were required on a continual basis throughout the season to ensure that gross escapement targets were met. Net fishery opportunities were severely restricted in Juan de Fuca Strait due to coho conservation concerns.

Coho Salmon

The return of coho salmon produced from the many hundreds of Strait of Georgia, Fraser River and West Coast of Vancouver Island spawning streams was expected to be extremely poor in 1997. Recent declines in marine survival combined with low numbers of spawning fish returning to many southern B.C. streams created this conservation concern. The proportion of fish harvested has been reduced in recent years, but the continued decline in marine survival rate has offset the expected benefits of the actions taken to date. Habitat degradation and loss are long term concerns for coho but are not the primary reasons for the sharp decline in production in the past few years.

In four out of the last six years Strait of Georgia and Fraser River coho have moved out of the Strait of Georgia sometime during their first year in the ocean, instead of remaining in the Strait for their entire ocean lives. In 1997, once again, Strait of Georgia and Fraser River coho migrated to the West Coast of Vancouver Island and were not be available to Strait of Georgia fisheries until their spawning migration in the fall.

DFO determined that a total exploitation rate of 20% to 25% in 1997 would sustain coho populations (i.e., would expose wild coho populations to very low incremental risks of loss). This exploitation rate goal was a substantial reduction from the 55-60% goal applied in 1995 and 1996 and the 70% and greater exploitation rates applied prior to 1995. In terms of fishing impact (catch and incidental mortality), this meant a reduction from approximately 1.0 million total catch in 1996 to approximately 270K to 341K total mortality in 1997.

For 1997, all southern BC fisheries were affected by management actions taken in order to reduce the total coho mortality (catch plus catch/release).

Area 20 Net Catch

There were no targeted coho fisheries in Area 20 in 1997. A by-catch monitoring program was implemented for commercial net fisheries for sockeye, pink and chum salmon in Areas 20 and 21, and in other Areas. The goal of the program was to provide estimates per opening of by-catch to allow managers to track and minimize by-catch levels. Preliminary Total Allowable Mortality (TAM) ranges for all south coast fisheries were developed pre-season and were used to control all commercial, recreational and Aboriginal fisheries. For the Area 20 net fishery, plus the chum net fisheries at Nitinat (Area 21), the TAM was 65,000 to 75,000.

The commercial net fisheries in Area 20 targeting on Fraser River sockeye commenced during the week ending August 16 and closed on the week ending August 30. The seine fishery opened a total of 8 days (12 hrs. per day) and gillnets opened a total of 75 hours during two separate fisheries. The Nitinat chum fishery commenced on October 5 for gillnets and October 20 for seines and closed November 13. The total Area 20 net mortality of approximately 7,500 was well below the bottom of the TAM range. Due to the timing of the chum fishery at Nitinat, coho were virtually absent in those catches. The high diversion rate through Johnstone Strait reduced the need to harvest sockeye in Area 20 and this contributed to the low coho by-catch..

West Coast Vancouver Island Troll (Areas 21 to 27, 121 to 127 and 130-1)

Canada's management plan for coho in 1997 was designed to address severe conservation concerns for southern B.C. coho stocks. Management objectives were to achieve a total mortality rate of 20-25% on inside stocks (Strait of Georgia, Fraser River) and a total mortality rate of 18 to 22% on WCVI stocks. In order to achieve these rates, the troll fishery was placed on non-retention/non-possession of coho salmon. The TAM, as described above, for WCVI and Johnstone Strait trollers was 45,000 to 55,000. Prior to the July 1 opening, coho sensitive areas were closed based on results from troll test fisheries (see also WCVI chinook section). During the open fisheries the daily catch of all salmon, including encounter rates of coho, were recorded via a troll monitoring program. The fishing plan was flexible in order to make in-season adjustments as required. The encounter rates of coho off WCVI were relatively high resulting in short openings, July 1-4 , and 11-13. The July 30 to September 22 opening was to permit a directed sockeye fishery in Johnstone Strait (Area 12). The encounter rate of coho in Area 12 was much lower than off WCVI.

The troll fishery closed October 24, 1997 with an estimated coho by-catch mortality of 22,867, including 4,603 in Area 12, substantially below the low end of the total allowable incidental mortality range.

Southern British Columbia Chum Salmon

Inside Net (Areas 11 to 19, 28 and 29)

The pre-season forecast for Study Area (inside) chum stocks was 4.9 million based on 1992-94 brood year returns. This forecast consisted of 1.9 million Fraser and 3.0 million non-Fraser (not including 100 thousand US).

Johnstone Strait (Areas 12 and 13)

Following the Johnstone Strait Clockwork Strategy, a one day commercial assessment fishery (purse seines only) occurred in Areas 12 and 13 on September 22/23. The catches totalled about 40,000 chum salmon based on dockside tallies. This commercial catch and subsequent test fishing indicated a total run through Johnstone Strait of 2.5 million (October 7). Under the Clockwork Strategy a run size of

greater than 3.0 million is required to permit additional commercial harvesting (20% exploitation rate). No further commercial fisheries were scheduled at this run size. The final in-season run size was estimated at 2.5 million. No commercial fisheries have occurred in Johnstone Strait since the September assessment fishery. The Aboriginal fishery in Johnstone Strait (Areas 12 and 13) is estimated to have caught about 12,000 chum.

The Nimpkish terminal area in Area 12 continues to be monitored. It is too early to forecast whether there will be a harvestable surplus of chum salmon for the Nimpkish River.

Strait of Georgia (Area 14 to 19)

No commercial fisheries have occurred in these areas to date, and stock assessment information indicates that fisheries are unlikely. Area 15 (Jervis) and Area 17 (Nanaimo) areas are closed to commercial fishing at this time. Early indications are poor (e.g. escapement to indicator systems are less than half of goal) and harvestable surpluses appear unlikely for these two areas. Area 14 (Qualicum) continues to be monitored; escapement levels into the Big and Little Qualicum Rivers are well below escapement requirements and test fishing in the terminal areas is not indicative of a large number of chum holding in the area. Puntledge River is the one bright spot with about 50,000 escapement to date (escapement goal is 60,000). Stock assessment information to date indicates that fisheries are unlikely in these areas. Early indications for the Cowichan (Area 18) are also poor. However, it is still quite early for this particular run and the situation could improve.

Recreational and aboriginal catches in Areas 14 to 19 areas are negligible. Test catches for all the above areas totalled approximately 14,000 chum salmon.

GSI Sample Collection

No GSI sample collection for stock identification was undertaken in 1997

Fraser River

Test fishing at Albion began on September 1. To November 7, test fishery catches total 3,700 chum. As of November 5, run timing is still uncertain; there are indications that the run is late but recent catches in the Johnstone Strait seine test fishery do not support this conclusion. The run size appears to be below the pre-season forecast of 1.9 million. The total terminal run including catch to November 7 is estimated at 712,000, with an early run component of 484,000 and a late run component of 228,000. Fisheries by First Nations started on October 25 between the Fraser River mouth and Sawmill Creek (6 kilometres above Yale and near the upstream limit of chum spawning on the Fraser). The catch, based on hails and Aboriginal landing slips to week ending November 2 is 4,300, including ceremonial catches. An Area 29 commercial fishery for chum took place on November 6 resulting in a catch of 19,000. Further fisheries may be held. Experimental fisheries to test methods of selectively harvesting chum while releasing other species were conducted on the Lower Fraser between September 1 and November 12. The modified gill net fishery harvested 4,600 chum; the tangle net fishery harvested 944 chum to November 8; the beach seine harvest was very small.

West Coast Vancouver Island Net (Areas 21 and 22)

Chum salmon returning to Area 22 (Nitinat Lake) are caught in Area 21, parts of Area 121 and potentially in Area 20-1. In 1997, pre-season forecasts were for a harvestable surplus of approximately 1 million chum salmon, based on good escapements in the brood years, high hatchery production levels in the brood years, below average ocean survival for the 1993 brood year and average survival for the 1994 brood year.

The Nitinat escapement objective is 250,000 to a maximum of 350,000. The additional 100,000 above the 250,000 target are required for hatchery broodstock requirements, increased distribution of spawners in the Nitinat River, and payment for in-lake test fishery and brood stock capture.

The fishing plan is based on achieving weekly escapement goals into Nitinat Lake. The strategy is to achieve the weekly escapement, minimize by-catch, provide early opportunities for gillnets, provide a seine fishery to balance allocation, and then allow a combined seine and gillnet fishery at the peak of the run. Implementation is based on weekly assessment information from an in-lake test fishery/escapement enumeration program, a gillnet test fishery outside Nitinat Lake in the commercial fishing area, and a seine test fishery outside Nitinat Lake.

The outside gillnet test fishery was implemented on September 16, with eight vessels fishing one or two 200 fathom chum gill nets, in a predetermined grid pattern. This test fishery continued 7 days/week through October 12. The in-lake gillnet test fishery for chum salmon began September 24 to assess escapement level. The outside seine test vessels started October 2 and continued to October 29 in Statistical Areas 21 to 26 inclusive.

Due to low chum catches in the outside gillnet test fishery, commercial openings at Nitinat were delayed until October 6. Gillnets then fished for 2 weeks (3 days each week) with good catches, but escapement to the lake remained below in-season goals until October 16. During this period a modified boundary, one nautical mile true south from Pachena Point and Bonilla Point light, was used to reduce the catch of coho and steelhead. Between October 16–20, escapement increased rapidly to 400,000, exceeding the weekly and seasonal goals. Seining opened October 20 in the normal two mile boundary for one day with a second day extension. A total of 576,000 chums was caught in this opening. Gillnets opened the next day until further notice, with seines open until further notice on the following day. When both seines and gillnets fished at the same time, a gillnet only area from Bonilla Point light to Logan Creek with a 2 nautical mile offshore boundary was open. The fishery ran continuously except for several days when the weather was too rough. Effort tapered off until the fishery was closed on November 12.

Total Nitinat chum catch, based on hails, is estimated at 1,069,000 (860,000 by seine and 209,000 by gillnet) and total chum escapement to Nitinat Lake including hatchery broodstock is estimated at 600,000. The test seine catch was 24,526 chum. The test gillnet catch was 10,165 chum prior to October 8 and 18,946 taken during the commercial fishery and extension period from October 8 onwards.

A directed chum troll fishery off the WCVI was open from October 2 to October 24, in Areas 21, 121-127, parts of Area 25, and Area 12. However there was no effort or catch in the vicinity of Nitinat. The total WCVI troll catch of chum was 3,200, based on fish slips to October 31.

GSI Sample Collection

One electrophoretic sample was collected by seine in Area 21 for stock composition during the week of October 19 to 25.

(Source Document) *1997 Post-Season Report for Canadian Treaty Limit Fisheries*. Canada Department of Fisheries and Oceans. December 3, 1997.

Fisheries/Stocks	Species	1997##	1996#	1995	1994	1993	1992	1991	1990
Stikine River (all gears)	Sockeye	65,393	74,281	53,467	45,095	47,197	26,284	22,763	18,024
	Coho	401	1,302	3,418	3,381	2,616	1,855	2,648	4,037
	Chinook-large	4,201	2,741	1,646	1,790	1,803	1,840	1,511	2,250
	Chinook-jack	266	421	860	350	308	239	660	959
	Pink	269	25	48	90	29	122	394	496
	Chum	222	232	263	173	395	231	208	499
	Steelhead	33	179	270	84	67	132	71	199
Taku River (commercial gillnet)	Sockeye	24,246	41,665	32,640	28,762	33,217	29,472	25,067	21,100
	Coho	2,903	5,028	13,629	14,531	3,033	4,077	3,415	3,207
	Chinook-large	2,732	3,331	1,577	2,065	1,619	1,445	1,177	1,258
	Chinook-jack	84	144	298	235	171	147	432	128
	Pink	0	0	2	168	16	0	296	378
	Chum	3	0	1	18	15	7	2	12
	Steelhead	183	98	205	232	11	15	5	22
Areas 3 (1-4) and 5-11 (commercial net)*	Pink	329,000	987,000	2,613,000	262,000	1,242,000	1,099,000	6,961,000	831,000
Area 1 (commercial troll)	Pink	261,000	732,000	1,284,000	220,000	890,000	760,000	1,647,000	1,165,000
North/Central Coast (commercial/sport)**	Chinook	145,568	26,900	119,100	241,000	258,300	262,000	303,200	253,000
West Coast Vancouver Island Area 12 (commercial troll)	Chinook	51,400	0	81,000	146,000	275,000	345,500	202,900	298,000
	Chinook	2,600	0	0	2,200	4,200	2,600	1,000	2,000
Georgia Strait (sport) (troll)	Chinook	56,300	93,800	61,500	70,800	118,800	116,600	112,700	112,000
	Chinook	800	0	0	13,000	33,300	37,300	32,000	34,000
	Total	57,100	93,800	61,500	83,800	152,100	153,900	144,700	146,000
Fraser River Stocks (total Canadian commercial catch)	Sockeye	8,737,000	1,019,000	903,000	9,800,000	13,428,000	3,906,000	6,947,000	13,411,000
	Pink	3,660,000	0	3,777,000	0	3,731,000	0	6,405,000	0
Fraser River Stocks (total US commercial catch)	Sockeye	1,578,000	257,000	415,000	2,100,000	2,876,000	700,000	1,881,000	2,427,000
	Pink	1,565,000	0	1,919,000	0	1,725,000	0	2,789,000	0
West Coast Vancouver Island (commercial troll)	Coho	0	761,000	1,345,000	1,251,000	954,000	1,664,000	1,890,000	1,864,000
Johnstone Strait (clockwork catch)***	Chum	52,000	96,000	269,000	1,295,600	1,271,700	1,368,283	174,269	1,183,901

1997 catches are based on in-season hails, on-the-grounds counts, dockside tallies and Aboriginal landing slips, fish slip data to Nov. 18 (transboundary), Nov 14 (north/central chinook), November 1 (north pinks), October 31 (WCVI troll chinook & chum, and GSTR chinook), and in-season hails, sport catches are from creel survey data to October 31 (Georgia Strait), and logbooks (north/central chinook)

1996 catches are preliminary

* Area 5-11 catches excluded in 1995, 1996 and 1997

** North Coast catch excludes terminal exclusion catches of 4,800 ('89), 5,500 ('90), 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), AND 5,943 in 1997

*** Canadian clockwork catch includes commercial, IFF and test fish catches in Areas 11-13 and 29 FOR 1985-87 and in Areas 11-13 for 1988-92, 1993, 1994 and in Areas 12-13 for 1995, 1996 and 1997

Preliminary 1985 to 1997 Catches in Canadian Treaty Limit Fisheries. Prepared for the December 3, 1997 Meeting of the Executive Session of the PSC, continued

Fisheries/Stocks	Species	1989	1988	1987	1986	1985
Stikine River (all gears)	Sockeye	20,032	15,291	9,615	17,434	25,464
	Coho	6,098	2,117	5,731	2,280	2,175
	Chinook-large	2,669	2,360	2,201	1,936	1,111
	Chinook-jack	289	444	444	975	185
	Pink	825	418	646	107	2,356
	Chum	674	733	459	307	536
	Steelhead	127	261	219	194	240
Taku River (commercial gillnet)	Sockeye	18,545	12,014	13,554	14,739	14,244
	Coho	2,876	3,123	5,599	1,783	1,770
	Chinook-large	895	555	127	275	326
	Chinook-jack	139	186	106	77	24
	Pink	695	1,030	6,250	58	3,373
	Chum	42	733	2,270	110	136
	Steelhead	24	86	223	48	32
Areas 3 (1-4) and 5-11 (commercial net)*	Pink	2,259,000	425,000	1,851,000	1,983,000	1,277,000
Area 1 (commercial troll)	Pink	1,377,000	1,630,000	495,000	416,000	6,870,000
North/Central Coast (commercial/sport)**	Chinook	301,200	245,600	282,800	261,000	275,000
West Coast Vancouver Island Area 12 (commercial troll)	Chinook	203,700	408,700	379,000	342,000	358,000
	Chinook	2,000	2,000	2,000	4,000	4,000
Georgia Strait (sport) (troll)	Chinook	133,000	119,000	121,000	182,000	235,000
	Chinook	29,000	20,000	39,000	44,000	56,000
	Total	162,000	139,000	160,000	226,000	291,000
Fraser River Stocks (total U.S. commercial catch)	Sockeye	12,776,000	1,615,000	3,776,000	9,372,000	8,754,000
	Pink	7,181,000	0	2,579,000	0	8,725,000
West Coast Vancouver Island (commercial troll)	Coho	2,439,000	679,000	1,932,000	2,755,000	2,925,000
		2,260,000	0	1,339,000	0	3,834,000
Johnstone Strait (clockwork catch)***	Chum	1,953,000	1,596,000	1,821,000	2,157,000	1,389,000
		481,803	1,111,559	90,668	1,060,903	529,100

1997 catches are based on in-season hails, on-the-grounds counts, dockside tallies and Aboriginal landing slips, fish slip data to Nov. 18 (transboundary), Nov 14 (north/central chinook), November 1 (north pinks), October 31 (WCVI troll chinook & chum, and GSTR chinook), and in-season hails, sport catches are from creel survey data to October 31 (Georgia Strait), and logbooks (north/central chinook)

1996 catches are preliminary

* Area 5-11 catches excluded in 1995, 1996 and 1997

** North Coast catch excludes terminal exclusion catches of 4,800 ('89), 5,500 ('90), 6,000 ('91), 6,100 ('92), 7,400 ('93), 6,400 ('94), 1,702 ('95), 16,000 ('96), AND 5,943 in 1997

*** Canadian clockwork catch includes commercial, IFF and test fish catches in Areas 11-13 and 29 FOR 1985-87 and in Areas 11-13 for 1988-92, 1993, 1994 and in Areas 12-13 for 1995, 1996 and 1997

D. 1997 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN THE UNITED STATES AND CANADA

The Pacific Salmon Treaty between Canada and the United States requires that information be exchanged annually regarding operations of and plans for existing enhancement projects, plans for new projects, and views concerning the other country's enhancement projects. In 1988, a committee was formed to develop recommendations for the pre- and post-season and enhancement report formats. In summary, the committee proposed that:

- detailed reports on existing enhancement facilities of the type produced in 1987 be prepared every four years;
- the Parties will annually update information on eggs taken, fry or smolt released and adults back to the facility; significant changes in facility mission or production will be highlighted in narratives; and
- the Parties will provide periodic reports through the appropriate panels on new enhancement plans.

1. 1997 Annual Report on the Salmonid Enhancement Activities of the United States

This report had not been received by May 31, 1998.

2 1997 Update Report for the Salmonid Enhancement Program in British Columbia

This report addresses item (2), the annual update report, and describes significant changes to the enhancement program since the previous detailed report in 1995. Also included are a series of appendices containing:

- 1) year-end status for facilities showing eggs taken, fry and smolt releases during 1997 and fish presently on hand (Appendices 1 and 2),
- 2) total releases from SEP for 1997, (Appendix 3),
- 3) descriptions of the Community Programs Divisions facilities (Appendix 4).

Program Adjustments

The process of amalgamating the Salmonid Enhancement Program with Habitat Management to form the Habitat and Enhancement Branch (HEB) was ongoing in 1997 and will be completed in 1998. The amalgamation integrates habitat protection and restoration, fish production, resource management planning and public education activities under a single organization,

Significant elements are the formation of six geographical areas, each with an Area Chief responsible for HEB program delivery, and decentralization of habitat restoration, biological and engineering staff to some of these areas. The headquarters divisions identified are Biological and Engineering Support, and Policy and Planning. The latter will include information management, evaluation and assessment, and production, project and land use planning.

