# Pacific Salmon Commission


## 1987/88
## Third 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

## Third Annual Report 1987/88

Vancouver, B.C.
Canada

PACIFIC SALMON COMMISSION

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

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## Letter of Transmittal

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

This report summarizes the activities of the Commission for the period June 15, 1987 to March 31, 1988. The text of agreements recommended to the Parties by the Commission to form the basis of fishery regimes for the 1988 season is incorporated as an amended Annex IV of the Treaty. The Commission wishes to note particularly that a comprehensive five-year agreement on coordinated enhancement and management measures was reached for the transboundary rivers of northern British Columbia and southeastern Alaska. This agreement, which is embodied in Chapter 1 of Annex IV and in a new memorandum of understanding, clearly adopts the cornerstone principles of the Pacific Salmon Treaty. Successful implementation of this arrangement will lead to improved benefits to the fisheries of both countries in the transboundary rivers area.

Reports on meetings of the Standing Committees on Finance and Administration, and Research and Statistics, are presented in summary, as are the activities of the Northern, Southern and Fraser River Panels. Executive summaries of reports prepared by the Joint Technical Committees during the period covered by this report are also presented.

The Auditor's report on financial activities of the Commission during the fiscal year April 1, 1987 to March 31, 1988, as approved by the Commission, is presented for your consideration.

Yours truly,

S. Timothy Wapato
Chair

# Pacific Salmon Commission

## OFFICERS for 1987/88

| | |
|---|---|
| Chair | Mr. C.W. Shinners (to November 19, 1987)<br>Mr. S.T. Wapato (from November 19, 1987) |
| Vice-Chair | Mr. S.T. Wapato (to September 30, 1987)<br>Mr. W. Wilkerson (from September 30, 1987)<br>Mr. C.W. Shinners (from November 19, 1987) |

## COMMISSIONERS

| Canada | United States |
|---|---|
| Mr. C.W. Shinners | Mr. S.T. Wapato |
| Mr. C. Atleo | Mr. D. Collinsworth |
| Mr. R. Wright | Mr. W. Wilkerson |
| Mr. L.P. Greene | Mr. D. Colson |
| Mr. G.E. Jones | Mr. G. McMinds |
| Mr. J. Gosnell | Mr. K. Parker |
| Ms. S. Hewlett | Dr. J. Donaldson |
| Mr. J. Nichol | Mr. H. Beasley |

## SECRETARIAT STAFF

| | |
|---|---|
| Executive Secretary | Mr. I. Todd |
| Deputy Executive Secretary | Mr. T.C. Jensen |
| Administrative Officer | Mr. K. Medlock |
| Chief Biologist | Dr. J.C. Woodey |

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# INTRODUCTION

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

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

The Pacific Salmon Commission, guided by principles and provisions of the Treaty, establishes general fishery management objectives for international conservation and harvest sharing of intermingling salmon stocks. Each country retains jurisdictional management authority for its fisheries but must take into account and manage its fisheries in a manner consistent with provisions of the Treaty. Implementation of the principles of the Treaty enables the United States and Canada, through better conservation and enhancement, to prevent overfishing, increase production of salmon, and ensure that each country receives benefits equivalent to its own production.

Annual management plans are part of the operating mechanism which enables Canada and the United States to meet these stated objectives of the Treaty. The Commission serves as a forum for negotiation of annual management plans for the major intercepting fisheries of both countries. The Commission serves also as a forum for consultation between the Parties on their salmonid enhancement operations and research programs.

The organizational structure of the Commission is focussed 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 trans-boundary rivers. The Southern Panel has responsibility for salmon originating south of Cape Caution, other than Fraser River sockeye and pink salmon.

The functions of the Northern and Southern Panels are to review annual post-season reports, annual pre-season fishing plans and ongoing and planned salmonid enhancement programs of each country to provide recommendations to the Commission for development of annual fishery regimes in accordance with the objectives of the Treaty. These plans, once adopted, are implemented by the management agencies in each country. The Northern and Southern Panels also meet in joint session to review coastwide concerns on chinook salmon.

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

The Commission meets at least once annually and conducts its business between meetings through its permanent Secretariat located in Vancouver, British Columbia. In the period June 15, 1987 to March 31, 1988 the Commission met on three occasions:*

1. Consultation with Panel Chairs/Vice-chairs and Joint Technical Committees' Co-chairs — October 6 - 8, 1987 at Vancouver, B.C.
2. Post 1987 fishing season meeting — November 15 - 20, 1987 at Portland, Oregon
3. Third Annual Meeting of the Commission — February 15 - 20, 1988 at Vancouver, B.C.

This, the third annual report of the Pacific Salmon Commission, provides a synopsis of the activities of the Commission and its subsidiary bodies during its third fiscal year of operation, April 1, 1987 to March 31, 1988.

*The Commission also met on June 9 - 11, 1987. Although it occurred within the fiscal year covered by this annual report, the meeting dealt with issues related to the 1987 fishing season and, accordingly, is described in the Commission's Second Annual Report.

# Activities of the Commission

# PART I
# ACTIVITIES OF THE COMMISSION

## A. CONSULTATION OF THE COMMISSION WITH THE PANEL CHAIRS/VICE-CHAIRS AND JOINT TECHNICAL COMMITTEE CO-CHAIRS
## October 6 - 8, 1987 — Vancouver B.C.

The Chair of the Commission, Mr. C.W. Shinners, stated that the purpose of the meeting was to identify a realistic list of issues for negotiation during the 1987/88 meeting cycle, and to provide panels and joint technical committees instructions for their deliberations. Representatives of the panels and joint technical committees provided reports to the Commission on lists of issues and assignments which had been developed through bilateral discussion. The Commission reviewed those lists and divided them into two categories; those that required resolution through negotiation for development of the 1988 fishery regime, and those that could be discussed for clarification but did not require resolution for 1988.

**Fraser River Panel Issues**

Issues for Panel Negotiation

1. Fishing Plan for 1988

As with the coming of each season, it is paramount that the Panel begin the process of developing a 1988 fishing regime. The 1988 sockeye cycle is the smallest of the four cycles, and, therefore will pose some interesting challenges. 1988 is not a pink cycle year.

Action: For the initial model runs we need the estimated run size, escapement, Treaty sharing arrangement, and payback if appropriate. The escapement and run size will be provided by DFO sometime in December or January.

2. Payback Policy

The question of whether allocation imbalances must be paid back is *not* an issue. The issue is how and when the payback will be made. It is recognized by both countries that management is not precise enough to exactly achieve allocation goals. Minor allocation imbalances have occurred each year.

Action: We have formed a payback committee with two members from each national section and one from the PSC staff to develop a draft payback proposal for the entire Panel to consider. A short list of suggested principles (guidelines) was developed for the committee to work from.

3. Escapement Add-on

Both countries have agreed to this principle, but need to define the process and to be able to identify the credit.

Action: This is primarily a technical issue needing to develop methodologies that could identify and award the escapement credit. The assignment is given to an ad-hoc technical team consisting of two from DFO, two U.S. section technical representatives and one from the PSC. Once the methodologies are identified, the whole Panel will examine the policy issues involved. This is a potentially contentious issue.

4. Stock Identification

The issue of tracking the harvest of Fraser origin sockeye and pink salmon in southeast Alaska and northern British Columbia continues to cause suspect and unrest within the Fraser River Panel, and needs to be resolved. To a lesser extent, a better understanding of the random sampling procedures for determining levels of U.S. origin pink salmon harvested during Fraser River Panel openings needs further clarification.

Action: A joint presentation by DFO, NMFS, ADF&G, WDF, PSC and Northern and Fraser technical staff will be slated on the November agenda to explain procedures used in stock identification, fishing patterns, and random sampling techniques. It is anticipated that further technical meetings may be required.

Issues for Panel Discussion and Clarification

No items were approved under this heading.

**Northern Panel Issues for Northern Boundary Area**

Issues for Panel Negotiation

1. Canada Area 1 Troll — Expired Sections of the Chapter
   - — Fishery Limits and Conduct
   - — Excluded Areas
   - — Duration of Chapter
   - — Stock Composition

2. Portland Canal Chum — Expired Sections of the Chapter
   - — Stock Condition and Fishery Conduct
   - — Research
   - — Enhancement

Issues for Panel Discussion and Clarification

1. Noyes Island Sockeye Catch after Week 30
   - — Stock Composition and Fishery Conduct

2. Tree Point Sockeye
   - — Stock Composition and Fishery Conduct

3. Boundary Area Data Needs
   - — Research Priorities
   - — Sampling Programs

4. Improvement of Coho Data Base
   - — Indicator Programs to Determine Stock Composition in Boundary Fisheries

**Northern Panel Issues for Transboundary Rivers**

Issues for Panel Negotiation

1. Taku and Stikine Harvest Sharing — Open Sections of the Chapter

2. Transboundary River Joint Enhancement
   - — Cost and Harvest Sharing Arrangements

Issues for Panel Discussion and Clarification

1. Improvement of Coho Data Base
   - — Stock Status and Composition of Catches
   - — Development of Appropriate Research Programs

2. Management Process and Research Needs

3. Technical Reports
   — Content and Timing
   — Special Reports
   — Results of 1987 Enhancement Investigations

**Southern Panel Issues**

Issues for Panel Negotiation

1. Coho Issue List

(a) Area 20 — Areas 7-7A
   — Identify Conservation Concerns
   — Ensure Common Understanding of Intent
   — Negotiate 1988 Regime (means also including numbers)

(b) West Coast Vancouver Island
   — Clarification of 7½% Cumulative Deviation including Application of Overage and Underage and Definition and Application of Penalty Principle

2. Chum Issue List

(a) Renegotiate Chapter
   — Evaluate 1987 Arrangements
   — Decision on Chapter Length

(b) Maintain a Balance between the Fisheries in Canada and the Limits on U.S. Fisheries in Areas 7-7A

Issues for Panel Discussion and Clarification

1. Coho Issue List

(a) Quantification and Management Intent for Sport Fisheries — West Coast Vancouver Island

(b) Management Intent of Fisheries in Areas 4B, 5 and 6C

(c) Coded-Wire Tag and Release Data Exchange in Agreed Content, Format, and Time Frame

2. Chum Issue List

(a) Evaluate Long-range View of Canadian and U.S. Management and Enhancement Practices
   — Identify Potential Increase in Interceptions of Either Parties' Stocks
   — Management Intent of Fisheries in Areas 4B, 5 and 6C
   — Stock Composition Catch Data up to and Including 1987 must be Jointly Available for Panel Use in February 1988

**Northern/Southern Panel Issues**

Issues for Panel Negotiation

1. Chinook

(a) Rebuilding Status — Appropriateness of Harvest Ceilings

(b) Overages/Underages — Adjustments as Required in 1988

(c) Hatchery Add-on
   — 1988
   — Process Proposal [The Canadian section agreed to respond to the U.S. proposal by November 1987.]

Issues for Panel Discussion and Clarification

1. Chinook

(a) Induced (Associated) Fishing Mortalities
- — Management Actions as Required
- — Non-Retention Emphasis
- — Size Limit Changes — Impacts

(b) Pass-Through
- — Definitions
- — Consideration of Report
- — Management Implications

(c) Transboundary Chinook Rebuilding
- — Evaluation of Escapement Goals and Rebuilding Progress
- — Management Options for 1988 if required

(d) Incorporation of Procedural Reform Data Presentation and Analysis Timetable

2. Coho

(a) Intent regarding Coastwide Management

3. Steelhead

(a) Program Needs Assessment

**Issues for Commission Discussion at November Meeting**

In addition to issues identified for Panel negotiation and discussion, the Commission also agreed to discuss the following issues during the November 1987 meeting.

(a) Review of the Role, Ethic and Process of Joint Technical Committees

1. Discuss the need for collaborative, cooperative efforts
2. Concern over some tendency for national advocacy
3. Dispute resolution or alternative processes

(b) Catch Accounting

1. There is a need for quality data to be provided in a timely fashion
2. In-season monitoring of catch (e.g., Fraser River Panel concerns)

(c) In-season Surprises

1. How does the Commission deal with surprises and at the same time avoid involvement with in-season management?

(d) Establish Procedures to Cover the Eventuality of Non-agreement on a Chapter in Annex 4.

1. Does the Commission establish rules of procedure?

**Panel Assignments to Joint Technical Committees**

Discussions took place between Panel and Joint Technical Committees' representatives to develop assignments for the Joint Technical Committees. Assignments agreed to for each Joint Technical Committee were as follows:

Assignments from the Northern Panel to the Joint Northern Boundary Technical Committee

1. Provide information on pink catches in Area 1, S.E. Alaska and Areas 3, 4 and 5 in 1987. Specifying catch by sub-area, time. Provide whatever information is available on average weights. At same time request that PSC provide information on the estimate of Fraser River component in the boundary areas (by November meeting);

2. Prepare a summary of the Portland Canal report which examines available information to determine the composition of Portland Canal chum stocks in the boundary area and information required to help rebuild these stocks (by November meeting);

3. Provide final 1986 sockeye stock composition information and preliminary catch information for 1987 for Noyes and Tree Point (by November meeting);

4. Provide information on Boundary sampling procedures, general results and techniques as part of a joint presentation on Fraser River stock identification (November date under review).

Assignments from the Northern Panel to the Joint Transboundary Technical Committee

1. Report on fishery performance and overview of management process for 1987 (by November meeting);

2. Provide information on run assessment and stock assessment and 1988 pre-season forecasts (after November);

3. Review and report on results of 1987 enhancement work by both Parties, and to review how these results may change or add to the previous enhancement report (November date under review);

4. Begin process of improving coho data base the Transboundary Committee will compile a list of reports outlining coho information prior to identifying programs to fill information gaps. Canada will be provided a copy of Alaska coded-wire tag coho report (by November).

Assignments from the Northern Panel to the Joint Northern Boundary and Transboundary Technical Committees

1. Provide an overview of research activities undertaken in 1987 (by November);

2. Develop a generic list of data requirements that both Parties will exchange on an annual basis (by November).

Assignments from the Joint Northern/Southern Panel to the Joint Chinook Technical Committee

1. Report on status of rebuilding through 1986 (by November).

2. Provide a preliminary report on catch and escapement for 1987 (by November).

3. Update catch and escapement for 1987 (by January).

4. Report on assessments of fishing induced mortalities:

   (a) numbers on mortalities (by November)
   (b) assessment of impact on rebuilding (by December)
   (c) options for dealing with impacts on rebuilding (by December).

5. Provide options for definitions of ""pass-through" and its management implications (by November).

6. Design a matrix showing time of availability of each category of data for each fishery which is consistent with reporting schedules proposed by the Working Group on Procedural Reform.

7. Evaluate escapement goals and rebuilding progress on transboundary river chinook:

   (a) progress report (by November)
   (b) report (by December).

Assignments from the Southern Panel to the Joint Coho Technical Committee

1. For the November PSC meeting, review 1987 post-season fishery reports and preliminary stock status expectations for 1988 fisheries. Identify potential conservation problems that are of concern for the management of 1988 coho fisheries in Canadian Area 20 and U.S. Areas 7/7A

2. For the November PSC meeting, provide a progress report on the Joint Technical Committee work to be accomplished under the Coho Chapter.

3. For the January/February PSC meetings, prepare a timetable for:

   (a) estimating stock composition for fisheries within the jurisdiction of the Southern Panel;
   (b) providing information on exploitation rates and patterns for stocks within the jurisdiction of the Southern Panel;
   (c) exchanging catch, escapement, CWT, hatchery release, and other data necessary to accomplish 3(a) and 3(b).

Assignments From the Northern Panel to the Joint Coho Technical Committee

1. The Coho Technical Committee presented a report to the Northern Panel last year which reviewed briefly the kinds of information available for coho in the boundary area. The Coho Technical Committee is requested to outline programs that will begin to fill in the data gaps which have been identified. The time frame for reporting is unspecified.

Assignments from the Southern Panel to the Joint Chum Technical Committee

1. Continue work on the 1986 PSC assignment to develop agreed-upon methods for the application of the GSI results to catch data up to and including 1987 (by February meeting).

2. Prepare a summary report on the long-range chum salmon management and enhancement intentions of each country. The report should contain any fundamental differences in management or enhancement approaches (by February meeting).

**Commission Actions on National Sections' Concerns**

The Commission reviewed a draft of the Procedural Reform Working Group's report which had been broadly circulated within each national section on July 31, 1987. The Working Group was instructed to incorporate comments provided by the two sections for presentation at the Commission's November meeting.

The Canadian Section raised questions concerning a second United States directed fishery on coho in Washington State Areas 7/7A. The Canadian view was expressed that although the language of the Coho Chapter of Annex IV agreed to in March 1987 permitted a directed fishery, understandings were reached that no such fishery would be conducted in 1987. The United States viewed this action as a purely domestic management matter which did not violate the understanding of the Coho Chapter, and considered that notification to Canada by domestic management agencies satisfied United States responsibilities. The Commission agreed that the intent of the language in the Coho Chapter would be discussed for clarification during the course of the 1987/88 meeting cycle.

On administrative matters, the Commission agreed that the transfer of chairmanships between national sections should occur annually following the post-season fishery reports, and prior to the initiation of discussions leading to development of the fishery regime for the ensuing year. Accordingly, the chairmanship of the Commission, the standing committees and the panels will be transferred mid-way during the November 1987 meeting.

## B. POST 1987 FISHING SEASON MEETING OF THE COMMISSION November 15 - 20, 1987 — Portland, Oregon

### First Plenary Session

The first plenary session of this meeting, held on November 19, 1987, was chaired by Mr. C.W. Shinners. The purpose of this session was to receive reports on progress made by the panels and the joint technical committees during their meetings of the preceding three days.

Southern Panel

Mr. Whitener (Chair) reported that the Southern Panel followed instructions provided at the October meeting of the Commission. Discussion had proceeded on the coho fisheries of Areas 7/7A and Area 20 in an effort to develop a common understanding between the sections on the intent of these fisheries. The Canadian fishery off the west coast of Vancouver Island was reviewed and current catch statistics indicate that the fishery was kept within the approved range of management error. The Panel noted that an explanation of the "cumulative deviation" concept may be required from the Commission.

The Panel exchanged views on progress by the Data Sharing Committee in resolving coded-wire tag problems, discussed the Canadian Strait of Georgia sport fishery, and reviewed the United States 4B, 5, 6, and 6C fishery.

On chum, the Panel began considering the possibility of extending the duration of the chapter. In view of the desire to balance interceptions in this fishery, a concern was expressed about the impact of enhancement which has not yet been taken into account. Concentrated efforts on stock identification have been continuing and Canada's request for in-season results of electrophoretic studies will be met.

The Joint Chum Technical Committee has produced a preliminary report on historical catches and has made progress on its other assignments. The Joint Coho Technical Committee has raised questions on its assignments and this matter will be dealt with by the Commission.

The Panel work plan is under development. No further bilateral sessions are planned for this meeting. Negotiating sessions are being planned for January and will be described in greater detail during the report of the Joint Northern/Southern Panel.

Northern Panel

Mr. Lemmen (Chair) reported that the Northern Panel had reviewed instructions provided in October and had initiated discussion on each of the issues identified for negotiation as well as those identified for clarification. The Panel had not identified any new issues for discussion during this meeting schedule. The Panel also had reviewed preliminary reports on the 1987 fisheries which had been developed by the joint technical committees. The Panel has agreed to meet in January to begin negotiations.

Joint Session of the Northern and Southern Panels

Mr. Pennoyer reported that the Panels in joint sessions had reviewed the issues identified in October and would not seek any change to those instructions.

The Panels had reviewed the report of the Joint Chinook Technical Committee including the preliminary report on the 1987 season. The catch ceiling regimes appear to have been maintained generally within the acceptable management ranges. Escapement estimates, although incomplete, in general appeared to be satisfactory, with the exception of an apparent stock problem in the Strait of Georgia. The Panels have not completed their review of the induced mortalities report. Options for definition of "pass-through" were also under consideration by the Technical Committee, and these will be reviewed by the Panels. The Committee provided a data availability matrix which will be useful in discussing procedural reform and which indicated that year-out treatment may be appropriate. A concern was expressed, however, that in-season emergency situations may not be addressed adequately under this approach.

The Panels also discussed the question of procedure. The Panels identified a complex overlap of issues between south and north and were unable to arrive at conclusions on how to streamline the business of the joint sessions of the Northern and Southern Panels. The Chairs have agreed to meet in January to initiate negotiations. Meetings of the bilateral Northern and Southern Panels will also take place during the same period. As one suggestion toward improvement of the meeting process, the two Panels may recommend that the Commission move its post-season meeting from November to January.

Fraser River Panel

Ms. Loomis (Chair) presented the preliminary post-season report of the Panel. She reported that the total sockeye return of almost 7,600,000 was well above the pre-season forecast of 6,200,000. The commercial catch in Canada totalled 3,200,000 and in the United States 1,941,000 which was very close to the international allocation objective. The pink run, on the other hand, totalled approximately 6,900,000, much lower than the forecast 11,000,000.

Mr. Fraser (Vice-chair) presented Canada's review of preliminary sockeye and pink escapements. Sockeye escapement goals for all major stocks were achieved for early and late runs, while escapements for summer-run stocks were above goals. Spawning conditions were good. Pink salmon returns, however, were lower than forecast and the escapement of 3,100,000 was much less than desired. Distribution was good, with fish experiencing no delays at Hells Gate. Spawning conditions throughout the watershed were good.

Ms. Loomis presented a preliminary status report on catch allocation. She noted that preliminary figures identify a cumulative shortfall in the United States catch allocation of 67,000 sockeye and 109,000 pinks. The Panel had reviewed its instructions issued in October. In 1988, the United States share of the sockeye TAC will be 32 percent. The 1988 run is the lowest cycle and the return will depend to a great extent on the Chilko run. The fishing season is expected to be short.

