# Pacific Salmon Commission


# 1994/95 Tenth 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

## Tenth Annual Report 1994/95

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:

Your File:

June 30, 1995

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 Tenth Annual Report of the Commission.

This report summarizes the activities of the Commission for the fiscal year April 1, 1994 to March 31, 1995.

Negotiations during the 1993/94 cycle, both within the Commission and on a government-to-government basis, were unsuccessful in producing agreement on either fishery regimes or the equity issue. As a result, the 1994 fishing season was conducted in the absence of agreed regimes. This impasse has continued through the 1994/95 meeting period, and at this time agreed fishery regimes are not in place for 1995.

Reports on the results of the 1994 fishing season, meetings of the Standing Committees on Finance and Administration, and Research and Statistics and the activities of the Northern, Southern and Fraser River Panels are presented in summary. Executive summaries of documents 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, 1994 to March 31, 1995, as approved by the Commission, is also included in this report.

Yours truly,

P.S. Chamut
Chair

# PACIFIC SALMON COMMISSION

## OFFICERS for 1994/95

| | |
|---|---|
| Chair | Mr. D.A. Colson (to September 30, 1994)<br>Mr. J. Pipkin (to November 30, 1994)<br>Mr. P.S. Chamut (from November 30, 1994) |
| Vice-Chair | Mr. P.S. Chamut (to November 30, 1994)<br>Mr. G.I. James (from November 30, 1994) |

## COMMISSIONERS

### Canada

Mr. Patrick S. Chamut (Chair)
Mr. Dennis Brown (from November 30, 1994)
Mr. Nelson Keitlah
Mr. Robert Wright
Mr. C.C. (Bud) Graham (from November 30, 1994)
Mr. Hubert Haldane (from November 30, 1994)
Mr. Michael Hunter (from November 30, 1994)
Mr. Bill Valentine
Mr. Joe Gosnell (to November 30, 1994)
Mr. Bruce Buchanan (to November 30, 1994)
Mr. Jack Nichol (to November 30, 1994)

### United States

Mr. G.I. James (Vice-Chair)
Mr. David A. Colson (to November 1, 1994)
Mr. James Pipkin (from November 30, 1994)
Mr. David Benton (from January 15, 1995)
Mr. Robert Turner
Mr. Jev Shelton
Mr. Henry R. Beasley
Mr. Rollie Rousseau
Ms. N. Kathryn Brigham
Mr. Chuck Meacham, Jr. (to January 15, 1995)

## SECRETARIAT STAFF

| | |
|---|---|
| Executive Secretary | Mr. Ian Todd |
| Administrative Officer | Mr. Ken Medlock |
| Chief Biologist | Dr. Jim C. Woodey |

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# INTRODUCTION

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

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

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

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

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

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

The Commission meets at least once annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period April 1, 1994 to March 31, 1995, the Commission planned to meet on four occasions:

1. Commission Executive Session
   October 11-13, 1994 - Kamloops, B.C.

2. Post-1994 fishing season meeting of the Commission
   November 28-December 2, 1994 - Vancouver, B.C.

3. Panels' negotiating session
   January 23-27, 1995 - Vancouver, B.C.

4. Tenth Annual Meeting of the Commission
   February 6-10, 1995 - Portland, Oregon

The Commission, as it entered its 1994/95 series of meetings, was faced with a major task. The Parties' inability to make sufficient progress, government-to-government, on the equity provisions of the Treaty during the latter part of 1993 and the spring of 1994 prevented the Commission from coming to agreement on fisheries arrangements for 1994.

The 1994 fishing season was highlighted by Canada's expressed intention to reduce the number of Fraser River-bound sockeye available to United States northern Puget Sound fishers, and by United States concerns about Canadian fishing efforts directed at severely-depleted stocks of coho and chinook bound for the rivers of Oregon and Washington.

The situation reached crisis proportions when serious shortfalls of Fraser River sockeye escapements destined for Early Stuart, Early Summer, and Summer-Run rivers were identified in early September, and shortly thereafter escapements of late-run stocks dominated by the famous Adams River run, failed to enter the river in expected numbers. These situations led to the formation of the Fraser River Sockeye Public Review Board by Canada, and the Commission's announcement of a bilateral review of the staff's run size estimation procedures.

Against this backdrop of uncertainty and concern, the Commission entered into its 1994/95 meeting cycle. Concurrently, the Parties continued government-to-government meetings in an effort to make progress on the equity issue. By the conclusion of the Commission's Tenth Annual Meeting in February, 1995, insufficient progress had been made in either forum to result in agreement on fishery regimes for 1995.

Efforts are continuing at the government-to-government level to devise ways and means of making progress on the equity issue. Recent exchanges of views regarding a mediation process hold some hope that fishery arrangements for the rapidly-approaching 1995 fishing season may still be within reach for the Commission.

For the purposes of continuity with past reports, the letter of transmittal describing fishery arrangements for 1993 has been included as Appendix A, and the last fully negotiated Annex IV from 1991 has been included as Appendix B.

One bright note on an otherwise clouded picture can be reported. During the period under review, the governments reached an interim agreement on the Yukon River, under the broad umbrella of the Pacific Salmon Treaty. The amended Treaty which reflects those provisions, is contained herein as Appendix C.

The challenges facing the Commission in 1995 and beyond remain difficult. Prodigious efforts will have to be advanced by all concerned to ensure that the cornerstone principles of the Treaty are developed and implemented to their full potential to provide security for the future of the combined fisheries resources of the two countries, as well as improved opportunities for the many diverse groups who rely on Pacific salmon for sustenance, pleasure, and profit.

This, the Tenth Annual Report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its tenth fiscal year of operation, April 1, 1994 to March 31, 1995.

# Activities of the Commission

# PART I
# ACTIVITIES OF THE COMMISSION

## A. EXECUTIVE SESSION OF THE PACIFIC SALMON COMMISSION
## October 11-13, 1994 -- Kamloops, B.C.

The Commission met in Executive Session to receive reports from the Standing Committee on Finance and Administration (SCFA), the Standing Committee on Research and Statistics (R&S), and from the Executive Secretary on Fraser River sockeye issues.

1. Report of the Standing Committee on Finance and Administration

The Commission reviewed and discussed a report on the SCFA's June 10, 1994, meeting.

The Committee, at its June meeting, reviewed general budgetary climates in the two countries which point to the probability of future reductions in contributions to the Commission. The Committee struck a working group to conduct an internal audit of the Secretariat's programs, operating procedures and financial controls to aid the Commission in establishing future priorities.

The Commission reviewed the agreed locations and dates of meetings for the 1994/95 meeting cycle. A review of the Commission's meeting cancellation policy was initiated.

2. Report of the Standing Committee on Research and Statistics

(a) Mass Marking/Selective Fisheries

The Committee reported on the study led by the Chinook and Coho Joint Technical Committees of the potential impact of mass marking hatchery stocks on the Commission's coastwide coded wire tag program. The Committee is confident that a methodology will be produced to assess the impact of mass marking for selective fisheries on the Commission's coded wire tag program. The Committee requested authorization to schedule a review of the issue in plenary session and follow up with a full technical review, both sessions to take place during the 1994 post-season meeting of the Commission. The Commission agreed.

(b) Report of the Joint Committee on Interceptions

The Coho Technical Committee published a report in February 1994 containing interim revised estimates of interception in both Southern and Northern Panel areas. Some concerns have been expressed about the methodology, but no further work is planned, and the report stands as published. On northern boundary area pinks, the Northern Boundary Technical Committee hopes to resolve the methodology issue at its November 4 and 5, 1994, meeting. An update of interception estimates for 1992 and 1993 has not been completed. The Commission approved issuance of a memorandum to the joint technical committees seeking completion of this work by December 1994.

(c) Status of Hatchery Marking Methodology Workshop

This workshop is scheduled to be held in January 1995. The support role of Secretariat staff was clarified.

(d) R&S Report on Research Needs

The Committee commented that agency resources do not appear to be available to extend research to areas identified; and each agency makes its own priorities for its research funds. R&S has identified a long list of research subjects, but requests assistance from the Commission in establishing priorities with respect to Commission issues.

3. Report on Fraser River Sockeye

The Executive Secretary reported on events surrounding management of Fraser River sockeye in 1994. Two major problems arose: (a) Early Stuart, Early Summer, and Summer run stocks accounted for in upriver Native fishery catches and preliminary spawning ground escapement estimates conducted by DFO totalled 1,300,000 less than the Commission's hydroacoustic estimates of abundance at Mission; and (b) late-run stocks dominated by the Adams River/Lower Shuswap stock appear to have been over-estimated in marine areas by almost 2,000,000 fish. Canada established an Independent Review Board to investigate causes of the inriver discrepancies. Four technical teams established by DFO, under the Independent Review Board process are at work, and Commission staff has representation on each one. The Commission has also announced that it will conduct a bilateral review of the staff's run size estimation procedures.

Fraser River sockeye problems have captured news media interest in Canada to an unprecedented degree. The United States section expressed serious concern about the staff's acceptance of responsibility for over-estimation of late-run abundance and participation in a news conference organized without prior approval by the United States.

## B. POST-1994 FISHING SEASON MEETING OF THE COMMISSION
## November 28-December 2, 1994 -- Vancouver, B.C.

1. Commission Executive Sessions

The Commission met in executive session once during the course of this meeting. Items discussed and actions taken were:

Item 1. Adoption of minutes of previous meetings.

The minutes of the February 7-11, 1994 meeting of the Commission were adopted as amended. The minutes of the October 12, 1994 meeting of the Commission were deferred.

Item 2. Exchange of post-season fishery reports.

The two sections exchanged respective 1994 post-season fishery reports (see Section IV of this report for summaries of those submissions).

Item 3. Exchange of annual enhancement update reports.

The report from Canada was provided (see Section IV of this report). The United States report is still in preparation and will be ready for exchange in January.

Item 4. Exchanged lists of PSC officers for 1994/95.

A consolidated list of officers for 1994/95 was circulated (Appendix D).

Item 5. Transfer the office of the Commission Chair to Canada.

Mr. P.S. Chamut assumed the role as Chair of the Commission, and Mr. G.I. James will, effective November 30, 1994, become the Chair of the U.S. section and Vice-Chair of the Commission.

Item 6. Status of JIC update on interception estimates for 1992 and 1993.

The Commission reviewed the request to technical committees for updates of interception estimates for 1992 and 1993. All committees expect to be able to provide updates by January. The coho estimates for 1993 may be provided as preliminary estimates, as some data from sport fisheries have not yet been received. A full JIC document cannot be provided in January; the interception estimates, however, will be available, and JIC will provide an interim report on the status of methodologies and the level of agreement on interception estimates in January.

Item 7. Report on selective fisheries/mass marking.

The Commission reviewed its concern over the potential impact of mass marking on the CWT program. The importance of good participation in the open forum which will be held Thursday afternoon to provide an executive summary of the conclusions and recommendations of the Selective Fishery Steering Committee and its work groups was stressed.

## C. PANELS' NEGOTIATING SESSION AND MEETING OF THE COMMISSION
## January 23-27, 1995 -- Vancouver, B.C.

The Commission met in executive session once during the course of this meeting. Items discussed and actions taken were:

1. Adoption of minutes of past meetings.

The minutes of the October 12 and November 30, 1994 meetings of the Commission's executive sessions were adopted as amended.

2. Report of the Standing Committee on Finance and Administration.

The Committee reported that the Parties have agreed to maintain funding for FY 1995/96 at this year's level of $800,000 each. Actions taken during this current year to reduce expenditures will result in sufficient funds being available to conduct all regular programs in 1995/96, and to conduct additional research at the Mission hydroacoustic site recommended by the technical assessment team of the Fraser River Sockeye Independent Review Board. The complete budget

for FY 1995/96 is presented in Appendix E. The Committee reported on the internal audit of Secretariat operations that had recently been conducted. The Committee will undertake a thorough review of this report at its next meeting, but at this time recommends adoption of organizational changes proposed by the Executive Secretary that are in general accordance with the findings of the audit committee.

The Commission adopted the recommendations contained within the Committee's report.

3. Commission staff involvement in the Fraser River Sockeye Public Inquiry.

The Executive Secretary reviewed events which led to the formation of the Fraser River Sockeye Public Review Board, and described the staff's involvement in each of the four technical review teams set up to examine possible causes of the discrepancy between Mission acoustic estimates and upstream accounting of Early Stuart, Early Summer, and Summer sockeye runs. He reported that all four technical teams have completed their reports and have submitted them to the Review Board, and noted that staff members participated fully in all cases and are in concurrence with the conclusions and recommendations of each group.

The team that examined the Commission's Mission hydroacoustic methodology and technology concluded that, while potential biases exist in the technique employed, it is unlikely that serious error in escapement estimation occurred. Four potential biases were identified of which three, if operational, would lead to under-estimates, and a fourth to over-estimates. Examination of the Mission acoustic data and ancillary data did not lead the team to conclude that biases were any different from any other year. The team recommended that the existing procedure should not be abandoned or substantially altered; at the same time, it recommended that supplementary research be conducted using different acoustic techniques to assess the general magnitude of the potential biases. The Standing Committee on Finance and Administration has approved funding for this work beginning in 1995, and discussions are underway between Commission staff and DFO hydroacoustic experts to develop a cooperative research plan.

## D. TENTH ANNUAL MEETING OF THE COMMISSION
## February 6-10, 1995 -- Portland, Oregon

The Commission did not meet in bilateral session during this period. A bilateral reception was held to commemorate the tenth anniversary of the Pacific Salmon Treaty.

# Activities of the Standing Committees

# PART II
# ACTIVITIES OF THE STANDING COMMITTEES

## A. MEETINGS OF THE STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

1. Committee Activities

**(a) Meeting of June 10, 1994 - Vancouver, B.C.**

The Committee met on June 10, 1994, to consider a number of financial and administrative issues. The Committee's deliberations were focused first on a review of scenarios developed by staff in accordance with direction provided by the Committee at its January 14, 1994, meeting, to assess the impact on Commission programs of:

(a) funding at the current contribution level of $800,000 per Party through FY 1995/96; and
(b) funding at a reduced contribution level of $700,000 per Party in FY 1995/96.

Staff, in preparing responses to the above scenarios, first addressed and fine-tuned Secretariat cost estimates of providing support to the Commission, panels, and joint technical committees for the normal annual meeting cycle. Moving then to biological programs conducted by the Secretariat in support of the Fraser River Panel, staff first developed priorities based upon the division of responsibilities between Canada and the Commission established in the August 1985 exchange of diplomatic notes between the Parties. For programs within the Panel Area, staff developed a list of priorities for sockeye and pink salmon, placing for the most part sockeye programs first.

Staff expressed the view that programs currently being funded by the Commission for areas outside the defined "Panel Area Waters" should in fact be conducted by the Parties, with the data so collected being provided to the Commission. From the staff perspective, these programs should then be the first to be cut from the Commission budget under either scenario. Concern was expressed that staff did not identify a reduction in permanent personnel strength under either scenario.

The Committee did not come to a conclusion on this difficult subject, but the Parties did agree to fund northern British Columbia and southeastern Alaska sampling programs in 1994, thus easing the strain on the Commission's budget to some degree for the current fiscal year. The subject will be re-visited at the next meeting of the Committee when, it is hoped, the level of funding to be provided by the Parties for next fiscal year will become known, and budgeting for that year can proceed with some certainty.

The Committee also re-examined its terms of reference in some depth. It reaffirmed that the Committee does, within its existing terms of reference, have the ability to review Secretariat operations to ensure that effective financial and personnel procedures are being carried out. With this understanding, no changes are being proposed to the Committee's terms of reference. As follow-up, however, Dr. McGruder and Mr. Graham were instructed to conduct an in-depth review of secretariat operations. This review was carried out over a three day period in the first week of

September, and the report from that review will be discussed by the Committee at its next meeting. Its findings will be summarized and presented to the Commission thereafter.

The Committee also introduced a review of the Commission's policy regarding apportionment of penalty costs resulting from meeting cancellations. Current policy requires each Party to absorb the costs in proportion to the size of its delegation. The U.S. section proposed that this policy be amended so as to require the Party which cancels the meeting to pay the full penalty cost. No decision was reached on this item, but it was to be a subject for discussion at the October meeting of the Commission.

**(b) Meeting of December 15, 1994 - Vancouver, B.C.**

The Committee met on December 15, 1994, with its deliberations being focused primarily on a review of the Commission's current financial status, and budget expectations for FY 1995/96.

The financial review and projections prepared by staff for the current fiscal year indicates that expenditures by the end of March will be lower than budgeted. In addition, reserves established in the 1994/95 budgeting process, higher than forecast net revenue from 1994 test fishing operations, and final recovery of funds from 1990 test fishing operations, are expected to result in an unexpended operating balance by the end of the current fiscal year of approximately $ 646,000. The Committee notes with pleasure that this sum includes $39,000 as a final and complete payment of a receivable outstanding from 1990 test fishing operations. The Committee **recommended** that these funds be carried over for application against program costs in FY 1995/96.

The Committee reviewed the budget proposed by staff for FY 1995/96. Application of the forecast operating balance from FY 1994/95 against regular program costs for FY 1995/96, coupled with the Parties' agreement to maintain contributions at the 1994/95 level of $800,000 each, would result in an unencumbered operating balance of approximately $179,000 at the end of FY 1995/96. Carry forward of this total into FY 1996/97 would mean that all regular programs could be carried out in that year if contributions from the Parties can be maintained at the $800,000 level.

The Committee, however, incorporated in its review an assessment of progress in the Fraser River Sockeye Public Review Board's examination of the Commission's hydroacoustic program at Mission. It is considered probable that recommendations will come forward from the technical review team to conduct research to examine the major assumptions inherent in the methodology in use. With this uncertainty in mind, the staff recommended, and the Committee concurred, that the forecast unencumbered balance be reserved for application against this special research program. It has been agreed that this program, if implemented, will be included in the staff's financial reports as a separate identifiable cost centre. The Committee recognized that taking this action could lead to negative implications for regular program funding in FY 1996/97, particularly if additional research at Mission is required beyond 1995. The Committee, however, understands the importance of the Commission's hydroacoustic program in the management of Fraser River sockeye stocks and therefore **recommended** adoption of the budget for FY 1995/96.

At its June 1994 meeting, the Committee struck an ad hoc audit team, comprising Dr. McGruder and Mr. Graham, to conduct an in-depth review of the Secretariat's operational procedures, the extent to which programs match the mandate provided under the Treaty, and the extent to which staffing levels are appropriate for the tasks required of staff. The audit team presented its report to the Committee, and the Committee hereby forwards it to the Commission. In summary, the audit team concluded that the Secretariat's operations are well-conducted and are in accordance with the responsibilities specified under the Treaty. In particular, the team commented on the unusually high morale prevalent among staff members.

The Committee, while it deferred discussion on many of the points raised in the team's report to its next meeting, did review the following recommendations from the Executive Secretary on the Secretariat's organizational structure and staffing levels:

(a) to re-organize the secretarial/meeting planning/records management functions to reflect current needs; and
(b) to convert a long-term fulltime "temporary" biologist's position to "permanent" status.

Acceptance of these recommendations would create no additional financial burden on the Commission's resources, and will not affect position classification levels. Further, acceptance of these proposals, as may be shown by a comparison of "existing" versus "proposed" organization charts, would result in a reduction of the authorized number of permanent positions in the Secretariat from 21 to 19. The Committee, therefore **recommended** that the Commission adopt these proposals.

The Committee discussed the Commission's current policy of penalty cost allocation between the Parties arising from unilateral meeting cancellations. Agreement could not be reached to amend the existing policy. The United States section stated that it should not be expected to pay penalty costs which arise as a result of any unilateral meeting cancellations initiated by Canada.

The Commission adopted the recommendations of the Standing Committee on Finance and Administration.

2. Secretariat Staffing Activities

The staff of the Secretariat remained unchanged over the fiscal year April 1, 1994, to March 31, 1995. Mr. K. Forrest's position as a biologist was amended to a "continuing" status from its "temporary" category. Ms. T. Tarita's responsibilities were expanded to include all direct supervisory control of records management, librarian, meeting planning and secretarial activities. The list of employees as at March 31, 1995, is presented in Appendix F.

3. Commission Committees and Panels Membership List

An updated membership list for standing committees, panels, joint technical committees, sub-committees, and ad hoc working groups as of May 15, 1995, is presented in Appendix G.

4. Other Administrative Activities

The Committee reviewed the Commission's meeting schedule for FY 1994/95 and FY 1995/96 (Appendix H).

## B. MEETINGS OF THE STANDING COMMITTEE ON RESEARCH AND STATISTICS

The Standing Committee on Research and Statistics met in Vancouver, B.C. on November 29, 1994, to discuss the following items:

- Status of the Joint Interceptions Committee's (JIC) update on interception estimates for 1992 and 1993, including the status of agreement on interceptions of coho and northern boundary pink salmon.

The JIC report is expected to be completed by the fall of 1995. It will include a statement on the status of interception calculation methodologies, on the quality of the estimates, and will point out that there is a high incidence of agreement on the estimates of interception. Estimates of interception prepared by the technical committees for 1992 and 1993 will, however, be available for use in Commission deliberations scheduled for January and February.

- Report from the task force on "mass marking and selective fisheries" including plans for presentation at the "open forum" set for December 1, 1994 at 2:00 p.m.

  In summary, the task force reported that:

  - interest in mass marking has become stronger, not weaker;
  - Commission concerns about the CWT are being upheld, even though there could be some positive benefits;
  - international cooperation is essential for successful implementation of any changes; and
  - if changes are not implemented uniformly there will be serious negative impacts on chinook and coho management coastwide.

- Report from Hatchery Methodology coordinators on plans and progress for the workshop set for January, 1995.

  The workshop is scheduled for Sand Point on January 10-12, 1995. It is expected that 10-20 individuals from Canada and about 50 from the U.S. will participate. A revised draft brochure will be circulated by the Secretariat to potential attendees.

  It was confirmed that the proceedings of the workshop will be provided to the Commission Secretariat for printing and distribution.

- General review of the role of the Standing Committee on Research and Statistics.

  The Committee expressed concern that although the "research needs" report, developed by the technical committees and R&S, has been presented to the Commission, there has been no response. The Committee agreed that it is important to identify bilateral work that needs to be done, and R&S should meet in the spring of 1995 to explore this topic in detail.

# Activities of the Panels

# PART III
# ACTIVITIES OF THE PANELS

## A. FRASER RIVER PANEL

The Fraser River Panel did not meet bilaterally during the 1994 fishing season as no international catch sharing arrangements were in place.

Manager-to-manager meetings involving panel members took place during the season to receive reports from Commission staff on the status of stocks.

The Panel did meet once in conjunction with the 1994 post-season meeting of the Commission. At that meeting:

- Commission staff presented a review of 1994 Fraser River sockeye salmon catches and run size estimates;

- DFO staff presented preliminary spawning escapement estimates for Early Stuart, Early Summer, and Summer Run stocks;

- the Panel received an overview of the Fraser River Sockeye Public Review Board objectives and procedures from DFO staff;

- the Panel received plans for the Pacific Salmon Commission's bilateral review of the staff's run size estimation procedures;

- PSC staff revised the status of Fraser River sockeye catch estimates in Alaska District 104;

- the Panel reviewed and approved the PSC staff's sampling and test fishing plans proposed for 1995; and

- the Panel reviewed the status of the 1992 and 1993 draft annual reports.

## B. NORTHERN PANEL

The Northern Panel met in bilateral session during the post-season meeting to discuss 1994 fishery results.

## C. SOUTHERN PANEL

No full bilateral meetings of the Southern Panel took place during the period covered by this report.

# Review of 1994 Fisheries and Treaty-related Performance

# PART IV
# REVIEW OF 1994 FISHERIES AND TREATY-RELATED PERFORMANCE

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

## A. FRASER RIVER SOCKEYE AND PINKS

Under the Pacific Salmon Treaty, the Fraser River Panel is responsible for in-season management of fisheries that target on Fraser River sockeye and pink salmon within the Panel Area. Prior to the onset of the fishing season, the Panel recommends a fishing regime and a management plan for Panel Area fisheries to the Pacific Salmon Commission (PSC). The plan is based on abundance forecasts and escapement goals for Fraser River sockeye and pink salmon stocks provided by Canada Department of Fisheries and Oceans (DFO), international allocation goals set by the Treaty, domestic allocation goals set by each country and management concerns for other stocks and species also identified by each country.

In-season, to achieve the objectives of the management plan approved by the PSC, the Panel uses commercial and test fishing data and various analyses from PSC staff to modify the fishing times in the management plan.

Achievement of the domestic allocation goals of Canada and the United States has been a major focus of in-season management and, in general, has been met successfully by the Panel. Resource conservation and international allocation goals take precedence over domestic allocation objectives, however, when trade-offs among these three objectives are necessary.

In 1994, the Panel did not perform these tasks due to unresolved differences between the Parties on international catch sharing arrangements.

Pacific Salmon Commission staff, however, conducted its normal field programs designed to assess abundance, timing, and diversion rate by major stock group. The national sections of the Fraser River Panel met on a regular basis to obtain the results of PSC staff analyses, which they used to develop domestic regulations for fisheries in the Panel Area.

Following is a summary of significant events which occurred during the 1994 season.

Canada's pre-season forecasts were for a total run of 19,000,000 and a Total Allowable Catch (TAC) of 13,600,000 Fraser River sockeye salmon. A high proportion (66%) of Fraser River bound sockeye was forecast to migrate through Johnstone Strait, due to warm ocean temperatures in the north Pacific Ocean caused by an El Niño event.

Canada set a pre-season gross escapement goal of 5,409,000 to provide for spawning escapements and for Fraser River Indian catches.

Returns of Fraser River sockeye salmon totalled 16,730,000 fish, based on in-season estimates of catch and escapement (as measured at Mission). Early Stuart, Early Summer Run, and Summer Run stocks all returned below forecast. Late run stocks were marginally higher than the pre-season forecast. Catches by country and area, and Mission hydroacoustic estimates of escapement are listed in Table 1.

The Stock Monitoring program provided in-season assessments of abundance, run timing and migration routes of Fraser River sockeye stocks throughout the fishing season. The diversion rate of Fraser sockeye through Johnstone Strait was about 75% for the entire season, but exceeded 90% during the late run migration.

The Racial Analysis program identified the major stock groups of Fraser River sockeye throughout the season, using scale and other characteristics. Post-season analyses incorporating spawning ground scale samples showed that in-season models slightly underestimated Early Stuart, Early Summer-run and Late-run proportions, and overestimated Summer-run proportions.

Estimates of all summer run sockeye abundance derived from the Mission echo sounding program in 1992 were substantially higher than the combined total of recorded upriver catches and spawning escapement estimates provided by the Department of Fisheries and Oceans. Canada appointed an independent Public Review Board under the chairmanship of the Honourable John Fraser to direct investigations into the reasons for the shortfall. Late-run escapement estimates derived from the Mission echo sounding program were substantially lower than the combined total of recorded upriver catches and spawning escapement estimates provided by the Department of Fisheries and Oceans.

Late-run (notably the Adams River/Lower Shuswap spawning stock) escapements fell substantially short of Canada's stated requirements. The Pacific Salmon Commission staff's run-size estimation procedures became the focus of a second inquiry which was authorized by the Commission and led by the staff.

Analysis of the staff's run-size estimation procedures focusing on the problem of 1994 late-run abundance estimation is presented in a report titled "Pacific Salmon Commission Run-size Estimation Procedures: An Analysis of the 1994 Shortfall in Escapement of Late-run Fraser River Sockeye Salmon" PSC Technical Report No. 6. The executive summary of that report is reproduced here as follows:

1. The 1994 run of Fraser River sockeye salmon approached the Fraser River mainly through Johnstone Strait. This produced large abundances of fish in Canadian fishing Areas 11-16 where over 6 million fish were harvested, or approximately one-half of the commercial catch of all Fraser River sockeye in 1994. Escapements of late-run sockeye to the Strait of Georgia were fished in both Canadian and United States waters under regulations promulgated by the management agencies in the two countries. Catches of late-run sockeye salmon in the Strait of Georgia and lower Fraser River totalled 1,331,000 fish.

2. In late September, 1994, Pacific Salmon Commission staff identified a large shortfall in the gross escapement of late-run Fraser River sockeye salmon. After fisheries in the Strait of Georgia and lower Fraser River had closed for the season, the PSC staff estimate of the number of late-run sockeye available for gross escapement was 3,340,000 fish. Estimates of in-river Native fishery catches below Mission and Mission hydroacoustic estimates of escapement, however, resulted in an in-season gross escapement estimate of only 1,138,000. After completion of estimation programs in the Fraser watershed, Canada Department of

Fisheries and Oceans post-season estimate was a total of 1,645,000 late-run sockeye in Native fishery catches and spawning ground escapements.

3. Canada and the United States approved the Pacific Salmon Commission plan for a bilateral review of run-size estimation procedures used in-season by PSC scientific staff. The review was led by PSC staff and included members of the Fraser River Panel Joint Technical Committee, experts from the two countries, members of the Fraser River Panel and members of the Fraser River Sockeye Public Review Board.

4. While late-run sockeye abundance was over-estimated in 1994, sockeye runs in 1993 were under-estimated and summer-run sockeye abundance in 1994 was also under-estimated by a small amount. Factors that may have led to the over-estimation of late-run sockeye in 1994 were identified at the first workshop on February, 2-3, 1995, and explored at the second workshop on April 26, 1995.

5. The methodology used by PSC staff for in-season run-size assessment was examined during the review. The three models that were used in-season provided similar estimates of late-run sockeye escapement to the Strait of Georgia and, hence, after subtraction of catch in the Strait of Georgia and the lower Fraser River, gave similar estimates of the number available for gross escapement. Post-season catch and racial analysis information used in the same models gave a greater range of estimates, but catch estimation errors and racial analysis imprecision did not fully explain the run-size estimation errors.

6. Analysis of post-season data showed that the large abundance of sockeye and the large purse seine fleet that fished in Johnstone Strait produced high harvest rates and record catches of late-run sockeye. Purse seine catch and CPUE models and the cumulative-normal model used in the assessments generated larger over-estimates of abundance using the post-season catch data than were obtained in-season. Extrapolation of the late-run regression models by applying 1994 data, which was much larger than the range of previous observation, may have been partly responsible for the over-estimation using purse seine models. A fundamental change in the Johnstone Strait purse seine harvest rates was identified as a major factor in the failure of the cumulative-normal model to correctly estimate the late-run abundance and number of fish available for gross escapement.

7. Harvest rates obtained in-season for summer-run sockeye were found to be substantially below those calculated using post-season estimates of catch and racial composition. During the 1994 fishing season, the error in summer-run harvest rate estimates led to the false conclusion that the use of 1983 harvest rates were appropriate for late-run sockeye. PSC staff did not adjust late-run harvest rates in the cumulative-normal model because of this finding. Also, when the low summer-run harvest rates were applied to late-run catch estimates, the exploitation rate model produced over-estimates of the number of late-run sockeye that entered the Strait of Georgia. Had correct catch and racial composition data been available in-season, higher harvest rates would have been used, thus lowering the in-season run size and escapement estimates from the cumulative-normal and exploitation rate models.

