Pacific Salmon Commission

1990/91 Sixth 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

Sixth Annual Report 1990/91

Vancouver, B.C.
Canada

PACIFIC SALMON COMMISSION

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

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Our File:

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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 Sixth Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 1990 to March 31, 1991, and includes reports on the final session of the Sixth Annual Meeting which was held in May, 1991. The text of agreements recommended to the Parties by the Commission to establish fishery regimes for the 1991 season and beyond is contained within this report, as is the amended Annex IV to the Pacific Salmon Treaty.

The Commission wishes to note that progress was made on all major issues discussed during this meeting cycle. Provisions for fishery regimes on chinook (Chapter III), coho (Chapter V) and chum (Chapter VI) were successfully negotiated and will apply for both 1991 and 1992. The Commission has thus provided time during the 1991-92 meeting cycle to focus its attention on longer term issues. In particular, attention will be directed toward a series of tasks which are designed to lead toward resolution of the equity issue, to discussion of long-range chinook management plans, and to discussion of management approaches for both northern and southern coho stocks.

Reports on meetings of the Standing Committees on Finance and Administration, and Research and Statistics, are presented in summary, as are the activities of the Northern, Southern and Fraser River Panels. Executive summaries of reports prepared by 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, 1990 to March 31, 1991, as approved by the Commission, is also included in this report.

Yours truly,

P.S. Chamut
Chair

PACIFIC SALMON COMMISSION

OFFICERS for 1990/91

Chair	Mr. D.W. Collinsworth (to September 30, 1990) Mr. J.R. Blum (October 1 to November 29, 1990) Mr. P.S. Chamut (from November 29, 1990)
Vice-Chair	Mr. P.S. Chamut (to November 29, 1990) Mr. J.R. Blum (from November 29, 1990)

COMMISSIONERS

United States	Canada
Mr. D.W. Collinsworth	Mr. P.S. Chamut
Mr. J.R. Blum	Mr. R. Wright
Mr. G.R. McMinds	Mr. C. Atleo (to Feb. 20, 1991)
Mr. D.A. Colson	Mr. J. Gosnell (from Feb. 20, 1991)
Mr. B. Wallace	Mr. L.P. Greene (to Feb. 20, 1991)
Mr. H.R. Beasley	Mr. Bruce Buchanan (from Feb. 20, 1991)
Dr. J.R. Donaldson	Mr. A.F. Lill
Mr. G.I. James	Mr. J. Nichol
	Ms. S. Paine
	Mr. N. Keitlah (from Feb. 20, 1991)

SECRETARIAT STAFF

Executive Secretary	Mr. I. Todd
Deputy Executive Secretary	Mr. W.W. Johnson (to March 15, 1991)
Administrative Officer	Mr. K. Medlock
Chief Biologist	Dr. J.C. Woodey

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INTRODUCTION

Interception of Pacific salmon bound for rivers of one country by fishermen 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 fishermen were catching salmon bound for British Columbia, Oregon and Washington. Canadian fishermen, primarily off the west coast of Vancouver Island, were capturing salmon bound for rivers of Washington and Oregon. Fishermen in northern British Columbia were intercepting salmon returning to Alaska, Washington and Oregon, and United States fishermen 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 is 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 for its fisheries but must take into account and manage its fisheries in a manner consistent with provisions of the Treaty. Implementation of the principles of the Treaty enables 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 has responsibility for salmon originating south of Cape Caution, other than Fraser River sockeye and pink salmon. The Fraser River Panel has special 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 to provide recommendations to the Commission for development of annual fishery regimes in accordance with the objectives of the Treaty. These plans, once adopted, 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. Scientific and technical work is conducted for the Panel by the Fishery Management Division of the Commission's Secretariat staff.

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 June 1, 1990 to May 17, 1991, the Commission planned to meet on six occasions to complete pre-season planning for 1990, and to negotiate fishing regimes for 1991:

1. Commission Executive Session
   July 17, 1990 - Vancouver, B.C.

2. Commission Executive Session
   October 17-18, 1990 - Kamloops, B.C.

3. Post 1990 fishing season meeting of the Commission
   November 25-29, 1990, Vancouver, B.C.

4. Panels' negotiating session
   January 21-25, 1991 - Vancouver, B.C.

5. Sixth Annual Meeting of the Commission
   February 2-8, 1991 - Bellevue, Washington

6. Sixth Annual Meeting of the Commission (completion)
   May 13-17, 1991 - Vancouver, B.C.

This, the sixth annual report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its sixth fiscal year of operation, April 1, 1990 to March 31, 1991, and includes reports on the final sessions of the Annual Meeting which were held in Vancouver, May 13-17, 1991.

During the period covered by this report, the Commission desired to make progress on development of a longer term chinook management regime, to exchange views on joint objectives and goals for stocks subject to interception and on objectives for major intercepting fisheries, to resolve remaining differences between the Parties on estimates of interception, and to re-negotiate expired chapters of Annex IV.

The timetable and schedule established by the Commission at the 1990 Annual Meeting was ambitious. Progress made during the period covered in this report, particularly with respect to the major task facing the Joint Committee on Goals and Objectives, has been slower than desired. Amended schedules have been agreed, however, and more progress toward achievement of the cornerstone principles of the Treaty is expected during the course of the next year. A two year duration of the chinook chapter of Annex IV was negotiated in order to reduce the number of issues facing the Commission during the 1991/92 meeting cycle, thus providing the opportunity for further progress on cornerstone principles.

Activities of the Commission

PART I
ACTIVITIES OF THE COMMISSION

A. EXECUTIVE SESSION OF THE PACIFIC SALMON COMMISSION
July 17, 1990 - Vancouver, B.C.

The Commission met in special executive session at the request of the Fraser River Panel to resolve sharing arrangements between the countries on the summer segment of the 1990 Fraser River sockeye run. The Commission reached agreement on the following points:

1. For 1990, Canada has made a pre-season forecast of the total summer group return size of 4,378,000. Based on this forecast, Canada has calculated an escapement add-on benefit of 486,000 summer-run sockeye, which results in a predicted TAC of 2.1 million summer-run sockeye. The U.S. has made no agreement with respect to the method of calculating an add-on benefit for 1990. However, for the purpose of managing the 1990 fishery, the U.S. catch of summer-run sockeye in 1990 shall not exceed 586,000 summer-run sockeye, and shall be adjusted in proportion to any change in the predicted TAC of 2.1 million.

2. The Commission agrees that in 1991 and 1992 the U.S. catch objective of the TAC of Fraser sockeye shall be proportionately distributed (i.e., shall be equal) over all management groups (Early Stuart, Early Summer, Mid Summer and Late Run sockeye), and shall otherwise be in accordance with Chapter 4 of Annex IV of the Treaty.

3. The Commission agrees to develop a means of identifying production from add-on escapements by February, 1991.

B. EXECUTIVE SESSION OF THE PACIFIC SALMON COMMISSION
October 17-19, 1990 -- Kamloops, B.C.

The Commission met to review progress on tasks that had been agreed during the 1989/90 meeting cycle; to initiate discussion on topics that might be considered for negotiation during the 1990/91 meeting cycle, and to prepare instructions for the panels and joint technical committees.

The Commission was satisfied good progress was being made on most issues. Unfortunately, assignments associated with the Chinook Workshop and the Goals and Objectives Committee have fallen behind schedule. The Commission agreed to delay the chinook option papers exchanges until December 14, 1990 and the workshop until January 10-11, 1991 and to adjust the delivery dates of some of the Joint Objectives and Goals papers while retaining the same final completion date of September 1991 for all papers (Appendix A).

The Commission in reviewing the workload facing the Parties agreed that identification of new initiatives for the 1990/91 meeting cycle would be unwise. Therefore, it proposed that the Panels

focus their energy on completion of the current work assignments, particularly those related to longer-term initiatives. To the extent changes are necessary for the 1991 season, negotiating positions on the expiring coho and chum chapters of Annex IV should be exchanged. The Northern Panel should exchange papers on the deeming issue for transboundary systems. All papers should be exchanged on November 29, 1990. The Fraser River Panel should undertake the necessary work to plan for the 1991 season. Negotiation of the chinook chapter for the 1991 season, and additional assignments for developing the long-term approach will be addressed by the Commission following a report on the chinook workshop process in the February annual meeting of the Commission.

In addition, time has been established during January 21-25, 1991 for the Panels to continue their deliberations. The Commission would like a report from each Panel on the results of their discussions and a proposed workplan for the rest of the PSC meeting cycle on the evening of January 23, 1991.

At this time, no new assignments are proposed for the joint technical committees; however, the Commission would like the technical committees to report on their work assignments during the January session.

The two national sections also agreed that a full meeting of the Commission would not be necessary in November. It was decided that the national sections and the panels could finalize documents and position papers, and that these would be exchanged by the Chair and Vice-Chair of the Commission on Thursday, November 29. The Standing Committee on Finance and Administration was expected to meet during this period.

This meeting was adjourned at 11:00 a.m. October 18, 1990. The Commission and advisors proceeded on a tour of the Adams River sockeye spawning grounds.

C. POST 1990 SEASON MEETING OF THE COMMISSION November 25-29, 1990 -- Vancouver, B.C.

The full Commission did not meet during this session. In the afternoon of November 29, 1990, the Chair and Vice-Chair met to exchange documents and position papers respecting agreements that had been reached during the October meeting in Kamloops. The following documents were exchanged:

1. Canadian presentation of a report titled "Assessment of Harrison River Chinook Salmon",

2. United States position paper on Chapters 5 and 6 of Annex IV,

3. Canadian position paper on Chapter 5 of Annex IV,

4. Canadian position paper on Chapter 6 of Annex IV,

5. United States position paper on the Transboundary Rivers "deeming" issue,

6. Canadian position paper on the Transboundary Rivers "deeming" issue,

7. United States preliminary post-season report for 1990 (see Part IV, Section B), and

8. Canadian 1990 post-season report for Canadian Treaty Limit Fisheries (see Part IV, Section C).

The two national sections named representatives to steering groups for both Northern and Southern Coho Workshops which are planned for the fall of 1991:

1. **Northern Coho Workshop Steering Group:**

   (a) United States representatives;

   - Dave Bedford
   - Dave Gaudet

   (b) Canadian representatives;

   - Ron Kadowaki
   - Dave Peacock

2. **Southern Coho Workshop Steering Group:**

   (a) United States representatives;

   - Tom Cooney
   - Gary Morishima
   - Dave Sones
   - Mark Cedergreen
   - Terry Williams

   (b) Canadian representatives;

   - Ron Kadowaki
   - Ron Fowler

The Chair and Vice-Chair also confirmed the Pacific Salmon Commission's slate of officers for 1990/91, effective November 29, 1990 as follows:

	Office	**1990/91**
1.	Commission Chair	Can. - P.S. Chamut
2.	Commission Vice-Chair	U.S. - J.R. Blum
3.	Fraser River Panel Chair	U.S. - L. Loomis
4.	Fraser River Panel Vice-Chair	Can. - F.J. Fraser
5.	Northern Panel Chair	Can. - N. Lemmen
6.	Northern Panel Vice-Chair	U.S. -
7.	Southern Panel Chair	U.S. - T.D. Cooney
8.	Southern Panel Vice-Chair	Can. - P. Sprout
9.	Meetings of the Northern and Southern Panels - Chair	U.S. -
	- Vice-Chair	Can. - N. Lemmen
10.	Meetings of the Fraser and Southern Panels - Chair	Can. - F.J. Fraser
	- Vice-Chair	U.S. - T.D. Cooney

11.	Stand. Comm. on F&A - Chair	Can. - P.S. Chamut
12.	Stand. Comm. on F&A - Vice-Chair	U.S. - G.R. McMinds
13.	Stand. Comm. on R&S - Chair	U.S. - J.R. Donaldson
14.	Stand. Comm. on R&S - Vice-Chair	Can. - L.P. Greene

The meeting was adjourned at 2:30 p.m. November 29, 1990.

D. MEETING OF THE COMMISSION January 21-25, 1991 -- Vancouver, B.C.

This session had been scheduled to provide the Panels the opportunity to meet, narrow the differences between the Parties, and put forward recommendations to the Commission where possible. The Commission planned to meet beginning the evening of January 23 to review progress made by the Panels and to decide on a course of action for the balance of the meeting cycle. Due to the outbreak of hostilities in the Persian Gulf, however, the United States section was forced to cancel this session. Efforts were made to extend the time available for the Annual Meeting scheduled for February 4-8, 1991.

E. SIXTH ANNUAL MEETING OF THE COMMISSION February 2-8, 1991 -- Bellevue, Washington

The Commission conducted its business in closed executive session, beginning at 2:00 p.m. Tuesday February 5, 1991. The Commission received an interim report from the Chair of the Standing Committee on Finance and Administration who noted that full funding had not been achieved for FY 1991/92. The Committee is exploring ways and means of reducing programs to achieve a balanced budget, and intends to complete its business by the end of this meeting.

The Chair of the Standing Committee on Research and Statistics reported that review of the Joint Interceptions Committee report has been completed and R&S will provide recommendations to the Commission during the course of this meeting.

The Commission discussed the schedule for the balance of the week, and expressed concern that bilateral panel meetings of substance had not yet taken place. Both Parties expressed the desire to complete business by noon Friday February 8.

The second sitting of the Commission commenced at 9:00 a.m. Wednesday February 6, 1991. At this sitting, the Commission approved minutes of the October and November meetings.

The Commission received a report from the Standing Committee on Research and Statistics concerning the update report of the Joint Interceptions Committee (see Part V, Section G). The Committee reported that while substantial progress has been made in reducing differences between the Parties' estimates of interceptions in some areas, significant differences still exist. Recommendations of R&S adopted by the Commission are listed below.

1. **R&S considers the general recommendations presented in JIC (89)-1 appropriate for inclusion in the current report to the Commission.**

(a) Bilateral development and refinement of methodologies for stock identification and estimation of catch composition should be encouraged.

(b) Research should be expanded to determine the direction and magnitude of bias associated with methods used to estimate stock composition where contributing stocks may constitute a small proportion of the catch.

(c) Research efforts should be undertaken to validate procedures currently used by the Parties to estimate stock compositions. For example, mass marking techniques could be used to evaluate the accuracy of CWT-based procedures employed to estimate hatchery contributions to catch.

2. Specific Recommendations.

(a) The development of joint methodologies to estimate coho salmon interceptions coastwide, pink salmon interceptions in the Northern Boundary area, and Fraser sockeye salmon interceptions in the Northern Boundary area should be accorded the highest priority.

(b) By December 1991, the technical committees should provide JIC with 1990 interception estimates for all species and categories. For technical committees involved in activities to address recommendations 1(a) and 2(a), estimates for 1990 interceptions, and any changes to the Parties' interception estimates for 1980 through 1989 that may result from development of joint methodologies, should be a second priority.

(c) JIC (91)-1 should be updated with the information provided by the technical committees under recommendations 2(b).

(d) Many differences in interception estimates will remain despite the efforts of the technical committees and the Parties to resolve them. The PSC should initiate a process to develop options to address remaining differences between the Parties' interception estimates. (At the appropriate time, JIC should prepare information in a format designed to: a) facilitate understanding of the magnitude and nature of remaining differences in interception estimates; and b) to clarify the degree of confidence of the technical committees' and PSC staff in the quality of interception estimates).

3. The R&S notes the following recommendations presented for particular technical committees.

Coho Salmon

(a) Bilateral development of methodologies for estimating stock composition should be pursued. If agreement can be reached on methodologies, resulting stock composition estimates should be applied to produce common interception estimates. The U.S. and Canada are initiating a joint research project to examine current and alternative models for estimating stock composition.

Current methodologies are based upon analysis of coded-wire-tag recovery data. Within the next year, the Coho Technical Committee should continue to investigate the feasibility of applying stock composition estimation techniques

developed for Southern Panel area fisheries to northern B.C. and S.E. Alaskan fisheries. Because of data limitations, however, it is unlikely that these techniques will be capable of producing usable estimates for these northern fisheries for years prior to 1986.

(b) The research recommendations of the Coho Technical Committee in the JIC report should be pursued. However, substantive new work on item (d), "Development of Coded-Wire-Tag Index Stocks" should not be undertaken until research directed at bilateral stock composition methodologies is completed.

Northern Boundary Pink Salmon

(a) Substantial differences exist in data bases and estimates resulting from the different methods used in the analysis of tagging data and the application of these estimates to non-tagging years. Procedures to adjust results of tagging experiments to reflect relative differences in the run size to each country are under development. These should be developed and, if possible, applied in 1991 to generate interception estimates for 1980-1990.

(b) For future interception estimation, additional work on stock identification methods is desired. It is recommended that the joint stock identification baseline studies, begun through the Northern Boundary Technical Committee, continue. Currently, pink salmon electrophoretic baseline samples are being analyzed for key Northern Boundary area stock groupings. Evaluation of the baselines for application in estimating interception estimates is expected to be completed in 1991. Pending the evaluation of the usefulness of the baseline data in identifying stock groups, plans for sampling mixed-stock fisheries should be made.

The Chair of R&S presented a proposed revision to the October 18, 1990 Understanding Between the Canadian and United States Sections of the Pacific Salmon Commission Concerning Equity-Related Issues, which pertains to the schedule related in part to the cancellation of the January meeting. The Commission accepted the revised Memorandum of Understanding (Appendix B) which calls for exchange of all draft chapters of management plans by the end of May 1991.

The Canadian section introduced draft language for inclusion in the letter of transmittal to the governments which if approved would establish a steering group to meet in March 1991 to develop an agenda for the September 1991 workshop on valuation methodologies.

The United States section presented a draft of requests to the Chinook Technical Committee for additional data analysis.

The third sitting of the Commission was brought to order at 7:10 p.m. Wednesday February 6, 1991. The Canadian section rejected the proposal for additional data analyses from the Chinook Technical Committee. They expressed the view that increasement in chinook ceilings were not advisable and tabled a position paper regarding 1991 chinook ceilings. The sitting adjourned for national caucuses at 7:35 p.m.

No further formal sittings of the Commission were held. At a meeting of the Chair and Vice-Chair held at 10:30 a.m. Friday February 8, 1991, a report from the Standing Committee on Finance and Administration containing budget recommendations for FY 1991/92 was accepted (Appendix C). It was also agreed that the United States would provide a written response to the Canadian chinook proposal at a later date, and following that transmittal the Chair and Vice-Chair will consult to

determine procedures necessary to complete the Commission's business. This meeting and this session of the Sixth Annual Meeting concluded at 10:33 a.m. Friday February 8, 1991, without having completed negotiations.

F. SIXTH ANNUAL MEETING OF THE COMMISSION (COMPLETION) MAY 13-17, 1991 - VANCOUVER, B.C.

In accordance with agreements reached during the February 2-8, 1991 meeting of the Commission, the United States transmitted a written response to Canada's chinook proposal on May 15 which quickly resulted in agreement to meet in Vancouver during the week of May 13-17, 1991.

The Commission conducted its business in executive session during this meeting, until late afternoon Thursday May 16, 1991. Final modifications to position papers were then exchanged between delegations until agreements were reached Friday May 17, 1991. The heads of delegation convened to sign the letter of transmittal and initialled the new version of Annex IV late in the afternoon of Friday May 17, thus bringing the 1991 Annual meeting to a successful conclusion.

The agreed letter of transmittal and new version of Annex IV are presented in their entirety in Appendix D of this report. Significant elements of the 1991 agreement include arrangements which will remain in place for both the 1991 and 1992 seasons on chinook (Chapter 3), coho (Chapter 5), and chum (Chapter 6), thus paving the way for the Commission to focus in this next meeting cycle on longer term issues such as the completion of tasks assigned to the Joint Objectives and Goals Committee, conduct of an equity valuation workshop, workshops on northern and southern coho issues, and development of long range approaches to chinook management.

Activities of the Standing Committees

PART II
ACTIVITIES OF THE STANDING COMMITTEES

A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

The Standing Committee on Finance and Administration met on three occasions during the 1990/91 fiscal year: on May 10, 1990 in La Jolla, California; November 27, 1990 in Vancouver, B.C.; and in a series of sittings between February 4 and 8, 1991 at Bellevue, Washington. This review of the major actions recommended by the Committee and later adopted by the Commission is presented in chronological order of meeting dates.

Meeting of the Committee - May 10, 1990 -- La Jolla, California

The Committee met in conjunction with the Annual Meeting of the International Fishery Commissions Pension Society.

The Committee reviewed the Executive Secretary's final report on income, expenditures, and balances in accounts for fiscal year 1989/90. The balance of unexpended funds was committed against program costs in 1990 as had been previously approved by the Commission.

The Committee reviewed and amended the budget for FY 1990/91 to reflect decisions made at this meeting and to incorporate updates on anticipated revenues and expenditures provided by staff.

The Committee received budget forecasts for FY 1991/92 and 1992/93 which had been prepared by staff based on the assumption that all existing programs required for support of Fraser River Panel and Commission responsibilities will be continued. The Committee reviewed the financial status of the Commission's budget and the commitments that had been made by both Parties to seek increases to the base funding level. Representatives of both national sections again agreed that programs proposed by staff are necessary to support the work of the Commission properly, and both again agreed to take the steps necessary to seek approval for an increase. Both sides concluded, however, that decisions on increased funding are not likely to be available until early in 1991.

<u>On Other Matters, the Committee:</u>

- reached consensus on how the secretariat could receive reimbursement from the Parties for penalty charges assessed by hotels as a result of short notice cancellations of meetings;

- completed steps necessary to transfer ownership of equipment on loan from the Commission to each national section;

- reviewed the meeting schedule of the Commission and discussed work plans for the 1990/91 cycle; and

- amended Commission by-laws concerning Secretariat staff hours of work, vacation leave entitlements, and use of vacation time to parallel rules which apply to Government of Canada public service staff in relevant occupational groups.

Meeting of the Committee - November 27, 1990 -- Vancouver, B.C.

The Committee reviewed the status of income and expenditure including projections for the balance of the current fiscal year. The financial position forecast for the end of the fiscal year indicated that revenues from the test-fishing program will be lower than forecast in the approved budget. In addition, the unexpended balance will be presented as an outstanding receivable due to one of the buyers having been placed in receivership while owing the Commission approximately $132,000. The Commission's position has been protected through negotiated security arrangements. Current projections of income and expenditures result in a forecast unexpended balance by year-end of $115,000 which will be obligated against the costs of programs in FY 1991/92.

The Committee reviewed budget proposals prepared by staff for FY 1991/92. Direct expenditures exclusive of the test-fishing program are expected to total approximately $2,121,000. If the Parties' contributions are not increased beyond the current $725,000 each, a shortfall of approximately $526,000 will result, even after application of the carry-over of unexpended funds from FY 1990/91 and other expected revenue.

The United States section reported that it could guarantee an increase of $50,000 for FY 1991/92. Submissions have been made to increase contributions to the $1,100,000 level previously agreed necessary but the earliest those funds could be available would be subsequent to October 1, 1991. It was stressed that this was a submitted request, but no guarantee could be made at this point.

The Canadian section reported that it could not guarantee any increase to the base level of $725,000 at this time. The results of funding initiatives taken by the Canadian section are not likely to be available until January 1991 and prospects for full funding are not bright.

The Executive Secretary pointed out the serious consequences that will occur if funding levels are not improved. Balanced programs cannot be maintained and reductions in staffing may be required, beginning as soon as April 1, 1991.

The Committee instructed staff to prepare detailed budget scenarios at $725,000, $775,000 and $875,000 contribution levels from each country. Each scenario is to be designed to minimize impact on programs. It was agreed that this work will be initiated over the next few days. An F&A working group led by Messrs. Graham and Walters will review the scenarios developed by staff and will brief respective national sections of the Committee prior to its next meeting. The Committee also agreed that staff should make every effort to reduce non-essential expenditures during the balance of the current fiscal year to maximize funds available to offset 1991 program costs.

The Committee discussed ways and means of convincing the Parties that the Commission's budgetary needs are real. A suggestion that an external audit of the Commission's programs for relevance to the Treaty was explored briefly. It was agreed that this subject will be placed on the agenda for the next meeting of the Committee.

The question of an F&A report on the budget to the Commission was raised. It was suggested that information be provided to both national sections at this meeting concerning the existing gap between available funding and budget requirements. A report to the full Commission will be made in executive session during the January 23-25, 1991 meeting. It was noted that the Commission's

by-laws require the budget to be approved at the official Annual Meeting, scheduled this coming year for February 4-8.

Other administrative actions were deferred until the next meeting of the Committee.

Meeting of the Committee - February 4-7, 1991 -- Bellevue, Washington

The Committee met on three occasions during the February 4-7, 1991 period, in conjunction with the Sixth Annual Meeting of the Commission.

The Committee reviewed revised submissions prepared by staff concerning forecasts on income and expenditures for the balance of the current (FY 1990/91) fiscal year. Cost savings resulting from the cancellation of the January 1991 meeting, the annual reception and other reductions have increased the forecast unexpended operating balance from $115,000 to $155,000. This balance will be used as a partial offset of the shortfall for FY 1991/92. The Parties reported that their efforts to achieve full funding for FY 1991/92 have met with limited success. Base budget contributions from each government will, however, be increased to $825,000 for FY 1991/92 and on a continuing basis thereafter.

In summary, funding levels available for FY 1991/92 have required cuts to the Secretariat's proposed operations totalling $150,000, affecting both scientific programs conducted in support of the Fraser Panel activities as well as to some administrative support activities. As a special one-year concession, the United States section has agreed to locate all major meetings of the Commission in Vancouver during the 1991/92 meeting cycle in order to reduce costs to the Secretariat's budget. Some sampling programs conducted in Southeastern Alaska and northern British Columbia for Fraser River sockeye and pinks, previously funded by the Secretariat, will be funded by the respective national sections.

The Committee stressed that the budget proposed (and accepted) to the Commission for FY 1991/92 does not address the long-term funding problem as initial projections for FY 1992/93 show a forecast shortfall of $245,000 (Appendix C).

The Committee also reviewed the Commission's meeting schedule and proposed the following dates and locations which were adopted by the Commission for the 1991/92 meeting cycle:

(a)	Fall executive session	-	October 16-18, 1991 - Vancouver, B.C.
(b)	Post-season meeting	-	December 9-13, 1991 - Vancouver, B.C.
(c)	Panels' negotiating session	-	January 21-24, 1992 - Vancouver, B.C
(d)	Seventh Annual Meeting	-	February 3-7, 1992 - Vancouver, B.C.

The schedule presented for the 1992/93 meeting cycle is:

(a)	Fall executive session	-	October 20-22, 1992 - Juneau, Alaska
(b)	Post-season meeting	-	Nov.30-Dec. 4, 1992 - Vancouver, B.C.
(c)	Panels' negotiating session	-	January 25-29, 1993 - Vancouver, B.C.
(d)	Eighth Annual Meeting	-	February 7-13, 1993 - Portland, Oregon

Other Administrative Matters

1. Staffing Changes

- Mr. Whittier Johnson, Deputy Executive Secretary, resigned effective March 15, 1991;

- Mrs. Greta Grant, Secretary, announced her retirement effective April 30, 1991.

The staff organizational structure and list of full-time employees as of March 31, 1991 is presented in Appendix E.

2. Standing Committees, Panels, Joint Technical and Other Committees Membership Lists

An updated membership list for standing committees, panels, joint technical committees, sub-committees, and ad hoc working groups as of March 31, 1991, is presented in Appendix F.

B. MEETINGS OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS

The Standing Committee on Research and Statistics met once during the period covered by this report.

Meeting of the Committee - February 4, 1991 - Bellevue, Washington

The Committee met to review a report prepared by the Joint Interception Committee and prepare recommendations for presentation to the Commission and to review progress made by the Joint Objectives and Goals Committee.

Joint Interception Committee Report

The highlights of the JIC (91)-1 report included:

- the Parties methodology for estimating chinook interceptions is now agreed upon; however, different parameters are used by the two Parties to determine Alaskan catch of transboundary salmon and, therefore, estimates for the two categories "Alaska interceptions of B.C. salmon" and "Alaskan catches of transboundary salmon" remain different.

- Transboundary - estimate methodology has been developed by CTC for U.S. transboundary chinook. Canada has developed parameters to be used with this methodology. The U.S. section of the Transboundary T.C. is reviewing both these parameters and the ones developed by the Chinook T.C.;

- Northern Boundary - the Northern Boundary Technical Committee continues to work toward an agreed methodology for interception estimates for pink salmon;

- Coho - the Coho Technical Committee continues its effort at developing a new procedure for estimating southern coho interceptions;

- Fraser sockeye in northern boundary fisheries - differences between the Pacific Salmon Commission and the Alaska Department of Fish and Game estimates need to be resolved.

The Committee discussed the nature of recommendations it would make to the Commission regarding the 1990 JIC report. The following key points were made:

- future JIC efforts should focus on refining methodologies for resolving differences in interception estimates for coho, Northern Boundary pink, and Alaska interceptions of Fraser sockeye;

- when possible JIC efforts would focus on 1990 interceptions;

- the report should draw the Commission's attention to differences of significance between the Parties' interception estimates, pointing out the need for planning to address areas where interception differences cannot be further narrowed; and

- R&S should encourage the Commission to focus JIC effort on coho and pink salmon interception estimates, moving toward resolution.

The Committee's final recommendations were adopted by the Commission February 6, 1991 (see Part I, Section F)

Joint Objectives and Goals Committee (JOGC) Progress

The Committee discussed the status of JOGC efforts, noting that schedules for JOGC work as outlined in an October 1990 document, Understanding Between The Canadian And The United States Sections Of The Pacific Salmon Commission Concern Equity Related Issues, had slipped in part due to meeting cancellations and delays in receiving data. A proposed revised draft of the Understanding Between the Sections reflecting new JOGC schedules presented by the Canadian section was reviewed. A finalized version was adopted by the Commission February 6, 1991 (see Part I, Section F).

The Committee agreed to meet in September 1991.

Activities of the Panels

PART III
ACTIVITIES OF THE PANELS

A. FRASER RIVER PANEL

The Fraser River Panel met in conjunction with the Commission and, in view of its special responsibilities concerning in-season management of fisheries on Fraser River sockeye and pinks in Panel Area waters, met frequently throughout the fishing season. The Panel was unable to complete negotiations on catch sharing arrangements for summer-run sockeye in 1990 and referred the issue to the Commission for resolution. The Commission came to agreement on this item July 17, 1990 (see Part I, Section A) and the Panel immediately finalized fishing plans.

The Panel reviewed the outcome of the 1990 season and initiated discussions on fishing plans for the 1991 sockeye and pink salmon during the winter meeting cycle. Final development of fishing plans has been deferred pending the outcome of domestic allocation discussions in both countries.

The Commission Secretariat's fishery management staff prepared, on behalf of the Panel, an annual report on the 1990 Fraser River sockeye fisheries. The executive summary is contained within Part IV, Section A of this report.

B. NORTHERN PANEL

The Northern Panel met infrequently during the 1990/91 meeting cycle, as fishery arrangements in the northern boundary/transboundary region were finalized last year. The Northern Panel was to conduct a workshop on Northern Boundary fisheries and stocks at the February 1991 PSC meeting as outlined in the "Bilateral Northern Panel Recommendations Regarding Joint Planning Process" signed May 16, 1990. Due to the cancellation of the January meeting and the resulting lack of time, it was decided to postpone this until the 1991/92 cycle meetings. Late in the February 2-8, 1991 meeting, the Panel was asked to review the positions of the Parties with respect to the "deeming" issue for Transboundary rivers stocks. Little time was available for this discussion and no agreements were reached on this subject.