The Panel reviewed its schedule. The forecast of run size for 1988 will be provided by Canada in January. During the January-February period domestic allocation goals will be established. The technical group will model regulatory options including payback during March. The Panel will finalize options in April and present regulatory proposals to the Commission in May.

Ms. Loomis noted that the Panel has endorsed a policy on payback, and presented a report to the Commission. This resolved one of the negotiating issues identified in the Panel's instructions. The issue of identifying benefits from "escapement add-ons" has been discussed. The technical group must reach agreement on a common data base, stock groupings, and the stock/recruit model to be used. The Panel will try to complete this task prior to the 1988 fishing season. The question of stock identification and sampling procedures was discussed by a panel of experts during this meeting, and the Panel is now in a good position to focus on this issue.

Technical Committee on Data Sharing

Mr. Lapi presented the report of the Technical Committee on Data Sharing noting that it is preliminary as it has yet to be reviewed by the Standing Committee on Research and Statistics. He commented that progress is being made by the working groups on mark recovery data base and mark recovery statistics. The mark recovery statistics group expects to report that a standard methodology cannot be achieved and problems will be dealt with on a case-by-case study. The mark recovery data base group has agreed to a common format and will be discussing timetables for exchange of tapes and verification procedures at meetings scheduled for December.

Appointment of Officers to the Commission and its Subsidiary Bodies for 1987/88

At the conclusion of the reporting session, Mr. Shinners announced that new Chairs of the Commission, Panels and Standing Committees will take office at the end of this plenary session. The new roster is:

| | **Office** | **1987/88** |
|---|---|---|
| 1. | Commission Chair | U.S. — S.T. Wapato |
| 2. | Commission Vice-Chair | Can. — C.W. Shinners |
| 3. | Fraser River Panel Chair | Can. — F.J. Fraser |
| 4. | Fraser River Panel Vice-Chair | U.S. — L. Loomis |
| 5. | Northern Panel Chair | U.S. — S. Pennoyer |
| 6. | Northern Panel Vice-Chair | Can. — N. Lemmen |
| 7. | Southern Panel Chair | Can. — P. Sprout |
| 8. | Southern Panel Vice-Chair | U.S. — R. Whitener |
| 9. | Meetings of the Northern and Southern Panels | |
| | Chair | Can. — P. Sprout |
| | Vice-Chair | U.S. — B. Whitener |
| 10. | Meetings of the Fraser and Southern Panels | |
| | Chair | U.S. — L. Loomis |
| | Vice-Chair | Can. — F.J. Fraser |
| 11. | Stand. Comm. on F & A Chair | U.S. — S.T. Wapato |
| 12. | Stand. Comm. on F & A Vice-Chair | Can. — C.W. Shinners |
| 13. | Stand. Comm. on R & S Chair | Can. — S. Hewlett |
| 14. | Stand. Comm. on R & S Vice-Chair | U.S. — J.R. Donaldson |

Mr. Shinners said he enjoyed his role as Chair of the Commission over the past year. He noted that the Commission survived some difficulties this year, and reiterated Canada's commitment to try to avoid difficulties in the future. He announced that the Chair of the Commission for the coming year will be Mr. S.T. Wapato of the United States.

Mr. Wapato clarified that Mr. Colson will be Vice-chair of the United States section during the next year. Mr. Shinners stated that he will continue as Chair of the Canadian section and therefore will be the Vice-chair of the Commission. Mr. G.E. Jones will be the Vice-chair of the Canadian section.

Statement of Purpose for this Meeting

Mr. Wapato stated that the purpose of this meeting was to clarify mechanisms of the negotiating process for the current cycle, so no position papers on negotiating issues have been exchanged. The Commission expects opening positions to be exchanged during the first plenary session at the February 1988 meeting. He stated that panels and joint technical committees would be provided with firm instructions and firm reporting dates by the end of this meeting, which is scheduled for not later than noon Friday, November 20.

**Second Plenary Session**

The Chair of the Commission, Mr. S.T. Wapato, stated that the purpose of this plenary session was to provide revised or clarifying instructions to the panels and joint technical committees. The Commission in executive session had agreed on the following clarification of general instructions to joint technical committees.

The Commission expects the joint technical committees to function as objective scientific advisory bodies. The members of the committees shall not bias their analyses, withhold relevant data or information from fellow committee members, or otherwise frustrate the objective, advisory mandate of the committees. In this regard, the Commission reaffirms the Ethical Guidelines for Technical Committee Members contained within the Commission's bylaws.

Specifically, the joint technical committees are instructed that the committee terms of reference contained within the various chapters of Annex IV are standing assignments to the committees. At the annual scoping session, or as required, the Commission and the bilateral panels shall make specific assignments and set priorities among the standing assignments. For the 1987/88 negotiating cycle, the assignments made at the October 1987 Vancouver meeting and subsequent assignments by the Commission or the bilateral panels shall be completed as specified.

The Commission recognizes that a joint technical committee may receive assignments which, for technical, personnel, or other reasons, cannot be completed within the time provided. In such a case, the committee should refer the problem to the Chair and Vice-chair of the Commission for resolution.

Specific instructions issued to the panels and joint technical committees following the October meeting were confirmed without amendment.

The Chair also announced that the Commission had approved the following schedule of panel and joint panel negotiating sessions in Vancouver, B.C.:

— Jan. 20, 1988 — bilateral Northern and Southern Panels
— Jan. 21, 1988 — bilateral Northern and Southern Panels in joint session
— Jan. 22, 1988 — open: either bilateral Northern or Southern or in joint session — adjourn 3:00 p.m.

General instructions for the panels were also announced:

— review available final reports of technical committees, update catch, escapement and progress of uncompleted reports
— complete questions on the conduct of the 1987 season
— exchange positions on issues outlining the intent of each country
— provide any further direction to technical committees to complete assignments assigned by Commission.

Panels were instructed to complete their assignments not later than February 14, 1988, the second day of the Commission's Third Annual Meeting which is scheduled for February 13—19, 1988 at the Four Seasons Hotel in Vancouver B.C. The Commission expects the panels to make every effort to provide consensus recommendations for resolution of all issues under deliberation.

Commissioner Shinners on adjournment thanked the United States section for its hospitality and contribution to a productive meeting.

## C. THIRD ANNUAL MEETING OF THE COMMISSION February 15 - 20, 1988 — Vancouver, B.C.

### First Plenary Session

The first plenary session of the third annual meeting of the Pacific Salmon Commission was chaired by Commissioner S.T. Wapato on February 15, 1988. He welcomed the delegations to Vancouver and introduced the United States' commissioners. Vice-chair, Mr. C.W. Shinners, extended Canada's welcome to the Commission and introduced the Canadian commissioners.

The Chair requested reports from the panels on their progress in providing consensus recommendations on the issues which had been identified for negotiation and on which views had been exchanged during the January 1988 bilateral meetings of the panels.

Fraser River Panel

Panel Chair F. Fraser and Vice-chair L. Loomis presented the report of the Fraser River Panel. The Panel noted the small total allowable catch projected for the 1988 season will be dominated by Chilko/Stellako and Weaver stocks. The Panel explained that the U.S. share of the TAC will total approximately 500,000 fish and the Canadian share will total approximately 812,000 fish.

The Panel noted its agreement on a payback policy and continuing difference of opinion over categorization of the shortfall in the 1987 Indian food fishery catch. The Panel noted its continuing discussion of issues pertaining to northern area catches of Fraser River pink salmon and commended the PSC staff for preparation of the 1987 post-season report.

The Panel requested direction from the Commission to continue bilateral meetings in the following days.

Northern Panel

Panel Chair S. Pennoyer and Vice-chair N. Lemmen presented the report of the Northern Panel. The Panel cited progress in several areas and agreement on provisions relating to research on Portland Canal chum.

The Panel explained that it had not reached agreement on Area 1 pink salmon troll fisheries and was continuing discussions on transboundary river enhancement and harvest sharing.

The Panel noted its satisfaction with use of the working group approach to provide initial exploration of opportunities for agreement.

The Panel agreed that it could make productive use of additional meeting time.

Southern Panel

Panel Chair P. Sprout and Vice-chair R. Whitener presented the report of the Southern Panel.

The Panel noted its inability to reach agreement on conduct of the U.S. Area 7/7A coho fishery. Chair Sprout explained that Panel work had come to a standstill and required additional direction from the Commission prior to continuing any work.

Commission Vice-chair C.W. Shinners expressed Canada's concern over the 7/7A issue and suggested that reintroduction of a U.S. 7/7A fishery would be divisive and likely to lead to reinstitution of a Canadian Area 20 coho fishery or some other response.

Commission Chair S.T. Wapato noted the importance of the 7/7A fishery to the U.S., the Indian Treaty fishing rights in the area, and the U.S. view that the Panel should not be discussing whether a fishery should exist, but only at what level.

Northern/Southern Panels in Joint Session

Chair P. Sprout and Vice-chair R. Whitener reported on meetings of the Northern and Southern Panels in joint session. They commented that the two panels have a large number of discussion papers under joint consideration, but that time had not been available for the panels to meet in joint session during this meeting.

The Chair and Vice-chair noted that productive use could be made of additional time during this meeting.

Chair S.T. Wapato commented that it was likely the panels would be called upon to do additional work. The Commission will reconvene in plenary session later in the day to provide instructions to the panels.

**Second Plenary Session**

The Chair of the Commission, Mr. S.T. Wapato, provided directions to the panels arising from decisions reached by the Commission earlier in executive session. The Chair noted that the panels will be permitted to continue work through to 7:00 a.m. Wednesday, February 17, 1988. The panels' chairs will be required to report progress made to the Commission in executive session. Any issues on which consensus has not been reached will be negotiated by the Commission in executive session during the remainder of the time alloted for the meeting.

Instructions to the Panels

1. The Fraser Panel was directed to continue its work.

2. The Southern Panel was directed to pursue discussions on:

   — level of fishing in 7/7A
   — degree of fishery response in Area 20
   — character and size of any other Canadian restitution fishery
   — measures to minimize interceptions within a 7/7A fishery and any Canadian restitution fishery
   — provide answers to questions submitted in writing yesterday by the U.S. section of the Panel
   — chum fisheries.

3. The Northern Panel was directed to pursue discussions on:

   — transboundary river regime
   — Area 1 troll.

4. The Northern and Southern Panels were directed to resume work in joint session after Wednesday morning on longer term issues, such as hatchery add-on, chinook rebuilding and induced mortalities.

Agreements Reached in Executive Session

The Commission met in executive session for the balance of the meeting. Agreement was reached on amendments to the respective Chapters of Annex IV to the Treaty and details were contained in a letter to governments recommending adoption (Appendix A). These amendments have been incorporated into revised Annex IV to the Treaty (Appendix B).

The Commission recommended adoption of regimes for the 1988 fishing season and beyond. In particular, the Commission reached agreement on a five-year amendment to the catch-sharing formula for stocks of the transboundary rivers, the Stikine and Taku. Agreement on a five-year joint enhancement program on those rivers is contained in a separate understanding between the national sections (Appendix C).

On other matters, the Commission:

— agreed to amendments in fishing arrangements for pink salmon in Dixon Entrance;

— agreed to initiate measures to protect and restore depressed chum salmon stocks originating in Portland Canal and adjacent areas of southeast Alaska and northern British Columbia;

— agreed that, as in the last two years, the 1988 Alaska all-gear catch of chinook will be increased somewhat above the base catch quota to permit Alaskan fishermen to catch chinook produced from local hatcheries;

— established a framework for pre- and in-season consultation between Canadian and U.S. domestic fishery managers over 1988 coho fisheries in northern Puget Sound and the Canadian section of the Strait of Juan de Fuca;

— agreed to continue in 1988 harvest arrangements for southern British Columbia/ northern Washington chum fisheries first instituted in 1987;

— adopted a policy that adjusts each country's share of Fraser River sockeye and pink salmon to compensate for harvest overages or underages in the preceding year, while preventing undue disruption of either side's fisheries; and

— established a joint Fraser River Panel Technical Committee.

During the course of the meeting, the Commission reviewed reports from the Standing Committee on Finance and Administration and in executive session took action on the Committee's recommendations. The Commission also reviewed the current draft report of the Procedural Reform Working Group.

# Activities of the Standing Committees

# PART II
# ACTIVITIES OF THE STANDING COMMITTEES

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

The Standing Committee on Finance and Administration led by Commissioners Shinners and Wapato met twice during fiscal year 1987/88; on October 5, 1987 in Vancouver and again on February 14, 1988. A brief review of the major actions recommended by the Committee and later adopted by the Commission is presented in chronological order of meetings.

**Meeting of the Committee — October 5, 1987 — Vancouver, B.C.**

The Committee reviewed the Executive Secretary's final report on income, expenditures and balances in accounts for fiscal year 1986/87. A surplus was identified and will be retained in Commission accounts for credit against the Parties' contributions for fiscal year 1988/89.

Income and expenditures for the first five months of fiscal year 1987/88 and projected figures for the balance of the year were also reviewed. The Committee approved, in principle, proposals for expenditure of a surplus which has developed as a result of higher than forecast test fishing revenues. Final approval is to be granted after the Committee reviews third quarter financial reports.

The Committee reviewed and approved the Executive Secretary's proposed base budget for fiscal year 1988/89. The budget calls for an increase in contribution from the Parties over current year levels (Appendix D) but noted that operational funds had to be transferred to salaries and benefits in order to meet cost increases associated with reclassification action, full staffing of continuing positions, and improved pension benefits.

A budget forecast for fiscal year 1989/90 was reviewed but the Committee took no action on that proposal. The Committee agreed to meet in April 1988 to discuss the 1989/90 budget in detail.

On other matters, the Committee:

— reviewed the use and utility of the E-Mail System. The current system is not functioning as an effective bilateral communications system. The Committee recommended that responsibility for administration of E-Mail revert to the Parties from the Secretariat.

— developed policy on use of the Secretariat's boardroom by "outside" agencies or groups. The Committee recommended that outside use be approved for a reasonable fee subject to absolute priority of any Commission-related body, and completion of meetings not later than 6:00 p.m.

— reviewed the Executive Secretary's recent correspondence in his continuing efforts to secure privileges and immunities in Canada reciprocal to those provided in the United States. The Committee directed the Executive Secretary to draft a letter for the Chair of the Commission to request the assistance of the Minister of Fisheries and Oceans to expedite the matter.

**Meeting of the Committee — February 14, 1988 — Vancouver, B.C.**

The Committee discussed the report of the auditors on fiscal year 1986/87. The Committee approved the report and recommended adoption by the Commission.

The status of income and expenditures including projections for the balance of the current fiscal year 1987/88 was discussed. The forecast of developing surpluses presented by the Executive Secretary at the October 1987 meeting of the Committee was reviewed and revised. The Committee provided final approval to fund projects and capital purchases recommended by the Executive Secretary at the October meeting. The Committee also approved additional proposals for expenditure of part of the surplus. The Committee expressed concern that acquisition of capital equipment may create a heavy burden on the Commission's base budget if a replacement schedule is not carefully designed, and instructed the Executive Secretary to draft a long-term replacement program for examination by the Committee at its next meeting.

The Committee reviewed a report from the Executive Secretary regarding financial implications of implementing reclassification action for seven positions on the Secretariat. These proposals were reviewed by the Chief of Classification for the Pacific Region of the Department of Fisheries and Oceans and met appropriate Public Service of Canada standards. The Committee noted that increased costs could be accommodated within funds available for fiscal year 1988/89.

The costs of the employee benefits package provided by the Commission were also reviewed and compared with those provided to federal employees of the Public Service of Canada. The Committee expressed concern that the full cost of a recent amendment to the International Fishery Commission's Pension Plan is to be borne by the employer, and instructed the Executive Secretary to draft a letter to the Society from the Chair of the Commission. The Committee also reviewed and endorsed a proposal to implement a dental insurance plan for the staff based on a 50:50 employer:employee cost-sharing formula.

On other matters, the Committee:

— discussed allocation of repair costs for Commission-owned equipment on permanent loan. The Committee agreed to examine the possibility of transferring ownership of the equipment to the Parties

— discussed the use of staff as expert witnesses in fishery-related court actions. The Committee concluded that Commission staff as a regular part of its duties should not be used by enforcement agencies of either Party as a technical resource

— examined the confidentiality of Commission executive session minutes. The Committee agreed that current rules regarding confidentiality should remain in place

— reviewed the status of the Commission's request for expanded privileges and immunities in Canada. The Committee was informed that efforts extended by the Department of External Affairs on the Commission's behalf should result in granting of privileges and immunities by Canada similar to those provided the Commission by the United States

— discussed proposed amendments to the Commission's bylaws and rules of procedure. The Committee recommended that rules concerning payment of technical experts' expenses be amended to require Joint Technical Committees to obtain prior approval from the Commission through the office of the Secretariat for the participation by outside experts

— agreed to meet in late April in Ottawa, Ontario to review budget proposals for fiscal years 1989/90 and 1990/91.

Other Administrative Matters

1. Staffing

Several changes occurred within the Secretariat staff during the period covered by this report:

— Ms. Holly Derham was appointed Assistant Scale Analyst effective July 6, 1987
— Mrs. Kathleen Kroeker, Data Entry Assistant, resigned effective August 31, 1987
— Ms. Cathy Mulholland was appointed Computer Programmer/Analyst/Operator effective February 10, 1988

— Mrs. Glenna Westwood was appointed Librarian/Records Management effective February 15, 1988
— Mr. Bruce White was the successful candidate for the position of Racial Identification Biologist (pink salmon) effective April 1, 1988.

With these appointments, the Secretariat staff is now at full complement. The full organizational structure and staff membership is listed in Appendix E.

2. Membership Lists

An updated membership list for standing committees, panels and joint technical committees as of March 31, 1988 is presented in Appendix F.

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

The Standing Committee on Research and Statistics, led by Commissioners Hewlett and Donaldson, met twice during the period covered by this report: January 18—19, 1988, and February 14, 1988.

**Meeting of the Committee — January 18—19, 1988 — Vancouver, B.C.**

The Chair of the Committee was assumed by Commissioner S. Hewlett. Commissioner J. Donaldson was selected Vice-chair.

The Committee reviewed draft recommendations of the Procedural Reform Working Group pertaining to operation of the Committee. The Committee agreed to recommend to the Commission that the technical committee co-chairs be added to the membership of the Research and Statistics Committee and that an informal working group be established to serve as staff to the Committee.

The Committee reviewed and clarified a document that articulated the Committee's role and responsibilities.

The Data Sharing Committee reported its progress to the Committee, noting that the majority of work had been completed in developing standards for sharing coastwide mark recovery data. A report on the data base system would be prepared by early February. Considerable work remained for the working group on mark recovery statistics.

The Committee distributed letters to each technical committee co-chair requesting information on the status of interception information for the stocks and fisheries over which the committees have jurisdiction, and asking the co-chairs to identify any administrative or other obstacles to completion of their assignments.

**Meeting of the Committee — February 14, 1988 — Vancouver, B.C.**

The Committee discussed whether and how Committee operations would need to change once membership expanded to include all technical committee co-chairs. The Committee also clarified its understanding of the role of the Committee's working group, noting that the group's membership will change as the needs of the Committee dictate and that the group will act strictly at the direction of the Chair and Vice-chair.

The Committee received a detailed report from the Data Sharing Committee on the coastwide mark recovery data base. The Committee agreed to recommend that the Commission adopt the data base report and the Data Sharing Committee's recommendation that a small group of individuals, reporting to the Data Sharing Committee, be charged with ensuring continuing standardization of data codes and formats.

The Committee discussed whether the Working Group on Mark Recovery Statistics required additional resources to complete its assignment. The Data Sharing Committee was asked to review this question and report to the Committee at the next meeting.

The Data Sharing Committee was directed to prepare a report for the next Standing Committee meeting on the feasibility of establishing coastwide data bases on catch and escapement information.

The Committee directed its working group to prepare a synopsis of the letters received from the technical committee co-chairs in response to the Committee's January letter. The working group was directed to report by the next Committee meeting. The Committee agreed to meet next in Vancouver, during June 1988.

# Activities of the Panels

# PART III
# ACTIVITIES OF THE PANELS

## A. NORTHERN PANEL

The Northern Panel met in conjunction with the Commission.

The Panel conducted an extensive review of the 1987 fishing season, identified issues for negotiation during the 1987/88 meeting cycle, identified tasks for Joint Technical Committees and exchanged views on cooperative research plans.

The Panel also met in Vancouver in January 1988 where bilateral discussion on issues related to the development of agreed fishery regimes for 1988 was conducted.

Substantial progress was made by the Panel in its efforts to reach consensus on its assigned tasks. The Panel was able to reach agreement on a memorandum of understanding regarding activities to be undertaken by the Joint Northern Boundary Technical Committee concerning rehabilitation and enhancement of Portland Canal chum salmon stocks, and on a fishery regime applicable to the Canadian pink salmon troll fishery in northern Dixon Entrance. Progress was made in discussion on sharing arrangements and enhancement proposals for transboundary rivers but the issues were forwarded to the Commission for resolution.

## B. SOUTHERN PANEL

The Southern Panel met in conjunction with the Commission. The Panel conducted an extensive review of the 1987 fishing season, identified issues for negotiation during the 1987/88 meeting schedule, identified tasks for joint technical committees, and exchanged views on the need for continued efforts on stock identification for coho and chum.

The Panel also met in Vancouver in January 1988 where bilateral discussion on issues related to the development of agreed fishery regimes for 1988 was conducted. Progress was made on all major issues, but the Panel was unable to reach consensus and final arrangments were negotiated by the Commission.

## C. JOINT MEETINGS OF THE NORTHERN AND SOUTHERN PANELS

The Northern and Southern Panels met jointly with the Commission and in January 1988 in Vancouver. As the chinook arrangements for 1987 and 1988 in Chapter 3, Annex IV of the Treaty had been successfully negotiated during the 1986/87 meeting cycle, discussions of this body were focussed on major assignments to the Joint Chinook Technical Committee such as identification of hatchery add-ons, assessment of chinook rebuilding progress, and an assessment of the effects of fishing-induced mortalities on the rebuilding schedule.