8. As a result of this investigation, the PSC will modify some assessment methodologies. First, the PSC will make changes to the purse seine catch and CPUE models. Second, Johnstone Strait purse seine harvest rates for recent years (1992-94) will be incorporated into the cumulative-normal model. In-season assessment of summer-run sockeye delay in the Strait of Georgia will be undertaken to avoid errors in summer-run exploitation rate models used for estimation of late-run escapement to the Strait of Georgia.

9. We recommend the establishment of a purse seine test fishery at the southeast end of the Johnstone Strait commercial fishing area, primarily to verify the arrival of expected numbers of fish at the commercial fishery boundary. Data on the rate of travel for sockeye salmon through the Johnstone Strait fishery area would also be obtained. Direct measurement of late-run sockeye escapement to the Strait of Georgia would be a future goal for this new test fishery.

10. We recommend that the area over which the Johnstone Strait fishery operates be reduced. This recommendation stems from the need to reduce harvest rates, stabilize the fishery in the future, improve manageability and provide high quality catch data for assessment of run sizes and measurement of escapement to the Strait of Georgia.

11. We recommend that methods for in-season and post-season catch estimation in Juan de Fuca and Johnstone Straits purse seine and gillnet fisheries be improved to provide more accurate and timely catch data for run-size assessment.

12. We recommend that emerging genetic (DNA) technologies be investigated, with the goal of improving the in-season racial identification of sockeye salmon stocks in the future. Improvements of stock composition estimates in catches used for assessment of run size is important to the scientific management of Fraser River sockeye salmon.

**Table 1.** Preliminary estimates of fishery catches and total run of Fraser River sockeye salmon during the 1994 fishing season, by country and area.

| | | Number of Fish | % of Run |
|---|---|---|---|
| **COMMERCIAL CATCH** | | | |
| CANADA | | | |
| Fraser River Panel Area | | | |
| Areas 121-124 Troll * | | 233,000 | |
| Area 20 Net | | 846,000 | |
| Areas 17-18 and 29 Troll | | 352,000 | |
| Area 29 Net | | 1,298,000 | |
| | Total | 2,729,000 | 16.3% |
| Non-Panel Areas | | | |
| Areas 1-10 Troll and Net | | 1,145,000 | |
| Areas 11-16 Troll and Net | | 6,042,000 | |
| Areas 124-127 Troll * | | 119,000 | |
| | Total | 7,306,000 | 43.7% |
| | CANADA TOTAL | 10,035,000 | 60.0% |
| UNITED STATES | | | |
| Fraser River Panel Area | | | |
| Areas 4B, 5 and 6C Net | | 119,000 | |
| Areas 6 and 7 Net | | 317,000 | |
| Area 7A Net | | 1,392,000 | |
| | Total | 1,828,000 | 10.9% |
| Non-Panel Areas | | | |
| Alaska Net | | 240,000 | 1.4% |
| | UNITED STATES TOTAL | 2,068,000 | 12.4% |
| | COMMERCIAL TOTAL | 12,103,000 | 72.3% |
| **NON-COMMERCIAL CATCH** | | | |
| CANADA | | | |
| Areas 12-13, 18, 20, 29, 123-124 Indian Fishery | | 171,000 | |
| Area 12 Test Fishing | | 14,000 | |
| Other Catches (Charters, etc.) | | 24,000 | |
| Fraser River Indian Fishery ** | | 928,000 | |
| Recreational Fishery | | 14,000 | |
| | Total | 1,151,000 | 6.9% |
| UNITED STATES | | | |
| Ceremonial and Test Fishing | | 0 | 0.0% |
| COMMISSION | | | |
| Areas 123-127, 20 and 29 Test Fishing | | 38,000 | |
| Areas 7 and 7A Test Fishing | | 2,000 | |
| | Total | 40,000 | 0.2% |
| | NON-COMMERCIAL TOTAL | 1,191,000 | 7.1% |
| | TOTAL CATCH | 13,294,000 | 79.5% |
| **MISSION ESCAPEMENT - INDIAN CATCH *** ** | | 3,436,000 | 20.5% |
| | TOTAL RUN | 16,730,000 | 100.0% |

* Troll catches in Area 124 are divided between Panel and non-Panel Areas.

** Mixed commercial and non-commercial catches in accordance with Canada's Aboriginal Fishing Strategy.

*** Mission gross escapement minus Fraser River Indian fishery catch above Mission.

# B. PRELIMINARY 1994 POST-SEASON REPORT FOR UNITED STATES FISHERIES OF RELEVANCE TO THE PACIFIC SALMON TREATY

**Northern Boundary Area Fisheries**

District 104 Purse Seine Fishery

For the 1994 purse seine fishing season no formal agreement had been reached with Canada on the conduct of the District 104 fishery. The pre-season management plan for the district was to conduct the fishery in a manner which would limit the fishing time and sockeye harvest to levels similar to the 1990 to 1993 time period. This would limit the fishing time and harvest of sockeye salmon prior to Statistical Week 31. There were three weeks of fishing prior to Statistical Week 31 in 1993.

The 1994 season began on July 3 (Statistical Week 28) for a 10 hour opening. During this opening 11,868 sockeye were harvested by 35 purse seine boats. The District 104 fishery was not opened again in Week 28, although inside districts were opened for an additional 15 hours on July 8 as the northern Southeast fishery was experiencing record harvests of pink and chum salmon and most of the purse seine effort was located in the northern districts. On July 11 and 12 (Statistical Week 29) the district was opened for a two day split opening of 7 hours per day. The inside districts at this time were opened for a continuous 39 hour opening. During this split 14 hour opening 25 purse seine boats harvested approximately 19,000 sockeye, 33,000 pink salmon and 36,000 chum salmon. Another 8 hour opening was allowed on July 15 (Week 29). During the 8 hour opening 41 boats harvested approximately 22,500 sockeye, 36,000 pink salmon, and 25,000 chum salmon. This brought the total sockeye harvest to date to approximately 49,000. A 15 hour opening was allowed on July 18. Fifty-two purse seine boats caught approximately 47,500 sockeye salmon, 92,000 pink salmon, and 40,000 chum salmon. Through July 18 approximately 101,000 sockeye had been harvested. With the Department managing the district for a harvest of approximately 120,000 sockeye it was decided to re-open the fishery on July 21 for 8 hours. During the opening 57 boats caught 57,000 sockeye salmon, 153,000 pink and 25,000 chum salmon. This put the sockeye harvest prior to Statistical Week 31 at 158,000 fish.

Beginning on July 25 (Statistical Week 31) and continuing through the final day of fishing on August 29, the District 104 fishery was managed according to the strength of the pink salmon return. For the next three openings the purse seine fishery was opened for 15 hours on July 25, July 28, and July 31. This conservative management approach was the result of a smaller pink salmon return as compared to the last several years in southern Southeast Alaska. Beginning on August 8 through the end of the fishery on August 29 the pink returns were sufficient to allow a two-day-on/two-day-off fishing schedule. Effort levels in District 104 were generally below those in recent years due to a larger portion of the fleet harvesting a record number of pink and chum salmon in the northern Southeast Alaska districts.

The total season's harvest in District 104 of 12.5 million pink salmon (Table 1) was slightly above the 1985 to 1993 average of 12.0 million fish. The harvest of 1.1 million sockeye, 715,000 chum salmon, and 345,000 coho salmon was the largest harvest experienced in the district.

The average number of hours, days, and boats fished pre-week 31 in years 1985 to 1994 is down 31-50% compared to the 1980 to 1984 period (Table 2). The sockeye harvest is also down 28% despite an increase in sockeye availability in recent years; the average sockeye catch-per-boat-day has increased 76% since 1984.

**Table 1.** Catch and effort in the Alaska District 104 commercial purse seine fishery by opening, 1994.

| Opening | Date | Chinook | Sockeye | Coho | Pink | Chum | Total | Boats | Hours |
|---|---|---|---|---|---|---|---|---|---|
| 28 | July 3 | 0 | 11,868 | 9,450 | 18,259 | 44,332 | 83,909 | 35 | 10 |
| 29 | July 11 | 1 | 11,222 | 7,085 | 19,112 | 22,798 | 60,218 | 25 | 7 |
| 29B | July 12 | | 8,084 | 4,152 | 14,196 | 13,309 | 39,747 | 13 | 7 |
| 29C | July 15 | 6 | 22,499 | 10,800 | 36,329 | 24,756 | 94,390 | 41 | 8 |
| 30 | July 18 | 0 | 47,457 | 18,644 | 92,235 | 39,634 | 197,970 | 52 | 15 |
| 30B | July 21 | 0 | 57,394 | 12,101 | 152,486 | 24,631 | 246,612 | 57 | 8 |
| 31 | July 25 | 0 | 79,302 | 23,450 | 483,353 | 44,531 | 630,636 | 150 | 15 |
| 31B | July 28 | 0 | 100,989 | 28,345 | 522,430 | 58,267 | 710,031 | 132 | 15 |
| 32 | July 31 | 0 | 110,909 | 22,672 | 977,972 | 57,496 | 1,169,049 | 124 | 15 |
| 32B | Aug. 4 | 5,215 | 190,379 | 42,886 | 2,661,096 | 93,195 | 2,992,771 | 153 | 39 |
| 33 | Aug. 8 | 2,729 | 127,907 | 34,614 | 1,856,470 | 39,803 | 2,061,523 | 147 | 39 |
| 33B | Aug. 12 | 0 | 99,226 | 27,399 | 1,511,557 | 35,652 | 1,673,834 | 128 | 39 |
| 34 | Aug. 16 | 0 | 118,445 | 23,582 | 1,548,367 | 38,663 | 1,729,057 | 96 | 39 |
| 34B | Aug. 20 | 1,346 | 71,449 | 22,259 | 1,213,099 | 61,035 | 1,369,188 | 171 | 39 |
| 35 | Aug. 24 | 2 | 44,283 | 26,998 | 895,860 | 54,099 | 1,021,242 | 110 | 39 |
| 36 | Aug. 28 | 0 | 33,062 | 30,752 | 460,970 | 62,507 | 587,291 | 81 | 39 |
| Total | | 9,305 | 1,134,475 | 345,189 | 12,463,791 | 714,708 | 14,667,468 | 1,515 | 373 |

**Table 2.** Fishing opportunity, effort, and sockeye harvest prior to Week 31 in District 104 purse seine, 1980 to 1993.

| Year | Hours Fished | Days Fished | Boats Fished | Boat Hours Fished | Boat-Days Fished | Sockeye Harvest | Sockeye Catch Boat-Hour | Sockeye Catch Boat-Day |
|---|---|---|---|---|---|---|---|---|
| 1980 | 207 | 10 | 601 | 124,407 | 6,010 | 266,198 | 2 | 44 |
| 1981 | 132 | 7 | 400 | 52,800 | 2,800 | 185,188 | 4 | 66 |
| 1982 | 117 | 6 | 554 | 64,818 | 3,324 | 212,851 | 3 | 64 |
| 1983 | 108 | 6 | 502 | 54,216 | 3,012 | 168,806 | 3 | 56 |
| 1984 | 108 | 6 | 369 | 39,852 | 2,214 | 103,319 | 3 | 47 |
| 1985 | 84 | 5 | 247 | 20,748 | 1,235 | 100,590 | 5 | 81 |
| 1986 | 108 | 6 | 337 | 36,396 | 2,022 | 91,320 | 3 | 45 |
| 1987 | 75 | 5 | 227 | 17,025 | 1,135 | 72,385 | 4 | 64 |
| 1988 | 108 | 6 | 430 | 46,440 | 2,580 | 248,759 | 5 | 96 |
| 1989 | 84 | 5 | 291 | 24,444 | 1,455 | 157,034 | 6 | 108 |
| 1990 | 42 | 4 | 374 | 15,708 | 1,496 | 169,943 | 11 | 114 |
| 1991 | 41 | 4 | 232 | 9,512 | 928 | 98,583 | 10 | 106 |
| 1992 | 29 | 3 | 201 | 5,829 | 603 | 79,643 | 14 | 132 |
| 1993 | 45 | 4 | 370 | 16,650 | 1,480 | 163,189 | 10 | 110 |
| 1994 | 55 | 6 | 223 | 12,265 | 1,338 | 158,524 | 13 | 118 |
| Ave. 80-84 | 134 | 7 | 485 | 67,219 | 3,472 | 187,272 | 3 | 55 |
| Ave. 85-94 | 67 | 5 | 293 | 20,502 | 1,427 | 133,997 | 8 | 98 |
| Change | -50% | -31% | -40% | -69% | -59% | -28% | 177% | 76% |

Tree Point Drift Gillnet Fishery

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

In 1994, the gillnet fishery at Tree Point was opened for a four-day fishing week on June 19 (Statistical Week 26). Catches of chum salmon during the early weeks of the fishery, Statistical Weeks 26, 27, 28, 29 and 30, were at record levels. During this time period, 267,300 chum salmon were harvested. Sockeye salmon catches during this time were below average and though chum salmon catches were at record levels, the Department reduced fishing time and area to ensure sufficient numbers of sockeye salmon passed through the fishery for escapement needs.

Due to below average catches of sockeye salmon, the Department fished only 3 days in Statistical Week 27. In Statistical Week 28, the fishing time was again held at three days due to below average catches of sockeye salmon and the southern end of the fishery was closed to fishing due to poor escapements of sockeye salmon in the Nass River. During Statistical Week 29, fishing time was held to three days. During this week, sockeye catches improved and a four day fishing week was announced for Statistical Week 30.

The fishery was managed according to the Pink Salmon Management Plan from Statistical Week 31 through Statistical Week 36, with the length of each opening based on a formula of fishing time allowed in the District 1 Purse Seine Fishery. In Statistical Week 31, due to below average pink escapements in early run systems, a two day opening was announced with a possible extension if pink escapements improved. At that time, the fleet was put on notice that even though the fishery was being managed according to the Pink Salmon Management Plan, if sockeye escapements to the Nass did not improve and the fishery was extended, the lower portion of the fishing area may be closed. Pink escapements did improve and the fishery was extended. The lower end of the fishery was not closed during this extension due to improved sockeye salmon escapements in the Nass River. While under Pink Salmon Management, four days of fishing time occurred in Statistical Week 31, with 5 days of fishing time being mandated by the plan from Statistical Weeks 32 through 35. In Statistical Week 36, a four day opening occurred. Pink salmon catches were average or below average during this time period. Sockeye catches were above average in Statistical Weeks 33, 34, 35, and 36.

Starting in Statistical Week 37, the fishery went on Fall management and was managed according to chum and coho salmon strength. For this week and the next two weeks, three days of fishing time was allowed. Coho salmon catches were above average during Statistical Weeks 29, 33, 35, 36, 37, and 39. Chum salmon catches were above average during this time in Statistical Weeks 35, 37, 38, and 39. Due to strong coho and fall chum catches, two days of fishing time was allowed for Statistical Weeks 40 and 41.

Portland Canal was open to fishing this season due to the strong returns of chum salmon observed in the fishery.

The total harvest of sockeye salmon at Tree Point was 100,377 fish (Table 3). This was the second lowest year of sockeye harvest since 1985 (85,690 in 1990) and brings the average annual harvest since 1985 to 164,360 sockeye salmon (Table 4).

**Table 3.** Weekly catch and effort in the Alaska District 101 commercial drift gillnet fishery, 1993.

| Opening | Date | Chinook | Sockeye | Coho | Pink | Chum | Total | Boats | Hours |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 19-Jun | 463 | 13,493 | 445 | 4,014 | 67,392 | 85,807 | 115 | 96 |
| 27 | 26-Jun | 211 | 4,899 | 980 | 8,084 | 64,182 | 78,356 | 122 | 72 |
| 28 | 3-Jul | 140 | 12,889 | 657 | 6,641 | 48,379 | 68,706 | 92 | 72 |
| 29 | 10-Jul | 50 | 15,142 | 1,803 | 18,380 | 51,666 | 87,041 | 89 | 72 |
| 30 | 17-Jul | 39 | 6,693 | 1,549 | 8,128 | 35,671 | 52,080 | 81 | 96 |
| 31 | 24-Jul | 10 | 5,255 | 666 | 7,336 | 8,504 | 21,771 | 54 | 96 |
| 32 | 31-Jul | 9 | 10,487 | 1,391 | 14,091 | 10,826 | 36,804 | 42 | 120 |
| 33 | 7-Aug | 7 | 18,186 | 3,311 | 47,718 | 22,484 | 91,706 | 72 | 120 |
| 34 | 14-Aug | 17 | 7,390 | 3,084 | 66,105 | 15,052 | 91,648 | 78 | 120 |
| 35 | 21-Aug | 3 | 4,291 | 6,927 | 61,498 | 34,512 | 107,231 | 47 | 120 |
| 36 | 28-Aug | 2 | 1,235 | 6,901 | 19,541 | 24,226 | 51,905 | 43 | 96 |
| 37 | 4-Sep | 0 | 258 | 7,584 | 1,754 | 34,667 | 44,263 | 44 | 72 |
| 38 | 11-Sep | 0 | 82 | 3,918 | 338 | 22,599 | 26,937 | 44 | 72 |
| 39 | 18-Sep | 4 | 57 | 4,561 | 20 | 33,324 | 37,966 | 41 | 72 |
| 40 | 25-Sep | 0 | 18 | 2,537 | 0 | 14,707 | 17,262 | 29 | 48 |
| 41 | 2-Oct | 0 | 2 | 700 | 0 | 1,485 | 2,187 | 12 | 48 |
| Total | | 955 | 100,377 | 47,014 | 263,648 | 489,676 | 901,670 | 1,005 | 1,392 |

**Table 4.** Annual harvest, and average annual harvest, of sockeye salmon in the Alaska District 101 drift gillnet fishery, 1985 to 1993.

| Year | Annual Harvest | Average Annual Harvest | Deviation from 130,000 |
|---|---|---|---|
| 1986 | 145,657 | 159,260 | 29,260 |
| 1987 | 107,595 | 142,038 | 12,038 |
| 1988 | 116,240 | 135,589 | 5,589 |
| 1989 | 144,936 | 137,458 | 7,458 |
| 1990 | 85,690 | 128,830 | (1,170) |
| 1991 | 131,492 | 129,210 | (790) |
| 1992 | 244,649 | 143,640 | 13,640 |
| 1993 | 394,098 | 171,469 | 41,469 |
| 1994 | 100,377 | 164,360 | 34,360 |

Programs to estimate sockeye salmon escapements are only in place for two systems in southern Southeast Alaska, Hugh Smith and McDonald Lakes. The sockeye salmon escapement to Hugh Smith Lake was approximately 8,958 based on weir counts and the results of a mark-recapture study. The informal escapement goal for Hugh Smith is 27,000. McDonald Lake's escapement is estimated to be 106,484 sockeye salmon based on an expansion of foot survey counts. This escapement is above the informal goal range of 70,000 to 85,000.

A weir was operated on Fish Creek at the head of Portland Canal to enumerate chum salmon for the fourth consecutive year. The 1994 weir count totalled 32,322 chum salmon compared to 9,916 in 1991, 46,771 in 1992 and 60,447 in 1993. The peak foot survey count of 9,535 chum salmon in Marx Creek was the highest on record since this spawning channel was constructed in 1985. Chum salmon escapements were strong in other Portland Canal area systems.

**Transboundary Area Fisheries**

Stikine River Area Fisheries

The 1994 harvest in the District 106 commercial gillnet fishery included 740 chinook, 211,048 sockeye, 267,831 coho, 179,994 pink, and 176,018 chum salmon (Table 5). District 106 catches of chinook and pink salmon were below the 1984 to 1993 averages while sockeye, coho, and chum catches were above average. The chum catch was the highest on record; sockeye, and coho catches were the second highest on record. An estimated 16% of the coho catch was of Alaskan hatchery origin. The U.S./Canada joint Tahltan Lake enhancement project contributed an estimated 7,019 sockeye to the catch.

**Table 5.** Weekly salmon catch in the Alaskan District 106 commercial drift gillnet fisheries, 1993. Catches do not include Blind Slough terminal area harvests.

| | | Catch | | | | | Effort | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 12-Jun | | | | | | | | |
| 26 | 19-Jun | 189 | 5,125 | 809 | 166 | 4,881 | 44 | 2 | 88 |
| 27 | 26-Jun | 127 | 14,349 | 3,311 | 1,232 | 19,794 | 84 | 2 | 168 |
| 28 | 3-Jul | 138 | 23,140 | 6,132 | 2,307 | 13,798 | 94 | 2 | 188 |
| 29 | 10-Jul | 60 | 32,776 | 6,862 | 1,687 | 15,965 | 113 | 2 | 226 |
| 30 | 17-Jul | 41 | 37,734 | 15,770 | 2,378 | 27,221 | 121 | 3 | 363 |
| 31 | 24-Jul | 67 | 44,451 | 19,980 | 11,149 | 20,504 | 176 | 3 | 528 |
| 32 | 31-Jul | 35 | 23,479 | 28,453 | 26,231 | 17,447 | 178 | 3 | 534 |
| 33 | 7-Aug | 8 | 14,611 | 19,529 | 21,675 | 5,801 | 136 | 2 | 272 |
| 34 | 14-Aug | 7 | 7,356 | 20,847 | 36,163 | 6,965 | 102 | 2 | 204 |
| 35 | 21-Aug | 29 | 5,841 | 41,991 | 54,371 | 12,497 | 138 | 4 | 552 |
| 36 | 28-Aug | 18 | 1,501 | 45,573 | 20,960 | 9,392 | 135 | 4 | 540 |
| 37 | 4-Sep | 8 | 409 | 29,149 | 1,492 | 8,653 | 119 | 3 | 357 |
| 38 | 11-Sep | 1 | 126 | 11,265 | 162 | 5,912 | 42 | 3 | 126 |
| 39 | 18-Sep | 6 | 140 | 12,274 | 21 | 5,137 | 67 | 3 | 201 |
| 40 | 25-Sep | 6 | 8 | 4,628 | 0 | 1,848 | 33 | 3 | 99 |
| 41 | 2-Oct | 0 | 2 | 1,258 | 0 | 203 | 11 | 2 | 22 |
| Total | | 740 | 211,048 | 267,831 | 179,994 | 176,018 | 1,593 | 43 | 4,468 |

In the District 108 fishery, 1,961 chinook, 97,224 sockeye, 44,891 coho, 35,405 pink, and 27,658 chum salmon were harvested (Table 6). Catches of all species were above the 1984-1993 averages; sockeye, coho, and chum catches were the highest recorded. An estimated 5% of the coho catch was of Alaskan hatchery origin. The U.S./Canada joint Tahltan Lake enhancement project contributed and estimated 10,029 sockeye to the catch.

**Table 6.** Weekly salmon catch and effort in the Alaskan District 108 commercial drift gillnet fishery, 1994. Catches do not include Ohmer Creek terminal area harvests. The permit days are adjusted for boats which did not fish the entire opening and are less than the sum of the permits times days open.

| | | Catch | | | | | Effort | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Permits | Days | Permit Days |
| 25 | 12-Jun | 72 | 89 | 21 | 2 | 9 | 27 | 1 | 27 |
| 26 | 19-Jun | 203 | 2,022 | 68 | 9 | 112 | 26 | 4 | 104 |
| 27 | 26-Jun | 361 | 12,193 | 270 | 42 | 473 | 66 | 4 | 264 |
| 28 | 3-Jul | 641 | 26,276 | 1,672 | 570 | 4,311 | 100 | 5 | 500 |
| 29 | 10-Jul | 338 | 25,854 | 1,377 | 1,186 | 5,000 | 110 | 5 | 550 |
| 30 | 17-Jul | 124 | 17,971 | 2,479 | 5,049 | 7,495 | 97 | 5 | 485 |
| 31 | 24-Jul | 43 | 7,327 | 1,491 | 8,961 | 3,144 | 59 | 4 | 236 |
| 32 | 31-Jul | 34 | 2,746 | 1,896 | 5,985 | 2,818 | 22 | 3 | 66 |
| 33 | 7-Aug | 3 | 1,343 | 1,844 | 3,760 | 775 | 16 | 2 | 32 |
| 34 | 14-Aug | 1 | 527 | 3,505 | 3,710 | 745 | 24 | 2 | 48 |
| 35 | 21-Aug | 38 | 565 | 7,431 | 4,752 | 690 | 37 | 4 | 148 |
| 36 | 28-Aug | 89 | 231 | 10,397 | 1,240 | 499 | 40 | 4 | 160 |
| 37 | 4-Sep | 11 | 43 | 6,261 | 135 | 576 | 35 | 3 | 105 |
| 38 | 11-Sep | 1 | 26 | 2,906 | 3 | 575 | 18 | 3 | 54 |
| 39 | 18-Sep | 1 | 9 | 2,126 | 1 | 404 | 21 | 3 | 63 |
| 40 | 25-Sep | 1 | 2 | 926 | 0 | 25 | 20 | 3 | 60 |
| 41 | 2-Oct | 0 | 0 | 221 | 0 | 7 | 3 | 2 | 6 |
| Total | | 1,961 | 97,224 | 44,891 | 35,405 | 27,658 | 721 | 57 | 2,908 |

Harvest sharing of Stikine sockeye stocks is based on in-season abundance forecasts produced by the Stikine Management Model (SMM) (Table 7). Unlike years previous to 1993, in-season scale pattern analyses were not conducted for District 106 and 108 sockeye catches in 1994. Historically, in-season results had proven to be unreliable. For 1994 (as in 1993), average stock proportions from the postseason SPA analysis in previous years were assumed for weekly catches; the averages used each week depended upon whether the run was judged to be below average, average, or above average. Based on average stock compositions in years of large Stikine River sockeye runs the Sumner Strait fishery (Subdistricts 106-41 & 42) harvested 49,728 Stikine sockeye salmon, 31.6% of the total sockeye harvest in that subdistrict; the Clarence Strait fishery (Subdistrict 106-30) took 10,864 Stikine fish, 20.3% of the catch in that subdistrict; and the District 108 fishery, near the mouth of the Stikine River, harvested 84,121 Stikine fish, 86.5% of the District 108 catch. An estimated 144,713 Stikine sockeye salmon were harvested in commercial gillnet fisheries from both districts.

**Table 7.** Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as determined in-season by the Stikine Management Model, 1994.

| Week | Start Date | Forecasts: Run Size | Forecasts: TAC | U.S. TAC | Canada TAC | Cumulative Catch: U.S. | Cumulative Catch: Canada |
|---|---|---|---|---|---|---|---|
| Model Runs Generated by the U.S. [a] | | | | | | | |
| 25 | 12-Jun | 345,540 | 291,540 | 145,770 | 145,770 | 41 | 0 |
| 26 | 19-Jun | 345,540 | 291,540 | 145,770 | 145,770 | 1,837 | 0 |
| 27 | 26-Jun | 345,540 | 291,540 | 145,770 | 145,770 | 7,464 | 443 |
| 28 | 3-Jul | 174,388 | 120,388 | 60,194 | 60,194 | 25,603 | 5,878 |
| 29 | 10-Jul | 180,259 | 126,259 | 63,130 | 63,130 | 55,864 | 11,515 |
| 30 | 17-Jul | 197,832 | 143,832 | 71,916 | 71,916 | 93,080 | 16,660 |
| 31 | 24-Jul | 382,386 | 328,386 | 164,193 | 164,193 | 129,097 | 34,486 |
| 32 | 31-Jul | 362,959 | 308,959 | 154,480 | 154,480 | 136,297 | 41,536 |
| 33 | 7-Aug | 357,006 | 303,006 | 151,503 | 151,503 | 140,614 | 42,528 |
| 34 | 14-Aug | 356,217 | 302,217 | 151,109 | 151,109 | 142,884 | 44,617 |

[a]U.S. forecasts were as follows: the preseason forecast was used for weeks 25, 26, and 27; the forecast based on inriver commercial catch was used for weeks 28, 29, and 30; and the forecast based on District 6 CPUE was used for the remainder of the sockeye season. (Canada independently generates forecasts that may use different criteria in some weeks.)

The estimated Stikine sockeye run was 278,699 fish (Table 8) and the escapement was 87,455 fish which was above the escapement goal.

**Table 8.** Run reconstruction for Stikine sockeye salmon, 1994.

| | Tahltan | non-Tahltan | Total |
|---|---|---|---|
| Escapement | 46,363 | 41,092 | 87,455 |
| Broodstock | 3,378 | | |
| ESSR | 6,852 | | |
| Spawning | 36,133 | 41,092 | 77,225 |
| Canadian Harvest | | | |
| Indian Food | 3,750 | 417 | 4,167 |
| Upper Commercial | 2,219 | 247 | 2,466 |
| Lower Commercial | 23,148 | 15,311 | 38,459 |
| Total | 29,118 | 15,974 | 45,092 |
| % Harvest | 22.5% | 26.4% | 23.8% |
| Test Fishery Catch | 1,204 | 229 | 1,433 |
| Inriver Run | 76,685 | 57,296 | 133,980 |
| U.S. Harvest | | | |
| 106-41&42 | 33,934 | 15,794 | 49,728 |
| 106-30 | 5,695 | 5,170 | 10,864 |
| 108 | 60,507 | 23,614 | 84,121 |
| Total | 100,136 | 44,578 | 144,713 |
| % Harvest | 77.5% | 73.6% | 76.2% |
| Test Fishery Catch | 4 | 2 | 6 |
| Total Run | 176,825 | 101,876 | 278,699 |
| Escapement Goal | 24,000 | 30,000 | 54,000 |
| TAC | 152,825 | 71,876 | 224,699 |
| Canada Catch | 29,118 | 15,974 | 45,092 |
| % of TAC | 19.1% | 22.2% | 20.1% |
| U.S. Catch | 100,136 | 44,578 | 144,713 |
| % of TAC | 65.5% | 62.0% | 64.4% |

Taku River Area Fisheries

The 1994 District 111 commercial gillnet harvest included 5,028 chinook, 105,866 sockeye, 188,445 coho, 402,272 pink, and 214,013 chum salmon (Table 9). Catches of all species were above the 1984 to 1993 averages. Coho and summer chum catches, 188,445 and 197,835 respectively, were the largest in the history of the fishery, but fall chum catches were extremely

poor. Sockeye salmon from several enhancement projects contributed an estimated 2,571 fish to the catch. An estimated 14% of the coho catch was of Alaska hatchery origin. The District 111 pink salmon harvest was the largest in the history of the fishery and two and one-half times the 1984 to 1993 even year average of 157,570 fish. The catch was comprised of wild stocks returning to Taku Inlet, Stephens Passage streams and runs to the DIPAC Hatchery in Juneau. The majority of the pink harvest (51%; 203,779 fish) was taken outside Taku Inlet in lower Stephens Passage during statistical weeks 32 through 34. In addition to the District 111 commercial fishery harvest, a total of approximately 2.1 million pink salmon were harvested by the DIPAC Hatchery in a cost recovery fishery in Gastineau Channel. Alaska hatchery chum salmon contributed the majority of the summer chum catch. The fall chum salmon harvest, (i.e. chum salmon caught after August 15, statistical week 34), was 16,178 fish, and was 51% below the 1984 to 1993 average. Chum salmon that are taken in the fall in District 111 are exclusively wild chum stocks from the Taku River and Port Snettisham.