C. SOUTHERN PANEL

The Southern Panel met infrequently during the 1990/91 meeting cycle, as the Commission had agreed early in the cycle that only minor adjustments to the provisions of Annex IV, Chapters 5 and 6 would be contemplated. The Panel did review the results of the 1990 fishing season.

D. JOINT MEETINGS OF THE NORTHERN AND SOUTHERN PANELS

The Northern and Southern Panels did not meet jointly during the 1990/91 meeting cycle. Chinook issues were developed by the Chinook Technical Committee and the Chinook Working Group.

Review of 1990 Fisheries and Treaty-related Performance

PART IV
REVIEW OF 1990 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

Under the terms of the Pacific Salmon Treaty, the responsibility of the Fraser River Panel is to manage the fisheries that target on Fraser River sockeye and pink salmon within the Panel Area. The annual process begins with the Panel recommending a pre-season fishing regime and a management plan for Panel Area waters to the Pacific Salmon Commission. The management plan is based on abundance forecast and escapement goals for Fraser River sockeye and pink salmon stocks provided by Canada Department of Fisheries and Oceans (DFO), international allocation goals set out in the Treaty, domestic allocation goals set by each country and management concerns for other stocks and species also identified by each country.

In-season management of Panel Area fisheries is under the direct control of the Panel. To achieve the Parties' objectives, the Panel uses commercial and test-fishing data and various analyses from the Commission staff to modify the fishing times set out in the management plan. In 1990, the Panel exercised its in-season regulatory mandate in the Panel Area only for the net fisheries and the Canadian inside (Strait of Georgia) troll fishery, as recommended by the Parties.

During the brief five-year history of the Panel, achievement of the domestic allocation goals of Canada and the United States has been a major focus of in-season management. Generally, the Panel has successfully implemented the national directives for domestic allocation of the allowable catch while achieving the goals for resource conservation (escapement) and international allocation. When trade-offs among these three objectives are necessary, however, resource conservation and international allocation goals take precedence over domestic allocation objectives.

The 1990 fishing season was the second year of the second four-year cycle (1989-92) covered by the Pacific Salmon Treaty. The pre-season forecast of run size was 16,500,000 Fraser River sockeye salmon. Based on this forecast, Canada was entitled to 486,000 of these fish in addition to their TAC because they allowed fish from their 1986 Total Allowable Catch (TAC) to spawn in exchange for future benefits. The TAC was expected to be about 10,309,000 fish. Almost zero pink salmon were expected to return to the Fraser River in 1990: even-year runs of Fraser pinks are virtually non-existent.

Prior to the season, the United States chose a sockeye harvest goal of 2,200,000 of their cumulative allocation of up to 7,000,000 Fraser River sockeye salmon for the 1989-92 period. A Commission agreement limited the United States harvest of summer-run sockeye to a total of 586,000 fish.

The Canadian catch of Fraser River sockeye salmon was expected to be about 8,300,000 in commercial fisheries and 700,000 in Indian food and other fisheries. The gross escapement goal was set by Canada at 5,830,000 fish.

The Fraser River Panel established pre-season regulations and a management plan based on the forecast return and the goals for catch and escapement. To ensure that the goals were achieved, the Panel met frequently throughout the fishing season to enact regulations fitted to the actual run timing and abundances of Fraser River stocks.

The total return of Fraser River sockeye salmon was about 22,006,000 fish, 5,506,000 more than forecast and the largest return since 1913. Total catches were estimated at 14,866,000 in commercial fisheries, 923,000 in Indian food fisheries and 136,000 in other non-commercial fisheries. United States fishermen caught 2,408,000 Fraser River sockeye salmon, (2,157,000 by Washington State fishermen and 251,000 by Alaskan fishermen) while Canadian fishermen caught 12,458,000.

The Stock Monitoring program provided in-season estimates of run timing, migration route and abundance of Fraser River sockeye stocks throughout the fishing season. These data were used to formulate fishing regulations to achieve escapement and catch goals. Summer-run stocks were about two weeks late in their arrival, compared to relatively normal arrival time of late-run stocks. This created a severe overlap in timing that led to a difficult management situation and contributed to the United States exceeding their allocation of summer-run stocks. A northerly landfall of Fraser River sockeye was evidenced by large catches of Fraser sockeye (1,330,000 fish) in fisheries north of Cape Caution. However, contrary to expectations, only 25% of the run that passed south of Cape Caution migrated through Johnstone Strait.

The Racial Analysis program was successful in identifying major stock groups of Fraser River sockeye throughout the season. Unexpected strength of summer-run stocks such as the Scotch/Seymour and Chilko groups, in combination with the late migration timing of these stocks, resulted in management uncertainty during late July and early August. Analysis of north coast fisheries provided an early warning that there was a substantial overlap in the migrations of summer- and late-run stocks. These findings resulted in significant departures from the pre-season management plan.

The gross escapement goals for Fraser River sockeye were adjusted during the season for a final total goal of 6,051,000 adults. The post-season estimate of gross escapements, based on spawning escapements and Indian food fishery catches, was 6,869,000 adults. Gross escapements of Early Stuart sockeye were 47,000 short of the goal, while the goals for summer- and late-run stocks were exceeded by 467,000 and 398,000 adults, respectively.

The total adult spawning escapement of 6,060,000 sockeye was 700,000 (13%) over the final goal of 5,360,000 Fraser sockeye. Spawning escapements of Early Stuart fish were 53,000 fish less than the goal, summer-run escapements were over by 361,000, while late-run escapements reached 3,924,000 fish, which was 392,000 above the goal.

The preliminary estimate of TAC in 1990 is 14,368,000 Fraser River sockeye salmon. This TAC is based on a run size of 22,006,000 fish, a Canadian Escapement Add-on Benefit of 1,078,000 and other deductions (including net escapements, the Fraser River Indian food fishery exemption, and test fishing catches) totalling 6,560,000 fish.

The allocation goals used throughout the fishing season for United States catches of Fraser River sockeye salmon were exceeded. United States fishermen caught 2,408,000 Fraser River sockeye,

208,000 over the goal of 2,200,000. This result was largely due to the unexpectedly large Alaska catch of about 251,000 Fraser River sockeye. In terms of the summer-run allocation, United States fishermen caught 887,000 summer-run fish, 301,000 over the goal of 586,000.

With respect to United States domestic allocation goals, the Treaty Indian harvest was 139,100 over the goal while the Non-Indian harvest was 31,300 fish over. Within the Treaty Indian catch, the catch in Areas 4B, 5 and 6C was slightly (about 4,000 fish) over the allocation and the catch in Areas 6, 7 and 7A was under by the same amount. Non-Indian gillnet and reefnet fishermen, respectively, caught 65,000 and 7,000 less than their allocations: these 72,000 fish represent an overage in the Non-Indian purse seine catch.

In Canada, gillnet fishermen were over their domestic allocation by 309,000 fish. Outside trollers were under their allocation by about 277,000 fish, inside trollers were under by 28,000 fish and purse seiners were under by 3,000 fish.

There were no major conflicts between the harvest of Fraser River sockeye salmon and concerns for the conservation of other species and stocks in 1990, partly because the concerns were taken into account during the design and implementation of the fishing plans. For example, the pre-season plan to harvest late-run sockeye along the migration route to minimize the incidental catch of Harrison River chinook in Canadian Area 29 was successfully implemented.

In the first two years of the 1989-92 cycle of the Treaty, the United States catch is estimated to be 4,846,000 sockeye. Washington fishermen harvested 4,406,000 Fraser River sockeye salmon and Alaskan fishermen are estimated to have harvested 440,000 sockeye.*

Achievement of objectives

The mandate of the Fraser River Panel is to manage fisheries in the Panel Area to achieve the annual goals for gross escapement of Fraser River sockeye salmon, for allocation of the catch between the countries, for domestic allocation of the catch within each country's share, and to consider conservation concerns for other stocks and species of salmon when planning and conducting the fisheries. Panel management strategies are assessed after each season to determine if the goals were met, to estimate catch deficiencies that require future attention and to improve management techniques and data collection programs.

* The estimate of Fraser River sockeye catch in Alaska for 1989 has not been agreed to by the United States.

Table 1. Comparison of 1990 in-season goals and in-season and post-season estimates of the gross escapement (adults only) of Fraser River sockeye salmon stocks.

Stock	In-season Goals*	In-season Estimates**	Post-season Estimates
Early Stuart	196,000	169,000	149,000
Early Summer-Run Stocks	507,000	726,000	570,000
Summer-Run Stocks	1,640,000	2,179,000 ***	2,044,000
Late-Run Stocks	3,708,000	3,557,000	4,106,000
TOTAL	6,051,000	6,631,000	6,869,000

* As adjusted by Canada on August 24, 1990.

** Includes 88,000 sockeye salmon caught in Fraser River Indian Food fisheries below Mission, B.C.

*** Includes Chilko - South End sockeye.

1. Escapement

The primary objective of the Fraser River Panel is to ensure that gross escapement goals are achieved. In March 1990, Canada set a gross escapement goal of 5,780,000 adults, which included an anticipated catch of 600,000 fish in the Fraser River Indian food fishery and an adult spawning escapement of 5,180,000 adults. The gross escapement goal was revised on July 10 to 5,901,000. The purpose of the adjustment was to take advantage of the larger-than-forecast Early Stuart run and attempt to achieve an escapement of 150,000 Early Stuart spawners. Due to an increase in the estimated run size of summer-run stocks, Canada increased the gross escapement goal to 6,051,000 adults on August 24 (Table 1).

The actual gross escapement in 1990 was 6,869,000 adults, of which 6,060,000 reached the spawning grounds. The gross escapement for Early Stuart sockeye was 149,000 fish, 47,000 short of the goal of 196,000. The gross escapement goals for the early summer-run and the summer-run stocks were exceeded by 63,000 and 404,000, respectively, with actual gross escapements of 570,000 and 2,044,000 adults. Early in-season concerns about the abundance of the summer-run stocks and gross escapement requirements precluded additional commercial harvest of these stocks. Late-run gross escapements totalled 4,106,000 adults, which was 398,000 over the goal. The extra escapements, which occurred as a result of management imprecision, have not yet been classified in the post-season accounting.

2. International Allocation

Achieving the international catch-allocation objectives of the Treaty is the second priority of the Fraser River Panel during the fishing season. The preliminary estimate of the Canadian Add-on Escapement Benefit is 1,078,000 Fraser River sockeye salmon, based on early summer- and summer-run run size estimates of 1,530,000 and 8,294,000 fish, respectively. With this estimate of the add-on benefit, a run size of 22,006,000 Fraser sockeye and deductions of 6,560,000, the TAC in 1990 is 14,368,000 fish (Table 2).

Prior to the 1990 fishery, the United States chose a catch goal of 2,200,000 Fraser sockeye. The actual catch by United States fishermen was 2,408,000, or 208,000 larger than the goal. This overage was largely due to the record catch of Fraser sockeye by Alaska fishermen in District 104.

Even with the overage, the United States catch was less than the maximum portion (23.1%) of the TAC that they could have taken in 1990.

The United States summer-run allocation was unavoidably exceeded, because the extreme overlap in the summer- and late-run migrations resulted in a situation where a summer-run overage was necessary if the total Fraser sockeye allocations were to be achieved. Summer-run sockeye catches in United States waters amounted to 887,000 fish, 301,000 larger than the allocation of 586,000 sockeye.

3. Domestic Allocation.

The third priority of the Panel, to achieve the domestic allocation goals of the Parties, is somewhat limited because the Panel manages only those United States and Canadian fisheries that occur within the Panel Area. In 1990, this included the Canadian Areas 20 and 29 net fisheries, the Areas 18-1 and -11 and 29 troll fisheries and all Washington State fisheries directed at Fraser River sockeye. The Canadian outside troll fisheries, including the fisheries within the Panel Area (Areas 121-124), were regulated by Canada. DFO regulates fisheries in non-Panel areas with the objective of ensuring that the combined fisheries achieve the Canadian domestic allocation goals.

Canadian catches of Fraser River sockeye by gear type were close to the goals set by the Minister of Fisheries (Table 3). Inside trollers caught 28,000 fish less than their allocation of 3.8% of the Canadian commercial catch; outside trollers caught 277,000 fewer than their allocation of 22.7%; purse seine fishermen harvested 3,000 under their allocation of 45.5%; and gillnet fishermen caught 309,000 over their allocation of 28.0%.

Table 2. Preliminary calculations of the international allocation of Fraser River sockeye salmon between Canada and the United States in 1990.

		Sockeye
TOTAL ALLOWABLE CATCH		
Total Run Size		22,006,000
Canadian Escapement Add-on Benefit		1,078,000 *
	Total Available to Share:	20,928,000
Deductions		
Adult Escapement Goal		5,360,000
Jack Escapement		21,000
Escapement Over Goal		700,000 **
Fraser River Indian Food Fishery Exemption		400,000
Test Fishing		79,000
Total Deductions		6,560,000
	Total Allowable Catch:	14,368,000
UNITED STATES		
	Initial Allocation:	2,200,000 ***
	Actual Catch:	2,408,000
	Deviation:	208,000
CANADA		
TAC Minus United States Share		12,168,000
Canadian Escapement Add-On Benefit		1,078,000
	Calculated Share:	13,246,000
	Actual Catch:	13,038,000
	Deviation:	(208,000)

* Preliminary estimate based on method agreed to by the Panel on February 8, 1991.

** Preliminary assessment of sockeye spawning escapements (adults) in excess of the goal.

*** Sockeye allocation in 1990 was an amount requested by the United States.

Table 3. Preliminary estimates of overages and underages in the catches of Fraser River sockeye salmon in 1990.

User Category	Actual Catches Number of Fish	%	Catch Goals Number of Fish	%	Overage/ (Underage)
INTERNATIONAL: by Country					
United States	2,408,400	16.2%	2,200,000	14.8%	208,400
Canada	12,458,000	83.8%	12,666,400	85.2%	(208,400)
Total:	14,866,400	100.0%	14,866,400	100.0%	0
UNITED STATES: by Group					
Treaty Indian	1,189,100	55.1%	1,050,000*	52.8%	139,100
Non-Indian	968,300	44.9%	937,000*	47.2%	31,300
Washington	2,157,400	100.0%	1,987,000	100.0%	170,400
Alaska District 104	251,000		213,000**		38,000
Total:	2,408,400		2,200,000		208,400

User Category	Actual Catches Number of Fish	%	Allocations Number of Fish	%	Overage/ (Underage)
UNITED STATES (Washington): by Area or Gear					
Treaty Indian					
Areas 4B, 5 and 6C	146,500	12.3%	142,600	12.0%	3,900
Areas 6, 7 and 7A	1,042,600	87.7%	1,046,500	88.0%	(3,900)
Total	1,189,100	100.0%	1,189,100	100.0%	0
Non-Indian					
Purse Seine	570,500	58.9%	498,700	51.5%	71,800
Gillnet	366,300	37.8%	430,900	44.5%	(64,600)
Reef Net	31,500	3.3%	38,700	4.0%	(7,200)
Total:	968,300	100.0%	968,300	100.0%	0
Washington Total:	2,157,400		2,157,400		
CANADA: by Gear					
Inside Troll	445,000	3.5%	473,400	3.8%	(28,400)
Outside Troll	2,551,000	20.5%	2,828,000	22.7%	(277,000)
Purse Seine	5,665,000	45.5%	5,668,400	45.5%	(3,400)
Gillnet	3,797,000	30.5%	3,488,200	28.0%	308,000
Canadian Total:	12,458,000	100.0%	12,458,000	100.0%	0

* In-season adjusted goals.

** The Alaska catch is not a catch goal. It was assumed to be 213,000 fish for the purpose of deriving catch goals for Washington fisheries.

Pre-season, the United States requested that the Panel divide their 1990 catch goal of 2,200,000 sockeye evenly between Treaty Indian and Non-Indian fishermen in Washington State. However, large catches of Fraser sockeye in Alaska District 104 caused the United States to modify the goals in the Panel Area on August 31. The modified goals for the Panel Area were 1,050,000 sockeye for Treaty Indians and 937,000 for Non-Indian fishermen. This modification was based on an assumed catch of 213,000 Fraser sockeye in Alaska so the total catch remained at 2,200,000 fish. The actual catches by Treaty Indian and Non-Indian fishermen in United States Panel Areas were 1,189,100 and 968,300, respectively, or 139,100 and 31,300 Fraser sockeye over their goals.

Other domestic sockeye allocations were established for 1990. Treaty Indian fishermen in Areas 4B, 5 and 6C caught 146,500 sockeye or about 4,000 greater than their allocation. There were no specific allocations among Treaty Indians in other Panel Areas. Among Non-Indian fishermen, purse seine fishermen caught 58.9% of the Non-Indian catch, gillnet fishermen caught 37.8%, and reefnet fishermen caught 3.3%, which represent 72,000 fish over, 65,000 under and 7,000 under the respective allocations for these gear.

4. Conservation of Other Stocks

Part of the mandate of the Fraser River Panel is to accommodate the conservation and management needs of other salmon species and stocks identified by the Parties, when it is managing Panel Area fisheries targeting on Fraser River sockeye salmon. Several measures were incorporated in the pre-season Management Plan to protect these other species and stocks. For example, fisheries targeting on late-run sockeye in the Strait of Georgia were restricted because of the necessity to minimize the by-catch of Harrison River chinook salmon. In 1990, no additional actions were required to protect the species and stocks of concern. The catches of other species of salmon in Panel Areas during Panel control totalled approximately 37,000 chinook, 178,000 coho and 3,000 chum salmon. A negligible number of non-Fraser sockeye were caught.

(Source Document) - *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1990 Fraser River Sockeye Salmon Fishing Season.* Pacific Salmon Commission Staff. May 1991.

B. PRELIMINARY 1990 POST-SEASON REPORT FOR UNITED STATES SALMON FISHERIES OF RELEVANCE TO THE PACIFIC SALMON COMMISSION

Northern Boundary Area Fisheries

District 104 Purse Seine Fishery

The U.S./Canada Pacific Salmon Treaty calls for limiting the sockeye harvest in the District 104 purse seine fishery during the period 1990 to 1993 to a maximum four-year total of 480,000 prior to statistical week 31. Under the terms of the agreement when the annual catch reaches 160,000 sockeye salmon, no further fishing periods will be allowed prior to statistical week 31. All underages not to exceed 20% of the Annex ceiling, will add to, and any overages will subtract from, the subsequent four-year period.

Due to the alignment of statistical weeks, the 1990 Treaty period extended over four weeks. Years 1991 to 1993 will each have three weeks during the Annex period. The goal of the Alaska Department of Fish and Game was to manage the District 104 purse seine fishery for a harvest of 120,000 to 150,000 sockeye salmon prior to statistical week 31.

The fishery was opened for one fifteen-hour period per week during statistical weeks 27 and 28. Approximately 65,000 sockeye salmon were harvested in the first two weeks. In statistical week 29 a six-hour opening was allowed and 65,000 sockeye salmon were harvested. To limit the sockeye catch in statistical week 30, yet still allow some harvest opportunities in this week, a six hour fishing period was allowed and only the northern portion of the district was opened. This strategy held the sockeye harvest to 39,500 fish in statistical week 30. The total sockeye harvest during the Treaty period was approximately 170,000 fish.

Weekly catch and effort in District 104 for the first four weeks of the fishery are given in Table 4. Total catches for both sockeye and pink salmon and hours open in the fishery prior to statistical week 31 and for the total season are given in Table 5 for the years 1985 to 1990. Weekly catches for 1990 for all species are given in the section on catch tables for Southeast Alaska.

Pink salmon returns to southern Southeast Alaska (Districts 101-108) in 1990 were much stronger than the predicted 13.1 million (6.0 million escapement index goal plus 7.1 million harvest). In District 104, 14,600,000 pink salmon were caught, the third largest District 104 harvest on record. Pink salmon harvests totalled 3.2 million in District 101, 2.6 million in District 102, and 3.0 million fish in District 103. Pink salmon escapement indices were above goals in Districts 101, 102, and 103 while escapements in Districts 105, 106, and 107 were slightly below goals. The total escapement index for southern Southeast Alaska was 7.1 million fish.

Table 4. Fishing effort and catch during the first four weeks of the season in the District 104 purse seine fishery, 1990.

Statistical Week	Beginning Date	Effort		Catch	
		Hours	Boats	Sockeye	Pink
27	July 1	12	68	24,485	42,882
28	July 8	12	143	41,117	98,018
29	July 15	6	76	64,795	227,071
30	July 22	6[a]	87	39,546	91,672
Total		36		169,943	459,643

[a/] Only the northern portion of the district was open.

Table 5. District 104 purse seine catches up to statistical week 31 and for the total season, 1985 to 1990. For 1985 to 1988, catches prior to Week 31 represent three weeks of fishing, while for 1989 and 1990 it is four weeks.

Year	Sockeye Catch		Pink Catch		Hours Fished	
	to wk 31	total	to wk 31	total	to wk 31	total
1985	100,590	431,575	356,881	8,503,133	84	492
1986	91,304	443,990	1,035,806	18,868,802	108	570
1987	72,385	171,214	198,479	1,674,018	75	183
1988	248,759	591,038	108,874	3,543,934	108	315
1989	157,034	516,069	1,664,750	13,010,576	84	462
Mean 1985-1989	134,014	430,777	672,958	9,120,093	92	404
1990	169,943	796,782	459,643	14,600,461	42	306
Mean 1985-1990	140,003	491,778	637,406	10,033,487	84	388

Tree Point Drift Gill Net Fishery

The Treaty specifies that the gillnet fishery in District 101-A and B be limited to an average annual harvest of 130,000 sockeye salmon. From 1985 to 1989, the average was 137,380 sockeye salmon. In 1990, 85,690 sockeye salmon were caught, lowering the 1985 to 1990 average annual harvest to 128,765 fish.

The Tree Point drift gillnet fishery opens by regulation on the third Sunday of June. In 1990, the gillnet fishery at Tree Point was initially opened for a four-day fishing week on June 17 (statistical week 25). Due to low numbers of sockeye salmon returning to Hugh Smith Lake and the Nass River and a below average catch rate of chum salmon, the fishing time at Tree Point for the next two weeks was reduced to 2.5 and then 2 days.

On July 8 (statistical week 28), the District 101 Pink Salmon Management Plan was initiated and continued to be followed through statistical week 35. Effort levels remained quite low and harvest of all species was well below those of recent years. During the final three weeks of the season, three days of fishing per week was allowed. Catches of fall coho and chum salmon were generally good during this time period. A comparison of the catches in 1990 to those in 1985 to 1989 is given in Table 6. Weekly catches for 1990 for all species are given in the section on catch tables for Southeast Alaska.

Table 6. District 101-11 gillnet catches, 1985-1990.

Year	Chinook	Sockeye	Coho	Pink	Chum
1985	2,788	172,736	51,043	691,147	233,872
1986	1,033	145,631	61,592	906,309	272,495
1987	1,785	107,503	36,644	583,145	157,856
1988	1,802	116,092	16,823	229,711	499,921
1989	1,808	144,936	31,931	1,347,847	298,152
Mean	1,843	137,380	39,607	751,632	292,459
1990	1,710	85,690	42,893	580,555	174,179
Mean	1,821	128,765	40,154	723,119	272,746

Portland Canal Chum Salmon

The catch of chum salmon in the Tree Point gillnet fishery in 1990 was 174,000 fish, below the past ten years' average. Portland Canal was closed to fishing north of Akeku Point during this opening and throughout the remainder of the season in order to conserve chum stocks returning to spawn in streams in Portland Canal.

Escapements of chum salmon into the Portland Canal systems were below goal, with Tombstone River and Hidden Inlet both experiencing poor chum escapements.

Transboundary Area Fisheries

Stikine River Fisheries

Results of in-season scale pattern analysis of District 106 and 108 indicated that the U.S. harvested a total of 40,732 Stikine sockeye salmon. This was greater than the 24,970 allowable catch the Stikine Management Model was stipulating near the end of the run (Table 7). It was determined during the season, however, that the scale pattern analysis was producing erroneous results by overestimating the contribution of Stikine River fish in the catches. This should be corrected in the post-season analysis.

The pre-season forecast of run strength for Stikine River sockeye salmon was 94,000 fish in 1990, which allowed the U.S. to fish in District 108 during the first two weeks of the fishery. The District 106 and 108 fisheries remained open each week during the summer season; effort levels exceeded those in recent years for each district. Cumulative catches of Stikine River sockeye salmon during the early weeks of the fishery appear in Table 7. Total catches by week in the District 106 and 108 fisheries are given in the section on catch tables for Southeast Alaska.

Table 7. Behavior of the Stikine River Management Model for 1990. The table gives the output from the model that was obtained each week during the fishery.

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

[a] I indicates indirect fishery allowed; D indicates directed fishery allowed.
[b] Cumulative U.S. catch decreased due to use of different analytical techniques to minimize the misclassification problem.

Taku River Fisheries

The Treaty stipulates that Canada and the U.S. are entitled to 18% and 82%, respectively, of the Total Allowable Catch (TAC) of the sockeye salmon originating in the Canadian portion of the Taku River. The estimated total run size for Taku River sockeye salmon in 1990 was 230,699 fish (Table 8). Since the escapement goal for Taku sockeye salmon ranges from 71,000 (U.S. goal) to 80,000 (Canadian goal), the TAC in 1990 ranged from 150,699 to 159,699 fish. The U.S. harvested approximately 115,500 Taku sockeye salmon, representing 72.3% - 76.7% of the TAC. The estimated escapement of sockeye in 1990 was 93,694 fish, approximately 7% higher than the 1985 to 1989 average, exceeding the escapement goal by 17% to 32%. Preliminary run reconstruction statistics for Taku sockeye salmon are given in Table 8.

Table 8. Preliminary Taku River and Port Snettisham sockeye salmon run reconstruction for 1990. Numbers are preliminary as of November 1, 1990.

	Taku River	Snettisham	Total
Run Reconstruction			
Escapement	93,694	19,326[a]	
Taku Inriver Harvest (Canada)	21,107		
Inriver Test Fishery Harvest (Canada)	285		
Inriver Food Fishery Harvest (Canada)	89		
Inriver Run (Canyon Island)	115,175		
District 111 Harvest (U.S.)	114,024	12,689	126,713
Personal Use	1,500		
District 111 Test Fishery Harvest (U.S.)		85	
Total Run	230,699	32,100	
Total Allowable Catch			
TAC	150,699 - 159,699		
U.S. Percent of TAC	72.3 - 76.7%		
Canadian Percent of TAC	13.5 - 14.3%		
Exploitation of Stock			
U.S. of Total Run	50%		
Canada of Inriver Run	19%		

[a] Counts at Snettisham weirs were incomplete due to high water.

Alsek River Fisheries

The total catch of sockeye salmon in the Alsek fishery was 17,000 fish, slightly less than the 1980 to 1989 average of 17,136 fish. The initial fishery opening was delayed two weeks relative to historical patterns to reduce catches of expected poor returns of early-run sockeye and chinook salmon. In addition, a mesh restriction was implemented through early July to prevent targeting on chinook salmon. After fishing one day during the initial fishery opening and two days during each of the next two weeks, results of ADF &G management models indicated a strong return of sockeye salmon. Fishing time for the remainder of the summer season was three days per week. Total effort (boat days) in the 1990 Alsek fishery was only 78% of the previous 10-year average. Total catches for the Alsek fishery are given in the section on catch tables for Southeast Alaska.

Enhancement Activities

The Memorandums of Understanding on joint enhancement in the transboundary rivers state that in 1990 5 million sockeye eggs will be taken from Tahltan Lake in the Stikine River drainage and 2.5 million eggs from each of Little Trapper an d Little Tatsamenie Lakes in the Taku River drainage. In 1990 approximately 4.8 million eggs were taken from Tahltan Lake, 2.4 million from Little Trapper, and 1.1 million from Little Tatsamenie Lake. Eggs were taken by Canada and flown to the Snettisham Incubation Facility in Alaska, where they are currently being incubated. The egg-take at Little Tatsamenie was smaller than expected because of mortality experienced during holding of brood stock for ripening and also because the escapement to this system was less than expected. The escapement to Tahltan Lake was less than 15,000 sockeye salmon in 1990; therefore, all fry resulting from this egg take will be planted back into Tahltan Lake next year. Fry resulting from the Taku River egg takes will be released into the large lakes located above the egg take sites in each drainage (Trapper and Tatsamenie Lakes).

Chinook Salmon

1990 Southeast Alaska Chinook Salmon Fishery

All Gear Harvest

The preliminary 1990 chinook salmon catch by all Southeast Alaska fisheries was 353,500. The base catch was 306,300 and the hatchery add-on was 47,200 fish. The base catch exceeded the 1990 target of 302,000 by 4,300 fish. This brought the cumulative deviation of the base catch to -900 (99.92% of the cumulative allowable base of 1,091,000 chinook salmon since 1987).

Table 9. Chinook all-gear catches in Southeast Alaska, 1987 to 1990, and deviation from the ceiling for each year. Catches in thousands.

Year	Preliminary Catches Total	Add-on	Base	Base Ceiling	Deviation from Base Number	Percent
1987	282.1	16.0	266.1	263.0	3.1	1.2%
1988	277.3	23.9	253.4	263.0	-9.6	-3.7%
1989	291.0	26.7	264.3	263.0	1.3	.5%
1990	353.5	47.2	306.3	302.0	4.3	1.4%
Cumulative	1,203.9	113.8	1,090.1	1,091.0	-.9	-.08%

Troll Fishery

The winter troll fishery harvested 33,000 chinook salmon from October 1, 1989 through April 14, 1990. A total of 4,400 (13%) of these were produced by Alaskan hatcheries.

During June, both experimental and hatchery access troll fisheries were conducted. The experimental fisheries were designed to increase the harvest of returns to selected Alaskan hatcheries by allowing trolling for 2 to 3 days per week in small portions of the suspected migratory corridor near the hatchery of origin. The hatchery access fishery was designed to increase the harvest of both Alaskan hatchery and wild stocks. The hatchery access fishery occurred between June 5 to 7 and June 21 to 23. Fishing was restricted to waters within the surf line of Southeast Alaska and Yakutat Bay.

The experimental fishery harvested 7,300 chinook salmon of which 4,400 (61%) were produced in Alaskan hatcheries. This was both the largest catch and highest percentage of Alaskan produced hatchery chinook recorded since its inception in 1986.

A total of 35,000 chinook salmon were harvested in the hatchery access fishery, of which 6,500 (19%) were produced in Alaskan hatcheries. This was only the second year of the hatchery access fisheries and both the catch and percentage of Alaskan hatchery produced chinook were greater than in 1989.

By Treaty agreement, the June troll fisheries were limited to 30,000 non-Alaskan hatchery produced chinook salmon. The total June catch was 42,300 with 10,900 (26%) produced in Alaskan hatcheries. The total non-Alaskan catch was 31, 400. This was 1,400 over the ceiling. The percentage produced in Alaskan hatcheries was higher than in 1989.

Less than 100 chinook salmon were harvested in terminal fisheries.

The summer fishery began on July 1 and continued through July 22 during which time 200,400 chinook salmon were harvested, of which 13,900 were produced in Alaskan hatcheries. Areas of high chinook salmon abundance were closed and chinook non-retention was implemented in the remainder of the area at this time.