A focus for the new HEB organization will be watershed-based production planning. The intent of these plans will be to document key habitat for fish, determine natural production capacity,

and explore opportunities for enhancement. Subsequent consultation with key watershed users (industry, municipalities, etc.) will develop consensus on protection of critical habitat and on fish production goals and utilization.

Federal funding for Pacific Salmonid enhancement peaked at \$38 million in 1990. Over the last seven years, budget cuts have reduced the current funding level to \$27 million. A further cut of \$3 million planned for 1998/99 has been deferred, as has the public consultation into expectations for, and delivery of, enhancement activities planned for 1997.

Significant Changes in Program

Coastal Division

East Coast Vancouver Island

Big Qualicum - Target escapements are below average for salmon in 1997. The escapement is further complicated by few females as compared to males. Egg deposition is estimated to be 50% of target. Hatchery production goals were achieved for chinook and coho. Chinook escapement is low for jacks and 3 year old fish indicative of weaker returns in the future. Coho escapement to the river is below average with few jacks present in the population also the fish size at return is small.

Chemainus - Both chinook and coho runs are well below expectations. Very few chinook were seen in the river after many swims throughout the season. Chinook observed were all small. The enhancement program achieve third of their chinook egg target. The coho egg target was achieved.

Little Qualicum - Has been experiencing similar returns as Big Qualicum. The chum egg deposition in the channel is 40% of target.

Puntledge - Pink salmon returns are poor. The chum returns are well above last year's river escapement. The summer run chinook are poor (112 fish) though a large number of female fish provided more eggs than expected. The low number of jacks and 3 year old fish indicate weak returns expected in the future. The fall run chinook are experiencing very poor returns (40 fish captured). Coho returns experienced a strong early component and weak main run timing. This may be due in part to the early high water events experienced on the coast. The run contained a large number of small fish. The average number of eggs per female was 70% of the normal number. Steelhead returns are very poor. Techniques for minimizing predator impact on Puntledge salmon are being tried on an experimental basis in the river.

Quinsam - Chinook adult returns continue to be below escapement targets, hatchery eggs spawned are slightly below hatchery target. Coho escapement is good with a strong early component and low numbers later in the run. Like Puntledge the number of eggs per female was 30% below average. Very large number of jack coho, at historic levels. Pink escapement is good. Chum escapement to the river is very good, above the previous five year average. The hatchery is undertaking several programs with the community and B.C. Hydro to improve flow control and productivity of the Campbell River system. An estuary management plan has been initiated with Campbell River municipality.

West Coast Vancouver Island

Conuma - Chum returns were average, with the hatchery achieving egg targets for all systems except Deserted River (late run). The chinook returns were good, though slightly below previous years escapement. There is a lack of jack and 3 year old chinook in the escapement. Coho returns were below average as expected due to weak 1994 returns and below target smolt releases for this brood. The coho run was predominately early run timing.

Nitinat - Continues to support a large chum fishery. Chinook returns are stronger than expected after the El Niño years (1992, 1993). The hatchery achieved all production egg targets. Coho escapements are stronger than expected (>1,000) considering the weak brood of 1994. The hatchery is incubating eggs for several satellite stocks in cooperation with various native groups. One item to note is the high incidence of bacterial kidney disease in the wild coho stocks from these areas.

Robertson Creek - The total chinook escapement was below target. The hatchery achieved their egg target, though the river had a low escapement. A low number of chinook females compared to males returned to the Somass river system. . The 1997 jack chinook escapement is exceedingly low indicative of poor returns for the future. Coho returns are better than expected considering the weak brood of 1994. There is a large number of jack coho returns.

Central Coast

Snootli - Good adult returns for chum and pink salmon. There was a fishery on both species. The chinook are returning in good numbers though below target escapement. The coho runs are poor. The Hatchery continues to support the community coho smolt program for lower Bella Coola stocks. This program has been expanded to include Atnarko stock, a previously discontinued program. Sockeye are slightly below target escapement.

North Coast

Kitimat - Steelhead program continues to be a success. The chinook run is good though slightly below previous years escapement. Coho run is less than half of previous years escapement to the Kitimat River. Chum returns though later timed than normal are better than expected. The non hatchery supported runs appear weak. Plans are on hold for the installation of a chinook adult enumeration fence on the Kildala River.

Pallant - Chum escapement was average. Coho returns were lower than previous years. Chinook escapement is estimated at 40 fish. These are progeny of chinook transplant in the early 1980's. Future plans for Pallant hatchery are to run it as a contract hatchery.

Fraser River and Northern B.C. Division

Lower Fraser

Capilano - *still to come.*

Chehalis - after two depressed years, Harrison chinook returns for the fall of 1997 appeared to return to past strength. Due to protracted high water, a 25 % shortfall in target was made up by transfer of Harrison origin eggs from Chilliwack River Hatchery. Coho returns appeared average, while chum returns were average to above average.

Chilliwack - *still to come.*

Inch - *still to come.*

Jones Creek - *still to come.*

Tenderfoot - *still to come.*

Upper Pitt - successful fall program resulted in 6.5 M sockeye eggs being taken. Recently constructed Alvin Patterson channel on south side of Corbold Creek was well spawned for second consecutive year.

Weaver - Poor fall of 1997 sockeye escapement resulted in channel being loaded to only 70 % of capacity. Similarly, escapements to upper watershed were reduced at only 10 % of target loading. Construction of a concrete channel with movable metalwork dividers located at the extreme downstream end of the spawning channel has resulted in more efficient adult fish handling and improved silt interception and removal capability.

Middle Fraser

Shuswap - although chinook escapements appeared average, unseasonably high water during broodstock collection on the Lower Shuswap resulted in a slight reduction in 1997 brood eggs taken. Facility continues to assist with local coho stock production and assessment activities.

Spilus - for a second consecutive year, depressed coho returns for Salmon and Coldwater River's led to shortfalls in egg collection numbers. To assist other projects, four 1996 brood coho production groups from the north/mid Thompson were taken on site.

Gates Creek - fall of 1997 channel escapement of just over 6 K sockeye, ~ 10 % of which are thought to have been of Early Stuart origin. As has been experienced in the past, prespawning mortality rate was high at ~ 30 %. Gravel in the entire spawning channel was cleaned of silt and organic growth in order to create improved spawning conditions for returning salmon.

Upper Fraser

Horsefly - low egg to fry survival for brood year 1996, combined with the presence of the dominant cycle return in 1997, led to the decision not to operate the channel for this year. Current plans are to conduct a number of improvement activities (settling basin cleaning and redesign, partial gravel replacement) prior to next fall to allow for operation for the sub-dominant return.

Nadina - fry program for brood year 1996 determined a high egg to fry survival of over 56 %. For the fall of 1997, a small escapement to the system resulted in just under 5 K adults being loaded into the channel. Again, the parasite Ich was documented as being present in the stock, and it may have been partially responsible, along with high migrational flows, for the 30 % prespawning mortality rate experienced.

Upper Skeena

Fulton - spring program for brood year 1996 revealed egg to fry survivals for channel #2 of 65 %, a level as high as any ever experienced at this site. For brood year 1997, adult loading was proceeding without incident until mid September when a high degree of prespawning mortality (~ 25%) was noted, mainly in the bottom half of channel #2 and the river. With the assistance of diagnostic staff from PBS, work continues into whether this was purely Ich induced, or if some additional agent is involved.

Pinkut - similar to the fall program at Fulton, adult spawning proceeded normally until mid season when elevated prespawning mortality was documented in the bottom three legs of the channel. Although present in the population, the Ich infection did not appear heavy enough to have resulted in the severity of problem seen, therefore further study into its cause continues. The affected portion of the channel was partially reloaded with later timing, healthy adults, in an attempt to make up for prespawning losses.

Northern

Transboundary - reduced escapement to Tahltan Lake (Stikine system) resulted in only 3.2 M of the 6.0 M sockeye egg target being achieved. At Tatsamenie Lake (Taku system), late run strength allowed for attaining of 5.0 M egg target. At both sites, work continues into determination of the contribution of enhanced origin stock, at fry, smolt and adult stage, to total populations. Regarding enhanced fry survivals, it is thought that with some additional fine tuning of outplant timing, improvements may be seen.

Resource Restoration and Development Division

Fraser River Passage - Routine maintenance and repair work including cleaning, structural repair and component replacement continues on fish passage facilities at Yale, Saddle Rock, Little Hell's Gate and Hell's Gate, mostly during winter low flow conditions. The two fishways at Bridge River have been cleaned of rock and debris and some damaged concrete areas have been repaired. This work has been performed by the Bridge River Indian Band under contract to DFO.

At Hell's Gate, a monitoring system measures rock movements on adjacent cliffs, with a view to predicting future rock falls. A study continued through 1997 featuring a numerical model devised to simulate sedimentation and to determine the mechanics of the problem bedload build up in the right bank tunnel. If the sedimentation problem can be permanently solved, it will result in improved right bank fish passage during the mid- to late- migration season. Water levels and flow velocities at key points need to be measured to verify this model thus modifications designed to improve the existing instrumentation systems and the quality of recorded data are underway.

No active work has been carried out in 1997 at Black Canyon on the Thompson River where the stability of a rock bluff may threatens fish passage if a slide is triggered. With a contingency plan prepared which gives options for quick response in the case of an emergency, and with instrument measurements in the past few years showing very limited rock movements, periodic instrument monitoring of the potential slide has been scaled down to a yearly visual check.

Kakweiken Channel - This is an "off" year for Pinks and only 6,000 were counted in the whole river/channel system, but on a later trip it was estimated most of the 6,000 went into the channel.

There is always a smattering of Chums and Coho through the same period and into the latter part of the year. (less than 100 mix observed in the channel in early December).

Glendale Channel - The channel was loaded with about 50,000 Pinks (and a smattering of incidental Chums) then closed off to remaining fish for the rest of the run. Some 10,000 Pinks were lined up in the approach channel off the river to the entry structure on the channel when it was closed off. The Glendale River itself contained upwards of 300,000 Pinks stretching from the estuary to the lake and many were observed spawning at the mouths of creeks entering the lake. No estimate is made of the Chums in the system.

Phillips Channel - This is an "off" year here too and there was no observation of Pinks at all in the channel this year and very few fish of any species at all observed in the river and lake system itself.

Orford Channel: Less than 100 Chum were observed and counted in the channel itself but the adjacent tributary of the Orford, Clear Creek, had a count of 5,500 Chum on one flight. There may have been more in the river but it is usually murky with glacial colouring throughout (and in the channel too) so no count is available of the run in the river. Clear Creek is aptly named to allow clear observation of the spawners returning to that tributary.

Habitat Restoration - The Resource Restoration Division, in concert with the Development Division, continues to implement habitat restoration projects throughout B.C. Funding for the projects was derived, in part, from other programs such as the Fraser River Action Plan, Skeena River Green Plan, B.C. Hydro, Watershed Restoration Plan (Forest Renewal B.C.), Habitat Conservation Fund and Pacific Salmon Foundation. In total, over 6 million dollars has been spent on habitat initiatives this year. Included in this expenditure are several demonstration sites on the Squamish and Chilliwack Rivers. These will be used to promote the benefits of habitat restoration and the various techniques that can be utilized in the field.

In addition to project implementation, technical staff have assisted in training contractors and have participated in workshops that will set the direction for future habitat rehabilitation projects throughout B.C.

Community Involvement Division

Level of Involvement

SEP's Community Involvement Division (CID) continues to manage four parts of the Salmonid Enhancement Program - the Community Economic Development Program (CEDP), the Public Involvement Program (fish production projects), information dissemination concerning CID (public displays, brochures, newsletters, etc. on various topics including fish production techniques, habitat restoration and educational concerns) and the Education Program (including Salmonids in the Classroom).

The CEDP, after funding reductions in 1994/95, has generally remained at the same level of funding and production. The Nimpkish hatchery expansion is complete. Some CEDP projects have initiated progressive alternative funding arrangements. For example, the Seymour Salmonid Society has secured funding of \$100K annually from the Greater Vancouver Regional District. The Namgis Band, which operates the Nimpkish hatchery, has proposed an ocean-ranching scheme that will lead to self-funding of the facility.

Publication and distribution of the Streamkeepers Handbook, and an additional module that offers information on in-stream habitat restoration techniques, has provided an effective tool for community groups and individuals to become "Streamkeepers." This will increase their ability to contribute to the knowledge base for streams in the Region, to monitor stocks and to rehabilitate habitat. There are now over 200 streamkeeper groups in B.C. and Yukon, involving 10,000 volunteers, who compliment the previous 10,000 volunteers who operate fish culture facilities under the Public Involvement Program. Streamkeeper training is being delivered as a credit course at Capilano College. Also, several individuals have registered with the Pacific Streamkeepers Federation to deliver non-credit training courses in their respective communities.

A new curriculum package called Table Talk was released by SEP in 1996. This was a collaborative effort with the Fraser River Action Plan to develop a teaching resource that deals with land- and water-use issues in the classroom. Students are taught consensus-based decision making by taking on specific sector (logging, mining, fishing, etc.) roles, then enter a role play process to solve a resource-use issue in an imaginary area in B.C.

Work with the Pacific Salmon Foundation (PSF) and the Commercial Fishing Industry Council (CFIC) has led to the introduction of a conservation stamp to be purchased for \$10.00 by each fisher when he/she buys their Fishers Registration Card. Proceeds will go to community-based enhancement projects applying to the Salmon Conservation and Restoration Program facilitated by the PSF. A special arrangement between the PSF and the T. "Buck" Suzuki Environmental Foundation will allow fishers to direct their contribution to one or the other, or both, organizations. This commercial contribution will be a welcome addition to the more than \$500K (with recent increases in Conservation Stamp costs and the inclusion of a cost for Juvenile Conservation Stamps) contributed to this program annually by the recreational sector,.

Lake Enrichment Program

Four sockeye salmon nursery lakes on Vancouver Island (Great Central, Henderson, Hobiton) and on the central coast (Long) were fertilized weekly from mid-June to mid-September 1997. Small, fixed wing aircraft or helicopters were used for all application work. By contrast, fertilization of Upper Adams Lake in the Fraser system was carried out during the summer of 1997 through application of fertilizer to the lake surface by boat to test its cost effectiveness given good road access to the lake and a readily available local labour pool. Preliminary indications are that plankton communities in the lakes responded well to the nutrient additions, although the summer of 1997 was one of the coolest and wettest on record. Additional analysis will be required to determine the effectiveness of the 1997 nutrient additions in significantly increasing the zooplankton food available to young sockeye. Field studies and assembly of coded wire tag release data to evaluate the relationship between sockeye smolt size and ocean survival for experimental sites on the west coast of Vancouver Is. were completed in 1997. Preliminary analysis indicates that early to mid-season smolt migratory timing produces higher marine survivals within a year and that the 1992 experimental release, conducted to coincide with the arrival of mackerel on the west coast, experienced lower marine survivals for all sizes and migratory timing groups than any of the 1989-1991 releases .

Program Coordination and Assessment Division

The Program Coordination and Assessment Division (PCAD) is responsible for information management, biological design and direction, project planning, program coordination and program assessment for fish and fish habitat enhancement restoration activities by the Habitat and Enhancement Branch.

Estimates of catch and escapement are now calculated for marked releases as well as releases of unmarked salmon for all enhancement projects based on mark data from index facilities. Exploration rates from index facilities are used to estimate escapement for projects with incomplete escapement sampling. These data are combined with catch data calculated by the Regional Mark Recovery Program (MRP) database to assess projects and update survival and catch distribution biostandards. A Program Evaluation database, which includes a variety of evaluation parameters including benefit/cost ratios, assessment value, conservation value, and public and native participation is used to rationalize expenditures in the Salmon Enhancement Program. The Enhancement Project database (ENPRO), used to capture fish culture data from facilities in a standardized manner for facility and assessment use, has been deployed to six facilities for testing. A catch and escapement database to assess contribution of finclipped and coded-wire tagged chum and pink on a finer resolution than can be calculated using the MRP database is nearing completion.

PCAD staff contributed to the Stock Assessment Division planning process which determined the streams for which SEP would provide adult escapement estimates. PCAD plans and co-ordinates juvenile marking programs, escapement sampling plans, and production targets for SEP facilities. PCAD also co-ordinates items such as the provision of surplus fish at facilities to native bands and to tendered sales and coded-wire tag purchasing and distribution. PCAD orders fish food for facilities and conducts a fish food quality control program. A quarterly report on the status of fish production activities at all SEP facilities is produced by PCAD

Please direct questions regarding specific projects to:

Coastal and Fraser River & Northern B.C. Divisions	Brian Pearce	666-3909
Development Division	Wai Leung	666-0615
Resource Restoration Division	Gary Logan	666-6810
Community Involvement Division	Don Lawseth	666-6831
Lake Enrichment Program	Kim Hyatt	756-7217
Program Coordination. & Assessment Division	Carol Cross	666-8598

Source Document) *1997 Update Report for the Salmonid Enhancement Program in British Columbia*. Department of Fisheries and Oceans, Canada. February 4, 1998.

Reports of the Joint Technical Committees

PART V

REPORTS OF THE JOINT TECHNICAL COMMITTEES

Executive summaries of reports submitted to the Commission by the joint technical committees during the period April 1, 1997 to March 31, 1998 are presented in this section. Copies of the complete reports are available on request from the library of the Pacific Salmon Commission.

A. JOINT CHINOOK TECHNICAL COMMITTEE

Joint Chinook Technical Committee – Incidental Fishing Mortality of Chinook Salmon: Mortality Rates Applicable to Pacific Salmon Commission Fisheries. TCCHINOOK (97)-1. January, 1997.

The Pacific Salmon Treaty recognizes the need to account for incidental fishing mortality and has instructed the Pacific Salmon Commission to “take into account such estimates of total chinook mortality in implementing the chinook rebuilding program” (paragraph 1(e) of the Chinook Annex). In 1987, the Chinook Technical Committee (CTC) reviewed agency reports and published literature on associated fishing mortality, and evaluated sources of associated mortality coastwide in marine and freshwater fisheries (CTC 1988). Since that report, substantial new information has become available on incidental mortality rates. This report reviews the information and recommends rates to be used for PSC fisheries in CTC analyses, and further recommends that fishery specific rates be applied as new information becomes available.

For hook-and-line fisheries, the CTC recognized a range of hook-and-release mortality rates from 20 to 30% but applied a single mortality rate of 30% in both commercial troll and recreational fisheries. For net fisheries, the CTC recognized a range in mortality rates from 70 to 90%, but applied a single mortality rate of 90%. For the current report, the CTC considered commercial troll and recreational fisheries separately, and purse seine and gill net fisheries separately, because recent studies indicate that mortality rates can be substantially different between these gear types.