## D. FRASER RIVER PANEL

The Fraser River Panel met in conjunction with the Commission, and in view of its special responsibilities concerning in-season management of fisheries on Fraser River sockeye and pinks in Panel Area waters, met frequently throughout the year. The Panel successfully negotiated fishing plans for 1987, and proposed a policy on payback of catch shortfall which was adopted by the Commission.

The Panel also recommended formation of a Joint Fraser River Technical Committee. This recommendation was adopted by the Commission, and the agreed terms of reference of this committee have been incorporated into Chapter 4 of revised (1988) Annex IV (Appendix B).

The Panel initiated discussions and made substantial progress in the development of fishing plans for 1988. Discussions took place between the Fraser Panel, Northern Panel, Joint Northern Boundary Technical Committee, Fraser River Technical Committee, and Pacific Salmon Commission scientific management staff on sampling plans for southeast Alaska and northern British Columbia to identify contributions of sockeye and pink salmon of Fraser River origin in fisheries of those areas.

The Commission's fishery management staff prepared, on behalf of the Panel, a report on the 1987 Fraser River sockeye and pink salmon fisheries which was presented to the Commission at the November 1987 meeting. The executive summary is contained within Section IV of this report.

# Review of 1987 Fisheries and Treaty-related Performance

# PART IV
# REVIEW OF 1987 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 at its November 1987 meeting. Source documents are referenced for each part of this review. **All figures are preliminary and will be updated in future reports as more complete tabulations become available.**

## A. FRASER RIVER SOCKEYE AND PINK

Management plans for harvesting Fraser River sockeye and pink salmon runs in the Panel Area during 1987 were developed by the Panel prior to the fishing season. These plans incorporated pre-season run size estimates and goals for escapement and international sharing of harvests and for Canadian and United States allocations to user groups. A fishing regime and management plan was adopted by the Commission and submitted to the Parties in June.

In-season regulations for the management of the Panel Area fisheries were formulated by the Panel to adjust for actual run strengths and timing. Escapement goals and international and domestic allocation objectives guided the Panel in this process. The Panel met 29 times to adjust fishing schedules to meet these objectives.

Fraser River sockeye returns totalled 7,662,000 fish, of which 5,747,000 were harvested and 1,915,000 reached their spawning grounds in the watershed. Commercial catches totalled 5,173,000 sockeye, divided between Canada (3,232,000) and the United States (1,941,000). In addition, Fraser River Indian food fisheries accounted for 468,000 sockeye while other non-commercial fisheries took 106,000 sockeye.

Estimated pink salmon returns of 7,065,000 fish were only 64% of the pre-season forecast (11,000,000) and, consequently, neither catch nor escapement reached expected levels. An estimated 3,841,000 Fraser River pink salmon were harvested in all areas, while 3,224,000 fish reached spawning grounds in the Fraser watershed. Canadian commercial fishery catches totalled 2,410,000 Fraser pink salmon while United States fishermen landed 1,256,000. Non-commercial catches accounted for 175,000 pink salmon.

Monitoring of the sockeye and pink salmon runs by test fishing and river echo sounding provided the Panel with reliable information which was used to schedule fisheries to meet catch and escapement objectives. Gross escapement of adult sockeye was estimated, in-season, at 2,152,000 compared with post-season reports of spawning escapements and Fraser River Indian food fishery catches upstream of Mission totalling 2,330,000 sockeye.

Racial analysis of commercial and test fishery catches provided information about Fraser sockeye stocks required to regulate the fishery to obtain the escapements of the various stocks specified by Canada. Genetic stock identification (GSI) techniques were applied to samples from Panel Area, south coast, and northern area pink salmon catches in efforts to identify and enumerate the Fraser River component. Racial identification of sockeye and pink salmon in distant, mixed-stock fisheries in northern British Columbia and southeastern Alaska permitted the Panel to fulfill its mandate to account for Fraser River sockeye and pinks wherever caught.

Escapements to Fraser watershed spawning grounds were estimated by Canada Department of Fisheries and Oceans at 1,915,000 sockeye including 19,000 jacks. The total adult spawners of 1,896,000 exceeded the goal (1,760,000) set by Canada, by 136,000 fish. However, the distribution of spawning was well balanced, with most individual spawning area totals near or slightly in excess of the goals. Pink salmon escapements totalled 3,224,000 spawners which was 54% of the goal. The reduced total run of pink salmon did not permit the escapement objective to be fulfilled.

The total allowable catch (TAC) of sockeye was estimated post-season at 5,566,000 fish. The United States portion of the TAC was 2,003,000, including a payback of 100,000 sockeye for the 1986 catch shortfall. The actual United States catch was 61,000 short of this allocation figure. Similarly, United States pink salmon catches were short of the allocation goal by 115,000 fish. The small pink salmon run was insufficient to allow a directed harvest to balance the catch.

Revised catch estimates obtained from final fish sales and landing slip totals in Canada and the United States and finalized racial analyses of those catches necessitate annual updates of the allocation status for Fraser River sockeye and pink salmon. **Table 1 presents the best estimates of catch allocation available in February 1988. Revision of 1987 catches and prior year data will be made in future reports as more complete or finalized data become available.**

The current status of sockeye allocation shows a cumulative shortfall of 98,000 fish in United States waters and a corresponding overage in Canada. Pink salmon allocation summaries currently show a 115,000 fish cumulative shortfall in United States waters.

The Pacific Salmon Commission in February 1988 approved a policy on payback of catch shortfalls in Fraser River sockeye and pink salmon. The policy calls for compensating shortfalls and overages in sockeye catch during the following year (or with pink salmon, two years hence), with the provision that neither Party is required to pay back more than 5% of its share of the TAC during any given year. Under this policy, a portion of the United States current shortfall would be compensated in 1988.

[Source Document — *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1987 Fraser River Sockeye and Pink Salmon Fishing Season.* Pacific Salmon Commission staff. February 1988.]

**TABLE 1.** PRELIMINARY 1985-1987 FRASER RIVER SOCKEYE AND PINK SALMON ALLOCATION STATUS[1]

| | SOCKEYE | | | PINK | |
|---|---|---|---|---|---|
| | 1985 | 1986 | 1987 | 1985 | 1987 |
| TOTAL RUN: | 13,879,000 | 15,898,000 | 7,662,000 | 18,864,000 | 7,065,000 |
| ESCAPEMENT & OTHER DEDUCTIONS: | 2,522,000 | 4,043,000 | 2,096,000 | 6,479,000 | 3,253,000 |
| TOTAL ALLOWABLE CATCH | 11,357,000 | 11,855,000 | 5,566,000 | 12,385,000 | 3,812,000 |
| UNITED STATES: | | | | | |
| ALLOCATION | 3,013,000[4] | 2,795,000[5] | 1,903,000[6] | 4,053,000[7] | 1,143,000[8] |
| ACTUAL CATCH | 2,925,000 | 2,746,000 | 1,942,000 | 3,824,000 | 1,257,000 |
| ANNUAL ALLOCATION STATUS[2] | (88,000) | (49,000) | 39,000 | (229,000) | 114,000 |
| CUMULATIVE ALLOCATION STATUS[2] | (88,000) | (137,000) | (98,000) | (229,000) | (115,000) |
| CANADA: | | | | | |
| ALLOCATION | 8,344,000 | 9,060,000 | 3,663,000 | 8,332,000 | 2,669,000 |
| ACTUAL CATCH/ESCAPEMENT[3] | 8,432,000 | 9,109,000 | 3,624,000 | 8,561,000 | 2,555,000 |
| ANNUAL ALLOCATION STATUS[2] | 88,000 | 49,000 | (39,000) | 229,000 | (114,000) |
| CUMULATIVE ALLOCATION STATUS[2] | 88,000 | 137,000 | 98,000 | 229,000 | 115,000 |

[1] — Based on current Commission interpretations and Panel agreements.
[2] — ( ) indicate a negative number or shortfall.
[3] — Includes escapement add-ons requested or approved by Canada which will generate future benefits.
[4] — (1.78/6.60 million x 11,357,000) - 50,000
[5] — (3.0/12.5 million x 11,855,000) - 50,000
[6] — (1.06/3.1 million x 5,566,000)
[7] — (3.6/11.0 million x 12,385,000)
[8] — (3.6/12.0 million x 3,812,000)

## B. CHINOOK

### Preliminary 1987 Chinook Salmon Catches in Ceilinged Fisheries

Preliminary estimates of 1987 catch for each fishery managed under a harvest ceiling established by the Treaty are provided in Table 2. **These data are very preliminary and can be expected to change as fish ticket data replace in-season projections, errors are detected and corrected, and as the final landings are included in the catch.** Conclusions drawn from these data are, therefore, tentative.

**TABLE 2.** Preliminary estimates of 1987 chinook catches in fishing areas under harvest ceilings.*

(THOUSAND FISH)

| AREA AND FISHERY | CEILING | CATCH | DIFFERENCE #'s | DIFFERENCE % |
|---|---|---|---|---|
| SE Alaska (T,N,S) a/ b/ | 279 | 279.7 | 0.7 | +0.3 |
| North/Central B.C. (T,N,S) | 263 | 274.6 | 11.6 | +4.4 |
| West Coast Vancouver I. (T) | 360 | 384.7 | 24.7 | +6.9 |
| Georgia Strait (T,S) | 275 | 171.1 | −103.9 | −37.8 |

a/ T=Troll; N=Net; S=Sport
b/ 263,000 base plus 16,000 hatchery add-on.

Please consult Table 3 for a summary of available coastwide catch statistics. Catches in all fisheries of interest to the PSC are documented.

*(Compiled with information available as of 10/21/87)

**TABLE 3.** PRELIMINARY 1987 CHINOOK CATCHES FROM STOCKS CONTRIBUTING TO U.S.-CANADA SALMON TREATY AREAS, COMPARED WITH 1984 - 1986 (numbers of fish in 1,000s.)

23-Oct-87 — PRELIMINARY DATA

| | TROLL | | | | NET | | | | SPORT | | | | TOTAL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AREA | 1987 | 1986 | 1985 | 1984 | 1987 | 1986 | 1985 | 1984 | 1987 | 1986 | 1985 | 1984 | 1987 | 1986 | 1985 | 1984 |
| S.E. ALASKA | a/ 242 | 236 | 217 | 236 | 15 | 22 | 36 | 32 | 22 | 21 | 25 | 22 | 279 | 279 | 278 | 290 |
| BRITISH COLUMBIA | | | | | | b/ | | | | c/ | | | | | | |
| North/Cent. Coast | 233 | 202 | 215 | 254 | 29 | 47 | 51 | 36 | 12 | 12 | 9 | 20 | 274 | 261 | 275 | 310 |
| W. Vanc. Island | 385 | 342 | 358 | 460 | 0.2 | 3.3 | 11 | 44 | d/ 32 | 13 | 14 | 44 | 417 | 358 | 383 | 548 |
| Georgia Strait/Fraser | 41 | 44 | 52 | 88 | 10 | 32 | 31 | 20 | e/ 130 | 182 | 235 | 369 | 181 | 258 | 318 | 477 |
| Johnstone Strait | 0 | 4 | 5 | 9 | 14 | 18 | 38 | 18 | 10 | 10 | 10 | 10 | 24 | 32 | 53 | 37 |
| Juan de Fuca Strait | 0 | 0 | 0.4 | 0.3 | 6 | 18 | 17 | 6 | e/ — | — | — | — | 6 | 18 | 17 | 6 |
| sub-total | 659 | 592 | 630 | 811 | 60 | 118 | 148 | 124 | 184 | 217 | 268 | 443 | 903 | 927 | 1,046 | 1,378 |
| WASHINGTON | | | | | | | | | | f/ | | | | | | |
| Strait | g/ 40 | 30 | 13 | 16 | 12 | 17 | 13 | 12 | h/ N/A | 69 | 44 | 48 | 52 | 116 | 70 | 76 |
| San Juans | 0 | 0 | 0 | 0 | 28 | 34 | 33 | 32 | h/ N/A | 17 | 13 | 26 | 28 | 51 | 46 | 58 |
| Other PS | 0 | 0 | 0 | 0 | 121 | 140 | 185 | 181 | h/ N/A | 88 | 110 | 125 | 121 | 228 | 295 | 306 |
| Coast | 76 | 46 | 48 | 12 | 34 | 15 | 25 | 16 | 40 | 24 | 31 | 16 | 150 | 85 | 104 | 44 |
| sub-total | 116 | 76 | 61 | 28 | 195 | 206 | 256 | 241 | 40 | 198 | 198 | 215 | 235 | 404 | 454 | 456 |
| COLUMBIA RIVER | — | — | — | — | i/ 456 | 283 | 151 | 128 | j/ 65 | 66 | 48 | 56 | 521 | 349 | 199 | 184 |
| OREGON | | | | | | | | | | | | | | | | |
| N. Cape Falcon | 5 | 6 | 5 | 9 | — | — | — | — | 4 | 2 | 4 | 0 | 9 | 8 | 9 | 9 |
| Central Coast | k/ N/A | 2 | 3 | 3 | — | — | — | — | N/A | 35 | 30 | 29 | N/A | 37 | 33 | 32 |
| sub-total | N/A | 8 | 8 | 12 | — | — | — | — | N/A | 37 | 34 | 29 | N/A | 45 | 42 | 41 |
| GRAND TOTAL | 1,022 | 912 | 916 | 1,087 | 726 | 629 | 591 | 525 | 315 | 539 | 573 | 765 | 2,063 | 2,080 | 2,080 | 2,377 |

*See legend page 34*

a/ Southeast Alaska troll chinook catches shown for Oct. 1 - Sept. 30 catch counting year. Purse seine chinook catches include only fish over five pounds round weight.

b/ British Columbia net catches includes only fish over 5 lb. round weight. Native food fishery catches are not included.

c/ Sport catches are for tidal waters only; catch updates will be provided as available.

d/ Estimates of tidal sport catches are from creel surveys in Barkley Sound only. Survey times and areas may vary from year to year.

e/ Georgia Strait sport catches include Juan de Fuca Strait sport catches. 1986 estimate includes projected catch through remainder of year.

f/ Sport catches include both marine and freshwater catches, but only adults in fresh water.

g/ Area 48 troll catches outside of the PFMC management period are included in the Juan de Fuca Strait total.

h/ Adjusted for punch card bias by multiplying punch card estimate by 0.833. This bias adjustment methodology is currently under review and may result in future adjustment to these numbers.

i/ Columbia River net catches include Oregon, Washington and treaty catches, but not treaty ceremonial.

j/ Columbia River sport catches are for adults only and include Washington, Oregon and Idaho anglers.

k/ Includes only terminal ocean troll and estuary inriver sport catches from Cape Falcon to Cape Blanco.
1986 inriver sport projections based on estimates from 1985 actual data. 1987 data not available.

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**Preliminary Review of 1987 Chinook Escapements**

Some fall running chinook stocks were still spawning at the time this technical information was developed. Consequently, only a brief preliminary escapement overview can be presented. This information should be considered preliminary and subject to change.

S.E. Alaska

Natural chinook salmon escapements to southeast Alaska and transboundary rivers in 1987 were generally similar to 1986. Preliminary estimates indicate a total 1987 escapement of 50,700 chinook salmon compared to 46,100 in 1986. Escapements increased in four of the 11 indicator systems and declined in seven. However, percentage changes were less than +/- 10% of 1986 levels in six of the 11 systems. Consistent with recent years, escapements to southern and central systems continued to show greatest improvements relative to the 1975-80 base period while northern systems improved less.

Transboundary Rivers

Chinook escapements in 1987 increased over 1986 in two of the six transboundary rivers and declined in four. Percent changes by system were: +415% in the Chilkat River, +116% in the Stikine River, -4% in the Alsek River, -26% in the Taku River, -7% in the Unuk River and -43% in the Chickamin River.

British Columbia

Estimates of 1987 chinook escapement are incomplete; however, most available data indicate a decline relative to 1986. Escapement to the Skeena and Nass systems is down to 65,500. Escapement to the upper and middle Fraser and Thompson River systems declined from 1986 levels by 18%, 21% and 41% (incomplete), respectively. Escapement estimates for other stocks were unavailable at the time this technical information was compiled.

Puget Sound and Washington Coast

Spawning escapement data are not yet available.

## Columbia River

Columbia River stocks continued to show a mixed response to rebuilding efforts. Escapement needs for lower river spring chinook stocks (Willamette and Cowlitz) were met. The Bonneville Dam count of 98,600 upriver spring chinook adults declined from the 118,200 count in 1986, in contrast to the previous upward trend. The 120,000 adult goal at Bonneville Dam is a combined goal for hatchery and wild stocks of which approximately 70% were wild at the time of goal development. Data are currently being analyzed to segregate wild from hatchery stocks for the 1987 run. Although a 1987 estimate of the wild upriver spring chinook run is not yet available, it is clear that the wild component remains depressed.

The 1987 return of 33,000 adult summer chinook was a 26% increase from the 1986 return of 26,200 and the largest since 1978. While the trend of increasing escapements continues, this stock still remains seriously depressed compared to its 85,000 escapement goal.

The upriver bright fall chinook adult count at McNary Dam was expected to exceed 150,000 fish compared to the 1986 count of 113,200 and the escapement goal of 40,000 adults. Sport fisheries and a limited tribal commercial gill net fishery in the area above McNary Dam were expected to harvest a little of this surplus with catches similar to last year's; 5,000 and 1,000, respectively. The upriver bright fall chinook stock has demonstrated dramatic rebuilding in the last few years compared to the record low return in 1981.

The 1987 return to Spring Creek Hatchery, including tule fall chinook trapped at Bonneville Dam as supplemental broodstock, totalled only 1,950 adults compared to 3,300 in 1986 and the escapement goal of 8,200 adults. It is believed that the major reason for the very poor return of the Spring Creek tule stock in 1987 was an epizootic of bacterial gill disease (BGD) at the hatchery in the 1984 brood. The BGD epizootic necessitated the premature release of all the tule stock for the 1984 brood at a very small size and in very poor health. In addition, annual installation of screens to divert smolt outmigrants away from the turbines and into the bypass system at Bonneville Dam was not completed in time to benefit the prematurely released smolts.

Lower river hatchery tule chinook returned to the Columbia River in record numbers in 1987. Large surpluses were recorded at nearly all Washington and Oregon hatchery facilities.

## Oregon Coast

Ocean escapement estimates of Oregon coastal north-migrating chinook stocks were not available at the time this information was compiled. Early indications (mid-October) of estuary and lower river sport fisheries indicate above average level of abundance. An increasing occurrence of older age fish (e.g., age 4 and 5) has been observed in 1986-87 inriver sport fisheries.

In October, there was great concern over the near absence of measurable rainfall since late spring. Coastal river water levels were the lowest in more than a decade with many of the coastal systems experiencing drought conditions. Many fish were holding in the lower reaches of these systems and it was feared that they would sustain increased mortality due to fishing (above recent year averages) and also be susceptible to significant levels of pre-spawning mortality.

[Source Document — TCCHINOOK (87)-5 *Chinook Technical Committee Report to the November 1987 meeting of the Pacific Salmon Commission.* October 23, 1987.]

**Preliminary Review of 1987 Alaska Hatchery Add-on and Projected 1988 Add-on of Chinook for Southeast Alaska Fisheries**

Pursuant to procedures approved by the Pacific Salmon Commission at its March 1987 meeting, 1987 southeast Alaska salmon fisheries were managed for the Commission established base catch ceiling of 263,000 chinook salmon plus an add-on for harvest of new Alaska hatchery production. Procedures used in 1987 to estimate hatchery contributions in-season and allow for harvest of new production were similar to those used during 1985 and 1986.

Preliminary data indicate that Alaskan hatcheries contributed an estimated 23,300 chinook to 1987 southeast Alaska fisheries, or 78 percent of the 30,000 pre-season projection. A new hatchery production add-on of 16,000 resulted after subtracting 5,000 for old or pre-Treaty (1984) hatchery harvest and 2,300 for risk adjustment from the estimated 23,300 contribution. Risk adjustment, a procedure established by the Commission, is designed to compensate for a potential overestimate of hatchery contributions due to statistical variability in the estimation procedure. The risk level of one in 20 (i.e., 5%) currently being used is intended to ensure that the base catch ceiling will not be exceeded as a result of overestimating hatchery contributions, and allowing the associated hatchery add-on, except by chance in one in 20 years.

Preliminary pre-season projections indicate a total 1988 Alaska hatchery harvest by southeast Alaska fisheries of 36,100 chinook salmon. This yields a pre-season projection for new production add-on of 27,000 chinook after subtracting 5,000 for "old" harvest and 4,100 for risk adjustment. The actual 1988 hatchery add-on will be based on in-season estimates of hatchery contributions derived from coded-wire tag recoveries. Approximately 35 percent of Alaska hatchery chinook expected to contribute to 1988 fisheries have been tagged. Catch sampling rates will be similar to 1986-87 or about 25-35 percent for troll, 40-50 percent for net, and 20-30 percent for sport.

[Source Document — *Preliminary Review of 1987 Alaska Hatchery Add-on of Chinook Salmon for Southeast Alaska Fisheries and Projected 1988 Hatchery Add-on.* Prepared for the Pacific Salmon Commission December 18, 1987 by Regional Staff Southeast Fisheries Divisions. ADF&G.]

## C. COHO

**Review of the 1987 Fishery**

A summary of coastwide coho catches by troll, net and sport fisheries for the period 1983-87 is presented in Table 4. Data for 1987 are incomplete and preliminary.

No specific provisions of the coho salmon chapter currently apply to southeast Alaska or northern B.C. fisheries.