The U.S. personal use fishery in the Taku River harvested an estimated 20 chinook, 1,500 sockeye, 100 coho, 100 pink, and 10 chum salmon. Two other fisheries in the Juneau area also intercepted some Taku River stocks. The spring Juneau-area sport fishery harvested an estimated 3,643 chinook salmon, above the ten-year average of 2,853 fish, but less than the five-year average of 4,381 fish.. The purse seine fishery in Chatham Strait was open north of Hanus Reef for 15 hours on July 15, and 8 hours on July 18, and harvested 60 chinook, 10,323 sockeye, 2,984 coho, 408,913 pink and 42,912 chum salmon.

**Table 9.** Preliminary weekly salmon catch and effort in the Alaskan District 111 commercial drift gillnet fishery, 1994.

| | | Catch | | | | | Effort | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Boats | Days Open | Boat Days |
| 25 | 12-Jun | | | | | | | | |
| 26 | 19-Jun | 1,119 | 3,828 | 30 | 147 | 1,190 | 59 | 5 | 295 |
| 27 | 26-Jun | 893 | 6,691 | 71 | 1,582 | 5,174 | 55 | 5 | 275 |
| 28 | 3-Jul | 941 | 8,253 | 1,193 | 4,013 | 22,520 | 63 | 4 | 252 |
| 29 | 10-Jul | 705 | 26,552 | 3,180 | 8,594 | 60,149 | 87 | 5 | 435 |
| 30 | 17-Jul | 548 | 10,978 | 3,896 | 18,019 | 50,068 | 96 | 4 | 384 |
| 31 | 24-Jul | 440 | 17,848 | 6,264 | 40,061 | 32,202 | 83 | 4 | 332 |
| 32 | 31-Jul | 154 | 16,737 | 7,885 | 121,687 | 18,482 | 94 | 5 | 470 |
| 33 | 7-Aug | 69 | 7,191 | 11,841 | 130,126 | 8,046 | 100 | 5 | 500 |
| 34 | 14-Aug | 63 | 3,260 | 18,029 | 67,653 | 3,034 | 98 | 5 | 490 |
| 35 | 21-Aug | 22 | 2,292 | 23,803 | 8,803 | 2,272 | 82 | 4 | 328 |
| 36 | 28-Aug | 20 | 1,214 | 22,791 | 1,452 | 2,318 | 83 | 3 | 249 |
| 37 | 4-Sep | 15 | 650 | 33,214 | 124 | 2,265 | 88 | 3 | 264 |
| 38 | 11-Sep | 7 | 235 | 23,134 | 11 | 2,787 | 71 | 4 | 284 |
| 39 | 18-Sep | 10 | 92 | 11,392 | 0 | 1,875 | 83 | 4 | 332 |
| 40 | 25-Sep | 19 | 37 | 15,272 | 0 | 1,458 | 56 | 4 | 224 |
| 41 | 2-Oct | 2 | 8 | 6,383 | 0 | 169 | 47 | 4 | 188 |
| 42 | 9-Oct | 1 | 0 | 67 | 0 | 4 | 4 | 2 | 8 |
| Total | | 5,028 | 105,866 | 188,445 | 402,272 | 214,013 | | 70 | 5,310 |

Efforts to re-negotiate harvest shares of Taku River salmon during the Pacific Salmon Commission and government-to-government negotiations in the spring and summer of 1994 were not successful. As a result, the Parties unilaterally developed fishing plans for Taku River salmon stocks. The

U.S. management plan reflected the provisions that were in effect for 1993, namely to provide for Canadian harvests of 18% of the TAC of Taku River sockeye and 3,000 coho.

The total Taku sockeye run was estimated at 208,653 fish. Based on the escapement goal range of 71,000 to 80,000 fish, the TAC was 137,653 to 128,653 sockeye salmon. The U.S. harvested an estimated 82,332 Taku sockeye salmon, representing 60% to 64% of the TAC. The estimated escapement of 97,320 sockeye salmon in 1994 was above the escapement goal range.

In-season scale pattern analysis was not used in 1994 to determine the stock composition of District 111 sockeye catches and the postseason analysis is in progress. Taku River sockeye salmon have comprised an average of 76% of the District 111 sockeye catch from 1983 to 1993. This average was used in the preliminary run reconstruction (Table 10).

**Table 10.** Taku sockeye salmon run reconstruction, 1994. Estimates do not include spawning escapements below the U.S./Canada border.

| | Taku | Port Snettisham Stocks |
|---|---|---|
| Escapement | 97,320 | Not Available |
| Canadian Harvest | | |
| Commercial | 28,762 | |
| Food Fishery | 239 | |
| Total | 29,001 | |
| % Harvest | 26% | |
| Test Fishery Catch | 0 | |
| Above Border Run | 126,321 | |
| U.S. Harvest | | |
| District 111 | 80,832 | 22,463 |
| Sweetheat Lake | | 2,571 |
| Personal Use | 1,500 | |
| Total | 82,332 | |
| % Harvest | 74% | |
| Test Fishery Catch | 0 | |
| Total Run | 208,653 | |

| Taku Harvest Plan | Minimum | Maximum |
|---|---|---|
| Escapement Goal | 71,000 | 80,000 |
| TAC | 137,653 | 128,653 |
| Canadian portion | 0.211 | 0.225 |
| U.S. Portion | 0.598 | 0.640 |

Alsek River Area Fisheries

Although catch sharing of Alsek salmon stocks between Canada and the U.S. has not been specified, Annex IV of the Pacific Salmon Treaty does call for a cooperative attempt to rebuild depressed chinook and early-run sockeye stocks. Preseason expectations were for an above average return of early run sockeye salmon, an average to below average return of late run sockeye and an average return of chinook salmon. These expectations were based on parent-year escapements to the Klukshu River. Based on the expected above average return of early run sockeye, the Alsek River was opened to commercial fishing on the first Monday in June. This marked the first time since 1987 that the Alsek was opened on the date specified by regulation. The initial opening was limited to 12 hours in order to evaluate the effectiveness of chinook conservation measures. Fishery performance indicated that the early segment of the sockeye return was strong and the chinook harvest was at expected levels.

The sockeye and chinook runs essentially developed as expected. The U.S. Dry Bay commercial gillnet fishery harvested 805 chinook, 19,639 sockeye, 4,182 coho, 0 pink, and 32 chum salmon (Table 11). The harvest of sockeye salmon was 32% above the 1984-1993 average. The catch of chinook salmon was two and one-half times above the 1984-1993 average, but equal to the 1964 to 1993 historical average. Coho catches were equal to the ten-year average, and the pink and chum catches were below average. Numbers of fishers declined sharply after week 29 because many moved to the East River, which had a strong return of sockeye.

**Table 11.** Preliminary weekly salmon catch and effort in the U.S. commercial fishery in the Alsek River, 1994.

| | | Catch | | | | | Effort | | |
|---|---|---|---|---|---|---|---|---|---|
| Week | Start Date | Chinook | Sockeye | Coho | Pink | Chum | Boats | Days Open | Boat Days |
| 24 | 5-Jun | 316 | 1,034 | 0 | 0 | 0 | 23 | 1 | 23 |
| 25 | 12-Jun | 194 | 1,073 | 0 | 0 | 0 | 27 | 1 | 27 |
| 26 | 19-Jun | 62 | 886 | 0 | 0 | 0 | 26 | 1 | 26 |
| 27 | 26-Jun | 76 | 3,138 | 0 | 0 | 1 | 26 | 2 | 52 |
| 28 | 3-Jul | 12 | 4,655 | 0 | 0 | 0 | 28 | 3 | 84 |
| 29 | 10-Jul | 45 | 1,833 | 1 | 0 | 0 | 11 | 3 | 33 |
| 30 | 17-Jul | 1 | 2,377 | 0 | 0 | 1 | 7 | 3 | 21 |
| 31 | 24-Jul | 21 | 1,171 | 1 | 0 | 4 | 6 | 4 | 24 |
| 32 | 31-Jul | 0 | 1,208 | 5 | 0 | 3 | [a] | 4 | [a] |
| 33 | 7-Aug | 0 | 1,273 | 4 | 0 | 0 | [a] | 4 | [a] |
| 34 | 14-Aug | 77 | 711 | 52 | 0 | 4 | [a] | 4 | [a] |
| 35 | 21-Aug | 0 | 161 | 135 | 0 | 5 | 4 | 4 | 16 |
| 36 | 28-Aug | 0 | 50 | 142 | 0 | 0 | [a] | 4 | a |
| 37 | 4-Sep | 0 | 51 | 914 | 0 | 4 | 5 | 6 | 28 |
| 38 | 11-Sep | 1 | 13 | 1,268 | 0 | 1 | 5 | 6 | 28 |
| 39 | 18-Sep | 0 | 5 | 1,312 | 0 | 9 | 7 | 4 | 28 |
| 40 | 25-Sep | 0 | 0 | 348 | 0 | 0 | 3 | 4 | 12 |
| 41 | 2-Oct | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| Total | | 805 | 19,639 | 4,182 | 0 | 32 | 178 | 61 | 433 |

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

**Transboundary River Joint Enhancement Activities**

In 1994, fry were outplanted to Trapper, Tahltan, Tuya, and Tatsamenie Lakes over the periods June 16 and 24, June 11 and July 19, June 16 to July 11, and July 14, respectively. Egg survivals and numbers of fry outplanted are summarized in Table 12.

**Table 12.** Green egg to outplanted fry survival rates for 1993 brood year transboundary river sockeye salmon enhancement projects.

| Lake | Green Eggs | Eyed Eggs | Fry Planted | Survival |
|---|---|---|---|---|
| Tahltan | 969,000 | 916,000 | 904,000 | 93.3% |
| Tuya | 5,171,000 | 4,712,000 | 4,690,000 | 90.7% |
| Tatsamenie | 1,144,000 | 709,000 | 521,000 | 45.5% |
| Trapper | 1,174,000 | 951,000 | 916,000 | 78.1% |

Green egg to fry survivals for all outplant groups except Tatsamenie improved over last year. Tatsamenie survivals of 60% from green to eyed egg were again poor for reasons not understood; additionally one Tatsamenie incubator of 169,000 fry was lost to IHNV.

In 1994, sockeye eggs were collected at Tahltan Lake (Stikine River) for the sixth year, and at Little Trapper and Tatsamenie/Little Tatsamenie Lakes (Taku River) for the fifth year. The eggs were collected by Canada and flown to the central incubation facility at Port Snettisham. The target of 6.0 million eggs at Tahltan Lake was not reached, because both countries agreed to stop egg collection after the crash of a Tel Air plane and the death of the pilot and a member of the egg take crew; a total of approximately 4.1 million eggs were collected. The Tatsamenie target of 2.5 million eggs was not achieved, due to brood stock limitations; approximately 1.3 million eggs were collected. The target of 1.0 million eggs at Trapper was slightly exceeded with approximately 1.1 million eggs collected.

The Snettisham Hatchery Central Incubation Facility operated very well during the last year. All the newly installed systems are functioning well. The one note of concern regarding this facility is the intention of the State of Alaska's Department of Fish and Game to cease operating the facility. The State intends to transfer operation of Snettisham to a private aquaculture organization. This approach has allowed Alaska to continue the operation of a number of hatcheries across the State and the expectation is that Snettisham would continue to serve the needs of the TBR enhancement projects. (Two U.S. members of the TBR committee are on the State's transfer team.)

The 1994 fishing season marked the first use of the Department of Fish and Game's otolith processing facility to meet the objectives identified as part of the U.S./Canada agreements in enhancing sockeye production. The lab was able to provide managers with an in-season estimate of the proportion of enhanced sockeye in 52 commercial openings over a 10 week period. These initial estimates were made by processing 4,653 otoliths taken from seven different Districts and Subdistricts, with the information given to managers in time for their next weekly opening. Numerous other juvenile and adult sockeye salmon samples were processed by the lab in 1994 in connection with assessment of outplant survivals in transboundary river lakes and domestic projects.

**Chinook Salmon Fisheries**

Southeast Alaska Chinook Salmon Fishery

All Gear Harvest

The preliminary estimate of the 1994 chinook salmon catch by all Southeast Alaska fisheries was 261,900 (Table 13). The base catch (total minus the add-on) was 231,000. The base catch was reduced by 23,000 below the quota of 263,000 as a requirement of the 1994 National Marine Fisheries Service's Biological Opinion for the Snake River Fall Chinook Salmon. This reduction allowed an estimated one additional spawner to return. The 1994 catch brought the cumulative deviation to -15,500 (below zero based on 240,000 in 1994).

**Table 13.** Chinook all-gear catches in Southeast Alaska, 1987 to 1994, and deviation from the ceiling each year. Catches in thousands.

| Year | Total | Add-on | Quota | Base | Number | Percent |
|---|---|---|---|---|---|---|
| 1987 | 281.9 | 16.7 | 263 | 265.2 | 2.2 | 0.8% |
| 1988 | 278.9 | 23.7 | 263 | 255.2 | -7.8 | -3.0% |
| 1989 | 291.1 | 26.7 | 263 | 264.4 | 1.4 | 0.5% |
| 1990 | 366.9 | 53.7 | 302 | 313.2 | 11.2 | 5.5% |
| 1991 | 357.0 | 61.4 | 273 | 295.6 | 22.6 | 9.6% |
| 1992 | 260.0 | 38.3 | 263 | 221.7 | -41.3 | -15.7% |
| 1993 | 301.9 | 33.7 | 263 | 268.2 | 5.2 | 2.0% |
| 1994 | 261.9 | 30.9 | 263[a] | 231.0 | -9.0 | -3.4% |
| Cumulative | 2,399.6 | 285.1 | 2,153[b] | 2,114.5 | -15.5[c] | -5.9% |

[a] Actual target was 240,000.
[b] Based on 263,000 for 1994.
[c] Calculated with 240,000 for 1994.

Troll Fishery

The winter troll fishery harvested 56,200 chinook salmon from October 11, 1993 through April 14, 1994. A total of 2,000 were from Alaskan hatcheries.

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

There is no limit on the number of chinook salmon harvested in the terminal and experimental fisheries. However, the experimental fisheries that limit the take of Treaty chinook salmon according to the percentage of Alaskan hatchery fish taken in the fishery. The catches in 1994 were: 100 in the terminal fishery and 11,300 in the experimental fishery. A total of 44.4% of the chinook salmon landed in these fisheries were from Alaskan hatcheries.

The summer fishery began on July 1 and continued through July 7. According to the new management plan, the target for this opening was 70% of the number of fish remaining to be harvested. A total of 98,200 chinook salmon were harvested during this opening. Beginning July

8, the areas of high chinook salmon abundance were closed for the remainder of the season. A second opening occurred on August 29 through September 3. The areas of high chinook salmon abundance remained closed during this opening in order to slow down the harvest rate. The catch during this period was 20,200. A total of 4,200 Alaskan chinook salmon were harvested during the first opening and 1,100 during the second.

The total troll harvest was 186,100 chinook salmon.

Net Fisheries

Net fisheries have a guideline harvest of 20,000 chinook salmon plus Alaska hatchery add-on chinook. Catches of chinook salmon in the net fisheries are incidental to the harvest of other species and only constitute a small fraction (<1.0%) of the total net harvest. In 1994, the net fisheries harvested a total of 35,300 chinook salmon of which 17,600 were from Alaska hatcheries.

Recreational Fisheries

The recreational fishery had a harvest of 40,500 chinook salmon of which 7,100 were from Alaska hatcheries.

Southern U.S. Chinook Fisheries

The following is a summary of 1994 and 1993 chinook catches in Washington and Oregon fisheries of interest to the Pacific Salmon Commission (PSC). The data are preliminary and will change as fish ticket data replace in-season projections, errors are discovered and corrected, and landings for the remainder of the year are included in the catch. These summaries were compiled on 11/9/94. The 1994 estimates include catches reported through 11/8/94; the 1993 estimates include catches for the entire year.

**Table 14.** Summary of chinook catch estimates in Washington and Oregon for 1993 and 1994.

| Fishery | 1994 Estimate | 1993 Estimate |
|---|---|---|
| Central Oregon | | |
| Troll | 400 | 600 |
| Recreational | NA | 52,400 |
| Columbia River | | |
| Net | 34,300 | 50,800 |
| Recreational[1] | 2,100 | 11,400 |
| Ocean (North of Falcon) | | |
| Troll | 4,400 | 55,100 |
| Recreational | 0 | 13,700 |
| Net | <50 | <50 |
| Washington Coastal | | |
| Marine Net | 32,700 | 49,600 |
| River Net | 10,600 | 12,200 |
| Strait of Juan de Fuca | | |
| Net | 5,600 | 1,400 |
| Troll | 2,600 | 9,800 |
| Recreational | NA | 32,400 |
| San Juan Islands | | |
| Net | 14,300 | 14,000 |
| Troll | 100 | 200 |
| Recreational | NA | 6,900 |
| Puget Sound | | |
| Marine Net | 44,200 | 42,700 |
| River Net | 18,000 | 12,300 |
| Recreational | NA | 41,000 |

[1]Includes mainstem Columbia River catch below Bonneville Dam only.

Ocean Fisheries off Central Oregon

Ocean fisheries off Oregon's coast harvest predominately 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 originating in Oregon coastal streams do migrate into PSC fisheries, including the Northern Oregon Coastal (NOC) and Mid Oregon Coast (MOC) stock aggregates. The NOC stocks are harvested only incidentally in Oregon fisheries (probably <5%),

while the catch distribution of MOC stocks in Oregon fisheries is thought to be much greater. Catch statistics are readily available for only one population of the MOC group in a preterminal troll fishery. Recreational catch of these two stock groups occurs primarily in estuary and freshwater areas as mature fish return to spawn and are reported through a "punch card" accounting system.

In 1993, the recreational catch for the NOC and MOC groups was 41,100 and 11,300, respectively. The 1994 recreational fishery is currently underway and no in-season estimates are made. The troll catch in the late season preterminal Elk River Fishery was estimated to be 400 chinook, compared to 649 chinook in 1993.

Columbia River

Pre-season forecasts for spring chinook in the Columbia River were for generally low to average returns for all stocks. Endangered Species Act (ESA) constraints for Snake River wild spring/summer chinook resulted in even more stringent conservation management than would have been required through conservation directives of the Columbia River Fish Management Plan. The commercial harvests of 2,000 spring chinook in 1994 and 1,500 in 1993 were all well below the recent five-year average of almost 14,000 chinook. The spring chinook sport catch in the Columbia River was 2,000 in 1994 and 1,900 in 1993. These compare with the recent five-year average of 6,100.

Non-tribal chinook-directed commercial fisheries were eliminated in 1994, due both to concerns over escapement of the lower river hatchery stock and ESA constraints for Snake River fall chinook. The non-tribal commercial fishery harvested 1,700 fall chinook (incidental to coho fisheries) in 1994, which represents only 10% of the 1993 record low harvest. The Treaty Indian commercial catches of fall chinook were 30,600 in 1994 compared to 31,100 in 1993. These compare to a 1990-1992 average catch of 55,000 and a 1986-1989 average catch of 130,000. ESA constraints limited the 1994 in-river fisheries to below levels provided in the Columbia River Management Plan and resulted in a tribal harvest of less than 50% of the harvestable surplus of upriver-origin fall chinook.

The total 1994 commercial catch of 34,300 chinook in the Columbia River was a new record low, following the previous record low in 1993. In the 1980's, the commercial harvest of chinook averaged almost 230,000. Since 1990, that average has dropped to less than 80,000. There are several reasons for the decline in catches. The two most critical are the recent poor ocean survival of most stocks of northwest salmon and the listing of several Columbia River stocks under the ESA. Both of these have resulted in recent year low harvests for both commercial and sport fisheries in the Columbia River.

The total 1994 mainstem sport catch below Bonneville Dam was only 2,100 chinook, almost all of which was caught during the spring chinook season. The spring chinook fishery has been constrained by upriver stock sizes since 1977. There have been no directed summer chinook commercial fisheries since the mid-1960's. No recreational harvest of summer chinook has been allowed since 1973. ESA concerns delayed the opening of fall chinook sport fisheries on the mainstem Columbia River until most of the run had passed through.

Ocean Fisheries North of Cape Falcon

The U.S. ocean fisheries operating north of Cape Falcon, Oregon, are typically constrained by coho and chinook ceilings developed through the domestic regulatory process of the Pacific Fisheries Management Council (PFMC). In 1994, pre-season forecasts indicated that many of Washington's

critical chinook and coho stocks were expected to return at record low numbers. Many critical stocks were projected to return below spawning escapement goal levels, even in the absence of any 1994 fishing. In response to this unprecedented situation, extensive fishery closures were necessary in both preterminal and terminal areas to ensure the maximum return of these critical stocks to spawning areas.

All non-tribal recreational and commercial fisheries in the North of Cape Falcon area were closed in 1994. Ocean harvest North of Cape Falcon was limited to a tribal all-salmon-except-coho troll fishery during the period from May 1 - June 30, 1994. This fishery had a quota of 16,400 chinook salmon. Effort and catch rates in this fishery were low and a total of 4,400 chinook were landed, 27% of the quota.

Washington Coast

Ocean escapements of northern Washington coastal stocks were predicted above minimum spawning levels, allowing both commercial and recreational fisheries. Although coastal fisheries are incomplete, preliminary 1994 estimates of Grays Harbor and Willapa Bay net catch total 32,700 chinook, compared to 49,600 in 1993. The 1994 commercial net fisheries in north coastal rivers have harvested an estimated 10,600 chinook, compared to 12,200 in 1993. Catches for the Humptulips and Chehalis rivers are included in the Grays Harbor marine net totals.

Strait of Juan de Fuca

The preliminary estimate of the 1994 incidental chinook catch in the Strait of Juan de Fuca net fishery is 5,600 chinook, compared to 1,400 in 1993. Through November 8, the Strait of Juan de Fuca tribal troll fishery has harvested an estimated 2,600 chinook, compared to 7,800 chinook caught through November 4, 1993. Tribal troll catch from January 1 through December 31, 1993 in this area was 9,800. Note that tribal troll catch estimates from this area do not include tribal catch in Area 4B during the May 1 - September 30 PFMC management period; catches during this period have been included in the North of Cape Falcon troll summary.

In 1994, the Area 4B state waters fishery, which occurs after the PFMC fishery, was kept closed due to poor stock status of numerous coho stocks. No chinook were harvested in this fishery in 1993. Total 1994 recreational catch estimates in Areas 5 and 6 are not available at this time; however, catch is much reduced from the preliminary 1993 catch due to fishery closures extending from May 1 to October 31. Preliminary estimates of 1993 recreational chinook catch for Areas 5 and 6 total 32,400, compared to 38,100 in 1992.

San Juan Islands

Preliminary 1994 estimates of the incidental chinook catch in the San Juan Islands net fisheries total 14,300 compared to 14,000 in 1993. Recreational catch estimates for 1994 in Area 7 are not available at this time. Preliminary estimates of recreational chinook catch for 1993 in Area 7 total 6,900, compared to 6,600 in 1992.

Puget Sound

Recreational and commercial fisheries in Puget Sound were regulated by unprecedented time and area closures to protect depressed spring and fall chinook and coho stocks. As a result of restrictions or closures placed on mixed stock fisheries, some terminal runs contained hatchery surpluses or harvestable returns of wild fish. Preliminary estimates of 1994 net catch in Puget Sound marine areas total 44,200 chinook, compared to 42,700 in 1993. Preliminary estimates of

1994 net catch in Puget Sound freshwater areas total 18,000 chinook, compared to 12,300 in 1993. Commercial marine catches in 1994 and 1993 represent only 43% and 42% of the previous five year average (1988-1992) of 102,359. Commercial freshwater catches represent 79% and 54% of the same five-year average of 22,626.

Puget Sound recreational catch estimates for 1994 are not available at this time. Preliminary estimates of 1993 recreational chinook catch for Areas 8-13 total 41,000, compared to 53,000 in 1992.

**Coho Salmon Fisheries**

Southeast Alaska Coho Salmon Fisheries

There are no specific provisions in the Annex IV chapter on coho salmon that apply to Southeast Alaska fisheries. These fisheries are managed by the Alaska Department of Fish and Game to achieve gear allocation objectives established by the Alaska Board of Fisheries and general coho salmon conservation objectives. The 1994 fisheries were managed in a manner similar to that since 1980. No catch ceilings are used, rather fisheries are managed based on in-season assessment of run strength.

In 1994, coho salmon abundance was far higher than had ever been observed in recent decades and possibly at any time in this century. Wild runs were proportionately more abundant than hatchery production compared with recent years and accounted for 87% of the catch. Due to exceptional abundance of wild stocks, the troll fishery remained open throughout the summer season beginning July 1 except for a 2-day closure in late August to restart the chinook fishery. In addition, the troll season was extended for 10 days past the usual September 20 closing date (except for offshore and boundary areas) to harvest surplus coho. Run strength was well distributed throughout the region, while showing the greatest extremes in the north, and most inside gillnet fisheries were managed under very liberal time-area fishing schedules.

The 1994 total harvest of 5,763,200 fish (Table 15) was more than 2 million fish higher than the previous record of 3,678,000 in 1993. An all-time record harvest was achieved by all five gear-types while the distribution of the harvest among commercial users was close to Alaska Board of Fisheries allocation objectives (based on the 1969-1988 average).

**Table 15.** Coho Salmon harvest in Southeast Alaska in 1994 by gear type.

| Gear Type | Harvest |
|---|---|
| Troll | 3,461,200 |
| Purse Seine | 970,500 |
| Drift Gillnet | 744,700 |
| Set Gillnet | 343,800 |
| Recreational | 243,000 |
| Total | 5,763,200 |

The upper bounds of biological escapement goals were exceeded for all four wild CWT indicator stocks. In addition, surveys and estimates for other systems indicated that escapements were very strong throughout the region.

Preliminary 1994 Coho Salmon Catches in Washington and Oregon Fisheries

This review compiles available coho catch data from 1994 and 1993 Washington and Oregon 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. Commercial statistics for 1994 include catches reported through November 8, 1994; the 1993 estimates include catches for the entire year. A summary of the 1994 and 1993 coho catches is presented in Table 16.

**Table 16.** Summary of coho catch estimates in Washington and Oregon fisheries for 1993 and 1994.

| Fishery | 1994 Estimate | 1993 Estimate |
|---|---|---|
| Columbia River | | |
| Net | 7,100 | 37,000 |
| Recreational[1] | 2,800 | 21,500 |
| Ocean (North of Falcon) | | |
| Troll | 0 | 74,100 |
| Recreational | 0 | 140,100 |
| Net | 0 | <50 |
| Washington Coastal | | |
| Marine Net | 20,200 | 41,700 |
| River Net | 5,400 | 20,300 |
| Strait of Juan de Fuca | | |
| Net | 12,900 | 4,300 |
| Troll | 0 | 100 |
| Recreational | NA | 64,100 |
| San Juan Islands | | |
| Net | 2,500 | 13,900 |
| Troll | 0 | 100 |
| Recreational | NA | 18,600 |
| Puget Sound | | |
| Marine Net | 322,600 | 149,500 |
| River Net | 116,100 | 19,500 |
| Recreational | NA | 61,500 |

[1]Includes mainstem Columbia River catch below Bonneville Dam only.

Columbia River

The 1994 preseason forecast for Columbia River coho was for a return of about 100,000 fish, consisting of both early and late stocks, a return that would only just meet hatchery escapement goals. Harvest management plans included no commercial fishing on the early part of the run and a delay until mid-October of the opening of the Buoy 10 sport fishery, conducted at the mouth of the river. Restrictions were in place throughout the Columbia River to protect early coho.

In-season assessment showed that the early coho return to the Columbia River was more than twice the forecast of 50,000 while that of the late coho was near the pre-season forecast of 50,000. Based on this in-season estimate, the Buoy 10 fishery opened earlier than planned (in mid-September), although this was still well past the peak of fish abundance. The total 1994 return of coho to the Columbia River was about 180,000, compared to 114,000 in 1993 and an average of 500,000 from 1980-1989.

The total 1994 mainstem Columbia River coho harvest was only 9,900 fish in the combined recreational and commercial fisheries. The total commercial fishery catch of coho was only 7,100, the lowest catch since the 1983 (El Nino) harvest of 2,400 and well below the 1980 - 1989 average of 275,000. The total recreational catch was only 2,800, well below the 1980 - 1989 average of 53,000 coho.

Ocean Fisheries North of Cape Falcon

The U.S. ocean fisheries operating north of Cape Falcon, Oregon, are typically constrained by coho and chinook ceilings developed through the domestic regulatory process of the Pacific Fisheries Management Council (PFMC). In 1994, pre-season forecasts indicated that many of Washington's critical chinook and coho stocks were expected to return at record low numbers. Many critical stocks were projected to return below spawning and escapement goal levels, even in the absence of any 1994 fishing. In response to this unprecedented situation, extensive fishery closures were necessary in both pre-terminal and terminal areas to ensure the maximum return of these critical stocks to spawning areas.

In response to the poor stock status of numerous coho stocks coastwide, the PFMC adopted 1994 seasons that included coho non-retention fishing in the area North of Cape Falcon, Oregon.

Washington Coastal Marine Net

The preliminary estimate of the non-tribal 1994 Willapa Bay and Grays Harbor coho net fisheries harvest is 11,500 compared to a catch of 24,200 in 1993. Tribal fisheries in Grays Harbor landed an estimated 8,700 coho in 1994 compared to 17,500 in 1993. There is no tribal catch in Willapa Bay.

North Washington Coastal River Net

The 1994 tribal net fisheries in Washington's coastal rivers have harvested approximately 5,400 coho compared to 20,300 in 1993. 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 preliminary estimate of the net fishery harvested in Areas 4B, 5, and 6C is 12,900 coho in 1994 compared to 4,300 in 1993.

Strait of Juan de Fuca Troll

The tribal troll fishery in Areas 4B (occurring outside of the PFMC management period), 5, and 6C harvested no coho in 1994 compared to 100 in 1993.

Strait of Juan de Fuca Recreational

No Washington State managed recreational fishery occurred in Area 4B in 1994. This 4B recreational fishery harvested 8,200 coho in 1993. Total 1994 estimates for Areas 5 and 6 are unavailable; however, the harvest will be much lower than the 1993 harvest because the fishery was closed during a substantial portion of the season (May 1 to October 31). The 1993 Area 5 and 6 coho catch of 55,900 is below the 1992 catch of 101,600.

San Juan Islands Recreational

Catch estimates are not yet available for the 1994 sport fishery in Area 7. The preliminary 1993 coho catch was 18,600. The catch in 1992 was 5,700.