Commercial Troll. The CTC has been using a single hook and release mortality rate in the chinook model of 30% for commercial troll fisheries. For these fisheries, the CTC decided the available information supports using mortality rates that are specific for hook type (barbed, barbless) and fish size category (legal, sublegal). Total hook-and-release mortality rates recommended for these categories are:

Barbed, legal:	21.1%
Barbed, sublegal:	25.5%
Barbless, legal:	18.5%
Barbless, sublegal:	22.0%

The CTC also recommends calculating an additional mortality increment in CTC analyses for drop-off mortality. Drop-off mortality is composed of two components: (1) *escaped encounters*, fish that are hooked but escape from the gear; and (2) *predation mortality*, fish that are removed or lethally maimed by predators. Drop-off mortality is fishery specific, varying with hook type, escaped encounter rate, and predator encounter rate. Based on the current information available to the CTC, estimates of total drop-off mortality, expressed as a percentage of chinook brought to the boat (including both those retained and those released), are:

SEAK Troll (barbed hooks):	0.8%
Oregon Troll (barbless hooks):	2.5%
Average (barbed hooks):	1.7%

Most of the variability in the rates developed by the CTC was due to differences in predator encounters. Because drop-off mortality is calculated as a percentage of both retained and released chinook salmon, the drop-off mortality rate is only additive to the hook-and-release mortality rate (which is a percentage of the fish released) for non-retention fisheries, when both legal and sublegal fish are released. In troll fisheries where legal-sized chinook are retained, total non-landed mortality must be calculated as two different components: hook-and-release mortality of sublegal fish, and drop-off mortality of both legal and sublegal fish.

Recreational. For recreational fisheries, the CTC found large differences in hooking mortality between fishing techniques. Recent research has documented high mortality rates associated with "California mooching" fishing method. At this time, the CTC agreed that rates for hook-and-release mortality for recreational fisheries of concern to the PSC should not incorporate data from the California mooching studies. However, if this fishing technique becomes more common in PSC fisheries, then the CTC estimates will need to be revised accordingly.

The CTC has been using a single hook and release mortality rate in the chinook model of 30% for recreational fisheries. The CTC considered adjustments to mortality rates due to hook type (barbed/barbless) and size category. Because the available data are not conclusive or consistent on the effect of hook type, the CTC decided not to consider barbed/barbless hook differences for estimating hook-and-release mortality in recreational fisheries. The CTC decided that the available data supported different mortality rates for chinook salmon < 33 cm, but no size-related differences among larger. Because chinook < 33 cm are not common in PSC fisheries, the rate for the larger size class will be used, unless size distribution data from a particular recreational fishery indicates that the rate should be weighted for the proportion of small fish present. The CTC recommends for CTC model analyses the following total hook-and-release mortality rates for recreational fishing specific for the two size categories:

≥33 cm :	12.3%
<33 cm :	32.2%

The CTC also recommends calculating an additional mortality increment for drop-off mortality in CTC analyses of recreational fisheries. This rate, based on the total chinook boated (landed catch and released catch), is fishery specific, varying with escaped encounter rate and predator encounter rate. Based on the current information available to the CTC, the following fishery specific rates are recommended:

SEAK:	3.6%
Puget Sound:	14.5%
Oregon:	2.7%

For fisheries where specific data are not available, the CTC will use the average of these rates, 6.9%, to estimate escaped encounters and predator losses.

Purse Seine. The CTC has been using a total non-retention mortality rate of 90% in the chinook model for purse seines. Recent studies indicate that chinook salmon mortality rates are potentially much lower for fish released from purse seines. The CTC recommends using a rate of 72% for total chinook non-retention mortality for all size classes of fish combined in CTC analyses. This rate is based on an average immediate mortality of 49% and a delayed mortality

of 23%.

When size-distribution information is available, the CTC recommends using the following estimates of immediate and total non-retention mortality:

	<u>Immediate</u>	<u>Total</u>
small chinook:	62.8%	85.8%
medium chinook:	50.5%	73.5%
large chinook:	28.0%	51.0%

In terminal fisheries where chinook salmon are released and a specific portion are close to spawning (< 60 d), the delayed mortality should be weighted to account for the lower rate of 1.1% observed for such fish.

The CTC will use these rates as generalized estimates of purse seine non-retention mortality. However, immediate mortality is fishery- and time-specific because of such factors as the type of fishery, frequency of catch sizes (related to handling time and suffocation of the chinook), incidence of chinook in sets by time and area of the fishery, handling of the chinook during boarding, and size distribution of the chinook caught. When fishery specific information becomes available for particular model fisheries, the CTC will apply the more specific estimates.

Gill Net. Prior to this review, the CTC assumed 90% release mortality for gill nets. This mortality rate has not been applied in the chinook model, because chinook non-retention (CNR) restrictions in gill net fisheries have not been explicitly modelled. CNR gill net fisheries are unlikely to be implemented due to high expected mortality rate of the fish released. However, CNR periods are likely in gill net fisheries where a limit on total chinook landings is imposed.

Review of the available literature indicated that gill net release mortality rates can be highly variable and may be substantially lower than 90% for salmon in their final year of life and close to maturity. Chinook salmon released from gill-nets in chinook model fisheries, however, are likely to be small, immature fish. Until data are available for this age and size range, the CTC will use the 90% mortality rate previously assumed.

The drop-out mortality rates currently used in the chinook model were derived from the available literature. This a poorly investigated subject; the rates must be viewed as very uncertain. Rates are expected to vary from fishery to fishery due to variables such as mesh size, prevailing weather and sea conditions, and predator abundance. These rates will continue to be used, however, pending review of updated incidental mortality reports from the agencies. Gill net fisheries occur primarily in SEAK, Fraser River, Puget Sound, the Washington Coast, and Columbia River. Until better information is available, the CTC will use the following drop-out mortality rates for these fisheries:

SEAK:	2%
Fraser River:	8%
Puget Sound:	8% (includes some purse seine fisheries)
Washington Coast:	2%
Columbia River:	3%

Joint Chinook Technical Committee - Description of Calibration Procedures and Results of May 1997 Calibration of the Pacific Salmon Commission Chinook Model. TCCHINOOK (97)-2. June 27, 1997.

This annual calibration report describes calibration procedure for the Pacific Salmon Commission (PSC) Chinook Model and summarizes the results of the May 1997 calibration (9702). The calibration process estimates the abundance (or cohort size) of the 30 model stocks. The abundances for broods that contributed to catch and escapement for the years 1979 through 1996 are estimated from historical time series of catch by fishery, and stock-specific estimates of escapement, terminal runs, hatchery production, and coded-wire-tag (CWT) recoveries. In addition, 1997 cohort abundances are estimated using pre-season forecasts provided by management agencies or model estimates of average survival rates.

This report includes:

1. Estimates of the abundance indices for the years 1979 through 1997 for the Southeast Alaska (SEAK) troll, North/Central British Columbia (NCBC) troll, West Coast Vancouver Island (WCVI) troll, Strait of Georgia (GS) troll and sport, Washington/Oregon (WA/OR) Ocean sport and troll, and North Puget Sound (NPS) sport fisheries;
2. Estimates of stock composition of total fishing mortality in the SEAK troll, NCBC troll, WCVI troll, and GS sport and troll fisheries; and
3. For each stock, the percent of total fishing mortality occurring in the SEAK all gear, NCBC all gear, the WCVI troll, and GS sport and troll fisheries.

Calibration 9702 will remain unchanged, but other calibrations may be done to update the model as improved forecasts of abundance and/or model enhancements are identified.

Joint Chinook Technical Committee - Evaluation of Three Methods for Predicting the Abundance Index for Chinook Salmon Available to the Southeast Alaska Troll Fishery. TCCHINOOK (97)-3. September, 1997.

In June 1996, the U.S. commissioners of the Pacific Salmon Commission (PSC) agreed on the elements of an abundance-based management regime for the all-gear chinook salmon fisheries in Southeast Alaska (SEAK). The U.S. letter of agreement (LOA) requested the PSC Chinook Technical Committee (CTC) to develop "a technically feasible procedure for estimating the aggregate abundance of chinook available to the SEAK fishery using in-season fishery performance data, for the purpose of adjusting preseason forecasts of harvest levels beginning in 1997" (Allen et al. 1996).

The bilateral CTC evaluated three methods for predicting the estimated abundance index of chinook available to the SEAK troll fishery. The assessments were based on data collected for the period 1979 through 1996 as well as abundance forecasts for 1997, which were either provided by agencies or represented by the PSC chinook model estimates. The years used in each assessment varied, depending on the appropriateness of the data, but each method was compared with estimated chinook abundance indices from the PSC chinook model calibration 9702 (CTC Report TCCHINOOK (97)-2). The three methods compared follow:

PSC Chinook Model Forecast. The preseason forecast of the estimated chinook abundance index for the SEAK troll fishery is based on the PSC chinook model.

In-season Prediction. A prediction of the estimated abundance indices for year *i* is based on fishery performance data from the troll fishery in year *i* and PSC chinook model estimated abundance indices. Various measures of fishery performance were assessed before selecting the statistic used in this report (Power Troll Statistic (PTS) = power troll catch per permit making a landing during the first 5 days of the summer troll season).

Bayesian Prediction. The application of Bayesian statistics to predict the estimated chinook abundance index is introduced. This method integrates information from both of the above methods and can be used in-season. This method does not introduce any new data into the estimation, but it combines the above methods based on the reliability of their historical relationships. Further, this method incorporates explicit estimates of the uncertainty in each of the above methods used to estimate the CTC abundance index.

The ability of each method to predict the estimated abundance index from the PSC chinook model was examined through retrospective analyses. The models were assessed by leaving one year of data out from a relationship, recalculating the relationship, and then predicting the value for the year omitted. This process, called hindcasting (PSC model) or jackknifing (in-season and Bayesian models), allows comparison of several predictions per model by comparing each prediction with the value actually observed, but omitted. The criteria for comparison between models were the mean percent error (MPE, the expected average error over time, a measure of bias), the mean absolute percent error (MAPE, the average annual error, a measure of uncertainty), and the maximum positive and negative errors (also measures of uncertainty and range of values).

The PTS and Bayesian predictions exhibited smaller MAPE, and lesser ranges of maximum errors than the model forecast abundance index. The Bayesian model exhibited the smallest MPE and the smallest maximum positive deviation. Consequently, the Bayesian method is the preferred method for predicting the estimated abundance index for the SEAK troll fishery.

Comparison of errors and range of errors by method determined from hindcasting for the 1987-1996 period (see text Table 12).

	CTC Model Forecast	In-season Prediction	Bayesian Prediction
MPE	+3%	+3%	+1%
MAPE	10%	8%	8%
MAX +	+25%	+22%	+15%
MAX -	-15%	-8%	-13%

The Bayesian method generates a distribution of abundance index values, given the PTS value observed in the current fishery and the CTC forecast abundance index. *The CTC recommends that the mode of this Bayesian posterior distribution be used as the "most probable" value of the estimated abundance of chinook salmon in the SEAK troll fishery.* The CTC also notes that the uncertainty about the predicted abundance index is also estimated. *The CTC recommends that the PSC consider how the new information on uncertainty could also be usefully employed in management.*

The CTC also notes that the current analysis of probability distributions relies upon limited data sets: 10 years for the hindcasted PSC model forecasts and 17 years for the PTS. However, future improvements in the PSC model forecasts are likely, and improved measures of in-season fishery performance may be identified. There are also concerns about the time trends in the error about the preseason forecast of the abundance index. *The CTC recommends re-evaluation of*

procedures to estimate abundance of chinook available to the SEAK fishery using in-season information prior to the 1999 fishing season.

This report is limited to the technical development of an in-season procedure that incorporates the PTS and provides an estimated abundance index for chinook available to the all-gear SEAK fishery. The CTC did not evaluate the extent to which variations in stock distributions influence the abundance index for the SEAK chinook fishery. Concerns of some CTC members with issues that may arise when integrating in-season adjustments to abundance for the SEAK fishery with regimes for other fisheries to achieve management objectives for harvest sharing and stock rebuilding are not addressed, because these considerations are beyond the scope of this technical assignment.

The Canadian CTC members wish to clarify that their review of the techniques in this report does not imply endorsement of any aspect of the U.S. LOA or the application of this technique to one fishery in isolation of others.

B. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

Joint Northern Boundary Technical Committee. U.S./Canada Northern Boundary Area 1997 Salmon Fisheries Management Report and 1998 Preliminary Expectations. TCNB (98)-1. January, 1998.

This report reviews:

- 1) Catch, effort, and management actions in the 1997 Northern Boundary Area pink, chum, sockeye, coho, and chinook salmon fisheries of southern Southeast Alaska Districts 101 to 106 and northern British Columbia Areas 1, 3, 4, and 5;
- 2) management performance relative to Treaty requirements;
- 3) historical catches by area, gear (purse seine, gillnet, toll, trap), year, week, and species (sockeye, pink, chum, coho, and chinook salmon);
- 4) historical escapements; and
- 5) preliminary expectations and fishing plans for 1998.

In southern Southeast Alaska, the all-gear salmon harvest of 23.2 million was well below the record harvests in recent years but was still above the 1960-1996 average of 19.5 million fish. The harvest was comprised of 15.3 (65.8%) million pink, 5.3 (23.0%) million chum, 2.0 (8.7%) million sockeye, 0.5 (2.3%) million coho, and 37 (0.02%) thousand chinook salmon. Escapement indices for pink salmon were well distributed and within the goal range except in District 107 where escapements were slightly below goal. Escapements of sockeye, chum, and coho salmon were generally well distributed and at acceptable levels in southern Southeast Alaska.

In Northern British Columbia, pink returns were well below expected levels: 304,163 pink salmon were harvested in the Area 1 net fishery, 420,709 pink salmon were harvested in Canadian Area 3 and 370,966 in the Area 4 fishery. Pink escapements were much lower than expected pre-season and escapements were below target for most Skeena-Nass systems. Sockeye returns were near expected levels, 506,952 were harvested in Area 3 and 955,607 in Area 4. The

Nass escapement levels for sockeye were near target. Skeena enhanced stocks were above target levels while wild stocks were variable, at or below escapement targets. Escapements of summer chum salmon were well below target.

For the 1997 fishing season, no agreement had been reached between Canada and the United States on the conduct of the Alaska District 104 purse seine fishery during Statistical Weeks 28-30 (July 6-26). Alaska Department of Fish and Game's management intent was to allow fishermen the opportunity to harvest domestic stocks, to allow for standard fishing periods, to distribute the fishing fleet, and to coordinate purse seine fishing opportunities throughout Southeast Alaska. In order to achieve these objectives, openings in District 104 were based on the observed run strength of southern Southeast pink salmon and the number of vessels fishing in the district. For the 1997 season, fishing time allowed in the district would not exceed the amount of fishing time allowed in District 101, and to the extent possible conform to the 1985-96 average hours fished in District 104 prior to Statistical Week 31. The abundance of sockeye salmon was exceptionally high in these early weeks and 573,000 sockeye were harvested when the district was opened for portions of 6 days (56 hours total) before Statistical Week 31. The number of hours fished in 1997 was below the 1985-1996 average of 63 hours and well below the 114 hours fished in District 101 during this 3-week period. The catch per effort and early escapements of pink salmon were strong; however, ADF&G managers felt that the high catches of pink, sockeye, and chum salmon would increase the seine effort in District 104 beyond what was needed at that time of the season. Therefore, openings in Statistical Weeks 29 and 30 were shortened relative to openings in other seine areas to discourage effort in this district. In addition, District 104 was not opened when Districts 101, 102, and other seine districts were opened for 15-hours on July 24th.

In the Alaska District 101-11 (Tree Point) gillnet fishery the Pacific Salmon Treaty calls for an average annual harvest, beginning in 1985, of 130,000 sockeye salmon. In Weeks 27 and 29 fishing time at Tree Point was reduced to three days in response to below average returns of chum salmon to Portland Canal and sockeye salmon to the Nass River. In Weeks 30 and 31 the lower portion of Tree Point was closed during a 24-hour extension due to conservation concerns for Nass River sockeye. The fishery was managed according to the Pink Salmon Management Plan from Week 30 through Week 35. During this time period harvests of chum and sockeye salmon were generally above Treaty averages and harvests of pink and coho salmon were below average. Effort levels were low throughout the season. The 1997 harvest of sockeye salmon at Tree Point was 169,474 fish. This brings the 1985 to 1997 average to 168,442 sockeye.

Under the Pacific Salmon Treaty the outside portions of Canada's Statistical Areas 3 and 5 are to be managed such that an average annual pink harvest of 900,000 is achieved. In 1997, 348,373 pinks were harvested in Management Units 3(1-4). The current average annual pink harvest from 1985-1997 in the treaty area is 1,759,170.

As for Alaska's District 104 seine fishery, there were no specific annex arrangements under the Pacific Salmon Treaty governing the conduct of the Canadian Area 1 troll fishery for pink salmon. Preliminary saleslips indicate the Area 1 troll catch was 263,650 pinks with 187,000 taken in the A-B line strip.

Strong harvests are forecasted for Southeast Alaska pink salmon in 1998. The Alaska Department of Fish and Game forecasts a harvest of between 36 and 50 million pink salmon in all of Southeast Alaska in 1998. Separate forecasts for northern and southern Southeast are no longer made. Returns of coho, sockeye, and chum salmon are projected to be strong, comparable to the levels observed in recent years.

In Canada, average Nass sockeye returns and very poor Skeena sockeye returns are anticipated in 1998, while above average pink returns are predicted.

C. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Joint Transboundary Technical Committee - Salmon Management and Enhancement Plans for the Stikine, Taku, and Alsek Rivers, 1995. TCTR (97)-1. April, 1997.

Management of the transboundary Stikine, Taku, and Alsek rivers to achieve conservation and allocation objectives stipulated by the Pacific Salmon Treaty requires close cooperation between Canada and the United States. This plan has been developed to assure that each Party has a clear understanding of objectives and procedures that will be used in managing relevant fisheries in the current year.

This report is organized by river system and salmon species. For each species within each drainage, the pre-season forecast, spawning escapement goal, harvest sharing objective, and management procedure are presented. For sockeye salmon stocks of the Stikine River, details of the stock assessment program are also presented.

The pre-season forecast for the Stikine River sockeye salmon run in 1995 is approximately 169,000 fish. This is an above average run which forecasts a total allowable catch of 115,000 fish to be shared by the two Parties. The Stikine River escapement goal for sockeye salmon is 54,000 fish, composed of 24,000 Tahltan sockeye and 30,000 non-Tahltan sockeye. In-season predictions of run size will be determined by the Stikine Management Model based on historical data, catch, effort, and stock composition data from 1982 to 1994. The stock assessment program for the Stikine River run is being adopted to take into consideration the introduction of enhanced fish. Additional sampling will be undertaken in 1995 to determine enhanced sockeye contributions to fisheries and escapements.

The 1995 run of chinook salmon to the Stikine River is expected to be below average, while the return of coho salmon is expected to be average to above average. There are no major changes to the management plans for salmon originating in the Stikine River.

It is expected that run sizes of Taku River chinook and coho salmon will be above average; the sockeye salmon run is expected to be average; and the pink and chum salmon runs are expected to be below average.

Alsek River run sizes of chinook, sockeye and coho are expected to be above average in 1995. However, the early sockeye run is expected to be below average. No major changes to the management plan for Alsek salmon are anticipated.

Sockeye salmon enhancement will continue in 1995 in the Stikine and Taku drainages. The following fry outplants from the 1994 egg takes are anticipated in June and July: 1.1 million to Tahltan Lake; 2.3 million to Tuya Lake; 0.9 million to Tatsamenie Lake; and 0.8 million to Trapper Lake. Green-egg to outplanted fry survival rates were 81.5% for Tahltan Lake eggs; 73.1% for Tatsamenie Lake eggs, and 69.2% for Trapper Lake eggs. Egg-take targets for the fall of 1995 are as follows: 6.0 million at Tahltan Lake; and, 2.5 million at Tatsamenie Lake. No eggs will be taken from Little Trapper Lake in 1995 due to concerns that juvenile production is below expectations.