**TABLE 4.** PRELIMINARY 1987 COHO CATCHES FROM U.S. AND CANADIAN FISHERIES a/ COMPARED WITH 1986, 1985, 1984, AND 1983 (thousand fish)

| | TROLL | | | | | NET | | | | | SPORT | | | | | TOTAL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AREA | 1987 | 1986 | 1985 | 1984 | 1983 | 1987 | 1986 | 1985 | 1984 | 1983 | 1987 | 1986 | 1985 | 1984 | 1983 | 1987 | 1986 | 1985 | 1984 | 1983 |
| S.E. ALASKA b/ | 1,040 | 2,126 | 1,589 | 1,133 | 1,280 | 416 | 1,083 | 951 | 805 | 703 | 58 | 58 | 60 | 60 | 55 | 1,514 | 3,267 | 2,600 | 1,998 | 2,038 |
| BRITISH COLUMBIA | | | | | | | | | | | c/ | | | | | | | | | |
| North Central | 759 | 1,648 | 655 | 859 | 1,166 | 192 | 490 | 273 | 223 | 370 | — | — | — | — | — | 951 | 2,138 | 928 | 1,082 | 1,536 |
| W. Coast Vanc. Is. | 1,792 | 2,157 | 1,389 | 2,172 | 2,169 | N/A | 11 | 8 | 11 | 9 | — | — | — | — | — | 1,792 | 2,168 | 1,397 | 2,183 | 2,178 |
| Georgia Str/Fraser | 205 | 209 | 200 | 117 | 121 | 9 | 51 | 49 | 23 | 27 | 625 | 572 | 728 | 443 | 404 | 839 | 832 | 249 | 868 | 552 |
| Johnstone Strait d/ e/ | — | — | — | — | — | 62 | 127 | 147 | 119 | 243 | — | — | — | — | — | 62 | 127 | 147 | 119 | 243 |
| Juan de Fuca Strait d/ | — | — | — | — | — | 223 | 203 | 225 | 75 | 17 | — | — | — | — | — | 223 | 203 | 225 | 75 | 17 |
| WASHINGTON/OREGON OCEAN | | | | | | | | | | | | | | | | | | | | |
| North of Cape Falcon | 147 | 206 | 256 | 97 | 66 | — | — | — | — | — | 61 | 210 | 210 | 51 | 247 | 208 | 416 | 466 | 148 | 313 |
| South of Cape Falcon | 382 | 428 | 55 | 47 | 373 | — | — | — | — | — | 278 | 191 | 166 | 131 | 137 | 660 | 619 | 221 | 178 | 510 |
| WASHINGTON INSIDE | | | | | | | | | | | | | | | | | | | | |
| Juan de Fuca Strait | 4 | 5 | 1 | 1 | 1 | 64 | 72 | 84 | 46 | 38 | N/A | 142 | 89 | 59 | 72 | 68 | 219 | 174 | 105 | 110 |
| San Juan Islands | — | — | — | — | — | 82 | 164 | 142 | 24 | 61 | N/A | 12 | 9 | 4 | 8 | 82 | 176 | 151 | 28 | 69 |
| Other Puget Sound | — | — | — | — | — | 1,433 | 1,108 | 930 | 710 | 827 | N/A | 115 | 119 | 78 | 194 | 1,433 | 1,223 | 1,049 | 788 | 1,021 |
| Coastal | — | — | — | — | — | 135 | 216 | 71 | 91 | 29 | N/A | N/A | 4 | 20 | 4 | 135 | 216 | 75 | 111 | 33 |
| COLUMBIA RIVER | — | — | — | — | — | 86 | 996 | 195 | 203 | 7 | 43 | 124 | 27 | 75 | 3 | 129 | 1120 | 222 | 278 | 10 |
| GRAND TOTAL | 4,329 | 6,779 | 4,145 | 4,425 | 5,175 | 2,702 | 4,521 | 3,075 | 2,330 | 2,331 | 1,065 | 1,424 | 1,412 | 921 | 1,124 | 8,096 | 12,724 | 7,904 | 7,961 | 8,630 |

a/ All totals include data as available on 11-1-87. N/A catches are treated as zeros.
b/ Southeast Alaska coho catches shown for calendar year. Data for 1987 are preliminary.
c/ 1987 sport catch through September only. Other years through end of December. Sport catch data have not been compiled for areas other than Georgia Strait.
d/ Johnstone Strait and Juan de Fuca Strait troll catch included with Georgia Strait/Fraser.
e/ Some Georgia Strait/Fraser catch is included with Johnstone Strait.

Alaska

In general, coho returns to southeast Alaska since 1980 have increased substantially compared to the low levels of the 1970s. The 1987 southeast Alaska fisheries were managed in a manner similar to that employed since 1980. Fisheries are managed in-season on the basis of run strength assessment to achieve conservation objectives and allocation objectives established by the Board of Fisheries.

The 1987 all-gear harvest of 1.5 million coho salmon was slightly less than half the record 1986 catch of 3.3 million and approximately 20% below the 1981-85 average of 2.0 million. Preliminary CWT data indicate Alaska hatchery contributions in 1987 were substantially below 1986 levels.

British Columbia

1. Fisheries Under the Coho Chapter

(a) Area 20

A total of 223,000 coho were caught by commercial net fisheries in Area 20. Of this total, 127,000 were caught incidentally during Fraser Panel controlled sockeye and pink fisheries, while 96,000 were taken after Fraser River control.

(b) WCVI Troll Fishery

An estimated 1,792,000 coho were caught in the WCVI troll fishery (based on sales slips accumulated to October 14). The catch ceiling for this fishery was 1.8 million. The 1987 coho season was the shortest on record, beginning on July 1 and ending on August 23.

(c) Swiftsure Bank

Swiftsure Bank (part of Area 21) was closed to trolling throughout the 1987 fishing season.

(d) Other South Coast Fisheries of Interest to the Southern Panel

(i) Georgia Strait Sport

The coho catch in the Georgia Strait sport fishery to the end of September was 625,435. This is the second highest total to this date since 1980 when the current creel survey program was started. Only the 1985 season had a higher catch to the end of September.

(ii) Georgia Strait Troll

The troll fishery in Georgia Strait took approximately 205,000 coho during a season which ran from July 1 to September 30. This catch is similar to 1985 and 1986 levels.

Washington/Oregon

1. Fisheries Conducted under the Coho Chapter

(a) Area 7/7A

A total of 81,500 coho salmon was harvested by net fisheries in the San Juan Islands (Areas 7 and 7A). The harvest was taken incidentally during fisheries under the control of the Fraser Panel (29,800) and during fisheries directed at coho salmon (51,700).

(b) Strait of Juan de Fuca

The treaty Indian troll fishery in the Strait of Juan de Fuca (Areas 4B, 5, 6, and 6C) harvested 3,600 coho salmon (excluding 4,600 coho harvested in Area 4B during the PFMC management period). The net fishery in this area harvested 63,100 coho. All the all-citizen catch was taken during fisheries under control of the Fraser Panel. The treaty Indian net catch was taken incidentally during fisheries under control of the Fraser Panel and during fisheries directed at chinook, coho, and chum salmon.

2. Other Fisheries

(a) Ocean Fisheries

No specific management regimes were established by the Pacific Salmon Commission for coho fisheries off the coasts of Washington, Oregon and California. Ocean troll and sport fisheries in this area operated under coho ceilings developed through domestic regulatory processes of the Pacific Fishery Management Council. Fisheries north of Cape Falcon were closed upon attainment of chinook quotas; preliminary data indicate that none of the PFMC coho ceilings were reached in 1987.

A total of 147,000 coho was harvested by troll fisheries north of Cape Falcon, Oregon. A total of 148,400 coho was harvested by recreational fisheries north of Cape Falcon, Oregon.

(b) Puget Sound

(i) Sport Fishery

Catch estimates are not available at this time for the 1987 Puget Sound sport fishery.

(ii) Net Fisheries other than in Juan de Fuca Strait and San Juan Islands areas

Net fisheries harvested 1,433,287 coho salmon in other areas of Puget Sound. The majority of this harvest occurred in terminal areas in which the coho run exceeded escapement requirements.

(c) Washington Coast

A total of 134,596 coho have been taken in Washington coastal net fisheries (35,618 north coast; 39,386 Grays Harbor; 59,592 Willapa Bay).

(d) Columbia River

Through October 2, the Columbia River coho net fisheries have harvested 86,800 coho; the lower river sport fishery has taken approximately 46,400 coho.

**Preliminary Indications of Potential Coho Conservation Concerns for the Management of 1988 Fisheries in Canadian Area 20 and U.S. Areas 7/7A**

Canada

On the basis of brood year escapement levels and the declining trend observed for this cycle (see TCCOHO (86)-1), the 1988 escapement of Fraser River coho is expected to be insufficient to meet the escapement goal of 175,000.

U.S.

Preliminary indications are that extremely low flow conditions during the summer of 1986 will result in reduced production of natural stocks from Puget Sound. Smolt enumeration studies along the Washington coast indicate reduced natural coho production can be expected from this area as well. Although Washington coastal stocks are not generally impacted significantly by harvests in Area 20 and Areas 7/7A, under ceiling management for the WCVI fishery, the reduced abundance of contributing stocks can be expected to increase harvest pressures on depressed Puget Sound stocks.

[Source Document — TCCOHO (87)-4 *Report of the Coho Technical Committee to the Southern Panel.* November 1987.]

## D. PRELIMINARY 1987 SALMON CATCHES AND ESCAPEMENTS TO THE TRANSBOUNDARY RIVERS

### Stikine River

Stikine River salmon are harvested by Alaska's gill net fisheries in Districts 106 and 108, Canadian lower and upper river commercial fisheries and Canadian subsistence fisheries. Sport fisheries near Wrangell and Petersburg also harvest some Stikine River salmon. Additional catches of unknown quantity are also taken in Alaska troll fisheries. A limited sport fishery exists in the Canadian portion of the river. Catch and effort data for the fisheries in 1987 are compared with past years' averages in Table 5.

Sockeye

Based upon a parent year (1982) escapement of 28,000 sockeye to Tahltan Lake, the total run to the Stikine River in 1987 was forecast to be slightly above average. The run which materialized was less than expected.

Of the total estimated harvest of Stikine River sockeye (excluding test fishery catch and based on preliminary analysis of scale patterns) Canadian fishermen harvested 9,614 (68%) while U.S. fishermen harvested 4,586 (32%).

Using preliminary analysis of stock composition of the commercial catch and test fishery catch-per-unit-of-effort data, the escapement of non-Tahltan stocks was estimated to be 15,872. Thus, it appears the escapement for the non-Tahltan stock was less than the desired (green)[1] range from 20,000 to 40,000 but still within the acceptable (yellow) range from 15,000 to 20,000. However, the weir count of 6,958 for Tahltan sockeye is well below the lower limit (20,000) of the desired green range and also less than the lower limit (18,000) of the acceptable yellow range.

[1]Escapement goals for Stikine River sockeye salmon are presented in *Stikine River Sockeye Salmon Management Plan, 1987,* prepared by the Transboundary Technical Committee.

TABLE 5. AVERAGE CATCHES, DAYS OF FISHING AND EFFORT COMPARED WITH 1987 VALUES FOR THE DISTRICT 106, DISTRICT 108, AND STIKINE RIVER FISHERIES.

| | Chinook | Sockeye | Coho | Pink | Chum | Days | Boat Days |
|---|---|---|---|---|---|---|---|
| DISTRICT 106 | | | | | | | |
| 1960-1986 | 1,442 | 82,162 | 49,015 | 278,949 | 41,672 | 37 | 2,837 |
| 1977-1986 | 1,475 | 120,997 | 60,375 | 324,450 | 38,851 | 32 | 2,260 |
| 1987 | 836 | 136,427 | 34,534 | 243,482 | 42,025 | 20 | 1,767 |
| DISTRICT 108 | | | | | | | |
| 1960-1986 | 2,562 | 13,066 | 12,218 | 16,793 | 49,814 | 32 | 820 |
| 1977-1986 | 422 | 8,807 | 11,147 | 8,052 | 2,968 | 19 | 315 |
| 1987 | 149 | 1,620 | 1,016 | 3,331 | 949 | 13 | 81 |
| CANADIAN LOWER RIVER COMMERCIAL | | | | | | | |
| 1979-1986[1]/ | 1,009 | 15,852 | 6,649 | 1,671 | 592 | 39 | 526 |
| 1987 | 1,151 | 6,138 | 5,728 | 646 | 432 | 20 | 287 |
| CANADIAN UPPER RIVER COMMERCIAL | | | | | | | |
| 1972-1986[1]/ | 126 | 866 | 10 | 2 | 0 | * | * |
| 1979-1986[1]/ | 111 | 696 | 7 | 3 | 1 | 5 | 10 |
| 1987 | 128 | 498 | 0 | 0 | 19 | 7 | 20 |
| CANADIAN UPPER RIVER INDIAN FOOD | | | | | | | |
| 1972-1986 | 746 | 3,797 | 4 | 25 | 3 | — | — |
| 1979-1986 | 881 | 4,603 | 7 | 47 | 5 | — | — |
| 1987 | 1,366 | 2,979 | 3 | 0 | 8 | — | — |

1/ No fishery 1984; in 1979 both lower and upper river commercial catch attributed to lower river commercial catch.
* Data not available.

Chinook

The total run of chinook salmon to the Stikine River in 1987 was predicted to be above average. The District 106 and 108 drift gill net fisheries harvested 836 and 149 chinook respectively. Both of these catches are far below the average of the past 10 years (Table 5). To minimize the incidental harvest of maturing spring-run chinook the area around the river mouth was closed to fishing during the first two weeks. In District 106 immature chinook originating from a variety of stocks predominate in catches and are caught incidentally during fisheries directed at other species.

Harvest of chinook salmon in the inriver fisheries was 444 jacks and 2,201 large adult fish. Catches of chinook were greater than the average (1979-1986) for each of the three fisheries (Table 5). Above average catches occurred in the commercial fishery despite a relatively late opening date, restricted mesh sizes and very limited fishing time early in the season.

The aerial survey count of large adult chinook spawning in the Little Tahltan River was 2,706. This is 116% more fish than observed in 1986 and 40% above the 1981-1985 average. The corresponding weir counts for the Little Tahltan are 4,769 adults in 1987, 2,893 in 1986, and 3,146 in 1985.

Coho

The total coho catch in District 106 of 34,534 is 30% below the 1960-86 average and 43% below the recent 10 year average. Most of this harvest (69%) occurred prior to directed management for coho. Preliminary in-season coded-wire tag information for District 106 indicates hatchery coho contributed 5,500 (16%) fish of the total harvest. The District 108 harvest of 1,015 was well below average (Table 5).

The coho harvest of 5,728 in the lower river commercial fishery was below average (Table 5). Preliminary observations from the test fishery suggest that the abundance of coho in the Stikine River was less than that of sockeye.

Chum and Pink

The District 108 chum salmon harvest of 949 is substantially below the long term (1960-1986) or recent 1977-1986 average (Table 5). The poor catch is primarily a result of restricted fishing time in Frederick Sound imposed to conserve sockeye salmon. Chum catches in the lower river commercial fishery (432) were slightly below the average of 592 for the period 1979-1986.

A below average pink salmon return was predicted for District 108. Pink salmon harvests in District 108 fell below both the 1960-86 and 1977-86 averages (Table 5).

**Taku River**

Taku River salmon are taken in the Alaskan District 111 commercial and test drift gill net fisheries, troll fisheries and in the Juneau area sport fishery. Canadian fisheries for Taku River salmon include inriver commercial and test gill net fisheries and a sport fishery. Catch and effort data for District 111 and inriver commercial fisheries of 1987 are compared with past years' averages in Table 6.

Sockeye

Based on preliminary results from the Canyon Island mark-recapture program and scale pattern analysis of District 111 catches, the total Taku River sockeye return for 1987 was 138,762 fish, 37% below the pre-season forecast of 221,000. The District 111 and Canadian inriver gill net fisheries harvested 47,338 (78%) and 13,554 (22%) sockeye salmon of Taku River origin respectively. These figures exclude Alaska's test fishery catches of 909 Taku sockeye and Canada's test fishery catch of 238. The total sockeye spawning escapement to the Taku River was estimated at 76,723. This falls within the upper end of the interim escapement goal range of 71,000-80,000 fish but 23% below the average 1984-1986 escapement of 100,170 sockeye. In addition to Taku River sockeye, the District 111 drift gill net commercial and test fisheries harvested an estimated 27,709 sockeye returning to Speel and Crescent Lakes in Port Snettisham.

Based on scale pattern analysis, four distinct sockeye stocks can be recognized within the Taku River. Of these, only the Trapper and Tatsamenie Lake escapements are counted through weirs. The Trapper Lake escapement of 12,007 compares closely with the 1983-1986 average of 12,324, but the Tatsamenie Lake count of only 2,794 is 77% below the 1985 and 1986 average of 12,192 (Table 7). The poor Tatsamenie sockeye run strength was reflected early in the season by scale samples taken in the District 111 gill net fishery and the Canyon Island fishwheels.

Despite a total closure of Port Snettisham to fishing from June 21 to August 17, the combined Speel Lake and Crescent Lake sockeye escapement of 17,158 was only half of the escapement target of 34,000 (12,000 Speel plus 22,000 Crescent). The Speel Lake weir count of 9,319 was slightly better than the 1983-1986 average of 8,295, while the Crescent Lake count of 7,839 was 15% below the average weir count for the same period (Table 7).

**TABLE 6.** AVERAGE CATCHES, DAYS OF FISHING AND EFFORT COMPARED WITH 1987 VALUES FOR THE DISTRICT 111 AND TAKU RIVER FISHERIES.

| | Chinook | Sockeye | Coho | Pink | Chum | Days | Boat Days |
|---|---|---|---|---|---|---|---|
| DISTRICT 111 COMMERCIAL | | | | | | | |
| 1969-1978 | 4,790 | 58,242 | 35,127 | 72,718 | 82,181[1]/ | 32.1 | 2,529 |
| 1979-1986 | 2,330 | 81,025 | 31,826 | 168,902 | 79,344 | 36.5 | 2,881 |
| 1987 | 2,060 | 74,525 | 35,157 | 357,708 | 121,630 | 32.8 | 2,321 |
| DISTRICT 111 TEST | | | | | | | |
| 1987 | 0 | 1,431 | 542 | 4,935 | 1,598 | 8 | 16 |
| CANADIAN COMMERCIAL | | | | | | | |
| 1979-1986[2]/ | 322[3]/ | 17,198 | 4,760 | 9,075 | 5,583 | 35.3 | 331.7 |
| 1987 | 233[3]/ | 13,554 | 5,599 | 6,503 | 2,270 | 26.2 | 281.0 |
| CANADIAN TEST | | | | | | | |
| 1986 | 0 | 42 | 1,292 | 0 | 25 | 44.0 | 44.0 |
| 1987 | 3 | 238 | 815 | 34 | 733 | 58.5 | 58.5 |

1/ Excludes 1975 when fall fishery was not opened.
2/ Excludes 1982 when fishery was restricted.
3/ Includes jacks.

**TABLE 7.** SALMON COUNTS AT TAKU RIVER AND PORT SNETTISHAM WEIRS, 1983-1987.

| Species System | 1983 | 1984 | 1985 | 1986 | Average | 1987 |
|---|---|---|---|---|---|---|
| Sockeye | | | | | | |
| Trapper Lake | 7,502 | 13,084 | 14,889 | 13,820 | 12,324 | 12,007 |
| Tatsamenie L. | | | 13,015 | 11,368 | 12,192 | 2,794 |
| Hackett River | | | 2,309 | 1,004 | 1,657 | 910 |
| Speel Lake | 10,484 | 9,764 | 7,073 | 5,857 | 8,295 | 9,319 |
| Crescent Lake | 19,422 | 6,707 | 7,249 | 3,414 | 9,198 | 7,839 |
| Coho | | | | | | |
| Tatsamenie L.[1]/ | | | 106 | 80 | 93 | 173 |
| Hackett River | | | 1,031 | 2,723 | 1,877 | 1,715 |

1/ Weir was removed prior to end of coho run.

Chinook

During 1987 the District 111 drift gill net fishery harvested 2,060 chinook salmon. Although this is an average chinook harvest for the 1979-1986 period (Table 6), a larger than average proportion of the harvest was comprised of immature fish. The Canadian harvest of 233 adult chinook salmon was below the 1979-1986 average harvest of 322 (Table 6). Incidental harvests were minimized by the relatively late fishery opening date, restricted mesh sizes, and limited fishing time allowed early in the season.

The maximum number of large adult chinook salmon observed during aerial surveys in the Nakina and Nahlin River was 4,028 fish. This escapement is 74% of that seen in these systems in 1986 but is approximately equal to the recent ten year average of 4,214 fish (Table 8).

**TABLE 8.** PEAK ESCAPEMENT COUNTS OF CHINOOK SALMON IN SELECTED TAKU RIVER TRIBUTARIES.

| Year | Nakina | Nahlin | Combined |
|---|---|---|---|
| 1977 | 3,850 | 650 | 4,500 |
| 1978 | 1,620 | 624 | 2,244 |
| 1979 | 2,110 | 857 | 2,967 |
| 1980 | 4,500 | 1,531 | 6,031 |
| 1981 | 5,110 | 2,945 | 8,055 |
| 1982 | 2,533 | 1,246 | 3,779 |
| 1983 | 968 | 391 | 1,359 |
| 1984 | 1,887 | 951 | 2,838 |
| 1985 | 2,647 | 2,236 | 4,883 |
| 1986 | 3,868 | 1,612 | 5,480 |
| Average 1977-1986 | 2,909 | 1,304 | 4,214 |
| 1987 | 2,906 | 1,122 | 4,028 |

Coho

The District 111 drift gill net coho catch of 35,157 is slightly above the recent 1979-1986 average of 31,826 fish, but similar to the 1969-1978 average of 35,127 fish.

The Canadian harvest of 5,599 coho salmon exceeded the 1979-1986 average harvest of 4,760 fish.