The total 1990 troll harvest of chinook salmon was 287,600 of which 29,400 were produced in Alaskan hatcheries.

Net Fisheries

Net fisheries have a guideline harvest of 20,000 chinook salmon plus Alaska hatchery add-on. Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and constitute only a fraction (less than 1%) of the total net harvest. In 1990, the net fisheries harvested a total of 26,800 chinook.

Recreational Fisheries

There is no harvest guideline established for recreational fisheries. They are managed primarily under a 2 fish-per-day bag limit and a 28" minimum size limit. The final harvest estimate will not be available until mid-1991; however, the preliminary projection is 38,200 chinook salmon. This

exceeds the previous high harvest of 31,100 by 7,100. However, the number and percentage of harvest estimated to be produced by Alaskan hatcheries, 13,100, is also the highest ever recorded.

Preliminary 1990 Chinook Salmon Catches in Southern U.S. Fisheries

The following is a summary of preliminary 1990 and 1989 chinook catches in Southern U.S. fisheries of interest to the Pacific Salmon Commission (PSC). These summaries include catches through 11/13/90.

Fishery	1990 Estimate	1989 Estimate
Central Oregon		
Troll	0	4,600
Recreational	NA	NA
Columbia In-River		
Net	145,900	274,900
Recreational	64,400	83,000
Ocean (North of Falcon)		
Troll	64,900	74,100
Recreational	33,100	20,800
Net	100	800
Washington Coastal		
Marine Net	41,400	56,300
River Net	16,000	28,500
Strait of Juan de Fuca		
Net	5,100	10,100
Troll	28,200	63,300
Recreational	NA	50,500
San Juan Islands		
Net	9,000	16,100
Troll	600	1,300
Puget Sound		
Recreational	NA	66,700
Marine Net	148,900	124,600
River Net	28,500	32,000

Ocean Fisheries off Central Oregon

Ocean fisheries off Oregon's central coast primarily harvest a mixture of southern chinook stocks not involved in the PSC rebuilding program; these stocks do not migrate north into PSC jurisdiction to any great extent. Some stocks that spawn in Oregon coastal streams do migrate into PSC fisheries, including the Northern Oregon coastal (NOC) stock aggregate. These north migrating stocks are harvested incidentally (probably <10%) in Oregon ocean fisheries. The only troll fishery that predominately harvests the NOC stock aggregate is the late season near-shore fishery off the mouth of the Elk River. In 1990, this Elk River fishery was closed; in 1989, the fishery harvested 4,600 chinook. Recreational catch estimates for 1989 and 1990 are not available at this time.

Columbia River

Columbia River 1990 freshwater recreational and commercial net fisheries are incomplete.

Preliminary estimates of 1990 spring and fall chinook net catch total 145,900, compared to 274,900 in 1989. Freshwater recreational catch estimates for 1990 total 64,400 chinook compared to 83,000 in 1989.

Ocean Fisheries North of Cape Falcon

In 1990, ocean commercial and recreational fisheries operating in the Pacific Fisheries Management Council (PFMC) region north of Cape Falcon were constrained by domestic quotas for both chinook and coho salmon. Separate quotas were established for the tribal troll and non-tribal fisheries.

Under PFMC quota management, ocean fisheries are terminated either when coho or chinook quotas are achieved or when seasons expire. Overall, in 1990, chinook catch success was poor, consistent with 1990 pre-season expectations for low abundance of key stocks. Most chinook quotas were not fully harvested. Preliminary estimates of 1990 tribal troll chinook catch total 31,100, 99% of the quota. Preliminary estimates of non-tribal chinook catch total 66,900, about 89% of the quota. Recreational catches are estimated at 33,100 (3,300 Oregon and 29,800 Washington). Non-tribal troll catches are estimated at 33,800 (2,500 Oregon and 31,300 Washington), of which approximately 25,900 were taken during the early season chinook fishery.

Washington Coast

Ocean escapements of northern Washington coastal stocks were above minimum spawning levels, allowing both commercial and recreational fisheries. Although coastal fisheries are incomplete, preliminary 1990 estimates of Grays Harbor and Willapa Bay net catch total 41,400 chinook, compared to 56,300 in 1989. The 1990 commercial net fisheries in north coastal rivers have harvested an estimated 16,000 chinook, compared to 28,500 in 1989.

Strait of Juan de Fuca

Preliminary estimates of 1990 net catch in the Strait of Juan de Fuca total 5,100 chinook, compared to 10,100 in 1989. To date, the tribal troll fishery has harvested an estimated 28,200 chinook in 1990. This is not directly comparable to the 63,300 chinook harvested in 1989 since, in past years, much of the catch in this fishery has occurred in November and December. Tribal catch in Area 4B during the May 1 - September 30 PFMC management period has been included in the North of Cape Falcon troll summary.

Recreational catch estimates for 1990 in Areas 5 and 6 are not available at this time. In 1990, about 400 chinook were caught in the Area 4B state waters fishery, after the PFMC fishery compared to 500 in 1989. Preliminary 1989 recreational chinook catch for all three areas is estimated at 50,500, compared to 40,800 in 1988.

San Juan Islands

Preliminary 1990 estimates of chinook net catch in the San Juan Islands total 9,000, compared to 16,100 in 1989.

Puget Sound

Recreational and commercial fisheries in Puget Sound were regulated by time and area closures to protect depressed spring chinook stocks. Preliminary estimates of 1990 net catch in Puget Sound total 177,400 chinook, compared to 156,600 in 1989. Puget Sound recreational catch estimates for 1990 are not available at this time. Recreational fisheries were managed in the same general manner as in 1989. Preliminary recreational chinook catch for 1989 is estimated at 66,700, compared to 90,800 in 1988.

Coho Salmon

Coho Fisheries in Southeast Alaska

No specific provisions of the Annex IV chapter on coho salmon currently apply to Southeast Alaska fisheries. These fisheries are managed by the Alaska Department of Fish and Game to

achieve gear allocation objectives established by the Alaska Board of Fisheries and general coho conservation objectives. The 1990 fisheries were managed in a manner similar to that used since 1980. Fisheries are managed in-season with time/area regulations and recreational bag limits based on run strength assessment. There are no catch ceilings used for coho salmon management.

Preliminary catch data indicate a total all gear harvest of approximately 2,829,600 coho salmon. Catches by gear type are shown on Table 10.

Table 10. Coho salmon catches by gear type.

Gear Type	Catch	Percent
Troll	1,830,500	64.7%
Set Net	148,000	5.3%
Purse Seine	371,000	13.1%
Drift Gillnet	344,300	12.2%
Recreational	135,000	4.8%
Total	2,829,600	

The 1990 harvest was the second highest harvest since 1960. Returns were strong throughout Southeast Alaska and very strong returns were again seen in the northern inside. Preliminary analysis indicates Alaskan hatcheries contributed about 373,000 (13.2%) coho salmon to the traditional commercial fisheries. This is the largest percentage of the total catch contributed by Alaskan hatcheries since contributions began in 1986 (Table 11).

Table 11. Hatchery contributions of coho salmon to the commercial catches in southeast Alaska, 1986-1990.

Year	Catch	Hatchery	Percent
1986	3,457,000	400,000	12%
1987	1,592,000	129,000	8%
1988	1,056,000	55,000	5%
1989	2,243,000	76,000	3%
1990	2,829,600	373,000	13%

The troll fishery catch was the second highest since 1960 and accounted for 64.7% of the total catch. A single 10-day closure (mid August) to comply with the Board of Fisheries directives was implemented for the troll fishery. No coho directed closure was implemented in the drift gill net fishery, but fall fishing was curtailed in many districts for chum salmon concerns. The drift gillnet harvest was the 2nd highest since 1960 and comprised 12.2% of the total harvest. As in the drift gillnet fishery, there was no directed closure in the purse seine fishery. The purse seine harvest was the 8th highest harvest since 1960 and comprised 13.1% of the total harvest. The set net harvest was the 7th largest since 1960 and comprised only 5.3% of the total harvest. The recreational harvest is the largest on record and comprised 4.8% of the total harvest.

Coho escapements were generally strong throughout the region.

Preliminary 1990 Coho Salmon Catches in Southern U.S. Fisheries

This review compiles available coho catch data from 1989 and 1990 southern U.S. fisheries of interest to the Pacific Salmon Commission (PSC). These data are preliminary and are expected to change as errors are corrected and fisheries are completed. Statistics for 1990 include catches through November 13, 1990. A gross catch summary is presented below.

Fishery	1990 Estimate	1989 Estimate
Columbia River		
Net	73,800	391,500
Recreational	NA	90,700
Ocean (North of Falcon)		
Troll	202,300	161,300
Recreational	241,000	227,400
Net	400	200
Washington Coastal		
Marine Net	92,000	94,500
River Net	24,900	20,800
Strait of Juan de Fuca		
Net	30,800	63,600
Troll	1,900	1,400
Recreational	NA	159,700
San Juan Islands		
Net	60,400	114,100
Troll	200	400
Puget Sound		
Recreational	NA	61,600
Marine Net	829,000	708,100
River Net	103,300	66,800

Columbia River Net

The 1990 net catch in the Columbia River was 73,800 coho. This is significantly less than the 1989 catch of 391,500 and reflects the decline in the 1990 run size compared to 1989.

Columbia River Sport

The Columbia River Buoy 10 and Light 26 fisheries harvested 17,300 coho in 1990 compared to 76,800 in 1989. The 1989 Columbia River sport catch of 90,700 coho includes mainstem and tributary catches in addition to the Buoy 10 and Light 26 fisheries. Mainstem and tributary catches are unavailable for 1990 and the reported sport catch is limited to the 1990 Buoy 10 and Light 26 fisheries.

North of Cape Falcon Troll

The U.S. troll fisheries operating in this area were constrained by coho ceilings developed through the domestic regulatory process of the Pacific Fisheries Management Council (PFMC). Coho catch ceilings for the 1990 ocean fisheries were developed to conserve depressed wild coho stocks originating in either Puget Sound or Washington coastal rivers. Non-tribal and tribal troll fisheries operated under catch ceilings of 105,000 and 90,000 coho respectively. The 1990 non-tribal coho catch of 102,400 was below the ceiling while the 1990 tribal catch of 99,900 exceeded the PFMC harvest ceiling. The ocean total for the tribal troll fishery includes the coho caught in Area 4B

from May 1 through September 30. Coho were available early in the season but CPUE was quite low through late August, September, and October. The total 1990 troll coho catch exceeded the 1989 total by approximately 41,000 fish.

North of Cape Falcon Sport

The 1990 recreational fishery north of Cape Falcon was constrained by a ceiling of 245,000 coho, developed through the PFMC management process. Approximately 241,000 coho (98.4% of the ceiling) were caught in 1990, approximately 13,600 coho more than were harvested in 1989.

Washington Coastal Marine Net

A total of 51,600 coho have been harvested by the non-tribal 1990 Willapa Bay and Grays Harbor net fisheries (Willapa Bay 47,400; Grays Harbor 4,200) compared to a catch of 69,700 in 1989. Tribal fisheries in Grays Harbor landed 40,400 coho compared to 24,800 in 1989. There is no tribal catch in Willapa Bay.

North Washington Coastal River Net

The tribal net fisheries in Washington's coastal rivers have harvested approximately 24,900 coho compared to 20,800 in 1989. The coastal river net harvest includes catch for the Quillayute, Hoh, Queets, Quinault, Moclips and Copalis rivers. Catch for the Humptulips and Chehalis rivers are included in the Grays Harbor tribal coastal marine net totals.

Strait of Juan de Fuca Marine Net

The tribal net fisheries in Areas 4B, 5, and 6C harvested 30,500 coho in 1990 compared to 63,600 in 1989. Non-tribal net fisheries landed 300 coho in 1990 compared to 24 in 1989.

Strait of Juan de Fuca Troll

The coho harvested by the tribal troll fishery in Area 4B during the May through September PFMC management period are summarized with the north of Cape Falcon troll data. The tribal troll fishery outside of the PFMC management period in Areas 4B, 5, and 6C harvested 1,900 coho in 1990 compared to 1,400 in 1989.

Strait of Juan de Fuca Sport

A Washington State managed recreational fishery was conducted in Area 4B in 1990. The harvest of 20,400 coho slightly exceeded the 20,000 coho quota. This 4B recreational fishery harvested 19,900 coho in 1989. 1990 estimates for Areas 5 and 6 are unavailable. The 1989 Areas 5 and 6 coho catch of 139,800 is approximately 28,300 coho greater than the 1988 catch of 111,500. Although the 1989 Area 6 sport catch declined, the Area 5 catch increased by approximately one and one half times the 1988 catch.

San Juan Islands Net Fisheries

The tribal net fisheries in Areas 6, 6A, 7, and 7A have harvested 44,400 coho (43,100 in 7/7A) in 1990 compared to 56,500 (55,500 in 7/7A) in 1989. The non-tribal net fisheries have harvested 16,000 coho (15,900 in 7/7A) compared to 57,600 (53,600 in 7/7A) in 1989. Pre-season domestic management planning, which took into account the conservation needs of Puget Sound native coho stocks, anticipated an Area 6, 6A, 7, and 7A combined coho catch of 115,700 coho compared to

the 1989 expected catch of 140,200. Area 6 accounted for 1,400 (2.4%), Area 7 accounted for 35,700 (59.1%) and Area 7A accounted for 23,300 (38.5%) of the combined tribal and non-tribal total catch of 60,400. The catch includes coho taken incidentally during fisheries under Fraser Panel control (10,300), fisheries directed at coho (29,200) and fisheries directed at chum (20,900).

Puget Sound Sport

Catch estimates are not available at this time for the 1990 Puget Sound sport fishery. Preliminary catch estimates for 1989 are presented. The combined 1989 coho catch of 61,600 in Areas 7 - 13 was less than the catch of 104,100 in 1988. Coho catches declined in 1989 relative to 1988 in all Puget Sound catch areas.

Puget Sound Marine Net

1990 tribal and non-tribal net fisheries in Puget Sound marine areas other than 4B, 5, 6A, 7 and 7A harvested 454,500 and 374,500 coho respectively. This compares to a tribal harvest of 421,200 and a non-tribal harvest of 286,900 coho in 1989.

Puget Sound River Net

River net fisheries in Puget Sound harvested approximately 103,300 coho in 1990 compared to 66,800 in 1989.

Chum Fisheries

This summary report provides a preliminary review of the 1990 Washington chum fishing season and is subject to correction and revision as additional information becomes available. Some terminal area Washington chum fisheries are still underway, and catch and run size information provided are preliminary data reported through mid-November. This report addresses in detail only those fisheries of most concern under the Pacific Salmon Treaty. The mixed-stock fisheries in United States (U.S.) waters that are 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 stocks of local origin.

Mixed Stock Fisheries

Areas 4B, 5 and 6C

Consistent with the provisions of the Chum Annex, the fishery in areas 4B, 5, and 6C was restricted to Treaty Indian gillnet gear. Fishing began in these areas on October 7 with a five-day opening. The areas were re-opened on October 14 and fished continuously through November 2. There were an additional 4 days of fishing from November 3 through November 7 and the fishery was then closed for the season.

Catches in the Strait fishery were about as expected throughout the chum management period, with peak catches occurring in the latter half of October. Incidental chum catches prior to the chum management period were only 34 fish. The total commercial chum catch reported through November 14 is 52,139. The fishery is now closed and little, if any, additional catch is expected to be reported.

Areas 7 and 7A

Prior to the chum management period, significant incidental catches of chum salmon were taken during fisheries targeting on coho. Total catches of chum salmon in Areas 7 and 7A prior to chum management were 24,299.

Throughout the chum season, U.S. and Canadian technical staffs kept in close communication on the status of the chum run size entering Johnstone Strait. Indications from the initial evaluation fishery and subsequent test fishing in late September and early October were that the run was larger than expected, with an estimated total run size of 3.48 million. The U.S. was notified by DFO of their intent to open chum fisheries in Johnstone Strait which would bring to total catch in that area to over the 225,000 threshold for U.S. fishing in Areas 7 and 7A. The U.S. then proceeded to schedule fisheries to harvest the quota of 120,000 chum as provided in Annex IV, and to make up the 1989 catch shortfall of approximately 42,000 fish (162,000 total). On October 15, the U.S. was notified by DFO that the Johnstone Strait run size had been further updated to 3.8 million and that the catch in Johnstone Strait had exceeded 640,000 chum. This allowed an increase in the chum harvest objective for Areas 7 and 7A to 182,000 (140,000 plus 42,000 shortfall in 1989).

Fisheries conducted in Areas 7 and 7A by Treaty Indian and non-Treaty fisheries have harvested a total of 180,364 chum based on preliminary catch data. No additional fisheries were schedule for these areas.

Puget Sound Terminal Area Fisheries and Run Strength

Pre-season forecasts for chum returns to Puget Sound were for a good run of about 1.6 million. Most Puget Sound chum runs have been updated in-season to less than predicted pre-season. Overall, the in-season estimates of abundance, as of November 8, indicate a total Puget Sound chum return of about 1.3 million. Many Puget Sound chum fisheries are still underway or just beginning. It is far too early to assess spawning escapement.

(Source Document) - *Preliminary 1990 Post Season Report for United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty.* U.S. Section, PSC, November 1990)

C. 1990 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

Catches reported below for 1990 are preliminary and are based on in-season estimates (hailed statistics), on-the-grounds counts by Canada Department of Fisheries and Oceans management staff, and/or sales slip data (troll and net) processed to October 22, 1990 (north coast) and November 3, 1990 (south coast); commercial catches for 1989 are also preliminary. Annex fisheries are reported on in the order of the Chapters of Annex IV. Comments are provided in point form, starting with expectations and management objectives, followed by catch results by species, and where available and appropriate, escapements. The expectations, management objectives, catches and escapements presented below are only for those stocks and fisheries covered by the Pacific Salmon Treaty; domestic catch allocations have been excluded. The attached table summarizes 1985-90 catches in Canadian fisheries under limits imposed by the Pacific Salmon Treaty (Table 12).

Transboundary Rivers

Stikine

- The Stikine River sockeye run was expected to return at below average strength in 1990. As required by the Transboundary Chapter of Annex IV, a pre-season forecast of 94,000 sockeye was made to guide initial fishing patterns of both countries. The total run forecast included an estimated Tahltan sockeye run of 25,000 to 30,000 sockeye, which was below average, and an estimated run of 66,000 non-Tahltan sockeye, which was above average.

- The annual harvest sharing arrangements for Stikine sockeye from 1988 until 1992, tied to commitments by the Parties to undertake cooperative enhancement, are as follows:

Range in TAC		Canadian Catch	
from	to	Minimum	Maximum
0	0	4,000	4,000
1	20,000	10,000	15,000
20,001	60,000	15,000	20,000
60,001	60,001+	20,000	30,000

- The Annex also provides for a Canadian catch of 4,000 coho. Chinook, pink and chum are to be taken as an incidental harvest in the directed fisheries for sockeye and coho.

- The total Canadian in-river sockeye catch of 18,024 was 1,976 below the target of 20,000 sockeye, which was based on early in-season forecasts of total return and total allowable catch (TAC). The final in-season forecasts of total return and TAC were approximately 109,000 and 49,000 sockeye, respectively.

- The preliminary post-season estimates of total run and TAC are 104,000 and 44,000, respectively. For comparison, pre-season forecasts were 94,000 and 34,000. Based on post-season estimates Canada's allowable catch was 20,000.

- Sockeye escapement past the Tahltan Lake weir was 14,927 which was below the 1985-89 average of 21,083 sockeye, and well below the escapement goal range of 20,000 to 40,000 sockeye. The preliminary estimate of total Tahltan stock size is 36,067 sockeye, slightly above the pre-season expectation of 25,000 to 30,000 fish. Based on preliminary analysis of in-season stock identification data (egg diameter) and test fishery timing data, the non-Tahltan escapement was approximately 27,000 sockeye. Thus the total Stikine escapement was approximately 42,000 sockeye, which is 70% of the 60,000 target escapement. It would appear that the target was missed due to the United States exceeding their allowable harvest guideline. This was primarily due to problems with the scale pattern analysis (SPA) that resulted in early season overestimates of the run size, U.S. catch and TAC.

- The target in-river coho catch for 1990 was 4,000 fish. The actual catch was 4,037 coho. Above average cumulative catch per unit effort (CPUE) in the commercial fishery indicated the potential for an above average escapement. This was verified by aerial surveys, however, the preliminary in-river run estimate, based on comparisons between the CPUE in the sockeye and coho test fisheries, was about 23,000 coho, slightly below average. The four-year cycle average for border escapement is 27,800 coho.

- The total 1990 gillnet catch of chinook was 2,250 adults and 959 jacks. The combined chinook catch was a record, largely due to the near record catch of jacks. The adult chinook count of 4,354 fish at the Little Tahltan weir was slightly below the 1985-89 average of 4,565 adult chinook, whereas the jack return (417) was 11% above average.

- Enhancement activities continued in 1990 with approximately 4.8 million sockeye eggs taken at Tahltan Lake and flown to the Port Snettisham hatchery for incubation. Approximately 1.1 million fry were outplanted into Tahltan Lake in June of this year from the initial egg-take in 1989. The fry were mass-marked with a thermally-induced otolith mark. There were some mortality problems at the hatchery, however these have been rectified.

Taku

- The annual 1988-92 harvest sharing arrangements for Taku salmon stocks of Canadian origin allow for a Canadian harvest of 18% of the sockeye TAC and a coho catch of 3,000 pieces. Other species may be taken incidentally to the sockeye/coho harvest. Like the Stikine River, this harvest is tied to a commitment by both Parties to undertake a cooperative sockeye enhancement program.

- The Canadian pre-season expectation was for an above average sockeye return of approximately 197,000 sockeye and a Canadian harvest of about 22,000 sockeye.

- In-season projections for total return and TAC were made regularly on the basis of the joint Canada/U.S. mark-recapture program, in-season SPA data from Alaska Department of Fish and Game (ADF&G) on the proportion of Taku-origin sockeye in the District 111 catch, in-season catch from Canadian fisheries, and historical run timing information. The in-season forecasts indicated a run greater than expected ranging from 208,000 in the second week of the season, to 282,000 in late July and early August. A rapid decline in sockeye abundance occurred in early August and resulting in a run estimate of 229,000 by the end of the season.

- The preliminary post-season estimate of the total run is 231,000 sockeye based on mark-recapture data and preliminary SPA results from the District 111 catch.

- The 1990 Canadian sockeye catch was 21,100 by the commercial fishery and 89 by the Indian Food Fishery (IFF). Preliminary analysis suggests that the total catch (21,189) was 13-14 percent of the TAC estimate of 150,700 to 159,700 sockeye. Therefore the Canadian catch was 5,900 and 7,600 short of the allowable catch. The main reason for the shortfall was the earlier than normal run timing which resulted in a premature end to the season and an inability to make up for the shortfall late in the season. Sockeye catchability was also reduced throughout most of the season due to higher-than-normal water levels.

- Based on the Canada/U.S. mark-recapture program, the estimated total escapement of 93,700 sockeye was above the interim goal range of 71,000 to 80,000. However, weir counts of sockeye at Little Trapper (9,443) and Little Tatsemenie (5,706) lakes were below average.

- The coho catch was 3,207 in the commercial fishery and 6 in the IFF, slightly above the 3,000 quota. Preliminary mark-recapture and test fishery data suggest the interim escapement goal of 27,500 to 35,000 was exceeded.

- The Canadian chinook catch consisted of 1,258 large fish and 128 jacks. The catch of large chinooks was the highest on record and far exceeded the 1984-89 average of large 412 chinook. Chinook escapement counts were above average in most of the index streams that were surveyed by ADF&G, and the total escapement, based on expanding the index counts, was the highest on record (24,500), just below the escapement goal range of 25,000 to 30,000.

Alsek

- Although catch sharing between Canada and the United States has not been specified for the Alsek, both countries have agreed to attempt to rebuild depressed chinook and early sockeye stocks.

- Canada does not commercially fish these species but does conduct important IFF and sport fisheries on the Alsek. In keeping with Annex provisions, Canadian catches of Alsek chinook and early sockeye continued to be restricted. The 1989 IFF catch was 173 chinook and 2,012 sockeye; these constitute average IFF catches for both species. The sport catch of 555 chinook was above average, whereas the number of sockeye angled (366) was below average. The coho sport catch of 75 was below average.

- At the Klukshu River, an Alsek River tributary, the total weir counts were 1,915 chinook (below average), 1,316 early run sockeye (below average), 24,679 late run sockeye (second highest on record), and 315 coho (below average). An above average return of sockeye (7,500) was enumerated in Village Creek by electronic counter.

Northern British Columbia - Southeastern Alaska

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

- Canadian pink stocks returning to Areas 3 and 4 were expected to provide a harvestable surplus of 1.8 million pink salmon in 1990.

- The Canadian management objective, in keeping with the Treaty Annex, is to limit the above net fisheries in a manner that would result in an average annual harvest of 900,000 pink salmon.

- Canadian catch in 1990, based on in-season hailed data, was 646,000 in Areas 3-1 to 3-4 and 5-11 and the 1985-90 average catch is 1,400,000. The 1990 catch reflects poor pink returns to Areas 3 and 5, and a modest return to Area 4. The proportion of catch taken in subareas 3-(1-4) during the 1989 season (77%) was above the 1985-89 average of 58%, and similar to the pre-Treaty average of 74%.

- Pink escapements to rivers and streams in Area 3 were mixed with poor returns to some streams while Area 4 escapements were in most cases well above target levels.

Area 1 Pink Catch by Troll

- Canadian management objectives, in keeping with Annex IV of the Treaty, were to close the A-B line strip (Areas 101-4, 101-8, and northern portions of Areas 101-3 and 103) to trolling for pinks on July 22, or earlier if a 300,000 pink troll catch was taken in the strip before July 22. The annual Area 1 troll catch of pinks must not exceed 1.95 million and there is a four-year cap (1990-93) of 5.125 million.

- Based on in-season estimates, the Canadian troll catch in the A-B line strip was 25,626 when it closed to trolling at midnight on July 22.

- The Area 1 pink fishery by troll gear was closed on September 30. Based on preliminary sales slip data the catch was 1.164 million in 1990.

Chinook

North and Central Coasts (Areas 1 to 10, 101 to 111, 130-2, 130-3 and 142 for Net and Sport; Troll includes above Areas plus 11 and 111)

- In 1990, Annex IV, Chapter 3 of the PST allowed for a base chinook catch of 263,000 plus 39,000 for a 302,000 total. However, Canada's accumulated overage from previous years was 38,000. Therefore the Canadian objective was to manage for a total chinook harvest of 264,000 by commercial and sport gear.

- The 1989 troll catch was 180,000 based on sales slips to October 22, 1990. This plus the net catch estimate of 40,000 from sales slip data and the sport catch estimate of 30,000 gives a total North/Central catch of 250,000. Terminal sport and net catches of 7,000 chinook have been excluded from this total.

- The troll fishery opened on June 28 and major chinook areas closed to all trolling on August 14. All areas closed to chinook trolling on August 18. Coho trolling closed at the end of September.

- Based on preliminary information, chinook escapements in 1990 were similar to recent years.

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

- The Canadian objective for 1990 was to manage to a troll harvest rate similar to 1985-87. The total allowable catch, abundance permitting, was 387,000.

- Trolling opened on June 28 and continued until midnight September 13 (coho closed on September 7). There were no chinook non-retention fisheries in 1990.

- There were four major time/area closures on the West Coast of Vancouver Island (WCVI) in 1990:

    1) Areas 127 and 130-1 closed from August 3 until August 23. This action was taken in order to prevent shaker and enforcement problems with sockeye and pink salmon.

    2) Complete closure to all trolling from August 17 to 22 followed attainment of the sockeye allocation.

    3) Conservation areas F1, F2, G and B closed September 1. This action was taken in order to reduce the coho catch rate.

    4) The same areas as in 3) above, plus chinook conservation area A and waters shoreward of chinook conservation area B closed on September 7. This action was taken in order to reduce coho and juvenile chinook shaker catches.

- The preliminary estimate of the 1990 WCVI troll catch is 296,000 based on sales as of November 3.

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

- The Treaty catch ceiling for the Strait of Georgia is 275,000 chinook, of which 225,000 are allocated to sport and 50,000 are allocated to troll. 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 LGS harvest rate by 20 percent. Therefore the Canadian management objectives in the Strait of Georgia for 1990 were to manage sport and troll fisheries for harvests below the Treaty ceiling.

- The Canadian objective for troll fishery was to manage for a 31,000 chinook harvest (62 cm minimum size limit). The troll catch based on sales slips as of November 3 was 33,000, 2,000 pieces over the troll allocation.

- The troll season for chinook lasted from July 1 to September 30. There was no non-retention troll fishery for chinook in Georgia Strait in 1990.

- For the sport fishery, a management plan to reduce harvest rates, implemented in Georgia and Johnstone Strait in 1989, was continued in 1990. In these areas the annual bag limit was 15, the daily bag limit was 2 and the size limit was 62 cm for Georgia Strait north of Cadboro Point (and for Johnstone Strait). In 1988, by comparison, there was a 45 cm size limit in Georgia and Johnstone Straits, an 8 per year bag limit in Georgia Strait and a 30 per year limit in Johnstone Strait, and a daily limit of 4 per day in Johnstone Strait. For the Canadian portion of Juan de Fuca Strait (Victoria area) in 1990, the size limit was 45 cm and the annual was 20.

- To the end of October 1990 the Georgia Strait sport catch of chinook, including the Victoria area, was 104,000 based on creel survey results.

Fraser River Sockeye and Pink Salmon

- For 1989 through 1992 the United States interception of Fraser salmon is capped at 7 million sockeye and 7.2 million pink salmon in aggregate.

- 1990 pre-season expectations were for a total Fraser sockeye run of 16.5 million with a TAC of 10.354 million. Fishable pink salmon runs do not return in even years.

- The actual 1990 sockeye return exceeded the pre-season forecast. Based on preliminary information as of October 22, 1990, the estimated total return was 21.4 million sockeye. Catch and escapement estimates are still under review and the final estimate of the 1990 Fraser sockeye run is expected in April 1991.

- The United States requested a Treaty catch of 2.2 million sockeye in 1990, 586,000 of which would be from summer run stocks. The actual United States catch was 2.398 million Fraser sockeye. This catch was taken by Alaska and Washington fishermen.

- Prior to the season the Canadian add-on benefit was estimated at 486,000 sockeye. This was included in the total Canadian share of approximately 9.0 million sockeye composed 8.313 million commercial catch, .675 million IFF catch and miscellaneous non-commercial catches including sport.

- As a result of the Sparrow decision by the Supreme Court of Canada in June 1990, the approach for the Fraser IFF was changed from a fixed allocation to passive management under a "standard" fishing plan. As well, IFF catch of Fraser sockeye outside the Fraser area was increased from 48,000 in 1989 to 75,000 in 1990. These fish were to be taken in Johnstone, Georgia and Juan de Fuca Straits.

- The current estimates of the Canadian commercial and total catches are 12,268,000 and 13,233,000 sockeye, respectively. The Canadian commercial catch was the largest since the Hells Gate slide and the 1990 Fraser IFF catch of 778,000 sockeye is the largest ever recorded.