Most of the stock assessment and research programs conducted in 1994 will be continued in 1995. Notable exceptions include the initiation of a chinook mark-recapture and radio tagging program on the lower Stikine River.

Joint Transboundary Technical Committee - Estimates of Transboundary River Salmon Production, Harvest, and Escapement, 1995. TCTR (97)-2. May, 1997.

Estimates of catches and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 1995 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.

Stikine

The 1995 Stikine sockeye run is estimated at 218,700 fish, of which an estimated 143,200 fish were harvested in various fisheries, 4,900 were used for brood stock, and 70,600 escaped to spawn. The catch was the second highest recorded since 1982 when stock identification techniques were first used for marine catches. The run was the third highest since 1979 and was above the 1985-1994 average of 141,100 sockeye salmon. The estimated U.S. commercial catch of Stikine sockeye salmon in Districts 106 and 108 was 76,400 fish; the Canadian in-river commercial, aboriginal, spawning surplus, and test fishery catches were 48,000, 5,500, 10,700 and 2,600 fish, respectively. Sockeye salmon from outplants into Tahltan and Tuya lakes contributed an estimated 27,300 fish to the U.S. harvests and 15,700 fish to Canadian catches. The postseason estimate of 218,700 sockeye salmon was above the preseason forecasts by Canada (169,000) and the U.S. (171,000). The Stikine Management Model correctly predicted a larger than average sockeye run, consisting of a strong Tahltan component and a weak mainstem component. Weekly in-season model forecasts ranged from 164,800 to 265,900 sockeye salmon; the final in-season model predictions were 164,800 (Canada) and 214,700 (U.S.). Canadian and U.S. final in-season estimates were different due to the U.S. using the commercial CPUE and Canada, the test fishery CPUE. Using the in-season estimates, both countries were harvesting just below their 50% of the TAC by their estimates. Using the postseason estimate of run size and total allowable catch, Canada harvested 35% of the total allowable catch and the U.S. harvested 47% of the total allowable catch. The brood stock take and terminal surplus escapement fishery removed 4,900 and 10,700 sockeye salmon, respectively, from the escapement to Tahltan Lake leaving a spawning escapement of 26,700 fish, 11% above the goal of 24,000 fish. The estimated spawning escapement of 42,800 non-Tahltan Stikine sockeye salmon was above the upper end of the escapement goal range (20,000 to 40,000 fish) for this stock group.

The catch of chinook salmon in Canadian commercial and aboriginal fisheries in the Stikine River was 1,600 large fish and 860 jacks, 15% below and 77% above the respective 1985-1994 averages. An additional 430 chinook salmon were taken in the Canadian in-river test fishery. The U.S. marine catch of chinook salmon in the District 106 and 108 mixed stock gillnet fisheries was 2,700 fish, approximately 23% above the 1985-1994 average catch. The spawning escapement of 3,100 chinook adults through the Little Tahltan River weir in 1995 was 45% below the 1985-1994 average and 42% below the joint U.S./Canada escapement goal of 5,300 fish. Surveys of other Stikine tributaries also showed below average escapements.

The U.S. marine harvest of Stikine River coho salmon is unknown since there is no stock identification program for this species; however, total mixed-stock coho catches of 170,600 and 17,800 fish in Districts 106 and 108, respectively, were 8% and 48% above the 1985-1994 averages. Alaskan hatchery fish comprised approximately 15% (28,400 fish) of the coho harvest from the two districts. The Canadian in-river coho catch of 3,400 fish was 4% above the previous 10-year average. The estimated coho above-border escapement of 21,200 fish was

below the escapement goal range of 30,000 to 50,000 coho salmon; however, coho survey counts were above average.

Taku

The 1995 Taku sockeye run estimate was 239,500 fish and included an estimated catch of 125,800 fish and an above-border spawning escapement of 113,700 fish. The run size, catch, and escapement were 14%, 19%, and 8% above the respective 1985-1994 averages. The estimated spawning escapement exceeded the upper level of the escapement goal range of 71,000 to 80,000 fish. An estimated 91,000 Taku sockeye salmon were taken in the District 111 commercial fishery and 2,100 sockeye salmon in the U.S. in-river personal use fisheries. Canadian in-river commercial and aboriginal fishery catches were 32,600 and 70 sockeye salmon, respectively. Since the escapement goal is expressed as a range, the resulting total allowable catch is also expressed as a range. In 1995, Canada harvested an estimated 19% to 21% and the U.S. took 55% to 58% of the total allowable catch.

The catch of large chinook salmon in the Canadian commercial fishery in the Taku River was 1,600 fish, 1.6 times the 1985-1994 average; in addition, 300 jack chinook were caught compared to an average of 170 fish. The chinook catch in the District 111 mixed stock gillnet fishery was 4,700 fish, 1.5 times the 1985-1994 average. Forty-one percent of the catch was estimated to be of Alaska hatchery origin. Escapements observed in six Taku River chinook index tributaries were evenly split between above and below average. The combined aerial survey count of the index tributaries was 8,760 fish, which was 8% below the 1985-1994 average of 9,500 fish, and 33% below the index escapement goal of 13,200 fish.

The Taku coho run was average in 1995. The U.S. harvest of 83,600 coho salmon in the District 111 mixed stock fishery was equal to the previous 10-year average. Alaskan hatcheries contributed an estimated 16% of the District 111 harvest, or approximately 13,700 fish. The Canadian in-river commercial and food fishery catch was 13,700 coho salmon, roughly three times the previous 10-year average. The above-border in-river run size is estimated at 69,400 coho salmon. After upriver Canadian catches are subtracted from the in-river run, the above-border spawning escapement is estimated at 55,700 coho salmon, which exceeds the interim escapement goal range of 27,500 to 35,000 fish.

The catch of pink salmon in District 111 was 41,300 fish, 79% below the 1985-1994 average catch. The Canadian commercial in-river harvest of pink salmon was only two fish. The escapement of pink salmon to the Taku River was very poor as evidenced by the fish wheel catch of 1,712 pink salmon, the second lowest catch since fish-wheel counts were started in 1985.

The catch of chum salmon in the District 111 fishery was 350,100 fish, composed of 339,200 summer run fish (prior to mid-August) and 10,900 fall run fish. The catch of summer chum salmon, primarily Alaskan hatchery stocks, was 1.7 times the 1994 record catch. The catch of fall chum salmon, composed of wild Taku River and Port Snettisham stocks, was 64% below the 1985-1994 average. The reported Canadian in-river catch of only one chum salmon was below average. Escapement appeared to be poor; the Canyon Island fish wheel catch of 218 chum salmon was 72% below average.

Alsek

For the Alsek River, the U.S. commercial catch of 33,100 Alsek sockeye salmon was more than double the 1985-1994 average. Canadian catches of 1,700 sockeye salmon in the aboriginal fishery and 680 in the sport fishery were 8% below and 107% above average, respectively. The escapement to the Klukshu River weir of 20,700 fish was 13% above the 1985-1994 average.

The Klukshu weir counts of 2,300 early run (count through August 15) and 18,400 late run sockeye salmon were 27% below and 21% above the 1985-1994 averages, respectively.

The chinook run to the Alsek River was well above average. The U.S. Dry Bay catch of 670 fish was double the 1985-1994 average. The combined Canadian sport and aboriginal fishery catch of 1,600 fish was over three times the 1985-1994 average. The 5,700 chinook count through the Klukshu River weir was the highest count recorded since the weir was installed in 1976 and was more than double the 1985-1994 average of 2,400 fish. The Klukshu River escapement goal is 4,700 chinook salmon. Aerial survey index counts of other spawning systems were generally above average in spite of surveys being conducted a week later than normal.

The coho run to the Alsek River was well above average, but current stock assessment programs prevent an accurate comparison with historical runs. The U.S. Dry Bay catch of 14,200 coho salmon was almost four times the 1985-1994 average, while the combined Canadian in-river aboriginal and sport fishery catch of 600 fish was 4.8 times the 1985-1994 average. Operation of the Klukshu weir does not provide a complete enumeration of coho salmon into this system since it is removed before the run is over; however, the count of 3,600 coho salmon was the second highest count on record.

Publications of the Pacific Salmon Commission

PART VI

PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 600 - 1155 Robson Street, Vancouver, B.C., V6E 1B5. Photocopying charges may be levied for documents which are out of print.

Documents listed here are those which were published during the period covered by this report. For previous publications, please refer to the Pacific Salmon Commission 1989/90 Fifth Annual Report and 1994/95 Tenth Annual Report, or contact the Pacific Salmon Commission Library.

A. ANNUAL REPORTS

12. Pacific Salmon Commission 1996/97 Twelfth Annual Report. October, 1997.

This report contains a summary account of the Commission's twelfth year of operation.

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

29. TCCHINOOK (97)-1 - *Incidental Fishing Mortality of Chinook Salmon: Mortality Rates Applicable to Pacific Salmon Commission Fisheries.* January, 1997.

30. TCCHINOOK (97)-2 - *Description of Calibration Procedures and Results of May 1997 Calibration of the Pacific Salmon Commission Chinook Model.* June 27, 1997.

31. TCCHINOOK (97)-3 - *Evaluation of Three Methods for Predicting the Abundance Index for Chinook Salmon Available to the Southeast Alaska Troll Fishery.* September, 1997.

ii. Joint Chum Technical Committee

No reports were finalized for publication during this reporting period.

iii. Joint Coho Technical Committee

No reports were finalized for publication during this reporting period.

iv. Joint Northern Boundary Technical Committee

19. TCNB (98-1) - *U.S./Canada Northern Boundary Area 1997 Salmon Fisheries Management Report and 1998 Preliminary Expectations.* January, 1998.

v. Joint Transboundary Technical Committee

27. TCTR (97)-1 - *Salmon Management and Enhancement Plans for the Stikine, Taku, and Alsek Rivers, 1995. April, 1997.*
28. TCTR (97)-2 - *Estimates of Transboundary River Salmon Production, Harvest, and Escapement, 1995. May, 1997*

vi. Joint Technical Committee on Data Sharing

No reports were finalized for publication during this reporting period.

vii. Joint Interceptions Committee

No reports were finalized for publication during this reporting period.

C. REPORTS OF THE FRASER RIVER PANEL

8. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1994 Fraser River Sockeye Salmon Fishing Season. PSC Staff. December, 1997.*
9. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1995 Fraser River Sockeye Salmon Fishing Season. PSC Staff. March, 1998.*

**D. TECHNICAL REPORT SERIES OF THE
PACIFIC SALMON COMMISSION**

8. Xie, Y, G. Cronkite, T.J. Mulligan. *A Split Beam Echosounder Perspective on Migratory Salmon in the Fraser River: A Progress Report on the Split-Beam Experiment at Mission, B.C., in 1995. PSC Tech. Rep. No. 8, December, 1997.*
9. Gable, Jim. *Sockeye Stock Composition Estimates for Fraser River First Nations Catches (1989 to 1995): A Comparison Between Run Reconstruction Models and Scale-Based Discriminant Function Models. PSC Tech. Rep. No. 9, February, 1998.*

**E. PUBLICATIONS BY PACIFIC SALMON COMMISSION
SECRETARIAT STAFF**

20. Adkison, M.D., Peterman, R.M., Lapointe, M.F., Gillis, D.M., and Korman, J. 1996. *Alternative models of climatic effects on sockeye salmon productivity in Bristol Bay, Alaska, and the Fraser River, British Columbia. Fish. Oceanogr. 5: 137-152.*
21. Xie, Y., *Acoustical tracking of ice failure process*, In *Sea Surface Sounds*, ed. By M.J. Buckingham and J.R. Potter. Pp. 457-469, World Scientific, 1995.
22. Xie, Y. and D.M. Farmer, *The influence of pressure ridges on seismic signals due to thermal cracking of sea ice*, J. Acoust. Soc. Am, 97(2), 1995.

F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

Responsibility for maintenance of the library of the International Pacific Salmon Fisheries Commission, on its termination December 31, 1985, was transferred to the Pacific Salmon Commission. Documents in the Library include historical archival papers which are available to researchers and other interested parties through contact with the Pacific Salmon Commission's Librarian.

Publication of John F. Roos' History of the International Pacific Salmon Fisheries Commission, and P. Gillhausen's Estimation of Fraser River Sockeye Escapements ended all publication series of the International Pacific Salmon Fisheries Commission. Copies of all in-print Progress Reports and Bulletins of the International Pacific Salmon Fisheries Commission are available free of charge through the Library of the Pacific Salmon Commission. Copies of the History of the International Pacific Salmon Fisheries Commission may also be ordered through the Library of the Pacific Salmon Commission.

G. DOCUMENTS SUBMITTED BY THE PARTIES

In compliance with provisions of the Treaty, the Parties provide annual post-season fishery reports and updates on their respective salmonid enhancement programs to the Commission. Documents received during 1997/98 were:

1. *Preliminary 1997 Post-Season Report for United States Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. December, 1997.
2. *Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December 3, 1997.
3. *Update Report for the Salmonid Enhancement Program in British Columbia.* Canada Department of Fisheries and Oceans. February 4, 1998.

Report of the Auditors for 1997/98

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS
FOR THE PERIOD APRIL 1, 1997 TO MARCH 31, 1998

AUDITORS' REPORT TO THE COMMISSIONERS

We have audited the statement of financial position of the Pacific Salmon Commission as at March 31, 1998 and the statements of financial activities and fund balances for the year then ended. These financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform an audit to obtain reasonable assurance whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Commission, as well as evaluating the overall financial statement presentation.

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 1998 and the results of its operations for the year then ended in accordance with the Financial Regulations of the Commission as described in note 1 to the financial statements.



Chartered Accountants

New Westminster, Canada

May 8, 1998

PACIFIC SALMON COMMISSION

Statement of Financial Position

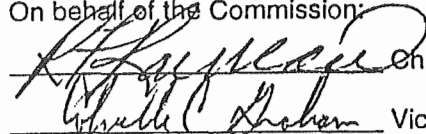
March 31, 1998, with comparative figures for 1997

	1998	1997
Assets		
General fund:		
Current assets:		
Cash and term deposits	\$ 945,709	\$ 1,870,074
Accounts receivable (note 3)	94,322	25,389
Interest receivable	2,710	5,130
Prepaid expenses	25,585	32,695
	<u>1,068,326</u>	<u>1,933,288</u>
	\$ 1,068,326	\$ 1,933,288
Working capital fund:		
Cash and term deposit	\$ 92,403	\$ 89,882
Capital asset fund:		
Capital assets	\$ 195,091	\$ 190,744
Yukon River Salmon Restoration and Enhancement Fund:		
Cash and term deposits	\$ -	\$ 572,617

Liabilities and Fund Balances

General fund:		
Current liabilities:		
Accounts payable and accrued liabilities	\$ 75,808	\$ 150,623
Deferred revenue (note 4)	224,329	777,652
Fund balance (note 5)	768,189	1,005,013
	<u>\$ 1,068,326</u>	<u>\$ 1,933,288</u>
Working capital fund:		
Fund balance	\$ 92,403	\$ 89,882
Capital asset fund:		
Equity in capital assets	\$ 195,091	\$ 190,744
Yukon River Salmon Restoration and Enhancement Fund:		
Fund balance	\$ -	\$ 572,617

On behalf of the Commission:



Chair, Standing Committee on Finance and Administration



Vice-Chair, Standing Committee on Finance and Administration

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

General Fund

Statement of Financial Activities and Fund Balances

Year ended March 31, 1998, with comparative figures for 1997

	1998	1997
Fund balance, beginning of year	\$ 1,005,013	\$ 523,956
Revenue:		
Contributions from contracting parties	1,600,000	1,800,000
Special contribution - stakeholder process	218,363	-
Interest	37,861	47,258
Other	3,847	35,526
Test fishing	687,799	1,055,706
	2,547,870	2,938,490
Expenditures:		
Salaries and employee benefits	1,428,086	1,302,569
Travel and transportation	97,970	66,048
Rents and communication	124,282	85,626
Printing and reproductions	14,033	11,788
Contract services	377,430	113,656
Materials and supplies	38,975	33,683
Loss on disposal of capital assets	2,880	4,996
Test fishing	586,126	715,983
	2,669,782	2,334,349
Excess of revenue over expenditures	883,101	1,128,097
Transfer to capital asset fund	(114,912)	(123,084)
Fund balance, end of year	\$ 768,189	\$ 1,005,013

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Working Capital Fund

Statement of Financial Activities and Fund Balances

Year ended March 31, 1998, with comparative figures for 1997

	1998	1997
Fund balance, beginning of year	\$ 89,882	\$ 66,515
Revenue:		
Interest	2,521	2,982
Balance of Mediation Fund	-	30,690
	2,521	33,672
Expenditure:		
Stakeholder meeting costs	-	10,305
Excess of revenue over expenditures	2,521	23,367
Fund balance, end of year	\$ 92,403	\$ 89,882

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Capital Asset Fund

Statement of Financial Activities and Fund Balances

Year ended March 31, 1998, with comparative figures for 1997

	1998	1997
Fund balance, beginning of year	\$ 190,744	\$ 194,028
Net additions during the year funded by transfer from the General Fund	114,912	123,084
Amortization	(110,565)	(126,368)
Fund balance, end of year	\$ 195,091	\$ 190,744

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Yukon River Salmon Restoration and Enhancement Fund

Statement of Financial Activities and Fund Balances

Year ended March 31, 1998, with comparative figures for 1997

	1998	1997
Fund balance, beginning of year	\$ 572,617	\$ 195,722
Revenue:		
Contributions	1,126,880	558,440
Foreign exchange on opening balance	5,127	7,300
Interest earned on term deposit	4,944	6,609
	1,136,951	572,349
Transfers to the Yukon River Panel	1,709,568	195,454
Fund balance, end of year	\$ -	\$ 572,617

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Notes to Financial Statements

Year ended March 31, 1998, with comparative figures for 1997

Nature of organization:

The Pacific Salmon Commission was established by Treaty between the Governments of Canada and the United States of America to promote cooperation in the management, research and enhancement of Pacific salmon stocks. The Treaty was ratified on March 18, 1985 and the Commission commenced operations on September 26, 1985.

1. Significant accounting policies:

(a) Fund accounting:

The General Fund includes funds provided annually through contributions from the Contracting Parties and any net surplus obtained through the test fishing program. By agreement of the Parties, any unexpended balance remaining at the end of one fiscal year may be used to offset contributions in the following year or may be used to offset a shortfall between contributions and approved expenditures in the following year.

The Capital Assets Fund reflects the Commission's capital asset transactions. Amortization is charged to the Capital Fund.

The Working Capital Fund represents monies contributed by the Parties to be used temporarily pending receipt of new contributions from the Parties at the beginning of a fiscal year, or for special programs not contained in the regular budget but approved during the fiscal year. Any surplus above a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the General fund and is treated as income.

The Yukon River Salmon Restoration and Enhancement Fund reflects funding provided on the creation of a separate entity, the Yukon River Panel. These funds were held in trust for the Yukon River Panel until March 1998 when the balance of the fund monies was transferred to the Panel.

(b) Basis of accounting:

The operations of the Commission are generally accounted for on an accrual basis except that purchase order expenditures are recognized at the time that the commitment for goods and services are made, rather than at the time that the goods or services are delivered.