Escapement information is incomplete, but late-season aerial surveys of lower river spawning sites indicate an average to above-average escapement in these areas. A preliminary mark-recapture estimate for escapement into Canadian portions of the drainage was made. This estimate is probably conservative because tagging was terminated prior to the end of the run. The estimated coho escapement past the Canadian fishery was approximately 35,000 to 40,000.

Chum

The commercial chum salmon harvest in District 111 was 121,630 fish (Table 6), representing the third highest catch in the district since 1960. This harvest has comprised of summer and fall runs. Since 1984, the Snettisham hatchery has significantly increased its contribution of summer chum to the fishery. Preliminary tag return data indicate that of the 57,226 summer chum caught prior to statistical week 34 approximately 13,000 were of hatchery origin.

The fall fishery harvests Taku origin chum and coho salmon and chum salmon returning to Port Snettisham. The total fall chum harvest of 64,404 is the highest since 1980. However, 57% of the catch was taken in Stephens Passage and Port Snettisham, indicating the primary run strength was returning to Port Snettisham. Extremely poor test fish catches from inside Taku Inlet supports this conclusion.

The Canadian commercial fishery harvested 2,270 chum salmon. This number is substantially below the 1979-1986 average of 5,583 fish (Table 6). District 111 and Canadian inriver test fisheries harvested 1,598 and 733 chum, respectively.

Escapement of chum salmon to the Taku River in 1987 is not known. High water conditions in the fall hampered aerial surveys and no population estimate was generated from the adult mark-recapture program. Further analysis of the Canadian test fishery data may produce an estimate of the chum salmon escapement.

Pink

Based on the extremely large 1985 parent year escapement of pink salmon into the Taku River, the 1987 return was anticipated to be very good. This year's pink catch of 357,708 in District 111 is over twice the 1979-1986 average (Table 6). This catch comprises Taku River, Stephens Passage, and hatchery stocks.

Preliminary surveys indicate excellent escapements into the Taku River and Stephens Passage systems, with the Taku River far exceeding its escapement goal of 150,000 to 250,000 pink salmon.

**Alsek River**

Fisheries for Alsek River salmon include an Alaskan set net fishery in Dry Bay at the mouth of the Alsek and Canadian Indian food and sport fisheries in the upper Tatshenshini River drainage. Sockeye and coho salmon are the target species in the Dry Bay fishery with small numbers of chinook and chum salmon taken incidentally. Unknown but presumed small numbers of Alsek River salmon are taken incidentally in several small Yakutat area fisheries. Sockeye and chinook salmon are target species in Canadian fisheries.

Sockeye

Management objectives for the Alsek River included rebuilding the early portion of the Klukshu River stock and to allow a total sockeye escapement to the Klukshu of 20,000 to 30,000 sockeye. Based on parent year escapements, the 1987 return of early and late run Alsek sockeye was expected to be above average.

The actual 1987 Alsek River return was very disappointing in view of parent year escapements. The 1987 Dry Bay set net catch of 11,299 sockeye was only 41% of the recent ten-year average (Table 9). Over half of the season's catch of sockeye was taken during the first three weeks of the fishery. Fishing time was restricted during most weeks of the sockeye season and the fishery was closed completely during the last week of July.

The sockeye harvest in the Indian food and recreational fisheries in Canada was 1,158 and 383 fish respectively. This represents 30% and 77% of the most recent ten-year averages of 3,805 and 498 fish, respectively (Table 9).

The Klukshu River escapement of 10,504 sockeye was the lowest recorded since the weir was installed in 1976, and represented only 52% of the 1976 to 1986 average escapement (Table 10).

**TABLE 9.** HISTORICAL AVERAGE CATCHES, NUMBER OF DAYS FISHED, AND EFFORT COMPARED WITH 1987 VALUES FOR THE ALSEK RIVER FISHERIES.

| | Chinook | Sockeye | Coho | Pink | Chum | Days | Boat Days |
|---|---|---|---|---|---|---|---|
| ALASKA COMMERCIAL | | | | | | | |
| 1967-1976 | 1,011 | 21,084 | 5,524 | 33 | 178 | 59.3 | * |
| 1977-1986 | 983 | 27,400 | 7,699 | 293 | 575 | 41.3 | * |
| 1987 | 345 | 11,299 | 2,537 | 0 | 1,922 | 38.5 | 379 |
| CANADIAN SPORT | | | | | | | |
| 1977-1986 | 258 | 498 | 115 | | | | |
| 1987 | 327 | 383 | 23 | | | | |
| CANADIAN SUBSISTENCE | | | | | | | |
| 1977-1986 | 125 | 3,805 | 5 | | | | |
| 1987 | 125 | 1,158 | 0 | | | | |

* Data not available.

**TABLE 10.** KLUKSHU RIVER WEIR COUNTS OF CHINOOK, SOCKEYE, AND COHO SALMON, 1976 TO 1987.

| Year | Chinook | Sockeye | Coho[1/] |
|---|---|---|---|
| 1976 | 1,244 | 11,691 | 1,572 |
| 1977 | 3,144 | 26,791 | 2,758 |
| 1978 | 2,976 | 26,867 | 30 |
| 1979 | 4,403 | 12,311 | 175 |
| 1980 | 2,637 | 11,750 | 704 |
| 1981 | 2,113 | 20,348 | 1,170 |
| 1982 | 2,369 | 33,699 | 189 |
| 1983 | 2,537 | 20,492 | 303 |
| 1984 | 1,672 | 12,727 | 1,402 |
| 1985 | 1,458 | 18,620 | 350 |
| 1986 | 2,709 | 24,850 | 71 |
| Average | 2,478 | 20,014 | 793 |
| 1987 | 2,616 | 10,504 | 202 |

1/ Weir was removed prior to end of coho run.

Chinook

Chinook spawning escapements in the Klukshu index tributary of the Alsek River for the principal brood years of the 1987 return (1981-83) were about average. Chinook returns to the Alsek have recently been well below expectations, however, so the U.S. Alsek River fishery was restricted to improve the spawning escapement. The Dry Bay chinook catch was 345 fish, only 35% of the recent ten-year average (Table 9).

Chinook catches in the Canadian recreational and Indian food fisheries were 327 and 125 fish, respectively (Table 9).

The escapement of chinook salmon to the Klukshu River was 2,616 fish, slightly exceeding the 1976 to 1986 average of 2,478 (Table 10).

Coho

The Alsek River coho harvest was extremely poor. The harvest of 2,537 fish was the second lowest since 1975 and represents only 33% of the recent ten-year average (Table 9). This does not necessarily reflect the actual run strength, however. Fishing effort during the fall season was extremely low because of good fishing in the nearby East River.

[Source Document — TCTR (87)-5 *Preliminary 1987 Salmon Catches and Escapements to the Transboundary Rivers.* November 13, 1987.]

## E. NORTHERN BOUNDARY AREA 1987 FISHERIES MANAGEMENT REPORT AND PRELIMINARY EXPECTATIONS FOR 1988

### Southeast Alaska

Management Performance Relative to Treaty Requirements

1. District 104 Seine Fishery

The U.S.-Canada Treaty calls for a maximum total harvest of 480,000 sockeye salmon from District 104 prior to statistical week 31 over the four year period 1985 through 1988. In 1987 a total of 72,000 sockeye salmon were taken prior to statistical week 31; in 1986, 91,000; and in 1985, 101,000. This leaves a balance of 216,000 sockeye salmon that have not been harvested.

2. District 101 Tree Point Gill Net Fishery

The U.S.-Canada Treaty specifies that the District 1-A and 1-B gill net fishery be limited in a manner that will result in an average annual harvest of 130,000 sockeye salmon. The 1987 harvest of sockeye salmon in the Tree Point gill net fishery was 108,000. The average over the past three years is 142,000 and over the last 14 years (1974-1987), 125,000.

1988 Salmon Forecast for Southern Southeast Alaska

The brood year (1986) escapement index of pink salmon for southeast Districts 101 to 108 was the highest on record. Winter conditions encountered by pink returning in 1988 were milder than average. Based on these data, the preliminary mid-point forecast for the 1988 pink salmon total run for southern southeast Alaska is 44.1 million. Exceptionally large numbers of pink fry were observed during the early marine survival documentation program and this suggests that if there is an error in the 1988 prediction it will be an underestimation of the return. With an escapement goal of 6 million a harvest of approximately 38 million pink salmon can be anticipated.

Distribution in the return should be similar to that of recent years. The majority of fish should be harvested off the west coast of Prince of Wales Island in Districts 103 and 104. A strong showing in District 101 is also expected.

### Northern British Columbia

Management Performance Relative to Treaty Requirements

1. Areas 3(1-4) and 5-11 Pink Net Catch

Under the Pacific Salmon Treaty the outside portions of Statistical Areas 3 and 5 (Management Units 3-1, 3-2, 3-3, 3-4 and 5-11) are to be managed such that an average annual pink harvest of 900,000 is achieved.

In 1987, 1,860,462 pink salmon were harvested in Management Units 3(1-4) and 5-11 combined. The high Area 3 catch in 1987 reflects the strength of the pink return to Areas 3 and 4. The proportion of the catch taken in subarea 3(1-4) was lower than any years in the 1970s and similar to the pattern of the past four years. The effort level in Area 3 in 1987 was very low for gill nets, and at moderate levels for seines. Of the total seine effort in 1987, 59% was expended in subareas 3(1-4), less than the pre-Treaty 1973-84 average of 68%.

The years 1985, 1986 and 1987 have been characterized by exceptionally large pink returns to Areas 3, 4. The Skeena-Nass fisheries are managed to harvest pink surplus to Areas 3, 4 and 5. The outcome has been large or record level pink catches, and consequently the current average annual pink harvest in the Treaty area (subarea 3(1-4) and 5-11) has averaged 1,750,000.

2. Area 1 Pink Troll Fishery

The pink troll catch from the southwest portion of Area 1 (that area south and west of Langara Island) was excluded from the Area 1 1987 catch for purposes of the Treaty. The Area 1 pink troll fishery regime was modified for 1987 to allow a total Area 1 pink troll catch ceiling of 800,000 in the Treaty portion of Area 1. In addition, an area adjacent to the Canada-U.S. boundary in the northern portion of Area 1 (Area 101-4, 101-8 and those portions of 101-3 and 103 north of 54 degrees 37 minutes N. latitude), would close to pink retention when the Area 1 Treaty area catch reached 300,000.

3. Treaty Related Performance

The pink catch in the Treaty area did not reach the overall ceiling of 800,000. The 300,000 subceiling nonretention area was implemented as required when the catch reached 300,000 (closure: midnight, July 31). The small number of trollers that remained fishing in the A-B line area after pink retention was implemented were fishing coho and were complying with pink nonretention.

The in-season monitoring of the Area 1 pink troll fishery compared well with the saleslip estimates for the first three weeks of July, then underestimated for the last half of the season. Since the bulk of the Treaty area catch occurred during the first three weeks of July, the date of closure at the subceiling of 300,000 is believed to be accurate.

1988 Salmon Forecast for Northern British Columbia

1. Area 1 Expectations

(a) Sockeye

There are no significant local sockeye stocks in Area 1. A catch of 70,000 Skeena and Nass sockeye is anticipated.

(b) Pink

A surplus of pink is expected to Naden Harbour and possibly to Masset Inlet.

(c) Chum

A small surplus is anticipated to Masset Inlet.

(d) Fishing Plans

A fishery on Skeena-Nass bound sockeye and pink salmon is planned, and management will be based on abundance of these stocks. Fisheries in August and September will be conducted in the vicinity of Naden Harbour and Masset Inlet to assess pink and chum strength.

2. Area 3 Expectations

(a) Sockeye

A poor sockeye return to Area 3 of 390,000 is expected and should provide for an Area 3 net catch of 160,000. In addition a catch of 175,000 Skeena sockeye is anticipated for a total catch of 335,000. There is concern that this expectation may be optimistic if the coastwide sockeye depression evident in recent returns was to continue through 1988.

(b) Pink

A pink return of 775,000 is anticipated, sufficient to provide an Area 3 catch of 400,000. In addition, 800,000 Skeena pink should be caught in Area 3 net fisheries, for a total catch of 1,200,000.

(c) Chum

Area 3 chum stocks remain depressed. An incidental catch of 50,000 Area 3 chum and 80,000 chum bound for other areas is anticipated.

(d) Fishing Plans

A moderate level sockeye fishery and a large pink fishery are anticipated. Measures to reduce the catch of coho, chum and chinook will continue and no significant changes in the harvest patterns are anticipated.

3. Area 4 Expectations

(a) Sockeye

The Skeena sockeye return is forecast to be 2,400,000 providing an Area 4 commercial net catch of 1,120,000. The concern over the poor coastwide sockeye return in recent years also applies to the Skeena system.

(b) Pink

The total Skeena pink return is forecast at 5,000,000. This is expected to provide an Area 4 catch of 2,000,000.

(c) Chum

Skeena chum escapements are severely depressed and chum are only caught incidentally.

(d) Fishing Plans

A large July fishery for sockeye, coupled with a large August fishery for pink is the fishing plan for 1988. No departures from the 1987 management practices are currently planned.

4. Area 5 Expectations

(a) Sockeye

Small local stocks will not have a harvestable surplus in 1988.

(b) Pink

A pink surplus of 435,000 local stocks coupled with a catch of 400,000 Skeena pink should provide a total catch of 835,000 in Area 5.

(c) Chum

Chum stocks are depressed and no target fisheries are anticipated.

(d) Fishing Pattern

Area 5 fishing patterns will be based on the abundance of Skeena sockeye and pink.

[Source Document — TCNB (87)-3 *Northern Boundary Technical Committee Report — U.S./Canada Northern Boundary Area 1987 Salmon Fisheries Management Report and 1988 Preliminary Expectations.* November 1987.]

## F. PRELIMINARY REVIEW OF 1987 SOUTHERN CHUM FISHERIES

### United States Waters

This report provides a preliminary review of the 1987 fishing season and is subject to correction and revision as additional information becomes available and additional fisheries are conducted. Most terminal area Washington chum fisheries are still underway and in-season assessments of stock status will continue to be made. Therefore, this report is restricted to a description of the management actions and harvests, through early November, for those fisheries of most concern under the Pacific Salmon Treaty.

The fisheries in United States (U.S.) waters that are believed to harvest a significant proportion of Canadian origin chum salmon are those in the Strait of Juan de Fuca (Areas 4B, 5 and 6C), the San Juan Islands (Area 7) and Point Roberts (Area 7A). The majority of the harvest in the Strait of Juan de Fuca is believed to be of U.S. origin, and management of this limited effort treaty Indian gill net fishery has generally been aimed at the needs of Puget Sound stocks. Fisheries in Areas 7 and 7A are believed to harvest primarily Canadian origin chum salmon and are the only Washington chum fisheries for which a specific 1987 fishing regime was defined by the Pacific Salmon Commission. Other chum fisheries in Washington waters are primarily terminal fisheries which harvest stocks of local origin.

Management Strategy

The pre-season management strategy developed for Areas 4B, 5 and 6C for 1987 was basically unchanged from what had been used in recent years and was consistent with the chum annex requirements.

The management regime for Areas 7 and 7A was established by the Pacific Salmon Commission at its March 1987 meeting. The agreement called for the fishery in these areas to be managed on the basis of catch levels that occur in the Canadian fishery in Johnstone Strait (based on the ""clockwork" management plan).

Fishery Review

Throughout the chum season, U.S. and Canadian technical staffs kept in close contact on the status of the chum run size entering Johnstone Strait. From the initial in-season update, indications were that the chum run was lower than expected, and although there was some improvement towards the end of the migration, the run size estimate never exceeded 3.0 million which would have allowed a greater than 10% exploitation rate. Therefore, the U.S. fisheries in Areas 7/7A were managed with the intent of limiting harvest to no more than 20,000 chum.

Virtually all of the chum harvested in Areas 7/7A were taken in fisheries directed on coho. An initial coho fishery took place in these areas on September 27 and 28 and harvested 2,527 chum. A reef net fishery for coho opened on September 28 and continued until September 30, incidentally harvesting a total of 974 chum.

Following an assessment of the catches from this first fishery and a determination that additional coho fishing was warranted, another fishery was scheduled. The fishery was designed with the intent of remaining within the allowable total chum catch of 20,000. The treaty Indian fishery occurred on October 7, and the non-Indian fishery took place on October 8. Total chum catch in these two fisheries was 22,063, bringing the season total catch up to 25,709.

Spawning Escapement

Spawning escapement estimates for Washington origin chum stocks will not be available until the late spring of 1988. The major chum runs are currently in inside waters and terminal fishing areas. In-season estimates of chum abundance are up significantly over the pre-season forecasts and significant harvests have occurred or are occurring. Spawning escapement goals are expected to be achieved.

[Source Document — *Preliminary Review of 1987 Washington Chum Fisheries in the Strait of Juan de Fuca, San Juan Islands and Southern Georgia Strait (Point Roberts).* November 1987.]

**Canadian Waters**

No report was available at the time of preparation of this report

# 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 July 1, 1987 to March 31, 1988 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 Report to the November 1987 Meeting of the Pacific Salmon Commission. TCCHINOOK (87)-5. October 23, 1987.**

The purpose of this report is to present the preliminary information on estimates of 1987 chinook salmon catches, a brief overview of 1987 fisheries and available escapement information.

Preliminary 1987 catch statistics reported for ceilinged fisheries are fairly close to the PSC ceilings. The major exception is the Georgia Strait troll and sport fisheries, which were well below the ceiling. The low catches in the Georgia Strait troll and sport fisheries, occurred despite normal effort levels and therefore are cause for major concern regarding the rebuilding of the Georgia Strait stocks. Target catch levels in Alaska and northern B.C. troll fisheries were attained during very short seasons.

Preliminary information indicates that coastwide spawning patterns are continuing to show a variable rate of response to the rebuilding program. In the case of lower Georgia Strait stocks, the declining trend in escapements may not yet have stopped.

Technical Committee Concern

In PSC document TCCHINOOK 87-4, the CTC indicated in our assessment of the rebuilding program for the lower Strait of Georgia chinook stock, that the potential of being able to rebuild this stock by 1998 was critically dependent upon three assumptions:

i) that survival of the 1985 - 87 brood years for the natural chinook stocks in southern B.C. would improve to base period averages; and

ii) that survival of chinook released from Strait of Georgia hatcheries will not be reduced through density dependent mechanisms resulting from the substantial increases in numbers released; and

iii) that 25% reduction in harvest rates in net fisheries would be accomplished.

Low total abundance of chinook in the Georgia Strait and poor recruitment of age-2 chinook to the sport fishery (sampling through September 1987) indicate survival of hatchery and wild stocks has been poor. Consequently, the Committee is concerned that assumptions i) and ii) above are not appropriate. Further conservation actions would therefore be required to rebuild this stock by 1998.

Progress on Other Assignments

The report contains consensus statements on the following topics:

— "clarification of pass-through commitments": This statement presents some background on this issue and identifies four general approaches for implementing and monitoring pass-through commitments.

— "incidental fishing mortalities of chinook salmon in fisheries of concern to the Pacific Salmon Commission": This statement presents the results of our review of agency reports, numbers of mortalities, a status report on our assessment activities and three recommendations for PSC consideration.

— "preliminary review of 1987 fisheries and escapements": This statement presents an initial summary of fishery and stock status through 1987.

— "matrix of data availability": This statement outlines data availability as it relates to PSC discussions on procedural reform.

— "progress report on assessment of rebuilding of transboundary chinook salmon stocks".

— "progress report on chinook stock identification in Juan de Fuca Strait, northern Puget Sound and Georgia Strait".

## B. JOINT CHUM TECHNICAL COMMITTEE

**Final 1986 Post Season Summary Report. TCCHUM (87)-5. November 1987.**

This Joint Chum Technical Committee report presents information for 1986 chum salmon in southern British Columbia and Washington, as required in Chapter 6 of Annex IV of the Pacific Salmon Treaty (PST). Detailed information may be found in the Canadian and United States agency reports appended to this report.

The PST called for Canada to manage its 1986 chum salmon fisheries in accordance with past management plans, i.e., the clockwork strategy, while the U.S. was to manage its chum salmon fisheries in U.S. Areas 7 and 7A to a negotiated ceiling, the magnitude of which was dependent on the run size passing through Johnstone Strait. The PST did not contain any requirements for special action in Canadian west coast of Vancouver Island fisheries or in fisheries in U.S. Areas 4B, 5, and 6C. The following summarizes the final submissions of the two countries on the 1986 chum salmon returns.

Southern British Columbia

The two areas of concern under the PST are those waters inside of Vancouver Island from Johnstone Strait to the southern portion of Vancouver Island (Inside) and those waters off the west coast of Vancouver Island (West Coast).

1. Inside Chum Salmon

The run size of fall chum salmon expected to return through Johnstone Strait was 2,774,000 of which 1,477,000 were to be produced from Inside wild spawning areas, 1,197,000 from Inside enhancement facilities and 100,000 from U.S. waters. The size of the Fraser River component in the expected total chum run was 977,000, of which 571,000 would be produced from wild spawning areas and 406,000 from enhancement facilities. The remaining wild spawning areas in the Inside area were expected to produce 906,000 chum salmon, while the remaining enhanced return, the majority of which originate from the mid-Vancouver Island area, was expected to be 791,000.

The post-season run size of chum salmon returning to Inside waters, including U.S. origin chum salmon returning through Johnstone Strait, as determined from final catch and escapement data, was 3,820,000 fish, 43% above the expected run size. The total return of chum salmon originating from the Fraser River was also 43% above the expected run size and was estimated to be 1,421,000, including estimates of catches in pertinent U.S. and Canadian commercial net fisheries between the northern end of Vancouver Island and the Columbia River.

2. West Coast Chum Salmon

The expected return of Nitinat enhanced origin chum salmon was 239,000. The return of chum salmon of wild origin to Nitinat was not predicted.

The post-season estimate of the run size of chum salmon of Nitinat origin was 451,000, including chum of enhanced and wild origin.