- The total Fraser sockeye spawning escapement is still under review, but is expected to approach 5.5 million adults, a modern day record. There were three major stock groups that made up the bulk of this year's record run (Chilko, Quesnel Lake and Adams/ Shuswap). The stock providing the majority of catch and escapement was the Adams/Shuswap.

Coho Salmon

Area 20 Net Catch

- There were no targeted coho fisheries in Area 20 in 1990.

- Incidental net catches during three sockeye fisheries in August totalled 125,400 coho, 2,000 pink, 11,900 chinook and 1,200 chum. An additional 2,900 coho were taken in test fisheries.

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

- The Canadian objective was to manage for a 1.80 million troll catch of coho.

- There were 4 major time/area closures (see WCVI section above) during the June 28 to September 7 coho season in 1990. Two of these actions were taken in order to reduce the coho catch rate and avoid shaker mortalities after coho salmon closed for the season.

- The preliminary estimate of troll catch is 1.844 million based on sales slips as of November 3, 1990.

Southern British Columbia Chum Fisheries

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

Johnstone Strait

- Pre-season expectations indicated a total inside run size of 2,929,000 chum salmon which would include 100,000 U.S. chum.

- The first chum-directed fishery in Johnstone Strait (Areas 12 and 13) occurred on September 18-20 (3rd week of September). The catch for the assessment fishery totalled 141,200 chum and indicated a run size of 3.0 million, which allowed a harvest of 20 percent under the clockwork plan. Subsequent run-size estimates on October 4, based on test fishing, indicated an increase in the initial estimate to 3.8 million, and an increase in

the allowable harvest rate to 30 percent. A commercial fishery was scheduled for October 9 and harvested 556,800 chum. A run size estimate on October 19 indicated no change to the 3.8 million estimate, and a commercial fishery was scheduled for October 22 to harvest the balance of the clockwork catch of 225,000. This fishery harvested 327,300 chum giving a total commercial harvest in Johnstone Strait of 1,025,300 chum. Post-season run assessments will be completed once escapement enumeration is finished.

Georgia Strait

- Terminal fisheries in the mid Vancouver Island area occurred on October 15, 22 and 29. Boundaries were similar to 1989 and included Areas 14-(4, 5, 9, 10) and a portion of Area 14-11. Catches from these early terminal fisheries totalled 137,500. No additional fisheries are anticipated.

- Two fisheries have occurred to date in Area 18 on November 5 and 12. Catch from these fisheries totalled 35,000.

Fraser River

- A fishery for chum salmon occurred on October 23 and the total catch was 75,000.

- Catch during Fraser River Panel openings totalled 300.

Outside Net (Areas 21 and 22)

- The stock of concern, relative to the Treaty, is the stock returning to Area 22 (Nitinat Lake) which is caught in Area 21. Pre-season expectations were for a harvestable surplus of 60,000 chum from the enhanced component of the Nitinat Lake return. The escapement objective is 175,000.

- Gillnet fisheries were initiated on September 17 to assess chum salmon abundance in the fishing area. Gillnets fished 4 days in the first week (September 17-20), and two days the following week (September 24-25). The fishing area was limited to inside a line two miles south of Pachena Point and Bonilla Point. In 6 days of fishing the gillnets caught 7,790 chum, 745 coho, and 116 chinook. These results plus seine test fishery assessments in the fishing area did not indicate sufficient surplus for a seine fishery. Consequently no further fisheries were conducted.

- Preliminary estimated escapement to Area 22 is 140,000 to November 5, with some chums still entering the lake. Egg requirements for the Nitinat Hatchery were achieved in early November.

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

- The 1990 troll catch of chum was 8,200, taken predominantly in the northwest portions of WCVI during July. This catch was well below 1985 to 1989 catches which ranged from 19,000 to 365,000.

G.S.I. Sample Collection

- In Johnstone Strait, nine weeks of both test and commercial fisheries were sampled for a total of 4,737 fish. In the mid Vancouver Island area, 1,322 fish were sampled from

commercial fisheries over a three week period. At Nitinat, approximately 1,000 fish were sampled over a four week period from test and commercial fisheries. There was no GSI sampling for WCVI troll due to low catches.

(Source Document) - 1990 Post-Season Report for Canadian Treaty Limit Fisheries. Report prepared for the November 1990 PSC meetings by Canada Department of Fisheries and Oceans November 23, 1990.

Table 12. Preliminary 1990 Catches in Canadian Treaty Limit Fisheries and 1985-89 Catches for Comparison.+ Prepared for the November 1990 meeting of the Pacific Salmon Commission.

Fisheries/Stocks	Species	1990	1989	1988	1987	1986	1985
Stikine River	Sockeye	18,024	20,032	15,291	9,615	17,434	25,464
(all gears)	Coho	4,037	6,098	2,117	5,731	2,280	2,175
	Chinook Adults	2,250	2,669	2,352	2,201	1,936	1,111
	Chinook Jacks	959	229	444	444	975	185
	Pink	496	825	418	646	142	2,383
	Chum	499	674	733	459	307	536
	Steelhead	199	127	261	219	194	240
Taku River	Sockeye	21,100	18,545	12,014	13,554	14,739	14,244
(commercial gillnet)	Coho	3,207	2,876	3,123	5,599	1,783	1,770
	Chinook Adults	1,258	895	555	127	275	326
	Chinook Jacks	128	139	186	106	77	24
	Pink	378	695	1,030	6,250	58	3,373
	Chum	12	42	733	2,270	110	136
	Steelhead	22	24	86	223	48	32
Areas 3 (1-4) and 5-11 (commercial net)	Pink	646,000	2,329,000	425,000	1,851,000	1,991,000	1,277,000
Area 1 (commercial troll)	Pink	1,164,000	1,349,000	1,630,000	495,000	416,000	687,000
North/Central Coast (commercial/sport)	Chinook	257,000 (250,000)	307,000 (301,000)	247,000	283,000	261,000	275,000
West Coast Van. Is.	Chinook	296,000	204,000	409,000	379,000	342,000	358,000
Area 12 (com. troll)	Chinook	2,000	2,000	2,000	2,000	4,000	5,000
Georgia Strait							
(sport)	Chinook	104,000	133,000	119,000	121,000	182,000	235,000
(troll)	Chinook	33,000	29,000	20,000	39,000	44,000	56,000
	Total	137,000	162,000	139,000	160,000	226,000	291,000
Fraser River stocks	Sockeye	13,233,000	12,784,000	1,615,000	3,783,000	9,363,000	8,754,000
(total Canadian Catch)	Pink	-	6,333,000	-	2,546,000	-	8,725,000
Fraser River stocks	Sockeye	2,398,000	2,382,000	679,000	1,932,000	2,748,000	2,925,000
(total U.S. Catch)	Pink	-	2,007,000	-	1,339,000	-	3,834,000
West Coast Van. Is. (commercial troll)	Coho	1,844,000	1,953,000	1,596,000	1,821,000	2,157,000	1,389,000
Johnstone Strait clockwork catch#	Chum	1,080,000	487,000	1,112,000	127,000	1,258,000	-

+ 1989 catches for North Coast net and troll chinook, WCVI troll chinook and coho and Georgia Strait troll chinook from PBS preliminary sales slip data in the PBS VAX database as of September 14, 1990; 1989 North Coast troll catch of pinks from sales slips as of Sept. 20, 1990, prorated by hails. 1989 Fraser River catches from PSC All 1990 troll catches from sales slips as of Oct. 22 (north) and Nov. 3 (south); 1990 net catches from most recent in-season hails and sales slips as of Oct.22/Nov.3; 1990 North Coast sport catch from creel survey and field estimates to November 16; 1990 Georgia Strait sport catch estimated from creel survey data to October 31.

* North Coast catch less terminal exclusion catch (under review) in brackets.

\# 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 1988-90.

D. 1990 UPDATE REPORTS FOR SALMONID ENHANCEMENT PROGRAMS IN CANADA AND THE UNITED STATES

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. 1990 United States Enhancement Update

The United States provided a report dated January 31, 1990 to Canada that combined under one cover all pertinent biological data for United States enhancement projects with a detailed account of plans for new projects. The Preliminary 1991 report incorporates updated information, including projections for releases from the 1990 brood year, as well as preliminary data on numbers of adults returning to hatcheries, and the number of eggs taken during 1990. **Please note that whenever updated, or preliminary new data, were not available, the Preliminary 1991 report is the same as the 1990 report.** Final information and projections current through the end of the 1990 calendar year will be available at the beginning of November, 1991. Thereafter the preliminary report will be available in January, with the final report for the year being available in November.

Northern Southeast Alaska

New Production

Construction of a new sockeye salmon Central Incubation Facility (CIF) at Snettisham was held up during the 1989 construction season because delegation of authority from the Alaska Department of Transportation and Public Facilities (DOTPF) to the Alaska Department of Fish and Game (ADF&G) was not received in time to begin work during the 1989 construction season. Some equipment for the new CIF has been purchased and is being used at the temporary CIF sockeye facility. September 1990 is the targeted project completion date. At full production, 25 million eggs will be incubated at the permanent CIF facility and 20 million unfed fry will be produced for lake stocking projects. Adult production will provide sockeye salmon for harvest in the commercial net fisheries of Northern Southeast Alaska and at transboundary rivers. Annual harvest is projected to be between 50-80% of annual adult production. In the interim, the temporary CIF facility produced and released 224,000 unfed fry from 295,000 eggs taken during 1988. During 1989, 7.58 million sockeye eggs were collected for incubation at the temporary CIF facility. Sockeye otoliths will be thermally marked and fry will be released in the spring of 1990.

U.S./Canada funds were used in 1989 to expand the Hidden Falls Hatchery for chinook salmon enhancement. Since the low bid for the Hidden Falls chinook enhancement project was

considerably higher than expected, the project review committee developed a revised project plan and schedule. As of June 30, 1989, design review of the amended project was underway. On August 29, 1989 notice was given to proceed with construction of the Hidden Falls Hatchery expansion. The contractor is on site and is expected to complete work by November 1, 1990. The project goal is to construct a hatchery facility capable of producing 1.2 million 12 gram chinook fingerling and 1.1 million 20 gram chinook smolts, annually. Adult chinook salmon production from smolt releases will provide salmon for harvest in the targeted commercial troll fishery. The expected contribution to the common property fishery will be 54,000 adult chinook salmon. At a 50% harvest rate, 22,500 adults would be caught in the commercial troll fishery.

Expansion of chinook salmon production at the Private Nonprofit Program (PNP) hatchery at Medvejie Creek began in 1986, with hydrological feasibility studies and conceptual design work. Construction began in September 1987 and was completed by June, 1988. Other stream rehabilitation took place and was completed in April, 1989. The overall goal of the Medvejie Creek chinook enhancement project was to develop rearing facilities, a water delivery system, and supporting improvements to produce an additional 600,000 chinook smolts.

The Baranof Warm Spring Bay Hatchery development project is behind schedule because of public concerns surrounding recreational and aesthetic values at Baranof Warm Spring Bay. Additionally, by building a chinook hatchery in the bay, other native fish species may be impacted. A lengthy public participation process is being implemented to address all public and environmental concerns. The FRED division recently hired an independent professional engineer to assess the cost of building the hatchery at present day prices. The cost estimate provided by the engineer was much higher than the 4 million dollars that was originally estimated. At this time, the FRED division is seeking alternatives to building a hatchery at Baranof Warm Springs.

During the 1988 and 1989 seasons, U.S./Canada funds were expended to evaluate the rearing capacity of Crescent Lake for juvenile sockeye salmon. Project funding covered: collecting, processing and analyzing water quality, determining photo period, temperature, and dissolved oxygen profiles, assessing algal biomass and zooplankton species composition and density, and enumerating rearing juvenile sockeye salmon populations in the lake. Analysis of water quality parameters for both seasons were completed, and juvenile sockeye fry population surveys were also done.

During 1989, the 6.4 million dollar Gastineau Hatchery opened its doors for salmon production. The hatchery has the capacity to incubate 111 million chum, 50 million pink, 1 million coho, and 200,000 chinook salmon per year. When the hatchery reaches full production, it is estimated that 1.7 million adult chums, 2 million adult pink salmon, 50,000 adult coho salmon, and 4,000 adult chinook salmon will be contributed to the common property fisheries in the Juneau area, while contributions of adult coho and chinook salmon to sport and personal use fisheries in the Juneau area are expected to be 50,000 and 4,000 salmon, respectively.

Southern Southeast Alaska

New Production

The Alaska Department of Fish and Game (ADF&G) Fisheries Rehabilitation, Enhancement and Development (FRED) Division Beaver Falls Hatchery was modified to facilitate enhanced sockeye salmon production in 1988. Construction modifications included: installation of a steam cleaner for disinfection, modification of hatchery drain troughs, installation of vented iodine disinfection tanks and construction of a storage area for hazardous chemicals. All construction and

modifications were completed by September 1988. Annual sockeye salmon production capacity at Beaver Falls hatchery is 15.6 million unfed fry. The purpose of this project is to partially mitigate impacts suffered as a result of the U.S./Canada Treaty, plus enhance depressed stocks. After hatchery modifications, 1988 egg-takes were initiated. Approximately 7.4 million eggs were collected for incubation during the 1988/1989 winter season. In the spring of 1989, 5.9 million unfed sockeye fry were released from Beaver Falls Hatchery. The contribution to the commercial fishery was estimated at 35,700 during the 1989 fishing season.

Construction of the adult sockeye holding and brood-stock ripening complex at Southern Southeast Regional Aquaculture Association (SSRAA) Beaver Falls Hatchery began in June 1989 and was completed in mid-July. Brood-stock tests are expected to proceed as scheduled during 1990. The only modification proposed for 1990 is to collect sockeye brood stock at the Ketchikan Public Utilities power house using an existing weir.

Crystal Lake Hatchery is being renovated to maintain chinook salmon production. Construction at the hatchery will involve: pipe replacement, purchase and relocation of a water chiller, electrical work, and plumbing repairs. Gas supersaturation assessment was also conducted at Crystal Lake Hatchery with U.S./Canada monies. Project completion is scheduled to occur on June 30, 1991. The purpose of Crystal Lake Hatchery chinook enhancement is to produce salmon for harvest by the troll fleet in Southeast Alaska. Renovation at the hatchery will mitigate potential disease concerns and increase overall chinook salmon production efficiency by 20 percent.

Bioenhancement of chum salmon at Marx Creek Spawning Channel occurred during 1989. Three phases of bioenhancement occurred: pre-emergent fry sampling, adult transplants and coded-wire-tag recovery, and instream incubator design and construction. It is estimated that during 1989 the total chum salmon fry production at Marx Creek Spawning Channel exceeded 4.2 million. Bear kills of adult chum salmon prior to spawning resulted in an estimated 10% loss of potential egg deposition.

Loss of Production

An accident occurred at Crystal Lake Hatchery during 1989 that resulted in mortality of 37,000 brood year 89 Crystal Lake Hatchery steelhead trout. As a result of a water line breakage, 90 percent of the incubating steelhead trout died leaving only 2,350 to be released as smolts during 1990.

Major Trends in Production from 1983-1989: Northern and Southern Southeast Alaska

During the report period from 1983-1989, all hatcheries in Southeast Alaska were undergoing brood-stock development. Both State and PNP facilities in Southeast Alaska were involved in applied fisheries research and producing fish for common property fisheries. In addition, State-managed facilities also contributed to fisheries enhancement and rehabilitation projects that benefited personal use, subsistence, and sport fisheries.

FRED hatcheries in Southeast Alaska have switched emphasis from pink and chum production to sockeye salmon production and chinook salmon brood-stock development. Sockeye salmon have long been valuable to commercial and personal-use fisheries. Pink and chum production will be facilitated mainly by the PNP sector in Southeast Alaska in the future.

Current FRED management strategies may warrant contracting the operation of some state-operated facilities to the private sector.

Washington Department of Fisheries

New Facilities or Production Increases

EASTBANK-CHELAN CO. PUD - A major facility located near Rocky Reach Dam on the Columbia River, with several release/acclimation sites located on tributaries. Emphasis on the use of native stocks for rebuilding.

Species	Stock	Stage	Number	Release Year
Summer Chinook	Methow	Yrlng	400,000	1991
Summer Chinook	Oakanogan	Yrlng	576,000	1991
Spring Chinook	Chiawa	Yrlng	672,000	1991
Summer Chinook	Wenatchee	Yrlng	864,000	1991
Sockeye	Wenatchee	Yrlng	200,000	1991

WINTHROP-DOUGLAS CO. PUD - A major facility located near Winthrop on the Methow River, with several release/acclimation sites located on tributaries. Emphasis on the use of native stocks for rebuilding.

Species	Stock	Stage	Number	Release Year
Spring Chinook	Twisp	Yrlng	225,000	1993
Spring Chinook	Methow	Yrlng	225,000	1993
Spring Chinook	Chewak	Yrlng	225,000	1993
Sockeye		Yrlng	500,000	1993

YAKIMA/KLICKITAT PROJECT - Potentially several facilities located on the Yakima or Klickitat rivers, with several release/acclimation sites located on tributaries. Emphasis on the use of native stocks for rebuilding.

Species	Stock	Stage	Number	Release Year
Spring Chinook	Yakima	Yrlng	823,000	1995?
Spring Chinook	Naches	Yrlng	823,000	1995
Spring Chinook	Klickitat	Yrlng	3,000,000	1995
Summer Chinook	Naches	Yrlng	200,000	1995
URB Fall Chinook	Yakima	Fingerling	3,003,000	1995
Coho		Yrlng	1,850,000	1995
Sockeye		Yrlng	1,106,000	1995

SHALE CREEK-WDF/QUINAULT TRIBE - An acclimation/release facility located on Shale Creek, tributary to Clearwater River, with adult capture capabilities. Emphasis on using native stocks for supplementation of populations. Future expansion to full-term rearing is being considered as well as expansion to other species. The major emphasis will be for yearling production but fed-fry releases will also be made.

Species	Stock	Stage	Number	Release Year
Coho	Queets	Yrlng	200,000	1989
		Fed-fry	2,000,000	1989

MATHENY CREEK-WDF/QUINAULT TRIBE - An acclimation/release facility located on Matheny Creek, tributary to Queets River, with adult capture capabilities. Emphasis on using native stocks for supplementation of populations. Future expansion to full-term rearing is being considered as well as expansion to other species. The major emphasis will be for yearling production but fed-fry releases will also be made. If this project come to fruition then a reduction in the Shale Creek Program will occur.

Species	Stock	Stage	Number	Release Year
Coho	Queets	Yrlng	150,000	1991
Spring Chinook	Queets	Sub-yrlng	150,000	1992
		Yrlng	150,000	1993

HOOD CANAL NET PENS - A new saltwater net pen site in Hood Canal located several miles north of Hoodsport. Planned production is for the release of yearling fall chinook.

Species	Stock	Stage	Number	Release Year
Fall Chinook	Finch Creek	Yrlng	200,000	1991

GRAYS HARBOR NET PENS - A net pen site or sites located in Grays Harbor designed to increase the survival of coho formerly released at Simpson Hatchery. A related decrease is indicated later in this section.

Species	Stock	Stage	Number	Release Year
Coho	Simpson	Yrlng	300,000	1991

Losses in Production

SIMPSON HATCHERY - A decrease in the production of coho yearlings related to an apparent environmental block in the lower Chehalis River. This production is being transferred to saltwater net pens.

Species	Stock	Stage	Number	Release Year
Coho	Simpson	Yrlng	250,000	1991

Trends in Production

Trends in production are depicted in Table 13.

Table 13. Thousands of pounds of salmon released by the Washington Department of Fisheries, 1983-1989.

Release Year	Fall Chinook	Spring Chinook	Coho	Chum	Pink	Annual Total
1983	1,532	466	2,121	119	0	4,238
1984	1,514	697	2,414	92	1	4,718
1985	1,609	605	2,373	131	0	4,718
1986	2,014	583	2,576	119	3	5,295
1987	1,856	495	2,695	115	0	5,161
1988	1,843	707	2,605	99	7	5,261
1989	1,958	613	2,619	102	0	5,292

Northwest Indian Fisheries Commission Reporting for The Treaty Tribes of Western Washington

New Production

Three new tribal facilities were completed in 1989 and had initial fish releases in 1990. The Muckleshoot Tribe's White River Hatchery released 269,000 sub yearlings of the highly depressed White River spring chinook stock. The Lummi Tribe released 2,328,000 fall chinook from their Mamoya rearing pond. The Stillaguamish Tribe released 32,500 yearling coho from their Johnson Creek Hatchery.

A major new facility, the Nisqually Tribe's Clear Creek Hatchery, is currently under construction and is scheduled to begin operation in the spring of 1991. The hatchery has a production goal of 6,000,000 fall chinook, 630,000 yearling coho, and 3,400,000 chum.

The Makah Tribe's Umbrella Creek sockeye facility has been upgraded from a streamside incubation site to a small hatchery. The facility now has an incubation capacity of 500,000 eggs and a rearing capacity of 100,000 fingerlings. The sockeye fry and fingerlings will be released into Lake Ozette.

The Muckleshoot and Suquamish Tribes are planning a cooperative marine net pen facility for central Puget Sound. The facility is planned to be in operation by 1992 and will produce 950,000 yearling coho.

Loss of Production

Viral Hemorrhagic Septicemia Virus (VHSV) was isolated from BY 1989 adult coho at the Lummi Bay Sea Pond Hatchery. The Lummi Skookum Creek Hatchery was also potentially exposed to the virus through egg transfers. As part of the emergency eradication measures associated with this detection, 6,000,000 BY 89 coho eggs, 500,000 BY 89 pink eggs, and 150,000 BY 89 fall chinook eggs and fry were destroyed at the two hatcheries. The affected facilities were sanitized and resumed operations in the spring of 1990.

Major Trend in Production

Tribal fish releases are listed in Table 14. Tribal releases have substantially increased in recent years. From 1982 to 1984, total annual releases averaged approximately 33 million fish. From 1985 to 1990, total annual releases increased to an average of approximately 47 million fish. This trend towards increased production is predicted to continue. Beginning in 1989 releases from the Quinault National Fish Hatchery are being reported by the USFWS. Although this involves no net loss in production for the region, an annual decrease of approximately 2 million fish is reflected in the tribal release numbers.

A synopsis of release trends, by species, is as follows: 1) Fall chinook production (age 0+ smolt releases) fluctuated between 9 and 14 million from 1982 to 1990. Release numbers are expected to increase in the future. 2) Only two stocks of spring chinook (S.F. Nooksack and White River) are currently being reared. Because of the depressed status of the stocks, and the difficulty in collecting brood stock, release numbers are not expected to greatly increase in the near future. 3) Two stocks of summer chinook (Quillayute and Stillaguamish) are now being enhanced at tribal facilities. 4) Coho production has fluctuated from 8 to 15 million) with some increases planned for future years. 5) Chum fry releases have undergone the most significant increase. Beginning in 1985, annual chum releases almost doubled to approximately 22 million. Significant increases are also planned for future years. 6) Pink salmon are currently being reared at only two tribal facilities (Port Gamble Hatchery and Lummi's Skookum Creek Hatchery). Because of the life history pattern of the species in Puget Sound, fry releases occur only on even numbered years. 7) Only the Lake Ozette stock of sockeye is now being reared in a tribal facility (Makah's Umbrella Creek Hatchery). Enhancement options for this stock are currently being studied. 8) Steelhead releases are predicted to remain at the 1 to 2 million level.

Table 14. Hatchery releases for Western Washington Tribes (1,000's of fish). Release numbers include tribal cooperative projects with state, federal and private entities.

	Release Year								
Species	1982	1983	1984	1985	1986	1987	1988	1989	1990[a]
Fall Chinook	10,871	9,836	8,721	9,686	11,632	11,080	13,094	12,102	14,212
Spring Chinook	0	76	14	67	114	142	4	231	202
Summer Chinook	100	54	96	355	123	91	472	451	188
Coho sub-yearlings	2,683	3,162	2,766	9,512	2,893	2,584	1,699	2,364	1,167
Coho yearlings	6,249	5,136	5,815	6,598	7,536	6,957	8,150	8,033	7,655
Chum	13,119	12,892	11,268	25,190	22,380	23,470	21,092	20,221	14,981
Pink	105	0	737	0	0	0	882	0	110
Sockeye	469	476	10	200	240	12	133	200	0
Steelhead sub-yearlings	683	320	766	1,402	1,159	932	577	398	353
Steelhead yearlings	572	730	48	1,252	1,242	978	905	872	821
Totals	34,858	32,682	31,141	54,262	47,319	46,246	47,008	44,872	39,689

[a] Release numbers for 1990 are preliminary.

Oregon Department of Fish and Wildlife

New Production

The Restoration and Enhancement Act of 1989 will add the following production to Columbia basin hatcheries:

- 1,600,000 coho smolts for release in 1992
- 1,300,000 fall chinook smolts for release in 1992

Construction on the Umatilla Hatchery will begin in mid 1990 and is expected to be completed by 1991. This facility will produce summer steelhead, upriver fall chinook and spring chinook.

The second year of the BPA funded oxygen supplementation study at Willamette Hatchery is expected to increase spring chinook production by 360,000 smolts in 1992.

Loss of Production

Wahkeena ponds 2,000,000 coho smolts production has been jeopardized by eye fluke in 2 of the last 3 years.

Major Trends

Mitchell Act programs have exceeded base funding for the last several bienniums. This funding shortfall may force a hatchery closure or reduction in program.

United States Fish and Wildlife Service

New Production

Effective in October 1989, operation of the Quinault National Fish Hatchery reverted to the Fish and Wildlife Service from the Quinault Tribe.

Changes in species and production regimes have increased production of spring chinook at Little White Salmon and coho at Eagle Creek.

Loss of Production

Detection of the disease, Viral Hemorrhagic Septicemia, at the Makah National Fish Hatchery in February 1989 prompted the destruction of all fish and eggs on hand. Over 3.4 million fall chinook, coho, chum, and steelhead eggs and fish were destroyed to prevent spread of the virus.

Changes in species have eliminated production of spring chinook at Eagle Creek and steelhead at Warm Springs.

Trends in Production

Recent and projected production represent increases over that during the middle of the decade. Total annual releases are approaching 50 million fish, up from a low of 38 million fish in brood year 1986. Part of this increase is due to reversion of the Quinault National Fish Hatchery to the Fish and Wildlife Service (3.5 million fish). Overall, the Service's production programs are stable, subject to the number of returning adults.

Idaho Department of Fish and Game

New Production

The Crooked River facility, a satellite to Clearwater Hatchery was completed in 1990 with a rearing capacity of approximately 750,000 smolts. Red River pond, with a rearing capacity of 350,000 smolts, was reconstructed. The original Red River pond was found to be unsuitable for rearing due to high parasite load, low turnover rate, and the inability to treat fish disease. The new Clearwater Hatchery, currently under construction, is scheduled to go on line in the spring of 1992.

The hatchery enhancement effort is being carefully examined with the aspect of preserving wild and natural fish in mind. Innovative hatchery management and stock management procedures are being developed.

Loss of Production

The 1990 spring and summer chinook salmon egg takes were substantially below potential hatchery and spawning ground capabilities as a result of insufficient brood escapement into the Snake River.

Trends in Production

Releases of hatchery fish since 1982, to enhance salmon and steelhead production, had steadily increased up to 1989. The combined effects of poor smolt outmigration conditions and poor adult escapement above Lower Granite Dam reduced the availability of brood fish in 1989 and 1990.

The availability of sufficient water flows for increased smolt survival to salt water is paramount in reversing the current trend of diminishing anadromous fish runs, maintaining the survival of wild and natural fish, and providing future harvest opportunity.

(Source Document) - *Preliminary Annual Report of the Salmonid Enhancement Activities of the United States in the Areas of the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. January 25, 1991.

2. 1990 Update Report for the Salmonid Enhancement Program in British Columbia

This report consists of tables on eggs taken and releases of fry and smolts from facilities in 1990 as well as narratives describing significant changes to the enhancement program since the detailed report in 1987 and the update in 1989.

Summary of Eggs Taken and Juvenile Releases

A summary of total releases of juveniles in 1990 by SEP unit and program component is presented in Table 15. The unit names for the Enhancement Operations component are different from those used in the 1989 update and the 1987 report due to reorganization. The former North Coast, South Coast, and Fraser Units were combined into two units, Coastal Operations, and Fraser River and Northern B.C. Operations.

Data by Species and Stock/River for individual facilities in the Enhancement Operations component are presented by production unit. These data include: egg target, eggs taken (or transferred to or from another facility), fry or yearlings rearing as of January 1, 1991, and number released by release stage. In cases where Stock or River is not specified, assume that the stock is native to the facility. Estimates for some of the spawning channels and for the Community Programs facilities are not available at this time.

Release data refer to fish released in 1990 and are grouped by release stage, defined as Fry, Fed Fry, or Smolts. Fry were released soon after swim-up. Fed Fry were reared and fed for 2 weeks to 10 months and were from the 1989 brood year, except for steelhead and cutthroat trout fry which were from the 1990 brood year. Chinook smolts were generally released as 90-day smolts from the 1989 brood year. However, some chinook particularly from the Upper Fraser, were released as yearling smolts (1988 brood) in the spring of their second year. These yearling smolts are identified by footnotes to the table. All coho smolts were yearlings (1988 brood), released in the spring of their second year.

Table 15. 1990 Releases from the salmonid enhancement program (thousands).

	SOCKEYE	CHUM	CHINOOK	COHO	PINK	STEELHEAD	CUTTHROAT
ENHANCEMENT OPERATIONS DIVISION:							
Coastal Unit		142,322	42,788	7,195	9,175	691	31
Fraser/NBC Unit	231,335	23,176	11,771	5,604	35,540	294	65
	231,335	165,498	54,559	12,799	44,715	985	96
COMMUNITY PROGRAMS DIVISION:							
Community Involvement	0	10,345	7,828	6,913	6,266	246	628
Resource Restoration	26	21,244	259	256	1,488		
	26	31,589	8,087	7,169	7,754	246	628
LAKE ENRICHMENT PROGRAM	31,079						
TOTAL SEP	**262,440**	**197,087**	**62,646**	**19,968**	**52,469**	**1,231**	**724**

Significant Changes in Program

Enhancement Operations - Coastal

EAST COAST VANCOUVER ISLAND - Several million pink salmon returned to east coast streams as a result of pink fry enhancement at Quinsam and Putledge hatcheries. Enhancement includes hatchery fry releases, seapen releases of fed fry, and transplants to other river systems. Although these stocks sustained high pre-spawning mortalities due to low flows and high temperatures, they can be readily maintained by enhancement efforts. Chinook returns have been very encouraging with Puntledge summer run chinooks probably at a 25-year high and a fall chinook run in excess of 3,00 fish allowing us to meet the Puntledge egg targets, without the use of transplants, for the first time.

GLENDALE CHANNEL - In its third year of operation, the channel was loaded to full capacity with 80,000 pinks and 60-70 thousand held in the entrance pool, out of a total escapement to the system of more than 300,000 pinks. A major problem with low flows and high water temperatures in the watershed, resulted in up to 90% pre-spawn mortality in the river but fish in the channel were kept alive by oxygen supplementation. By October 4, the crisis was over and at least 140,000 pinks survived to spawn.

KAKWEIKAN CHANNEL - In its first year of operation, 80,000 pinks were successfully loaded into the channel.

