PACIFIC SALMON COMMISSION
TRANSBOUNDARY TECHNICAL
COMMITTEE REPORT

SALMON MANAGEMENT AND ENHANCEMENT PLANS FOR THE STIKINE, TAKU AND ALSEK RIVERS, 2001

REPORT TCTR (01)-01

This plan was finalized at the May 29-30, 2001 meeting of the
Transboundary Technical Committee

August, 2001

ACRONYMS

ADFG	Alaska Department of Fish and Game
DFO	Department of Fish and Oceans, Canada
DIPAC	Douglas Island Pink and Chum, Inc.
NSRAA	Northern Southeast Regional Aquaculture Association
TFN	Tahltan First Nation
TRTFN	Taku River Tlingit First Nation
CAFN	Champagne/Aishihik First Nation

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INTRODUCTION

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the Pacific Salmon Treaty, requires a co-operative approach by Canada and the United States. It is important that both Parties have a clear understanding of the objectives and agree upon procedures to be used in managing the fisheries, including the criteria upon which modifications of fishing patterns will be based. This document is intended to facilitate co-operative salmon management and research on transboundary stocks of the Stikine, Taku, and Alsek Rivers conducted by the Canadian Department of Fisheries and Oceans (DFO), the Tahltan First Nation (TFN), the Iskut First Nation (IFN), the Taku River Tlingit First Nation (TRTFN), Champagne/Aishihik and the Alaska Department of Fish and Game (ADF&G).

The report contains, by river system and species, the 2001 salmon forecasts, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the conduct of the 2001 fisheries. With the exception of Stikine sockeye salmon, for which a numerical forecast is required by the Pacific Salmon Treaty and by the Stikine Management Model and Taku River sockeye salmon, forecasts are given qualitatively, with reference to brood year escapement data where available. The report also contains joint plans for fry plants and egg collections in 2001 and proposed transboundary field projects for the year, identifying agency responsibility and contacts for the various functions within the projects.

STIKINE RIVER

Sockeye Salmon

Stock Definitions

Stikine sockeye salmon are, for research, management, and monitoring purposes, subdivided into four stock groups: 1) **wild Tahltan stock** which are those fish originating from naturally spawning sockeye salmon in Tahltan Lake; 2) **planted Tahltan stock** which are those fish originating from broodstock collected at Tahltan Lake and whose fry are backplanted into Tahltan Lake; 3) **Tuya stock** which are those fish originating from broodstock collected at Tahltan Lake and whose fry are backplanted into Tuya Lake; and 4) **mainstem stock** which are all natural remaining sockeye populations in the Stikine River. For management purposes, the collective wild and planted Tahltan stocks are referred to as **the total Tahltan stock** or, sometimes, just Tahltan stock.

Preseason Forecast

For 2001, the total run forecast for Stikine sockeye salmon is 113,000 fish, which constitutes a below average run. For comparison, the recent ten-year average (1991-2000) total Stikine sockeye run size is approximately 200,000 fish. The 2001 forecast includes approximately 23,600 wild Tahltan Lake sockeye (21%), 4,400 planted Tahltan Lake sockeye (4%), 35,000 Tuya Lake planted sockeye (31%), and 50,000 mainstem sockeye salmon (44%).

The 2001 prediction is based on the following components:

1. A forecast of approximately 28,000 Tahltan wild + enhanced sockeye of which 4,400 are expected from the enhancement project. This is the average of a sibling-based forecast of 31,000 for the total Tahltan stock which includes approximately 3,000 enhanced sockeye, and a smolt forecast of 25,000 Tahltan sockeye of which 6,000 are expected to originate from the enhancement project;

2. a forecast of 35,000 Tuya sockeye salmon, which is a forecast based on 1997-00 average age-specific fry-to-adult survival data for Tuya sockeye; and
3. a forecast of 50,000 mainstem stock based on a sibling forecast.

Age and stock specific catch and escapement estimates are used to reconstruct annual runs for the Stikine sockeye stocks. Marine catch estimates are based on ADF&G scale pattern analysis. Lower inriver catch estimates are based on a variety of stock identification techniques (SPA, egg diameters, parasite frequency, electrophoretic data). The contribution of Tahltan stocks to upper river commercial and aboriginal fisheries had been assumed to be 90% prior to 1997 and has been estimated from egg diameter analysis since 1997. The contributions of planted Tuya and Tahltan fish to various harvests are estimated with analysis of otoliths for thermal marks combined with analysis of scale patterns or egg diameters. Tahltan escapements are enumerated at the Tahltan Lake weir and Mainstem and Tuya escapements are calculated through the subtraction of the reconstructed inriver Tahltan run and the estimated inriver catches of Tuya and Mainstem sockeye stocks from the total inriver run estimates.

The 2001 outlook is characterised as below average for all components of the run. The preseason outlook is for a total allowable catch (TAC) for all Stikine sockeye salmon of 29,000 fish. Of this, approximately 1,800 sockeye are expected to be harvested in test fisheries (stock assessment) leaving approximately 27,200 sockeye to be shared 50:50 between Canada and the U.S. in existing fisheries, i.e. 13,600 each country. The TAC outlook is comprised of the following components:

1. Given an escapement goal of 24,000 sockeye salmon for the total Tahltan stock, the predicted total allowable catch (TAC) is 4,000 Tahltan sockeye with an exploitation rate on this stock of 0.14.
2. Applying the Tahltan exploitation rate to the Tuya stock prediction of 35,000 fish (since Tuya is mixed with Tahltan), yields a TAC of 5,000 Tuya fish and a surplus of 30,000 fish for the Tuya stock. The Tuya surplus potentially would be exclusively available for Canadian terminal (ESSR) harvest.
3. The projected TAC for mainstem fish to allow for an escapement of 30,000 spawners is 20,000 fish.