United States

The two areas of concern under the PST are those waters along the U.S.-Canada border from the outer Strait of Juan de Fuca to Point Roberts (Puget Sound) and the waters along the outer coast of Washington State (Washington Coastal).

1. Puget Sound Chum

The total Puget Sound run size (all timing components) expected to return to Washington State waters was 1,239,000, a high prediction for an even year return, of which 444,000 were from wild spawning areas and 795,000 were from enhancement facilities. The stocks that were expected to contribute the largest returns were: Skagit River (244,000); south Puget Sound (289,000); and Hood Canal (372,000).

The post-season run size, as estimated from run reconstruction, was 1,529,000, a 23% increase over the pre-season forecast. Both enhanced and wild stocks showed higher returns, with the exception of wild stocks returning to the Strait of Juan de Fuca tributaries and the Nooksack-Samish area.

2. Washington Coastal Chum

On the Washington coast, chum salmon return in significant numbers to Grays Harbor and Willapa Bay. In addition, a small return of enhanced origin chum salmon occurs in the Quinault River. The 1986 pre-season expected total run size of the Washington coastal chum salmon was 207,000. The actual return, as estimated by run reconstruction, was 153,000.

**Historical Canadian and United States Chum Salmon Data Report for the Years Prior to 1985. TCCHUM (88)-1. January 1988.**

The summary and agency reports are intended to provide the majority of the historical information required by paragraph 1 of Chapter 6, Annex IV of the Pacific Salmon Treaty (PST). The report includes descriptions of the fishery areas and chum stocks of concern under the PST, the management policies on and processes involved in managing the fisheries on those stocks, and the stock assessment procedures used by the two countries. Also included are the terms of reference for the Joint Chum Technical Committee and a list of the participants who contributed to the report.

**Progress Report on Genetic Stock Identification of Chum Salmon in Southern British Columbia and Washington. TCCHUM (88)-2. February 14, 1988.**

The Pacific Salmon Commission assigned the Joint Chum Technical Committee the task of developing estimates of the stock composition of catches of chum salmon in intercepting fisheries in southern British Columbia and Washington. The progress that the Chum Technical Committee has made on this assignment is summarized as follows:

— A review program has been initiated to evaluate the differences in the statistical techniques used by Canada and Washington.

— The sampling programs conducted in 1986 were evaluated. Sampling programs for the west coast Vancouver Island troll fishery and the United States San Juan Islands net fishery were determined to not be adequate to estimate the stock composition of the catch in these fisheries.

— The Washington baseline data base has been enhanced with the addition of several stocks and resampling of all major stocks.

— An interim joint baseline data base was developed. The Committee could not agree that the joint baseline produced estimates with an acceptable level of bias.

— A series of recommendations were made regarding the steps needed to arrive at joint estimates of the stock composition of the catch.

**Summary Report on the Current and Future Management and Enhancement Intentions of the United States and Canada for Southern Chum Salmon. TCCHUM (88)-3. February 1988.**

The October 1987 assignment to the Joint Chum Technical Committee from the Pacific Salmon Commission was to prepare a summary report on the long-range chum salmon management and enhancement intentions of each country. The report should contain any fundamental differences in management or management approaches and an evaluation of their potential effects on future interceptions.

It is a difficult task to predict, with any certainty, future management and enhancement activities, especially while implementation of the Pacific Salmon Treaty (PST) is still in its early stages. Therefore, the Committee felt that the only meaningful forecasts possible would be for the next one or two chum cycles (4-8 years). This was based on the assumption that any major enhancement activities that are not already proposed and placed into the funding processes of each country are not likely to be on-line and producing harvestable fish for one-to-two cycles. Management strategies for chum have been relatively stable in recent years and there are no indications or major changes on either side.

The report provides an overview of southern chum management by the U.S. and Canada and illustrates a basic difference in approach. A better understanding of this difference should be helpful in preventing misunderstandings about each other's fisheries and reducing conflict. While there are exceptions and some variation caused largely by domestic allocation and other localized needs, the two countries utilize the following general management philosophies.

Canada is currently managing to provide wild stock rebuilding by reducing harvest rates in the mixed-stock fishery in Johnstone Strait. Terminal area fisheries are used to harvest those fish that could not be harvested in the mixed-stock fishery due to natural stock limitations. Additionally, Canada employs enhancement as a means to augment harvests, as well as escapement of certain stocks.

Inside stocks are harvested in two types of fisheries, a mixed-stock fishery in Johnstone Strait and terminal fisheries in the Strait of Georgia and the Fraser River. This approach provides for a continuation of traditional fishing patterns and harvest opportunity in areas of higher product quality.

Harvest rates are established annually for Johnstone Strait fisheries at levels necessary to facilitate wild stock rebuilding. For stocks that have a surplus beyond escapement, after the harvest in Johnstone Strait, additional harvest may be taken in terminal areas. This combined approach, mixed and terminal, has recently resulted in a catch distribution of 54% in Johnstone Strait and 46% in the terminal areas.

The Nitinat stock (wild and enhanced) is managed for a fixed escapement. Enhancement is used to augment wild escapement and to stabilize annual harvest. The fishery targeting on Nitinat stock occurs in the marine area adjacent to Nitinat Lake. Some interception of passing stocks occurs. No targeted fisheries are conducted on the Juan de Fuca Strait stock due to small harvestable surplus.

In Washington, chum management emphasizes regional natural stock management. Only one of six Puget Sound regions (Hood Canal) has major chum enhancement and management focused on the hatchery stocks. Washington fisheries are managed to achieve fixed escapement goals each year. Management emphasizes terminal area fisheries within each region, where harvest can be directed at discrete stocks or stock groupings. The mixed-stock fisheries in the western Strait of Juan de Fuca and San Juan Islands are traditional fisheries. They are also required under domestic treaty obligations to provide fishing opportunity for Indian tribes in usual and accustomed fishing locations, as well as to balance domestic allocations. These fisheries are small in comparison to the terminal fisheries (20% of the total harvest). Domestic conservation and allocation constraints, as well as PSC mandated ceilings, can also limit the Puget Sound mixed-stock fisheries.

The two countries' management strategies for chum fisheries can be categorized as follows:

| Fishery | Strategy |
|---|---|
| Johnstone Strait | Variable harvest rate |
| U.S. Strait of Juan de Fuca | Fixed effort |
| Qualicum, Nitinat | Fixed escapement |
| U.S. San Juans/ Pt. Roberts | Variable ceilings |

Both countries intercept chum destined for the other country's rivers, but the manner in which these interceptions have occurred is quite different due to the differences in management strategy. These differences in strategy will also have an impact on the future trend of interceptions. Interceptions of Washington origin chum occur in the mixed-stock fisheries in Johnstone Strait and in terminal area fisheries at Qualicum and Nitinat directed at Canadian origin fish, with U.S. fish making up a small proportion of the catch. When these fisheries catch large numbers of fish, the interceptions of U.S. origin chum may be significant. Of the two Washington fisheries that intercept Canadian chum, the most significant interceptions occur in the San Juan Island - Point Roberts fishery which harvest primarily Canadian origin fish. The total catch in this fishery is not large but the high proportion of Canadian origin fish may result in significant interceptions. The other fishery that intercepts chum of Canadian origin is the treaty Indian fishery in the Strait of Juan de Fuca. This fishery is not large and is composed primarily of U.S. origin fish.

In summary, chum interceptions in the two countries' fisheries can be categorized as follows:

| Fishery | Interceptions |
|---|---|
| Johnstone Strait and U.S. Strait of Juan de Fuca | Directed at domestic mixed-stock with incidental interpretations. |
| Qualicum, Nitinat | Terminal area fishery with incidental interceptions. |
| U.S. San Juans/Pt. Roberts | Directed at U.S. and Canadian mixed stocks. |

The Committee is unable to quantify future interception levels and trends. However, we have made the following general observations based on our understandings of current management strategies. Both of the Washington chum fisheries that catch Canadian chum have been restricted by the chum annex of the PST, and are expected to continue to be restricted. Areas 7/7A are expressly limited to harvest ceilings, while the Strait of Juan de Fuca fishery is limited by gear and participation. The Strait of Juan de Fuca fishery has experienced a growth in catch in the last three years due to favorable fishing conditions and good chum abundance, but further significant growth is not expected under current limitations. Both of these fisheries may be further constrained, in any given year, by domestic allocation and conservation needs that have not as yet been defined. Future stock compositions in Areas 7/7A could change given Canadian natural stock rebuilding.

Interceptions of U.S. origin chum in Canadian WCVI troll and net fisheries are not expected to increase significantly over current levels. The troll chum harvest, which increased considerably in 1985 and 1986, is expected to be variable due to fluctuations in chum availability and fishing opportunity, but should remain below the levels of 1985 and 1986 due to domestic allocation constraints. The chum fishery at Nitinat has grown in recent years due to increased enhancement. In 1984 the fishery was moved outside the lake, with associated increased interceptions of non-Nitinat origin fish. The hatchery in this area is now at full production and full impact on harvest levels should be realized in the next couple of years. Interception levels should not change significantly after full hatchery production is realized. However, it should be noted that the natural stock demonstrates large variations in survival with occasional boom years, such as 1985, which can result in very large harvests and interceptions.

Interception levels in most inside B.C. fisheries are not expected to change significantly. The only area that might be expected to experience a change in interceptions is Johnstone Strait. In this area the clockwork management strategy has been established with the intent to accomplish the rebuilding of depressed natural chum stocks, and has resulted in harvest rates of 10 to 20 percent in recent years. As the clockwork strategy succeeds in rebuilding the stocks it is expected the allowable harvest rates in Johnstone Strait, and the associated interceptions, will increase to a level comparable to those observed in 1982 and 1986 (30 - 40%). Of course, actual future interceptions can be dependent upon a variety of factors such as the size of U.S. runs, migration routes and timing of fisheries. Hatchery production in both the Qualicum area and the Fraser River has reached the capacity of the facilities, and no new major projects are expected to come on-line soon.

Finally, in looking to the future, the Committee was asked to identify needed future work efforts. In our evaluation of differences in management and expectations for future interception levels, it has become apparent that we are unable to predict, on an annual basis, the proportion of U.S. or Canadian stocks that migrate around either side of Vancouver Island (rate of diversion). A better understanding of migration routes and their annual variability is vital to our ability to project and evaluate the effect of future changes in management or enhancement strategies. This understanding will likely be derived from fishery stock identification information such as GSI, and jointly developed run reconstruction models. Efforts such as these will also allow the Committee to examine timing and location of stock passage and identify and recommend alternative means for limiting interceptions. Therefore, the Committee recommends that its future work efforts be directed to continue improvements in the techniques and fishery coverage of stock identification work, and that work begin on chum run reconstructions that account for changes in migration routes and timing.

## C. JOINT TECHNICAL COMMITTEE ON COHO

**Report of the Coho Technical Committee to the Southern Panel TCCOHO (87)-4. November 1987.**

The Coho Technical Committee convened on November 2-3 in Vancouver, Canada to address the work assignments made by the Pacific Salmon Commission at its October 6-8, 1987 executive session. At least one other meeting of the Committee will be required to develop the time schedules for estimation of stock composition for Southern Panel areas and for filling data gaps in northern areas. This report: (1) reviews preliminary data for 1987 fisheries and identifies potential conservation concerns of relevance to fisheries in Canadian Area 20 and U.S. Areas 7/7A; and (2) presents a progress report on activities undertaken under the Committee's general instructions in Chapter 5 of Annex IV, including the following topics:

- Evaluation of Management Actions
- Annual Review of Coho Stock Status
- Information on Exploitation Rates and Patterns
- Productivity
- Historical Catch and Fishery Information
- Estimate Stock Composition
- Alternative Management Strategies
- Research Needs
- Indicator Stock Programs
- Stock and Fishery Assessments and Management Recommendations
- Programs to Assure Attainment of Spawning Escapement Goals and Prevent Overfishing
- Exchange Information to Assess Effectiveness of Alternative Fishery Regulatory Measures
- Develop Standardized Methodologies for Stock and Fishery Assessment
- Timetable for Stock Composition Estimates
- Timetable for Data Availability for Coho Management.

## D. JOINT NORTHERN BOUNDARY TECHNICAL COMMITTEE

**U.S./Canada Northern Boundary Area 1987 Salmon Fisheries Management Report and 1988 Preliminary Expectations. TCNB(87)-3. November 1987.**

This report reviews the 1987 Boundary Area pink, chum and sockeye salmon fisheries of southeast Alaska and northern British Columbia and outlines preliminary 1988 expectations and fishing plans. The document is submitted to the Pacific Salmon Commission as required in Article IV of the Pacific Salmon Treaty. The report describes for Alaska and then for northern British Columbia a review of the 1987 season, followed by a review of management performance in relation to Treaty requirements and then the 1988 sockeye, pink and chum expectations. Tables of catch and escapement are provided. A section from the 1985 Northern Boundary Technical report consisting of a description of the boundary area fisheries, their historic development, and a review of changes in gear efficiency is included for reference.

## E. JOINT TRANSBOUNDARY TECHNICAL COMMITTEE

**Preliminary 1987 Salmon Catches and Escapements to the Transboundary Rivers. TCTR(87)-5. November 13, 1987.**

This report presents preliminary data on the catches and escapements of Pacific salmon returning to the transboundary Stikine, Taku and Alsek Rivers during 1987. Information on catches and fishing effort reported herein are not expected to change significantly with completion of post-season updating of the data. Likewise, data on escapement through weirs or based on aerial surveys are unlikely to change significantly. However, data regarding the estimated stock composition of catches and escapement estimates based on test fisheries and mark-recapture experiments are considered very preliminary and subject to change. Data presented in this report will be updated prior to the February meeting of the Commission if warranted. Final data regarding stock composition of catches and estimates of escapements based on test fisheries and mark-recapture experiments will be reported in the spring of 1988.

**Sockeye Salmon Enhancement Feasibility Studies in the Transboundary Rivers. TCTR(88)-1. February 1988.**

Enhancement opportunities for sockeye salmon are assessed for eleven transboundary lakes in the Stikine, Taku, and Alsek River systems. Using existing information and results from field studies undertaken in 1987, production potentials are developed from two analytical models. The first model is based on predicting adult sockeye production from the total euphotic volume of the system and the second, on determining potential smolt production from zooplankton (food supply) densities in the system.

Tuya Lake in the Stikine River system has the greatest production potential of the lakes studied. The largest of the lakes studied, it currently has no anadromous sockeye production due to a physical barrier preventing fish passage. Tahltan Lake, in the same river system, is a potential source of broodstock. It appears capable of routinely supporting egg-takes without excessive removals form the wild stocks. The Tahltan stock is readily identifiable from other stocks in the system and could be targeted on by both U.S. and Canadian fisheries. Two enhancement scenarios are possible for Tuya Lake: (1) annual fry plants with harvest of all returns excluding broodstock and (2) removal of the outlet barrier so that a natural run could be established.

Tahltan Lake ranks third in potential enhancement production due to a relatively high euphotic volume and to relatively low fry densities and high zooplankton production. As this lake has been fertilized in the past several years without apparent increase in fry densities, fry implants or increased escapement may be needed to utilize the zooplankton production. The lake should be surveyed during a period of no fertilization to determine natural levels of fry and zooplankton densities.

Chutine and Christina Lakes in the Stikine River system have limited enhancement potential due to glacial turbidity and low zooplankton abundance.

Tatsamenie Lake in the Taku River system ranks second among the lakes studied for enhancement potential. It is a large lake with a large euphotic volume but presently has a low level of adult sockeye production. The rearing environment appears to be underutilized as evidenced by the moderate densities of zooplankton and low densities of fry. Low sockeye escapements to this lake in some years would limit egg-taking opportunities. Targeting the enhanced stock in the fisheries may be difficult and methods or opportunities for harvesting need to be studied.

The enhancement potentials of Trapper, Kuthai, and King Salmon Lakes in the Taku River system are moderate. Zooplankton densities are relatively high and current sockeye run sizes are very low or non-existent so fry plants would seem to have the best potential of increasing production. Opportunities for targeting fishing effort on any of these stocks appear limited.

Little Trapper Lake has a low enhancement potential. The rearing habitat appears to be fully utilized and zooplankton density is low. Lake enrichment appears to be the best method for increasing productivity, but again, the small size of the lake limits total production.

Kennicott Lake is the smallest of the lakes studied. Enhancement potential is estimated as low. There is at present no sockeye run. Although zooplankton densities are high, it is thought to be too shallow for successful rearing of sockeye fry.

Klukshu Lake in the Alsek River system is small and enhancement through fry plants is not recommended since fry recruitment already appears adequate (at least in 1987). This lake had the highest fry densities measured of the 11 lakes studied while zooplankton densities were relatively low. Lake enrichment might increase production.

Approximate costs of major activities dealing with enhancement are summarized. Recommendations for further studies include: (1) determining growth rates of smolts reared under feeding conditions of 1987; (2) conducting further surveys of lake conditions for prospective candidates for enhancement to look at annual variations; (3) identifying methods of stock identification for enhanced stocks; (4) determining the marketing value of enhanced fish dependent on where they are caught; and (5) disease and parasite analysis.

# Publications of the Pacific Salmon Commission

# PART VI
# PUBLICATIONS OF THE PACIFIC SALMON COMMISSION

Documents listed herein are available to domestic fishery agencies of Canada and the United States, research organizations, libraries, scientists and others interested in the activities of the Commission, through the offices of the Secretariat, 1155 Robson Street, Vancouver, B.C. V6E 1B9.

## A. ANNUAL REPORTS

1. ***Pacific Salmon Commission 1985/86 First Annual Report***
This report provides a summary account of the Commission's second year of operation and contains a summary account of the first meetings of the Commission, and incorporates the full text of the Pacific Salmon Treaty including Annexes and Memoranda of Understanding.

2. ***Pacific Salmon Commission 1986/87 Second Annual Report***
This report provides a summary account of the Commission's second year of operation and contains amendments to Annex IV which apply to the 1987 fishery regime.

## B. REPORTS OF JOINT TECHNICAL COMMITTEES

### i. Joint Chinook Technical Committee

1. TCCHINOOK (86)
*Draft report of the Chinook Technical Committee to the Pacific Salmon Commission's Southern and Northern Panels.* January 21, 1986.
2. TCCHINOOK (86)
*Summary Report of the Chinook Technical Committee (1985) — Prepared for the March 1986 meetings of the Pacific Salmon Commission and Northern and Southern Panels.* February 24, 1986.
3. TCCHINOOK (86)-1
*Final 1985 Report of the Chinook Technical Committee.* September 3, 1986.
4. TCCHINOOK (86)-2
*Chinook Technical Committee Report — Preliminary Review of 1986 Fisheries.* November 3, 1986.
5. TCCHINOOK (87)-1
*Chinook Technical Committee Report — Preliminary Review of 1986 Fisheries.* February 2, 1987. (An update of Report TCCHINOOK (86)-2 submitted November 1986.)
6. TCCHINOOK (87)-2
*Assessing Progress towards Rebuilding of Depressed Chinook Stocks.* February 12, 1987.
7. TCCHINOOK (87)-3
*Data Report of the Chinook Technical Committee on Unaccounted for Sources of Fishing Associated Mortalities of Chinook Salmon in Westcoast Salmon Fisheries.* February 1, 1987.
8. TCCHINOOK (87)-4
*Chinook Technical Committee Report — 1986 Summary Report.* February 26, 1987. (Revised 2/28/87.)
9. TCCHINOOK (87)-5
*Chinook Technical Committee Report to the November 1987 Meeting of the Pacific Salmon Commission.* October 23, 1987.

### ii. Joint Chum Technical Committee

1. TCCHUM (87)-1
   *Chum Technical Committee Report — Summary Report of Southern British Columbia and Washington Chum Salmon Data for the years prior to 1985.* February 1987.
2. TCCHUM (87)-2
   *Chum Technical Committee Report — Working Paper on Genetic Stock Identification Methods for Southern Chum Salmon.* February 1987.
3. TCCHUM (87)-3
   *Chum Technical Committee Report — Research Needs on Southern British Columbia and Washington State Chum.* February 1987.
4. TCCHUM (87)-4
   *Final 1985 Post Season Summary Report.* August 1987.
5. TCCHUM (87)-5
   *Final 1986 Post Season Summary Report.* November 1987.
6. TCCHUM (88)-1
   *Historical Canadian and United States Chum Salmon Data Report for the Years Prior to 1985.* January 1988.
7. TCCHUM (88)-2
   *Progress Report on Genetic Stock Identification of Chum Salmon in Southern British Columbia and Washington.* February 14, 1988.
8. TCCHUM (88)-3
   *Summary Report on the Current and Future Management and Enhancement Intentions of the United States and Canada for Southern Chum Salmon.* February 1988.

### iii. Joint Coho Technical Committee

1. TCCOHO (86)-1
   *Coho Technical Committee Report on 1985 Fisheries. Responses to Questions posed by the Southern Panel March 2, 1986.* June 20, 1986.
2. TCCOHO (87)-1
   *Report of the Joint Coho Technical Committee — Response to Southern Panel Questions.* February 7, 1987.
3. TCCOHO (87)-2
   *Coho Technical Committee Report — Response to a Request from the Northern Panel for Information on Stock Composition of Coho Harvested in Northern British Columbia and Southeast Alaska.* February 1987.
4. TCCOHO (87)-3
   *Coho Technical Committee Report — Impacts of Swiftsure Bank Closure and incidental coho catch estimates for 1987 — Canadian Area 20 and U.S. Areas 7/7A.* June 1, 1987.
5. TCCOHO (87)-4
   *Report of the Coho Technical Committee to the Southern Panel.* November 1987.