KITIMAT HATCHERY - An all-time record run of steelhead returned to the Kitimat River, resulting in an estimated sport catch over 10,000 and an escapement of 3-4,000 fish. Chinook egg targets were generally met.

OXFORD CHANNEL - This channel was completed in August for the expected peak return of adult summer chums. The total run was only about 20% of expected which resulted in a light loading of 2-3,000 spawners in the channel.

PALLANT CREEK PROJECT - First significant numbers of chinook returned from the experimental transplant of Quinsam River stock, with up to 100 adults given access to the river.

SNOOTLI HATCHERY/ATNARKO CHANNEL - Chinook and chum targets were achieved. Operation of Atnarko pink channel was delayed due to reconstruction of intake but 10-12,000 pinks were loaded into channel.

Enhancement Operations - Fraser River and Northern B.C.

BIRKENHEAD HATCHERY - Funding for this project was terminated. Chinook enhancement continued by satelliting the Birkenhead stock into Inch and Tenderfoot Creek hatcheries where there are more favorable rearing conditions. The expectation is for higher survival rates at reduced cost. Sufficient brood stock to reach target of 150 thousand eggs was captured in three days but very few coded-wire-tags were found in the returns.

CHILLIWACK HATCHERY - Design and planning is underway to rebuild the heavily damaged pink salmon run by expanding the hatchery with Zenger boxes. Construction of a small experimental spawning channel is being discussed.

CLEARWATER HATCHERY - At the beginning of the current fiscal year, funding for this project was reduced substantially. The objective of this cut was to reduce costs and to reassess the current enhancement strategy used for the Clearwater chinook and coho stocks. The intention is to restore funding to its former level once a new operating strategy is developed.

EAGLE RIVER HATCHERY - Chinook brood stock targets were met, on site wells have been redeveloped, and the heated water supply is on line.

FULTON & PINKUT CHANNELS - There was a large escapement (1.1 million) of sockeye into Babine Lake. Both channels were loaded to capacity and 16,000 spawners were successfully airlifted to upper Pinkut Creek.

HORSEFLY CHANNEL - Major repairs were completed to fix flood damage from the 1989 flood. The channel was again fully loaded with 23,000 sockeye in two days. The 12 million fry produced by the channel in 1990 represented 16% of total system output.

QUESNEL HATCHERY - The enhancement program is proceeding as per plan with a good showing of coded-wire-tagged chinooks in the Upper Cariboo.

TENDERFOOT HATCHERY - Releases of chinook smolts from seapens at Porteau Cove produced a substantial return of 2 and 3 year-old chinooks to the Britannia area. Two beach seine sets resulted in the capture of over 500 chinooks that were then tagged and released.

TRANSBOUNDARY SOCKEYE ENHANCEMENT - Egg take targets on Tahltan and Trapper systems were achieved (4.9 million and 2.4 million, respectively). However, only half of the 2.5 million egg target for the Tatsamenie was achieved due to poor escapement.

WHITEHORSE HATCHERY - During the current fiscal year, sufficient funding was provided only to complete the rearing and marking of the 1989 brood chinook. The existing contract for operation was terminated in July 1990. Responsibility for the continuing operation of this mitigation project now rests with the Yukon Territorial Government. The 1990 escapement of chinook at the fishway was the second highest on record (1,406), of which one-quarter were estimated to be of hatchery origin.

Development

CHILKO CHANNEL - Approximately 10,000 sockeye successfully spawned in the channel this year, of which 8,000 were airlifted by helicopter.

FRASER RIVER FISH PASSAGE - Maintenance work continued. A lighting experiment at Hells Gate and China Bar was completed with excellent results. Passage was definitely improved. Design and investigations continue on Bridge River Fishway and Hells Gate.

NEKITE CHANNEL - Approximately 10,000 summer chums utilized the channel this year, about 25% of the total run.

Community Programs

NANAIMO AND COWICHAN HATCHERIES - Modifications to the Nanaimo and Cowichan hatcheries will facilitate the chinook rebuilding program for Georgia Strait stocks. Final modifications to the Nanaimo Hatchery are being completed. Cowichan Hatchery has been redeveloped, including new wells and back-up systems, and rearing ponds. Completion of the new

hatchery building is delayed to the summer of 1991 due to high construction costs in 1990. Egg take (350,000 eggs) from captive brood stock program at Cowichan is below target due to delayed maturation of brood stock.

NIMPKISH HATCHERY - Expansion being contemplated in order to increase enhancement of chinook and coho while maintaining moderate levels of chum production. Production targets are being finalized so that the design process can begin.

WHANNOCK PILOT - A pilot facility was constructed on the Whannock River in rivers Inlet for increased production of chinook. The community-based project will assess several rearing and release strategies over the next several years in an attempt to enhance the Chuckwalla/Kilbella stocks and the Whannock River chinooks. In addition, the Shotbolt Bay chinook facility was rebuilt.

HABITAT RESTORATION - To increase production of chum, sockeye and coho, the Resource Restoration Unit built a total of 10 semi-natural enhancement projects, including a groundwater-fed sockeye channel adjacent to the Adams River and a side-channel project on the East Coast of Vancouver Island (Coal Creek) for the production of coho harvested in Georgia Strait. Several fences were also constructed to facilitate assessment of Community Programs projects. Effort for marking and enumeration of returns of coho in the upper Skeena River system was increased to attain data to determine the exploitation rate so that enhancement and further management measures can be taken to conserve these depressed coho stocks.

Lake Enrichment Program

BARKLEY SOUND - Preliminary estimates of sockeye escapement to Barkley Sound (Great Central, Sproat, and Henderson Lakes) are 30% below target, partly due to significant pre-spawning mortality in the terminal marine area. A lower-than-average egg-to-fry survival is anticipated due to extreme flood events on the spawning grounds.

CHILKO LAKE - Escapement of sockeye was significantly higher than expected.

(Source Document) - *1990 Update Report for the Salmonid Enhancement Program in British Columbia.* Canada Department of Fisheries and Oceans. January 28, 1991.

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, 1990 to March 31, 1991 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. Estimates of Chinook Salmon Interceptions- A Report to the Joint Interceptions Committee. TCCHINOOK (90)-2. June 15, 1990

Executive Summary

In February of 1989, the Pacific Salmon Commission (PSC) established an Ad-Hoc Joint Interceptions Committee (JIC) in an attempt to narrow differences in salmon interception estimates exchanged by the United States and Canada one month earlier. A request was made to the Chinook Technical Committee to provide assistance in resolving differences in chinook salmon interceptions.

This report presents the Chinook Technical Committee's estimates of chinook salmon interceptions for the period 1981 through 1989. These estimates reflect an agreement on methodologies within the Chinook Technical Committee.

These estimates are primarily based on the PSC chinook model which was bilaterally developed to evaluate the impacts of management approaches on rebuilding of depressed chinook stocks. Since this model was not designed for the specific purposes of estimating stock compositions or estimating interceptions, a number of adjustments were required before model results could be applied. These adjustments are described on a fishery by fishery basis within the body of this report.

While the Committee reached agreement on the interception estimates presented in this report, concerns remain as to their accuracy, interpretation and potential use. The absolute magnitude of interceptions presented in this report should be viewed with caution since: (a) the accuracy of these estimates cannot be independently determined; (b) catches in some time and area strata for Canadian sport fisheries are not included; and (c) model stock composition estimates are not available for all catch strata. Interpretive notes pertaining to interception estimates for particular areas are provided for reference.

The Committee is confident that these estimates are consistent with our understanding of relative changes in stock status and appropriately reflect changes in interception patterns. The interception estimates presented in this report are considered the best available.

Joint Chinook Technical Committee. 1989 Annual Report. TCCHINOOK (90)-3. November 9, 1990

Executive Summary

1989 Chinook Salmon Catches in Fisheries with Ceilings

Estimates of 1989 catch for each fishery managed under a harvest ceiling established by the Pacific Salmon Commission are presented below. Catches are compiled from information available as of October 1990 (numbers in thousands).

Area and Fishery	Ceiling	Catch	Difference #'s	Difference %
Souteast Alaska (T,N,S,)	263	264.3	1.3	+0.5% a/b/
North/Central B.C. (T,N,S)	263	307.0	44.0	+16.7% a/b/
West Coast Vancouver I. (T)	360	203.5	-156.5	-43.5%
Georgia Strait (T,S)	275	162.0	-113.0	-41.1%
Northern B.C. (T,N,S,) /c	254.4	292.2	+37.8	+14.9%

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

b/ The actual total catch was 291,100 chinook, including a hatchery addon of 26,700.

c/ Alternative catch values as per Canada's terminal area exclusion paper February 13, 1989; excludes 8,600 chinook caught in 3 extreme terminal areas during the base period and 14,800 chinook caught in these areas in 1989, difference is 6,200 chinook.

The positive deviation for the catch in the North/Central B.C. fishery exceeds the 7.5% management range about the catch ceiling established by the Pacific Salmon Commission.

Cumulative Deviations from Catch Ceilings

Catches and cumulative deviations from catch ceilings since 1987, are as follows (numbers in thousands):

Area and Fishery	Ceiling	1987 Catch a/	1988 Catch a/	1989 Catch a/	Total Deviations	Cumulative Deviations #'s	Cumulative Deviations %
Southeast Alaska (T,N,S)	263	266.1	253.7	264.3	-4.9	-4.9	-1.9% b/
North/Central B.C. (T,N,S)	263	283.0	247.1	307.0	+48.1	48.1	+18.3% c/
West Coast Vancouver I. (T)	360	379.0	407.2	203.5	-90.3	-27.0	-7.5% d/
Georgia Strait (T,S)	275	159.0	138.7	162.0	-365.3	-20.6	-7.5% d/
North/Central B.C. (T,N,S) e/	254.4	283.0	247.1	292.2	+41.9	+41.9	+16.5%

a/ Compiled with information available as of 10/28/90 for U.S. data and 10/01/90 for Canada.

b/ S.E. Alaska catches exclude hatchery addons of 16,000, 25,000 and 26,700 for 1987, 1988, and 1989, respectively

c/ Exceeds 7.5% management range; management action required.

d/ Negative deviations below the 7.5% management range cannot be accumulated.

e/ Alternative catch values as per Canada's terminal area exclusion paper Feb.13/89; see footnote c, above

Escapement Assessment

Results from the Escapement Assessment indicate that the status of many stocks has deteriorated since 1988. The overall outlook for stock rebuilding in the 1989 escapement assessment is worse than in 1988. In 1989, 11 stocks were classified as either Probably Not Rebuilding or Not Rebuilding, compared to 4 in 1988. Furthermore, 16 stocks decreased their rebuilding status from 1988 while only 5 improved their status.

Although the outlook is worse, 6 stocks attained their escapement goals for at least 4 out of the last 5 years: Andrew Creek, Keta, Chickamin, Skeena, Upper Fraser and Columbia Upriver bright. Of these stocks, Andrew Creek, Keta and Skeena are classified as Rebuilding. The other 3 stocks are classified as Probably Rebuilding because of declines in recent escapements. Altogether, 12 stocks met their escapement goals in 1989 (more than 1988 but fewer than in 1986 and 1987) and more stocks continued to reach a higher percentage of their goal than during the base period.

Exploitation Rate Assessment

Fishery Indices

The fishery index measures exploitation rate changes over time for indicator stocks harvested by a fishery. The index was developed to estimate changes in fishery harvest rates. The utility of the index is dependent on how representative the indicator stocks are of the actual populations harvested in the fishery.

For 1989, the initial 1985 target reductions for fisheries with Pacific Salmon Commission catch ceilings were achieved in the Southeast Alaska troll fishery, the North/Central B.C. troll fishery, and the west coast Vancouver Island troll fishery. When 1985-1989 averages are considered, only the North/Central B.C. troll fishery has met the 1985 target reduction. The 1985 target reduction for southeast Alaska was achieved for the reported catch index, but not for the total mortality index (catch plus incidental mortalities). The average 1985-1989 total mortality index for the Southeast Alaska troll fishery remains 4 percentage points above the 1985 target reduction. The 1985-1989 average fishery index for the west coast Vancouver Island troll fishery remains 6 percentage points above the 1985 target reduction.

In 1989, the combined harvest rate by the Strait of Georgia sport and troll fisheries continued to exceed the initial 1985 target reduction by a substantial margin. The average 1985-1989 reduction in the fishery index is slightly over half the 1985 target reduction. A reason for this is that the average reduction for the sport fishery index is estimated to be only 4% less than the base period and, in 1989, is estimated to have increased to 28% above the base period. The troll fishery has, on average, achieved its target reduction.

The Washington/Oregon ocean troll and sport fisheries have maintained, on average,exploitation rates below base period levels. Note that indices reported for 1987 and 1988 differ substantially from the indices reported in TCCHINOOK (89)-1 because CWT recoveries from the Washington Buoy 10 sport fishery were incorrectly identified as ocean sport fishery recoveries in the historical database.

Stock Specific Trends

The stock-specific analyses in the Exploitation Rate Analysis monitor the response of stocks to fishery management actions, brood year survival and exploitation patterns, and stock contributions to fisheries.

For 17 stocks, recent exploitation rates could be compared to base period levels. Considering only changes greater than $\pm 2\%$, total mortalities by ocean fisheries have been reduced for 14 of the 17 stocks. The portion of total mortality accounted for by incidental fishing mortality has increased for 10 of the 17 stocks evaluated.

The Committee emphasizes that to maintain reductions or further reduce brood year ocean exploitation rates under a fixed catch ceiling policy, the abundance of chinook in the fishing areas must equal or exceed recent abundances. However, both the survival rate assessment and the stock contribution estimates indicate reduced survival of recent brood years for most of the major contributing indicator stocks. Without reductions in harvest pressures, in ocean and/or terminal fisheries, it is unlikely that spawning escapements needed to maintain progress in the rebuilding program will be attained.

Integrated Analysis

If the rebuilding program were proceeding as planned, we would expect fishery indices to be below 1985 target levels, brood year exploitation rates to decline to near MSY levels, and most of the escapement indicator stocks to be in the upper status categories.

Harvest rates in the ceiling fisheries have been reduced, but generally not to the 1985 target levels. Target reductions have been achieved or nearly achieved in the Southeast Alaska and North/Central B.C. ceiling fisheries and have not been met in the west coast Vancouver Island and Strait of Georgia ceiling fisheries. However, at this stage of the rebuilding program, it would be expected that harvest rate reductions in fisheries with Pacific Salmon Commission catch ceilings would be greater than the initial 1985 target reductions. Harvest rates in non-ceiling fisheries have generally declined.

Progress toward rebuilding for many of the stocks has been limited by poor survival and a failure to meet expected reductions in exploitation rates for ceiling fisheries. Reductions in stock exploitation indices were within 10% of their 1985 target levels for only 4 of the 7 stock groupings for which comparisons could be made.

With some exceptions, stock groups that have a majority of their fishing-related mortality in northern ceiling fisheries appear to be doing fairly well. Stock groups that have a majority of their fishing mortality in Strait of Georgia fisheries are typically classified as Probably Not Rebuilding or Not Rebuilding. The 2 stock groups that have a majority of their fishing mortality in U.S. non-ceiling fisheries have shown a mixed response.

Chinook abundance in the Southeast Alaska and North/Central B.C. troll fisheries is projected by the chinook model to be near the rebuilding period (1985-1989) average but above the long term (1979-1989) average. Abundance in the west coast Vancouver Island and Strait of Georgia fisheries is projected to be below the rebuilding period average and substantially below the long-term average. However, these projections of fishery abundance are optimistic because the current model does not incorporate the declines in short-term survival projected in the Exploitation Rate Analysis.

Poor survival is projected for broods returning in 1990 and 1991; only one stock group is projected to have a short-term survival index greater than the long-term average. If the rebuilding progress is to continue despite these reduced survivals, brood year exploitation rate reductions will be required. In particular, in order to meet the rebuilding goals for stocks significantly impacted by the Strait of Georgia and west coast Vancouver Island fisheries, additional management actions will be required to reduce harvest rates for these fisheries.

Qualifications

1. The distribution of stocks, by geographic location and stock-type, is still incomplete, particularly for Canadian spring and summer stocks, even though the number of stocks included in this report has more than doubled compared to the 1988 report. The number of stocks was increased principally to improve the reliability of the exploitation rate evaluation and to examine the consistency of responses between stocks.

2. Changing fishing patterns can confound interpretation of total exploitation rate analysis.

3. The Committee is concerned that current management strategies may have resulted in changes to the age and sex composition of chinook spawning escapements in a way that may impede progress towards rebuilding. In particular, size limit changes may increase escapements of males while decreasing escapements of females (males typically mature at an earlier age and smaller size than females). It should be noted that the optimum spawning escapements established by agencies are based on an age and sex composition that would have resulted from previous ocean management. If spawning escapement increases contain a disproportionate number of males, the productivity resulting from increased escapements will not achieve expected levels based on historical data.

Chinook Technical Committee Recommendations

1. *Further management action should be taken to reduce stock exploitation rates (including compensation for increased incidental mortalities per reported catch) in order to increase the probability of reaching escapement goals by 1998.* With the current management regime, it is expected that many indicator stocks will not achieve their escapement goals by 1998, since the assessed status of the escapement indicator stocks is poorer for 1989 than for 1988, survival projections indicate reduced chinook abundance in 1990 and 1991, and our assessments indicate that the current ceilings have not reduced harvest rates to the initial 1985 target levels for 3 out of 4 fisheries.

   The exploitation rate reduction required to rebuild stocks will depend upon stock productivities, the change in brood survival rates, stock exploitation patterns, and abundance in ceiling fisheries in which the stock is primarily harvested. In general, the management actions required to reduce harvest rates will be proportional to the decreases in chinook abundance.

2. *Policy issues and information needs for interpretation of the pass-through provision should be resolved.* A complete assessment of cumulative pass-through impacts on rebuilding progress is needed to complete the rebuilding assessment.

3. *Policy issues of what constitutes rebuilding must be resolved so the Committee can complete its assessment of rebuilding progress* (e.g. appropriate stock groupings; proportion of the stocks rebuilding, etc.).

4. The Committee recommends attention to the following information concerns and needs:

   (a) *The effect of regulatory changes on the potential productivity of naturally spawning stocks should be assessed.* An increased commitment to conduct consistent escapement surveys, including sex ratio and age composition data, is needed to evaluate expected production and returns by brood year.

   (b) *Indicator stock programs should be reviewed to determine if representation of production regions and stock types is adequate and if tagging levels for the indicator stocks are sufficient.* The Committee is especially concerned about the representation of spring and spring/summer stocks, and the development of standardized definitions for run-timing classifications of stocks.

   (c) *Troll fisheries and chinook non-retention periods should be annually sampled to assess the impacts of changes in fishing patterns and to verify parameters used in estimating incidental mortalities.* Changes in spatial and temporal fishery patterns have affected fishing effort and perhaps chinook encounter rates.

   (d) *Consistent and standardized recovery programs for CWT fish at hatcheries and on spawning grounds should be established.* In addition, tagging of juvenile fish should be standardized for enumeration of marks, total release numbers, and tag retention estimation procedures.

Joint Chinook Technical Committee. Report on Preliminary 1990 Catch and Escapement. TCCHINOOK (91)-1. February 8, 1991.

This report presents preliminary information on: (a) chinook catches in fisheries relevant to the U.S./Canada Pacific Salmon Treaty (Table 1) for the period 1986-1990; and (b) summary of the 1986-1990 escapements of chinook escapement indicator stocks (Table 2).

Table 1. Summary of the 1987-1990 Chinook Catches in Fisheries Relevant to the U.S./Canada Pacific Salmon Treaty. (Numbers in thousands of fish). NOTE: Catches for 1990 are very preliminary (estimates as of 2-Feb-91).

	TROLL				NET				SPORT				TOTAL			
AREA	1990	1989	1988	1987	1990	1989	1988	1987	1990	1989	1988	1987	1990	1989	1988	1987
S.E. ALASKA a/	287	236	231	242	28	24	22	15	38	28	26	24	353	288	279	281
BRITISH COLUMBIA b/c/																
North/Cent. Coast	179	225	182	240	46	46	44	29	31	36	21	14	256	307	247	283
W. Vanc. Island	296	203	409	379	29	40	15	1	61	48	33	32 d/	386	291	457	412
Georgia St/Fraser	32	29	20	38	15	24	8	13	112	133	119	121 e/	159	186	147	172 e/
Johnstone St	2	2	2	2	18	29	6	14	10	10	10	10	30	41	18	26
Juan de Fuca St	0	0	0	0	7	22	4	7				e/	7	22	4	7 e/
sub-total	509	459	613	659	115	161	77	64	214	227	183	177	838	847	873	900
WASHINGTON INSIDE																
Strait (mar) f/	46	63	50	45	5	10	10	11	NA	50	40	53 i/	NA	123	100	109
San Juans (mar) g/	1	1	0	0	9	16	32	29	NA	8	9	14 i/	NA	25	41	43
Others PS (mar+fw) h/	0	0	0	0	179	156	133	127	NA	59	63	59 i/	NA	215	196	186
Coastal (mar+fw) h/	0	0	0	0	58	85	74	51	NA	NA	7	3 i/	NA	NA	81	54
sub-total	47	64	50	45	251	267	249	218	NA	NA	119	129	NA	NA	418	392
COLUMBIA RIVER	---	---	---	---	151	275	491	483 j/	48	84	94	84 k/	199	359	585	567
WA/OR N C FALCON	65	74	108	81	0	1	3	4	33	21	19	44	98	96	130	129
OREGON																
Inside Waters m/	0	5	4	3	---	---	---	---	NA	42	49	47	NA	47	53	50
GRAND TOTAL	886	838	1006	1030	534	728	992	784	NA	NA	490	505	NA	NA	2338	2319

a/ Southeast Alaska troll chinook catches shown for Oct. 1 - Sep. 30 catch counting year.
b/ British Columbia net catches include only fish over 5 lb. round weight. Native food fishery catches are not included.
c/ Sport catches are for tidal waters only, catch updates will be provided as available.
d/ Estimates of tidal sport catches are from creel surveys in Barkley Sound only. Survey times and areas may vary from year to year.
e/ Georgia Strait sport catches include Juan de Fuca Strait sport catches.
f/ Strait troll catch includes all catch in Areas 5 and 6C and catch in Area 4B outside of the PFMC management period (May-September).
g/ San Juan net catch includes catch in Areas 6, 6A, 7 and 7A; sport catch includes Area 7.
h/ Coastal and Puget Sound sport catches include marine and freshwater catches, but only adults in freshwater.
i/ Numbers adjusted for punch card bias. See "1988 WA State Sport Catch Report" for details.
j/ Columbia River net catches include Oregon, Washington and treaty catches, but not treaty ceremonial.
k/ Columbia River sport catches include adults only, for Washington, Oregon, Idaho and Buoy 10 anglers.
m Troll = late season troll off Elk River mouth (Cape Blanco); sport = estuary and inland (preliminary for 1987-89).

Table 2. Summary of the 1986-1990 escapement of Pacific Salmon Commission Chinook Escapement Indicator Stocks. NOTE: Escapements for 1990 are very preliminary (estimates as of 2-Feb-91).

Production Unit	Stock Type	Ave Esc. Base a/	Esc. Goal	1986 Esc.	1987 Esc.	1988 Esc.	1989 Esc.	1990 Esc.	1990 % Base	1990 % Goal
Southeast Alaska										
Situk	Spring	1,391	2,100	2,067	1,884	885	652	700	50%	33%
Spring Salmon	Spring	92	250	245	193	206	238	206	224%	82%
Andrew Creek	Spring	379	750	1,131	1,042	752	848	1,062	280%	142%
Blossom	Spring	163	1,280	2,045	2,158	614	550	411	252%	32%
Keta	Spring	407	800	1,104	1,229	920	1,848	970	238%	121%
Transboundary Rivers Not Addressed in Treaty Annexes										
Chilkat (U.S.)	Spring	213	2,009	129	1,286	781	1,362	272	128%	14%
Unuk (U.S.)	Spring	1,469	2,880	3,402	3,157	2,794	1,838	946	64%	33%
Chickamin (U.S.)	Spring	338	1,440	2,683	1,560	1,258	1,494	902	267%	63%
Transboundary Rivers Addressed in Treaty Annexes										
Alsek (U.S.)	Spring	4,214	5,000	4,073	3,892	3,105	3,838	2,992	41%	60%
Alsek (Canada)	Spring	5,255	12,500	5,418	5,232	4,060	4,912	3,102	59%	25%
Taku (U.S.)	Spring	7,978	25,600	12,178	8,951	13,411	15,462	21,278	267%	83%
Taku (Canada)	Spring	9,700	30,000	15,040	11,486	17,252	18,784	24,498	253%	82%
Stikine (U.S.)	Spring	6,224	13,440	11,572	19,108	29,168	18,860	17,416	280%	130%
Stikine (Canada)	Spring	8,004	25,000	11,572	19,108	29,168	18,860	17,416	218%	70%
B.C. North Coast										
Yakoun River	Summer	788	1,576	500	2,000	2,000	2,800	2,000	253%	127%
Nass Area	Spr/Sum	7,944	15,888	17,390	11,400	10,000	12,500	12,000	151%	76%
Skeena Area	Spr/Sum	20,883	41,766	59,968	59,120	68,700	57,200	55,980	268%	134%
B.C. Central Coast										
Area 6 Index	Summer	2,760	5,521	2,615	1,566	3,165	1,000	NA	NA	NA
Area 8 Index	Spring	2,725	5,450	3,362	1,456	1,650	2,500	2,385	88%	44%
Rivers Inlet	Spr/Sum	2,475	4,950	7,623	5,239	4,430	3,330	4,039	163%	82%
Smith Inlet	Summer	1,055	2,110	532	1,050	1,050	225	510	48%	24%
West Coast Vancouver Island										
Indicator Stocks	Fall	5,745	11,500	4,810	3,570	5,525	8,480	5,756	100%	50%
Fraser River										
Upper River	Spring	12,229	24,458	41,207	34,520	34,250	25,300	35,500	290%	145%
Middle River	Spr/Sum	9,216	21,133	27,349	27,330	24,160	15,100	25,170	273%	119%
Thompson River	Summer	22,059	55,714	45,130	36,730	47,100	38,000	41,006	186%	74%
Harrison River	Fall	116,791	233,582	162,393	78,693	35,700	75,000	170,676	146%	73%

Table 2 continued...

Table 2 continued...

Production Unit	Stock Type	Ave Esc. Base a/	Esc. Goal	1986 Esc.	1987 Esc.	1988 Esc.	1989 Esc.	1990 Esc.	1990 % Base	1990 % Goal
Georgia Strait										
Upper b/	Sum/Fall	2,546	5,100	1,630	5,700	3,300	6,600	1,670	66%	33%
Lower	Fall	11,139	22,278	2,830	2,530	6,914	6,830	7,400	66%	33%
Puget Sound										
Skagit	Spring	1,217	3,000	1,995	2,108	1,988	1,853	1,902	156%	63%
Skagit	Sum/Fall	13,265	14,900	18,127	9,647	11,954	6,776	NA		
Stillaguamish	Sum/Fall	817	2,000	1,277	1,321	717	811	NA		
Snohomish	Sum/Fall	5,028	5,250	4,534	4,689	4,513	2,947	NA		
Green	Fall	5,723	5,800	4,792	10,338	7,994	11,512	NA		
Washington Coast										
Hoh	Spr/Sum	1,325	NA c/	1,500	1,700	2,600	4,800	NA		
Queets	Spr/Sum	925	NA c/	900	600	1,800	2,600	1,800	190%	
Grays Harbor	Spring	425	1,400	1,800	900	3,000	1,900	NA		
Grays Harbor	Fall	8,575	14,600	10,500	18,800	28,200	26,500	NA		
Quillayute	Summer	1,275	1,200	700	600	1,300	2,200	1,400	110%	117%
Quillayute	Fall	5,850	NA c/	10,000	12,400	15,200	10,000	13,900	238%	
Hoh	Fall	2,875	NA c/	5,000	4,000	2,700	5,100	NA		
Queets	Fall	3,875	NA c/	7,700	6,000	7,800	8,900	NA		
Columbia River										
Upper River	Spring	27,800	84,000	36,500	41,400	35,100	26,100	33,000 d/	119%	39%
Upper River	Summer	23,100	85,000	25,700	31,800	30,100	28,700	25,000	108%	29%
Lewis River	Fall	13,021	NA	12,000	12,900	12,100	21,200	NA		
Upriver Bright	Fall	28,325	40,000	113,300	154,100	114,700	96,500	57,600	203%	144%
Oregon Coast Aggregate Index e/	Fall	91	NA	121	129	221	151	125	137%	

a/ Base period for Alaskan and Transboundary stocks 1975-80; base for all other stocks 1979-82.
b/ 1986 escapement estimate for Upper Georgia Strait reflects unusual survey conditions.
c/ Stocks managed on the basis of floor minumum and fixed harvest rates.
d/ Based on average wild proportion of total adult escapement.
e/ Oregon coastal north-migrating chinook stocks are assessed in terms of spawners per mile survey units.

Joint Chinook Technical Committee. Review of Canadian Proposal for Terminal Area Exclusion of Chinook Catches from the All-Gear North and Central B.C. Catch Ceiling. TCCHINOOK (91)-2. February 7, 1991

This report on the Canadian paper on terminal exclusions has been prepared by the bilateral Chinook Technical Committee (CTC) in compliance with the 1990 Letter of Transmittal. In this report, we review the purpose and objectives of the terminal exclusion approach, summarize data needs for implementing the concept, and review the three terminal exclusions identified by the 1990 Letter of Transmittal. A full technical review is not possible at this time, given the short time permitted for review and the limits of available information. However, we conducted a preliminary constructive review of the data and analyses presented, and provide recommendations for further data or monitoring needs. During technical review of the Canadian terminal exclusion report, it became apparent that a difference exists between the U.S. and Canadian understandings of how base catch levels in terminal exclusion areas were to be handled in the all-gear north and central British Columbia (NBC) catch ceiling.

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[1] Review of 1989 and 1990 Terminal Area Exclusion of Chinook Catches from the Northern B.C. Catch Ceiling. Prepared by Canadian members of the Chinook Technical Committee, February 4, 1991.

Conclusions and Recommendations

The general concept of terminal exclusions for harvest of localized natural or hatchery stocks returning in surplus of spawning escapement goals is a sound management approach. However, available data indicate that the three exclusion areas defined in the Canadian paper do not completely satisfy conditions for an ideal terminal exclusion. Because the Canadian terminal exclusion report lacks complete data analysis and because insufficient time was available for a complete review, the CTC is unable, at this time, to recommend unconditional technical acceptance of any of the terminal exclusion areas in the Canadian paper.

General Recommendations

1. Some procedures used to monitor fisheries and to estimate catches and stock composition need further refining. The sampling rates for coded-wire-tags (CWT) should be increased wherever practical and the accuracy of hail catch by subarea evaluated.

2. If the terminal exclusion program is continued, annual reports should be provided until such time as the CTC determines that they are no longer necessary to address technical concerns.

3. U.S. members of the CTC recommend that Canada provide a time schedule for providing data necessary to evaluate terminal exclusions.

Recommendations Specific to Exclusion Areas

Skeena

Presuming continued sampling and that completion of analysis of biological sampling data affirms assumptions regarding stock composition and maturity, this revised exclusion area is consistent with conditions for terminal exclusion.