Puget Sound Marine Net

Preliminary estimates of the 1994 tribal and non-tribal net fishery harvests in Puget Sound marine areas other than 4B, 5, 6, 6A, 6C, 7 and 7A are 299,500 and 23,100 coho, respectively. This compares to a tribal harvest of 127,100 and a non-tribal harvest of 22,400 coho in 1993. Catch increased substantially over the 1993 level only in fisheries that target hatchery stocks (Areas 6D, 7B, 8D, 9A, 10A, 10E, 12A, 13). Harvest levels in other areas declined from the 1993 level (8, 8A, 9, 10, 10F, 12, 12B, 12C). The total Puget Sound commercial marine harvest of 322,600 coho in 1994 and 149,500 coho in 1993 represent just 49% and 23% of the 1988 - 1992 average catch of 659,100.

Puget Sound River Net

Preliminary harvest estimates for tribal river net fisheries in Puget Sound are 116,100 coho in 1994 compared to 19,500 in 1993. Catch increased substantially over the 1993 level only in fisheries that target hatchery stocks (Nooksack, Duwamish/Green, Puyallup, Nisqually). Harvest levels in other areas (Hoko, Sekiu, Skagit, Stillaguamish, and Skokomish) declined from the 1993 level, except in the Skagit River where harvest increased slightly. There was a 48-hour period of directed fishing to develop the river run-size update and the majority of the 1994 catch was taken in that test fishery.

Puget Sound Recreational

Catch estimates are not available at this time for the 1994 Puget Sound sport fishery. The 1993 coho catch of 61,500 in Areas 8-13 was less than the catch of 82,100 in 1992.

**Chum Salmon Fisheries**

Preliminary Review of the 1994 Washington Chum Fisheries of Interest to the Pacific Salmon Commission

This summary report provides a preliminary review of the 1994 chum fishing season and is subject to correction and revision as additional information becomes available. Many 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 concern under the Pacific Salmon Treaty. The mixed-stock fisheries in United States (U.S.) waters that had been addressed in the chum annex of the Pacific Salmon Treaty are those in the western Strait of Juan de Fuca (Areas 4B, 5 and 6C), the San Juan Islands (Area 7) and Point Roberts (Area 7A).

Other chum fisheries in Washington waters are primarily terminal fisheries which harvest runs of local origin.

Mixed Stock Fisheries

Areas 4B, 5, and 6C

As in previous years, the chum fishery in Areas 4B, 5, and 6C, was restricted to Treaty Indian gillnet gear only. Chum fishing in these areas was delayed until the week of October 16 due to domestic coho conservation concerns. Test fisheries were conducted during the two weeks prior to the commercial fishery opening to collect GSI samples. The commercial fishery was initially opened for five days from noon on October 16 to noon on October 21. It re-opened at noon on October 23 and remained open continuously until November 2. The fishery was closed for 24 hours in order to permit catch assessment, and was re-opened at noon on November 3 for two additional days, closing at noon on November 5. There was one additional opening the following week from 8:00 a.m. on November 9 to 6:00 p.m. on November 11.

Incidental summer chum catches in fisheries prior to the fall chum management period totalled only 99 fish. Fall chum catches in the Strait of Juan de Fuca commercial fishery were somewhat less than expected given the forecasted abundance of Puget Sound and Canadian chum runs. The total commercial harvest during the chum management period was 53,624 chum. There were an additional 374 chum harvested in test fisheries for GSI collection, bringing the total chum catch in Areas 4B, 5, and 6C, reported through November 16, to 54,097. Little, if any, additional catch is expected.

Areas 7 and 7A

Prior to the fall chum management period, relatively few summer chum (45 fish) were harvested incidental to fisheries targeting on other species (sockeye). Pre-season forecasts were for strong fall chum returns to both Southern B.C. and Puget Sound. These forecasts were, for the most part, confirmed in-season. The Johnstone Strait chum run size was updated in-season to 4.6 million and the Puget Sound chum run now is estimated at just over 2 million. Due to concerns for the status of natural coho stocks returning to Puget Sound, the bulk of the fishery in Areas 7/7A was delayed until the end of October. Although there was no chum annex in place for 1994, it was the intent of the U.S. managers to manage the fishery consistent with previous agreements. Given these limitations, the U.S. scheduled a limited, reef net only, fishery beginning October 2 with a requirement to release all chinook, coho, and sockeye. The reef net fishery was open continuously through November 5. The total harvest for the reef net gear in Areas 7 and 7A is reported at 4,083 chum.

Test fisheries to collect chum GSI samples were conducted in Area 7A the week of October 23. Indications were that very few coho remained in the area and a Treaty Indian fishery was opened from noon on October 28 until 9:00 p.m. on October 29. The estimated chum catch from this opening is 23,474.

A non-Treaty fishery followed the Treaty Indian fishery, opening on October 31 for gillnets from 4:00 p.m. to 8:00 a.m.; and November 1 for purse seines from 6:00 a.m. to 7:00 p.m. The fishery, originally scheduled for two days, was extended for an additional two days (through November 4) due to low effort and poor catches. The reported catch for this opening is 23,999.

An additional four day non-Treaty fishery was conducted from November 7 through November 10. A very preliminary estimate of catch is only 13,733. For the weeks of November 13 and

November 20, additional non-Treaty fisheries were scheduled for four days and three days, respectively. No catch estimate is available from these fisheries, but preliminary reports are that catches and effort remain low.

Total chum catch reported through November 16 from Areas 7/7A is 66,329.

Puget Sound Terminal Area Fisheries and Run Strength

Pre-season forecasts for chum returns to Puget Sound were for a fall chum run of about 1.6 million, which is above average return. Most Puget Sound chum runs have been updated in-season with some areas indicating runs much larger than the pre-season forecasts. The total in-season estimate of Puget Sound chum run sizes, as of November 16, is approximately 2.0 million. Many Puget Sound chum fisheries are still underway or just beginning, and additional in-season estimates of abundance will be made in the coming weeks. At this time, it is far too early to assess spawning escapement.

**Fraser River Sockeye Fisheries**

1994 U.S. Fraser Sockeye Fishery Management Preliminary Post-Season Overview

Having failed to reach an agreement on the 1994 allocation objectives and a general fishery regime, the U.S. and Canada proceeded to manage their respective 1994 fisheries for Fraser sockeye unilaterally, much like they did in 1992. The bilateral Fraser Panel did not assume regulatory control of the fisheries in Panel waters as would normally be the case. As in 1992, it was agreed that the Pacific Salmon Commission (PSC) staff would function as normal except that they would not provide in-season recommendations. All information was communicated by the PSC staff during telephone conference calls held generally on Fridays and Tuesdays. In addition, there were regularly scheduled technical reviews with the PSC staff and management staffs from both countries. It was agreed that information on fishery openings and closures would be communicated to each country and the PSC staff by telephone and FAX.

The U.S. announced that it would conduct a "normal" fishery for this cycle by targeting fisheries primarily on the more abundant Summer and Late runs, and that it would not target fisheries on the Early Stuart run in consideration of inriver Canadian aboriginal fisheries. Canada announced that it intended to maximize its harvest of Fraser River sockeye before they became available to U.S. fisheries by prosecuting an aggressive fishing strategy. Canada's aggressive strategy was expected to be assisted by a forecasted high northern diversion through Johnstone Strait.

The U.S. developed a pre-season fishing plan based on normal timing and Canadian run size forecasts. The U.S. fisheries were proposed to begin after the passage of the Early Stuart and Lake Washington runs. Forecasts of run timing and diversion indicated that the runs might be significantly later than normal, and that a large proportion of the run would migrate by way of Johnstone Strait rather than the normal Strait of Juan de Fuca route. To minimize coho by-catch, all fisheries were planned to be closed as early as possible, except for the possibility of a late season fishery in area 7A to harvest any remaining sockeye shares.

In-season management began on July 5 with the first telephone conference call between the PSC staff and the two countries. Between July 5 and October 15 telephone conferences were normally held twice weekly, with technical consultations each Thursday. The U.S. fisheries began on July 19 with a treaty Indian fishery opening in the Strait of Juan de Fuca (areas 4B, 5 and 6C). The fishery started slow , but catches increased quickly. The fishery was closed on July 29 to pace the

catch according to inter-tribal allocation agreement. The inside (areas 6, 7, and 7A) fisheries remained closed during this two week period.

By the end of July there were indications that the runs might not be as late as forecast and that the northern diversion rate was increasing rapidly. On July 29, Canada announced the opening of their major net fisheries in Johnston Strait and Area 20 Juan de Fuca and the WCVI troll fishery the following week. In response, the U.S. began fisheries in Areas 6, 7 and 7A on August 2 and reopened Areas 4B, 5 and 6C on July 31.

As a result of Canada's aggressive fishing pattern, catches in Areas 4B, 5 and 6C dropped drastically and the U.S. began fishing seven days per week in this area on August 5. Treaty and non-Treaty fisheries were rotated on a continuous schedule in Areas 6, 7 and 7A while the tribes fished continuously in Areas 4B, 5 and 6C. Shortly after the beginning of U.S. fisheries, the northern diversion rate allowed Canada the ability to fish aggressively in Area 20 and on the WCVI while managing the Johnston Strait and Area 29 fisheries to provide for their escapement goals up-river. This resulted in low daily catches in U.S. fisheries.

The U.S. closed the treaty fishery in Area 4B on August 19 and closed Areas 5 and 6C on the following Tuesday, August 23, due to lack of sockeye and concerns for coho by-catch. Beginning August 22, all further non-treaty purse seine and gillnet fisheries were limited to Area 7A for the same reasons. Reefnets continued to fish in both Areas 7 and 7A. On August 23, Canada announced that they were closing Area 20 for the season because of low sockeye catches. Beginning August 28, the treaty tribes limited all future treaty fisheries to Area 7A. The U.S. closed all remaining sockeye fisheries for the season on September 4.

On September 20, Canada announced that the sockeye spawning escapement and Indian catch inriver was 1.3 million fish fewer than were estimated to have passed Mission by the PSC staff. These "missing" fish were from the Early Stuart, Early Summer and Summer runs. Canada established an independent review board to investigate this discrepancy. On September 30, the PSC staff reported that there were indications that they had over-estimated the escapement of Late run sockeye in the Gulf of Georgia. A revised PSC staff estimate indicated that the Late run escapement would not exceed 1.5 million fish, less than one-half the escapement goal.

The preliminary post-season estimated Fraser sockeye run is 15,743,000 fish compared to the preseason forecast of 19.0 million. The post-season estimated gross escapement past Mission is 3,573,000 million fish. The U.S. caught 1,830,000 Fraser sockeye in Washington fisheries. The catch by treaty fisheries was 952,000 and by non-treaty fisheries 878,000. An additional 225,000 Fraser sockeye are estimated to have been caught in the Alaskan District 104 seine fishery. The incidental catch of coho was significantly less than anticipated in U.S. treaty and non-treaty fisheries in Areas 6, 7 and 7A. Coho by-catch in the Canadian Area 20 fishery and U.S. treaty fishery in Areas 4B, 5 and 6C approached anticipated levels.

(Source document) *Preliminary 1994 Post-Season Report for United States Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section of the Pacific Salmon Commission. November, 1994.

# C. 1994 POST-SEASON REPORT FOR CANADIAN TREATY LIMIT FISHERIES

Catches reported below are based on in-season estimates (hailed statistics), on-the-grounds counts by DFO management staff, sales slip data (commercial troll and net), and creel surveys (sport). The preliminary 1994 commercial catches were obtained from sales slips to October 1 (North/Central) and November 2, (South) 1994 and in-season hails; south coast sport catches are from creel survey data to September 30, 1994. Annex fisheries are reported 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 are only for those stocks and fisheries covered by the Pacific Salmon Treaty (PST); domestic catch allocations have been excluded. The attached table summarizes 1985-1994 catches in Canadian fisheries that have been under limits imposed by the Pacific Salmon Treaty.

**Transboundary Rivers**

Stikine River

No progress was made with respect to re-negotiating harvest shares of Stikine salmon during the Pacific Salmon Commission and Government-to-Government negotiations prior to/during the 1994 fishing season. As a result, Canada developed a fishing plan for the Stikine River which adopted the arrangements for chinook and sockeye (which had not expired) but excluded the catch ceiling for coho salmon which had expired in 1992 (4,000 pieces). Accordingly, the objectives of the 1994 management plan were: to harvest 50% of the total allowable catch (TAC) of Stikine River sockeye salmon; to allow Canadian fishers reasonable access to coho salmon subject to conservation requirements; and, to allow chinook salmon to be taken only as an incidental catch in the directed fishery for sockeye salmon.

The Transboundary Chapter of Annex IV requires the Transboundary Rivers Technical Committee (TRTC) to prepare a pre-season forecast to guide initial fishing patterns of both countries. However, due to the uncertainty with regards to harvest shares due to the PST impasse, the management planning meeting of the TRTC was postponed with the result that a joint sockeye forecast was not made. Canada's expectation was for a record run of approximately 312,000 sockeye in 1994, 211,000 sockeye of Tahltan Lake origin and 101,000 non-Tahltan sockeye. For comparison, the previous ten-year average Tahltan sockeye run size was approximately 59,700 fish and the non-Tahltan stock conglomerate has averaged approximately 73,700 sockeye.

A total of 45,092 sockeye was caught in the combined Canadian commercial and Aboriginal fishery; 91% of the catch occurred in the commercial fishery. This was the second highest sockeye catch on record (a record catch of 47,197 sockeye was taken in 1993), exceeding the 1984-1993 average of 20,743 by 117%. An additional 6,852 sockeye salmon was taken under an "Excess Salmon To Spawning Requirements Licence (ESSR)" which permitted the terminal harvest of sockeye at Tahltan Lake once the escapement goal had been achieved.

The preliminary estimate of the total sockeye run size is 278,700 fish including 176,825 Tahltan Lake sockeye and 101,876 sockeye of the non-Tahltan stock conglomerate. A Stikine run size of this magnitude is the highest on record and is 2.2 times the 1984-1993 average run size of 128,732 sockeye salmon. The preliminary estimate of the TAC for 1994 is 224,700 sockeye and of this, Canada was entitled to catch 112,350 sockeye. The total Canadian harvest represents 20% of the

preliminary TAC estimate. The total escapement is estimated to be approximately 80,603 sockeye, 49% above the target of 54,000 fish.

The sockeye weir count at Tahltan Lake was 46,363 fish which was approximately 46% above the previous ten-year average of 31,652 sockeye. Of the total number of fish counted at the lake, 3,378 sockeye were taken for hatchery brood stock and 6,852 were harvested under the ESSR. This left a spawning escapement of 36,133 which was well above the escapement goal of 20,000 sockeye for Tahltan Lake.

The total coho catch for the season was 3,368 fish, 14% above the 1984-1993 average of 2,956 coho. All but four of the coho were taken in the lower Stikine commercial fishery. Coho escapement surveys have not yet been conducted, however, preliminary analysis of test fishery catch per unit of effort (CPUE) suggested the total escapement was approximately 49,000 fish which is near the upper end of the interim spawning escapement goal range of 30,000 to 50,000 coho. Aerial surveys of coho spawning index areas also indicated above average escapement; the combined index count was the third highest on record and was 37% above the previous ten-year average.

The total 1994 gillnet catch of chinook consisted of 1,790 adults and 350 jacks compared to 1984-1993 ten-year averages of 1,832 large chinook and 456 jacks. The adult chinook count of 6,387 fish (53% female) at the Little Tahltan weir was 15% above the 1985-93 average of 5,530 fish and was above the escapement goal 5,300 large chinook. The count of 121 jacks was 60% below the 1985-93 average of 300 jacks. Aerial surveys of most of the other Stikine chinook index spawning areas were average to below average.

Joint Canada/U.S. enhancement activities continued in 1994 with approximately 4.117 million sockeye eggs taken at Tahltan Lake and flown to the Port Snettisham hatchery for incubation. Although the egg target for Tahltan Lake was 6.0 million, this program was terminated following the fatal crash of the plane involved in transporting the eggs. Approximately 0.904 million fry were out-planted into Tahltan Lake, and 4.7 million fry into Tuya Lake in June and July of 1994 from the 1993 egg-take. The fry were mass-marked with a thermally-induced otolith mark.

A total of 915,119 sockeye smolts were enumerated emigrating from Tahltan Lake in 1994.

Taku River

As with Stikine River issues, no progress was made with respect to re-negotiating harvest shares of Taku River salmon prior to the 1994 season. As a result, Canada developed a fishing plan which did not numerically constrain harvests of sockeye and coho; the basic objective of the management plan for each species was to manage according to the conservation requirements, i.e. escapement goals for each species. The plan therefore did not acknowledge previous arrangements which limited Canada to 18% of the TAC of Taku River sockeye salmon and 3,000 coho salmon. As in the Stikine River, and in agreement with Annex IV, Canada did not target on chinook salmon in the Taku River; both Parties had previously agreed to rebuild chinook by 1995.

The Canadian pre-season forecast was for an above average return of approximately 242,000 sockeye, 14% above the previous ten-year average run size of approximately 212,000 sockeye.

In-season projections of the total run size and TAC were made frequently throughout the season based on the joint Canada/U.S. mark-recapture program, the estimated interception of Taku sockeye in the U.S. fisheries, the catch in the Canadian in-river fishery, and historical run timing information. The final in-season forecast was a total run of 227,200 sockeye, 7% above the

previous 10-year average of 212,200 sockeye. The TAC was estimated to be approximately 147,200 to 156,200 sockeye.

The 1994 Canadian sockeye catch was approximately 29,001 fish, 28,762 of which were caught in the commercial fishery. The commercial catch was 37% above the 1984-1993 average of 20,919 sockeye. Preliminary analysis indicates that the total Canadian sockeye catch in 1994 represented about 20% of the TAC.

Based on the Canada/U.S. mark-recapture program, the estimated total escapement of 97,320 sockeye was well above the interim escapement goal of 71,000 to 80,000 fish. Based on weir counts, the escapements at Little Trapper and Little Tatsamenie lakes were 12,691 and 3,527 sockeye, respectively. Both estimates were above the respective principal brood year escapements in 1989. The sockeye weir count at Kuthai Lake was an above average 5,427 fish; this program was conducted by the Taku River Tlingits as one of their Aboriginal Fisheries Strategy projects.

The coho catch of 14,693 fish was a record and was approximately 75% above the previous record catch of 8,390 coho in 1983 and was 4.3 times the 1984-1993 average catch of 3,491 coho salmon. Preliminary mark-recapture data indicated a spawning escapement of approximately 60,400 through September 10. A preliminary estimate of total escapement is approximately 87,553 coho which far exceeds the interim escapement goal of 27,500 to 35,000 coho.

The Canadian chinook catch consisted of a record 2,184 large fish and 235 jacks. The commercial catch of large chinook, 2,065 fish, was roughly 2.6 times the 1984-1993 average of 797 fish; the catch of chinook jacks was 44% above the average of 163 jack chinook. Chinook aerial escapement counts were above average in all but one of the six Taku chinook index streams. The combined index count of 9,913 chinook was 11% above the previous ten-year average of 8,915 fish. However, the total count was below the index escapement goal of 13,200 fish.

Joint Canada/U.S. enhancement activities continued in 1994 with 1.062 million sockeye eggs taken from Little Trapper sockeye and 1.210 million taken from the Tatsamenie stock. The eggs were flown to the Port Snettisham hatchery in Alaska for incubation. Approximately 0.521 million sockeye fry were out-planted into Tatsamenie Lake, and 0.916 million fry into Trapper Lake, in June/July of 1994 from the 1993 egg-takes. The fry were mass-marked with a thermally-induced otolith mark.

Alsek River

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

Canada does not commercially fish in the Alsek drainage, but does conduct important Aboriginal and sport fisheries. In keeping with Annex provisions, Canadian catches of Alsek chinook and early sockeye continued to be restricted.

The Aboriginal fishery harvested an estimated 289 chinook, 2,006 sockeye, and 8 coho salmon. The Aboriginal catch of chinook was approximately 61% above the 1984-1993 average of 179 fish. The sockeye catch was 2% below the 1984-1993 average of 1,987 sockeye.

The recreational fishery harvested an estimated 197 chinook, 261 sockeye and 77 coho salmon. Compared to 1984-1993 average sport catches, the chinook catch was 34% below average, the sockeye catch was 22% below average, and the coho catch was 65% below respective averages.

At the Klukshu River, an Alsek River tributary, total weir counts included: 3,727 chinook, the second highest on record and 66% above the 1984-1993 average of 2,244 fish; 15,038 sockeye consisting of 3,247 early run sockeye which was 13% below the 1984-1993 average of 3,728 fish, and 11,791 late run sockeye, 26% below the 1984-1993 average of 15,876 sockeye; and 1232 coho, 19% below the 1984-1993 average of 1,525 fish. The estimated Village Creek sockeye escapement was 3,960, 30% below the 1985-1993 average of 5,145 fish. Aerial surveys indicated above average chinook escapement in other Alsek drainage tributaries in Canada.

**Northern British Columbia Pink Salmon**

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

A below average return was anticipated for Canadian northern boundary pink stocks. For Area 3, local pink stocks were expected to provide a catch of 225,000; Skeena River pinks were expected to provide a catch of 500,000. The Area 4 catch was expected to be 600,000 pinks for a total Area 3 and 4 catch of 1,325,000.

The Canadian pink catch in 1994, based on in-season hailed data, was 250,000 in sub-areas 3(1-4) and 5(11); the 1985-94 average catch is 1,825,000. Due to changes in statistical area boundaries, catches from 5(11) include those from 5(10). The percentage of the 1994 net catch taken in subareas (1-4) during the 1994 season, 70%, was between the 1985-1994 average of 63% and the pre-Treaty average of 74%.

Pink escapements to rivers and streams in Area 3 were below target levels. Preliminary Area 4 pink escapements are well below the minimum escapement target of one million pinks.

Area 1 Pink Catch by Troll

Based on in-season estimates, the Canadian troll catch in the A-B line strip was 73,800.

The Area 1 troll fishery for pink salmon was closed on September 14. Based on in-season data, the Area 1 pink troll catch was 220,512 in 1994.

**Chinook Salmon**

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

Chinook fisheries were conservatively managed in 1994 in anticipation of reduced chinook abundance over 1993 levels.

The 1994 troll catch was 178,000 based on sales slips to October 1, 1994. This troll catch plus the net catch estimate of 26,000 from saleslip data and the preliminary sport catch estimate of 37,000 gives a total North/Central coast catch of 241,000. Terminal net catches of 6,400 chinook have been excluded from this total.

The troll fishery was open July 1 to September 5. There were 9 days of non-retention (September 6 - 14).

Based on preliminary information, chinook escapements in 1994 were similar to those in recent years.

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

There was no Pacific Salmon Treaty ceiling for chinook in 1994, however the objective was to keep chinook harvest rates to levels experienced in recent years and to address Canadian stock concerns.

The troll fishery opened coastwide on July 1 with Conservation Area S (Swiftsure) closed. All other Conservation Areas remained open throughout the season.

Trolling for chinook continued until September 5 when all WCVI Troll Areas closed for the season at 2359 H September 5, 1994.

The preliminary estimate of the 1994 WCVI troll catch is 143,911 chinook based on sales slips to November 2, 1994 (an additional 2,383 chinook were harvested in Area 12). Catch and effort in 1994 were the lowest on record since 1950.

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

In response to conservation concerns for the Lower Georgia Strait (LGS) chinook stocks, Canada continued a series of area and gear-specific management actions to reduce the LGS harvest rate by 20 percent. Therefore the Canadian management objectives in the Strait of Georgia for 1994 were to manage sport and troll fisheries for catches below the Treaty ceiling.

The Canadian objective for the troll fishery was to manage for a 31,000 chinook harvest (62 cm minimum size limit). The troll season opened on July 1 and continued until 2359 H September 14. Trolling for chinook reopened during a directed chum troll fishery on September 29 and closed for chinook and coho 2359 H September 30. Trolling for chum continued until closed 2359 H October 3, 1994. The Strait of Georgia troll catch of chinook is 12,949 based on sales slips to November 2, 1994.

In the sport fishery, the chinook management plan implemented in 1989 in Georgia and Johnstone Strait was continued in 1994. This plan included an annual bag limit of 15, a daily bag limit of 2 and a size limit of 62 cm for Johnstone Strait and the Strait of Georgia north of Cadboro Point. For the Canadian portion of Juan de Fuca Strait (Victoria area), the size limit was 45 cm and the annual bag was 20.

The 1994 sport catch for the Strait of Georgia to the end of September was 69,547 based on creel survey results.

**Coho Salmon**

Area 20 Net Catch

There were no targeted coho fisheries in Area 20 in 1994. Due to conservation concerns, coho, chinook and steelhead catches were monitored and controlled during the 1994 sockeye fishery.

Based on sales slip information to November 2, 1994, incidental catches during four weeks of Fraser River sockeye fishing in August totalled 116,681 coho, 8,157 chinook and 448 chum salmon. There was a total of 12 seine fishing days and 19 gill net fishing days. In the 1994 season there was an extremely high diversion of sockeye salmon through Johnstone Strait (see Fraser River section).

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

There was no Pacific Salmon Treaty ceiling for coho in 1994, however, the objective was to keep coho harvest rates to levels experienced in recent years and to address Canadian stock concerns.

The troll fishery opened coastwide on July 1 with Conservation Area S (Swiftsure) closed. All other Conservation Areas remained open throughout the season.

Trolling for coho continued until 2359 H September 5 when all WCVI Troll Areas closed for the season.

The preliminary estimate of the 1994 WCVI troll catch is 1,237,247 coho based on sales slips to November 2, 1994.

### Fraser River Sockeye Salmon

Canada and the United States did not agree during 1993/94 negotiations on a sharing arrangement for Fraser River sockeye.

Without an agreement, Canada adopted a management plan designed to maximize sockeye benefits for Canadians with the following objectives, in order of priority: 1) meet Canadian escapement targets, 2) meet Section 35 and negotiated harvest agreements for Canadian aboriginals, and 3) address Canadian domestic allocation objectives.

Main elements of the fishing plan included: 1) provide seine and gillnet opportunities in Juan de Fuca Strait, 2) for conservation purposes, implement a program to document and minimize incidental harvest of chinook, steelhead and coho in Juan de Fuca net fisheries, 3) provide net and troll opportunities in Johnstone Strait and the North Coast, and 4) provide gillnet opportunities in the Fraser River.

For pre-seasoning planning purposes, the commercial TAC was 12,255,000 at a forecast run of 19,000,000; Canadian fisheries were planned with an anticipated U.S. harvest in Alaska and Washington of 2,500,000; the goal for the return to the river (spawning escapement and Indian fishery allocation) was 6,397,000; the forecast diversion rate was 68%.

Pre-season modelling suggested Canadian objectives would be satisfied with extended Canadian gillnet and seine fisheries in Area 20, so the commercial season began with such a pattern of openings; similarly, the outside troll fishery began with sockeye openings only on the WCVI. Northern troll areas closed in order to concentrate effort on the WCVI area.

Based on preliminary in-season estimates, the sockeye return was 15.7 million fish, 17% below forecast but on this cycle the fourth largest since 1950.

The commercial catch was 11.2 million sockeye, of which 9.1 million were caught by Canada and 2.1 million (includes 225,000 in Alaska) were caught by the United States. The non-commercial catch, including Indian food fishery catches outside the Fraser River was 963,000.

For the second consecutive year, management was affected by exceptionally high diversion through Johnstone Strait (current estimate is greater than 90%) which resulted in curtailment of the extended openings in Area 20 as catches declined to minimal levels and coho by-catches rose, and by movement of the outside troll fleet to north coast areas and eventually into Johnstone Strait and the Strait of Georgia in attempts to reach its sockeye allocation.

Aboriginal Fishery Strategy agreements established a Fraser River sockeye allocation of 988,000 fish, 640,000 of which were for the bands below Sawmill Creek that had agreements to sell their catches. Preliminary estimates of catch, based on mandatory landings below Sawmill Creek, and catch estimates above Sawmill Creek, were 811,000 sockeye. The estimated catch by non-Fraser Indian fisheries was 171,000 sockeye.

Fraser River spawning escapement estimates are currently incomplete and under review.

Differences were observed between hydro-acoustic estimates by the Pacific Salmon Commission of migration past Mission and DFO's preliminary upstream estimates of catch and escapement for Early Stuart, Early Summer, and Summer runs of sockeye. Additionally, the number of late run sockeye that migrated into the Strait of Georgia was over-estimated by the PSC. Review boards have been appointed by Canada and the PSC to investigate the causes of these events.

**Southern British Columbia Chum Salmon**

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

Johnstone Strait

Pre-season expectations indicated a total inside run size of 4.205 million chum salmon, including 100,000 destined for Puget Sound streams. This run size would allow for a 30% harvest rate under the Canadian Clockwork strategy.

There were three directed commercial chum fisheries in Johnstone Strait in 1994. The first occurred on September 25 - 27 (seines 24 hours, gill nets 40 hours). The catch for this assessment fishery was 248,304. This combined with earlier test fishing results, indicated a run size of 3.8 million which would allow for a 20% harvest rate under the Clockwork strategy. However, even at a 20% harvest rate, additional TAC was still available in Johnstone Strait. In addition, test fishing catches picked up after the assessment fishery indicating that the 3.8 million run size estimate might be conservative. A second fishery was conducted on October 10 - 12 (seines 7 hours, gill nets 40 hours) which harvested a further 554,381 chum salmon. Subsequent run size assessment indicted a total clockwork chum run of greater than 3.8 million. Test fishing continued following the second commercial fishery and recorded some of the highest catches of the season (and in the history of the test fishery). Based on this information and the good commercial catch in the previous week the run size estimate was upgraded on October 17 to 4.609 million. Under the Clockwork strategy the allowable harvest rate increased to 30% with a commercial TAC of 1.207 million compared to the pre-season TAC of 1.091 million at a run size of 4.205 million. As of October 17 the Johnstone Strait commercial Clockwork catch totalled 822,185 (including a troll catch of 19,500). In addition, it was anticipated that a further 175,000 would be taken by directed chum fisheries in U.S. Areas 7 and 7A, Indian Food Fisheries in Areas 12 - 13, Johnstone Strait test fisheries and as incidental catch in Area 14. This allowed for a remaining commercial catch in Johnstone Strait of about 390,000. The third and final Clockwork fishery occurred October 23 - 26 (seines 9.5 hours, gill nets 66 hours) and caught 442,600 chum. Post season run size assessment will be completed once escapement enumeration is finished. Early returns to terminal areas suggest that escapement goals will be met in 1994 for most areas.

Strait of Georgia

The following table provides open dates in the Strait of Georgia terminal chum fisheries as of November 4. There were three gill net openings in Area 14 for a total catch of 96,000 chums. Terminal fisheries in Jervis Inlet (Area 16) and Satellite Channel (Area 18) may not occur due to low escapements to date. In Area 17, there was one gillnet fishery for a catch of 10,000 chums.

| WEEK ENDING DATES | STATISTICAL AREA | | | |
|---|---|---|---|---|
| | 14 | 16 | 17 | 18 |
| October 22 | Open | - | - | - |
| October 29 | Open | - | Open | - |
| November 5 | Open | - | - | - |
| November 12 | - | - | - | - |

Outside Net (Areas 21 and 22)

Chum salmon returning to Area 22 (Nitinat Lake) are caught in Area 21 and parts of Area 121 and 20-1. Pre-season forecasts were for a harvestable surplus of approximately 1,000,000 chum. The escapement objective is 250,000 to a maximum of 350,000. The additional 100,000 above the 250,000 target are required for hatchery broodstock requirements and increased distribution of spawners in Nitinat River.