(c) Capital assets:

Capital assets are stated at cost. Costs of repairs and replacements of a routine nature are charged as a current expenditure while those expenditures which improve or extend the useful life of the assets are capitalized. Amortization is provided using the straight-line method of rates sufficient to amortize the costs over the estimated useful lives of the assets. The rates of amortization used on an annual basis are:

Automobiles		20%
Boats		20%
Computer equipment and software		30%
Equipment		20%
Films		33%
Furniture and fixtures	85	10%
Leasehold improvements		10%

PACIFIC SALMON COMMISSION

Notes to Financial Statements (continued)

Year ended March 31, 1998, with comparative figures for 1997

1. Significant accounting policies (continued):

(d) Income taxes:

The Commission is a non-taxable organization under the Privileges and Immunities (International Organizations) Act (Canada).

(e) Foreign exchange translation:

Transactions originating in foreign currencies are translated at the exchange rate prevailing at the transaction dates. Assets and liabilities denominated in foreign currency at the balance sheet date are translated to equivalent Canadian amounts at the current rate of exchange.

(f) Statement of Changes in Financial Position:

A statement of changes in financial position has not been provided as it would not provide any additional meaningful information.

2. Capital assets:

	Cost	Accumulated amortization	1998 Net book value	1997 Net book value
Automobiles	\$ 146,620	\$ 105,677	\$ 40,943	\$ 6,551
Boats	87,705	76,980	10,725	8,160
Computer equipment	423,142	365,087	58,055	73,889
Equipment	447,130	379,435	67,695	78,699
Films	1,800	1,800	-	-
Furniture and fixtures	233,189	229,669	3,520	5,069
Computer software	108,265	94,112	14,153	18,376
Leasehold improvements	19,532	19,532	-	-
	\$ 1,467,383	\$ 1,272,292	\$ 195,091	\$ 190,744

3. Related party transactions:

Included in accounts receivable is \$27,067 (1997 - \$Nil) due from the Government of Canada and \$27,067 (1997 - \$Nil) due from the Government of the United States.

4. Deferred revenue:

Deferred revenue consists of cash contributions received from a contracting party in the current year that represent funding for programs and services to be carried out in the following year. Deferred revenue includes accrued interest on the contributions up to March 31, 1998.

PACIFIC SALMON COMMISSION

Notes to Financial Statements (continued)

Year ended March 31, 1998, with comparative figures for 1997

5. General fund balance:

The Commission has approved a carryover of the unexpended funds in the General Fund to be utilized as follows:

	1998	1997
(a) Continuing operations	\$ 742,604	\$ 972,318
(b) Reserve for prepaid expenses	25,585	32,695
	\$ 768,189	\$ 1,005,013

6. Pension plan:

The Commission maintains a defined benefit pension plan for its employees. Actuarial valuations of this pension plan are carried out triennially and provide estimates of present value of accrued pension benefits at a point in time, calculated on the basis of various assumptions with respect to pension plan costs and rates of return on investments.

At the date of the most recent actuarial valuation as amended, January 1, 1996, the present market value of related assets exceeds accrued benefits by \$120,000.

7. Financial instruments:

The financial instruments consist of cash and term deposits, amounts receivable and interest receivable, and accounts payable and accrued liabilities. The carrying amounts of these financial instruments are a reasonable estimate of the fair values.

Appendices

Appendix A

Recommendations from the Report on Pacific Salmon to the Prime Minister of Canada and the President of the United States by David W. Strangway and William D. Ruckelshaus

Recommendations

Our recommendations need to be put into context. In the last several months, we have been extremely impressed with the calibre of fishers and professionals on all sides of this dispute. There are a lot of very good people trying to work in a system for managing salmon that has become dysfunctional. This system needs to be repaired so these well meaning people can do their work. We believe the recommendations that follow can put us on the road to system repair but if recovery is to occur both sides need to look for solutions not for reasons to continue the impasse. Solutions require genuine accommodation. It is our view that an accommodation is possible under the terms of the existing Treaty. What must be present is the political will to achieve the necessary accommodation by those responsible for the management of the fish – this means the governors of the states of Alaska, Washington and Oregon, the tribal leaders in Washington and Oregon, the Minister of Fisheries and Oceans for Canada in consultation with the government of British Columbia and ultimately, the Prime Minister of Canada and the President of the United States.

Therefore we recommend:

1. The stakeholder process should not be reconvened.
2. The governments (states, tribes and federal government on the U.S. side and Federal and Provincial Governments on the Canadian side) should cause to be adopted interim fishing arrangements for all relevant species of salmon for up to two years. The development of these arrangements should be led by the fish managers supported by the fishers and fish scientists but the arrangements must be made and the governments must ensure that they are.
3. During this two year period, governments from both sides should develop a practical framework for implementing Article III leading to the establishment of longer term fishing arrangements.
4. At the same time, governments should undertake a comprehensive review of the Pacific Salmon Commission (PSC) and dedicate themselves to making it a functional institution for the preservation and management of the Pacific Salmon. The assignment to the PSC should be clear. The Commission should be fully funded and empowered to carry out its work and all governments need to closely monitor its performance.

We are well aware that if recommendations 2 and 3 are to be carried out, meaningful compromises of positions strongly held will be necessary. However, we must not forget the stakes are high. If the tragedy of the Commons is to be averted, rules must be established for the preservation of the fish and time is not on their side.

For the implementation of these recommendations, we are willing to render such further process related assistance as the President and Prime Minister deem appropriate.

Conclusion

This report could be much longer and more descriptive of everything we have found. For instance, we have strong views on the need to institute a science-based comprehensive conservation system to insure the preservation of our shared resource. This need and others can be addressed if we can agree on interim fish-sharing arrangements, commit to longer-term arrangements within the framework of Article III of the Treaty, and fix the Pacific Salmon Commission. In our judgement the salmon will remain in jeopardy if we do not take these steps. For too long,

good faith and trust have been missing elements in our dealings with the salmon and one another. It is time to work on preserving the fish and restoring our centuries-old friendship and cooperation.

Respectfully submitted.

David W. Strangway

William D. Ruckelshaus

Appendix B

Revised Annex IV to the Pacific Salmon Treaty effective May 17, 1991

Annex IV

Chapter 1

TRANSBOUNDARY RIVERS

1. Recognizing the desirability of accurately determining exploitation rates and spawning escapement requirements of salmon originating in the Transboundary Rivers, the Parties shall maintain a Joint Transboundary Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern Panel and to the Commission. The Committee, inter alia, shall

- (a) assemble and refine available information on migratory patterns, extent of exploitation and spawning escapement requirements of the stocks;
- (b) examine past and current management regimes and recommend how they may be better suited to achieving preliminary escapement goals;
- (c) identify enhancement opportunities that:
 - (i) assist the devising of harvest management strategies to increase benefits to fishers with a view to permitting additional salmon to return to Canadian waters;
 - (ii) have an impact on natural Transboundary river salmon production.

2. The Parties shall improve procedures of co-ordinated or co-operative management of the fisheries on Transboundary River stocks.

3. Recognizing the objectives of each Party to have viable fisheries, the Parties agree that the following arrangements shall apply to the United States and Canadian fisheries harvesting salmon stocks originating in the Canadian portion of

(a) the Stikine River:

(i) Assessment of the annual run of Stikine River sockeye salmon shall be made as follows:

- a. A pre-season forecast of the Stikine River sockeye run will be made by the Transboundary Technical Committee prior to March 1 of each year. This forecast may be modified by the Transboundary Technical Committee prior to the opening of the fishing season.
- b. In-season estimates of the Stikine River sockeye run and the Total Allowable Catch (TAC) shall be made under the guidelines of an agreed Stikine Management Plan and using a mathematical forecast model developed by the Transboundary Technical Committee. Both U.S. and Canadian fishing patterns shall be based on current weekly estimates of the TAC. At the beginning of the

season and up to an agreed date, the weekly estimates of the TAC shall be determined from the pre-season forecast of the run strength. After that date, the TAC shall be determined from the in-season forecast model.

- c. Modifications to the Stikine Management Plan and forecast model may be made prior to June 1 of each year by agreement of both Parties. Failure to reach agreement in modifications shall result in use of the model and parameters used in the previous year.
 - d. Estimates of the TAC may be adjusted in-season only by concurrence of both Parties' respective managers. Reasons for such adjustments must be provided to the Transboundary Technical Committee.
- (ii) Harvest sharing of naturally occurring Stikine River sockeye salmon for the period 1988 to 1992, contingent upon activities specified in the February 1988 Understanding between the United States and the Canadian Section of the Pacific Salmon Commission concerning Joint Enhancement of Transboundary River Salmon Stocks (Understanding) shall be as follows:
- a. When the estimated TAC of Stikine River sockeye salmon is zero or less:
 - 1. Canada may conduct its native food fishery but the catch shall not exceed 4,000 fish, there will be no commercial fishing;
 - 2. The United States shall not direct commercial fisheries at Stikine River sockeye salmon in District 108;
 - 3. The United States may fish in the commercial gillnet fisheries in the Sumner Strait portion of District 106 so long as the in-season estimate of the contribution of Stikine River sockeye salmon is less than 20 percent of the total catch to date of sockeye salmon in Sumner Strait.
 - b. When the estimated TAC of Stikine River sockeye salmon is between 1 and 20,000 fish:
 - 1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 10,000 fish and may increase its catch to include any surplus available in-river total allowable catch but not to exceed 15,000 fish;
 - 2. The United States shall not direct commercial fisheries at Stikine sockeye salmon in District 108;
 - 3. The United States may fish in the commercial gillnet fisheries in the Sumner Strait portion of District 106 so long as the in-season estimate of the contribution of Stikine River sockeye salmon is less than 25 percent of the total catch to date of sockeye salmon in Sumner Strait. If the contribution of Stikine River sockeye salmon is greater than 20 percent but less than 25 percent only one day of fishing per week will be permitted, if greater than 25 percent, no fishing will be permitted in Sumner Strait.
 - c. When the estimated TAC of Stikine River sockeye salmon is between 20,001 and 60,000 fish:
 - 1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 15,000 fish and may increase its catch to include any surplus total allowable catch but not to exceed 20,000 fish;
 - 2. The United States may direct commercial fisheries at Stikine River sockeye salmon in District 108 if the total TAC of Stikine River sockeye salmon is greater than the actual catch of Stikine River sockeye salmon in District 106 plus 20,000.

- d. When the estimated TAC of Stikine River sockeye salmon is greater than 60,000 fish:
 - 1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 20,000 fish and may increase its catch to include any surplus total allowable catch but not to exceed 30,000 fish;
 - 2. The United States may direct commercial fisheries at Stikine River sockeye salmon in District 108 if the total TAC of Stikine River sockeye salmon is greater than the actual catch of Stikine River sockeye salmon in District 106 plus 30,000.
 - e. United States incidental catches of Stikine River sockeye salmon in District 108 shall not be counted when computing TAC available for the Canadian fishery. For the purpose of calculation, the Canadian in-river allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift gillnet fishery.
- (iii) Canada shall harvest no more than 4,000 coho salmon annually in the Stikine River from 1988 through 1992.
- (iv) Canadian harvests of chinook, pink, and chum salmon may be taken as an incidental harvest in the directed fishery for sockeye and coho salmon.
- (v) Both Parties shall take the appropriate management action to ensure that the necessary escapement goals for the chinook salmon bound for the Canadian portions of the Stikine River are achieved by 1995.
- (vi) If the United States unilaterally withdraws from mutually agreed enhancement goals and activities as specified in the Understanding, then the harvest sharing of naturally occurring Stikine River salmon as stated in sections (ii) through (iv) above shall remain in effect.
- (vii) If Canada unilaterally withdraws from mutually agreed enhancement goals and activities as specified in the Understanding, then the harvest sharing of naturally occurring Stikine River sockeye salmon shall be as follows:
- a. When the estimated TAC of Stikine River sockeye salmon is zero or less:
 - 1. Canada may conduct its native food fishery but the catch shall not exceed 4,000 fish, there will be no commercial fishing;
 - 2. The United States shall not direct commercial fisheries at Stikine River sockeye salmon in District 108;
 - 3. The United States may fish in the commercial gillnet fisheries in the Sumner Strait portion of District 106 so long as the in-season estimate of the contribution of Stikine River sockeye salmon is less than 20 percent of the total catch to date of sockeye salmon in Sumner Strait.
 - b. When the estimated TAC of Stikine River sockeye salmon is between 1 and 20,000 fish:
 - 1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 4,000 fish and may increase its catch to include any surplus available in-river total allowable catch but not to exceed 7,000 fish;

2. The United States may direct commercial fisheries at Stikine sockeye salmon in District 108 if the total TAC of Stikine River sockeye salmon is greater than the actual catch of Stikine River sockeye salmon in District 106 plus 7,000;
 3. The United States may fish in the commercial gillnet fisheries in the Sumner Strait portion of District 106 so long as the in-season estimate of the contribution of Stikine River sockeye salmon is less than 25 percent of the total catch to date of sockeye salmon in Sumner Strait.
- c. When the estimated TAC of Stikine River sockeye salmon is between 20,001 and 60,000 fish:
1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 7,000 fish and may increase its catch to include any surplus total allowable catch but not to exceed 15,000 fish;
 2. The United States may direct commercial fisheries at Stikine River sockeye salmon in District 108 if the total TAC of Stikine River sockeye salmon is greater than the actual catch of Stikine River sockeye salmon in District 106 plus 15,000.
- d. When the estimated TAC of Stikine River sockeye salmon is greater than 60,000 fish:
1. Canada shall conduct its commercial and native food fisheries so that the all gear catch is at least 15,000 fish and may increase its catch to include any surplus total allowable catch but not to exceed 25,000 fish;
 2. The United States may direct commercial fisheries at Stikine River sockeye salmon in District 108 if the total TAC of Stikine River sockeye salmon is greater than the actual catch of Stikine River sockeye salmon in District 106 plus 25,000.
- e. United States incidental catches of Stikine River sockeye salmon in District 108 shall not be counted when computing TAC available for the Canadian fishery. For the purpose of calculation, the Canadian in-river allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift gillnet fishery.
- f. Canada shall harvest no more than 2,000 coho salmon annually.
- g. Canadian harvest of chinook, pink, and chum salmon may be taken as an incidental harvest in the directed fishery for sockeye and coho salmon.
- (b) the Taku River:
- (i) Harvest sharing of naturally occurring Taku River sockeye salmon for the period 1988 to 1992, contingent upon activities specified in the February 1988 Understanding concerning Joint Enhancement of Transboundary River Salmon Stocks (Understanding), shall be as follows:
 - a. Canada shall harvest no more than 18 percent of the TAC of the sockeye salmon originating in the Canadian portion of the Taku River each year.
 - b. Canada shall harvest no more than 3,000 coho salmon each year.
 - (ii) Canadian harvests of chinook, pink and chum salmon may be taken as an incidental harvest in the directed fishery for sockeye and coho salmon.
 - (iii) Both Parties shall take the appropriate management action to ensure that the necessary escapement goals for chinook salmon bound for the Canadian portions of the Taku River are achieved by 1995.

- (iv) If the United States unilaterally withdraws from mutually agreed enhancement goals and activities as specified in the Understanding, then the harvest sharing of naturally occurring Taku River salmon as stated in sections (i) and (ii) above shall remain in effect.
 - (v) If Canada unilaterally withdraws from mutually agreed enhancement goals and activities as specified in the Understanding, then Canada's share of naturally occurring Taku River sockeye salmon shall be 15 percent of the TAC. Furthermore, Canada shall commercially harvest coho, chinook, pink, and chum salmon only incidentally during a directed sockeye salmon fishery.
4. The Parties agree that if the catch allocations set out in paragraph 3 are not attained due to management actions by either Party in any one year, compensatory adjustments shall be made in subsequent years. If a shortfall in the actual catch of a Party is caused by management action of that Party, no compensation shall be made.
5. The Parties agree that the following arrangements shall apply to United States and Canadian fisheries harvesting salmon stocks originating in Canadian portions of the Alsek River: Recognizing that chinook and early run sockeye stocks originating in the Alsek River are depressed and require special protection, and in the interest of conserving and rebuilding these stocks, the necessary management actions shall continue until escapement targets are achieved.
6. The Parties agree to consider co-operative enhancement possibilities and to undertake as soon as possible studies on the feasibility of new enhancement projects on the Transboundary Rivers and adjacent areas for the purpose of increasing productivity of stocks and providing greater harvests to the fishers of both countries.
7. Recognizing that stocks of salmon originating in Canadian sections of the Columbia River constitute a small portion of the total populations of Columbia River salmon, and that the arrangements for consultation and recommendation of escapement targets and approval of enhancement activities set out in Article VII are not appropriate to the Columbia River system as a whole, the Parties consider it important to ensure effective conservation of up-river stocks which extend into Canada and to explore the development of mutually beneficial enhancement activities. Therefore, notwithstanding Article VII, paragraphs 2, 3, and 4, during 1985, the Parties shall consult with a view to developing, for the transboundary sections of the Columbia River, a more practicable arrangement for consultation and setting escapement targets than those specified in Article VII, paragraphs 2 and 3. Such arrangements will seek to, inter alia,
- (a) ensure effective conservation of the stocks;
 - (b) facilitate future enhancement of the stocks on an agreed basis;
 - (c) avoid interference with United States management programs on the salmon stocks existing in the non-transboundary tributaries and the main stem of the Columbia River.

Chapter 2

NORTHERN BRITISH COLUMBIA SOUTHEASTERN ALASKA

1. Considering that the chum salmon stocks originating in streams in the Portland Canal require rebuilding, the Parties agree in 1990 and 1991 to jointly reduce interceptions of these stocks to the extent practicable and to undertake assessments to identify possible measures to restore and enhance these stocks. On the basis of such assessments, the Parties shall instruct the Commission to identify long-term plans to rebuild these stocks.
2. With respect to sockeye salmon, the United States shall
 - (a) with respect to District 4 purse seine fishery:
 - (i) for the four year period, 1990 through 1993, limit its fishery in a manner that will result in a maximum four-year total catch of 480,000 sockeye salmon prior to United States Statistical Week 31;
 - (ii) when the annual catch reaches 160,000 sockeye salmon, no further daily fishing periods in District 4 will be allowed prior to Statistical Week 31;
 - (iii) all underages not to exceed 20% of the Annex ceiling will add to, and overages will subtract from, the subsequent four-year period.
 - (b) limit its drift gillnet fishery in Districts 1A and 1B in a manner that will result in an average annual harvest of 130,000 sockeye salmon.
3. With respect to pink salmon, Canada shall
 - (a) limit its net fishery in Areas 3-1, 3-2, 3-3, 3-4, and 5-11 in a manner that will result in an average annual harvest of 900,000 pink salmon;
 - (b) with respect to the Area 1 troll fishery:
 - (i) for the four year period, 1990-1993, limit its Area 1 pink salmon troll catch to a total of 5.125 million;
 - (ii) during the period 1990 through 1993, close the pink salmon troll fishery in the most northerly portion of Area 1 in management units 101-4, 101-8, 101-3 north of 54 degrees 37 minutes N. and 103 north of 54 degrees 37 minutes N to pink salmon trolling when the pink salmon fishery has lasted 22 days starting with the beginning of the troll season in Area 1, but no earlier than July 22, except that the most northerly portion of the area shall close to pink salmon trolling whenever the catch in that area reaches 300,000 pinks.
 - (iii) limit the maximum harvest in the entire Area 1 in any one year to 1.95 million pink salmon; and,
 - (iv) all underages, not to exceed 20% of the Annex ceiling, will add to, and overages will subtract from, the subsequent four-year period.
4. In 1987 and thereafter, in order to ensure that catch limits specified in paragraphs 2 and 3 are not exceeded, the Parties shall implement appropriate management measures which take into account the expected run sizes and permit each country to harvest its own stocks.