Bella Coola

1. The CTC notes concern for local natural stocks classified as Probably Not Rebuilding. Consequently, terminal exclusion should be carefully evaluated and monitored for impacts on this depressed stock complex.

2. Exclusion area impacts on depressed natural stocks could be reduced by restricting the exclusion fishery to the early season, large mesh, gillnet fishery.

Kitimat

1. On the basis of information contained in the Canadian report, the case for the Kitimat exclusion area is the weakest of the three exclusion proposals. Confidence in this proposal is reduced by: the relatively high incidence of non-local and immature fish, the large fishing area involved, the presence of local natural stocks classified as Probably Not Rebuilding, and lower quality of data.

2. The CTC cannot recommend support for the 1989 and 1990 terminal exclusion as presented in the Canadian report due to the concerns identified.

3. The exclusion area would be consistent with conditions for terminal exclusion if exclusions could be limited to mature chinook returning to enhanced stocks in Subarea 6-1 during June and July only. Further time/area restrictions may be of value in achieving this objective.

4. Time and area resolution of catch and biological sampling data from sport census programs in the Kitimat exclusion area should be improved and more thoroughly documented.

5. A base catch level for a redefined exclusion area could not be directly estimated. The CTC recommends that the most technically defensible approach for calculation of a base level would be to use data collected for the 1989 and 1990 seasons; such a procedure would be conservative in that it would likely overestimate the true catch within this area during the 1979-1982 base period used for other exclusion areas. While this approach would be of limited value when determining exclusions for the 1989 and 1990 seasons, it would establish a base level for consideration of future exclusions for the Kitimat area. A more conservative base level catch implies a larger base catch before any exclusion catch is allowed.

Summary

In order for terminal exclusion to work for a particular area, the area must have a largely pure catch of the target stock with little incidental harvest of non-local or immature stocks. Reporting of the catch must be "clean", such that fish caught in other areas are not landed in and reported from the terminal area. There must be some means of determining the stock composition of the catches from the exclusion area. And it must be possible to define a base period catch level for the area such that only catches exceeding this level are allowed for exclusion. All these requirements are technically feasible, but need to be demonstrated for any potential terminal exclusion area.

Given limits of practicality for fisheries regulation and catch/sampling programs, some "contamination" (i.e. harvest impact on non-mature or non-local stocks) is unavoidable. The

impact of the catch of non-local or immature fish in the exclusion areas on the rebuilding of individual natural stocks can likely not be assessed, but are likely less than impacts imposed by other changes to the rebuilding program (i.e. ceiling changes, increased incidental mortalities, etc.). Changes in large mixed-stock fisheries are likely to have greater impacts on rebuilding than changes in harvest rates by terminal fisheries which target local, mature stocks exceeding their escapement goals. Evaluations of future terminal exclusions should focus on whether the objectives and conditions of the terminal exclusions are achieved.

In conducting the studies associated with the three terminal exclusion areas in NBC, Canada Department of Fisheries and Oceans (DFO) found that it was necessary to redefine slightly each of the three areas. For the Skeena River, the terminal exclusion area was reduced to define an area more easily monitored for catches uncontaminated with catches from nearby areas. In the Bella Coola terminal area, it was decided to close Subarea 8-13 since catch in that area was too small to adequately sample. The catch from the Kitimat area was shown to have a higher contribution from non-local and immature fish than the Skeena or Bella Coola area. To focus the harvest on mature chinook (>5lbs.) returning to the enhanced Kitimat stocks, Canada proposed to limit the exclusion area/period to Subarea 6-1 during June and July. This experience demonstrates the necessity for flexibility and refinement in defining terminal exclusion areas.

Under circumstances where increased terminal catches result from new enhancement activities, a hatchery addon concept could alternatively allow harvest of new enhanced production. However, the hatchery addon concept determines the catch from new enhancement production (minus a risk adjustment) taken in addition to the allowable catch ceiling. The addon approach would increase demands upon tagging and sampling programs throughout B.C. areas where enhanced fish are harvested. Under the terminal exclusion concept, enhanced stocks contribute to non-terminal fisheries and thus contribute to the rebuilding program by buffering (i.e. increased contributions of hatchery fish would reduce impacts on other stocks in mixed-stock fisheries operating under catch ceilings).

The catch excluded from each area depends upon the base catch level established. The base catch is the portion of the base period catches taken in the exclusion area adjusted for implementation of the NBC catch ceiling. Different base catch levels result from the use of different assumptions. A decision on an appropriate base catch for each exclusion area is not purely a technical matter. Alternative procedures are outlined in this review.

B. JOINT CHUM TECHNICAL COMMITTEE

Joint Chum Technical Committee. Final 1989 Post Season Summary Report. TCCHUM (91)-1. February 1991.

Introduction

This Joint Chum Salmon Technical Committee report presents a review of fishery management activity, and details of catch and escapement for 1989 chum salmon in southern British Columbia and Washington, as required in Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST). Detailed information may be found in the Canadian and United States agency reports appended to this report.

Status of Treaty Requirements

Chum stocks and fisheries in southern B.C. and in U.S. Areas 4B, 5, 6C, 7, and 7A are managed under the terms set out in the Pacific Salmon Treaty. The following provides a brief synopsis of the PST chum annex provisions (italics) and of Canadian and United States management actions in 1989.

1. *The Parties shall maintain a Joint Chum Technical Committee to review stock status, develop new methods for stock management and report on management and research findings.*

   Reports published in 1989 are listed under 1989 Technical Committee Publications.

2. *Canada was to manage its Inside fisheries to provide rebuilding of depressed naturally spawning stocks and minimize increased interceptions of U.S. chum.*

   In 1988, the gross escapement of Inside chum totalled 1,053,000. Wild escapement totalled 877,000 which was 44% of the Clockwork goal of 2,000,000. The Fraser River wild escapement was 465,000 or 66% of the 700,000 goal. Although stock compositions samples were taken, the technical Committee has not agreed on a method for determining whether increased interceptions were minimized.

   The only terminal area fishery scheduled by Canada to harvest specific stocks with identified surpluses was mid Vancouver Island (Area 14). This fishery was managed to limit interceptions of U.S. origin or other non-targeted stocks. In Addition, a one day coho directed fishery was scheduled in Area 20.

3. *In 1989, Canada was to manage its Johnstone Strait Clockwork harvest to set levels dependent on the run size entering Johnstone Strait as determined in-season. The catch level of chum salmon in U.S. fishing Areas 7 and 7A was determined by the catch of chum salmon in Johnstone Strait. In addition, the traditional proportion of effort and catch between Areas 7 and 7A was to be maintained.*

   The in-season estimate of Johnstone Strait run size was 3,000,000 providing for a harvest of 20% or 600,000 chum. Post-season, the run size was 1,775,000 chum resulting in an overall harvest rate of 31.5% for clockwork assessment purposes. The Clockwork Harvest Plan was reviewed after the end of the 1988 fishing season; no subsequent changes were incorporated for 1989.

   The total allowable catch for U.S. Areas 7 and 7A was 120,000, however, this was increased by a 2,300 chum underage from the U.S. fishery in 1988. The total catch for this fishery in 1989 was 81,000 chum, resulting in a significant shortfall to be applied in future years. The U.S. catch in Areas 7 and 7A was disproportionately harvested in Area 7. The traditional proportion is an even distribution of catch between the two areas.

4. *In 1989, the U.S. was to maintain the limited effort nature of its chum fishery in U.S. Areas 4B, 5, and 6C to minimize increased interceptions of Canadian chum. In addition, the U.S. was to monitor this fishery for increasing interceptions of Canadian chum.*

   The U.S. chum fishery in the Strait of Juan de Fuca (Areas 4B, 5, and 6C) was limited, as it has been in past years, to participation by gillnet fishermen from the four Tribes that

fish in the Strait of Juan de Fuca. It opened nine days later than normal and closed in mid-November, as usual. The catch of 52,400 chum was below the 1988 catch level. GSI samples were taken to determine whether this catch resulted in higher interception of Canadian chum.

5. *When the catch of chum salmon in U.S. Areas 7 and 7A fails to achieve the specified ceiling, the ceiling in subsequent years will be adjusted accordingly.*

   The U.S. fishery in Areas 7 and 7A in 1989 fell 42,300 chum short of the 123,300 ceiling for 1989.

6. *Catch compositions in fisheries covered by this chapter were to be estimated post-season using methods agreed upon by the Joint Chum Technical Committee.*

   The appropriate fisheries, covered by this chapter, were sampled, however, methods for estimating stock composition are under review by the Committee.

7. *In 1989, Canada was to manage the Nitinat net chum fishery to minimize the harvest of non-targeted stocks.*

   The boundaries of the Nitinat fishery were the same as in 1988. Canada conducted GSI sampling to quantify the incidence of interceptions of passing stocks.

8. *In 1989, Canada was to conduct GSI sampling of the West Coast Vancouver Island troll fishery (Areas 121-124) if catch levels were predicted to reach levels similar to those in 1985 and 1986.*

   Early season catch information from the West Coast Vancouver Island troll fishery did not indicate that the season's total chum catches would reach 1985/86 levels. As a result, Canada did not conduct GSI sampling of this fishery.

C. JOINT COHO TECHNICAL COMMITTEE

No reports were finalized by this Committee during this reporting period.

D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

Joint Northern Boundary Technical Committee. U.S./Canada Northern Boundary Area 1989 Salmon Fisheries Management Report and 1990 Preliminary Expectations. TCNB (90)-1. May 1990.

Introduction

This report reviews the 1989 Boundary Area pink, chum, and sockeye salmon fisheries of Southeast Alaska and Northern British Columbia and outlines preliminary 1990 expectations and fishing plans. The document is submitted to the Pacific Salmon Commission as required in Article IV of the Pacific Salmon Treaty. The report includes, for both Alaska and Northern British Columbia, a review of the 1989 fishing season, a review of management performance in relation to Treaty requirements, and expectations for 1990 sockeye, pink, and chum returns. Tables of catch and escapement are provided. A general description of the boundary area fisheries, their

historic development, and a review of changes in gear efficiency can be found in the 1987 Northern Boundary Technical Report (TCNB 88-1 January, 1986).

Joint Northern Boundary Technical Committee. U.S./Canada Northern Boundary Area 1990 Salmon Fisheries Management Report and 1991 Preliminary Expectations. TCNB (90)-2. November 1990.

Executive Summary

This report reviews: 1) catch, effort, and management actions in the 1990 Boundary Area pink, chum, and sockeye salmon fisheries of southern Southeast Alaska (Districts 101-106) and northern British Columbia (Areas 1, 3, 4, and 5); 2) management performance relative to Treaty requirements; 3) historical catches and escapements; and 4) preliminary 1991 expectations and fishing plans.

The Pacific Salmon Treaty limits the Alaska District 104 (Noyes Island) purse seine fishery to a four-year total catch (1990-1993) of 480,000 sockeye salmon prior to Statistical Week 31. Under terms of the agreement, when the annual catch reaches 160,000 sockeye salmon, no further daily fishing periods are allowed prior to Week 31. By Week 30, the final Treaty week, sockeye catch was approximately 130,600 fish. In an effort to remain within Treaty limits, but also harvest larger than expected returns of pink salmon, a six hour opening was allowed in only the northern portion of the district for Week 30. Approximately 39,500 sockeye were caught in this final opening covered by the Treaty for a total catch through Week 30 of 170,000 sockeye salmon. This leaves 310,000 sockeye salmon remaining to be harvested over the next three years in order to stay within the allowable four-year catch of 480,000. Total season catch of sockeye salmon in the fishery was a record 796,000. Harvest of all species were well above average in District 104. For pink salmon, 14,600,000 were caught; the third largest District 104 pink harvest on record. The preliminary estimates of District 104 harvests of other species are 7,731 chinook, 198,200 coho, and 213,000 chum salmon.

In the Alaska District 101-11 (Tree Point) drift gillnet fishery the catch of sockeye salmon since 1985 has been limited to an annual average of 130,000 by the Pacific Salmon Treaty. Catch of sockeye salmon in 1990 was a relatively poor 86,000 bringing the 1985-1990 average to 129,000. Catch of pink and chum salmon were below average while the catch of coho salmon was close to the past ten year's average.

The Treaty stipulates that the outside portions of Canadian Statistical Areas 3 and 5 (Management Units 3-1, 3-2, 3-3, 3-4 and 5-11) be managed for an average annual pink salmon harvest of 900,000. In 1990, 645,775 pink salmon were harvested reducing the 1985 to 1990 average annual harvest to 1,418,454 fish. The 1990 harvest reflects largely the poor return to Area 3 and moderate returns to Area 4.

In Canadian Area 1, the troll fishery is regulated under the Treaty to a maximum annual catch of 1.95 million pink salmon with a four year, 1990 to 1993, cumulative total limited to 5.125 million pinks. Additionally, the northern portion of Area 1 is to close to pink retention when the pink catch reaches 300,000 in this area, or July 22, should this subceiling not be met. Preliminary saleslips catches totalled 1.16 million pink salmon in Area 1 in 1990. Catches in the northern portion of this area were only 25,626 prior to the July 22 closure.

Strong returns are forecast for Northern Boundary area pink salmon in 1991. Expectations are for a below average sockeye salmon return to Area 3 (Nass River) and an average return to Area 4 (Skeena River).

Joint Northern Boundary Technical Committee. Review of Steelhead Stock Status, Harvest Patterns, Enhancement and Migrations in the Northern Boundary Area. TCNB (91)-1. February 1991.

Executive Summary

In February 1990, the Northern Panel of the Pacific Salmon Commission (PSC) instructed the Northern Boundary Technical Committee to prepare a document which presented the available information regarding the status of steelhead stocks in the Northern Boundary area.

This report reviews the information relating to the historical catch and escapement, distribution and life histories, enhancement activities and the migration and timing of steelhead stocks returning to northern B.C. and S.E. Alaska systems. The Canadian portion of this report is a preliminary review with a more detailed document in preparation for the fall of 1991.

In Alaska, steelhead are found from Dixon Entrance to the Alaska Peninsula. However, the majority are located in Southeast Alaska coastal streams. Most systems contain relatively small populations (200 or fewer adults) with the largest system, the Situk River, supporting a run from 3,000 to 6,000 adult steelhead. Typically Alaskan steelhead are of the "fall" or "spring" run timing variety with the latter type dominating the return.

Alaskan sport harvest of steelhead is almost exclusively in freshwater with average harvests increasing from 1,820 (1977-1981) to 4,441 (1985-1989). Commercial fisheries in Southeast Alaska averaged approximately 1,500 steelhead harvested annually prior to 1983. Since 1983 harvests have increased annually with a peak catch of 11,540 in 1986. The majority of the steelhead harvest occurs in Districts 101 and 104 with 1980 to 1989 average catches of 1,975 and 1,438.

Steelhead enhancement in Southeast Alaska has been conducted at moderate levels with combined smolt and fry releases averaging approximately 100,000 from 1985 to 1989. Various release strategies have been attempted with a standard release size established based on hatchery steelhead programs in Oregon and Washington.

The lack of a time series of reliable escapement and harvest rate information precludes making a quantitative, or even an accurate qualitative assessment of stock status. Unfortunately, there are no current programs which will further this assessment.

Available northern B.C. sport harvest information for steelhead reports catches occurring in the Nass, Skeena, Stikine and Taku rivers. Sport harvest from 1980 to 1989 has averaged 378 in the Nass River, 2,393 in the Skeena River, 69 in the Stikine River and 18 in the Taku River. Commercial harvest in Areas 3, 4 and 5 have increased from 1963 to 1989 averages of 2,087, 13,326 and 438 to 1985 to 1989 averages of 3,561, 16,198 and 715, respectively. Stikine and Taku rivers show commercial harvests which decrease from 1979 to 1989 averages of 254 and 119 to 1985 to 1989 averages of 140 and 58, respectively. Native harvest of Skeena River steelhead have increased from a 1963 to 1989 average of 2,899 to a 1985 to 1989 average of 5,884.

Steelhead enhancement in Areas 3, 4 and 5 has been minor and exclusively limited to the Skeena watershed. From 1985 to 1988 an average of 232,000 fry have been released annually in several Skeena tributaries.

Preliminary stock assessment information for the Skeena steelhead return indicates a 1963 to 1990 average terminal stock of 32,099. The preliminary estimates of a minimum escapement goal based on fry capacity estimates for the Skeena watershed is 26,000 spawners.

E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Joint Transboundary Technical Committee. Long-Term Research Plans for the Transboundary Rivers. TCTR (90)-3. November 1990.

Introduction

Long-term goals established by the Pacific Salmon Commission for the transboundary rivers include achieving optimum salmon production and providing each Party benefits equivalent to the salmon production originating in its own waters. If these goals are to be realized, careful planning of programs designed to address them must be undertaken. The special nature of the transboundary rivers is recognized by the Commission and the Parties are encouraged to cooperate in the development of harvest management strategies, research, and enhancement to the mutual benefit of both nations.

In the years leading up to the Treaty and then after the ratification of the Treaty, both Parties directed considerable resources into investigating the fisheries and salmon stocks of the transboundary rivers. As a result, substantial progress has been made which has led to improved management approaches and a cooperative sockeye enhancement plan. In spite of this progress, large gaps remain in our understanding of the fisheries resources of the transboundary rivers.

The Transboundary Rivers Technical Committee (TBRTC) has identified seven Treaty-related activities which could benefit from acquiring additional or improved information from the transboundary rivers. These are:

1. in-season management,
2. management evaluation,
3. forecasting future returns,
4. development of spawning escapement goals,
5. enhancement planning,
6. enhancement evaluation, and
7. interception estimation.

The purpose of this report is to develop a long-term plan for addressing these needs. This is done by first identifying current research and monitoring programs and evaluating how well they are meeting our information needs (Chapter 2). Next, current programs that need further development or follow up in order to make best use of their information are identified (Chapter 3). Finally, new programs are identified, their importance determined, approaches for addressing them developed, and the specific programs are prioritized (Chapter 4). In some cases, to meet new data needs, entirely new programs will be required, while in others, further analysis of existing information may be sufficient. Findings are summarized in the last chapter (Chapter 5). This report will provide the Commission with a sense of direction for transboundary river programs. The report should also provide information to assist the various government agencies in funding allocation decisions. It is recognized that objectives sometimes change and this research plan must be considered flexible in order to respond to change.

Summary

Current research and monitoring programs on transboundary river salmon stocks are primarily oriented towards sockeye salmon because of the existence of international harvest sharing agreements for returns of this species to the Taku and Stikine rivers. Research on sockeye salmon has resulted in the development of escapement monitoring and stock identification programs, and in-season management systems. This research is necessary annually to fulfill international harvest sharing arrangements and conservation measures stipulated by the Pacific Salmon Treaty.

Substantial research and monitoring is also conducted on transboundary chinook and coho salmon stocks. Chinook salmon programs have generally involved monitoring of escapements to assess the success of the cooperative coastwide escapement rebuilding program. Most of the escapement estimation programs within the Alsek, Stikine, and Taku rivers are conducted on index systems; relating the production of these index sites to that of the entire drainages is an area of research currently being highlighted. Research on coho salmon has been primarily focused on determining harvest rates and monitoring escapements of index stocks.

Little research on pink and chum salmon stocks has been conducted due to the reduced economic value of these runs particularly in the Stikine and Alsek rivers. Escapement monitoring programs have been instituted for these species on the Taku River.

Current research on "other" transboundary rivers, including the Unuk, Chickamin, Whiting, and Chilkat rivers is limited to U.S. programs designed to determine exploitation rates and harvest patterns of chinook salmon rearing in U.S. sections of the Unuk, Chickamin, and Chilkat rivers. No commercial fisheries exist in these rivers and virtually no data exist on their salmon production; therefore, little research has been funded to examine the current or potential productivities of salmon stocks which they support.

Research programs are generally meeting our current management obligations for sockeye salmon, but additional assessment programs and management systems need to be developed for chinook and coho salmon to effectively manage these stocks. Many issues involved with new cooperative international sockeye salmon enhancement projects need to be addressed. Additionally, questions regarding estimates of the interceptions of transboundary river stocks exist which can realistically only be solved by new research.

Several transboundary river research programs begun in recent years promise to yield important results. Short-term plans and goals for these projects were reviewed by the TBRTC. Radio telemetry has been used to document run timing, spawner distribution, and to assess escapement estimation reliability of Taku River sockeye and chinook salmon stocks. Though radio telemetry is costly, it has proven to be an effective technique for acquiring such information from the large, turbid transboundary rivers where no other comparable techniques are available. For logistical and monetary considerations, the TBRTC recommends conducting telemetry studies in 1991 and 1992 on Taku River coho salmon before initiating telemetry studies on Stikine River chinook salmon in 1993 and 1994. Genetic stock identification combined with other biological markers offers promise in providing improved stock composition data. The TBRTC recommends completing the collection, processing, and analysis of the chinook and sockeye GSI baselines as the most important short-term goals for this research. Research related to enhancement activities on the Taku and Stikine rivers is being initiated in a wide variety of areas. The TBRTC recommends specific areas that need to be addressed over the next two years, including evaluating the success and impact of sockeye fry stocking, developing a laboratory for analysis of otolith mass marks, and identification of further enhancement opportunities in the Taku and Stikine rivers.

The TBRTC prioritized long-term research needs not currently being addressed for the transboundary rivers. Chinook salmon research is rated as the highest priority for the Stikine and Alsek rivers. Improving escapement estimates is the highest ranked priority for the Stikine River, while examination of escapement goals is ranked as most important for the Alsek River. Coho salmon research is ranked as the highest need for the Taku River, with improved escapement estimation identified as the highest priority. Long-term research needs for sockeye salmon are listed only for the Alsek River, where improved catch accounting, examination of escapement goals, and improved escapement estimation are ranked in order of decreasing importance. Research needs related to improving escapement estimates and catch accounting of Stikine and Alsek river coho salmon are identified, as are needs for Taku River chinook, chum, and pink salmon. For the "other"transboundary rivers, escapement monitoring is given the highest priority. Most enhancement-related research needs are for sockeye salmon, including studies on the enhancement potentials of new and current candidate lakes, improvement of run forecasting necessary for developing harvest management systems when enhanced returns come on-line, and further development of thermal mass-mark processing technology. Research into the enhancement potential of other species in the transboundary rivers is also identified as a need.

Joint Transboundary Technical Committee. Transboundary River Salmon Production, Harvest, and Escapement Estimates, 1989. TCTR (91)-1. February 8, 1991.

Executive Summary

Post-season estimates of the catches and escapements of Pacific salmon returning to the transboundary Stikine, Taku, and Alsek rivers for 1989 are presented and compared with historical patterns. Relevant information pertaining to the management of appropriate U.S. and Canadian fisheries is presented and the use of in-season management models is discussed.

The 1989 Stikine sockeye run was estimated at 90,400 fish, of which 37,000 were harvested in various fisheries and 53,400 escaped to spawn. The U.S. marine commercial and test fishery catches of Stikine sockeye salmon were 14,500 and 800 fish, respectively; the Canadian inriver commercial and Indian food fishery catches were 17,700 and 2,400 fish, respectively; and the inriver test fishery catch was 1,600 fish. The pre-season forecast of the run was 80,900 sockeye salmon. The Stikine Management Model worked well this year in predicting the Stikine sockeye run, predicting from 88,000 to 121,000 fish during various weeks of the season. The model correctly predicted a smaller than average portion of the run being from the Tahltan stock. Estimates of the total allowable catch (TAC) were derived from predictions of the total Stikine River run; Canada harvested its portion of the TAC while the U.S. harvested approximately half of its TAC estimated by the model. Due to the low run size of the Tahltan stock 15,700 fish), the resulting spawning escapement to Tahltan Lake (8,300 fish) was below the 20,000 to 30,000 goal range established by the Transboundary Technical Committee. The escapement of 45,100 non-Tahltan Stikine sockeye salmon exceeded the upper level of the escapement goal range.

The Canadian inriver Stikine chinook catch was a record 3,000 fish (including jacks), approximately 43% more than the 1980 to 1988 average, with approximately 60% harvested in commercial fisheries and 40% harvested in the Indian food fishery. The U.S. marine catch in the District 106 and 108 mixed stock fisheries was 1,900 fish, approximately 28% more than the 1980 to 1988 average catch. Chinook spawning escapements were good in the Stikine River in 1989, with a count of 4,700 large adults through Little Tahltan weir and a total inriver escapement estimate of 18,900 large fish, 1,800 fish more than the 1980 to 1988 average.

The Stikine coho run was good in 1989. The U.S. marine harvest of Stikine River coho salmon is not known since there is no stock identification program in place; however, total catches in

District 106 were above average. The Canadian inriver coho catch was 6,100, fish, 50% more than the Treaty entitlement of 4,000 fish. The fishery was managed to take the 4,000 fish Treaty entitlement plus a 1,900 fish shortfall from the 1988 season. Coho aerial survey escapement counts were well above average.

The Stikine River runs of pink and chum salmon are typically very small. In 1989, Canadian catches of these two species were 800 and 700 fish, respectively. This is well below the 1980 to 1988 average for pink salmon and slightly above average for chum salmon.

The 1989 total Taku sockeye run was estimated at 177,600 fish and included a catch of 82,300 and an escapement of 95,300 fish. The U.S. marine commercial and inriver personal use catches were 62,800 and 700 fish respectively, and the Canadian inriver commercial, food fishery, and test fishery catches were 18,500, 50, and 200 fish, respectively. The Pacific Salmon Treaty defines harvest sharing of Taku River sockeye salmon as 18% of the total allowable catch to Canada and 82% to the U.S. Since the escapement goal set by the Transboundary Technical Committee is expressed as a range, 71,000 to 80,000 fish, the resulting total allowable catch is also determined as a range. In 1989, Canada took 17% to 19% and the U.S. took 60% to 65% of the total allowable catch. The estimated spawning escapement for Taku sockeye salmon exceeded the upper level of the escapement goal range.

The chinook catch in the Canadian commercial fishery in the Taku River was 1,000 fish, approximately three times the 1980 to 1988 average. The catch in the U.S. District 111 mixed stock fishery was 1,800 chinook salmon, approximately 86% of the 1980 to 1988 average. Relatively strong chinook escapements were observed in spawning areas throughout the Canadian portion of Taku River drainage.

The Taku coho run was strong in 1989. The U.S. harvest of coho salmon in the District 111 mixed stock fishery was 51,800 fish, 16,000 fish more than the 1980 to 1988 average. The Canadian inriver coho catch was 2,900 salmon, close to Treaty limit of 3,000 fish. The above-border run size through October 1 (end of tagging program) was estimated at 60,800 coho salmon, similar to the above-border run for a comparable time period in both 1987 and 1988. Aerial survey index counts and weir counts in U.S. and Canadian portions of the Taku drainage were generally above those of recent years.

The catches of pink and chum salmon in the U.S. District 111 fishery were 180,600 and 37,000 fish, respectively, near the 1980 to 1988 average for pink salmon and approximately 40% of the average for chum salmon. Canadian inriver catches included 700 pink and 40 chum salmon, nearly an order of magnitude below the 1980 to 1988 averages for both species.

The sockeye run to the Alsek River was above average as indicated by below average U.S. terminal and Canadian inriver catches and above average escapement counts. The U.S. Dry Bay catch was 13,500 sockeye salmon, approximately 77% of the 1980 to 1988 average catch. The Canadian sport fishery catch of 300 fish and food fishery catch of 1,900 fish were 67% and 92%, respectively, of the 1980 to 1988 average. The count of sockeye salmon through Klukshu weir was 23,500 fish, approximately 31% more than the 1980 to 1988 average. The early run component comprised 14% of the total run which represented a 31% increase from the 1980 to 1988 average run.

The chinook run to the Alsek River was also about average. The U.S. Dry Bay catch of 200 fish was 50% of the 1980 to 1988 average. The Canadian combined sport and food fishery catch of 400 chinook salmon was near the 1980 to 1988 average. However, the escapement into Klukshu River, 2,300 chinook salmon, was above the 1980 to 1988 average.

The coho run to the Alsek River was relatively strong in 1989. The U.S. Dry Bay coho catch of 6,000 fish was near the 1980 to 1988 average and the Canadian inriver sport catch of 200 fish was 2.6 times the 1980 to 1988 average. The Klukshu weir count of 2,200 coho salmon was more than twice the 1980 to 1988 average.

The U.S. Dry Bay pink and chum salmon catches of two and 1,000 fish, respectively, were near the 1980 to 1988 average. There are no recorded Canadian catches of pink or chum salmon in the Alsek River.

F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

Joint Technical Committee on Data Sharing. 1989 Annual Report of the Data Sharing Committee and Its Work Groups. TCDS (90)-1. May 1990.

I. Introduction

This is the first annual report of the Data Sharing Committee. The Committee was formed in 1985 and reports to the Standing Committee on Research and Statistics. The first meeting was held in February 1986. A history of the Data Sharing Committee through 1988 is given in Appendix I of the report. The initial goals or concerns of this Committee were to review equipment needs of the Pacific Salmon Commission (PSC), to facilitate data exchange between the two Parties, and to develop standard methods of reporting and analyzing coded-wire-tag data.

The Data Sharing Committee works in part through the use of work groups, which are established to work on specific tasks that are expected to take an extended time to accomplish and that need people with special qualifications. At the first meeting of the Data Sharing Committee, two work groups were established: The Mark-Recovery Work Group to look into standardizing statistical techniques for using coded-wire-tag data and the Mark-Recovery Databases Work Group to look into ways of standardizing coded-wire-tag databases to facilitate sharing of the data coastwide. In 1989 two new work groups were established: the Data Standards Work Group to provide continual maintenance of data standards and formats and the Catch Data Exchange Work Group to develop standard formats for catch and effort data. When a work group has completed its assignment, it is disbanded, as was done with the Work Group on Mark-Recovery Databases in 1989.

The Data Sharing Committee provides oversight and guidance to its work groups and coordinates activities between them when needed. To facilitate communications between the parent Committee and the work groups, at least one member of the Data Sharing Committee from each Party is placed on each work group. While major tasks are assigned to work groups, the Data Sharing Committee addresses other problems concerning data needs of the Parties or joint PSC technical committees, such as difficulties in data exchange, misunderstandings in data interpretation, and maintenance of standards in data collection.

At the initial meeting the Data Sharing Committee, the timely exchange of data was a large concern. It was decided that for most data, exchange could be best handled directly between agencies or through the joint PSC technical committees, but that for coded-wire-tag data, a centralized database was the best answer. The Mark-Recovery Databases Work Group later determined that actual storage and maintenance of the database was best handled within each country. Data, in a standardized format, would then be exchanged between a designated data center from each Party.

The Data Sharing Committee determined that standardizing data reporting formats for other commonly exchanged data would be desirable. With the completion of the work by the Work Group on Mark-Recovery Databases, Data Sharing is now undertaking the standardization of formats for catch and effort data exchange. The modified approach of developing standard formats for data exchange rather than building one common database is reflected in the name of the new work group under the Data Sharing Committee: Work Group for a Catch Data Exchange.