The fishing plan is based on providing early opportunities for gill net followed by a seine fishery to balance allocation and then a seine/gill net fishery at the peak of the run. Fisheries are dependent on reaching weekly escapement milestone levels into Nitinat Lake. Early season opportunities are constrained by concerns over Thompson River steelhead by-catch.

The season opened with a 4 day gill net fishery commencing September 26 which was extended until the October 7 (11 days). Gill nets reopened October 10 for 3 days then closed since early season catch limits had been reached. Seines fished 2 days starting October 15. After the seine fishery, gill nets reopened and fished continuously until the end of the season. Seines reopened October 18 and also fished continuously until the end of the season on November 8.

Until October 18 fishing was limited to waters inside a line 2 nautical miles true south of Pachena Point to 2 nautical miles true south of Bonila Point. Commencing October 18 gill nets were allowed additional area to fish inside a line as far east as 2 nautical miles true south of Logan Creek.

Until the time of this report (October 27) gill nets fished 24 days and caught 270,203 chum. Seines fished 11 days and caught 568,609 chum for a combined total of 838,812 chum. The fishery continued into the second week of November. Escapement into Nitinat Lake has reached 500,000 and the hatchery should have no trouble reaching their target of 35 million eggs. Sales of surplus chum by the hatchery and an Aboriginal ESSR gill net fishery in the Lake are currently underway.

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

The 1994 troll catch of chum is 15,800 based on sales slips to November 2, 1994. The catch was taken predominantly in the northwest region of WCVI.

G.S.I. Sample Collection

There was no electrophoretic sampling for stock composition in 1994.

Preliminary 1994 Catches in Canadian Treaty Limit Fisheries and 1985-93 Catches for Comparison. Prepared for the Nov 28 to Dec 2, 1994 meeting of the Pacific Salmon Commission

| Fisheries/Stocks | Species | 1994+ | 1993** | 1992 | 1991 | 1990 | 1989 | 1988 | 1987 | 1986 | 1985 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Stikine River (all gears) | Sockeye | 45,092 | 47,197 | 26,284 | 22,763 | 18,024 | 20,032 | 15,291 | 9,615 | 17,434 | 25,464 |
| | Coho | 3,368 | 2,616 | 1,855 | 2,648 | 4,037 | 6,098 | 2,117 | 5,731 | 2,280 | 2,175 |
| | Chinook-lge | 1,790 | 1,803 | 1,836 | 1,511 | 2,250 | 2,669 | 2,370 | 2,201 | 1,936 | 1,111 |
| | Chinook-jak | 350 | 308 | 238 | 660 | 959 | 289 | 444 | 444 | 975 | 185 |
| | Pink | 90 | 29 | 122 | 394 | 496 | 825 | 418 | 646 | 107 | 2,356 |
| | Chum | 173 | 395 | 231 | 208 | 499 | 674 | 733 | 459 | 307 | 536 |
| | Steelhead | 83 | 67 | 132 | 71 | 199 | 127 | 261 | 219 | 194 | 240 |
| Taku River (commercial gillnet) | Sockeye | 28,750 | 33,217 | 29,472 | 25,067 | 21,100 | 18,545 | 12,014 | 13,554 | 14,739 | 14,244 |
| | Coho | 13,867 | 3,033 | 4,077 | 3,415 | 3,207 | 2,876 | 3,123 | 5,599 | 1,783 | 1,770 |
| | Chinook-lge | 2,065 | 1,619 | 1,445 | 1,177 | 1,258 | 895 | 555 | 127 | 275 | 326 |
| | Chinook-jak | 235 | 171 | 147 | 432 | 128 | 139 | 186 | 106 | 77 | 24 |
| | Pink | 168 | 16 | 0 | 296 | 378 | 695 | 1,030 | 6,250 | 58 | 3,373 |
| | Chum | 7 | 15 | 7 | 2 | 12 | 42 | 733 | 2,270 | 110 | 136 |
| | Steelhead | 196 | 11 | 15 | 5 | 22 | 24 | 86 | 223 | 48 | 32 |
| Areas 3 (1-4) and 5-11 (commercial net) | Pink | 250,000 | 1,242,000 | 1,099,000 | 6,961,000 | 831,000 | 2,259,000 | 425,000 | 1,851,000 | 1,983,000 | 1,277,000 |
| Area 1 (commercial troll) | Pink | 221,000 | 890,000 | 760,000 | 1,647,000 | 1,165,000 | 1,377,000 | 1,630,000 | 495,000 | 416,000 | 687,000 |
| North/Central Coast* (commercial/sport) | Chinook | 241,000 | 258,300 | 262,000 | 303,200 | 253,000 | 301,200 | 245,600 | 282,800 | 261,000 | 275,000 |
| West Coast Vancouver Island | Chinook | 144,000 | 271,000 | 345,500 | 202,900 | 298,000 | 203,700 | 408,700 | 379,000 | 342,000 | 358,000 |
| Area 12 (com. troll) | Chinook | 2,400 | 4,000 | 2,600 | 1,000 | 2,000 | 2,000 | 2,000 | 2,000 | 4,000 | 4,000 |
| Georgia Strait | | | | | | | | | | | |
| (sport) | Chinook | 70,000 | 118,800 | 116,600 | 112,700 | 112,000 | 133,000 | 119,000 | 121,000 | 182,000 | 235,000 |
| (troll) | Chinook | 13,000 | 32,500 | 37,300 | 32,000 | 34,000 | 29,000 | 20,000 | 39,000 | 44,000 | 56,000 |
| | Total | 83,000 | 151,300 | 153,900 | 144,700 | 146,000 | 162,000 | 139,000 | 160,000 | 226,000 | 291,000 |
| Fraser River stocks | Sockeye | 9,100,000 | 13,428,000 | 3,906,000 | 6,947,000 | 13,411,000 | 12,776,000 | 1,615,000 | 3,776,000 | 9,372,000 | 8,754,000 |
| (total Canadian catch) | Pink | - | 3,731,000 | - | 6,405,000 | - | 7,181,000 | - | 2,579,000 | - | 8,725,000 |
| Fraser River stocks | Sockeye | 2,100,000 | 2,876,000 | 700,000 | 1,881,000 | 2,427,000 | 2,439,000 | 679,000 | 1,932,000 | 2,755,000 | 2,925,000 |
| (total U.S. catch) | Pink | - | 1,725,000 | - | 2,789,000 | - | 2,260,000 | - | 1,339,000 | - | 3,834,000 |
| West Coast Vancouver Island (commercial troll) | Coho | 1,237,000 | 938,300 | 1,664,000 | 1,890,000 | 1,864,000 | 1,953,000 | 1,596,000 | 1,821,000 | 2,157,000 | 1,389,000 |
| Johnstone Strait clockwork catch# | Chum | 1,300,000 | 1,166,000 | 1,414,000 | 262,000 | 1,184,000 | 482,000 | 1,112,000 | 127,000 | 1,177,000 | 587,000 |

\+ 1994 catches are based on in-season hails, sales slips Oct 1 (North/Central) to Nov 2 (South) 1994, preliminary sport catch estimates, and creel survey sport catch estimates to September 30, 1994.

** 1993 catches are preliminary.

* North Coast catch less terminal exclusion catches of 6,400 in 1994, 7,400 in 1993, 6,100 in 1992, 6,000 in 1991, 5,500 in 1990 and 4,800 in 1989.

\# Canadian clockwork catch includes commercial, IFF and test fish catches in Areas 11-13 and 29 for 1985-87 and in Areas 11-13 for 1988-92, 93, 94.

(Source Document) *1994 Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December, 1994.

## D. 1994 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 operatings 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. 1994 Annual Report on the Salmonid Enhancement Activities of the United States

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 1994 Annual Report, the fifth in the series, incorporates updated information, including projections for releases from the 1992 brood year, as well as preliminary data on numbers of adults returning to hatcheries, and the number of eggs taken during 1993. Final information and projections current through the end of the 1993 calendar year are contained in this report.

#### Southeast Alaska

New Production

In 1993, the following hatcheries either added additional incubation or rearing capacity by increasing their physical plants, increasing their water flow, or otherwise altering their permitted capacities:

Snettisham
Neets Bay
Port Armstrong
Medvejie Creek
Hidden Falls
Haines Projects
Gastineau

Loss of Production

There were no significant losses of production.

Trends in Production

Most private non-profit hatcheries are still in the process of brood stock development and, consequently, have not reached their capacities. Potential eggtakes, releases and returns should increase over the next few years until the hatcheries reach their physical and legally-permitted capacities.

Washington Department of Fisheries

Production Changes

During the 91-93 biennium, production decreases at state funded facilities were implemented in response to budgetary shortfalls. For the 93-95 biennium production changes have been proposed in response to budgetary shortfalls and are to be implemented unless alternate funding or operating entity can be arranged. Production increases in response to a program to increase recreational fisheries opportunities were implemented at three facilities.

Trends in Production

Trends in production are depicted in the following table.

Thousands of pounds of salmon released by the Washington Department of Fisheries, 1983-1992.

| 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 |
| 1990 | 1,910 | 874 | 2,439 | 93 | 3 | 5,319 |
| 1991 | 1,686 | 1,179 | 2,234 | 71 | 0 | 5,170 |
| 1992 | 1,753 | 1,052 | 2,549 | 82 | 5 | 5,441 |
| 1993 | 1,699 | 1,061 | 2,253 | 89 | 0 | 5,102 |

Treaty Tribes of Western Washington

New Facilities and Production

The Muckleshoot and Suquamish Tribes began operation of a marine net pen facility in mid-Puget Sound near Seattle. This facility was used to produce 183,000 yearling coho in 1994 and has a future annual production goal of 950,000 yearling coho.

The Quinault Indian Nation has expanded its Salmon River Acclimation Pond facility on the Queets system. The new Salmon River Fish Culture Facility began operation in the spring of 1994

and includes incubation and full-term rearing of all current Queets production programs. This production includes 800,000 Salmon River coho smolts and 150,000 steelhead smolts for enhancement, and 200,000 coho yearlings for remote site wild supplementation. Additional releases include 200,000 to 300,000 wild fall chinook which are tagged as a U.S./Canada indicator stock.

The Quinault Nation has also resumed attempts to supplement the Quinault sockeye population with small releases of fingerlings from their net pen facility as of July 1993. The Nation expects to continue and likely expand the program in future years.

Loss of Production

No significant losses of production occurred for tribal facilities in 1994.

Overall Production Trends

Trends in tribal fish production are listed in the following table. Beginning in 1985, annual releases increased substantially. From 1982 to 1984, total annual releases averaged approximately 33 million fish. From 1985 to 1994, total annual releases increased to an average of approximately 45 million fish. Moderate increases in fall chinook, spring chinook and coho yearling production are planned for future years. Production of other species are expected to remain similar to recent years. Beginning in 1989, releases from the Quinault Nation Fish Hatchery have been reported by the USFWS. Although this involves no net loss in production for the region, an annual decrease of approximately two million fish is reflected in the tribal release numbers.

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

| Release Year | Fall Chinook | Spring/ Summer Chinook | Sub-Yearling Coho | Yearling Coho | Chum | Pink | Sockeye | Sub-Yearling Steelhead | Yearling Steelhead | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 1982 | 10,871 | 100 | 2,683 | 6,249 | 13,119 | 105 | 469 | 683 | 572 | 34,858 |
| 1983 | 9,836 | 130 | 3,162 | 5,136 | 12,892 | 0 | 476 | 320 | 730 | 32,682 |
| 1984 | 8,721 | 110 | 2,766 | 5,815 | 11,266 | 737 | 10 | 766 | 948 | 31,141 |
| 1985 | 9,686 | 422 | 9,512 | 6,598 | 25,190 | 0 | 200 | 1,402 | 1,252 | 54,262 |
| 1986 | 11,632 | 237 | 2,893 | 7,536 | 22,380 | 0 | 240 | 1,159 | 1,242 | 47,319 |
| 1987 | 11,080 | 133 | 2,584 | 6,957 | 23,470 | 0 | 12 | 932 | 978 | 46,246 |
| 1988 | 13,094 | 476 | 1,699 | 8,150 | 21,092 | 882 | 133 | 577 | 905 | 47,008 |
| 1989 | 12,102 | 682 | 2,364 | 8,033 | 20,221 | 0 | 200 | 398 | 872 | 44,872 |
| 1990 | 14,212 | 659 | 1,269 | 7,693 | 14,981 | 110 | 0 | 353 | 821 | 40,098 |
| 1991 | 17,237 | 446 | 2,194 | 9,458 | 14,887 | 0 | 12 | 769 | 903 | 45,906 |
| 1992 | 12,847 | 1,105 | 3,800 | 11,589 | 12,417 | 46 | 48 | 339 | 686 | 42,877 |
| 1993 | 10,459 | 900 | 2,781 | 8,635 | 14,167 | 0 | 46 | 144 | 1,190 | 38,322 |
| 1994 | 12,125 | 1,282 | 1,385 | 8,444 | 14,257 | 0 | 171 | 159 | 847 | 38,670 |

Oregon Department of Fish and Wildlife

New Production

No new production is planned for 1993 brood year.

Major Trends

Mitchell Act funding continues to be appropriated in an untimely manner and is insufficient to maintain existing fish hatchery programs. If funding shortfalls continue, hatchery closures and reductions in various programs can be expected in the future.

General Fund reductions as a result of Measure Five, a property tax reduction measure, may also result in hatchery closures and program reductions.

The implementation of Oregon's Wild Fish Policy will change programs in some areas emphasizing natural production, habitat improvement and acclimation over increased production.

United States Fish and Wildlife Service

Fish and Wildlife Service production continues to be stable at around 50 million fish released. Production levels of individual species and life-stages have changed somewhat due to changes in production programs. More advanced rearing programs are being pursued in lieu of fry and pre-smolt release programs.

Fall chinook production is up due to achievement of full production levels at Spring Creek and Makah National Fish Hatcheries.

Spring chinook numbers are down due to lowered rearing densities at some stations and reduction of sub-yearling release programs.

Coho release numbers are down due to reduced levels of fry releases and sub-yearling releases.

Chum production is down due to decreased reliance on external sources for eggs.

Idaho Department of Fish and Game

New Production

The sockeye salmon captive broodstock program for endangered (U.S. Endangered Species Act) Snake River sockeye salmon continued in 1993, using Redfish Lake returning adults and outmigrant juveniles. A total of two females and six males were trapped for the captive brood program. A portion of the sockeye smolt emigrating from the lake in 1993 were once again incorporated into the captive brood program.

Losses in Production

Brood year 1993 spring and summer chinook adults will produce about 80% of hatchery smolt potential. The 1990, 1991, and 1992 spring and summer chinook salmon brood escapements and egg takes were well below potential hatchery capacities.

Trends in Production

Hatchery production, as well as natural production, is predicted to diminish with the low adult fish numbers returning to Idaho. The continuing trends of average and below-average water years, low flows in the mainstem migration corridor, exacerbated mortality of smolts through the federal hydroelectric system, and poor ocean conditions continue to take their toll on smolts as well as returning adult fish. Continuing downward trend of adult returns should be expected.

The observed decreasing trend in numbers of wild redds counted in trend areas indicates declining abundance of wild spring and summer chinook. The 1993 count was 27% of the average counts from 1960-64, a period of pre-mainstem hydroelectric system completion. Counts have declined since the indicator stock program was initiated, but improved from 1992 (12%).

(Source Document) *1994 Annual Report on the Salmonid Enhancement Activities of the United States.* United States Section of the Pacific Salmon Commission. January, 1995.

2. 1994 Update Report for the Salmonid Enhancement Program in British Columbia

An evaluation of the Salmonid Enhancement Program (SEP) was completed by the Internal Audit and Evaluation Branch, Ottawa. Two reports were released in June 1994:

ARA Consulting Group Inc. 1993. Program Review: Salmonid Enhancement Program.

Pearse, P.H. 1994. Salmon Enhancement: An assessment of the Salmon Stock Development Program on Canada's Pacific Coast.

Copies of these reports are available from the Internal Audit and Evaluation Branch, Department of Fisheries and Oceans, 200 Kent Street, Ottawa, Ontario, K1A 0E6.

Program Adjustments

SEP activities were reduced in fiscal year 1994/95 as a result of a $2.8M funding cut. Administration, technical support, planning and information management support were reduced. Research and assessment work, especially chinook and coho coded-wire tagging, were also cut back. Production cuts include discontinuation of the Burrard Inlet seapen project (chinook), closure of the Eagle River hatchery (chinook and coho) and discontinuation of Chilko Lake fertilization (sockeye).

Summary of Eggs Taken and Juvenile Releases

A summary of total releases of juveniles in 1994 by SEP unit and program component is presented in the following table.

Data by species and stock/river for individual facilities in the Enhancement Operations and Community Programs components are presented by production unit in Tables 2 and 3 of the report, which are not reproduced here. These data include: egg target, eggs taken (or transferred to or from another facility), fry or yearlings rearing as of September 30, 1994, 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 lake enrichment projects are not available at this time but will be forwarded in the spring.

1994 Releases from the Salmonid Enhancement Program (thousands)

| | Sockeye | Chum | Chinook | Coho | Pink | Steelhead | Cutthroat |
|---|---|---|---|---|---|---|---|
| **Enhancement Operations** | | | | | | | |
| Coastal Division | | 154,876 | 29,755 | 7,250 | 7,590 | 515 | 46 |
| Fraser/NBC Division | 224,592 | 23,588 | 8,501 | 4,949 | 3,410 | 346 | 46 |
| | 224,592 | 178,464 | 38,256 | 12,199 | 11,000 | 861 | 92 |
| **Community Programs** | | | | | | | |
| Community Involvement Division | | 9,697 | 11,999 | 4,465 | 2,431 | 99 | 61 |
| Resource Restoration Division | 264 | 22,599 | 212 | 1,959 | 1,350 | 4 | |
| | 264 | 32,296 | 12,211 | 6,424 | 3,781 | 103 | 61 |
| **Lake Enrichment Program** | N/A | | | | | | |
| **TOTAL SEP** | 224,856 | 210,760 | 50,467 | 18,623 | 14,781 | 964 | 153 |

## Significant Changes in Program

Coastal Division

**Quinsam Hatchery** - Sea pen releases of chinook smolts continue.

**Big Qualicum Hatchery** - Sea pen releases of chinook smolts continue.

**Conuma Hatchery** - Sea pen releases of chinook and chum have been increased.

**Puntledge Hatchery** - Sea pen releases of chinook smolts were re-initiated.

**Snootli Hatchery** - Reduced coho smolt production was continued for 1994 brood. Yearling chinook smolt releases continue.

**Nitinat Hatchery** - Sea pen releases of chinook and chum continue.

Fraser River and Northern B.C. Operations

**Capilano Hatchery** - This was the first year without seapen releases since 1986. We are investigating white chinook from Chilliwack Hatchery (Harrison stock) to serve as hatchery broodstock, due to their potential tolerance of a smaller release size and later adult return timing (to avoid summer low-flow conditions).

**Chehalis River Hatchery** - Due to reduced funding, the chum target dropped from 10.5 million to 9.0 million.

**Chilliwack Hatchery** - Very few Chilliwack pink salmon were released because incubation space was saved for eggs from Jones Creek. About 650K unfed fry were released into Jones, representing all of the pink salmon spawn that survived the Jones Creek landslide. White chinook (Harrison stock) continue to show quite high adult returns.

**Eagle River Hatchery** - Facility closure was announced in August, 1994. A portion of the production was transferred to Spius Creek Hatchery.

**Fulton River Project** - Abnormally high prespawning losses in river, channel #1 and channel #2 were attributed to an outbreak of the protozoan parasite "Ich". Mortalities from first loading of channel #2 were flushed out and the channel was partially reloaded with late run fish. The impact on production is difficult to quantify, but fry migration may be reduced by as much as 40 - 50% from normal levels.

**Inch Creek Hatchery** - The emphasis on the successfully rebuilt Nicomen coho stock was shifted to the Stave stock (which has a growing sport fishery), with their targets of 200K and 60K smolts being switched.

**Jones Creek** - Silt and sand from the landslide area continue to be deposited in the channel and lower reaches of the stream, smothering all eggs that have been deposited. Without the rescue egg transplant to the Chilliwack Hatchery, the stock would have been wiped out.

**Pinkut Creek Project** - Similar situation to that described for Fulton River. Majority of losses in bottom half of channel.

**Shuswap River Hatchery** - Although an "Ich" outbreak in Lower Shuswap chinook stock resulted in prespawning mortality of more than half of the returning adults, the egg target of 600,000 was slightly exceeded.

**Spius Creek Hatchery** - Production of Salmon River chinook yearlings and coho fry, formerly produced at Eagle River, will now be done at this site.

**Tenderfoot Creek Hatchery** - Chinook releases were reduced by 500K because of a shortfall in the egg target when the adult returns to the Britannia Beach brood stock capture site ceased earlier than in previous years. Many early-returning brood stock were released to accommodate a spawner tagging program being conducted by Fisheries Management. The pink salmon program was switched from the Mamquam stock (which had been successfully rebuilt over the past several cycles) to the Lower Paradise groundwater channel on the Cheakamus River. Significant losses (over 10%) of coho from Bacterial Kidney Disease occurred during extended rearing.

**Transboundary Sockeye Enhancement** - Due to a fatal plane crash, the Tahltan Lake egg target of 6.0 million was not reached (4.2 million taken). Fall of 1994 was the first year of enhanced returns to all three sites; otoliths taken from brood stock will be processed to determine the percent enhanced component.

Development Division

**Fraser River Fish Passage** - Maintenance work continued. An additional low-level fishway was installed at Hell's Gate in spring, 1994.

Community Involvement Division

The position of a Watershed Restoration Biologist has been added to the group. The primary role of this biologist is to organize and implement the new Streamkeeper Program for volunteers. Also, in March 1995, the $100 thousand Community Ventures Program will be discontinued. There are 8000 volunteers under the SEP Public Involvement Program carrying out enhancement work in B.C. and the Yukon. These projects are worth about $8.0 million in labour and lever about $1.5

million in donated funds. The Salmon Conservation Stamp now provides about $200-300 thousand each year for community-based enhancement projects through the Pacific Salmon Foundation. The 1994-95 directory of the Community Economic Development, Public Involvement and School projects which lists all sites is available on request.

Resource Restoration Division

The primary focus for the division continues to be habitat restoration based on input from Management Biology and Habitat Management. In addition, the division has been implementing a restoration program funded by B.C. Hydro aimed at restoring lost productivity due to construction of dams on salmon-bearing streams in B.C. Over 50% of the divisional activity occurred within the Fraser River drainage with financial support originating from the Fraser River Action Plan. In summary, over twenty-five projects were undertaken, many of these in partnership with municipalities, forest companies, Harbour Commission and provincial agencies. Habitat restoration will continue to be a priority for the Salmon Enhancement Program for the foreseeable future, particularly with the implementation of the recently announced provincial Watershed Restoration Program.

Lake Enrichment Program

Great Central, Henderson, Hobiton and Long Lakes were fertilized again during 1994 but Chilko Lake was left unfertilized after four consecutive years of enhancement.

Program Coordination and Assessment Division

A major activity this year is to upgrade estimates of escapement of enhanced salmon to include fish that spawn naturally. A new data system was designed to facilitate these calculations for all projects based on high quality data for index projects. Survival and catch distribution biostandards used to estimate project production and economic benefits are also being updated. Division staff provided much of the data used in the evaluations of SEP cited in the Introduction. Work is continuing on a database designed to capture data at the project level in a standardized manner at different projects and to complement the existing assessment database. The Division also coordinated SEP juvenile marking and adult spawner enumeration and sampling activities.

(Source Document) *1994 Update Report for the Salmonid Enhancement Program in British Columbia*. Department of Fisheries and Oceans, Canada. February, 1995.

# 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, 1994 to March 31, 1995 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. 1993 Annual Report. TCCHINOOK (94)-1. December 6, 1994.**

This report contains the Chinook Technical Committee's (CTC) assessment of the chinook rebuilding program through 1993. Major conclusions of the assessment are:

- Through 1993, only 50% of the escapement indicator stocks are rebuilding.
- Declines in escapements have not been stopped for 8 of the 18 stocks classified as "Indeterminate" or "Not Rebuilding."
- Harvest rates for all fisheries constrained by PSC ceilings have not been reduced to levels projected when the rebuilding program was established in 1984.
- Observed survivals for recent years have been below long-term averages.
- Under existing management regimes and depressed marine survival conditions, only one-third of the model stocks representing naturally spawning chinook stocks are projected to achieve their escapement goals by 1998.

Since the rebuilding program is scheduled for completion in 1995 for Southeast Alaska and Transboundary stocks and in 1998 for other stocks, options for completing the rebuilding program become more limited and potential management measures become more restrictive with each passing year.

***Therefore, the CTC recommends that substantial reductions in total fishing mortality should be implemented, beginning in 1995.*** For example, a 50% reduction in fishing mortality rates for all fisheries from recent levels would rebuild additional major stocks, sustain stocks that have been rebuilding, and provide protection for stocks that have not responded positively to the rebuilding program. The level of harvest rate reduction examined does not represent a CTC recommendation. Rather, the actual reductions implemented would depend upon policy choices regarding the stocks to be rebuilt and the management objectives and constraints for particular fisheries.

***The CTC, therefore, further recommends that the Parties explicitly state their objectives for the remaining years and:***

i) identify the set of indicator stocks that are to be rebuilt by 1998; and

ii) establish management objectives and constraints (e.g., minimum catch levels for fisheries, target harvest rates, etc.) for individual fisheries.

After these policy determinations are made, the CTC can provide assistance in evaluating alternative means of accomplishing the rebuilding objectives of the Parties in the years remaining in the rebuilding program. Further delays in responding to reduced abundances would increase the potential for even more severe disruptions of future fisheries to successfully complete the rebuilding program.

Even with substantial reductions in fishing mortalities some stocks are not expected to rebuild by 1998. The highly variable status of stocks within geographic areas indicates that it will not be possible to rebuild all stocks by 1998 through management of mixed-stock ocean fisheries. ***The CTC recommends, therefore, additional stock-specific management or rehabilitation actions to achieve escapement goals for these stocks.***

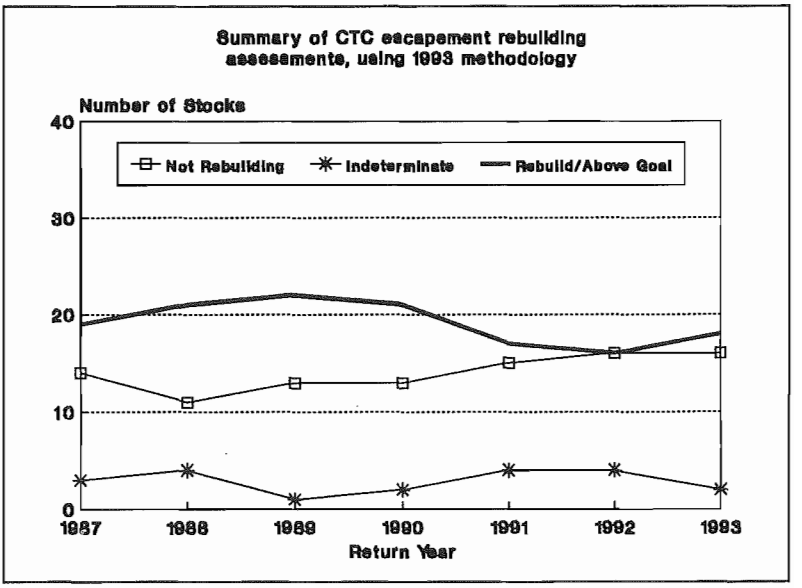
**Key Points in the 1993 Annual Report**

**1) Catch in Ceiling Fisheries and Exploitation Rates in Nonceiling Fisheries (Chapter 1)**

In 1993, catch in fisheries with catch ceilings established by the PSC were either within the +7.5% management range (SEAK and NCBC fisheries) or below the -7.5% range (WCVI troll and Strait of Georgia troll and sport). Through 1993, the cumulative deviations in each fishery under these ceilings are all within the 7.5% management range, if the 1992 and 1993 add-ons presented by Canada are accepted (Chapter 1). In nonceiling fisheries, harvest rates were generally consistent with obligations for passthrough (as estimated by applying the nonceiling index suggested by the CTC, 1991) except for the stocks in the North Puget Sound summer/fall stock group in the southern U.S. marine fisheries (Chapters 3). However, in terminal fisheries, harvest rates have increased relative to the base period in eight of 24 escapement indicator stocks (Chapter 5).

**2) Rebuilding Status of Escapement Indicator Stocks (Chapter 2)**

This year's assessment of escapement trends included 44 naturally spawning escapement indicator stocks following the addition of the Deschutes fall stock and the splitting of coastal Oregon into two stock aggregates. Further, procedures for categorizing the rebuilding status of the escapement indicator stocks were revised, and resulted in a reduced number of stocks assessed as Indeterminate. Stocks



that were assessed as Indeterminate or Not Rebuilding were further examined to determine if the decline in escapements had been stopped. As of 1993, 50% of the 36 escapement indicator stocks with goals were assessed as being Above Goal or Rebuilding, 44% were assessed as Not Rebuilding, and 6% were assessed as Indeterminate. Further, for eight of the 18 stocks that were assessed as Not Rebuilding or Indeterminate, we have apparently not stopped the decline in spawning escapements. Comparing escapement assessments through 1993 with previous years indicates that we are not progressively achieving the spawning escapement goals of the indicator stocks. Rather, the assessments have been very similar for the past four years and slightly poorer than during 1987-1990. The above figure was based on the 1993 assessment methods, data, and escapement goals and only accounts for CTC re-categorization of Indeterminate stocks in 1993. Explanation of these changes (5 Indeterminate stocks changed to Rebuilding) is presented in Chapter 2. Among the eight indicator stocks without escapement goals, six stocks were assessed as having 1989-1993 average escapements above base level, one stock was assessed as having average escapements below base level, and one stock has not changed from the base level.

**3) Exploitation Rate Indicator Stocks (Chapter 3)**

Examination of coded-wire tag data for 35 exploitation rate indicator stocks indicated that:

a) Reductions in fishery indices did not meet the 1984 projected reduction in any of the four ceiling fisheries (SEAK troll, NCBC troll, WCVI troll, and GST troll and sport), and increased in three of four fisheries compared to 1992. The 1985 target harvest rate reduction used previously in the CTC Annual Reports was replaced by the time trend of harvest rate indices projected by the 1984 version of the CTC chinook model. The CTC replaced the 1985 target for the reasons detailed in Section 3.3.1 of this report. Across ceiling fisheries, the average harvest rate reduction, compared to the base period, was only 5% in 1993, compared to the longer term average (1985-1993) reduction of 18%. Fishery indices calculated for 1993 fisheries were -26% in SEAK troll, -23% in NCBC troll, -1% in WCVI troll, and +29% for GS troll and sport fisheries.

b) In 1993, ocean total mortality exploitation rates were reduced from the base period in 13 of 17 stocks for which this comparison is possible (median reduction 10%, range from -21% to +9%). Combined ocean and terminal fishery total exploitation rates were also reduced in 13 of 17 comparisons (median reduction 5%, range from -23% to +23%). However, incidental mortalities increased relative to the base period in 14 of these 17 comparisons (median increase 4%, range -1% to +14%).

c) The age 2-3 survival indices for broods contributing to fisheries in 1994 and 1995 indicate that survival rates will be well below the base period levels for all stock groups with the exception of the SEAK/TBR-I groups. The largest reductions are projected for the Lower GS Falls (-97%), Upper GS Summer/Falls (-92%), North PS Summer/Falls (-91%), and WCVI Falls (-90%).