5. In setting pink salmon fisheries regimes for 1987 and thereafter, the Parties agree to take into account information from the northern pink tagging program.
6. The Parties shall at the earliest possible date exchange management plans for the fisheries described herein.
7. In order to accomplish the objectives of this Chapter, neither Party shall initiate new intercepting fisheries, nor conduct or redirect fisheries in a manner that intentionally increases interceptions.
8. The Parties shall maintain a Joint Northern Boundary Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern Panel and the Commission. The Committee, inter alia, shall
 - (a) evaluate the effectiveness of management actions;
 - (b) identify and review the status of stocks;
 - (c) present the most current information on harvest rates and pattern on these stocks, and develop a joint data base for assessments;
 - (d) collate available information on the productivity of stocks in order to identify escapements which produce maximum sustainable harvests and allowable harvest rates;
 - (e) present historical catch data, associated fishing regimes, and information on stock composition in fisheries harvesting these stocks;
 - (f) devise analytical methods for the development of alternative regulatory and production strategies;
 - (g) identify information and research needs, including future monitoring programs for stock assessments; and,
 - (h) for each season, make stock and fishery assessments and recommend to the Northern Panel conservation measures consistent with the principles of the Treaty.

Chapter 3

CHINOOK SALMON

1. Considering the escapements of many naturally spawning chinook stocks originating from the Columbia River northward to southeastern Alaska have declined in recent years and are now substantially below goals set to achieve maximum sustainable yields, and recognizing the desirability of stabilizing trends in escapements and rebuilding stocks of naturally spawning chinook salmon, the Parties shall

- (a) instruct their respective management agencies to establish a chinook salmon management program designed to meet the following objectives:
 - (i) halt the decline in spawning escapements in depressed chinook salmon stocks; and,
 - (ii) attain by 1998, escapement goals established in order to restore production of naturally spawning chinook stocks, as represented by indicator stocks identified by the Parties, based on a rebuilding program begun in 1984;
- (b) continue the chinook working group to clarify policy issues relating to the execution of this Chapter; for example, the definition of pass-through, and the development of common procedures for adjusting catch ceilings in response to changes in abundance, positive incentives and enhancement add-ons; the chinook working group will develop options for consideration by the Commission and Panels as appropriate;
- (c) jointly initiate and develop a co-ordinated chinook management program;
- (d) maintain a Joint Chinook Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern and Southern Panels and to the Commission, which inter alia, shall
 - (i) evaluate management actions for their consistency with measures set out in this Chapter and for their potential effectiveness in attaining these specified objectives;
 - (ii) evaluate annually the status of chinook stocks in relation to objectives set out in this Chapter and, consistent with paragraph (d) (v) beginning in 1986, make recommendations for adjustments to the management measures set out in this Chapter;
 - (iii) develop procedures to evaluate progress in the rebuilding of naturally spawning chinook stocks;
 - (iv) recommend strategies for the effective utilization of enhanced stocks;
 - (v) recommend research required to implement this rebuilding program effectively; and,
 - (vi) exchange information necessary to analyze the effectiveness of alternative fishery regulatory measures to satisfy conservation objectives;
- (e) ensure that
 - (i) in 1991, the all-gear catch in Southeast Alaska shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Southeast Alaska shall not exceed 263,000 chinook salmon; these catches exclude the Alaska hatchery add-on as described in the letter of transmittal; in 1991 and 1992 Alaska shall open its general summer troll fishery on July 1; the June fishery shall not exceed 40,000 chinook salmon (excluding the Alaska hatchery add-on) taken in a manner similar to

1989 and 1990; and areas of high chinook abundance shall be closed during chinook non-retention periods to reduce incidental mortalities;

- (ii) in 1991, the all-gear catch in Northern and Central B.C. shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Northern and Central B.C. shall not exceed 263,000 chinook salmon; these catches exclude a portion of the catch in extreme terminal areas as described in the letter of transmittal;
 - (iii) in 1991 and 1992, the annual troll catch off the west coast of Vancouver Island shall not exceed 360,000 chinook salmon;
 - (iv) in 1991 and 1992, the total annual catch by the sport and troll fisheries in the Strait of Georgia shall not exceed 275,000 chinook salmon; Canada will undertake management measures to achieve the target of rebuilding Lower Georgia Strait and Fraser River chinook stocks by 1998;
 - (v) adjustments to the ceilings may be made in response to reductions in chinook abundance so that the indicator stocks are rebuilt by 1998;
 - (vi) fishing regimes are reviewed by the Committee and structured so as not to affect unduly or to concentrate disproportionately on stocks in need of conservation;
 - (vii) starting with the 1987 season, a 7.5 percent management range is established above and below a catch ceiling. On a continuing basis, the cumulative deviation (in numbers of fish) shall not exceed the management range. In the event that the cumulative deviation exceeds the range, the responsible Party shall be required in the succeeding year, to take appropriate management actions to return the cumulative deviation, plus any penalty assessed, to a level within the established management range. Negative cumulative deviations shall not accumulate below the management range. It is the intent of this section to insure that, on average, the annual catch in ceilinged fisheries is equal to the agreed target ceiling; and,
 - (viii) in 1987 and thereafter, the United States will continue to monitor fisheries in Juan de Fuca Strait (Areas 4B, 5, 6A, 6C) and the outer portions of Puget Sound (6B, 7, 7A, 9) so as to assess the levels and trends in the interceptions of Canadian chinook salmon;
- (f) maintain the following program, recognizing that associated fishing mortalities can affect the rebuilding schedule. The Parties shall
- (i) minimize the effects of such mortalities;
 - (ii) monitor, assess, and report associated fishing mortalities;
 - (iii) provide the information required by the Chinook Technical Committee to estimate the magnitude and assess the impacts of associated mortalities on an on-going basis;
 - (iv) beginning in 1989, the Chinook Technical Committee shall
 - a. review reports provided by the Parties on an annual basis, unless directed by the Commission, and estimate the magnitude of all quantifiable sources of associated fishing mortalities;
 - b. evaluate their impact on the rebuilding schedule and recommend management actions that will achieve the objectives of the chinook rebuilding program, taking into account the effects of all fishing mortalities; and

- c. develop technical procedures and standardize methodologies to quantify the magnitude of associated fishing mortalities, including savings of fish, and assess their impacts upon the rebuilding program, including pass-through commitments;
 - (v) the Commission shall annually take into account, starting in 1988, the impacts of fishing mortalities, as determined by the Chinook Technical Committee, in establishing regional fishing regimes and may adjust allowable catches accordingly, to assure rebuilding by 1998;
 - (g) manage all salmon fisheries in Alaska, British Columbia, Washington and Oregon, so that the bulk of depressed stocks preserved by the conservation program set out herein principally accrue to the spawning escapement;
 - (h) establish, at the conclusion of the chinook rebuilding program, fishery regimes to maintain the stocks at optimum productivity and provide fair internal allocation determinations. It is recognized that the Parties are to share the benefits of coastwide rebuilding and enhancement, consistent with such internal allocation determinations and this Treaty; and,
 - (i) exchange annual management plans prior to each season.
2. The Parties agree that enhancement efforts designed to increase production of chinook salmon would benefit the rebuilding program. They agree to consider utilizing and redirecting enhancement programs to assist, if needed, in the chinook rebuilding program. They agree that each region's catches will be allowed to increase above established ceilings based on demonstrations to the Commission and assessment by it of the specific contributions of each region's new enhancement activities, provided that the rebuilding schedule is not extended beyond 1998, and provisions of Subsection 1(e)(vi) of this Chapter are adhered to.
3. The Parties shall submit a report to the Commission by December 1991 which presents
- (a) joint recommendations for chinook salmon escapement goals in the transboundary rivers;
 - (b) given the goals recommended in 3(a), a jointly accepted assessment of progress toward rebuilding chinook stocks in these transboundary rivers based on escapement data available through 1991, and the likelihood of achievement of these goals by 1995; and,
 - (c) co-operatively developed management options to be identified by December 1991 and initiated in 1992 and following seasons to ensure rebuilding of chinook stocks in the transboundary rivers which are identified in 3(b) as requiring further management actions.

Chapter 4

FRASER RIVER SOCKEYE AND PINK SALMON

1. In order to increase the effectiveness of the management of fisheries in the Fraser River Area (hereinafter the Area) and in fisheries outside the Area which harvest Fraser River sockeye and pink salmon, the Parties agree

(a) that the preliminary expectations of the total allowable catches of Fraser River sockeye and pink are:

	<u>Sockeye</u>	<u>Pink</u>
1985	6.6 million	11.0 million
1986	12.5 million	
1987	3.1 million	12.0 million
1988	3.6 million	
1989	7.1 million	14.0 million
1990	13.0 million	
1991	3.1 million	14.0 million
1992	3.6 million	

(b) that

(i) based on these preliminary expectations, the United States shall harvest as follows:

	<u>Sockeye</u>	<u>Pink</u>
1985	1.78 million	3.6 million
1986	3.0 million	
1987	1.06 million	3.6 million
1988	1.16 million	

(ii) the United States catches referred to in paragraph 1(b)(i) herein shall be adjusted in proportion to any adjustments in the total allowable catches set out in paragraph 1(a) herein that are due to any agreed adjustments in pre-season or in-season expectations of run-size. When considering such adjustment, the Parties shall take into account all fisheries that harvest Fraser River sockeye and pink salmon including annual Fraser River Indian food fish harvests in excess of 400,000 sockeye. The United States catches shall not be adjusted to any adjustments in the total allowable catch that may be caused by changes in escapement goals that form the basis for the agreed total allowable catches set out in paragraph 1(a) herein;

(iii) notwithstanding the agreed United States and Canadian catch levels for Fraser River sockeye and for coho off the west coast of Vancouver Island, as provided in paragraph 1(b)(i) herein and in Chapter 5, respectively, and subject to paragraph 1(b)(ii), in 1985 the United States catch of Fraser River sockeye shall be 1.73 million and the Canadian catch of coho off the west coast of Vancouver Island shall not exceed 1.75 million; and in 1986, the United States catch of Fraser River sockeye shall be 2.95 million and the Canadian catch of coho off the west coast of Vancouver Island shall not exceed 1.75 million;

(c) in 1985, to instruct the International Pacific Salmon Fisheries Commission to develop regulatory programs in the Area to give effect to the provisions of paragraph 1(b);

- (d) to instruct the Fraser River Panel for 1986 through 1992 to develop regulations to give effect to the provisions of paragraphs 1(b) and 1(f);
 - (e) to instruct the Fraser River Panel that if management measures fail to achieve such sockeye and pink catches, any difference shall be compensated by adjustments to the Fraser fishery in subsequent years;
 - (f) in the period 1989 to 1992, the Fraser River Panel shall determine the annual United States catch level so that the total United States catch in this period shall not exceed 7 million sockeye in the aggregate. In the years 1989 and 1991, the United States harvest shall not exceed 7.2 million pink salmon, in the aggregate. Notwithstanding the foregoing, these levels shall be reduced in proportion to any decreases in the total allowable catches set out in paragraph 1(a) herein that are due to any agreed decreases in pre-season or in-season expectations of run size. When considering such reductions, the Parties shall take into account all fisheries that harvest Fraser River sockeye and pink salmon including annual Fraser River Indian food fish harvests in excess of 400,000 sockeye. The United States catches shall not be reduced due to any decreases in the total allowable catch that may be caused by changes in escapement goals that form the basis for the agreed total allowable catches set out in paragraph 1(a) herein;
 - (g) to consider no sooner than 1989 adjusting the regime in accordance with the principles of Article III;
 - (h) to instruct the Fraser River Panel that in managing Fraser River sockeye and pink salmon, it shall take into account the management requirements of other stocks in the Area.
2. Notwithstanding the provisions of Paragraphs 1(b) and 1(f), and to ensure that Canada receives the benefits of any Canadian-funded enhancement activities undertaken following entry into force of this Treaty, any changes in the total allowable catch due to such activities shall not result in adjustment of the United States catch.
 3. The Parties shall establish data-sharing principles and processes which ensure that the Parties, the International Pacific Salmon Fisheries Commission, the Commission and the Fraser River Panel are able to manage their fisheries in a timely manner consistent with this Chapter.
 4. The Parties may agree to adjust the definition of the Area as necessary to simplify domestic fishery management and ensure adequate consideration of the effect on other stocks and species harvested in the Area.
 5. In managing the fisheries in the Area, the Parties, the Commission, and the Fraser River Panel shall take into account fisheries inside and outside the Area that harvest Fraser River sockeye and pink salmon. The Parties, the Commission, and the Fraser River Panel shall consider the need to exercise flexibility in management of fisheries outside the Area which harvest Fraser River sockeye and pink salmon.
 6. The Parties shall establish a technical committee for the Fraser River Panel:
 - (a) the members shall co-ordinate the technical aspects of Fraser River Panel activities with and between the Commission staff and the national sections of the Fraser River Panel, and shall report to their respective national sections of the Panel. The committee may receive assignments of a technical nature from the Fraser River Panel and will report results directly to the Panel.
 - (b) membership of the committee shall consist of up to three such technical representatives as may be designated by each national section of the Commission.
 - (c) members of the technical committee shall analyze proposed management regimes, provide technical assistance in the development of proposals for management plans, explain technical reports and provide information and technical advice to the respective national sections of the Panel.

- (d) the technical committee shall work with the Commission staff during pre-season development of the fishery regime and management plan and during in-season consideration of regulatory options for the sockeye and pink salmon fisheries of Fraser Panel Area waters to ensure that:
- (i) domestic allocation objectives of both Parties are given full consideration;
 - (ii) conservation requirements and management objectives of the Parties for species and stocks other than Fraser River sockeye and pink salmon in the Fraser River Panel Area during periods of Panel regulatory control are given full consideration; and,
 - (iii) the Commission staff is timely informed of management actions being taken by the Parties in fisheries outside of the Fraser River Panel Area that may harvest sockeye and pink salmon of Fraser River origin.
- (e) the staff of the Commission shall consult regularly in-season with the technical committee to ensure that its members are fully and timely informed on the status of Fraser River sockeye and pink salmon stocks, and the expectations of abundance, migration routes and proposed regulatory options, so the members of the technical committee can brief their respective national sections prior to each in-season Panel meeting.

Chapter 5

COHO SALMON

1. Recognizing that for the past several years some coho stocks have been below levels necessary to sustain maximum harvest and that recent fishing patterns have contributed to a decline in some Canadian and United States coho stocks, and in order to prevent further decline in spawning escapements, adjust fishing patterns, and initiate, develop, or improve management programs for coho stocks, the Parties shall

- (a) instruct their respective management agencies to continue to develop coho salmon management programs designed to meet the following objectives
 - (i) prevent overfishing; and,
 - (ii) provide for optimum production;
- (b) maintain a Joint Coho Technical Committee (Committee), reporting, unless otherwise agreed, to the Panels and the Commission. The membership of the Committee shall include representation from the Northern and Southern Panel Areas. The Committee, inter alia, shall, at the direction of the Commission and relevant Panels
 - (i) evaluate management actions for their consistency with measures set out in this Chapter and for their potential effectiveness in attaining the objectives established by the Commission;
 - (ii) annually identify, review, and evaluate the status of coho stocks in relation to the objectives set out in this Chapter and make recommendations for adjustments to the management measures consistent with those objectives;
 - (iii) present the most current information on exploitation rates and patterns on these stocks, and develop a joint data base for assessments;
 - (iv) collate available information on the productivity of coho stocks in order to identify the management objectives necessary to prevent overfishing;
 - (v) present historical catch data and associated fishing regimes;
 - (vi) estimate stock composition in fisheries of concern to the Commission and Panels;
 - (vii) devise analytical methods for the development of alternative regulatory and production strategies;
 - (viii) identify information and research needs, including future monitoring programs for stock assessments;
 - (ix) investigate the feasibility of alternative methodologies for implementing indicator stock programs in all areas;
 - (x) for each season, make stock and fishery assessments and recommend to the Commission conservation measures consistent with the principles of the Treaty;
 - (xi) develop programs to assure the attainment of spawning escapement goals and prevent overfishing;

- (xii) exchange information necessary to analyze the effectiveness of alternative fishery regulatory measures in achieving conservation objectives; and,
 - (xiii) work to develop, under the direction of the Joint Northern and Southern Panels, standard methodologies for coho stock and fishery assessment; and,
- (c) unless otherwise agreed, in any area where fisheries of one Party may intercept coho stocks originating in the rivers of the other which require conservation action or such other action as the Commission may determine, that Party will endeavour to limit incidental coho catches in fisheries targeting on other species.
2. For coho stocks shared by fisheries of the United States and Canada, recommendations for fishery regimes shall be made by the Northern Panel for coho salmon originating in rivers with mouths situated between Cape Caution and Cape Suckling and by the Southern Panel for coho salmon originating in rivers with mouths situated south of Cape Caution, as provided in Annex I. At the direction of the Commission, each Party shall establish regimes for its troll, sport, and net fisheries consistent with management objectives approved by the Commission.
3. The Parties agree
- (a) for 1991 and 1992, the west coast of Vancouver Island (Canadian Management Areas 21, 23, 24, 25, 26, 27, 121, 123, 124, 125, 126, 127, and 130-1) annual troll harvest shall not exceed 1.8 million Coho;
 - (b) for 1991 and 1992, the Swiftsure Bank area will be closed to chinook and coho salmon trolling in order to address conservation concerns expressed by both Parties. Troll fishing for sockeye and pink salmon shall, upon appropriate prior notice, be permitted only in order to attain Canadian domestic troll allocation objectives on sockeye and pink;
 - (c) to avoid any alterations in coho fisheries along the west coast of Vancouver Island that would increase the proportional interception of U.S. coho stocks;
 - (d) that in 1991 and 1992, for Canadian Area 20, and U.S. Areas 7 and 7A, fisheries directed at coho salmon will be permitted. Notwithstanding this agreement, if the Commission determines that conservation concerns expressed by either Party warrant further restrictions, then the Parties shall limit their catch of coho salmon to that taken incidentally during fisheries under the control of the Fraser Panel and those permitted under the provisions of Annex IV, Chapter 6. Both Parties agree that in 1987, due to conservation concerns expressed by both Parties and agreed to by the Commission, coho fisheries in Canadian Area 20 and U.S. Areas 7 and 7A shall be limited by the levels of incidental coho catch anticipated during fisheries conducted under the control of the Fraser Panel and provisions of Annex IV, Chapter 6;
 - (e) for 1991 and 1992, the United States shall adhere to presently agreed management objectives in Strait of Juan de Fuca Areas 4B, 5, and 6C; and,
 - (f) to develop in 1993 and thereafter, troll fishery regimes for the west coast of Vancouver Island that
 - (i) implement conservation measures approved by the Commission and take into account any increased contributions by the Parties to the fishery; and,
 - (ii) provide for the sharing of benefits of coho production of each Party consistent with the principles of Article III.
4. Notwithstanding any other provisions of this Chapter, the Commission, for 1993 and thereafter, may set specific fishery regimes as appropriate, which may include troll harvest ceilings, for coho salmon in the intercepting fisheries restricted under this Chapter that

- (a) implement conservation measures approved by the Commission;
- (b) take into account increased production;
- (c) provide for the recognition of benefits of coho production of each Party consistent with the principles of Article III;
- (d) take into account actions taken by each Party to address its conservation concerns; and,
- (e) take into account time and area management measures which will assist either Party in meeting its conservation objectives while avoiding undue disruption of fisheries.