II. Executive Summary

During this past year, the Data Sharing Committee provided a communication link to address problems with discrepancies in catch statistics and sampling rates between Canada and Washington State. At the request of the U.S. members of the Transboundary Technical Committee, the Data Sharing committee looking into in-season communication problems between Whitehorse and Juneau which resulted in improved computer software for the Whitehorse management office allowing for electronic exchange of data. In July the Data Sharing Committee presented the report "Activities of the Work Group on Mark-Recovery Statistics 1986-1988" (TCDS 89-1) to the committee on Research and Statistics (R&S). Two new work groups under the Data Sharing Committee were formulated this year, one on data standards and one on catch data exchange; terms of reference were developed for both groups. The Data Sharing Committee and the coastwide Mark Committee agreed that greater communication was needed between the two bodies, especially concerning decisions and recommendations made on coded-wire tagging; Data Sharing has agreed to hold one of its meetings each year in conjunction with the Mark Committee annual meeting held in February each year. At the request of R&S, Data Sharing compiled a source list for Treaty-related catch data; the list is included in this report.

The Mark-Recovery Statistics Work Group met only once during this reporting period. This meeting was held in connection with the Data Sharing meeting in July to facilitate communication between the two groups.

The Mark-Recovery Database Work Group completed its work on the database format, produced a document on the format, "Information Content and Data Standards for a Coastwide Coded-Wire-Tag Database, Version 1.2" (TCDS 89-1), and was disbanded in 1989.

At the April 18, 1989, meeting of the Data Sharing committee, the Work Group on Data Standards was established to continue to develop the format for coded-wire-tag data and to provide assistance in standardization of formats for exchanging other types of data. The work group met twice in 1989 to discuss what information should be included in the database and ideas on what the format should be.

The Catch Data Exchange Work Group was formulated at the October 5, 1989, meeting of the Data Sharing Committee. The work group did not meet bilaterally in 1989.

G. JOINT INTERCEPTIONS COMMITTEE

Joint Interceptions Committee. Second Report on the Parties' Estimates of Salmon Interceptions. JIC (91)-1. January 1991.

Executive Summary

In February 1990 the Pacific Salmon Commission (PSC) instructed the Joint Interceptions Committee (JIC) to continue its work through PSC technical committees to: (a) resolve

outstanding differences in 1980-1988 interception estimates; (b) to provide 1989 interception estimates; and (c) to review stock composition data and estimation methods used to measure salmon interceptions. This report addresses this charge and summarizes the technical committees' approaches for resolving outstanding differences.

JIC has prepared the following information from responses received from the joint technical committees:

1. Summaries of results of technical committee deliberations in four areas: (a) revisions and additions to JIC (89)-1; (b) an update to previous concerns regarding the quality of interception data and the accuracy and precision of estimation methodologies; (c) progress on development of joint estimation methodologies; and (d) recommendations to resolve or reduce differences between the Parties' interception estimates.

2. Tables summarizing the Parties' interception estimates and the differences between the Parties' estimates, by species and interception category.

3. Figures depicting the magnitude of remaining differences in interception estimates.

4. Appendices detailing the Parties' annual estimates of interceptions for 1980 to 1989 by species, fishing area and gear.

The success this past year in reducing or narrowing differences in the Parties' interception estimates varied amongst the committees. Changes in the 1980-88 interception estimates since the previous JIC report are summarized below.

Differences That Were Resolved in 1990

CHINOOK: - B.C. interceptions of Washington chinook; Washington interceptions of B.C. Chinook.

Differences That Were Substantially Decreased in 1990

CHINOOK: - Alaskan interceptions of B.C. chinook; Alaskan catch of chinook from Canadian sections of transboundary rivers.

Differences That Were Substantially Increased in 1990

PINK: - B.C. interceptions of Alaskan pinks: Alaskan interceptions of B.C. pinks.

COHO: - B.C. interceptions of Washington coho in 1987.

Substantial Remaining Differences

SOCKEYE: - Alaskan interceptions of B.C. sockeye; Alaskan catch of sockeye from Canadian sections of transboundary rivers.

PINK: - B.C. interceptions of Alaskan pinks; Alaskan interceptions of B.C. pinks; Alaskan catch of pinks from Canadian sections of transboundary rivers.

CHUM: - Alaskan catch of chum from Canadian sections of Transboundary rivers; B.C. interceptions of Alaskan chum.

COHO: - All categories except B.C. catch of transboundary coho.

Reasons For Remaining Differences

Since a common catch database is employed, remaining differences in interception estimates reflect differences in methodologies and circumstances where hard data are scarce. JIC expects that cooperative technical work will reduce pink and coho differences in 1991. Discussion of reasons for remaining differences is included in this document and in JIC (89)-1.

Additional Work For Resolution of Differences

TRANSBOUNDARY TECHNICAL COMMITTEE: Additional work on narrowing differences for sockeye, pink, chum and coho would not be fruitful without further research. Chinook estimates for category B1 will be reviewed by the Transboundary Technical Committee.

NORTHERN BOUNDARY TECHNICAL COMMITTEE:

Sockeye: The Committee will work with PSC staff, CDFO and ADF&G to resolve differences in estimates of category A interceptions of Fraser sockeye. Tagging data which is used to estimate Canadian interceptions of Alaska stocks is currently under review by the Northern Boundary Technical Committee.

Pink: The Committee will continue work on an agreed-upon methodology for analyzing tag data and applying tag data to years when there was no tagging.

Chum: In 1991 the Committee expects to receive new information on electrophoretic sampling of northern boundary chum stocks. The Committee will assess this information for use in measuring chum stock composition in Northern Boundary area catches.

CHINOOK TECHNICAL COMMITTEE: Since the Committee reached agreement on estimates of interceptions, no further work is presently planned.

COHO TECHNICAL COMMITTEE: The Committee intends to continue development of a joint methodology to estimate stock compositions from CWT data for fisheries in the Southern Panel area. Efforts will also be undertaken to determine the feasibility of applying the same methodology to fisheries in the Northern Panel area. The Committee intends on assessing the feasibility of using mass marking techniques as a potential means of validating estimates of stock composition generated from coded-wire-tag data. The Committee will investigate the feasibility of generating separate CWT recovery estimates for Washington State statistical Areas 7 and 7A.

FRASER TECHNICAL COMMITTEE: Estimates of Washington and southern B.C. sockeye and pink salmon interceptions in Washington and B.C. fisheries were provided by PSC staff and approved by the Fraser Technical Committee. Estimates of pink interceptions are preliminary and subject to change. Current work by PSC staff, ADF&G and CDFO to resolve differences in interception estimates for Fraser sockeye by Alaskan fisheries are supported by the Fraser Technical Committee.

CHUM TECHNICAL COMMITTEE: Although agreement has been reached on category D and E interception estimates, the Committee will continue to review changes in accuracy and precision of estimated stock compositions using different GSI baselines. Once this work is complete, the Committee will turn its attention to: a) development and application of bias correction procedures

for stocks which comprise a small proportion of the catch; b) time/area stratification for application of GSI-based stock composition estimates; and c) revision and updating of the Canadian GSI baseline. Interceptions may be updated in 1991 as a result of this work.

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, 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, or contact the Pacific Salmon Commission library.

A. ANNUAL REPORTS

1. Pacific Salmon Commission 1989/90 Fifth Annual Report. November 1990.

This report contains a summary account of the Commission's fifth year of operation and contains amendments to Annex IV of the Pacific Salmon Treaty which applied to the 1990 fishery regime.

B. REPORTS OF JOINT TECHNICAL COMMITTEES

i. Joint Chinook Technical Committee

16. TCCHINOOK (90)-2 - *Estimates of Chinook Interceptions. A Report to the Joint Interceptions Committee.* June 15, 1990.

17. TCCHINOOK (90)-3 - *1989 Annual Report.* November 9, 1990.

18. TCCHINOOK (91)-1 - *Chinook Technical Report on Preliminary 1990 Catch and Escapement.* February 8, 1991.

19. TCCHINOOK (91)-2 - *Review of Canadian Proposal for Terminal Area Exclusion of Chinook Catches from the All-Gear North and Central B.C. Catch Ceiling.* February 7, 1991.

ii. Joint Chum Technical Committee

12. TCCHUM (91)-1 - *Final 1989 Post-Season Summary Report,* February 1991.

iii. Joint Coho Technical Committee

No reports were finalized by this committee during this reporting period.

iv. Joint Northern Boundary Technical Committee

9. TCNB (90)-1 - *U.S./Canada Northern Boundary Area 1989 Salmon Fisheries Management Report and 1990 Preliminary Expectations.* May 1990.

10. TCNB (90)-2 - *U.S./Canada Northern Boundary Area 1990 Salmon Fisheries Management Report and 1991 Preliminary Expectations.* November 1990.

11. TCNB (91)-1 - *Review of Steelhead Stock Status, harvest Patterns, Enhancement and Migrations in the Northern Boundary Area.* February, 1991.

v. Joint Transboundary Technical Committee

14. TCTR (90)-3 *Long-Term Research Plans for the Transboundary Rivers.* November 1990.

15. TCTR (91)-1 - *Transboundary River Salmon Production, Harvest, and Escapement Estimates, 1989.* February 8, 1991.

vi. Joint Technical Committee on Data Sharing

5. TCDS (90)-1 - *1989 Annual Report of the Data Sharing Committee and Its Work Groups.* May 1990.

vii. Joint Interceptions Committee

3. JIC (91)-1 - *Second Report on the Parties' Estimates of Salmon Interceptions.* January 1991.

C. REPORTS OF THE FRASER RIVER PANEL

5. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1990 Fraser River Sockeye Salmon Fishing Season.* PSC Staff. May 1991.

D. 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. Work in progress by the IPSFC at that date continues to be published as annual reports, progress reports, and bulletins of the IPSFC. Publications since December 31, 1985 are.

1. *Annual Report of the International Pacific Salmon Fisheries Commission for 1985.* New Westminster, B.C. 1986. This is the final report of this series which was initiated in 1937.

2. Williams I.V. et al. 1989. *Studies of the Lacustrine Biology of the Sockeye Salmon (O. Nerka) in the Shuswap System.* IPSFC Bull. XXIV. New Westminster, B.C.

3. Fretwell, M.R. 1989. *Homing Behavior of Adult Sockeye Salmon in Response to a Hydroelectric Diversion of Homestream Waters at Seton Creek.* IPSFC Bull. XXV. Vancouver, B.C.

4. Gilhousen P. 1989. *Wounds, Scars and Marks on Fraser River Sockeye Salmon with Some Relationships to Predation Losses.* IPSFC Prog. Rept. No. 42. Vancouver, B.C.

5. Gilhousen P. 1990. *Prespawning Mortalities of Sockeye Salmon in the Fraser River System and Possible Causal Factors.* IPSFC Bull. XXVI. Vancouver, B.C.

One other report is currently in progress, as is the History of the IPSFC which will be published in book form. Completion of these two documents, expected within the next year, will end the publication series of the International Pacific Salmon Fisheries Commission.

E. 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 1990/91 were:

1. *Preliminary 1990 Post-Season Report for United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty. United States Section, Pacific Salmon Commission.* November 1990.

2. *1990 Post-Season Report of Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. November 23, 1990.

3. *Preliminary Annual Report on the Salmonid Enhancement Activities of the United States in the Areas of the Pacific Salmon Treaty. United States Section, Pacific Salmon Commission.* January 25, 1991.

4. *1990 Update Report for the Salmonid Enhancement Program in British Columbia.* Canada Department of Fisheries and Oceans. January 28, 1991.

Report of the Auditors for 1990/91

PART VII
AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 1990 TO MARCH 31, 1991

AUDITORS' REPORT TO THE COMMISSIONERS

We have audited the balance sheet of Pacific Salmon Commission as at March 31, 1991 and the statements of revenue and expenditures, fund balances and changes in financial position for the year then ended. These financial statements are the responsibility of the Commission. 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, 1991 and the results of its operations and the changes in its financial position for the year then ended in accordance with the Financial Regulations of the Commission applied on a basis consistent with that of the preceding year.

Peat Marwick Thorne
Chartered Accountants

New Westminster, Canada
June 3, 1991

PACIFIC SALMON COMMISSION

Balance Sheet

March 31, 1991, with comparative figures for 1990

	1991	1990
Assets		
General fund:		
Current assets:		
Cash term term deposits	$ 376,632	$ 482,457
Accounts receivable	42,648	2,097
Interest receivable	7,164	18,374
Prepaid expenses	31,913	39,580
	458,357	542,508
Note receivable (note 2)	130,507	–
	$ 588,864	$ 542,508
Working capital fund:		
Cash and term deposit	$ 94,438	$ 96,483
Fixed asset fund:		
Fixed assets (note 3)	$ 273,972	$ 391,785
International Pacific Salmon Fisheries Commission Fund:		
Term deposits	$ 145,354	$ 155,973

On behalf of the Commission:

_____ Chair, Standing Committee on Finance and Administration

_____ Vice-Chair, Standing Committee on Finance and Administration

	1991	1990
Liabilities and Fund Balances		
General fund:		
Current liabilities:		
Accounts payable and accrued liabilities	$ 159,157	$ 70,386
Fund balance (note 4):		
Reserves	429,707	472,122
	$ 588,864	$ 542,508
Working capital fund:		
Fund balance	$ 94,438	$ 96,483
Fixed asset fund:		
Fund balance	$ 273,972	$ 391,785
International Pacific Salmon Fisheries Commission Fund:		
Fund balance	$ 145,354	$ 155,973

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

General Fund

Statement of Revenue and Expenditures

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
Revenue:		
Contributions from contracting parties	$ 1,450,000	$ 1,430,000
Interest	109,948	123,999
Test fishing	978,562	927,434
	2,538,510	2,481,433
Expenditures:		
Salaries and employee benefits	1,278,230	1,271,219
Travel and transportation	62,163	90,641
Rents and communication	83,558	95,334
Printing and reproductions	18,107	23,283
Contract services	215,772	325,513
Materials and supplies	29,446	47,956
Test fishing	828,915	781,661
Loss (gain) on disposal of fixed assets	23,456	(2,413)
	2,539,647	2,633,194
Excess (deficiency) of revenue over expenditures	(1,137)	(151,761)
	$ 2,538,510	$ 2,481,433

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Working Capital Fund

Statement of Revenue and Expenditures

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
Revenue:		
Interest	$ 10,805	$ 10,762
Expenditures:		
Meeting expenses	12,850	–
Program costs	–	14,279
Excess (deficiency) of revenue over expenditures	$ (2,045)	$ (3,517)

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

International Pacific Salmon Fisheries Commission Fund

Statement of Revenue and Expenditures

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
Revenue:		
Interest earned on term deposit	$ 18,004	$ 19,986
Expenditure:		
Publications	28,623	58,960
Excess of expenditures over revenue	$ (10,619)	$ 38,974

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Fund Balances

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
General fund:		
Fund balance, beginning of year	$ 472,122	$ 670,629
Transfer (to) from funds:		
Fixed asset fund	(41,278)	(46,746)
Excess (deficiency) of revenue over expenditures	(1,137)	(151,761)
Fund balance, end of year	$ 429,707	$ 472,122
Working capital fund:		
Fund balance, beginning of year	$ 96,483	$ 100,000
Excess (deficiency) of revenue over expenditures	(2,045)	(3,517)
Fund balance, end of year	$ 94,438	$ 96,483
Fixed asset fund:		
Fund balance, beginning of year	$ 391,785	$ 556,488
Transfer from General Fund	41,278	46,746
Depreciation	(159,091)	(211,449)
Fund balance, end of year	$ 273,972	$ 391,785
International Pacific Salmon Fisheries Commission Fund:		
Fund balance, beginning of year	$ 155,973	$ 194,947
Excess of expenditures over revenue	(10,619)	38,974
Fund balance, end of year	$ 145,354	$ 155,973

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Changes in Financial Position

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
General fund:		
Operating activities:		
Excess (deficiency) of revenue over expenditures	$ (1,137)	$ (151,761)
Add (deduct):		
Net changes in non-cash working capital balances relating to operations	67,097	(20,827)
Cash used by operations	65,960	(172,588)
Financing activity:		
Transfer to fixed asset fund	(41,278)	(46,746)
Investing activities:		
Increase in note receivable	(130,507)	–
Cash used in investing activities	(130,507)	–
Decrease in cash during the year	(105,825)	(219,334)
Cash and term deposits, beginning of year	482,457	701,791
Cash and term deposits, end of year	$ 376,632	$ 482,457
Working capital fund:		
Financing activity:		
Excess (deficiency) of revenue over expenditures	$ (2,045)	$ (3,517)
Cash used in financing activities	(2,045)	(3,517)
Cash and term deposits, beginning of year	96,483	100,000
Cash and term deposits, end of year	$ 94,438	$ 96,483
Fixed asset fund:		
Operating activity:		
Item not affecting working capital:		
Loss (gain) on sale of fixed asset	$ 23,456	$ (2,413)
Cash used for operations	23,456	(2,413)
Investing activities:		
Additions to fixed assets	(67,334)	(47,800)
Proceeds on sale of fixed assets	2,600	3,467
Cash used for investing activities	(64,734)	(44,333)
Financing activity:		
Transfer from general fund	41,278	46,746
Increase in cash during the year	–	–
Cash, beginning of year	–	–
Cash, end of year	$ –	$ –

See accompanying notes to financial statements.

PACIFIC SALMON COMMISSION

Statement of Changes in Financial Position

Year ended March 31, 1991, with comparative figures for 1990

	1991	1990
International Pacific Salmon Fisheries Commission Fund:		
Operating activities:		
Excess of expenditures over revenue	$ (10,619)	$ (38,974)
Decrease in cash during the year	10,619	38,974
Cash and term deposits, beginning of year	155,973	194,947
Cash and term deposits, end of year	$ 145,354	$ 155,973

See accompanying notes to financial statements.

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.

Effective January 1, 1987 and pursuant to a decision of the International Pacific Salmon Fisheries Commission, balances of funds belonging to that Commission and commitments against those funds were transferred to the Pacific Salmon Commission for administrative purposes.

1. Significant accounting policies:

(a) Fund accounting:

The General Fund represents funds provided annually through contributions from the Contracting Parties. Any unappropriated balance remaining at the end of one fiscal year is used to offset the contributions by the Parties in the following year.

The Fixed Assets Fund represents the cumulative results of fixed asset transactions. Depreciation is charged to the Fixed Assets 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 the fixed limit in the account at the end of the fiscal year is transferred to the General fund and is treated as income.

(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) Fixed assets:

Fixed 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 . Depreciation 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 depreciation used on a annual basis are:

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

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.

2. **Note receivable:**

During the year a purchaser of part of the Commission's test fishing was placed into receivership. The Commission has taken legal action to secure its position by way of a mortgage claim on assets of one of the guarantors.

3. **Fixed assets:**

			1991	1990
	Cost	Accumulated depreciation and amortization	Net book value	Net book value
Automobiles	$ 70,419	$ 61,314	$ 9,105	$ 23,183
Boats	97,744	78,018	19,726	31,882
Computer equipment	388,132	353,925	34,207	46,604
Equipment	293,259	233,530	59,729	104,866
Films	1,800	1,800	–	–
Furniture and fixtures	226,955	89,415	137,539	159,685
Computer software	58,022	56,077	1,946	11,892
Leasehold improvements	19,532	7,812	11,720	13,673
	$ 1,155,863	$ 881,891	$ 273,972	$ 391,785

4. **Reserves:**

Reserves for contractual commitments:

Contractual commitments are recognized in the accounts only to the extent that the service or goods have been delivered. Until the service or goods are delivered the obligation is recorded as a reserve against the General Fund balance.

4. **Reserves:** (continued)

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

		1991	1990
(a)	Continuing operations	$ 397,794	$ 432,542
(b)	Reserve for prepaid expenses	31,913	39,580
		$ 429,707	$ 472,122

5. **Pension plan:**

The Commission maintains a defined benefit pension plan for its employees. Actuarial valuations of this pension plan are carried out periodically 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, October 31, 1989, the present value of accrued benefits is $2,000,544 and the market value of related assets available to provide these benefits is $2,039,711.

6. **Comparative figures:**

Certain of the 1990 comparative figures have been reclassified to conform with the financial presentation adopted for the current year.

Appendices

Appendix A

The Canadian and The United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues

Redraft
October 18, 1990

Recognizing the desire of Canada and the United States to develop a mutually acceptable approach to identify and resolve equity issues in a timely manner, consistent with the Treaty and Treaty Understandings, the Parties agree that the ad hoc Joint Interceptions Committee (JIC) and Joint Objectives and Goals Committee (JOGC), established by the Commission in February 1989, should complete their assigned tasks and further agree to conduct Commission level discussions on benefits and deeming.

Specifically, the Parties agree:

1. To assign to JIC the tasks defined by the Research and Statistics Committee in its recommendation to the Commission (letter to Don Collinsworth dated February 6, 1990) to produce a revised interception report (JIC 89-1) by December 1990.

2. To make every effort to resolve differences in interception estimates using the best available scientific information. In the event they are not successful, either Party may refer outstanding differences in the interception estimates to technical dispute settlement, in accordance with Article XII.

3. To resolve the differences regarding the issue of deeming for transboundary river stocks during the November 1990/February 1991 meeting cycle.

4. To task JOGC with completing its documentation of short and long-term management plans. Documentation is to be provided as envisioned in the August 31, 1989 statement of the JOGC. The Parties should make their best efforts to adhere to the following activities and time schedule:

   (a) May 1990 - JOGC to exchange initial drafts of chapters for Northern Puget Sound and Fraser River sockeye. Chapters for Southeast Alaska and the Skeena-Nass production areas have already been exchanged.

   (b) June 25, 1990 - JOGC meeting for evaluation of exchanged chapters and development of recommendations on content and presentation to guide development of further chapters. Exchanged chapters are to be modified to ensure conformity in style and content.

   (c) January 10, 1991 - JOGC to exchange draft chapters for remainder of Fraser River, Strait of Juan de Fuca, Southern Puget Sound, Washington Coast, Upper and Lower Columbia River, West Coast of Vancouver Island and Georgia and Johnstone Straits.

(d) January 1991 - Bilateral discussion by the JOGC, appropriate Panel chairs and technical committee members, and others as necessary to identify incompatible short and long-term management objectives and production plans for chapters identified in 4A and 4C and circulate same to the Commission. The Commission should provide these to the Panels for their bilateral review and discussion.

(e) January-February 1991 - Bilateral JOGC/Panel discussions of opportunities for cooperative problem solving. This activity could be handled by separate or joint meetings of Panels.

(f) February 1991 - Commission review of chapters and problem statements and provision of direction to JOGC and/or Panels on continued development of this process. JOGC to identify and reach agreement on a workplan to ensure completion and exchange of outstanding chapters and problem statements by September 1991.

5. To conduct bilateral Panel deliberations in November 1991 through January 1992 on JOGC problem statements and opportunities for cooperative problem solving in an attempt to reach consensus on specific measures to be undertaken by the Parties to improve the stocks and fisheries to benefit the Parties.

6. In February 1992 to have the Commission review all JOGC chapters, and problem statements and Panel recommendations with a view to preparing plans that will improve the stocks and fisheries examined in this process.

7. To hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions.

8. To exchange views on factors affecting each Party's perceptions of benefits in relation to salmon production and interceptions. Canada will present its view early in the November 1991 meeting, followed by a presentation by the U.S. later in that meeting.

9. Completion of the foregoing is intended to provide the Commission with the information needed to address whether one country is deriving substantially greater benefits than those provided from its rivers, and, if so, how that imbalance should be addressed. The Commission will at that time initiate a process to deal with these questions, consistent with paragraph A of the Memorandum of Understanding of the Pacific Salmon Treaty (1985).

Appendix B

Understanding Between The Canadian and The United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues

Revised JOGC
February 6, 1991
at 10:10 a.m.

Recognizing the desire of Canada and the United States to develop a mutually acceptable approach to identify and resolve equity issues in a timely manner, consistent with the Treaty and Treaty Understandings, the Parties agree that the ad hoc Joint Interceptions Committee (JIC) and Joint Objectives and Goals Committee (JOGC), established by the Commission in February 1989, should complete their assigned tasks and further agree to conduct Commission level discussions on benefits and deeming.

Specifically, the Parties agree:

1. To assign to JIC the tasks defined by the Research and Statistics Committee in its recommendation to the Commission (letter to Don Collinsworth dated February 6, 1990) to produce a revised interception report (JIC 89-1) by December 1990.

2. To make every effort to resolve differences in interception estimates using the best available scientific information. In the event they are not successful, either Party may refer outstanding differences in the interception estimates to technical dispute settlement, in accordance with Article XII.

3. To resolve the differences regarding the issue of deeming for transboundary river stocks during the November 1990/February 1991 meeting cycle.

4. To task JOGC with completing its documentation of short and long-term management plans. Documentation is to be provided as envisioned in the August 31, 1989 statement of the JOGC. The Parties should make their best efforts to adhere to the following activities and time schedule:

   (a) May 1990 - JOGC to exchange initial drafts of chapters for Northern Puget Sound and Fraser River sockeye. Chapters for Southeast Alaska and the Skeena-Nass production areas have already been exchanged.

   (b) June 25, 1990 - JOGC meeting for evaluation of exchanged chapters and development of recommendations on content and presentation to guide development of further chapters. Exchanged chapters are to be modified to ensure conformity in style and content.

   (c) February 1991 - JOGC to exchange draft chapters for remainder of Fraser River, Strait of Juan de Fuca, Southern Puget Sound, Washington Coast, Upper and Lower Columbia River, West Coast of

Vancouver Island and Georgia and Johnstone Straits. JOGC to exchange all chapters in completed form by the end of May 1991.

(d) Mid-June 1991 - Bilateral discussion by the JOGC to identify incompatible short and long-term management objectives and production plans and develop problem statements for all chapters. At the conclusion of this meeting JOGC will meet with Panel Chairs to explore opportunities for cooperative problem solving.

(e) October 1991 - Commission review of chapters and problem statements and provision of direction to JOGC and/or Panels on continued development of this process. The Commission should provide these to the Panels for their bilateral review and discussion.

5. To conduct bilateral Panel deliberations in November 1991 through January 1992 on JOGC problem statements and opportunities for cooperative problem solving in an attempt to reach consensus on specific measures to be undertaken by the Parties to improve the stocks and fisheries to benefit the Parties.

6. In February 1992 to have the Commission review all JOGC chapters, and problem statements and Panel recommendations with a view to preparing plans that will improve the stocks and fisheries examined in this process.

7. To hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions.

8. To exchange views on factors affecting each Party's perceptions of benefits in relation to salmon production and interceptions. Canada will present its view early in the November 1991 meeting, followed by a presentation by the U.S. later in that meeting.

9. Completion of the foregoing is intended to provide the Commission with the information needed to address whether one country is deriving substantially greater benefits than those provided from its rivers, and, if so, how that imbalance should be addressed. The Commission will at that time initiate a process to deal with these questions, consistent with paragraph A of the Memorandum of Understanding of the Pacific Salmon Treaty (1985).

Appendix C

Approved Budget FY 1991/92 and Preliminary Forecast for FY 1992/93

APPROVED BUDGET FY 1991/92
AND PRELIMINARY FORECAST FOR FY 1992/93

		1991/92	1992/93
1.	INCOME		
	A. Contributions		
	(i) Canada	$ 825,000	$ 825,000
	(ii) U.S.	825,000	825,000
	TOTAL	$1,650,000	$1,650,000
	B. Carry-over from FY-1	$ 155,000	$ 75,000
	C. Special Reserve	90,000	0
	D. Interest	30,000	20,000
	E. Sale of Assets	25,000	0
	F. Total Income	$1,950,000	$1,745,000
2.	EXPENDITURES		
	A. Forecast	$2,100,000	$2,057,000
	B. Program Reduction*	(150,000)	(67,000)
	C. Approved**	1,950,000	1,990,000
3.	BALANCE (Deficit)	$ 0	($ 245,000)
4.	TEST FISHING PROGRAM		
	Net Revenue Forecast	$ 75,000	

* Programs reductions to meet targets in 1991/92

1. Area 20/unreported catch	$28,200
2. Alaska pinks	30,000
3. Alaska/North B.C. sockeye	32,000
4. Vehicle replacement	12,000
5. Admin. support	47,800
	$150,000

** 1991/92 only

NOTES:

1. Administrative support cost reduction in FY 1991/92 includes Chilko trip staff costs, and reduction in staff costs through transferring meetings from the U.S. to Vancouver for this cycle only.

2. Sockeye sampling costs in S.E. Alaska and Northern B.C. will be dropped by the Secretariat but will be carried out by the Parties, with samples taken as specified by the Secretariat and analyzed by Secretariat scientific staff.

3. Program reductions identified for FY 1992/93 reflect elimination of the Area 20/unreported catch and S.E. Alaska/Northern B.C. sockeye sampling programs.

Appendix D

Recommendations of the Commission to the Parties for Amendments to Annex IV and other understandings to give effect to the agreed fishery regimes for 1991 and 1992

PACIFIC SALMON COMMISSION

The Honorable James A. Baker, III
Secretary of State
U.S. Department of State
2201 C Street N.W.
Washington, D.C. 20520

The Honourable Barbara MacDougall, P.C., M.P.
Secretary of State for External Affairs
Ottawa, Ontario
K1A 0G2

The Honorable Robert A. Mosbacher
Secretary of Commerce
U.S. Department of Commerce
14th Street N.W.
Washington, D.C. 20230

The Honourable John C. Crosbie, P.C., M.P.
Minister of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

Dear Sir:

I have the honour to report to you on understandings that have been reached by the Pacific Salmon Commission and to recommend changes in Annex IV of the Pacific Salmon Treaty.

In accordance with Article XIII, Paragraph 2 of the Treaty, the Commission recommends that Chapters 3, 5, and 6 of Annex IV be amended. The entire text of Annex IV as proposed by the Commission is attached. Pursuant to Article XIII, Paragraph 3 of the Treaty, amendments to the Annex may be implemented through an exchange of notes between the Governments. The Commission recommends that an exchange of notes occur implementing these proposals as soon as possible. The Commission expects that the relevant management agencies will manage fisheries under their responsibility consistent with these agreements.

The amended chapters are of two years duration, consistent with the intent of the Commission to provide the time necessary to develop longer-term approaches to addressing the needs of the Parties.

The Commission has also reached the following understandings as to the implementation of the Pacific Salmon Treaty:

1.) With respect to Annex IV, Chapter 3, the Commission agrees that:

a) in 1991 and 1992, the Southeast Alaska all gear catch shall consist of the base ceiling, with a ceiling adjustment for 1991 only, as specified in Annex IV, Chapter 3, plus a catch of new Alaska hatchery add-on chinook to be calculated in-season using the procedures approved by the Commission for the 1990 add-on and as described in Alaska's February 4, 1991 report to

the Commission; the preseason expectation of the 1991 hatchery add-on is 57,800 chinook salmon;

the U.S. agrees to continue tagging and catch sampling rates which provide precision of hatchery contribution estimates similar to that of recent years and provide a report to the Commission in November 1992 describing the results of the 1991 and 1992 hatchery add-on programs;

the Commission agrees to consider a reduced risk adjustment level for 1992 based upon evaluation and review by the Chinook Technical Committee of the following information to be provided by the United States by November 1991:

i) the computational procedures for estimating the coefficient of variation associated with the add-on;

ii) the effects of hatchery add-on fisheries, if any, on the rebuilding of wild stocks including information on the stock composition of chinook catches in the June fisheries and on the duration of subsequent chinook non-retention periods;

b) with respect to terminal exclusions, the Commission agrees that the CWG with the assistance of the CTC and the findings reported in TCCHINOOK (91)-2, shall recommend standards and criteria to the Commission by January 1993, to govern consideration for future proposals for terminal exclusions. With regard to the exclusion of selected terminal area chinook catches from the Northern and Central B.C. catch ceiling, the Commission agrees to the provisions detailed in Attachment A;

c) with respect to the west coast Vancouver Island troll fishery, and in light of the below average forecast of chinook abundance in 1991, Canada will manage this fishery in a manner consistent with the spirit and intent of the Treaty and the rebuilding program. Prior to the start of each season, Canada will provide the U.S. with details regarding its plans and intentions for this fishery;

d) with respect to the adjustments in catch ceilings for the 1991 Southeast Alaska and Northern and Central B.C. fisheries, the Parties agree that the overage/underage policy set forth in Chapter 3, paragraph 1(e)(vii) is to be applied to the base ceiling levels of 263,000 chinook;

e) with respect to the Strait of Georgia fisheries, Canada agrees to provide a report to the Commission on the evaluation of the effectiveness of the management measures taken in 1988, 1989 and 1990 to reduce the harvest rates on depressed chinook stocks following completion of the PSARC and domestic review processes; and,

f) the Parties remain committed to evaluating management regimes for chinook that might better address the Parties' long term objectives and are consistent with the fundamental principles established in Article III of the Pacific Salmon Treaty.