**4) Model Projections for Rebuilding and Abundance (Chapter 4)**

The CTC chinook model was used to estimate expected changes in chinook abundance in fisheries, and to project the status of the rebuilding program in 1998 under two marine survival and two harvest reduction scenarios. Chinook abundance in fisheries is expected to decline from the 1994 level in three of the four ceiling fisheries. In the SEAK and NCBC troll, the abundance is expected to return to base period levels (approximately a 50% decline in abundance from recent levels); in the WCVI troll, abundance is expected to continue decreasing to approximately 34% below the base period level. In contrast, in GS fisheries, abundance is expected to recover to base

period levels by 1995. The rebuilding status of chinook stocks predicted by the model in 1998 is highly dependant on the marine survival rates assumed and the management actions taken in fisheries. For example, if future marine survivals are assumed to equal those of the most recent five years and existing management regimes are maintained, only one-third of the model indicator stocks representing naturally spawning chinook stocks would be predicted to rebuild by 1998. Previous modelling assessments have frequently assumed that future marine survivals would equal the long-term average survival rate. However, in almost every indicator stock, the more recent survivals are substantially less than this long-term average.

**5) Variability in Response of Stocks (Chapter 5)**

The integrated assessment continues to demonstrate the highly variable response of stocks to the rebuilding program. In only one of the 13 stock groups identified, were the component stocks assessed as having the same escapement rebuilding status (NPS-Summer/Fall, all three stocks categorized as Not Rebuilding). In all other stock groups, the component stocks ranged in escapement assessment categories from Above Goal to Not Rebuilding.

**6) Deviations from Assumptions of Rebuilding Program**

The PSC catch ceilings were established in 1984 (see PSC 1991 for details) with the expectation that the initial reduction of harvest rates associated with imposition of the ceilings would be followed by further progressive harvest rate reductions as chinook abundance increased during the rebuilding program. The initial reduction was expected to occur as a result of setting the ceiling for each fishery at a reduced level relative to recent catches, assuming that:

a) cohort survival rates would remain equal to the average rate observed in the base period;

b) the harvest rates in non-ceiling fisheries would not increase from base period values and would actually be reduced by 25% in Canadian net fisheries; and

c) that management actions would not alter the ratio of incidental fishing mortalities to reported catch observed in the base period used in the model analyses.

Further, in years in which abundance precluded harvesting the full ceiling without an increase in the harvest rate, the CTC recommended that further restrictions (e.g., restricting the season length) be implemented to restrict harvest.

The CTC's assessment through 1993 indicates that many of the assumptions used in developing the PSC chinook rebuilding program have been violated. These violations include reductions in survival rates, an increased ratio of incidental to reported catch mortalities, and the possible increase in exploitation rates in non-ceiling fisheries affecting the wild stocks in the North Puget Sound Summer/Fall stock group. As a consequence, exploitation rate reductions required to rebuild naturally spawning chinook stocks have been under-estimated and the fishery exploitation rates have exceeded those projected by the 1984 model. Under these survival and incidental mortality conditions, and the limited time remaining to rebuild, the exploitation rate reductions currently required for rebuilding will be substantially greater than originally predicted.

**Previous Recommendations**

Unfortunately, many recommendations presented in previous CTC reports have not been addressed and continue to be appropriate. Given expected reductions in chinook abundance, the CTC recommends that the Parties:

a) ***Consider alternatives to fixed quotas for controlling harvest rates.*** The wide fluctuation observed in chinook abundance suggests that required reductions in harvest rates will not be achieved with fixed catch quotas. Alternatives include the use of catch levels linked to predictions of chinook abundance obtained from the chinook model and/or methods that can effectively control harvest rates through fishing effort limitations.

b) ***Reduce incidental fishing mortality or set allowable harvests based on total mortality.*** Reductions in stock exploitation rates for reported catch have been offset to a significant extent by increases in incidental mortality. Incidental mortality reductions would increase the number of chinook available for harvest and/or escapement.

c) ***Initiate stock-specific investigations to evaluate stocks assessed as Not Rebuilding and develop stock-specific actions that compliment harvest controls, including enhancement and the reduction of nonfishing related sources of mortality.*** The investigations may include evaluation of escapement goals, escapement monitoring programs, fisheries management, and non-fishing sources of mortality. The severely depressed status of some stocks and the lack of a positive response in escapements suggest that, to rebuild some stocks, management actions additional to the control of harvests in mixed stock ocean fisheries will be necessary.

To continue the development of chinook stock assessments and facilitate understanding of the factors affecting chinook production, the CTC continues to recommend the following (see CTC, 1992b):

i) ***Conduct research on factors affecting freshwater and marine survival of chinook stocks.*** Factors such as predation, El Nino events, habitat destruction, and enhancement practices can significantly affect chinook production and the rebuilding program. Examination of environmental factors may also improve our capacity to predict abundance of chinook.

ii) ***Provide data required by the CTC to complete the escapement and exploitation rate assessments, specifically:***

a) ***Report estimated CWT recoveries to the PSMFC by July of the year following the fishery.*** In the past, the estimated recoveries for Puget Sound sport fisheries, tributary sport recoveries in the Columbia River, and escapement recoveries for most southern U.S stocks have not been available by July.

b) ***Collect and provide information on the age and sex composition of the spawning escapement.*** Age- and sex-specific escapement data are essential to evaluate brood production, stock productivity, and escapement goals. Age- specific data also improve the quality of the calibration of the CTC chinook model.

c) ***Tag representative exploitation rate indicator stocks at sufficient levels.*** The CTC is especially concerned about the lack of adequate representation of spring and summer stocks and the lack of an indicator stock (with escapement data) for the Harrison River stock.

d) ***Establish consistent and standardized recovery programs for CWT fish at hatcheries and on spawning grounds.*** Accurate estimates of escapement are essential for the Exploitation Rate Assessment.

e) ***Provide estimates of sublegal encounter rates in fisheries with size limits, and legal and sublegal encounter rates in chinook non-retention and net fisheries.*** The CTC has estimated that incidental fishing mortality is approximately 30-50% of the reported catch (CTC 1987). However, sampling programs to determine the magnitude and stock composition of the nonlanded catch mortality are virtually nonexistent.

f) ***Provide estimates of nonreported chinook catches by Canadian Native fisheries.*** The CTC is unable to fully evaluate impacts of these fisheries on chinook stocks and the rebuilding program until these data are provided.

## B. JOINT CHUM TECHNICAL COMMITTEE

**Joint Chum Technical Committee. Final 1992 Post Season Summary Report. TCCHUM (94)-1. May, 1994.**

### Introduction

This Joint Chum Salmon Technical Committee report presents the appropriate information for 1992 chum salmon stocks and fisheries in southern British Columbia and Washington, as required by Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST). In addition, paragraph six of the Pacific Salmon Treaty Letters of Transmittal, dated May 17, 1991, provided for an amendment to Chapter 6 of Annex IV of the PST. Detailed information may be found in the United States and Canadian agency sections of 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 1992.

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

   The Joint Chum Technical Committee convened on three separate occasions during the year to address various assignments. The following reports were published: Final 1990 Post-Season Summary Report, TCCHUM (92)-1; Accuracy and Precision of Genetic Stock Identification for Estimating the Stock Composition of Mixed-Stock Chum Salmon Fisheries in Northern Puget Sound and Southern Georgia Strait, TCCHUM (92)-2; Update of Research Needs for Southern British Columbia and Washington Chum Salmon, TCCHUM (92)-3.

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 1992, the gross escapement of Inside chum totalled 2,031,000. Escapement to natural spawning areas totalled 1,790,000 which was 10% below the Clockwork goal of 2,000,000. The Fraser River escapement was 682,000, or 97% of the 700,000 goal.

Terminal area commercial fisheries scheduled by Canada to harvest specific stocks with identified surpluses included; mid Vancouver Island (Area 14), Jervis Inlet (Area 16), Nanaimo (Area 17), Cowichan (Area 18), and Fraser River (Area 29). These fisheries were managed to limit interceptions of U.S. origin or other non-targeted stocks. Stock composition samples were taken, but the technical committee has not addressed the issue of "minimizing increased interceptions".

3. *In 1992, 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 Clockwork Harvest Plan was reviewed and revised after the end of the 1991 fishing season. The threshold level for harvest at 30% was increased from 3.7 million to 3.9 million. No further changes were incorporated in 1992. The in-season estimation of the Johnstone Strait run size was 4,400,000 providing for a harvest rate of 30% or 1,320,000 chum. Post-season, the Clockwork run size was estimated at 4,317,000 chum. The actual Clockwork harvest was 1,479,000, resulting in a harvest rate of 34%.

   The total allowable chum catch for U.S. Area 7 and 7A was 140,000, based on a total Johnstone Strait chum harvest which exceeded 640,000 fish. The target harvest was reduced to 122,000 fish due to a 18,000 fish over-harvest in these areas in 1991. The total catch for the Area 7 and 7A fishery in 1992 was 119,000 chum. This fishery was managed to maintain a traditional fishing pattern with both areas opened simultaneously. The final catch distribution between Area 7 and Area 7A was 46% and 54%, respectively.

4. *In 1992, 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. The commercial catch of 58,000 chum was 3% higher than the 1985-1991 average Strait harvest. Genetic Stock Identification (GSI) samples were taken. However, the technical committee has not addressed the issue of "minimizing increased interceptions".

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. Area 7 and 7A catch fell short of the 1992 ceiling by 2,400 fish. This deficit will be added to a future year's allowable catch (Table 1).

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.*

   Fisheries covered by this chapter were sampled, and stock composition estimates were provided to the Joint Interceptions Committee. Methods for estimating stock composition are under continuing review by the committee.

7. *In 1992, Canada was to manage the Nitinat chum net fishery to minimize the harvest of non-targeted stocks.*

A gillnet only fishing area, used during combined gear fisheries only, was reduced in size by 50% in 1992 relative to 1991. In addition, the start of the Nitinat fishery was delayed by two weeks, to late September, to reduce the interception of non-target stocks. Canada conducted GSI sampling to quantify the incidence of interceptions of non-target stocks in Area 121. Additional GSI samples were not collected from Area 20-1. The technical committee has not addressed the issue of "minimizing the harvest of non-target stocks".

8. *In 1992, 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 the 1985 and 1986 levels. As a result, Canada did not conduct GSI sampling of this fishery. The total catch for this fishery was 45,500 chum salmon.

Table 1. Summary of U.S. Treaty chum allocations and catches for Areas 7 and 7A, 1986-1992.

| Year | PST Specified Catch Level | Adjusted U.S. 7 & 7A Catch[1] | Actual Catch | Current Due U.S. |
|---|---|---|---|---|
| 1986 | 80,000 | 80,000 | 92,984 | N/A |
| 1987 | 20,000 | 20,000 | 26,323 | -6,323 |
| 1988 | 140,000 | 133,677 | 131,356 | 2,321 |
| 1989 | 120,000 | 122,321 | 81,021 | 41,300 |
| 1990 | 140,000 | 181,300 | 180,544 | 756[2] |
| 1991 | 120,000 | 120,000[2] | 138,361 | -18,361 |
| 1992 | 140,000 | 121,639 | 119,210 | 2,429 |

1. Takes into account underages or overages from previous years.
2. 1990 accumulated U.S. shortfall foregone through PSC agreement.

## C. JOINT COHO TECHNICAL COMMITTEE

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

## D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

**Joint Northern Boundary Technical Committee. U.S./Canada Northern Boundary Area 1994 Salmon Fisheries Management Report and 1995 Preliminary Expectations. TCNB (94)-1. November, 1994.**

This report reviews: 1) catch, effort, and management actions in the 1994 Northern Boundary Area pink, chum, and sockeye salmon fisheries of southern Southeast Alaska Districts 101 to 106 and northern British Columbia Areas 1, 3, 4, and 5; 2) management performance relative to Treaty requirements; 3) historical catches and escapements; and 4) preliminary 1995 expectations and fishing plans for 1995.

In southern Southeast Alaska, the all-gear salmon harvest was 28.0 million which is close to the 1980 to 1993 average of 28.8 million. The harvest was comprised of 21.1 (75.3%) million pink, 3.4 (12.2%) million chum, 1.7 (6.2%) million coho, 1.7 (6.1%) million sockeye, and 55 (0.2%) thousand chinook salmon. Pink salmon escapements were reasonably well distributed and near index goals in all southern Southeast Alaska districts. Escapement indices totalled 7.1 million or 1.1 million above the 6.0 million escapement target. Escapements of sockeye, chum, and coho salmon were generally strong throughout the region.

In Northern British Columbia, pink returns were very poor relative to recent years; 354,988 pink salmon were harvested in Canadian Area 3 and only 160,250 pink in the Area 4 fishery. Pink escapements to most areas were extremely poor. Sockeye returns were below average; 326,125 were harvested in Area 3 and only 555,229 in Area 4. Escapement levels for sockeye were near target for the Nass and Skeena Rivers. Escapements of summer chum salmon were relatively good in Area 3.

For the 1994 purse seine fishing season no formal agreement had been reached with Canada on the conduct of the District 104 fishery. However, this fishery was managed to limit fishing time and sockeye harvest to levels similar to the 1990 to 1993 annex arrangement under the Pacific Salmon Treaty. The total sockeye salmon harvest prior to Statistical Week 31 was 158,524 fish.

In the Alaska District 101-11 (Tree Point) gillnet fishery the U.S./Canada Pacific Salmon Treaty calls for an average annual harvest, beginning in 1985, of 130,000 sockeye salmon. The 1994 harvest of sockeye salmon at Tree Point was 100,377 fish. This brings the 1985 to 1994 average to 164,360 sockeye.

Under the Pacific Salmon Treaty the outside portions of Canada's Statistical Areas 3 and 5 are to be managed such that an average annual pink harvest of 900,000 is achieved. In 1994, 249,651 pinks were harvested in Management Units 3 (1-4) and 5-11 combined. The current average annual pink harvest from 1985-1994 in the treaty area is 1,824,943.

As for Alaska's District 104 seine fishery, there were no specific annex arrangements under the Pacific Salmon Treaty governing the conduct of the Canadian Area 1 troll fishery for pink salmon. Preliminary sales slips indicate the Area 1 troll catch was 220,500 fish with 73,820 taken in the A-B line strip.

Weak harvests are forecast for Southeast Alaskan pink salmon in 1995. The Alaska Department of Fish and Game forecasts a harvest of between 15 and 25 million pink salmon in all of Southeast Alaska in 1995. Separate forecasts for northern and southern southeast are no longer made.

Returns of coho salmon are projected to be below recent year averages but returns of sockeye and chum salmon are projected to be comparable to the levels observed in recent years.

In Canada, average sockeye fisheries are anticipated in Area 3 and Area 4 in 1994, while lower than average pink catches are predicted.

## E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

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

## F. JOINT TECHNICAL COMMITTEE ON DATA SHARING

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

## G. JOINT INTERCEPTIONS COMMITTEE

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

# Publications of the Pacific Salmon Commission

# PART VI
# PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

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

Documents listed here are those which were published during the period from 1990/91 through 1994/95 inclusive. 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

**5. 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.

**6. Pacific Salmon Commission 1990/91 Sixth Annual Report. November 1991.**

This report contains a summary account of the Commission's sixth year of operation and contains amendments to Annex IV of the Pacific Salmon Treaty which applied to the 1991 fishery regime.

**7. Pacific Salmon Commission 1991/92 Seventh Annual Report. November 1992.**

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

**8. Pacific Salmon Commission 1992/93 Eighth Annual Report. November 1993.**

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

**9. Pacific Salmon Commission 1993/94 Ninth Annual Report. November 1994.**

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

## 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.

20. TCCHINOOK (91)-3 - *1990 Annual Report.* November 5, 1991.

21. TCCHINOOK (92)-1 - *Review of Alaskan Procedures to Estimate Add-On and Predicted Effects of June Fisheries.* January 24, 1992.

22. TCCHINOOK (92)-2 - *Chinook Technical Report on Preliminary 1991 Catch and Escapement.* February 13, 1992.

23. TCCHINOOK (92)-3 - *Long-Term Research Plans for Coastwide Pacific Chinook Stocks.* October 23, 1992.

24. TCCHINOOK (92)-4 - *1991 Annual Report.* November 17, 1992.

25. TCCHINOOK (93)-1 - *Chinook Technical Report on Preliminary 1992 Catch and Escapement.* February 11, 1993.

26. TCCHINOOK (93)-2 - *1992 Annual Report.* November 19, 1993.

27. TCCHINOOK (94)-1 - *1993 Annual Report.* December 6, 1994.

**ii. Joint Chum Technical Committee**

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

13. TCCHUM (92)-1 - *Final 1990 Post-Season Summary Report.* March 1992.

14. TCCHUM (92)-2 - *Accuracy and Precision of Genetic Stock Identification for Estimating the Stock Composition of Mixed-Stock Chum Salmon Fisheries in Northern Puget Sound and Southern Georgia Strait.* February 18, 1992.

15. TCCHUM (92)-3 - *Update of Research Needs for Southern British Columbia and Washington Chum Salmon.* April, 1992.

16. TCCHUM (93)-1 - *Final 1991 Post Season Summary Report.* March, 1993.

17. TCCHUM (94)-1 - *Final 1992 Post Season Summary Report.* May, 1994.

**iii. Joint Coho Technical Committee**

8. TCCOHO (91)-1 - *Northern Panel Area Coho Salmon Status Report.* December, 1991.

9. TCCOHO (94)-1 - *Interim Estimates of Coho Stock Composition for 1984-1991 Southern Area Fisheries and for 1987-1991 Northern Panel Area Fisheries.* February 10, 1994.

**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.

12. TCNB (91)-2 - *U.S./Canada Northern Boundary Area 1991 Salmon Fisheries Management Report and 1992 Preliminary Expectations.* November, 1991.

13. TCNB (92)-1 - *U.S./Canada Northern Boundary Area 1992 Salmon Fisheries Management Report and 1993 Preliminary Expectations.* November, 1992.

14. TCNB (93)-1 - *Research Needs and Priorities for Sockeye, Pink, Chum, and Steelhead Salmon in the Northern Boundary Area.* November, 1993.

15. TCNB (93)-2 - *U.S./Canada Northern Boundary Area 1993 Salmon Fisheries Management Report and 1994 Preliminary Expectations.* November, 1993.

16. TCNB (94)-1 - *U.S./Canada Northern Boundary Area 1994 Salmon Fisheries Management Report and 1995 Preliminary Expectations.* November, 1994.

**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.

16. TCTR (91)-2 - *Transboundary River Sockeye Salmon Enhancement Activities, 1989 Brood Year (July 1989 through October 1990).* May 1991.

17. TCTR (91)-3 - *Salmon Management Plan for the Stikine, Taku, and Alsek Rivers, 1991.* June, 1991.

18. TCTR (91)-4 - *Escapement Goals for Chinook Salmon in the Alsek, Taku, and Stikine Rivers.* November, 1991.

19. TCTR (92)-1 - *Transboundary River Salmon Production, Harvest and Escapement Estimates, 1990.* January, 1992.

20. TCTR (92)-2 - *Salmon Management and Enhancement plans for the Stikine, Taku and Alsek Rivers, 1992.* June, 1992.

21. TCTR (93)-1 - *Transboundary River Salmon Production, Harvest and Escapement Estimates, 1991.* January, 1993.

22. TCTR (93)-2 - *Salmon Management and Enhancement plans for the Stikine, Taku and Alsek Rivers, 1993.* August, 1993.

23. TCTR (93)-3 - *Transboundary River Salmon Production, Harvest and Escapement Estimates, 1992.* November, 1993.

24. TCTR (94)-1 - *Transboundary River Sockeye Salmon Enhancement Activities. Final Report for Fall, 1990 to Spring, 1992.* April, 1994.

**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.

6. TCDS (91)-1 - *1990 Annual Report of the Data Sharing Committee and Its Work Groups.* July, 1991.

**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. TECHNICAL REPORT SERIES OF THE PACIFIC SALMON COMMISSION

2. Levy, D.A., B. Ransom and J. Burczynski. *Hydroacoustic Estimation of Sockeye Salmon Abundance and Distribution in the Strait of Georgia, 1986.* PSC Tech. Rep. No. 2, October, 1991.

3. Cheng, P, D.A. Levy, and P.S. Nealson. *Hydroacoustic Estimation of Fraser River Pink Salmon Abundance and Distribution at Mission, B.C. in 1987.* PSC Tech. Rep. No. 3, October, 1991.

4. Levy, D.A., P.A. Nealson, and P. Cheng. *Fixed-Aspect Hydroacoustic Estimation of Fraser River Sockeye Salmon Abundance and Distribution at Mission, B.C. in 1986.* PSC Tech. Rep. No. 4, October, 1991.

5. Gable, J., and S. Cox-Rogers. *Stock Identification of Fraser River Sockeye Salmon: Methodology and Management Application.* PSC Tech. Rep. No. 5, October, 1993.

6. Pacific Salmon Commission. *Pacific Salmon Commission Run-size Estimation Procedures: An Analysis of the 1994 Shortfall in Escapement of Late-run Fraser River Sockeye Salmon.* PSC Tech. Rep. No. 6, May, 1995.

## E. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

6. Blackbourn, D.J. and M.B. Tasaka. 1989. *Marine Scale Growth in Fraser River Pink Salmon: A Comparison with Sockeye Salmon Marine Growth and Other Biological Parameters.* In P.A. Knudsen (ed.) Proceedings of the 14th Northeast Pacific Pink and Chum Salmon Workshop. Washington State Department of Fisheries, p.p. 58-63.

7. White, B.A. 1989. *Simulation Analysis of GSI Applications to Odd-Year Pink Salmon Fishing.* In P.A. Knudsen (ed.) Proceedings of the 14th Northeast Pacific Pink and Chum Salmon Workshop. Washington State Department of Fisheries, p.p. 37-41.

8. Woodey, J.C. 1989. *Use of GSI Data in Management of Fraser River Pink Salmon.* In P.S. Knudsen (ed.) Proceedings of the 14th Northeast Pacific Pink and Chum Salmon Workshop. Washington State Department of Fisheries, p.p. 42-44.

9. White, B.A. and J.B. Shaklee. 1991. *Need for Replicated Electrophoretic Analyses in Multiagency Genetic Stock Identification (GSI) Programs: Examples from a Pink Salmon (O. gorbuscha) GSI Fisheries Study.* (CJFAS v. 48(8), 1396-1407.

10. White, B.A. and I.C. Guthrie (eds.) 1991. *Proceedings of the 15th Northeast Pacific Pink and Chum Salmon Workshop.* Pacific Salmon Commission, 241 p.p.

11. White, B.A. and J. Gable. 1991. *In-Season Management of Fraser River Pink Salmon Using GSI Techniques.* In B.A. White and I.C. Guthrie (eds.) Proceedings of the 15th Northeast Pacific Pink and Chum Salmon Workshop. Pacific Salmon Commission, p.p. 194-200.

12. Shaklee, J.B., D.C. Klaybor, S. Young and B.A. White. 1991. *Genetic stock structure of odd-year pink salmon, O. gorbuscha (Walbaum), from Washington and British Columbia and potential mixed-stock applications.* Journal of Fish Biology (1991) 39 (Supp. A), 21-34.

13. Walters, C. and J.C. Woodey. 1992. *Genetic Models for cyclic dominance in sockeye salmon (O. nerka).* CJFAS v. 49(2), 281-292.

14. Cave, J.D. and W.J. Gazey. 1994. *A Pre-Season Simulation Model for Fisheries on Fraser River Sockeye Salmon (O. nerka).* CJFAS v. 51(7), 1535-1549.

## F. REPORTS OF THE INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

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

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 Behaviour 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.

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

## G. DOCUMENTS SUBMITTED BY THE PARTIES

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

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 1991/92 were:

1. *Preliminary 1991 Post-Season Report for United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. December, 1991.

2. *1991 Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December 12, 1991.

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. December 2, 1991.

4. *Operations and Plans for the Salmonid Enhancement Program in British Columbia and the Yukon Territory.* Canada Department of Fisheries and Oceans. December, 1991.

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 1992/93 were:

1. *Preliminary 1992 Post-Season Report for United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. December, 1992.

2. *1992 Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December, 1992.

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. December, 1992.

4. *Operations and Plans for the Salmonid Enhancement Program in British Columbia and the Yukon Territory.* Canada Department of Fisheries and Oceans. January, 1993.

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 1993/94 were:

1. *Preliminary 1993 Post-Season Report for United States Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. December, 1993.

2. *1993 Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December, 1993.

3. *1993 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, 1994.

4. *1993 Update Report for the Salmonid Enhancement Program in British Columbia.* Canada Department of Fisheries and Oceans. February, 1994.

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 1994/95 were:

1. *Preliminary 1994 Post-Season Report for United States Fisheries of Relevance to the Pacific Salmon Treaty.* United States Section, Pacific Salmon Commission. November, 1994.

2. *1994 Post-Season Report for Canadian Treaty Limit Fisheries.* Canada Department of Fisheries and Oceans. December, 1994.

3. *1994 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. February 8, 1995.

4. *1994 Update Report for the Salmonid Enhancement Program in British Columbia.* Canada Department of Fisheries and Oceans. November 23, 1994.

# Report of the Auditors for 1994/95

# PART VII
# AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 1994 TO MARCH 31, 1995

## AUDITORS' REPORT TO THE COMMISSIONERS

We have audited the balance sheet of Pacific Salmon Commission as at March 31, 1995 and the statements of revenue and expenditures and fund balances for the year then ended. These financial statements are the responsibility of the Commission's management. Our responsibility is to express an opinion on these financial statements based on our audit.

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

In our opinion, these financial statements present fairly, in all material respects, the financial position of the Commission as at March 31, 1995 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.

KPMG Peat Marwick Thorne

Chartered Accountants

New Westminster, Canada
May 10, 1995

# PACIFIC SALMON COMMISSION

Balance Sheet

March 31, 1995, with comparative figures for 1994

| | 1995 | 1994 |
|---|---|---|
| **Assets** | | |
| General fund: | | |
| Current assets: | | |
| Cash and term deposits | $ 1,087,591 | $ 998,053 |
| Accounts receivable | 17,378 | 14,667 |
| Interest receivable | 14,766 | 4,617 |
| Prepaid expenses | 32,321 | 31,787 |
| | 1,152,056 | 1,049,124 |
| Note receivable | – | 38,671 |
| | $ 1,152,056 | $ 1,087,795 |
| Working capital fund: | | |
| Cash and term deposit | $ 62,886 | $ 90,012 |
| Capital asset fund: | | |
| Capital assets (note 2) | $ 165,379 | $ 181,880 |
| International Pacific Salmon Fisheries Commission Trust Fund: | | |
| Term deposits (note 3) | $ – | $ – |
| **Liabilities and Fund Balances** | | |
| General fund: | | |
| Current liabilities: | | |
| Accounts payable and accrued liabilities | $ 72,810 | $ 72,132 |
| Deferred revenue (note 4) | 342,048 | 400,000 |
| Fund balance (note 5) | 737,198 | 615,663 |
| | $ 1,152,056 | $ 1,087,795 |
| Working capital fund: | | |
| Fund balance | $ 62,886 | $ 90,012 |
| Capital asset fund: | | |
| Equity in capital assets | $ 165,379 | $ 181,880 |
| International Pacific Salmon Fisheries Commission Trust Fund: | | |
| Fund balance | $ – | $ – |

On behalf of the Commission:

_____ Chair, Standing Committee on Finance and Administration

_____ Vice-Chair, Standing Committee on Finance and Administration

See accompanying notes to financial statements.

# PACIFIC SALMON COMMISSION

General Fund

Statement of Revenue and Expenditures and Fund Balances

Year ended March 31, 1995, with comparative figures for 1994

| | 1995 | 1994 |
|---|---|---|
| Fund balance, beginning of year | $ 615,663 | $ 658,155 |
| Revenue: | | |
| Contributions from contracting parties | 1,641,000 | 1,634,000 |
| Interest | 55,961 | 47,377 |
| Other | – | 15,815 |
| Test fishing | 562,767 | 714,535 |
| | 2,259,728 | 2,411,727 |
| Expenditures: | | |
| Salaries and employee benefits | 1,345,097 | 1,388,550 |
| Travel and transportation | 44,565 | 55,855 |
| Rents and communication | 81,194 | 97,025 |
| Printing and reproductions | 10,521 | 17,015 |
| Contract services | 104,980 | 188,837 |
| Materials and supplies | 35,450 | 34,216 |
| Loss (gain) on disposal of capital assets | 2,391 | (1,838) |
| Test fishing | 435,841 | 627,311 |
| | 2,060,039 | 2,406,971 |
| Excess of revenue over expenditures | 199,689 | 4,756 |
| Transfer to capital asset fund | (78,154) | (47,248) |
| Fund balance, end of year | $ 737,198 | $ 615,663 |

See accompanying notes to financial statements.

# PACIFIC SALMON COMMISSION

Working Capital Fund

Statement of Revenue and Expenditures and Fund Balances

Year ended March 31, 1995, with comparative figures for 1994

| | 1995 | 1994 |
|---|---|---|
| Fund balance, beginning of year | $ 90,012 | $ 88,911 |
| Revenue: | | |
| Interest | 4,149 | 2,883 |
| Expenditures: | | |
| Meeting expenses | – | 1,782 |
| Inquiry | 20,763 | – |
| Program costs | 10,512 | – |
| | 31,275 | 1,782 |
| Excess (deficiency) of revenue over expenditures | (27,126) | 1,101 |
| Fund balance, end of year | $ 62,886 | $ 90,012 |

See accompanying notes to financial statements.

# PACIFIC SALMON COMMISSION

Statement of Revenue and Expenditures and Fund Balances

Year ended March 31, 1995, with comparative figures for 1994

| | 1995 | 1994 |
|---|---|---|
| Capital asset fund: | | |
| Equity in capital assets, beginning of year | $ 181,880 | $ 227,735 |
| Net additions during the year acquired by transfers from the General Fund | 78,154 | 47,248 |
| Depreciation | (94,655) | (93,103) |
| Fund balance, end of year | $ 165,379 | $ 181,880 |

See accompanying notes to financial statements.