5. Starting with the 1987 season, a 7.5 percent management range is established above and below a catch ceiling. On a continuing basis, the cumulative deviation (in numbers of fish) shall not exceed that management range. In the event that the cumulative deviation exceeds the range, the responsible Party shall be required, in the succeeding year, to take appropriate management actions to return the cumulative deviation, plus any penalty assessed, to a level within the established management range. Negative cumulative deviations shall not accumulate below the management range. It is the intent of this section to insure that, on average, the annual catch in ceilinged fisheries is equal to the agreed target ceiling.

6. The Parties agree that enhancement efforts designed to increase production of coho salmon would, when combined with catch ceilings and/or time/area management measures, aid in rebuilding depressed natural stocks by reducing the exploitation rates on these stocks. They agree that utilizing this opportunity in the future to rebuild natural stocks is, in most cases preferable to reductions in fishing levels. A major objective of enhancement is to lay the foundation for improved fisheries in Annex areas in the future.

Chapter 6

SOUTHERN BRITISH COLUMBIA AND WASHINGTON STATE CHUM SALMON

1. The Parties shall maintain a Joint Chum Technical Committee (Committee) reporting, unless otherwise agreed, to the Southern Panel and the Commission. The Committee, inter alia, will undertake to
 - (a) identify and review the status of stocks of primary concern;
 - (b) present the most current information on harvest rates and patterns on these stocks, and develop a joint data base for assessments;
 - (c) collate available information on the productivity of chum stocks to identify escapements which produce maximum sustainable harvests and allowable harvest rates;
 - (d) present historical catch data, associated fishing regimes, and information on stock composition in fisheries harvesting those stocks;
 - (e) devise analytical methods for the development of alternative regulatory and production strategies;
 - (f) identify information and research needs, to include future monitoring programs for stock assessment; and,
 - (g) for each season, make stock and fishery assessments and evaluate the effectiveness of management.
2. In 1991 and 1992, Canada will manage its Johnstone Strait, Strait of Georgia, and Fraser River chum fisheries to provide continued rebuilding of depressed naturally spawning chum stocks, and, to the extent practicable, minimize increased interceptions of United States origin chum. Terminal fisheries conducted on specific stocks with identified surpluses will be managed to minimize interception of non-targeted stocks.
3. In each of 1991 and 1992,
 - (a) for Johnstone Strait run sizes less than 3.0 million
 - (i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will limit its harvest rate in Johnstone Strait to less than 10 percent, resulting in a Johnstone Strait catch level of up to 225,000 chum; and,
 - (ii) when the catch in Johnstone Strait is 225,000 chum or less, the United States catch of chum in Areas 7 and 7A shall be limited to chum taken incidentally to other species and in other minor fisheries, but shall not exceed 20,000, provided, however, that catches for the purposes of electrophoretic sampling shall not be included in the aforementioned limit;
 - (b) for Johnstone Strait run sizes from 3.0 million to 3.7 million
 - (i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will limit its harvest rate in Johnstone Strait to 20 percent, resulting in a Johnstone Strait catch level of 225,000 to 640,000 chum; and,
 - (ii) when the catch in Johnstone Strait is from 225,000 to 640,000 chum, the United States catch of chum in Areas 7 and 7A shall not exceed 120,000;
 - (c) for Johnstone Strait run sizes of 3.7 million and greater

- (i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will harvest at a rate in Johnstone Strait of 30 percent or greater, resulting in a Johnstone Strait catch level of 640,000 chum or greater; and,
 - (ii) when the catch in Johnstone Strait is 640,000 chum or greater, the United States catch of chum in Areas 7 and 7A shall not exceed 140,000;
 - (d) it is understood that the Johnstone Strait run sizes, harvest rates, and catch levels referred to in 3(a), 3(b), and 3(c) are those determined in season, in Johnstone Strait, by Canada; and,
 - (e) the United States shall manage in a manner that, as far as practicable, maintains a traditional proportion of effort and catch between United States Areas 7 and 7A, and avoids concentrations of effort along the boundary in Area 7A.
4. In 1991 and 1992, the United States shall conduct its chum fishery in the Strait of Juan de Fuca (United States Areas 4B, 5 and 6C) so as to maintain the limited effort nature of this fishery, and, to the extent practicable, minimize increased interceptions of Canadian origin chum. The United States shall continue to monitor this fishery to determine if recent catch levels indicate an increasing level of interception.
 5. If the United States chum fishery in Areas 7 and 7A fails to achieve the 1991 and 1992 catch levels specified in paragraphs 3(a)(ii), 3(b)(ii), and 3(c)(ii), any differences shall be compensated by adjustments to the Areas 7 and 7A fishery in subsequent years, except that chum catches below the level specified in paragraph 3(a)(ii) shall not be compensated.
 6. Catch compositions in fisheries covered by this chapter will be estimated by post-season analysis using methods agreed upon by the Joint Chum Technical Committee.
 7. Canada will manage the Nitinat net chum fishery to minimize the harvest of non-targeted stocks.
 8. In 1991 and 1992, Canada shall conduct electrophoretic sampling of chum taken in the West Coast Vancouver Island troll fishery if early-season catch information indicates that catch totals for the season may reach levels similar to 1985 and 1986. Sampling, should it occur, will include catches taken from the southern areas (Canadian Areas 121-124).

Chapter 7

GENERAL OBLIGATION

With respect to intercepting fisheries not dealt with elsewhere in this Annex, unless otherwise agreed, neither Party shall initiate new intercepting fisheries, nor conduct or redirect fisheries in a manner that intentionally increases interceptions.

Chapter 8

YUKON RIVER

DEFINITIONS

1. For the purposes of this Chapter,
 - (a) "Restoration" means returning a wild salmon stock to its natural production level;
 - (b) "Enhancement" means expanding a wild salmon stock beyond its natural production level;
 - (c) "Yukon River" means the entire Yukon River drainage in Canada and the United States;
 - (d) "Yukon River in Canada" means the entire Yukon River drainage in Canada, including the Porcupine River drainage; and
 - (e) "Mainstem Yukon River in Canada" means the Yukon River drainage in Canada, excluding the Porcupine River drainage.

ADMINISTRATION

2. This Chapter applies to salmon originating in the Yukon River.
3. The Parties shall seek to ensure the effective conservation of stocks originating in the Yukon River. The Parties shall implement agreed research and management programs, as provided for in memoranda of understanding and this Chapter, further develop co-operative research and management programs, and shall identify potential restoration and enhancement opportunities.
4. Article II, paragraphs 7, 8, 18, 19, and 20, Article IV, Article V, Article VII, and Article XIII, paragraph 2, shall not apply to salmon referred to in paragraph 2. With regard to Article XII, for matters related to the Yukon River, the Yukon River Panel shall substitute for the Commission.
5. Subject to the approval of the Parties, the Yukon River Panel shall make such by-laws and procedural rules, for itself, as may be necessary for the exercise of its functions and the conduct of its meetings.
6. Each Party shall designate the responsible management entity for the harvest of salmon referred to in paragraph 2.
7. The Yukon River Panel shall make recommendations to the management entities concerning the conservation and management of salmon originating in the Yukon River in Canada.
8. The responsible management entities shall take into account the proposals of the Yukon River Panel in the adoption of regulations, and shall ensure the enforcement of these regulations.

9. The Parties shall maintain the Yukon River Joint Technical Committee ("JTC") established by paragraph C.2 of the Memorandum of Understanding dated 28 January 1985, reporting to the Yukon River Panel. The JTC shall meet at least once a year to, inter alia:

- (a) assemble and refine information on migratory patterns and the extent of exploitation in fisheries harvesting Yukon River origin salmon;
- (b) review existing assessment techniques and investigate new ways for determining total return and escapement and make recommendations on optimum spawning escapement objectives;
- (c) examine past and current management regimes and recommend how they may be better formulated to achieve escapement objectives;
- (d) exchange information on proposed and existing restoration and enhancement programs, identify restoration and enhancement opportunities and evaluate the management consequences of harvests of restored or enhanced fish;
- (e) develop and recommend restoration and enhancement programs to be funded by the Yukon River Salmon Restoration and Enhancement Fund;
- (f) monitor and coordinate agreed research programs and recommend research required in order of priority to enable the Parties to effectively implement this Chapter;
- (g) evaluate annually the status of Canadian origin chum and chinook salmon stocks and make recommendations for adjustments to the rebuilding programs set out in this Chapter;
- (h) use existing procedures and investigate new ways to evaluate progress in rebuilding salmon stocks where necessary;
- (i) investigate and recommend stock separation studies that would assist in developing specific fishery management programs for individual salmon stocks;
- (j) review and analyze the effectiveness of alternate fishery regulatory measures to satisfy conservation objectives;
- (k) submit an annual report to the Yukon River Panel on fishery performance, including harvests and fishing effort of all user groups, fish values made available by either side and biological status of stocks;
- (l) review information available on coho salmon originating in the Yukon River, and undertake assessments of such stocks;
- (m) report on the condition of salmon habitat and measures to be taken to protect or enhance salmon habitat; and
- (n) undertake other assignments as agreed by the Yukon River Panel, which may include analysis of socio-economic characteristics of the fishery.

10. The Yukon River Panel shall make recommendations to the responsible management entities to coordinate management of the Yukon River fisheries that affect Canadian-origin salmon stocks. These entities shall exchange annual fishery management plans prior to each season. It is understood that co-ordinated management of coho salmon is not being considered at this time.

MAINSTEM YUKON RIVER

CHUM SALMON

11. With respect to chum salmon originating in the Yukon River in Canada, the Parties agree that spawning escapements have declined in recent years and are now substantially below levels necessary to achieve optimum sustained yield. Recognizing the desirability of rebuilding the stock, the Parties shall, through their respective management entities, implement a brood year rebuilding program for the Canadian mainstem chum stock to attain by 2001 the agreed escapement objective of more than 80,000 chum salmon for each brood year. The rebuilding program shall take into account the relative health of the brood years and endeavour to rebuild the stronger brood years in one cycle and the weaker brood years in three cycles in equal increments. The Yukon River Panel shall establish and modify as necessary the escapement objectives based on recommendations of the JTC.

12. During the rebuilding program for the Canadian mainstem chum stock, Canada will endeavour to manage the harvest of chum salmon in the mainstem Yukon River in Canada within a guideline harvest range of 23,600 in years of weak returns and 32,600 in years of strong returns. The United States will endeavour to deliver to the Canadian border on the mainstem Yukon River the number of chum salmon necessary to meet with spawning escapement objective for that year in the rebuilding program, and provide for a Canadian harvest within the agreed Canadian guideline harvest range. For the years 1992 to 1995, the United States will endeavour to deliver to the Canadian border on the mainstem Yukon River numbers of chum salmon within the following ranges:

1992	74,600	-	112,600
1993	74,600	-	112,600
1994	84,600	-	112,600
1995	103,600	-	112,600

If spawning escapements from 1992 to 1995 reach the levels anticipated, the United States will, for the remainder of the rebuilding period, endeavour to deliver annually between 88,600 and 112,600 chum salmon to the Canadian border on the mainstem Yukon River. However, if the spawning escapement objective is not achieved for any brood year, the Panel shall establish a new rebuilding program for that brood year to complete the rebuilding program by 2001.

13. During the rebuilding program, for any year when a strong return is anticipated, the Yukon River Panel shall consider recommending a spawning escapement objective substantially above 80,000. If the Panel makes such a recommendation for that year, the United States will endeavour, for that year, to deliver to the Canadian border on the mainstem Yukon River the number of chum salmon necessary to meet with spawning escapement objective recommended by the Panel, plus the Canadian harvest range for the rebuilding program.

14. These arrangements regarding border escapement and Canadian guideline harvest range set out above for the rebuilding period will terminate not later than the end of 2001.

15. The responsible management entities shall consult closely and where possible coordinate pre-season management planning and in-season responses to run assessments. If during pre-season discussion within the Yukon River Panel consideration is being given to not conducting a directed commercial fishery in Alaska because of serious conservation concerns, Canada will also consider taking such a measure. If it is determined in-season that pre-season management measures agreed to by the Panel are insufficient to achieve agreed spawning escapement levels, the Parties agree to consider taking further conservation measures to meet the escapement objectives.

CHINOOK SALMON

16. With respect to chinook salmon originating in the Yukon River in Canada, the Parties agreed that spawning escapements declined substantially below levels necessary to achieve optimum sustainable yields. Recognizing the desirability of arresting the decline, the Parties agree to a minimum spawning escapement objective of 18,000 for

the Canadian mainstem chinook stock for six years beginning in 1990. Recognizing the difficulty of managing selectively Yukon River chinook salmon stocks, the Parties will endeavour to meet the spawning escapement objective. During this six-year period, the Panel shall develop a rebuilding program that will result in optimum sustained yields from the stock and recommend measures to implement this program.

17. During the period 1990 to 1995 inclusive for the Canadian mainstem chinook stocks, the United States will endeavour to deliver annually between 34,800 and 37,800 chinook salmon to the Canadian border on the mainstem Yukon River and Canada will endeavour to manage the harvest of chinook salmon in the mainstem Yukon River in Canada within a guideline harvest range of 16,800 in years of weak returns and 19,800 in years of strong returns.

18. In years of very strong returns the United States agrees to consider, with a view to increasing, the border escapement in order to allow spawning escapement above the stabilisation level.

19. The responsible management entities shall consult closely and where possible coordinate pre-season management planning and in-season responses to run assessments. If during pre-season discussion within the Yukon River Panel, consideration is being given to not conducting a directed commercial fishery in Alaska because of serious conservation concerns, Canada will also consider taking such a measure. If it is determined in-season that pre-season management measures agreed to by the Panel are insufficient to achieve agreed spawning escapement levels, the Parties agree to consider taking further conservation measures to meet the escapement objectives.

PORCUPINE RIVER

20. The Parties recognize that limited information currently exists for salmon stocks spawned in the Porcupine River drainage in Canada. Information available for the Fishing Branch fall chum salmon stock indicates that spawning escapements for this stock are below interim escapement objectives.

21. The Parties further recognize that the agreed rebuilding program for salmon spawned in the mainstem Yukon River in Canada is expected to contribute increased escapements to Porcupine River stocks.

22. To ensure that maximum benefits accrue to Porcupine River spawning escapements from the rebuilding program for mainstem stocks, the Parties agree:

- (a) not to initiate new fisheries on Canadian-origin stocks within the Porcupine River drainage before December 31, 1999; and
- (b) if after this period either Party intends to initiate a new fishery on the Porcupine River, that Party shall inform the Yukon River Panel, which shall have to authority to make recommendations for management arrangements to the Parties.

23. The JTC shall compile existing information on the status of these stocks and the benefits accruing to Porcupine River salmon stocks and on management and research tools available for management of these stocks. Based on this information, the JTC shall:

- (a) advise the Yukon River Panel regarding the status of these stocks and the benefits accruing to Porcupine River salmon spawning escapements from the mainstem rebuilding program;
- (b) prepare a range of potential rebuilding options for the Fishing Branch River fall chum salmon, including the option of allowing these stocks to rebuild as a result of the rebuilding program agreed to for the Yukon River mainstem fall chum salmon stock; and
- (c) recommend to the Yukon River Panel ways to improve and expand information needed to better manage these stocks for optimum production.

24. Based on information and recommendations provided by the JTC, the Yukon River Panel shall consider making recommendations to the Parties regarding rebuilding, restoration and improved management of these Porcupine River stocks.

GENERAL

25. If information becomes available that indicates that the catch records that provided the basis for the Canadian guideline harvest range in paragraphs 12 (Chum Salmon) and 17 (Chinook Salmon) are erroneously low, at Canada's request the Yukon River Panel may recommend increasing the ranges set out in these paragraphs to reflect the adjusted figures for the Aboriginal Fishery and the sport fishery catch.

26. With respect to coho salmon originating in the Yukon River in Canada, the Parties agree that the status of these stocks is not known with certainty.

27. The Parties agree that efforts designed to increase in in-river return of Yukon River origin salmon by reducing the marine catches and by-catches of Yukon River salmon would benefit the status of the Yukon River stocks. The Parties agree to identify, quantify and undertake efforts to reduce these catches and by-catches.

28. The Parties agree that the numbers of Canadian-origin Yukon River salmon in U.S. marine catches are presently unknown.

29. The Parties agree that, in light of their respective receipt of benefits from the salmon originating in their territories:

- (a) salmon should be afforded unobstructed access to and from, and use of, existing migration, spawning and rearing habitats;
- (b) water quality standards should be maintained and enforced;
- (c) it is essential to maintain the productive capacity of the salmon habitat on both sides of the boundary in order to achieve the objectives of this Chapter; and
- (d) should access be obstructed, water quality standards be degraded or productive capacity of the salmon habitat be diminished to a degree that affects the objectives of this Chapter, the Panel may recommend corrective actions which may include adjustments to fishing patterns, border escapement objectives and guideline harvest ranges.

30. The Parties agree to endeavour, subject to budgetary limitations, to implement the fisheries research and management programs recommended by the JTC for co-ordinated management of the Yukon River chinook and chum salmon stocks.

RESTORATION AND ENHANCEMENT FUND

31. It is understood that the Parties' implementation of Article III(1)(b) as it pertains to the Yukon River must recognize factors unique to the Yukon River drainage system.

32. The Parties agree that further discussion is required regarding Article III(1)(b) and the percentage of the U.S. harvest of each species of salmon originating in Canadian sections of the river that shall be deemed to be of U.S. origin in order to conclude a long-term agreement. Pending resolution the Parties agree that:

- (a) there shall be established a Yukon River Salmon Restoration and Enhancement Fund, hereinafter referred to as "the Fund", to be managed by the Yukon River Panel;

- (b) the Fund shall be used for programs and directly associated research and management activities on either side of the border which are based on recommendations by the JTC and are directed at the restoration and enhancement of Canadian origin salmon stocks;
- (c) the United States shall seek to provide annually to the Fund by December 31 of each year beginning in 1995 a financial contribution, subject to the availability of appropriated funds. In the event that the annual contribution is not made this agreement shall be suspended until the contribution for that year is made;
- (d) the Parties shall assist the Yukon River Panel in the development and implementation of these programs and shall, in particular, provide from their own budgetary resources, essential support as required for programs in their territories;
- (e) during rebuilding as specified in this Chapter, unless the Parties jointly decide otherwise on the basis of recommendations by the Yukon River Panel:
 - (i) the Parties shall endeavour to allow spawning escapements to increase as a result of the fish produced from restoration activities, taking into account the desirability of avoiding disruption of existing fisheries;
 - (ii) the agreed Canadian guideline harvest levels during rebuilding will not change; and
 - (iii) harvest shares for salmon produced by enhancement activities will be recommended by the Yukon River Panel, taking into account the objectives of the rebuilding programs and the desire to avoid disruptions of existing fisheries.

Following the rebuilding period the catch shares for the fish produced through these programs shall be recommended by the Yukon River Panel; and

- (f) the Fund shall be open for additional financial contributions from any source.

33. The Parties shall jointly develop and implement policies and procedures for planning, feasibility studies and operational methods. As a first step, the Parties shall undertake comprehensive co-operative regional planning and field surveys for possible salmon restoration and enhancement programs, the results of which shall be provided to the JTC. As part of this planning process, both Parties should incorporate fish genetic and health guidelines developed by the JTC.

34. The Parties understand that the financial contributions to the Fund shall be used for the programs described in Paragraph 32(b) to provide benefits for U.S. and Canadian fishermen in the Yukon River.