To this end, in January 1991, the Parties held a workshop to explore alternative chinook management approaches. There was an overall view among the participants that the Workshop was a good forum for exploring new management ideas and for understanding problems that jurisdictions face implementing management approaches. The participants identified information needs and policy issues that must be resolved before completing development of alternative management approaches. Accordingly, the Commission agreed that the Chinook Work Group, in cooperation with the Chinook Technical Committee, shall:

(i) develop operational definitions for policy issues such as rebuilding, rebuilt, pass through, and stocks of concern which are necessary components of a longer term chinook management approach;

(ii) advise the Commission on processes to ensure active participation by the Panels in the development of options for a long term chinook management approach;

(iii) identify technical tasks that need to be addressed before the management approaches can be fully evaluated, and a timetable for completion of these tasks; and,

(iv) consistent with paragraph 1(b) of Annex IV, Chapter 3, present the Commission with management options to respond to short-term variations in abundance in a manner consistent with the conservation and equity principles of the Treaty.

The Chinook Work Group will provide a progress report to the Commission in November 1991 containing a proposed workplan and a prioritized schedule for completion of these assignments with a view toward completion of the work for consideration by the Commission at the 1993 annual meeting.

2.) With respect to Annex IV, Chapter 4, the Commission agrees to the provisions of Attachment 3: "Establishment of Fraser Sockeye and Pink Salmon Escapement Goals for 1991 and 1992 for the Purposes of Computing the Total Allowable Catch; and Attachment 4: "Fraser Panel Agreement on Sockeye Escapement Add-On Computation";

3.) With respect to Annex IV, Chapter 5, the Commission agrees:

a) For 1991 and 1992, Canada will not conduct a directed coho net fishery in Area 20 and the U.S. may conduct a directed coho fishery in Areas 7 and 7A subject to U.S. domestic management processes;

b) Although the Parties hold differing views on the appropriateness of the directed coho fishery in Areas 7 and 7A, they agree that the enhancement based approach proposed by the U.S. appears to be a positive step forward and agree to explore the merits of this approach to address the Areas 7 and 7A directed coho issue. In doing so, both Parties have agreed to clarify the technical and procedural questions which will form the basis for making an informed decision on the proposed approach.

The parties have also identified the need to jointly develop a time frame and methodology for the purpose of assessing how well the average annual contributions of new specified U.S. production to Canadian fisheries compare to the average interceptions that may occur in directed Areas 7 and 7A coho fisheries.

c) that, with respect to the 1990 directed coho fishery in Areas 7 and 7A:

i) to jointly estimate the level of interceptions that occurred in the 1990 Areas 7 and 7A directed coho fishery (recognizing that the estimates generated for this purpose may not necessarily reflect improved stock composition estimates that will eventually be available to the Parties when currently on-going joint technical studies are completed);

ii) to establish a base period and level of production from which the new increased production could be measured and clarify which Canadian fisheries

would receive benefits from the new specified U.S. production. (It is recognized the Parties have differing opinions on whether it is appropriate to apply actions taken prior to 1991);

iii) that the U.S. will not harvest the cumulative Areas 7 and 7A chum salmon shortfall through 1990 (as provided in Annex IV, Chapter 6, Paragraph 5); and

iv) that if the above steps are determined not to adequately address compensating measures for the 1990 Areas 7 and 7A directed coho fishery, the Parties will consider and agree to appropriate additional compensating measures by no later than the February 1992 annual meeting of the Pacific Salmon Commission;

d) to complete discussions on compensating measures for the 1990 Area 7/7A fishery and assess the merits of the long term enhancement based approach. Results of these discussions will be provided to the Commission in February 1992;

e) to initiate discussions on coho within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties; and,

f) to adjust the date of the workshop on southern coho issues to January 1992 and to report the findings to the Commission during the January 1992 meetings of the Commission.

4.) With respect to Annex IV, Chapter 6, the Commission agrees to initiate discussions on chum within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties.

5.) With respect to implementation of Article III, Paragraph 1 of the Pacific Salmon Treaty, the Commission agrees that:

> The Parties are committed to developing a mutually acceptable approach to identify and resolve equity issues in a timely manner. In the "Understanding Between the Canadian and United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues", Item 7 identifies that the Parties will "hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions." To coordinate this workshop, the Commission has established a Steering Group which will meet in June 1991 to develop a schedule, agenda, attendance requirements, and format for the workshop. Workshop discussions will be structured around selected topics and papers identified in advance by the Parties. At the conclusion of the workshop, the Steering Group, supported by Commission staff, will compile the papers, work products, discussion comments, and a summary of the workshop and provide these to the Commission by October 1991.

The Commission respectfully requests your approval of these recommendations.

Appendix E

Pacific Salmon Commission
Secretariat Staff as of March 31, 1991

EXECUTIVE OFFICE

Ian Todd
Executive Secretary

Greta Grant
Secretary

Glenna Westwood
Librarian/Records Administrator

Vicki Beck
Secretary, Meeting Planner

Elizabeth Green
Receptionist

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

Keith Forrest
Project Biologist, Racial Database

Valerie Craig
Project Biologist, Test-Fishing

Steve Cox-Rogers
Project Biologist, Sockeye

Peter Cheng
Project Biologist, Acoustics

Bruce White
Project Biologist, Pinks

Ian Guthrie
Head, Biometrics/Computer Services

Carol Arffman
Scale Analyst

Kathy Mulholland
Computer Programmer/Analyst/Operator

Jullie Parkin
Assistant Scale Analyst

Doug Stelter
Statistician

Holly Derham
Assistant Scale Analyst

Appendix F

Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of March 31, 1991

U.S.A.	CANADA

1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

G.R. McMinds (Vice-Chair)	P.S. Chamut (Chair)
S. Stanley	C.C. Graham
C.K. Walters	H. James
R. Allen	D. Delcorde
J. Heffernan	

Editorial Board

N.J. Sands	C.C. Graham
J.R. Donaldson	

Staff - I. Todd (ex. officio)

2. STANDING COMMITTEE ON RESEARCH AND STATISTICS

J.R. Donaldson (Chair)	S. Paine
G.R. McMinds	B. Riddell
D. Bevan	D. Peacock
J.B. Scott	M. Hamer
J.C. Olsen	W. Saito
G.S. Morishima	R. Harrison
G.R. Graves	R. Kadowaki
M. Grayum	D. Anderson
N.J. Sands	
B. Van Alen	

Research and Statistics Working Group

N.J. Sands	A.W. Argue
L. Rutter	S. Steele
P. Mundy	
T. Cooney	
R. Lincoln	
C.K. Walters	
J. Van Meter	

Staff: I. Todd (ex. officio)

Ad Hoc Joint Interceptions Committee

G. Morishima (Co-Chair)
M. Fraidenburg
N.J. Sands
J.R. Donaldson (Commissioner)
A.W. Argue (Co-Chair)
R. Kadowaki
B. Snyder
S. Paine (Commissioner)

Ad Hoc Joint Objectives and Goals Committee

T. Cooney (Co-Chair)
N. Cohen
L. Rutter
J.R. Donaldson (Commissioner)
A.F. Lill (Co-Chair)
C.C. Graham
C.N. MacKinnon
S. Paine (Commissioner)

3. FRASER RIVER PANEL

Ms. L. Loomis (Chair)
D.A. Austin
R.A. Schmitten
R.P. Zuanich
W.R. Allen
T.E. Kruse
L. Phinney
R. Suggs
F.J. Fraser (Vice-Chair)
E. Crey
M. Forrest
J. Hill
R. Kendall
L. Wick
V. Fiamengo
M. Griswold
K. McGivney
M. Medenwaldt
R. Nugent
P. Quaw

4. SOUTHERN PANEL

T.D. Cooney (Chair)
R.W. Whitener, Jr.
B. Bohn
K. Brigham
W.L. Robinson
R. Haindel
M. Barker
J.R. Van Meter
D.B. Sones
M. Cedergreen
J. Nicholas
T.R. Williams
P. Sprout (Vice-Chair)
T. Davis
R. Fowler
E. Larson
S. Steele
R. Duncan
G. Tribe
W. Peterson
W. Greene
J. Legate
R. Alexander
J. Reid

5. NORTHERN PANEL

N.A. Cohen (Chair)
D. Bedford
A. Enge
J. Green
N. Lemmen (Chair)
M. Forand
N. James
W. Kristmanson

D.C. Jones
S. Pennoyer
D.C. Cantillon
J. Brooks
D. Kelley
J. Peckham
J. Shelton
J. Winther
A. Ronneseth
M. Wade
E. Derrick
R. Haugen
R. Kendel
J. Lemers
G. Miltenberger
R. Wilson

6. JOINT CHINOOK TECHNICAL COMMITTEE

J.B. Scott (Co-Chair)
D. Bevan
P. Patillo
G.R. Freitag
D. Pitman
K.A. Henry
S.E. Ignell
N.J. Sands
R.H. Williams
G.S. Morishima
T.W. Roth
S. Moore
P.J. Hassemer
D. Gaudet
J. Carlile
J.M. Berkson
B. Riddell (Co-Chair)
P. Starr
B. Snyder
P. Ryall
K. Petri
N. Schubert
L. Lapi

Joint Chinook Working Group

S. Pennoyer
R. Whitener
T.D. Cooney
J. Martin
D.G. Bedford
A.W. Argue
B. Riddell
R. Fowler
T. Davis
J. Malcolm

7. JOINT COHO TECHNICAL COMMITTEE

G.S. Morishima (Co-Chair)
J. Scott
R.A. Hayman
K.A. Henry
B. Williams
R.H. Williams
R. Wunderlich
J. Banyard
R. Kadowaki (Co-Chair)
K. Pitre
N. Schubert
T. Pendray
L. Lapi
K. Wilson
P. Ryall

Northern Coho

A.M. Anderson
R. Carlson
S.H. Hoffman
L.D. Shaul
D. Gaudet
A. Didier

8. JOINT CHUM TECHNICAL COMMITTEE

G.R. Graves (Co-Chair)
R. Hatch
K.A. Henry
N. Lampsakis
W. Tweit
R. Boomer

D. Anderson (Co-Chair)
A. Gould
T. Beacham
M. Joyce
W. Leudke
L. Hop Wo

9. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

B. Van Alen (Co-Chair)
N.J. Sands
J.H. Helle
P.S. Doherty
G.T. Oliver
J. Blick
J.J. Pella
D.B. Romey
A. Didier

D. Peacock (Co-Chair)
L. Jantz
M. Henderson
B. Snyder

10. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

N.J. Sands (Co-Chair)
J.H. Eiler
W.R. Bergmann
A.J. McGregor
K.A. Jensen
J.C. Olsen
K. Pahlke
B. Lynch

R. Harrison (Co-Chair)
S. Johnston
C. Wood
P. Milligan
P. Etherton

Enhancement Sub-Committee

B. Sele (Co-Chair)
R. Burkett
J. Koenings
K. Leon

B. Morley (Co-Chair)
P. Milligan
C.J. West

11. JOINT TECHNICAL COMMITTEE ON DATA SHARING

N.J. Sands (Co-Chair)
K.A. Henry
K. Johnson
G.S. Morishima
M. Matylewich
D. Bevan
J. Pavel
M. Hamer
J.H. Bjerring
M. Birch
M. Holmes

Working Group on Mark-Recovery Statistics

R. Hilborn
J.E. Clark
K. Henry
R. Comstock
R. Conrad
P. Lawson
J. Skalski
J. Schnute
C. Cross
R. Kronlund
T. Mulligan

Working Group on Data Standards

K. Johnson
B. Johnson
C. Corrarino
D. O'Connor
R. Olson
L. Lapi
M. Hamer

Catch Data Exchange Working Group

J. Pavel (Co-Chair)
S. Johnson
S. Markey
G. Lukas
W. Daspit
J.H. Bjerring (Co-Chair)
L. Bijsterveld
V. Palermo
B. Kuhn
M. Holmes

12. FRASER RIVER PANEL TECHNICAL COMMITTEE

M. Grayum (Co-Chair)
B. Tweit
B. Vreeland
W. Saito (Co-Chair)
A. Gould
A. MacDonald

13. NATIONAL CORRESPONDENTS

C.K. Walters
C.C.Graham
H. James
D. Kowal

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: 70602

Your File:

January 27, 1992

MEMORANDUM

TO: All recipients of PSC 1990/91 Annual Report

FROM: I. Todd, Executive Secretary

RE: Omission from the Pacific Salmon Commission 1990/91 Sixth Annual Report

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Enclosed for your records is a complete copy of "Appendix D. Recommendation of the Commission to the Parties for amendments to Annex IV and other understandings to give effect to the agreed fishery regimes for 1991 and 1992.

The attachments to the letter of transmittal, including the amended Annex IV were inadvertently not included in the recently distributed Sixth Annual Report. Please accept my apologies for any inconvenience this omission may have caused.

I. Todd
Executive Secretary

Appendix D

Recommendations of the Commission to the Parties for Amendments to Annex IV and other understandings to give effect to the agreed fishery regimes for 1991 and 1992

PACIFIC SALMON COMMISSION

The Honorable James A. Baker, III
Secretary of State
U.S. Department of State
2201 C Street N.W.
Washington, D.C. 20520

The Honourable Barbara MacDougall, P.C., M.P.
Secretary of State for External Affairs
Ottawa, Ontario
K1A 0G2

The Honorable Robert A. Mosbacher
Secretary of Commerce
U.S. Department of Commerce
14th Street N.W.
Washington, D.C. 20230

The Honourable John C. Crosbie, P.C., M.P.
Minister of Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

Dear Sir:

I have the honour to report to you on understandings that have been reached by the Pacific Salmon Commission and to recommend changes in Annex IV of the Pacific Salmon Treaty.

In accordance with Article XIII, Paragraph 2 of the Treaty, the Commission recommends that Chapters 3, 5, and 6 of Annex IV be amended. The entire text of Annex IV as proposed by the Commission is attached. Pursuant to Article XIII, Paragraph 3 of the Treaty, amendments to the Annex may be implemented through an exchange of notes between the Governments. The Commission recommends that an exchange of notes occur implementing these proposals as soon as possible. The Commission expects that the relevant management agencies will manage fisheries under their responsibility consistent with these agreements.

The amended chapters are of two years duration, consistent with the intent of the Commission to provide the time necessary to develop longer-term approaches to addressing the needs of the Parties.

The Commission has also reached the following understandings as to the implementation of the Pacific Salmon Treaty:

1.) With respect to Annex IV, Chapter 3, the Commission agrees that:

a) in 1991 and 1992, the Southeast Alaska all gear catch shall consist of the base ceiling, with a ceiling adjustment for 1991 only, as specified in Annex IV, Chapter 3, plus a catch of new Alaska hatchery add-on chinook to be calculated in-season using the procedures approved by the Commission for the 1990 add-on and as described in Alaska's February 4, 1991 report to

the Commission; the preseason expectation of the 1991 hatchery add-on is 57,800 chinook salmon;

the U.S. agrees to continue tagging and catch sampling rates which provide precision of hatchery contribution estimates similar to that of recent years and provide a report to the Commission in November 1992 describing the results of the 1991 and 1992 hatchery add-on programs;

the Commission agrees to consider a reduced risk adjustment level for 1992 based upon evaluation and review by the Chinook Technical Committee of the following information to be provided by the United States by November 1991:

i) the computational procedures for estimating the coefficient of variation associated with the add-on;

ii) the effects of hatchery add-on fisheries, if any, on the rebuilding of wild stocks including information on the stock composition of chinook catches in the June fisheries and on the duration of subsequent chinook non-retention periods;

b) with respect to terminal exclusions, the Commission agrees that the CWG with the assistance of the CTC and the findings reported in TCCHINOOK (91)-2, shall recommend standards and criteria to the Commission by January 1993, to govern consideration for future proposals for terminal exclusions. With regard to the exclusion of selected terminal area chinook catches from the Northern and Central B.C. catch ceiling, the Commission agrees to the provisions detailed in Attachment A;

c) with respect to the west coast Vancouver Island troll fishery, and in light of the below average forecast of chinook abundance in 1991, Canada will manage this fishery in a manner consistent with the spirit and intent of the Treaty and the rebuilding program. Prior to the start of each season, Canada will provide the U.S. with details regarding its plans and intentions for this fishery;

d) with respect to the adjustments in catch ceilings for the 1991 Southeast Alaska and Northern and Central B.C. fisheries, the Parties agree that the overage/underage policy set forth in Chapter 3, paragraph 1(e)(vii) is to be applied to the base ceiling levels of 263,000 chinook;

e) with respect to the Strait of Georgia fisheries, Canada agrees to provide a report to the Commission on the evaluation of the effectiveness of the management measures taken in 1988, 1989 and 1990 to reduce the harvest rates on depressed chinook stocks following completion of the PSARC and domestic review processes; and,

f) the Parties remain committed to evaluating management regimes for chinook that might better address the Parties' long term objectives and are consistent with the fundamental principles established in Article III of the Pacific Salmon Treaty.

To this end, in January 1991, the Parties held a workshop to explore alternative chinook management approaches. There was an overall view among the participants that the Workshop was a good forum for exploring new management ideas and for understanding problems that jurisdictions face implementing management approaches. The participants identified information needs and policy issues that must be resolved before completing development of alternative management approaches. Accordingly, the Commission agreed that the Chinook Work Group, in cooperation with the Chinook Technical Committee, shall:

(i) develop operational definitions for policy issues such as rebuilding, rebuilt, pass through, and stocks of concern which are necessary components of a longer term chinook management approach;

(ii) advise the Commission on processes to ensure active participation by the Panels in the development of options for a long term chinook management approach;

(iii) identify technical tasks that need to be addressed before the management approaches can be fully evaluated, and a timetable for completion of these tasks; and,

(iv) consistent with paragraph 1(b) of Annex IV, Chapter 3, present the Commission with management options to respond to short-term variations in abundance in a manner consistent with the conservation and equity principles of the Treaty.

The Chinook Work Group will provide a progress report to the Commission in November 1991 containing a proposed workplan and a prioritized schedule for completion of these assignments with a view toward completion of the work for consideration by the Commission at the 1993 annual meeting.

2.) With respect to Annex IV, Chapter 4, the Commission agrees to the provisions of Attachment 3: "Establishment of Fraser Sockeye and Pink Salmon Escapement Goals for 1991 and 1992 for the Purposes of Computing the Total Allowable Catch; and Attachment 4: "Fraser Panel Agreement on Sockeye Escapement Add-On Computation";

3.) With respect to Annex IV, Chapter 5, the Commission agrees:

a) For 1991 and 1992, Canada will not conduct a directed coho net fishery in Area 20 and the U.S. may conduct a directed coho fishery in Areas 7 and 7A subject to U.S. domestic management processes;

b) Although the Parties hold differing views on the appropriateness of the directed coho fishery in Areas 7 and 7A, they agree that the enhancement based approach proposed by the U.S. appears to be a positive step forward and agree to explore the merits of this approach to address the Areas 7 and 7A directed coho issue. In doing so, both Parties have agreed to clarify the technical and procedural questions which will form the basis for making an informed decision on the proposed approach.

The parties have also identified the need to jointly develop a time frame and methodology for the purpose of assessing how well the average annual contributions of new specified U.S. production to Canadian fisheries compare to the average interceptions that may occur in directed Areas 7 and 7A coho fisheries.

c) that, with respect to the 1990 directed coho fishery in Areas 7 and 7A:

i) to jointly estimate the level of interceptions that occurred in the 1990 Areas 7 and 7A directed coho fishery (recognizing that the estimates generated for this purpose may not necessarily reflect improved stock composition estimates that will eventually be available to the Parties when currently on-going joint technical studies are completed);

ii) to establish a base period and level of production from which the new increased production could be measured and clarify which Canadian fisheries

would receive benefits from the new specified U.S. production. (It is recognized the Parties have differing opinions on whether it is appropriate to apply actions taken prior to 1991);

iii) that the U.S. will not harvest the cumulative Areas 7 and 7A chum salmon shortfall through 1990 (as provided in Annex IV, Chapter 6, Paragraph 5); and

iv) that if the above steps are determined not to adequately address compensating measures for the 1990 Areas 7 and 7A directed coho fishery, the Parties will consider and agree to appropriate additional compensating measures by no later than the February 1992 annual meeting of the Pacific Salmon Commission;

d) to complete discussions on compensating measures for the 1990 Area 7/7A fishery and assess the merits of the long term enhancement based approach. Results of these discussions will be provided to the Commission in February 1992;

e) to initiate discussions on coho within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties; and,

f) to adjust the date of the workshop on southern coho issues to January 1992 and to report the findings to the Commission during the January 1992 meetings of the Commission.

4.) With respect to Annex IV, Chapter 6, the Commission agrees to initiate discussions on chum within the Southern Panel area with a view toward clarifying and improving understanding of the conservation concerns and the management approaches of the Parties.

5.) With respect to implementation of Article III, Paragraph 1 of the Pacific Salmon Treaty, the Commission agrees that:

The Parties are committed to developing a mutually acceptable approach to identify and resolve equity issues in a timely manner. In the "Understanding Between the Canadian and United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues", Item 7 identifies that the Parties will "hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions." To coordinate this workshop, the Commission has established a Steering Group which will meet in June 1991 to develop a schedule, agenda, attendance requirements, and format for the workshop. Workshop discussions will be structured around selected topics and papers identified in advance by the Parties. At the conclusion of the workshop, the Steering Group, supported by Commission staff, will compile the papers, work products, discussion comments, and a summary of the workshop and provide these to the Commission by October 1991.

The Commission respectfully requests your approval of these recommendations.

ATTACHMENT 1

Revised Annex IV
to the Pacific Salmon Treaty
in effect for 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 fishermen with a view to permitting additional salmon to return to Canadian waters;

(ii) have an impact on natural Transboundary river salmon production.

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2. The Parties shall improve procedures of coordinated or cooperative 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.

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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 gill net 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;

pg 11B

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 gill net 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 inriver allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift gill net 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 gill net 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 gill net 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:

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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 inriver allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift gill net 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.

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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 cooperative 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 fishermen 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.

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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.

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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.

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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.

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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 coordinated 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

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(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

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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;

RR HB

(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;

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(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) cooperatively 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.

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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:

	Sockeye	Pink
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:

	Sockeye	Pink
1985	1.78 million	3.6 million
1986	3.0 million	
1987	1.06 million	3.6 million
1988	1.16 million	

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(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;

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(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.

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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 coordinate 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 3 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,

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(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;

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(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 endeavor to limit incidental coho catches in fisheries targeting on other species.

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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;

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(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

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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.

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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.

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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;

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(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).

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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.

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Attachment 2

Exclusion of Selected Terminal Area Chinook Catches from the Northern and Central British Columbia Chinook Catch Ceiling

1) With respect to the terminal exclusions for 1989 and 1990 in North/Central British Columbia (NCBC), after review of the methodologies by the Chinook Technical Committee (CTC) in accordance with the May 16, 1990 letter of transmittal:

a) Skeena

The Parties agree to exclude from the catch ceiling in NCBC: 4,500 chinook salmon in 1989 and 4,400 chinook salmon in 1990 (base catch of 2,400). Canada will provide the additional biological data from this area for the CTC to review.

b) Bella Coola

The Parties agree to exclude from the catch ceiling in NCBC: 300 chinook salmon in 1989 and 1,100 chinook salmon in 1990 (base catch of 2,800).

c) Kitimat

The Parties agree that for 1989 and 1990, no portion of the catches in this area will be excluded from the catch ceiling.

2) With respect to 1991 and 1992, the following terminal exclusions shall be allowed if the conditions identified in paragraph 3 are satisfied:

a) Skeena

Catches of chinook (>5 lbs) by net fisheries in the River/Gap/Slough exclusion area (described in TCCHINOOK (91)-2) in excess of the base catch level of 2900 will be excluded from the NCBC catch.

b) Bella Coola

Catches of chinook (>5 lbs) in the exclusion area (described in TCCHINOOK (91)-2) in excess of the base catch level of 2950 will be excluded from the NCBC catch.

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c) Kitimat

Catches of chinook (>12.5 lbs) in the exclusion area (described in TCCHINOOK (91)-2) in June and July in excess of the base catch level of 2,400 will be excluded from the NCBC catch.

3) Conditions to be satisfied for acceptance of 1991 and 1992 terminal exclusions are:

a) Canada collects catch, coded-wire-tag, and biological sampling data from the exclusion area and provides preliminary catch and CWT data to the Commission in the January following the fishery and the remainder of the data by June of the year following the fishery;

b) the terminal exclusions satisfy the following general conditions:

i) spawning escapements of stocks targeted in the exclusion area are meeting or exceeding the interim escapement goal;

ii) the harvest in the exclusion area is comprised of mature chinook returning to local stocks while minimizing the harvest of immature and non-local stocks; and

iii) management capabilities accurately account for and sample harvest occurring exclusively in the exclusion area.

4) Non-Acceptance of Terminal Exclusions

Terminal exclusions in the area described in paragraphs 2(a)-2(c) are to be evaluated by the CTC on the basis of time and gear strata proposed by Canada. In the event that catch from a terminal exclusion time/gear stratum is not accepted by the Commission for either year, the total catch in that stratum shall count against the NCBC ceiling for that year.

5) Terminal Exclusion Reserves in Base Catch Ceilings

For accounting purposes, NCBC fisheries other than those identified in paragraphs 2(a)-(c) shall be considered to operate under the NCBC ceiling level minus the base catch levels specified for those terminal exclusion areas.

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(ii) Based on this preliminary forecast, the escapement add-on production benefit shall be 41,000 Early Stuart, 63,000 early-summer, 14,000 mid-summer fish and 18,000 late run fish.

(iii) Canada's escapement add-on production benefit referred to in paragraph 1.C (ii) shall be adjusted in proportion to any in-season and post-season adjustments in the run size set out in paragraph 1.C (i).

(iv) The Parties agree that Canada's escapement add-on production benefit as determined in 1.C (i) - (iii) above shall not be included in the calculations of the Total Allowable Catch from which the U.S. allocations are determined.

2. At appropriate times throughout 1991 and 1992, Canada will provide gross and net spawning escapement requirements by race and management group. Specifically, Canada will provide, on a pre-season basis, escapement requirements, and will provide notification of any in-season adjustments to specific escapement goals.

3. The Parties agree that notwithstanding paragraph 1B and 1C, the Parties recognize that the harvest of increased Fraser sockeye production could have impacts requiring adjustments in harvest patterns in both countries, to be consistent with Article III, Paragraph 3. Canada agrees to take into account such potential impacts in planning and executing its production increases, and to consult with the U.S. on ways to minimize such impacts and to plan adjustments in harvest management, as necessary.

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ATTACHMENT 5

Understanding Between The Canadian and The United States Sections of the Pacific Salmon Commission Concerning Equity Related Issues

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Recognizing the desire of Canada and the United States to develop a mutually acceptable approach to identify and resolve equity issues in a timely manner, consistent with the Treaty and Treaty Understandings, the Parties agree that the ad hoc Joint Interceptions Committee (JIC) and Joint Objectives and Goals Committee (JOGC), established by the Commission in February 1989, should complete their assigned tasks and further agree to conduct Commission level discussions on benefits and deeming.

Specifically, the Parties agree:

1. To assign to JIC the tasks defined by the Research and Statistics Committee in its recommendation to the Commission (letter to Don Collinsworth dated February 6, 1990) to produce a revised interception report (JIC 89-1) by December 1990.

2. To make every effort to resolve differences in interception estimates using the best available scientific information. In the event they are not successful, either Party may refer outstanding differences in the interception estimates to technical dispute settlement, in accordance with Article XII.

3. To resolve the differences regarding the issue of deeming for transboundary river stocks during the November 1990/February 1991 meeting cycle.

4. To task JOGC with completing its documentation of short and long-term management plans. Documentation is to be provided as envisioned in the August 31, 1989 statement of the JOGC. The Parties should make their best efforts to adhere to the following activities and time schedule:

   (a) May 1990 - JOGC to exchange initial drafts of chapters for Northern Puget Sound and Fraser River sockeye. Chapters for Southeast Alaska and the Skeena-Nass production areas have already been exchanged.

   (b) June 25, 1990 - JOGC meeting for evaluation of exchanged chapters and development of recommendations on content and presentation to guide development of further chapters. Exchanged chapters are to be modified to ensure conformity in style and content.

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(c) February 1991 - JOGC to exchange draft chapters for remainder of Fraser River, Strait of Juan de Fuca, Southern Puget Sound, Washington Coast, Upper and Lower Columbia River, West Coast of Vancouver Island and Georgia and Johnstone Straits. JOGC to exchange all chapters in completed form by the end of May 1991.

(d) Mid-June 1991 - Bilateral discussion by the JOGC to identify incompatible short and long-term management objectives and production plans and develop problem statements for all chapters. At the conclusion of this meeting JOGC will meet with Panel Chairs to explore opportunities for cooperative problem solving.

(e) October 1991 - Commission review of chapters and problem statements and provision of direction to JOGC and/or Panels on continued development of this process. The Commission should provide these to the Panels for their bilateral review and discussion.

5. To conduct bilateral Panel deliberations in November 1991 through January 1992 on JOGC problem statements and opportunities for cooperative problem solving in an attempt to reach consensus on specific measures to be undertaken by the Parties to improve the stocks and fisheries to benefit the Parties.

6. In February 1992 to have the Commission review all JOGC chapters, and problem statements and Panel recommendations with a view to preparing plans that will improve the stocks and fisheries examined in this process.

7. To hold a bilateral workshop in September 1991 for the purpose of exchanging alternative technical approaches for determining each Party's benefits in relation to salmon production and interceptions.

8. To exchange views on factors affecting each Party's perceptions of benefits in relation to salmon production and interceptions. Canada will present its view early in the November 1991 meeting, followed by a presentation by the U.S. later in that meeting.

9. Completion of the foregoing is intended to provide the Commission with the information needed to address whether one country is deriving substantially greater benefits than those provided from its rivers, and, if so, how that imbalance should be addressed. The Commission will at that time initiate a process to deal with these questions, consistent with paragraph A of the Memorandum of Understanding of the Pacific Salmon Treaty (1985).

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