# PACIFIC SALMON COMMISSION

International Pacific Salmon Fisheries Commission Trust Fund

Statement of Revenue and Expenditures and Fund Balances

Year ended March 31, 1995, with comparative figures for 1994

| | 1995 | 1994 |
|---|---|---|
| Fund balance, beginning of year | $ – | $ 73,583 |
| Revenue: | | |
| Interest earned on term deposit | – | 1,838 |
| Book sales | – | 1,319 |
| | – | 3,157 |
| Expenditures: | | |
| Publications | – | 1,042 |
| Past service costs | – | 2,507 |
| Pension costs | – | 73,191 |
| | – | 76,740 |
| Excess of expenditures over revenue | – | (73,583) |
| Fund balance, end of year | $ – | $ – |

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.

**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 Capital 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 a pre-determined fixed limit in the account at the end of the fiscal year is transferred to the General fund and is treated as income.

(b) Basis of accounting:

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

(c) Capital assets:

Capital assets are stated at cost. Costs of repairs and replacements of a routine nature are charged as a current expenditure while those expenditures which improve or extend the useful life of the assets are capitalized . 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.

(f) Statement of Changes in Financial Position:

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

2. **Capital assets:**

| | | | 1995 | 1994 |
|---|---|---|---|---|
| | Cost | Accumulated depreciation and amortization | Net book value | Net book value |
| Automobiles | $ 99,536 | $ 81,338 | $ 18,198 | $ 7,893 |
| Boats | 82,661 | 74,901 | 7,760 | 3,299 |
| Computer equipment | 332,777 | 305,515 | 27,262 | 38,812 |
| Equipment | 365,431 | 313,104 | 52,327 | 48,318 |
| Films | 1,800 | 1,800 | – | – |
| Furniture and fixtures | 233,189 | 181,863 | 51,326 | 74,645 |
| Computer software | 75,875 | 71,275 | 4,600 | 3,053 |
| Leasehold improvements | 19,532 | 15,626 | 3,906 | 5,860 |
| | $ 1,210,801 | $ 1,045,422 | $ 165,379 | $ 181,880 |

3. **International Pacific Salmon Fisheries Commission Trust Fund:**

During the 1994 fiscal year the Commissions responsibilities for administration of the IPSFC Trust Fund were completed. The remaining fund balance was transferred to that Commission's pension fund and all future responsibilities were assumed by the respective governments.

4. **Deferred revenue:**

Deferred revenue consists of cash contributions received from a contracting party in the current year that represent funding for programs and services to be carried out in the following year. Deferred revenue includes accrued interest on the contributions up to March 31, 1995.

## 5. General balance:

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

| | | 1995 | 1994 |
|---|---|---|---|
| (a) | Continuing operations | $ 704,877 | $ 545,205 |
| (b) | Reserve for note receivable | – | 38,671 |
| (c) | Reserve for prepaid expenses | 32,321 | 31,787 |
| | | $ 737,198 | $ 615,663 |

## 6. Pension plan:

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

At the date of the most recent actuarial valuation as amended, January 1, 1993, the present value of accrued benefits exceeds the market value of related assets available to provide these benefits by $110,567. It is intended to fund this deficiency from normal operations within the next 15 years. As at March 31, 1995, $40,000 has been paid towards the unfunded liability.

# Appendices

# Appendix A

## Letter of Transmittal to Governments regarding fishery regimes for 1993

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

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

The Honorable Warren M. Christopher
Secretary of State
U.S. Department of State
2201 C Street N.W.
Washington, D.C. 20520

The Honorable Ronald H. Brown
Secretary of Commerce
U.S. Department of Commerce
14th and Constitution Avenue N.W.
Washington, D.C. 20230

Dear Sir:

I have the honour to report to you on understandings reached by the Pacific Salmon Commission regarding certain of the fishery regimes specified in Annex IV of the Pacific Salmon Treaty.

In accordance with Article XIII, Paragraph 2 of the Treaty, the Commission recommends implementation of the following arrangements for 1993:

1. **Transboundary Rivers - Annex IV, Chapter 1.**

With respect to the Transboundary rivers, Canada and the U.S. agree to continue the expired annex provision through 1993. Discussions directed towards adjusting agreed fishing regimes to improve access to enhanced sockeye returns will continue prior to the 1994 season.

2. **Northern B.C. and S.E. Alaska - Annex IV, Chapter 2.**

With respect to Portland Canal chum salmon, Canada and the U.S. agree to prohibit net fisheries in relevant areas as recommended by the bilateral Northern Panel on February 15, 1993. In addition, they agree to continue discussion of restoration and enhancement programs for northern boundary chum salmon.

3. **Fraser River Sockeye and Pink Salmon - Annex IV, Chapter 4.**

Canada and the U.S. agree that the management regime for the Fraser sockeye and pink salmon fishery in 1993 is as follows:

a) For sockeye salmon:

i) When the estimated TAC is less than 12.062 million fish, the U.S. catch in the Panel area shall not exceed 20 percent of the TAC;

ii) When the estimated TAC is between 12.062 and 15 million fish, the U.S. catch in the Panel area shall not exceed 2.412 million fish plus 10 percent of the TAC between 12.062 and 15 million fish;

iii) When the estimated TAC is greater than 15 million fish, the U.S. catch in the Panel area shall not exceed 2.706 million fish plus 5 percent of the TAC above 15 million fish, but the catch shall not exceed 2.806 million fish;

iv) Differences concerning catches of Fraser sockeye caught outside of the Panel area remain unresolved and will be addressed in connection with negotiations on 1994 arrangements.

v) The U.S. will not fish in 1993 on the early Stuart run in order to provide adequate escapement and viable fisheries in the upper portion of the Fraser River drainage.

b) For pink salmon the total U.S. catch shall be 25.7% of the TAC, but shall not exceed 3.6 million fish.

c) Calculation of 1993 TACs for Fraser River sockeye and pink salmon, and any catch overages or underages in 1993, shall be as specified in Annex IV, Chapter 4 of the Treaty and as specified in previous agreements by the Fraser Panel.

d) The dispute referred to in Canada's Note 189 of November 24, 1992 and the Department of State's Note of December 8, 1992 remains unresolved and will be addressed in connection with negotiations on 1994 arrangements.

e) Based on these arrangements, the Fraser Panel shall develop fishery management plans for the Fraser Panel area as soon as possible.

4. **Coho Salmon - Annex IV, Chapter 5.**

For 1993, Canada will limit its WCVI coho troll fishery to 1.7 million. Other coho chapter provisions remain unchanged.

5. **Southern B.C. and Washington State Chum Salmon - Annex IV, Chapter 6.**

With respect to southern chum, Canada and the U.S. agree to continue the expired Annex provisions through 1993.

The Commission expects that the relevant management agencies will manage fisheries under their responsibility consistent with these agreements.

The Commission respectfully requests your early approval of these recommendations.

Yours truly,

Yves Fortier, Chair
Pacific Salmon Commission

# Appendix B

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

Annex IV

Chapter 1

TRANSBOUNDARY RIVERS

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

(a) assemble and refine available information on migratory patterns, extent of exploitation and spawning escapement requirements of the stocks;

(b) examine past and current management regimes and recommend how they may be better suited to achieving preliminary escapement goals;

(c) identify enhancement opportunities that:

(i) assist the devising of harvest management strategies to increase benefits to fishers with a view to permitting additional salmon to return to Canadian waters;

(ii) have an impact on natural Transboundary river salmon production.

2. The Parties shall improve procedures of 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.

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;

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:

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.

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 fishers of both countries.

7. Recognizing that stocks of salmon originating in Canadian sections of the Columbia River constitute a small portion of the total populations of Columbia River salmon, and that the arrangements for consultation and recommendation of escapement targets and approval of enhancement activities set out in Article VII are not appropriate to the Columbia River system as a whole, the Parties consider it important to ensure effective conservation of up-river stocks which extend into Canada and to explore the development of mutually beneficial enhancement activities. Therefore, notwithstanding Article VII, paragraphs 2, 3, and 4, during 1985, the Parties shall consult with a view to developing, for the transboundary sections of the Columbia River, a more practicable arrangement for consultation and setting escapement targets than those specified in Article VII, paragraphs 2 and 3. Such arrangements will seek to, inter alia,

(a) ensure effective conservation of the stocks;

(b) facilitate future enhancement of the stocks on an agreed basis;

(c) avoid interference with United States management programs on the salmon stocks existing in the non-transboundary tributaries and the main stem of the Columbia River.

## NORTHERN BRITISH COLUMBIA
## SOUTHEASTERN ALASKA

1. Considering that the chum salmon stocks originating in streams in the Portland Canal require rebuilding, the Parties agree in 1990 and 1991 to jointly reduce interceptions of these stocks to the extent practicable and to undertake assessments to identify possible measures to restore and enhance these stocks. On the basis of such assessments, the Parties shall instruct the Commission to identify long-term plans to rebuild these stocks.

2. With respect to sockeye salmon, the United States shall

   (a) with respect to District 4 purse seine fishery:

      (i) for the four year period, 1990 through 1993, limit its fishery in a manner that will result in a maximum four-year total catch of 480,000 sockeye salmon prior to United States Statistical Week 31;

      (ii) when the annual catch reaches 160,000 sockeye salmon, no further daily fishing periods in District 4 will be allowed prior to Statistical Week 31;

      (iii) all underages not to exceed 20% of the Annex ceiling will add to, and overages will subtract from, the subsequent four-year period.

   (b) limit its drift gillnet fishery in Districts 1A and 1B in a manner that will result in an average annual harvest of 130,000 sockeye salmon.

3. With respect to pink salmon, Canada shall

   (a) limit its net fishery in Areas 3-1, 3-2, 3-3, 3-4, and 5-11 in a manner that will result in an average annual harvest of 900,000 pink salmon;

   (b) with respect to the Area 1 troll fishery:

      (i) for the four year period, 1990-1993, limit its Area 1 pink salmon troll catch to a total of 5.125 million;

      (ii) during the period 1990 through 1993, close the pink salmon troll fishery in the most northerly portion of Area 1 in management units 101-4, 101-8, 101-3 north of 54 degrees 37 minutes N. and 103 north of 54 degrees 37 minutes N to pink salmon trolling when the pink salmon fishery has lasted 22 days starting with the beginning of the troll season in Area 1, but no earlier than July 22, except that the most northerly portion of the area shall close to pink salmon trolling whenever the catch in that area reaches 300,000 pinks.

      (iii) limit the maximum harvest in the entire Area 1 in any one year to 1.95 million pink salmon; and,

      (iv) all underages, not to exceed 20% of the Annex ceiling, will add to, and overages will subtract from, the subsequent four-year period.

4. In 1987 and thereafter, in order to ensure that catch limits specified in paragraphs 2 and 3 are not exceeded, the Parties shall implement appropriate management measures which take into account the expected run sizes and permit each country to harvest its own stocks.

5. In setting pink salmon fisheries regimes for 1987 and thereafter, the Parties agree to take into account information from the northern pink tagging program.

6. The Parties shall at the earliest possible date exchange management plans for the fisheries described herein.

7. In order to accomplish the objectives of this Chapter, neither Party shall initiate new intercepting fisheries, nor conduct or redirect fisheries in a manner that intentionally increases interceptions.

8. The Parties shall maintain a Joint Northern Boundary Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern Panel and the Commission. The Committee, inter alia, shall

(a) evaluate the effectiveness of management actions;

(b) identify and review the status of stocks;

(c) present the most current information on harvest rates and pattern on these stocks, and develop a joint data base for assessments;

(d) collate available information on the productivity of stocks in order to identify escapements which produce maximum sustainable harvests and allowable harvest rates;

(e) present historical catch data, associated fishing regimes, and information on stock composition in fisheries harvesting these stocks;

(f) devise analytical methods for the development of alternative regulatory and production strategies;

(g) identify information and research needs, including future monitoring programs for stock assessments; and,

(h) for each season, make stock and fishery assessments and recommend to the Northern Panel conservation measures consistent with the principles of the Treaty.

## 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

(i) evaluate management actions for their consistency with measures set out in this Chapter and for their potential effectiveness in attaining these specified objectives;

(ii) evaluate annually the status of chinook stocks in relation to objectives set out in this Chapter and, consistent with paragraph (d) (v) beginning in 1986, make recommendations for adjustments to the management measures set out in this Chapter;

(iii) develop procedures to evaluate progress in the rebuilding of naturally spawning chinook stocks;

(iv) recommend strategies for the effective utilization of enhanced stocks;

(v) recommend research required to implement this rebuilding program effectively; and,

(vi) exchange information necessary to analyze the effectiveness of alternative fishery regulatory measures to satisfy conservation objectives;

(e) ensure that

(i) in 1991, the all-gear catch in Southeast Alaska shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Southeast Alaska shall not exceed 263,000 chinook salmon; these catches exclude the Alaska hatchery add-on as described in the letter of transmittal; in 1991 and 1992 Alaska shall open its general summer troll fishery on July 1; the June fishery shall not exceed 40,000 chinook salmon (excluding the Alaska hatchery add-on) taken in a manner similar to 1989 and 1990; and areas of high chinook abundance shall be closed during chinook non-retention periods to reduce incidental mortalities;

(ii) in 1991, the all-gear catch in Northern and Central B.C. shall not exceed the base ceiling of 263,000 chinook salmon plus 10,000; in 1992, the all-gear catch in Northern and Central B.C. shall not exceed 263,000 chinook salmon; these catches exclude a portion of the catch in extreme terminal areas as described in the letter of transmittal;

(iii) in 1991 and 1992, the annual troll catch off the west coast of Vancouver Island shall not exceed 360,000 chinook salmon;

(iv) in 1991 and 1992, the total annual catch by the sport and troll fisheries in the Strait of Georgia shall not exceed 275,000 chinook salmon; Canada will undertake management measures to achieve the target of rebuilding Lower Georgia Strait and Fraser River chinook stocks by 1998;

(v) adjustments to the ceilings may be made in response to reductions in chinook abundance so that the indicator stocks are rebuilt by 1998;

(vi) fishing regimes are reviewed by the Committee and structured so as not to affect unduly or to concentrate disproportionately on stocks in need of conservation;

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

(viii) in 1987 and thereafter, the United States will continue to monitor fisheries in Juan de Fuca Strait (Areas 4B, 5, 6A, 6C) and the outer portions of Puget Sound (6B, 7, 7A, 9) so as to assess the levels and trends in the interceptions of Canadian chinook salmon;

(f) maintain the following program, recognizing that associated fishing mortalities can affect the rebuilding schedule. The Parties shall

(i) minimize the effects of such mortalities;

(ii) monitor, assess, and report associated fishing mortalities;

(iii) provide the information required by the Chinook Technical Committee to estimate the magnitude and assess the impacts of associated mortalities on an on-going basis;

(iv) beginning in 1989, the Chinook Technical Committee shall

a. review reports provided by the Parties on an annual basis, unless directed by the Commission, and estimate the magnitude of all quantifiable sources of associated fishing mortalities;

b. evaluate their impact on the rebuilding schedule and recommend management actions that will achieve the objectives of the chinook rebuilding program, taking into account the effects of all fishing mortalities; and

c. develop technical procedures and standardize methodologies to quantify the magnitude of associated fishing mortalities, including savings of fish, and assess their impacts upon the rebuilding program, including pass-through commitments;

(v) the Commission shall annually take into account, starting in 1988, the impacts of fishing mortalities, as determined by the Chinook Technical Committee, in establishing regional fishing regimes and may adjust allowable catches accordingly, to assure rebuilding by 1998;

(g) manage all salmon fisheries in Alaska, British Columbia, Washington and Oregon, so that the bulk of depressed stocks preserved by the conservation program set out herein principally accrue to the spawning escapement;

(h) establish, at the conclusion of the chinook rebuilding program, fishery regimes to maintain the stocks at optimum productivity and provide fair internal allocation determinations. It is recognized that the Parties are to share the benefits of coastwide rebuilding and enhancement, consistent with such internal allocation determinations and this Treaty; and,

(i) exchange annual management plans prior to each season.

2. The Parties agree that enhancement efforts designed to increase production of chinook salmon would benefit the rebuilding program. They agree to consider utilizing and redirecting enhancement programs to assist, if needed, in the chinook rebuilding program. They agree that each region's catches will be allowed to increase above established ceilings based on demonstrations to the Commission and assessment by it of the specific contributions of each region's new enhancement activities, provided that the rebuilding schedule is not extended beyond 1998, and provisions of Subsection 1(e)(vi) of this Chapter are adhered to.

3. The Parties shall submit a report to the Commission by December 1991 which presents

(a) joint recommendations for chinook salmon escapement goals in the transboundary rivers;

(b) given the goals recommended in 3(a), a jointly accepted assessment of progress toward rebuilding chinook stocks in these transboundary rivers based on escapement data available through 1991, and the likelihood of achievement of these goals by 1995; and,

(c) 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.

## 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 | |

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

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

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

(d) to instruct the Fraser River Panel for 1986 through 1992 to develop regulations to give effect to the provisions of paragraphs 1(b) and 1(f);

(e) to instruct the Fraser River Panel that if management measures fail to achieve such sockeye and pink catches, any difference shall be compensated by adjustments to the Fraser fishery in subsequent years;

(f) in the period 1989 to 1992, the Fraser River Panel shall determine the annual United States catch level so that the total United States catch in this period shall not exceed 7 million sockeye in the aggregate. In the years 1989 and 1991, the United States harvest shall not exceed 7.2 million pink salmon, in the aggregate. Notwithstanding the foregoing, these levels shall be reduced in proportion to any decreases in the total allowable catches set out in paragraph 1(a) herein that are due to any agreed decreases in pre-season or in-season expectations of run size. When considering such reductions, the Parties shall take into account all fisheries that harvest Fraser River sockeye and pink salmon including annual Fraser River Indian food fish harvests in excess of 400,000 sockeye. The United States catches shall not be reduced due to any decreases in the total allowable catch that may be caused by changes in escapement goals that form the basis for the agreed total allowable catches set out in paragraph 1(a) herein;

(g) to consider no sooner than 1989 adjusting the regime in accordance with the principles of Article III;

(h) to instruct the Fraser River Panel that in managing Fraser River sockeye and pink salmon, it shall take into account the management requirements of other stocks in the Area.

2. Notwithstanding the provisions of Paragraphs 1(b) and 1(f), and to ensure that Canada receives the benefits of any Canadian-funded enhancement activities undertaken following entry into force of this Treaty, any changes in the total allowable catch due to such activities shall not result in adjustment of the United States catch.

3. The Parties shall establish data-sharing principles and processes which ensure that the Parties, the International Pacific Salmon Fisheries Commission, the Commission and the Fraser River Panel are able to manage their fisheries in a timely manner consistent with this Chapter.

4. The Parties may agree to adjust the definition of the Area as necessary to simplify domestic fishery management and ensure adequate consideration of the effect on other stocks and species harvested in the Area.

5. In managing the fisheries in the Area, the Parties, the Commission, and the Fraser River Panel shall take into account fisheries inside and outside the Area that harvest Fraser River sockeye and pink salmon. The Parties, the Commission, and the Fraser River Panel shall consider the need to exercise flexibility in management of fisheries outside the Area which harvest Fraser River sockeye and pink salmon.

6. The Parties shall establish a technical committee for the Fraser River Panel:

(a) the members shall 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 three such technical representatives as may be designated by each national section of the Commission.

(c) members of the technical committee shall analyze proposed management regimes, provide technical assistance in the development of proposals for management plans, explain technical reports and provide information and technical advice to the respective national sections of the Panel.

(d) the technical committee shall work with the Commission staff during pre-season development of the fishery regime and management plan and during in-season consideration of regulatory options for the sockeye and pink salmon fisheries of Fraser Panel Area waters to ensure that:

(i) domestic allocation objectives of both Parties are given full consideration;

(ii) conservation requirements and management objectives of the Parties for species and stocks other than Fraser River sockeye and pink salmon in the Fraser River Panel Area during periods of Panel regulatory control are given full consideration; and,

(iii) the Commission staff is timely informed of management actions being taken by the Parties in fisheries outside of the Fraser River Panel Area that may harvest sockeye and pink salmon of Fraser River origin.

(c) 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.

## COHO SALMON

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

(a) instruct their respective management agencies to continue to develop coho salmon management programs designed to meet the following objectives

(i) prevent overfishing; and,

(ii) provide for optimum production;

(b) maintain a Joint Coho Technical Committee (Committee), reporting, unless otherwise agreed, to the Panels and the Commission. The membership of the Committee shall include representation from the Northern and Southern Panel Areas. The Committee, inter alia, shall, at the direction of the Commission and relevant Panels

(i) evaluate management actions for their consistency with measures set out in this Chapter and for their potential effectiveness in attaining the objectives established by the Commission;

(ii) annually identify, review, and evaluate the status of coho stocks in relation to the objectives set out in this Chapter and make recommendations for adjustments to the management measures consistent with those objectives;

(iii) present the most current information on exploitation rates and patterns on these stocks, and develop a joint data base for assessments;

(iv) collate available information on the productivity of coho stocks in order to identify the management objectives necessary to prevent overfishing;

(v) present historical catch data and associated fishing regimes;

(vi) estimate stock composition in fisheries of concern to the Commission and Panels;

(vii) devise analytical methods for the development of alternative regulatory and production strategies;

(viii) identify information and research needs, including future monitoring programs for stock assessments;

(ix) investigate the feasibility of alternative methodologies for implementing indicator stock programs in all areas;

(x) for each season, make stock and fishery assessments and recommend to the Commission conservation measures consistent with the principles of the Treaty;

(xi) develop programs to assure the attainment of spawning escapement goals and prevent overfishing;

(xii) exchange information necessary to analyze the effectiveness of alternative fishery regulatory measures in achieving conservation objectives; and,

(xiii) work to develop, under the direction of the Joint Northern and Southern Panels, standard methodologies for coho stock and fishery assessment; and,

(c) unless otherwise agreed, in any area where fisheries of one Party may intercept coho stocks originating in the rivers of the other which require conservation action or such other action as the Commission may determine, that Party will endeavour to limit incidental coho catches in fisheries targeting on other species.

2. For coho stocks shared by fisheries of the United States and Canada, recommendations for fishery regimes shall be made by the Northern Panel for coho salmon originating in rivers with mouths situated between Cape Caution and Cape Suckling and by the Southern Panel for coho salmon originating in rivers with mouths situated south of Cape Caution, as provided in Annex I. At the direction of the Commission, each Party shall establish regimes for its troll, sport, and net fisheries consistent with management objectives approved by the Commission.

3. The Parties agree

(a) for 1991 and 1992, the west coast of Vancouver Island (Canadian Management Areas 21, 23, 24, 25, 26, 27, 121, 123, 124, 125, 126, 127, and 130-1) annual troll harvest shall not exceed 1.8 million Coho;

(b) for 1991 and 1992, the Swiftsure Bank area will be closed to chinook and coho salmon trolling in order to address conservation concerns expressed by both Parties. Troll fishing for sockeye and pink salmon shall, upon appropriate prior notice, be permitted only in order to attain Canadian domestic troll allocation objectives on sockeye and pink;

(c) to avoid any alterations in coho fisheries along the west coast of Vancouver Island that would increase the proportional interception of U.S. coho stocks;

(d) that in 1991 and 1992, for Canadian Area 20, and U.S. Areas 7 and 7A, fisheries directed at coho salmon will be permitted. Notwithstanding this agreement, if the Commission determines that conservation concerns expressed by either Party warrant further restrictions, then the Parties shall limit their catch of coho salmon to that taken incidentally during fisheries under the control of the Fraser Panel and those permitted under the provisions of Annex IV, Chapter 6. Both Parties agree that in 1987, due to conservation concerns expressed by both Parties and agreed to by the Commission, coho fisheries in Canadian Area 20 and U.S. Areas 7 and 7A shall be limited by the levels of incidental coho catch anticipated during fisheries conducted under the control of the Fraser Panel and provisions of Annex IV, Chapter 6;

(e) for 1991 and 1992, the United States shall adhere to presently agreed management objectives in Strait of Juan de Fuca Areas 4B, 5, and 6C; and,

(f) to develop in 1993 and thereafter, troll fishery regimes for the west coast of Vancouver Island that

(i) implement conservation measures approved by the Commission and take into account any increased contributions by the Parties to the fishery; and,

(ii) provide for the sharing of benefits of coho production of each Party consistent with the principles of Article III.

4. Notwithstanding any other provisions of this Chapter, the Commission, for 1993 and thereafter, may set specific fishery regimes as appropriate, which may include troll harvest ceilings, for coho salmon in the intercepting fisheries restricted under this Chapter that

(a) implement conservation measures approved by the Commission;

(b) take into account increased production;

(c) provide for the recognition of benefits of coho production of each Party consistent with the principles of Article III;

(d) take into account actions taken by each Party to address its conservation concerns; and,

(e) take into account time and area management measures which will assist either Party in meeting its conservation objectives while avoiding undue disruption of fisheries.

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

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

## SOUTHERN BRITISH COLUMBIA AND WASHINGTON STATE CHUM SALMON

1. The Parties shall maintain a Joint Chum Technical Committee (Committee) reporting, unless otherwise agreed, to the Southern Panel and the Commission. The Committee, inter alia, will undertake to

(a) identify and review the status of stocks of primary concern;

(b) present the most current information on harvest rates and patterns on these stocks, and develop a joint data base for assessments;

(c) collate available information on the productivity of chum stocks to identify escapements which produce maximum sustainable harvests and allowable harvest rates;

(d) present historical catch data, associated fishing regimes, and information on stock composition in fisheries harvesting those stocks;

(e) devise analytical methods for the development of alternative regulatory and production strategies;

(f) identify information and research needs, to include future monitoring programs for stock assessment; and,

(g) for each season, make stock and fishery assessments and evaluate the effectiveness of management.

2. In 1991 and 1992, Canada will manage its Johnstone Strait, Strait of Georgia, and Fraser River chum fisheries to provide continued rebuilding of depressed naturally spawning chum stocks, and, to the extent practicable, minimize increased interceptions of United States origin chum. Terminal fisheries conducted on specific stocks with identified surpluses will be managed to minimize interception of non-targeted stocks.

3. In each of 1991 and 1992,

(a) for Johnstone Strait run sizes less than 3.0 million

(i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will limit its harvest rate in Johnstone Strait to less than 10 percent, resulting in a Johnstone Strait catch level of up to 225,000 chum; and,

(ii) when the catch in Johnstone Strait is 225,000 chum or less, the United States catch of chum in Areas 7 and 7A shall be limited to chum taken incidentally to other species and in other minor fisheries, but shall not exceed 20,000, provided, however, that catches for the purposes of electrophoretic sampling shall not be included in the aforementioned limit;

(b) for Johnstone Strait run sizes from 3.0 million to 3.7 million

(i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will limit its harvest rate in Johnstone Strait to 20 percent, resulting in a Johnstone Strait catch level of 225,000 to 640,000 chum; and,

(ii) when the catch in Johnstone Strait is from 225,000 to 640,000 chum, the United States catch of chum in Areas 7 and 7A shall not exceed 120,000;

(c) for Johnstone Strait run sizes of 3.7 million and greater

(i) Canada, taking into account the catch of Canadian chum in United States Areas 7 and 7A, will harvest at a rate in Johnstone Strait of 30 percent or greater, resulting in a Johnstone Strait catch level of 640,000 chum or greater; and,

(ii) when the catch in Johnstone Strait is 640,000 chum or greater, the United States catch of chum in Areas 7 and 7A shall not exceed 140,000;

(d) it is understood that the Johnstone Strait run sizes, harvest rates, and catch levels referred to in 3(a), 3(b), and 3(c) are those determined in season, in Johnstone Strait, by Canada; and,

(e) the United States shall manage in a manner that, as far as practicable, maintains a traditional proportion of effort and catch between United States Areas 7 and 7A, and avoids concentrations of effort along the boundary in Area 7A.

4. In 1991 and 1992, the United States shall conduct its chum fishery in the Strait of Juan de Fuca (United States Areas 4B, 5 and 6C) so as to maintain the limited effort nature of this fishery, and, to the extent practicable, minimize increased interceptions of Canadian origin chum. The United States shall continue to monitor this fishery to determine if recent catch levels indicate an increasing level of interception.

5. If the United States chum fishery in Areas 7 and 7A fails to achieve the 1991 and 1992 catch levels specified in paragraphs 3(a)(ii), 3(b)(ii), and 3(c)(ii), any differences shall be compensated by adjustments to the Areas 7 and 7A fishery in subsequent years, except that chum catches below the level specified in paragraph 3(a)(ii) shall not be compensated.

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

7. Canada will manage the Nitinat net chum fishery to minimize the harvest of non-targeted stocks.

8. In 1991 and 1992, Canada shall conduct electrophoretic sampling of chum taken in the West Coast Vancouver Island troll fishery if early-season catch information indicates that catch totals for the season may reach levels similar to 1985 and 1986. Sampling, should it occur, will include catches taken from the southern areas (Canadian Areas 121-124).

Chapter 7

## GENERAL OBLIGATION

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

# Appendix C

## Revised Pacific Salmon Treaty

Canadian Embassy  Ambassade du Canada

The Honourable Warren M. Christopher,
Secretary of State of the
United States of America,
Washington

Washington, February 3, 1995

Excellency,

I have the honour to refer to your Note, dated February 3 1995, the text of which reads as follow:

*I have the honor to refer to negotiations that have been underway since 1985 on a long-term agreement for the conservation of salmon stocks originating from the Yukon River in Canada.*

*I have the honor to propose that our two Governments conclude an interim Agreement incorporating relevant provisions agreed in the negotiations to date in order to allow institutional arrangements to commence functioning while negotiations continue on a long-term agreement which would incorporate the relevant provisions of the interim Agreement.*

*To this end, I propose that Annex I to the Treaty between Canada and the United States of America concerning Pacific Salmon, signed at Ottawa on January 28, 1985 ("the Treaty") be amended by adding a new paragraph (d) to establish a Yukon River Panel for salmon originating in the Yukon River. I further propose that Annex IV to the Treaty be amended by adding a new chapter 8 as set forth in Attachment A to this note. Attachment B to this note contains provisions that have been developed in the negotiations to date and that are deferred for the long-term agreement.*

*I further propose that in the event that the Treaty terminates prior to the termination of this Interim Agreement:*

*(a) this Interim Agreement shall remain in force;*

.../2

*(b) the functions of the Yukon River Panel shall be assumed by a new commission, the "Yukon River Salmon Commission", and the Panel shall thereupon cease to exist;*

*(c) other provisions of the Treaty, to the extent they apply to the Yukon River, shall remain in effect as part of this Agreement, mutatis mutandis; and*

*(d) the Parties shall seek to agree on other measures necessary for the continuation and application of this Agreement.*

*If this proposal is acceptable to the Government of Canada, I have the further honor to propose that this note, with Attachment A, together with your Excellency's note in reply, shall constitute an Agreement between our two Governments, which will enter into force on the date of your Excellency's note and remain in force until December 31, 1997, unless the Parties agree in writing to extend it.*

*Accept, Excellency, the renewed assurances of my highest consideration.*

I have the honour to inform you that the proposals contained in the above note are acceptable to the Government of Canada and to confirm that that Note and the present note in reply, which is equally authentic in English and French, shall constitute an interim agreement between our two Governments for the conservation of salmon stocks originating from the Yukon River in Canada.