PRINCIPLES AND GUIDELINES FOR THE

RESTORATION AND ENHANCEMENT FUND

PRINCIPLES

35. Restoration and enhancement activities shall be consistent with the protection of the existing wild salmon stocks and the habitats upon which they depend.

36. Given the wild nature of the Yukon River and its salmon stocks, and the substantial risks associated with large scale enhancement through artificial propagation, these enhancement activities are in appropriate at this time.

37. Artificial propagation shall not be used as a substitute for effective fishery regulation, stock and habitat management or protection.

GUIDELINES

38. The priorities for implementing projects with the Fund shall be in this order: (a) restoring habitat and wild stocks; (b) enhancing habitat; and (c) enhancing wild stocks.

39. Careful planning is necessary before undertaking any restoration or enhancement projects that might impact any wild stock. Projects shall be evaluated by the Yukon River Panel based on a Yukon River basin wide stock rebuilding and restoration plan. A careful assessment and inventory of wild stocks and their health, habitat, and life history must be an integral part of restoration and enhancement planning.

40. The most stringent of the fish genetics and fish disease policies in place by the responsible management entity of either Party will be applied to salmon restoration or enhancement projects.

41. The JTC shall develop a standard proposal format and implement a procedure for reviewing project proposals for use of the Fund. The JTC shall also develop and implement standard procedures for evaluating proposals for use of the Fund. When appropriate, the JTC will provide an evaluation of the ecological and genetic risks, and socio-economic impacts, and will identify alternative actions including but not restricted to fishery management actions. The JTC shall establish levels for restored stocks consistent with natural habitat capacity.

42. Following JTC evaluation of proposed projects, each Party shall provide an opportunity for public comment and review of the proposed projects, along with the JTC evaluation.

43. The Yukon River Panel shall then decide which projects to fund, based on these guidelines, the JTC evaluation and any public comments received.

Appendix C

Appointment of Officers for 1997/98

Effective December 3, 1997, a new slate of officers for the Pacific Salmon Commission was identified as follows:

(a)	Commission Chair	U.S.	J. Pipkin
(b)	Commission Vice-Chair	Can.	P.S. Chamut
(c)	Fraser River Panel Chair	U.S.	A.D. Austin
(d)	Fraser River Panel Vice-Chair	Can.	A.F. Lill
(e)	Northern Panel Chair	U.S.	K. Duffy
(f)	Northern Panel Vice-Chair	Can.	D. Radford
(g)	Southern Panel Chair	Can.	P. Sprout
(h)	Southern Panel Vice-Chair	U.S.	T. Williams
(i)	Meetings of the Northern and Southern Panels		
	- Chair	Can.	P. Sprout
	- Vice-Chair	U.S.	_____
(j)	Meetings of the Fraser and Southern Panels		
	- Chair	U.S.	_____
	- Vice-Chair	Can.	A.F. Lill
(k)	Standing Committee on F&A - Chair	U.S.	R. Rousseau
(l)	Standing Committee on F&A - Vice-Chair	Can.	C.C. Graham
(m)	Standing Committee on R&S - Chair	Can.	B. Lefeaux-Valentine
(n)	Standing Committee on R&S - Vice-Chair	U.S.	_____

Appendix D

Approved Budget FY 1998/99

APPROVED BUDGET FY 1998/99		
1.	INCOME	
A.	Contribution from Canada	\$800,000
B.	Contribution from U.S.	\$800,000
	Sub total	\$1,600,000
C.	Carry-over from 1997/98	\$487,745
D.	Interest	\$18,823
E.	Other income	\$0
F.	Total Income	\$2,106,568
2.	EXPENDITURES	
A.	1. Permanent Salaries and Benefits	\$1,235,229
	2. Temporary Salaries and Benefits	\$165,250
	3. Total Salaries and Benefits	\$1,400,479
B.	Travel	\$70,291
C.	Rents, Communications, Utilities	\$117,889
D.	Printing and Publications	\$15,000
E.	Contractual Services	\$187,594
F.	Supplies and Materials	\$36,668
G.	Equipment	\$88,650
H.	Mission Research - Split Beam	\$151,646
J.	Total Expenditures	\$2,068,217
3.	BALANCE (DEFICIT)	\$38,351
4.	TEST FISHING PROGRAM	
A.	Forecast Revenues	\$761,288
B.	Forecast Expenditures	\$714,598
C.	Forecast Balance	\$46,690
5.	TOTAL BALANCE (DEFICIT)	\$85,041

Appendix E

Terms of References for the Selective Fishery Evaluation Committee

I. **Reporting and Committee Structure:** The Selective Fishery Evaluation Committee (SFEC) will report to the PSC and will be comprised of a Steering Committee and two working groups; the Regional Coordination Working Group (RCWG) and the Selective Fishery Analytical Working Group (SFAWG). All official members of the Steering Committee and working groups will be considered members of the SFEC.

- A. Steering Committee: The Steering Committee will be comprised of:
 - 1. the co-chairs of the PSC Coho Technical Committee, Chinook Technical Committee, and Data Sharing Technical Committee,
 - 2. the co-chairs of the two working groups, and
 - 3. agency mass-marking/selective-fishery co-ordinators.
- B. Regional Coordination Working Group (RCWG): The RCWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All RCWG members should contribute actively to the work of this group.
- C. Selective Fishery Analysis Working Group (SFAWG): The SFAWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All SFAWG members should contribute actively to the work of this group.

II. **Duties of the SFEC**

- A. Facilitate the appropriate level of coordination and reporting on mass marking and selective fishery programs among the Parties, affected agencies, and existing coastwide and regional committees established to monitor activities related to the coastwide CWT program.
- B. Receive and review mass marking and selective fisheries proposals from the proponent(s) as early in the planning process as possible to determine whether the proposed activities may potentially adversely impact the integrity of the coastwide CWT program.
- C. Establish a technical evaluation process that will:
 - 1. review assessments of proposed mass-marking/selective-fishery initiatives developed by the proponent(s) with respect to impacts on other jurisdictions and maintaining the integrity of the CWT program,
 - 2. review procedures and protocols for marking, sampling, and evaluation developed by the proponent(s) and, if appropriate, develop and propose alternative procedures to mitigate any adverse impacts on the CWT program,
 - 3. conduct a post-season evaluation of the performance of selective fisheries, and
 - 4. conduct, at agreed intervals, technical evaluations of mass marking and selective fishery programs in order to assist the Parties to maintain the integrity of the CWT program.
- D. Establish formal standards and objectives for a viable CWT program to enable more precise evaluation of potential impacts of mass marking and selective fisheries to the viability of the coastwide CWT program and to guide the development of mitigation measures.
- E. Specific duties of the Steering Committee include being responsible for overall coordination and prioritization of the activities for the working groups and being the focal point for reporting to the PSC. The agency mass-marking/selective-fishery co-ordinators should ensure that mass marking and selective fishery proposal are provided to the SFEC in a timely manner.

- F. Specific duties of the RCWG, among other related activities, include:
1. coordinate and report on continuing research on electronic detection and mass marking technologies,
 2. develop CWT sampling procedures and programs for selective fisheries based on sampling recommendations of the SFAWG,
 3. recommend guidelines and/or time frames necessary to evaluate the success of the selective fisheries in conserving naturally spawning stocks,
 4. review proposals for mass marking and selective fisheries,
 5. identify and review relevant mass marking and selective fishery issues that may emerge during domestic consultation processes,
 6. provide the necessary liaison with the Data Standards Working Group of the Data Sharing Technical Committee to ensure that necessary modifications are made to PSC data exchange formats to maintain the integrity of the CWT system, and
 7. prepare an annual report summarizing mass marking statistics, index tag groups, and sampling programs for marks and CWTs.
- G. Specific duties of the SFAWG, among other related activities, include:
1. design marking and sampling strategies that will achieve desired precision for CWT-based estimates,
 2. develop analytical tools for the evaluation, by the SFEC, of selective fishery proposals and their potential impact on the coastwide CWT program,
 3. provide the necessary technical liaison with agencies and other coastwide committees working on selective fishery evaluation models,
 4. review and recommend parameter values for modelling selective fisheries, and
 5. develop analytical tools for evaluating the impacts of selective fisheries on escapements and exploitation rates for naturally spawning coho and chinook stocks.

Appendix F

Pacific Salmon Commission Secretariat Staff as of March 31, 1998

EXECUTIVE OFFICE

Ian Todd
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Vicki Ryall
Meeting Planner

Janice Abramson
Secretary

FINANCE & ADMINISTRATION

Kenneth N. Medlock
Finance and Administration

Bonnie Dalziel
Accountant

FISHERY MANAGEMENT

James C. Woodey
Chief Biologist

Jim Gable
Head, Racial Identification Group

Jim Cave
Head, Stock Monitoring Group

Mike Lapointe
Project Biologist, Sockeye

Peter Cheng
Project Biologist, Acoustics

Bruce White
Project Biologist, Pinks

Yunbo Xie
Hydroacoustics Scientist

Keith Forrest
Racial Data Biologist

Ian Guthrie
Head, Biometrics

Jullie Andersen
Senior Scale Analyst

Doug Stelter
Statistician

Maxine Reichardt
Scale Analyst

Kathy Mulholland
Computer Systems Manager

Holly Derham
Assistant Scale Analyst

Andrew Gray
Hydroacoustics Biologist (temp)

Appendix G

Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of March 31, 1998

UNITED STATES

CANADA

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

Mr. Rollie Rousseau (Chair)
Mr. David Benton
Mr. Charles K. Walters
Mr. James Heffernan
Mr. W. Ron Allen

Mr. C.C. (Bud) Graham (Vice-Chair)
Mr. Patrick S. Chamut
Ms. Heather James
Mr. A.W. (Sandy) Argue

Staff: I. Todd (ex. officio)

Editorial Board

Dr. Norma Jean Sands

Mr. A.W. (Sandy) Argue

Staff: I. Todd (ex. officio)

2. STANDING COMMITTEE ON RESEARCH AND STATISTICS

Dr. Norma Jean Sands
Mr. Ben Van Alen
Dr. Jack H. Helle
Dr. Gary S. Morishima
Mr. Gary R. Graves
Mr. Michael Grayum
Mr. James B. Scott

Mr. Bill Valentine (Chair)
Dr. Brian Riddell
Mr. David Peacock
Mr. Ron Kadowaki
Mr. Sandy Johnston
Dr. Max Stocker
Dr. Jake Rice
Ms. Susan Bates
Mr. Al Macdonald
Mr. Paul Ryall

Staff: I. Todd (ex. Officio)

Research and Statistics Working Group

Dr. Norma Jean Sands
Mr. Michael Grayum
Mr. Thomas D. Cooney
Mr. Lee H. Blankenship
Mr. Charles K. Walters
Mr. Mike Matylewich

Mr. A.W. (Sandy) Argue
Ms. Frances Dickson

Ad Hoc Joint Interceptions Committee

Dr. Gary S. Morishima (Co-Chair)
Dr. Norma Jean Sands

Mr. A.W. (Sandy) Argue
Ms. Barb Snyder

Ad Hoc Joint Objectives and Goals Committee

Mr. Thomas D. Cooney (Co-Chair)
Mr. Larry Rutter
Mr. Kevin C. Duffy

Mr. C.C. (Bud) Graham (Co-Chair)
Mr. A.W. (Sandy) Argue

3. FRASER RIVER PANEL

Mr. A. Dennis Austin, (Chair)
Ms. Lorraine Loomis
Mr. William L. Robinson
Mr. Robert Suggs

Mr. Al F. Lill (Vice-Chair)
Mr. Mike Forrest
Mr. Larry Wick
Ms. Diane Bailey
Mr. Mike Griswold
Mr. William Otway

Fraser River Panel Alternates

Mr. Bruce Sanford
Mr. Ronald G. Charles
Mr. Rob Zuanich

Mr. Vince Fiamengo
Mr. Mike Medenwaldt
Mr. Terry Lubzinski
Mr. Murray Chatwin
Ms. Christine Hunt
Mr. Wayne Saito

4. SOUTHERN PANEL

Mr. Terry R. Williams (Vice-Chair)
Mr. Patrick Patillo
Mr. Burnell Bohn
Mr. William L. Robinson
Mr. James E. Harp
Mr. Keith E. Wilkinson

Mr. Paul Sprout (Chair)
Mr. Ron Fowler
Mr. John Legate
Mr. Richard Watts
Ms. Geraldine (Danni) Tribe

Southern Panel Alternates

Dr. Donald O. McIsaac
Mr. Eugene Greene, Sr.
Mr. Michael A. Peters
Mr. Mark Cedergreen
Mr. Thomas D. Cooney

Mr. Roy Alexander
Mr. Basil Ambers
Ms. Patricia Guiguet
Mr. John Sutcliffe
Mr. Ron Parke
Mr. Ed Lockbaum

5. NORTHERN PANEL

Mr. Kevin C. Duffy (Chair)
Ms. Deborah A. Lyons
Mr. Arnold Enge
Mr. William Foster
Mr. James E. Bacon
Mr. William Hines

Mr. Don Radford (Vice-Chair)
Mr. Mark Forand
Mr. William Kristmanson
Mr. Alan Ronneseth
Mr. Russ Jones
Ms. Lynn Christie
Mr. Chris Dragseth

Northern Panel Alternates

Mr. Scott Marshall
Mr. Thomas Jacobson
Mr. Robert M. Thorstenson
Mr. James D. Becker
Mr. Andrew W. Ebona
Mr. Ronald J. Berg

Mr. Rick Haugan
Mr. Ray Kendel
Mr. Robert H. Hill
Ms. Joy Thorkelson
Mr. Mike O'Neil
Mr. Burt Hunt

6. JOINT CHINOOK TECHNICAL COMMITTEE

Mr. James B. Scott (Co-Chair)
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Mr. Edward Bowles
Mr. Alex C. Wertheimer
Dr. Gary Winans
Mr. Larrie LaVoy
Dr. Douglas M. Eggers
Mr. Ronald H. Williams
Dr. Gary S. Morishima
Ms. Phaedra Budy
Ms. Elisabeth A. Wood
Mr. Gregg Mauser
Mr. Dave Gaudet
Dr. Jim M. Berkson
Mr. John Carlile
Dr. John Burke
Ms. Marianne McClure
Dr. John H. Clark
Mr. Scott McPherson
Mr. C. Dell Simmons
Dr. Jeff Koenings
Ms. Jennifer Gutmann
Mr. Shijie Zhou

Dr. Brian Riddell (Co-Chair)
Ms. Barb Snyder
Mr. Wilf Luedke
Dr. Jim Irvine
Mr. Bill Shaw
Dr. Brent Hargreaves
Mr. Din Chen

Joint Chinook Working Group

Mr. Thomas D. Cooney (Co-Chair)
Mr. Dave Gaudet
Dr. Jeff Koenings
Mr. Thomas Jacobson
Mr. Burnell Bohn
Mr. Terry R. Williams
Ms. Deborah Lyons
Mr. Keith E. Wilkinson
Mr. William L. Robinson
Mr. James E. Harp
Mr. Eugene Greene Sr.

Mr. Ed Lochbaum (Co-Chair)
Mr. A.W. (Sandy) Argue
Mr. C.C. (Bud) Graham
Dr. Brian Riddell
Mr. Alan Ronneseth
Mr. Russ Jones
Mr. William Otway
Mr. Dave Einarson
Ms. Frances Dickson
Mr. Ron Fowler
Mr. Bill Shaw
Mr. Ron Parke
Mr. Roy Alexander
Mr. Mike O'Neil
Ms. Patricia Guiguet

Joint Chinook Working Group – Alternates

Mr. James B. Scott
Mr. Kevin C. Duffy
Mr. James E. Bacon
Mr. William Foster
Dr. Norma Jean Sands
Dr. Donald O. McIsaac

7. JOINT COHO TECHNICAL COMMITTEE

Dr. Gary S. Morishima (Co-Chair)
Mr. James B. Scott
Mr. Robert A. Hayman
Dr. Peter W. Lawson
Mr. Bill Tweit
Mr. Robert Wunderlich
Ms. Marianna Alexandersdottir

Mr. Ron Kadowaki (Co-Chair)
Ms. Lynda Orman
Dr. Blair Holtby

Northern Coho

Dr. John H. Clark
Ms. Michele Masuda
Mr. Richard Bailey
Mr. Bill Shaw
Mr. Leon D. Shaul
Mr. Dave Gaudet

8. JOINT CHUM TECHNICAL COMMITTEE

Mr. Gary R. Graves (Co-Chair)
Mr. Nick Lampsakis
Mr. Ralph Boomer
Mr. Jon Anderson
Mr. Randy Hatch
Dr. Gary Winans

Mr. Paul Ryall (Co-Chair)
Mr. Wilf Luedke
Mr. Leroy Hop Wo
Mr. Clyde Murray

9. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

Mr. Ben Van Alen (Co-Chair)
Dr. Jack H. Helle
Mr. Phillip S. Doherty
Mr. Glen T. Oliver
Mr. Gary R. Freitag
Dr. Jim Blick
Dr. Jerome J. Pella

Mr. David Peacock (Co-Chair)
Mr. Les Jantz
Ms. Barb Snyder
Mr. R.S. Hooton
Dr. Chris Wood
Mr. Skip McKinnel

10. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Dr. Norma Jean Sands (Co-Chair)
Mr. Andrew J. McGregor
Mr. John H. Eiler
Mr. William R. Bergmann
Ms. Kathleen A. Jensen
Mr. Keith Pahlke
Mr. Brian Lynch
Mr. Joe J. Muir
Mr. Alan Burkholder

Mr. Sandy Johnston (Co-Chair)
Mr. Pat Milligan
Mr. Pete Etherton

Enhancement Sub-Committee

Mr. Ron Josephson (Co-Chair)
Mr. Eric Prestegard
Mr. Pete Hagen
Mr. David Barto
Mr. Steve Reifenhuth

Mr. Pat Milligan
Dr. Kim Hyatt

11. JOINT TECHNICAL COMMITTEE ON DATA SHARING

Dr. Norma Jean Sands (Co-Chair)
Dr. Ken Johnson
Dr. Gary S. Morishima
Mr. Mike Matylewich

Ms. Susan Bates (Co-Chair)
Ms. Sue Lehmann
Mr. Marc Hamer
Mr. Louis Lapi
Ms. Lia Bijsterveld

Working Group on Mark-Recovery Statistics

Dr. Ray Hilborn (Co-Chair)
Dr. John Skalski
Mr. Rich Comstock
Mr. Robert Conrad
Dr. Peter W. Lawson

Dr. John Schnute (Co-Chair)
Ms. Carol Cross

Working Group on Data Standards

Dr. Ken Johnson
Mr. Ron Olson
Mr. John Leppink
Mr. Dick O'Connor
Ms. Barbara Haar

Mr. Marc Hamer
Ms. Brenda Adkins
Ms. Susan Bates

Catch Data Exchange Working Group

Mr. Scott Johnson (Co-Chair)
Dr. Ken Johnson
Ms. Susan Markey
Mr. Gerald Lukas

Ms. Lia Bijsterveld (Co-Chair)
Mr. Louis Lapi
Ms. Brenda Adkins

12. FRASER RIVER PANEL TECHNICAL COMMITTEE

Mr. Michael Grayum (Co-Chair)
Mr. Jon Anderson
Mr. Dave Cantillon

Mr. Al Macdonald (Co-Chair)
Mr. Paul Ryall
Mr. Al Cass
Mr. Neil Schubert

13. NATIONAL CORRESPONDENTS

Mr. Charles K. Walters

Mr. A.W. (Sandy) Argue
Ms. Heather James