### iv. Joint Northern Boundary Technical Committee

1. TCNB (86)
   *Report of the Canada/United States Northern Boundary Technical Committee.* January 8, 1986.
2. TCNB (86)-1
   *Northern Boundary Technical Committee Report — Joint United States/Canada Salmon Research, Northern Boundary Area Adult Tagging Report, 1982 to 1985.* November 1986.
3. TCNB (86)-2
   *Northern Boundary Technical Committee Report — Steelhead Report.* November 1986.
4. TCNB (86)-3
   *Northern Boundary Technical Committee Report — Assessment of an Apparent Weakness in the Early Portion of the Nass River Sockeye Salmon Run.* November 1986.

5. TCNB (87)-1
   *Northern Boundary Technical Committee Report — U.S./Canada Northern Boundary Area 1986 Salmon Fisheries Management Report and 1987 Preliminary Expectations.* January 1987.
6. TCNB (87)-2
   *Northern Boundary Technical Committee Report — Status of Chum Stocks in the Northern Boundary Areas.* February 1987.
7. TCNB (87)-3
   *Northern Boundary Technical Committee Report — U.S/Canada Northern Boundary Area 1987 Salmon Fisheries Management Report and 1988 Preliminary Expectations.* November 1987.

**v. Joint Transboundary Technical Committee**

1. TCTR (86)
   *Report of the Canada/United States Transboundary Technical Committee. Final Report.* February 5, 1986.
2. TCTR (87)-1
   *Report of the Transboundary Technical Committee.* February 8, 1987.
   *Appendix 1. Spawning stock size of Stikine River sockeye salmon 1986.* May 1987.
3. TCTR (87)-2
   *Report of the Transboundary Technical Committee. Stikine River Sockeye Salmon Management Plan 1987.* April 1987.
4. TCTR (87)-3
   *Report of the Transboundary Technical Committee. Enhancement Opportunities for the Transboundary Rivers.* April 28 - 30, 1987.
5. TCTR (87)-4
   *Report of the Transboundary Technical Committee. Taku River Sockeye Salmon Management Plan 1987.* April 27 - May 1, 1987.
6. TCTR (87)-5
   *Preliminary 1987 Salmon Catches and Escapements to the Transboundary Rivers.* November 13, 1987.
7. TCTR (88)-1
   *Sockeye Salmon Enhancement Feasibility Studies in the Transboundary Rivers.* February 1988.

**vi. Joint Transboundary and Northern Boundary Technical Committees**

1. TCNB/TR (87)-1
   *Report of the Northern Boundary and Transboundary Technical Committees — Stock Identification of Sockeye Salmon Using Biological Markers.* February 1987.

## C. DOCUMENTS SUBMITTED BY DOMESTIC AGENCIES AND THE PARTIES

**i. To the Joint Chinook Technical Committee**

1. *Preliminary Report on 1985 Southeast Alaska Chinook Salmon Catch and Escapement.* Prepared by Southeast Region, Fisheries Divisions Staff, Alaska Department of Fish and Game. January 31, 1986. (Appendix 1 to TCCHINOOK (86)-1.)
2. *Observations on Chinook Salmon Non-Retention in the 1985 Southeast Alaska Purse Seine Fishery.* Prepared by B. Van Alen and M. Seibel, Alaska Department of Fish and Game. June 1986 (Appendix 2 to TCCHINOOK (86)-1.)
3. *Observations on Chinook Salmon Hook and Release in the 1985 Southeast Alaska Troll Fishery.* Prepared by A. Davis, J. Kelley and M. Seibel, Alaska Department of Fish and Game. June 1986. (Appendix 3 to TCCHINOOK (86)-1.)
4. *Data Report on Unaccounted for Sources of Fishing Associated Mortalities of Chinook Salmon in B.C. Fisheries (1977-1986).* Prepared by the Canadian members of the Chinook Technical Committee. January 1987.
5. *State of Washington Department of Fisheries — Progress Report No. 251. 1976 to 1985 Puget Sound Chinook (Oncorhynchus tshawytscha) Net Catch with Regard to Pacific Salmon Treaty Obligations.* Prepared by Steven L. Shepard, Fish Biologist, Planning, Research and Harvest Management Program. January 1987.

6. *Preliminary Review of 1986 Chinook Salmon Hatchery Addon for Southeast Alaska Fisheries and Projected Addon for 1987.* Prepared by Southeast Region Staff, Fisheries Divisions, Alaska Department of Fish and Game. January 12, 1987. Revised May 18, 1987.
7. *Summary of Chinook Escapement and Harvest Rate Indicator Stocks for the Oregon Coast (Excluding Columbia River).* Prepared by R. Kaiser and S. Jacobs, Oregon Department of Fish and Wildlife. January 13, 1987.
8. *Observation on Chinook Salmon Non-Retention in the 1986 Southeast Alaska Purse Seine Fishery.* Prepared by B. Van Alen and M. Seibel, Alaska Department of Fish and Game. February 1987.
9. *Associated Fishing Induced Mortalities of Chinook Salmon in Southeast Alaska.* Prepared by Alaska Department of Fish and Game and National Marine Fisheries Service, Auke Bay Laboratory. February 1987.
10. *Georgia Strait Chinook Stock Composition: A GSI Simulation Analysis.* Prepared by National Marine Fisheries Service, Genetics Unit, Manchester, Washington and Washington Department of Fisheries, Resource Assessment and Development Unit, Olympia, Washington. February 1987.
11. *Mortality Rates of Sublegal and Legal Sized Chinook Salmon Associated with Incidental Catch during Chinook-Only Troll Closures.* Prepared by Alex Wertheimer, National Marine Fisheries Service, Auke Bay, Alaska. February 4, 1987.
12. *Southeast Alaska Regional Summary — Identification of Indicator Stocks and Assessment of Rebuilding of Natural Chinook Salmon Stocks (Appendix to TCCHINOOK (87)-2).* Prepared by Alaska Department of Fish and Game. February 5, 1987. Updated May 22, 1987.
13. *Regional Summary for Columbia River Chinook Indicator Stocks (Appendix to TCCHINOOK (87)-2).* Prepared by Columbia River Inter-Tribal Fish Commission. February 6, 1987.
14. *Washington Chinook Fishery Stock Composition Estimates — Results from Genetic Stock Identification Studies in Selected Washington State Fisheries.* Prepared by The U.S. Section of the Chinook Technical Committee. February 8, 1987.
15. *History of Chinook and Coho Salmon Catch in Washington State Fisheries Operating in Puget Sound and Juan de Fuca Strait.* Prepared by the Washington State Department of Fisheries. February 8, 1987.
16. *Summary of Chinook Escapement and Harvest Rate Indicator Stocks for Puget Sound and the Washington Coast.* Prepared by the Northwest Indian Fisheries Commission and the Washington Department of Fisheries with assistance from Dr. Gary Morishima and Dr. Kenneth Henry. February 9, 1987. (Appendix to TCCHINOOK (87)-2.
17. *Evaluation of Chinook Pass-Through and Evaluation of Associated harvests in Washington-Oregon Fisheries without PSC harvest ceilings.* Prepared by The Washington Department of Fisheries, The Columbia River Inter-Tribal Fish Commission, The U.S. Fish and Wildlife Service, The National Marine Fisheries Service and The Northwest Indian Fisheries Commission. February 11, 1987.
18. *Review of Natural Chinook Salmon Escapement Trends in Transboundary Rivers of Northern British Columbia and Southeast Alaska.* Prepared by Canadian Department of Fisheries and Oceans and Alaska Department of Fish and Game. February 12, 1987.
19. *Historical Catch of Chinook Salmon in Juan de Fuca Strait and the Strait of Georgia (1953-1986) and Associated Information on Stock Composition of the Catch.* Prepared by B. Riddell. February 18, 1987.
20. *Supplement to the Canadian Report on Unaccounted for Sources of Fishing Associated Mortalities: Pass-Through Related Information.* Prepared by the Canadian members of the Chinook Technical Committee. February 19, 1987.
21. *Observations on Chinook Salmon Hook and Release in the 1986 Southeast Alaska Troll Fishery.* Prepared by A. Davis, J. Kelly and M. Seibel, Southeast Region, Division of Commercial Fisheries, Alaska Department of Fish and Game, Douglas, AK. (February 19, 1987.) Updated and retitled version June 1987.
22. *Preliminary Review of 1987 Alaska Hatchery Addon of Chinook Salmon for Southeast Alaska Fisheries and Projected 1988 Hatchery addon.* Prepared by Regional Staff, Southeast Fish and Game, Juneau, Alaska. December 18, 1987.

**ii. To the Joint Chum Technical Committee**

1. *Washington/Oregon Chum Salmon Management and Stock Assessment for years prior to 1985.* Prepared by the United States section of the Joint Chum Salmon Technical Committee. February 1987.
2. *Preliminary Review of 1987 Washington Chum Fisheries in the Strait of Juan de Fuca, San Juan Islands and Southern Georgia Strait (Point Roberts).* November 1987.

**iii. To the Joint Coho Technical Committee**

1. *Information on Coho Salmon Stocks and Fisheries of Southeast Alaska.* Prepared by Southeast Region, Fisheries Divisions Staff, Alaska Department of Fish and Game. Juneau, AK. January 1986. (Appendix 2 to TCCOHO (86)-1.)
2. *History of Chinook and Coho Salmon Catch in Washington State Fisheries Operating in Puget Sound and Juan de Fuca Strait.* Prepared by the Washington State Department of Fisheries. February 8, 1987.
3. *Canadian Agency Report on Coho Salmon.* Prepared by Canadian Section of the Coho Technical Committee. (Appendix 1 to TCCOHO (86)-1.) June 16, 1987.
4. *Post-Season Report for 1985 U.S. Coho Fisheries from Cape Falcon, Oregon to the Washington/Canadian Border and Coho Stock Status Expectations.* June 20, 1986.

**iv. To the Joint Northern Boundary Technical Committee**

1. *In-season Management Rationale — Tree Point Gillnet Fishery 1986.* February 1987.
2. *Summary of the 1986 Salmon Net Fishery in Area 3, British Columbia.* February 1987.
3. *Contribution of Alaskan, Canadian, and Transboundary Sockeye Stocks to Catches from Southeast Alaska Districts 101-108, 1986, based on Analysis of Scale Patterns.* Prepared by Glen T. Oliver, Kathleen A. Jensen, Iris S. Frank and Norma Jean Sands. Div. of Commercial Fisheries, Alaska Dept. of Fish and Game, Douglas, Alaska. September 1987.

**v. To the Joint Transboundary Technical Committee**

1. *Management Strategies of the Canadian Commercial Fishery on the Stikine River in 1986.* Prepared by S. Johnston, Dept. of Fisheries and Oceans, Whitehorse, Y.T. February 8, 1987.
2. *1986 In-Season Management Rationale and Post-Season Summary of the Alaskan Drift Gillnet Sockeye Fishery in District 6 and District 8.* Prepared by Alaska Department of Fish and Game.
   February 11, 1987.
3. *Contribution of Principal Sockeye Salmon Stock Groups to Catches from Southeast Alaska's District 106 and 108 and Canada's Stikine River Fisheries, 1986.* Prepared by Kathleen A. Jensen, Glen T. Oliver and Iris Frank. Alaska Department of Fish and Game. August 1987.
4. *Separation of Principal Taku River and Port Snettisham sockeye salmon (Oncorhynchus nerka) Stocks in Southeastern Alaska and Canadian Fisheries of 1986 Based on Scale Pattern Analysis.* Prepared by Andrew J. McGregor and Susan L. Walls. Alaska Department of Fish and Game. Technical Data Report No. 213. August 1987.
5. *Migratory Timing and Escapement of Taku River Salmon Stocks in 1986.* Prepared by Andrew J. McGregor and J.E. Clark. Alaska Department of Fish and Game. September 1987.

**vi. To the Joint Transboundary and Northern Boundary Technical Committees**

1. *Preliminary Report of Fishery Performance in the Northern Boundary and Transboundary Areas 1987.* Prepared by Comm. Fish. Div., Alaska Department of Fish and Game. November 1987.

**vii. To the Commission by Canada**

1. *A summary of the Salmonid Enhancement Program in British Columbia and the Yukon Territory.* Prepared by Canada Department of Fisheries and Oceans. November 14, 1986.

2. *Canadian catches in 1986 and Pre-Season Expectations for 1987.*
   a) *Fraser River, Northern B.C. and Yukon Division Summary Review of 1986 Salmon Fisheries and Returns.*
   b) *Preliminary Review of 1986 Fisheries and Prospects for 1987. South Coast Division.*
   c) *Canadian Report of the 1986 Salmon Fisheries of Northern British Columbia Including Preliminary Expectations and Fishing Plans for 1987.*

   Prepared by Canada Department of Fisheries and Oceans. November 1986.
3. *Canadian Report of the 1987 Salmon Fisheries of Northern British Columbia.* Prepared by the Dept. of Fisheries and Oceans. November 1987.

**viii. To the Commission by the United States**

1. *1986 Post-Season and 1987 Pre-Season Fishery Report.* Prepared by U.S. Section, Pacific Salmon Commission Coho, Chinook, Chum, Northern Boundary and Transboundary Technical Committees in Cooperation with State, Federal, and Tribal Fishery Management Agencies. November 1986.
2. *Enhancement Report of the United States Section, Pacific Salmon Commission.* Prepared by U.S. Section, Pacific Salmon Commission Coho, Chinook, Chum, Northern Boundary and Transboundary Technical Committees in cooperation with State, Federal, and Tribal Fishery Management Agencies.

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

1. *Technical Information Requirements for Effective Implementation of the Canada-United States Treaty concerning Pacific Salmon.* Prepared for the Pacific Salmon Commission: Natural Resources Consultants, Seattle, Washington. October 1986.

## E. REPORTS OF THE FRASER RIVER PANEL

1. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1986 Fraser River Sockeye Salmon fishing season.* November 1986.
2. *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1987 Fraser River Sockeye and Pink Salmon Fishing Season.* February 1988.

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

Responsibility for maintenance of the library of the former International Pacific Salmon Fisheries Commission has been transferred to the Pacific Salmon Commission. Copies of all annual reports to and including 1985, progress reports, bulletins of the IPSFC, and a library catalogue are available on request from the Pacific Salmon Commission Secretariat, 1155 Robson Street, Vancouver, B.C. V6E 1B9.

## G. PUBLICATIONS BY PACIFIC SALMON COMMISSION SECRETARIAT STAFF

1. Cook, R.C., and I. Guthrie. 1987. *In-season stock identification using scale pattern recognition.* In: H.D. Smith, L. Margolis, and C.C. Wood (ed.). Sockeye Salmon (Oncorhynchus nerka) Population Biology and Future Management. Can. Spec. Publ. Fish. Aquat. Sci. 96.
2. Woodey, J.C. 1987. *In-season management of Fraser River sockeye salmon (Oncorhynchus nerka): meeting multiple objectives.* In: H.D. Smith, L. Margolis, and C.C. Wood (ed.). Sockeye Salmon (Oncorhynchus nerka) Population Biology and Future Management. Can. Spec. Publ. Fish. Aquat. Sci. 96, pp 367-374.

# Report of the Auditors for 1987/88

# PART VIII
# AUDITORS' REPORT AND FINANCIAL STATEMENTS FOR THE PERIOD APRIL 1, 1987 TO MARCH 31, 1988

AUDITORS' REPORT TO THE COMMISSION

We have examined the balance sheet of the Pacific Salmon Commission as at March 31, 1988 and the statements of revenue and expenditures, fund balances and changes in financial position for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as we considered necessary in the circumstances.

In our opinion, these financial statements present fairly the financial position of the Commission as at March 31, 1988 and the results of its operations, and the changes in its financial position for the year then ended in accordance with the financial regulations adopted by the Commission applied on a basis consistent with that of the preceding year.

Peat Marwick

Coquitlam, Canada
June 6, 1988

Chartered Accountants

**PACIFIC SALMON COMMISSION**
**Balance Sheet**
**March 31, 1988**
**(With comparative figures for 1987)**

| | 1988 | 1987 |
|---|---|---|
| **ASSETS** | | |
| General Fund: | | |
| Current assets: | | |
| Cash and term deposits | $1,130,067 | 1,034,331 |
| Accounts receivable: | | |
| Travel advances | — | 2,600 |
| Other | 4,139 | 2,104 |
| Interest receivable | 10,900 | 4,598 |
| | 15,039 | 9,302 |
| Prepaid expenses | 48,145 | 48,178 |
| Prepaid pension contributions | 72,948 | 100,000 |
| | $1,266,199 | 1,191,811 |
| Working Fund: | | |
| Current asset: | | |
| Term deposit | $ 100,000 | 100,000 |
| Fixed Asset Fund: | | |
| Fixed assets (note 3) | $ 665,520 | 520,467 |
| **LIABILITIES AND FUND BALANCES** | | |
| General Fund: | | |
| Current liabilities: | | |
| Accounts payable and accrued liabilities | $ 100,435 | 88,470 |
| Deferred revenue (note 5) | 357,500 | — |
| Fund balance: | | |
| Unappropriated fund balance | 170,202 | 274,703 |
| Reserves (note 4) | 638,062 | 828,638 |
| Fund balance per accompanying statement | 808,264 | 1,103,341 |
| | $1,266,199 | 1,191,811 |
| Working Fund: | | |
| Fund balance | $ 100,000 | 100,000 |
| Fixed Asset Fund: | | |
| Fund balance | $ 665,520 | 520,467 |

See accompanying notes to financial statements.

On behalf of the Commission:

S. Timothy Wapato

Chair

Vice-Chair

PACIFIC SALMON COMMISSION
General Fund
Statement of Revenue and Expenditures
For the year ended March 31, 1988
(With comparative figures for the year ended March 31, 1987)

| | 1988 | 1987 |
|---|---|---|
| Revenue: | | |
| Contributions of cash from contracting parties | $1,430,000 | 1,430,000 |
| International Pacific Salmon Fisheries Commission Trust Account | — | 287,989 |
| Gain on sale of fixed assets | 1,382 | 2,925 |
| Interest | 86,223 | 108,941 |
| Test fishing | 935,542 | 932,257 |
| | $2,453,147 | 2,762,112 |
| Expenditures: | | |
| On behalf of International Pacific Salmon Fisheries Commission | $ 42,101 | 17,806 |
| Materials and supplies | 69,441 | 58,555 |
| Overhead | 231,397 | 157,306 |
| Professional services | 263,752 | 316,730 |
| Rentals | 38,748 | 89,432 |
| Repairs and maintenance | 71,534 | 13,097 |
| Salaries and employee benefits | 946,908 | 787,759 |
| Test fishing | 699,552 | 616,929 |
| Total expenditures | 2,363,433 | 2,057,614 |
| Excess of revenue over expenditures | 89,714 | 704,498 |
| | $2,453,147 | 2,762,112 |

See accompanying notes to financial statements.

**PACIFIC SALMON COMMISSION**
**Statement of Fund Balances**
**For the year ended March 31, 1988**
**(With comparative figures for the year ended March 31, 1987)**

| | 1988 | 1987 |
|---|---|---|
| General Fund: | | |
| Fund balance, beginning of year | $1,103,341 | 988,973 |
| Transfer (to) from funds: | | |
| Fixed Asset Fund | (391,872) | (540,130) |
| Working Capital Fund | 7,081 | (50,000) |
| Excess of revenue over expenditures | 89,714 | 704,498 |
| Fund balance, end of year | $ 808,264 | 1,103,341 |
| Working Capital Fund: | | |
| Fund balance, beginning of year | $ 100,000 | 50,000 |
| Interest earned on Capital Fund | 7,081 | — |
| Transfer to General Fund | (7,081) | — |
| Transfer from General Fund | — | 50,000 |
| Fund balance, end of year | $ 100,000 | 100,000 |
| Fixed Asset Fund: | | |
| Fund balance, beginning of year | $ 520,467 | 164,209 |
| Transfer from General Fund | 391,872 | 540,130 |
| Depreciation | (246,819) | (183,872) |
| Fund balance, end of year | $ 665,520 | 520,467 |

See accompanying notes to financial statements.

**PACIFIC SALMON COMMISSION**
**Statement of Changes in Financial Position**
**For the year ended March 31, 1988**
**(With comparative figures for the year ended March 31, 1987)**

| | 1988 | 1987 |
|---|---|---|
| General Fund: | | |
| Operating activities: | | |
| Excess of revenue over expenditures | $ 89,714 | 704,498 |
| Add (deduct): | | |
| Net changes in non-cash working capital balances relating to operations | 390,813 | (129,038) |
| Cash provided by operations | 480,527 | 575,460 |
| Financing activities: | | |
| Transfer from (to) Working Capital Fund | 7,081 | (50,000) |
| Transfer to Fixed Asset fund | (391,872) | (540,130) |
| | (384,791) | (590,130) |
| Increase (decrease) in cash during the year | 95,736 | (14,670) |
| Cash and term deposits, beginning of year | 1,034,331 | 1,049,001 |
| Cash and term deposits, end of year | $1,130,067 | 1,034,331 |
| Working Capital Fund: | | |
| Financing activity: | | |
| Interest earned on funds | 7,081 | — |
| Transfer (to) from General Fund | $ (7,081) | 50,000 |
| Cash provided by financing activities | — | 50,000 |
| Cash and term deposits, beginning of year | 100,000 | 50,000 |
| Cash and term deposits, end of year | $ 100,000 | 100,000 |
| Fixed Asset Fund: | | |
| Operating activity: | | |
| Item not affecting working capital: | | |
| Gain on sale of fixed asset | $ (1,382) | (2,925) |
| Cash used for operations | (1,382) | (2,925) |
| Investing activities: | | |
| Additions to fixed assets | (397,922) | (542,205) |
| Proceeds on sale of fixed assets | 7,432 | 5,000 |
| Cash used for investing activities | (390,490) | (537,205) |
| Financing activity: | | |
| Transfer from General Fund | 391,872 | 540,130 |
| Increase in cash during the year | — | — |
| Cash, beginning of year | — | — |
| Cash, end of year | $ — | — |

See accompanying notes to financial statements.