Please accept, Excellency, the renewed assurances of my highest consideration.

Raymond A. J. Chrétien
Ambassador of Canada

ATTACHMENT A

# Yukon River

## Definitions

1. For the purposes of this Chapter,

   (a) "Restoration" means returning a wild salmon stock to its natural production level;

   (b) "Enhancement" means expanding a wild salmon stock beyond its natural production level;

   (c) "Yukon River" means the entire Yukon River drainage in Canada and the United States;

   (d) "Yukon River in Canada" means the entire Yukon River drainage in Canada, including the Porcupine River drainage; and

   (e) "Mainstem Yukon River in Canada" means the Yukon River drainage in Canada, excluding the Porcupine River drainage.

## Administration

2. This Chapter applies to salmon originating in the Yukon River.

3. The Parties shall seek to ensure the effective conservation of stocks originating in the Yukon River. The Parties shall implement agreed research and management programs, as provided for in memoranda of understanding and this Chapter, further develop co-operative research and management programs, and shall identify potential restoration and enhancement opportunities.

4. Article II, paragraphs 7, 8, 18, 19, and 20, Article IV, Article V, Article VII, and Article XIII, paragraph 2, shall not apply to salmon referred to in paragraph 2. With regard to Article XII, for matters related to the Yukon River, the Yukon River Panel shall substitute for the Commission.

5. Subject to the approval of the Parties, the Yukon River Panel shall make such by-laws and procedural rules, for itself, as may be necessary for the exercise of its functions and the conduct of its meetings.

6. Each Party shall designate the responsible management entity for the harvest of salmon referred to in paragraph 2.

7. The Yukon River Panel shall make recommendations to the management entities concerning the conservation and management of salmon originating in the Yukon River in Canada.

8. The responsible management entities shall take into account the proposals of the Yukon River Panel in the adoption of regulations, and shall ensure the enforcement of these regulations.

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

   (a) assemble and refine information on migratory patterns and the extent of exploitation in fisheries harvesting Yukon River origin salmon;

   (b) review existing assessment techniques and investigate new ways for determining total return and escapement and make recommendations on optimum spawning escapement objectives;

   (c) examine past and current management regimes and recommend how they may be better formulated to achieve escapement objectives;

   (d) exchange information on proposed and existing restoration and enhancement programs, identify restoration and enhancement opportunities and evaluate the management consequences of harvests of restored or enhanced fish;

   (e) develop and recommend restoration and enhancement programs to be funded by the Yukon River Salmon Restoration and Enhancement Fund;

   (f) monitor and coordinate agreed research programs and recommend research required in order of priority to enable the Parties to effectively implement this Chapter;

   (g) evaluate annually the status of Canadian origin chum and chinook salmon stocks and make recommendations for adjustments to the rebuilding programs set out in this Chapter;

   (h) use existing procedures and investigate new ways to evaluate progress in rebuilding salmon stocks where necessary;

   (i) investigate and recommend stock separation studies that would assist in developing specific fishery management programs for individual salmon stocks;

(j) review and analyze the effectiveness of alternate fishery regulatory measures to satisfy conservation objectives;

(k) submit an annual report to the Yukon River Panel on fishery performance, including harvests and fishing effort of all user groups, fish values made available by either side and biological status of stocks;

(l) review information available on coho salmon originating in the Yukon River, and undertake assessments of such stocks;

(m) report on the condition of salmon habitat and measures to be taken to protect or enhance salmon habitat; and

(n) undertake other assignments as agreed by the Yukon River Panel, which may include analysis of socioeconomic characteristics of the fishery.

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

Mainstem Yukon River

Chum Salmon

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

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

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

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

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

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

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

## Chinook Salmon

16. With respect to chinook salmon originating in the Yukon River in Canada, the Parties agreed that spawning escapements declined substantially below levels necessary to achieve optimum sustainable yields. Recognizing the desirability of arresting the decline, the Parties agree to a minimum spawning escapement objective of 18,000 for the Canadian mainstem chinook stock for six years beginning in 1990. Recognizing the difficulty of managing selectively Yukon River chinook salmon stocks, the Parties will endeavour to meet the spawning escapement objective. During this six-year period, the Panel shall develop a rebuilding program that will result in optimum sustained yields from the stock and recommend measures to implement this program.

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

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

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

## Porcupine River

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

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

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

(a) not to initiate new fisheries on Canadian-origin stocks within the Porcupine River drainage before December 31, 1999; and

(b) if after this period either Party intends to initiate a new fishery on the Porcupine River, that Party shall inform the Yukon River Panel, which shall have the authority to make recommendations for management arrangements to the Parties.

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

(a) advise the Yukon River Panel regarding the status of these stocks and the benefits accruing to Porcupine River salmon spawning escapements from the mainstem rebuilding program;

(b) prepare a range of potential rebuilding options for the Fishing Branch River fall chum salmon, including the option of allowing these stocks to rebuild as a result of the rebuilding program agreed to for the Yukon River mainstem fall chum salmon stock; and

(c) recommend to the Yukon River Panel ways to improve and expand information needed to better manage these stocks for optimum production.

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

## General

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

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

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

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

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

    (a) salmon should be afforded unobstructed access to and from, and use of, existing migration, spawning and rearing habitats;

    (b) water quality standards should be maintained and enforced;

    (c) it is essential to maintain the productive capacity of the salmon habitat on both sides of the boundary in order to achieve the objectives of this Chapter; and

    (d) should access be obstructed, water quality standards be degraded or productive capacity of the salmon habitat be diminished to a degree that affects the objectives of this Chapter, the Panel may recommend corrective actions which may include adjustments to fishing patterns, border escapement objectives and guideline harvest ranges.

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

Restoration and Enhancement Fund

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

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

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

(b) the Fund shall be used for programs and directly associated research and management activities on either side of the border which are based on recommendations by the JTC and are directed at the restoration and enhancement of Canadian origin salmon stocks;

(c) the United States shall seek to provide annually to the Fund by December 31 of each year beginning in 1995 a financial contribution, subject to the availability of appropriated funds. In the event that the annual contribution is not made this agreement shall be suspended until the contribution for that year is made;

(d) the Parties shall assist the Yukon River Panel in the development and implementation of these programs and shall, in particular, provide from their own budgetary resources, essential support as required for programs in their territories;

(e) during rebuilding as specified in this Chapter, unless the Parties jointly decide otherwise on the basis of recommendations by the Yukon River Panel:

(1) the Parties shall endeavour to allow spawning escapements to increase as a result of the fish produced from restoration activities, taking into account the desirability of avoiding disruption of existing fisheries;

(2) the agreed Canadian guideline harvest levels during rebuilding will not change; and

(3) harvest shares for salmon produced by enhancement activities will be recommended by the Yukon River Panel, taking into account the objectives of the rebuilding programs and the desire to avoid disruptions of existing fisheries.

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

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

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

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

## Principles and Guidelines for the Restoration and Enhancement Fund

### Principles

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

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

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

### Guidelines

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

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

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

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

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

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

ATTACHMENT B

Deferred Elements

1. Regarding preambular statements:

Recognizing that salmon stocks originating from the Yukon River in Canada are harvested by fishermen of both Canada and the United States and that effective conservation and management of these resources are of mutual interest,

Recognizing the uniqueness of the Yukon River and its salmon fisheries,

Having as their principal goal in adapting the Pacific Salmon Treaty to the Yukon River drainage system to rebuild and conserve stocks and provide benefits to the fisheries of both countries on this river system, which means the maintenance in both countries of viable fisheries on the Yukon River,

Recognizing that considerable work needs to be done to understand the composition of stocks in the various Yukon River fisheries and to develop effective management techniques to conserve specific stocks while allowing higher harvest rates on other stocks,

2. Regarding implementation of Article III(1)(b) of the Treaty:

[U.S. proposal: With respect to the implementation of Article III(1)(b) of the Treaty in relation to the Yukon River, the Parties agree that the subsistence and small-scale commercial fishermen of the Yukon River in both countries shall not suffer disruption in the fisheries in which they participate. The Parties agree that the subsistence fisheries in each country are entitled to the highest use. The Parties agree that adjustment of catch allocations shall not be the method through which Article III(1)(b) shall be implemented in relation to the Yukon River.] [Canadian proposal: The Parties agree that further adjustment of catch allocations of wild stocks, beyond catch allocations established in the Yukon River Salmon Protocol to the Pacific Salmon Treaty, shall not be the method through which Article III (1)(b) of the Pacific Salmon Treaty shall be implemented in relation to the Yukon River.]

3. Regarding the application of Article V of the Treaty:
[Article V of the Treaty to be incorporated into the text.]

4. Regarding the sharing of chum salmon after rebuilding:

The shares of total allowable catch (TAC) [U.S. Proposal: in the Yukon River] from the stock of chum salmon which [U.S. Proposal spawns] [Canadian Proposal: originates] in the mainstem Yukon River drainage in Canada specified below shall

apply beginning in 2002. The TAC for this stock shall be determined annually by the Yukon River Panel based upon pre-season projections of run strength by the JTC, and modified as necessary, by the responsible management entities based on in-season assessments. However, these catch shares shall apply at an earlier date if [Canadian Proposal: the weighted average of] spawning escapements of this stock for the two principals brood years exceeds the minimum escapement objective recommended by the JTC, currently 80,000 [Canadian Proposal: and the TAC is 80,000 or more].

[U.S. Proposal:

Canada:

27% of TAC for that portion of TAC up to 120,000 chum salmon, plus _% of TAC for that portion of TAC in excess of 120,000 chum salmon.

U.S.:

73% of TAC for that portion of TAC up to 120,000 chum salmon, plus _ _% of TAC for that portion of TAC in excess of 120,000 chum salmon.]

[Canadian Proposal:

For TACs of 80,000 or more

Canada: 45% of the TAC

U.S.: 55% of the TAC

For TACs of less than 80,000

A floor of 23,600 for Canada shall apply; the Yukon River Panel will distribute the difference between the floor level and the TAC.]

5. Regarding chum salmon returns substantially below expectations:

[U.S. Proposal: If in any year during the rebuilding program for chum salmon subject to this Section the salmon return in numbers substantially lower than expected due to causes beyond the control of the Parties, the Panel shall recommend to the Parties the adjustment of the border escapement objective and Canadian guideline harvest range so that the resulting burdens of reduced harvest are shared.]

6. Regarding the sharing of chinook salmon after rebuilding:
The shares of total allowable catch (TAC) [U.S. Proposal: in the Yukon River] from the stock of chinook salmon which [U.S. Proposal: spawns] [Canadian Proposal: originates] in the mainstem Yukon River drainage in Canada specified below shall apply beginning in [U.S. Proposal: _____] [Canadian Proposal: 2005]. The TAC for this stock shall be determined annually by the Yukon River Panel based on pre-season projections of run strength by the JTC, and modified as necessary by the responsible management entities based upon in-season assessments. However, these catch shares shall apply at an earlier date [Canadian Proposal: between the end of the stabilization period and 2005] if [Canadian Proposal: the weighted average of] escapement of this stock for the two principal brood years exceeds the minimum escapement objective recommended by the JTC, currently 33,000 [Canadian Proposal: and the TAC is 80,000 or more].

[U.S. Proposal:

Canada:

18% of TAC for that portion of TAC up to 110,000 chinook salmon, plus __% of TAC for that portion of TAC in excess of 110,000 chinook salmon.

U.S.:

82% of TAC for that portion of TAC up to 110,000 chinook salmon, plus __% of TAC for that portion of TAC in excess of 110,000 chinook salmon.]

[Canadian Proposal:

For TACs of 80,000 or more

Canada: 55% of the TAC

U.S.: 45% of the TAC

For TACs less than 80,000

A floor of 16,800 for Canada shall apply; the Yukon River Panel will distribute the difference between the floor level and the TAC.]

7. Regarding chinook salmon returns stronger than expected:

[Canadian Proposal: During the stabilization program or during any rebuilding program implemented by the Panel, for any year when a very strong return is anticipated, the Yukon Panel shall consider recommending a spawning escapement objective substantially above the stabilization/rebuilding escapement level. If the Panel makes such a recommendation for that year, the U.S. will endeavour, for that year, to deliver to the Canadian border on the mainstem Yukon River the number of chinook salmon necessary to meet the spawning escapement objective recommended by the Panel, plus the Canadian harvest range for the stabilization/rebuilding program.]

8. Regarding chinook salmon returns substantially below expectations:

[U.S. Proposal: If in any year during the stabilization and rebuilding programs for chinook salmon subject to this Section the salmon return in numbers substantially lower than expected due to causes beyond the control of the Parties, the Yukon River Panel shall recommend to the Parties the adjustment of the border escapement objective and Canadian guideline harvest range so that the resulting burdens of reduced harvest are shared.]

9. Regarding the Porcupine River:

[Canadian Proposal: Catch shares for the Canadian-origin Porcupine River chum salmon stocks after rebuilding shall be recommended to the Parties by the Yukon River Panel.]

10. Regarding coho salmon:

When sufficient information on coho salmon originating in the Yukon River in Canada becomes available, the Yukon River Panel shall determine the U.S. contribution to the Fund with respect to such salmon using [Canadian Proposal: the same] [U.S. Proposal: a similar] valuation formula as that provided for chinook and chum salmon, unless the Yukon River Panel decides otherwise.

11. Regarding U.S. marine catches:

[Canadian Proposal: when sufficient information on these numbers become available...]

12. Regarding deeming:

The Parties agree that ___% of the United States [U.S. Proposal: Yukon River] harvest of salmon originating in the Yukon River drainage in Canada shall be deemed to be of United States origin.

13. Regarding the U.S. financial contribution to the Fund during the long-term agreement:

The amount of the U.S. financial contribution to the Fund shall be determined by the Yukon River Panel. To determine this contribution the Yukon River Panel shall:

a. estimate, based on the recommendation of the JTC, the number of Canadian-origin chinook and chum salmon in the U.S. harvest for the previous year, using, for the first year, the figure of __% for Canadian-origin chinook salmon and __% for Canadian-origin chum salmon;

b. subtract the number of Canadian origin chinook and chum salmon deemed, in accordance with Paragraph [X], to be of U.S. origin; and

c. multiply the resulting figures by the average commercial [Canadian Proposal: wholesale] [U.S. Proposal: ex-vessel market] values for chinook and chum salmon caught by the Canadian Yukon River commercial fishery in the year for which the calculation is done;

d. in the event that, for any year, the Yukon River Panel cannot by the end of December of the following year agree on the above estimates, and the dispute is submitted for referral to a Technical Dispute Settlement Board, the estimates established for the previous year shall apply for that year until they are replaced by different estimates established by the decision of the Board.

14. Further regarding contributions to the Fund:

The Parties further understand that application of the provisions of Paragraph 32 represents compensation [Canadian Proposal: owed to Canada] for U.S catches of Canadian-origin Yukon River salmon and shall represent full implementation of Article III(1)(b) as it applies to Canadian origin Yukon River salmon.

# Appendix D

## Appointment of Officers for 1994/95

Effective November 30, 1994, the new slate of officers for the Pacific Salmon Commission was identified as follows:

| | | | |
|---|---|---|---|
| (a) | Commission Chair | Can. | P.S. Chamut |
| (b) | Commission Vice-Chair | U.S. | G.I. James |
| (c) | Fraser River Panel Chair | Can. | A. Lill |
| (d) | Fraser River Panel Vice-Chair | U.S. | L. Loomis |
| (e) | Northern Panel Chair | Can. | C. Dragseth |
| (f) | Northern Panel Vice-Chair | U.S. | K. Duffy |
| (g) | Southern Panel Chair | U.S. | T. Cooney |
| (h) | Southern Panel Vice-Chair | Can. | P. Sprout |
| (i) | Meetings of the Northern and | | |
| | Southern Panels - Chair | U.S. | T. Cooney |
| | - Vice-Chair | Can. | P. Sprout |
| (j) | Meetings of the Fraser and | | |
| | Southern Panels - Chair | Can. | A. Lill |
| | - Vice-Chair | U.S. | L. Loomis |
| (k) | Stan. Comm. on F&A - Chair | Can. | C.C. Graham |
| (l) | Stan. Comm. on F&A - Vice-Chair | U.S. | R. Rousseau |
| (m) | Stan. Comm. on R&S - Chair | U.S. | K. Brigham |
| (n) | Stan. Comm. on R&S - Vice-Chair | Can. | B. Lefeaux-Valentine |

# Appendix E

## Approved Budget FY 1995/96

| | | |
|---|---|---|
| 1. | Income | |
| | A. Contribution from Canada | $ 800,000 |
| | B. Contribution from U.S. | 800,000 |
| | Sub-total | $1,600,000 |
| | C. Carry-over from 1994/95 | 646,336 |
| | D. Interest | 22,000 |
| | E. Other income | 0 |
| | F. Total Income | 2,268,336 |
| 2. | Expenditures | |
| | A. 1. Permanent Salaries & Benefits | $1,198,260 |
| | 2. Temporary Salaries & Benefits | 244,510 |
| | 3. Total Salaries & Benefits | 1,442,770 |
| | B. Travel | 82,326 |
| | C. Rents, Communications, Utilities | 116,195 |
| | D. Printing and Publications | 18,000 |
| | E. Contractual Services | 280,465 |
| | F. Supplies and Materials | 48,249 |
| | G. Equipment | 101,092 |
| | H. Mission Research | 179,239 |
| | I. Total Expenditures | $2,268,336 |
| 3. | Balance (Deficit) | $ 0 |
| 4. | Test-Fishing Program | |
| | A. Forecast Revenues | $ 927,615 |
| | B. Forecast Expenditures | 752,959 |
| | C. Forecast Balance | $ 174,656 |
| 5. | Total Balance (Deficit) | $ 174,656 |

# Appendix F

## Pacific Salmon Commission
## Secretariat Staff as of March 31, 1995

### EXECUTIVE OFFICE

Ian Todd
Executive Secretary

Teri Tarita
Records Administrator/Librarian

Vicki Ryall
Executive Assistant

Janice Abramson
Secretary

### FINANCE & ADMINISTRATION

Kenneth N. Medlock
Finance and Administration

Bonnie Dalziel
Accountant

### FISHERY MANAGEMENT

James C. Woodey
Chief Biologist

Jim Gable
Head, Racial Identification Group

Jim Cave
Head, Stock Monitoring Group

Mike Lapointe
Project Biologist, Sockeye

Valerie Craig
Project Biologist, Test-Fishing

Bruce White
Project Biologist, Pinks

Peter Cheng
Project Biologist, Acoustics

Keith Forrest
Racial Data Biologist

Ian Guthrie
Head, Biometrics

Carol Lidstone
Scale Analyst

Doug Stelter
Statistician

Jullie Andersen
Assistant Scale Analyst

Kathy Mulholland
Computer Systems Manager

Holly Derham
Assistant Scale Analyst

# Appendix G

## Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of May 15, 1995

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| CANADA | UNITED STATES |
|---|---|

## 1. STANDING COMMITTEE ON FINANCE AND ADMINISTRATION

| | |
|---|---|
| Mr. C.C. (Bud) Graham (Chair) | Mr. Rollie Rousseau (Vice-Chair) |
| Mr. Patrick S. Chamut | Mr. David Benton |
| Ms. Joyce Quintal-McGrath | Mr. Charles K. Walters |
| Ms. Heather James | Mr. James Heffernan |
| | Mr. W. Ron Allen |
| | Dr. John L. McGruder |

Staff: I. Todd (ex. officio)

### Editorial Board

| | |
|---|---|
| Mr. A.W. (Sandy) Argue | Dr. Norma Jean Sands |

Staff: I. Todd

## 2. STANDING COMMITTEE ON RESEARCH AND STATISTICS

| | |
|---|---|
| Mr. Bill Valentine (Vice-Chair) | Ms. N. Kathryn Brigham (Chair) |
| Dr. Brian Riddell | Dr. Norma Jean Sands |
| Mr. David Peacock | Mr. Ben Van Alen |
| Mr. Ron Kadowaki | Dr. Don Bevan |
| Mr. Sandy Johnston | Dr. James C. Olsen |
| Mr. Don Anderson | Dr. Gary S. Morishima |
| Mr. Wayne Saito | Mr. Gary R. Graves |
| Mr. Louis Lapi | Mr. Michael Grayum |
| Dr. Jake Rice | Mr. James B. Scott |

### Research and Statistics Working Group

| | |
|---|---|
| Mr. A.W. (Sandy) Argue | Dr. Norma Jean Sands |
| Ms. Susan Steele | Mr. Larry Rutter |
| | Mr. Thomas D. Cooney |
| | Mr. Rich Lincoln (alternate to Cooney) |
| | Mr. Charles K. Walters |
| | Mr. Mike Matylewich |

Staff: I. Todd (ex. officio)

### Ad Hoc Joint Interceptions Committee

Mr. A.W. (Sandy) Argue
Mr. Ken Wilson
Ms. Barb Snyder
Dr. Gary S. Morishima (Co-Chair)
Dr. Richard Moore
Dr. Norma Jean Sands

COMMISSIONER REPRESENTATIVES

Mr. Patrick S. Chamut
Mr. Robert Turner

### Ad Hoc Joint Objectives and Goals Committee

Mr. C.C. (Bud) Graham (Co-Chair)
Mr. Colin N. MacKinnon
Mr. A.W. (Sandy) Argue
Mr. Thomas D. Cooney (Co-Chair)
Ms. N. Kathryn Brigham
Mr. Larry Rutter
Mr. Kevin C. Duffy

COMMISSIONER REPRESENTATIVES

Mr. Patrick S. Chamut
Mr. Robert Turner

## 3. FRASER RIVER PANEL

Mr. Al F. Lill (Chair)
Mr. Mike Forrest
Ms. Ruth Kendall
Mr. Larry Wick
Ms. Diane Bailey
Mr. Mike Griswold
Ms. Lorraine Loomis (Vice-Chair)
Mr. William L. Robinson
Mr. A. Dennis Austin
Mr. Jack R. Giard

### Fraser River Panel Alternates

Mr. Vince Fiamengo
Ms. Kaarina McGivney
Mr. Mike Medenwaldt
Mr. Terry Lubzinski
Mr. Murray Chatwin
Ms. Christine Hunt
Ms. Teresa Scott
Mr. W. Ron Allen
Mr. Robert Suggs

## 4. SOUTHERN PANEL

Mr. Paul Sprout (Vice-Chair)
Mr. Tom Davis
Mr. Ron Fowler
Mr. John Legate
Mr. Richard Watts
Ms. Geraldine Tribe
Mr. Thomas D. Cooney (Chair)
Mr. Burnell Bohn
Mr. J. Gary Smith
Mr. Terry R. Williams
Mr. James E. Harp
Mr. Mark Cedergreen

### Southern Panel Alternates

Ms. Susan Steele
Mr. Roy Alexander
Mr. Basil Ambers
Ms. Patricia Guiguet
Mr. John Sutcliffe
Mr. Ron Parke
Dr. Donald O. McIsaac
Mr. Eugene Greene Sr.
Mr. Michael A. Peters
Mr. Keith E. Wilkinson

## 5. NORTHERN PANEL

Mr. Chris Dragseth (Chair)
Mr. Mark Forand
Mr. William Kristmanson
Mr. Alan Ronneseth
Mr. William Otway
Mr. Russ Jones
Mr. Kevin C. Duffy (Vice-Chair)
Mr. Daniel V. Hickman
Mr. Arnold Enge
Mr. Steven Pennoyer
Mr. William Foster
Mr. John P. Peckham

### Northern Panel Alternates

Mr. Rick Haugan
Mr. Ray Kendel
Mr. Robert H. Hill
Ms. Joy Thorkleson
Ms. Lynn Christie
Mr. Burt Hunt
Mr. Scott Marshall
Mr. Don W. Collinsworth
Mr. John Winther
Mr. James E. Bacon
Mr. Gerald P. Merrigan

## 6. JOINT CHINOOK TECHNICAL COMMITTEE

Dr. Brian Riddell (Co-Chair)
Ms. Barb Snyder
Mr. Ken Pitre
Mr. Neil Schubert
Mr. Paul Ryall
Mr. Wilf Luedke
Mr. Tom Shardlow
Mr. Rob Kronlund
Dr. Steve Macdonald
Mr. James B. Scott (Co-Chair)
Dr. Don Bevan
Mr. Gary R. Freitag
Mr. Dexter Pitman
Dr. Kenneth A. Henry
Mr. Alex C. Wertheimer
Dr. Richard Moore
Dr. Gary Winans
Dr. Norma Jean Sands
Mr. Ronald H. Williams
Dr. Gary S. Morishima
Mr. Timothy W. Roth
Dr. Sandra Moore
Mr. Gregg Mauser
Mr. Dave Gaudet
Mr. Jim M. Berkson
Mr. John Carlile
Mr. Paul Suchanek
Ms. Marianne Johnson
Mr. John H. Clark

## 6. JOINT CHINOOK TECHNICAL COMMITTEE CONT.

Mr. Scott McPherson
Mr. C. Dell Simmons

### Joint Chinook Working Group

Mr. A.W. (Sandy) Argue (Co-Chair)
Mr. C.C. (Bud) Graham
Dr. Brian Riddell
Mr. Ron Fowler
Mr. Tom Davis
Mr. William Green
Mr. Alan Ronneseth
Mr. Greg Savard
Mr. Gary Miltenberger
Mr. Ed Lockbaum
Mr. Don Anderson

Mr. Thomas D. Cooney (Co-Chair)
Ms. N. Kathryn Brigham
Mr. Dave Gaudet
Mr. Daniel V. Hickman
Mr. Gerald P. Merrigan
Mr. Burnell Bohn
Mr. Terry R. Williams
Ms. Debra Lyons
Mr. Keith E. Wilkins
Mr. Don W. Collinsworth
Mr. William L. Robinson

### Joint Chinook Working Group - Alternates

Mr. James B. Scott
Dr. Sandra Moore
Mr. Kevin C. Duffy
Mr. James E. Bacon
Mr. William Foster
Dr. Norma Jean Sands

## 7. JOINT COHO TECHNICAL COMMITTEE

Mr. Ron Kadowaki (Co-Chair)
Mr. Ken Pitre
Mr. Neil Schubert
Mr. Tom Pendray
Mr. Louis Lapi
Mr. Ken Wilson
Mr. Paul Ryall
Dr. Blair Holtby

Dr. Gary S. Morishima (Co-Chair)
Mr. James B. Scott
Mr. Robert A. Hayman
Dr. Kenneth A. Henry
Dr. Peter W. Lawson
Dr. Richard Moore
Mr. Gregory C. Volkhardt
Mr. Robert Wunderlich
Mr. George Milner

### Northern Coho

Dr. Aven M. Anderson
Dr. John E. Clark
Dr. H. Richard Carlson
Mr. Leon D. Shaul
Mr. Dave Gaudet

## 8. JOINT CHUM TECHNICAL COMMITTEE

Mr. Don Anderson (Co-Chair)
Mr. Paul Ryall
Dr. Terry Beacham
Ms. Marilyn Joyce
Mr. Wilf Luedke
Mr. Leroy Hop Wo

Mr. Gary R. Graves (Co-Chair)
Dr. Kenneth A. Henry
Mr. Nick Lampsakis
Mr. Ralph Boomer
Mr. Tim Tynan
Mr. Randy Hatch
Dr. Gary Winans

## 9. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

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

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

## 10. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

Mr. Sandy Johnston (Co-Chair)
Mr. P. Milligan
Mr. P. Etherton
Dr. Mike Henderson
Dr. Brent Hargreaves

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

### Enhancement Sub-Committee

Mr. Bruce Morley (Co-Chair)
Mr. P. Milligan
Mr. Cam J. West

Mr. Ron Josephson (Co-Chair)
Mr. Michael H. Haddix
Dr. Jeff Koenings
Mr. Pete Hagen
Mr. Michael Scott Kelley
Mr. David Barto

## 11. JOINT TECHNICAL COMMITTEE ON DATA SHARING

Ms. Susan Bates (Co-Chair)
Mr. Louis Lapi
Mr. Marc Hamer
Mr. James H. Bjerring
Mr. Rob Kronlund
Ms. Sue Lehmann
Dr. Norma Jean Sands (Co-Chair)
Dr. Kenneth A. Henry
Dr. Ken Johnson
Dr. Gary S. Morishima
Mr. Mike Matylewich
Mr. Joseph Pavel
Dr. Don Bevan

Staff: K. Mulholland (ex. officio)

### Working Group on Mark-Recovery Statistics

Dr. John Schnute (Co-Chair)
Ms. Carol Cross
Dr. Tim Mulligan
Mr. Rob Kronlund
Dr. Ray Hilborn (Co-Chair)
Dr. John E. Clark
Dr. Kenneth A. Henry
Dr. John Skalski
Mr. Rich Comstock
Mr. Robert Conrad
Dr. Peter W. Lawson

### Working Group on Data Standards

Mr. Louis Lapi
Mr. Marc Hamer
Dr. Ken Johnson
Mr. Ron Olson
Mr. Charles Corrarino
Mr. Dick O'Connor
Ms. Barbara Haar

### Catch Data Exchange Working Group

Mr. James H. Bjerring (Co-Chair)
Ms. Lia Bijsterveld
Mr. Vic Palermo
Ms. Susan Bates
Mr. Joseph Pavel (Co-Chair)
Mr. Scott Johnson
Dr. Ken Johnson
Ms. Susan Markey
Mr. Gerald Lukas

## 12. FRASER RIVER PANEL TECHNICAL COMMITTEE

Mr. Al MacDonald (Co-Chair)
Mr. Paul Ryall
Mr. Al Cass
Mr. Michael Grayum (Co-Chair)
Mr. Tim Tynan

## 13. NATIONAL CORRESPONDENTS

Mr. A.W. (Sandy) Argue
Ms. Heather James
Mr. Mel Farquhar
Mr. Charles K. Walters

# Appendix H

## Pacific Salmon Commission
## Approved Meeting Schedule 1995/96 and 1996/97

The 1995/96 meeting schedule has been approved as follows:

1. 1995/96

   (a) PSC Executive Session
   October 10-12, 1995
   Westmark Cape Fox Lodge
   Ketchikan, Alaska

   (b) Post-Season Meeting
   November 27-December 1, 1995
   Four Seasons Hotel
   Vancouver, B.C.

   (c) PSC & Panels Meeting
   January 22-26, 1996
   Hyatt Regency Hotel
   Bellevue, Washington

   (d) PSC 11th Annual Meeting
   February 12-16, 1996
   Four Seasons Hotel
   Vancouver, B.C.

The 1996/97 meeting cycle dates and locations have been agreed as follows:

2. 1996/97

   (a) PSC Executive Session
   October 15-17, 1996
   PSC Boardroom
   Vancouver, B.C.

   (b) PSC Post-Season Meeting
   December 9-13, 1996
   Four Seasons Hotel
   Vancouver, B.C.

   (c) PSC & Panels Meeting
   January 27-31, 1997
   Four Seasons Hotel
   Vancouver, B.C.

   (d) PSC 12th Annual Meeting
   February 10-14, 1997
   Portland Hilton
   Portland, Oregon