**PACIFIC SALMON COMMISSION**
**Notes to Financial Statements**
**March 31, 1988**

1. Nature of organization:

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

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

2. Significant accounting policies:

   (a) Fund accounting:

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

   The Fixed Assets Fund represents the cumulative results of fixed asset transactions. Depreciation is charged to the Fixed Assets Fund.

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

   (b) Basis of accounting:

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

   (c) Fixed assets:

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

| | |
|---|---|
| Automobiles | 20% |
| Boats | 20% |
| Computer equipment and software | 30% |
| Equipment | 20% |
| Films | 33% |
| Furniture and fixtures | 10% |

   (d) Income tax:

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

   (e) Foreign exchange:

   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.

3. Fixed assets:

| | 1988 | | | 1987 |
|---|---|---|---|---|
| | Cost | Accumulated Depreciation | Net Book Value | Net Book Value |
| Automobiles | $ 71,873 | 26,533 | 45,340 | 48,759 |
| Boats | 66,737 | 26,834 | 39,903 | 53,250 |
| Computer equipment | 412,088 | 257,161 | 154,927 | 226,542 |
| Equipment | 293,848 | 111,038 | 182,810 | 189,788 |
| Films | 1,800 | 1,800 | — | 600 |
| Furniture and fixtures | 218,493 | 22,231 | 196,262 | 1,528 |
| Computer software | 40,999 | 12,300 | 28,699 | — |
| Leasehold improvements | 19,532 | 1,953 | 17,579 | — |
| | $1,125,370 | 459,850 | 665,520 | 520,467 |

4. Reserves:

(a) Reserves for contractual commitments:

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

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

| | 1988 | 1987 |
|---|---|---|
| Fixed assets | $156,027 | 392,460 |
| Professional services | 132,860 | 180,000 |
| International Pacific Salmon Fisheries Commission commitments | 228,082 | 108,000 |
| | 516,969 | 680,460 |
| (b) Reserve for prepaid expenses | 48,145 | 48,178 |
| (c) Reserve for prepaid pension contributions | 72,948 | 100,000 |
| | $638,062 | 828,638 |

5. Deferred revenue:

Deferred revenue represents cash contributions received from a contracting party in the current year that represent revenue for the year ended March 31, 1989.

6. Pension plan:

Pacific Salmon Commission maintains a contributory defined benefit multi-employer pension plan that covers all of their salaried employees. The plan provides for pensions based upon length of service and the highest consecutive three years of service earnings.

The pension expense of $80,989 (1987 - $24,451) includes $53,937 of costs relating to a plan amendment allowing for an early retirement option. These costs are included as current period expenditures.

# Appendices

# Appendix A

## Recommendations of the Commission to the Parties for Amendments to Annex IV and other understandings to give effect to the agreed fishery regime for 1988

**PACIFIC SALMON COMMISSION** February 19, 1988

The Right Honourable Joe Clark, P.C., M.P.
Secretary of State for External Affairs
Ottawa, Ontario
K1A 0G2

The Honorable George P. Schultz
Secretary of State
U.S. State Department
Washington, D.C., 20520

Dear Sir:

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

In accordance with Article XIII, Paragraph 2 of the Treaty, the Commission recommends that Chapters 1, 2, 4 and 6 of Annex IV be amended. The entire text of Annex IV as proposed by the Commission for 1988 is attached (Attachment 1). Pursuant to Article XIII, Paragraph 3 of the Treaty, amendments to the Annex may be implemented through an exchange of notes between the Governments. The Commission expects that the relevant management agencies will manage fisheries under their responsibility in the recommended manner during the 1988 fishing season. The Commission recommends that an exchange of notes occur implementing these proposals as soon as possible.

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

1) With respect to Annex IV, Chapter 1, the Commission has agreed to an "Understanding between the United States and the Canadian Sections of the Pacific Salmon Commission concerning Joint Enhancement of Transboundary Salmon Stocks" (Attachment 2).

2) With respect to Annex IV, Chapter 2, the Commission agrees that the Joint Northern Boundary Technical Committee shall undertake assessments and identify possible measures to restore and enhance Portland Canal chum stocks and in consideration of the depressed stocks of chum salmon in areas adjacent to Portland Canal. To this end, the Technical Committee shall:

(a) During 1988, design and recommend a coordinated research program that will define the distribution, timing and harvest rates on the chum salmon stocks originating from streams in the Portland Canal area.

(b) Review past, current and proposed chum salmon CWT recovery programs in the Northern Boundary Area.

(c) Review current chum enhancement projects in the Northern Boundary Area (Nakat remote release site and Portland Canal spawning channels) and enhancement strategies that may restore depressed chums in Portland Canal and adjacent areas in SSE Alaska and northern B.C.

(d) Review current and potential management options for the protection of depressed Portland Canal area natural chum salmon stocks.

3) With respect to Annex IV, Chapter 3:

(a) The Canadian Commissioners made the following statement regarding the rebuilding of the Strait of Georgia chinook stocks:

"At the November 1987 meeting of the Pacific Salmon Commission, the Canadian Commissioners asked the Canadian National Section to form a Task Group to address the problem of declining chinook catch and escapement in the Strait of Georgia."

Canada points out that actions taken to address this problem are, in the final analysis, a Canadian management responsibility. However, Canada also recognizes its responsibilities under the Pacific Salmon Treaty to place lower Strait of Georgia chinook stocks back on the Commission's rebuilding schedule.

Canada recognizes the United States' interest in this issue. The results of our Task Group's deliberations cannot be announced at this meeting. Discussions on this issue are continuing within Canada and Canada will be addressing the problem of conservation of lower Georgia Strait chinook stocks starting in 1988."

(b) In 1988 the Southeast Alaska all-gear catch of chinook salmon shall consist of the base catch specified above, plus a catch of new Alaska hatchery add-on to be calculated in-season using the procedures approved by the Commission for the 1987 add-on and as described in Alaska's December 18, 1987 hatchery add-on report to the Commission. The preseason expectation for the 1988 hatchery add-on is 27,000 chinook salmon.

(c) With respect to the overage in the chinook fishery in Northern and Central British Columbia, it is Canada's intention to take appropriate management action to return to a level within the established management range.

4) With respect to Annex IV, Chapter 4, the Commission approved the following recommended policy of the Fraser River Panel:

FRASER RIVER PANEL
REPORT ON
PAYBACK POLICY
November 24, 1987

The Panel has reached agreement upon the following points regarding payback:

1. The Panel notes that early PSC experience, the allocation of Fraser River sockeye and pink salmon, and current management information suggests that overages in catches above Treaty-established allocations are likely to accrue to Canada.

2. Until the Fraser River Panel can receive better and more timely catch data from catch areas beyond the current Panel Area, it will be difficult for the Panel to reduce the tendency towards Canadian overages.

3. In 1987, the Panel reached agreement on how the TACs for Fraser River pink and sockeye salmon were to be calculated for 1985 and 1986. No change to this calculation method is proposed for future years, but the Panel notes that occasions may arise in which the Panel will be required to give direction to the staff on how certain elements of the runs be treated in any given year.

4. It is the primary responsibility of the Panel to meet the annual international allocation goals as defined by the Treaty Annex.

5. The Panel has also agreed to an annual distribution of early and late run stocks.

On the basis of the above, the Panel recommends the following:

In order to accomplish the primary responsibility, each Party's share shall be adjusted each year in the amount of any harvest overage or underage of the same species from the previous year or years. In making this adjustment no Party's share will be reduced by more than 5% because of the adjustment, unless otherwise agreed. Any remaining balance from the harvest overage or underage shall be incorporated in the subsequent year's allocation.

Notwithstanding the provisions intended to meet annual international allocation goals, the Panel also seeks to manage fisheries to meet agreed-to distribution goals for early- and late-timed stocks. If the harvest of early- or late-timed stocks by either Party consistently exceeds its distribution goal, either Party may raise a point of concern about management of the harvest which shall be addressed by the Panel in order to develop management measures which insure that the harvest does not continue to exceed its distribution goal.

5) With respect to Annex IV, Chapter 5:

Recognizing the differences of opinion that exist between the two Parties regarding Annex IV Chapter 5, Paragraph 3.d, the Commission has recommended for 1988 that United States and Canadian domestic managers should meet, at which time the U.S. will report on the fishing plans being considered in United States domestic management processes. In developing their fishing plans, the U.S. managers are encouraged to take into consideration strategies available to them to shape any directed coho fishery which may occur in Areas 7 and 7A to address conservation and other concerns expressed by Canadian Commissioners. Following consultation with United States domestic managers, Canadian managers, taking into consideration the United States fishing plan, will inform U.S. managers of any directed coho fisheries in Canadian Area 20 prior to their taking place.

In the event that inseason information indicates that stock conditions or catches have changed significantly from those assumed preseason, and these changes require modification of preseason-established fisheries in Areas 7 and 7A, United States domestic managers shall inform Canadian managers of those changes prior to altering the plans for Areas 7 and 7A. Canadian managers will notify the U.S. of subsequent changes to Canadian fisheries in Area 20.

The Commission reiterated the importance of bilateral agreement on stock composition estimates for the fisheries in Chapter 5. In this regard, the Commission has directed the Joint Coho Technical Committee to place high priority on completing the assignment given by the Commission in November of 1987, according to the schedule identified in the Committee's report of January, 1988

6) With respect to Annex IV, Chapter 6:

The United States recognizes that its fishery in 1987 harvested approximately 5,600 chum salmon in excess of the harvest permitted under Annex IV, Chapter 6, paragraph 3 (a) (ii). The United States intends to reduce its catch by this amount in a future year when the U.S. harvest is at the levels specified in paragraphs 3b and 3c.

The Commission hopes that these recommendations will meet with your approval.

Sincerely,

PACIFIC SALMON COMMISSION

S. Timothy Wapato
Chair

# Appendix B

## Revised Annex IV to the Pacific Salmon Treaty in effect for 1988

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 establish a Joint Transboundary Technical Committee (Committee) reporting, unless otherwise agreed, to the Northern Panel and to the Commission. The Committee, inter alia, shall

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

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

   (c) identify enhancement opportunities that:

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

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

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 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 in-river allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift 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 0 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 in-river allowable catch of sockeye salmon will be based on a 10 percent harvest rate of Stikine River sockeye salmon in the District 106 drift 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 Understanding concerning Joint Enhancement of Transboundary River Salmon Stocks, 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 on the feasibility of new enhancement projects on the transboundary rivers and adjacent areas for the purpose of increasing productivity of stocks and providing greater harvests to the fishermen of both countries.

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

   (a) ensure effective conservation of the stocks;

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

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

Chapter 2

## NORTHERN BRITISH COLUMBIA
## SOUTHEASTERN ALASKA

1. Considering that the chum salmon stocks originating in streams in the Portland Canal require rebuilding, the Parties agree in 1988 to jointly reduce interception 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 stocks.

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

   (a) during the period of 1985 through 1988, limit its purse seine fishery in District 4 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; and,

   (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) for 1988, 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 catch in that area reaches 300,000 pinks or, the pink salmon fishery has lasted 22 days starting with the beginning of the troll season in Area 1, whichever comes first;

   (c) in addition, when the total 1988 Area 1 pink salmon troll catch reaches 1.7 million, close management units 101-1, 101-2, 101-3, 101-5, 101-9 and 1-1 to pink salmon trolling; and

   (d) for the purposes of this agreement, in 1988, allow the following management units to remain open to pink salmon trolling: 101-6, 101-7, 101-10, 1-2, 1-3, 1-5 and 1-7.

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

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

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

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

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

   (a) evaluate the effectiveness of management actions;

   (b) identify and review the status of stocks;

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

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

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

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

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

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

Chapter 3

## CHINOOK SALMON

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

   (a) instruct their respective management agencies to establish a chinook salmon management program designed to meet the following objectives:

      (i) halt the decline in spawning escapements in depressed chinook salmon stocks; and,

      (ii) attain by 1998, escapement goals established in order to restore production of naturally spawning chinook stocks, as represented by indicator stocks identified by the Parties, based on a rebuilding program begun in 1984.

   (b) jointly initiate and develop a coordinated chinook management program;

   (c) 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.

   (d) ensure that

      (i) in 1987 and 1988, the annual all-gear catch in southeast Alaska shall not exceed 263,000 chinook salmon;

      (ii) in 1987 and 1988, the annual all-gear catch in northern and central British Columbia shall not exceed 263,000 chinook salmon;

(iii) in 1987 and 1988, the annual troll catch off the west coast of Vancouver Island shall not exceed 360,000 chinook;

(iv) in 1987 and 1988, the total annual catch by the sport and troll fisheries in the Strait of Georgia shall not exceed 275,000 chinook; Canada will undertake management measures to minimize further reductions in spawning escapements in 1987 and 1988;

(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 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; 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.

(e) establish 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) by December 1987, the Chinook Technical Committee shall

a. complete a technical review of Party reports on associated fishing mortalities;

b. complete an evaluation of all sources of associated fishing mortalities coastwide in all marine and freshwater fisheries as requested by the Commission in March 1986;

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; and,

d. estimate the magnitude of all quantifiable sources of associated fishing mortalities, estimate 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;

(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;

(f) 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;

(g) 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 such coastwide rebuilding and enhancement, consistent with such internal allocation determinations and this Treaty; and,

(h) 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 assessments 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(d)(vi) of this Chapter are adhered to.

3. The Parties shall submit a report to the Commission by December 1987 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 1987, and the likelihood of achievement of these goals by 1995; and,

   (c) cooperatively developed management options to be identified by December 1987 and initiated in 1988 and following seasons to ensure rebuilding of chinook stocks in the transboundary rivers which are identified in 3(b) as requiring further management actions.

Chapter 4

## FRASER RIVER SOCKEYE AND PINK SALMON

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

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

| | 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 3 such technical representatives as may be designated by each national section of the Commission.

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

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

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

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

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

(e) the staff of the Commission shall consult regularly in-season with the technical committee to ensure that its members are fully and timely informed on the status of Fraser River sockeye and pink salmon stocks, and the expectations of abundance, migration routes and proposed regulatory options, so the members of the technical committee can brief their respective national sections prior to each in-season Panel meeting.

## 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;

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

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

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 1987 and 1988, the west coast of Vancouver Island (Canadian Management Areas 21, 23, 24, 25, 26, 27, 121, 123, 124, 125, 126, 127, and 130-1) troll harvest shall not exceed 1.8 million coho;

   (b) for 1987 and 1988, 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 1987 and 1988, 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 1987 and 1988, 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 1989 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 1988 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 1988, 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 1988,

   (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 1988, 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 1987 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 1988, 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

## Understanding between the United States and the Canadian Sections of the Pacific Salmon Commission concerning Joint Enhancement of Transboundary River Salmon Stocks

Recognizing the desire of the United States and Canada to embark upon a joint salmon enhancement program for the transboundary rivers that is carefully planned and coordinated:

I. The Parties agree:

A. That for the period 1988 through 1992 the goal for enhancement activities on the transboundary rivers is to embark on a program designed to produce annually 100,000 returning sockeye salmon to the Taku River and to the Stikine River, for a total of 200,000 sockeye salmon per year;

B. To develop strategies for management of the enhanced stocks prior to the return of adult fish;

C. To determine harvest sharing arrangements for enhanced stocks prior to the time eggs are taken to initiate production level enhancement;

D. That the target year to initiate the first production level egg-takes of 5 million eggs per system for sockeye salmon on the Taku and Stikine Rivers is 1989;

E. To develop an agreed process for conducting periodic review of implemented projects to identify and recommend action regarding, inter alia:

1. Success or failure of a project in a given year or series of years,

2. A distribution of benefits that is substantially different than expected,

3. Costs which are substantially greater than expected;

F. To recommend a plan for funding of projects including:

1. Cost sharing arrangements between the Parties,

2. Long term funding obligations,

3. In carrying out joint enhancement projects, capital construction and on-site operating costs shall be borne by the country on whose soil project components are located.

II. The Parties agree to establish an Enhancement Subcommittee of the Transboundary Technical Committee whose Terms of Reference shall be, inter alia, to:

A. Develop a preliminary summary of various projects which meet the enhancement goals established by the Northern Panel;

B. Develop detailed feasibility studies for projects selected by the Northern Panel, including:

1. Estimation of costs and benefits,

2. Likelihood of success,

3. Schedules for implementation,

4. Procedures for evaluation,

5. A fisheries management plan for the enhanced stocks;

C. Monitor implementation of projects and report progress to the Northern Panel.

III. In recognition of the Parties desire to embark upon a sockeye salmon enhancement program for the Stikine and Taku rivers, the Parties agree to conduct the following activities in 1988:

A. The Enhancement Subcommittee shall:

1. Determine the feasibility of obtaining sockeye salmon brood stock from Tatsamenie Lake, Little Trapper Lake and Tahltan Lake,

2. Prepare a management cost analysis for enhancement activity that will be undertaken for Taku and Stikine River sockeye salmon.

B. The United States shall:

1. Conduct pathological screening of Tatsamenie Lake, Little Trapper Lake and Tahltan Lake sockeye salmon,

2. Develop fish culture profiles for Tatsamenie Lake, Little Trapper Lake and Tahltan Lake sockeye salmon.

C. Canada shall:

1. Conduct a detailed limnological survey of Tuya Lake,

2. Deliver about 20,000 eggs each from the Tahltan Lake, Little Trapper Lake and Tatsamenie Lake stocks of sockeye salmon to the central incubation facility at Port Snettisham in Alaska so that fish culture profiles can be developed.

3. Provide samples required to conduct pathological screening.

4. Assess the quantity and quality of sockeye salmon spawning habitat in the tributaries of Tatsamenie Lake, Upper Trapper Lake and Tuya Lake.

# Appendix D

## Pacific Salmon Commission
## Approved Budget for Fiscal Year 1988/89
## and Comparison with Fiscal Year 1987/88

| | FY 1988/89 | FY 1987/88 |
|---|---|---|
| Staff salaries | $ 826,300 | $ 749,500 |
| Staff benefits | 101,800 | 82,300 |
| Staff travel | 58,400 | 63,700 |
| Transportation of things | 17,300 | 38,300 |
| Rents, communications and utilities | 94,500 | 84,500 |
| Printing | 25,000 | 43,000 |
| Other services | 279,300 | 250,100 |
| Supplies | 38,900 | 68,600 |
| Equipment | 31,500 | 50,000 |
| TOTAL | $ 1,473,000 | $ 1,430,000 |

Due from each Party:

| | |
|---|---|
| Canada | $ 715,000 |
| United States | 715,000 |
| Other Income | 43,000 |
| Total | $1,473,000 |

FY 1988/89

Object Classes 11 & 12: Salaries and Benefits

| | |
|---|---|
| Object Class 11: Secretariat Staff Salaries | $826,300 |
| Object Class 12: Secretariat Staff Benefits* | 101,800 |
| Total: | $928,100 |

* To include some or all of the following: employer portion of pension costs; social security; medical, disability, life, and accidental death and dismemberment insurance for continuing full-time staff.

Object Class 21: Secretariat Staff Travel ..... $ 58,400

These funds will provide for the travel of the Executive Secretary and other members of the Secretariat staff between Vancouver, B.C. and various locations in the United States and Canada of importance to the Commission. Such locations could include one or more of the following: Washington, D.C.; Ottawa, Ontario; Juneau, Alaska; Portland, Oregon; Seattle, Washington; Olympia, Washington and Prince Rupert, British Columbia.

Object Class 22: Transportation of Things ..... $ 17,300

This object class will cover any or all of the following (or related) types of expenditures:
- freight, express and courier service
- transportation of household effects (new hires)
- miscellaneous shipping costs.

Object Class 23: Rents, Communications and Utilities ..... $ 94,500

This object class will cover any or all of the following (or related) types of expenditures:
- telephones
- telex
- postage
- photocopy machine
- utilities (heat, light, water, sewage)
- rental of facilities for the annual meeting
- rental of facilities for other meetings.

Object Class 24: Printing ..... $ 25,000

This object class will cover the following types of expenditures:
- printing of reports and forms
- printing of the annual report.

Object Class 25: Other Services ..... $279,300

This object class will cover any or all of the following (or related) types of expenditures:
- maintenance contracts on the computer, word processors, typewriters, photocopiers, etc.
- building maintenance contract
- auditing fees
- vehicle insurance and other vehicle needs
- other miscellaneous contracts.

Object Class 26: Supplies ..... $ 38,900

This object class will cover any or all of the following (or related) types of expenditures:
- stationery
- miscellaneous office supplies
- biological supplies.

Object Class 31: Equipment ..... $ 31,500

This object class will cover any or all of the following (or related) types of expenditures:
- miscellaneous office furniture
- miscellaneous office equipment
- miscellaneous scientific equipment.

# Appendix E

## Pacific Salmon Commission
## Secretariat Staff as of March 31, 1988

## EXECUTIVE OFFICE

Ian Todd
Executive Secretary

Greta Grant
Secretary

Thomas C. Jensen
Deputy Executive Secretary

Glenna Westwood
Librarian/Records Administrator

Vicki Beck
Secretary, Meeting Planner

Elizabeth Green
Receptionist

## FINANCE & ADMINISTRATION

Kenneth N. Medlock
Finance and Administration Officer

Ellen Mochizuki
Accountant

## FISHERY MANAGEMENT

James C. Woodey
Chief Biologist

Jim Gable
Head, Racial Identification Group

Steve Cox-Rogers
Project Biologist, Sockeye

Bruce White
Project Biologist, Pinks

Betty Tasaka
Scale Analyst

Holly Derham
Assistant Scale Analyst

Jim Cave
Head, Stock Monitoring Group

Peter Cheng
Project Biologist, Acoustics

Ian Guthrie
Head, Biometrics/Computer Services

Kathy Mulholland
Computer Programmer/Analyst/Operator

Doug Stelter
Statistician

# Appendix F

## Membership Lists for Standing Committees, Panels, Joint Technical Committees and other Appointments as of March 31, 1988

| | CANADA | U.S.A. |
|---|---|---|
| **1.** | **STANDING COMMITTEE ON FINANCE AND ADMINISTRATION** | |
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