Due to recent declines in survival for Stikine sockeye, there is a high level of uncertainty in these preseason forecasts. The various preseason forecast techniques suffer from a relatively short time series of data and, therefore, not surprisingly, there have been wide discrepancies between past forecasts and actual runs. For example in 1998, the total run was forecast as 218,500 whereas the estimate of actual run was 121,000; this poor survival could be due to both poor survival in the marine and returning freshwater environment. However, in 1999, the preseason forecast of 126,000 Stikine sockeye salmon was very close to the post-season estimate of approximately 125,000 sockeye. The run size projection in 2000 of 138,000 fish was 89% above the actual return of 73,100 fish. Despite problems with preseason forecasting, these forecasts are useful for management until we have in season data with which to revise our forecasts.

Tahltan Lake Sockeye Forecast

Sibling forecast: The sibling forecast technique used for the Tahltan stock is based on the relationship between the return of age-4 fish in one year and the total run in the following year. Using data from both planted and wild Tahltan runs, the relationship between the return of age-1.2 (4 year olds with two years in marine waters, also designated as 4(2)) fish in one year and the total (all ages) run in the following year is described by the following equation:

$$N_{t+1} = 8{,}290 + 9.494010 \bullet N_{1.2,t} \qquad [1.a]$$

where: N_{t+1} = total Tahltan run (all ages) in year(t+1); and
$N_{1.2,t}$ = total Tahltan return of age-1.2 in year(t).

The coefficient of determination for this relationship is $r=0.900$.

The wild Tahltan component by itself is estimated by:

$$N_{t+1} = 6{,}611 + 9.596184 \bullet N_{1.2,t} \qquad [1.b]$$

where: N_{t+1} = wild Tahltan run (all ages) in year(t+1); and
$N_{1.2,t}$ = wild Tahltan return of age-1.2 in year(t).

The coefficient of determination for this relationship is $r=0.893$. The run of all age-1.2 Tahltan sockeye salmon in 2000 was estimated to have been 2,376 fish. Using equation [1a], a run size of approximately 31,000 Tahltan sockeye salmon is expected in 2001. The estimated wild component of this forecast is 28,000 sockeye salmon (from an estimated return of 2,246 wild Tahltan age-1.2 fish in 2000 and equation 1.b). Subtracting the predicted run of wild Tahltan fish from the total Tahltan forecast yields a run projection of 3,000 planted Tahltan fish.

Smolt based forecast: The other forecast method examined for Tahltan sockeye salmon was based on smolt data and average survival rates for individual age classes of both wild and enhanced smolts from smolt years 1994 on. It is generally agreed by oceanographers that recent significant changes in marine productivity have likely affected salmon production since the 1994 year of entry into the marine environment and therefore only data from 1994 on was used.

Average rates of return for 2001 wild age classes were estimated as follows: 4.2% of the 0.288 million age 1+ smolt counted in 1998 are expected to return as age 5(2) in 2001; 1.1% of the 0.452 million age 1+ smolt counted in 1999 expected to return as age 4(2) in 2001; 3.4% of the 43,000 age 2+ smolt counted in 1998 expected to return as age 6(3) in 2001; and 3.6% of the 17,000 age 2+ smolt counted in 1999 expected to return as age 5(3) in 2001. The wild Tahltan Lake sockeye run is therefore expected to be 19,323 in 2001 based on smolt data.

Average rates of return for 2001 enhanced age classes were estimated as follows: 2.3% of the 0.210 million age 1+ enhanced smolt counted in 1998 are expected to return as age 5(2) in 2001; 0.3% of the 0.293 million age 1+ enhanced smolt counted in 1999 expected to return as age 4(2) in 2001; 1% of the 8,300 age 2+ enhanced smolt counted in 1998 expected to return as age 6(3) in 2001; and 2.4% of the 1,400 age 2+ enhanced smolt counted in 1999 expected to return as age 5(3) in 2001. The enhanced Tahltan Lake sockeye run is therefore expected to be 5,712 in 2001 based on smolt data.

Using smolt-to-adult survival data for the 1994 ocean year of entry onwards gives an expected run of approximately 25,000 total Tahltan sockeye salmon, including 19,000 wild and 6,000 planted fish. By including only the survival data from the 1994-year of ocean entry on, we have attempted to incorporate the low recent survivals observed in recent years.

The 2001 preseason total Tahltan Lake sockeye forecast that will be used for management purposes at the beginning of the season is 28,000 sockeye salmon derived from the average of the sibling-based and smolt-based forecasts. A run of this magnitude would be well below the previous 10-year average of 103,000 fish and below the previous 5-year average of 87,600 sockeye salmon. Last year's run of 20,000 fish was 39% below the preseason forecast of 33,000 fish.

Tuya Forecast

A total run size of approximately 35,000 Tuya Lake sockeye is expected in 2001 comprised of <500 age-4 sockeye salmon, 17,000 age-5 sockeye salmon, and 17,500 age-6 sockeye salmon. This run outlook is based on the 1997-00 average age-specific sockeye fry-to-adult survivals observed at Tuya Lake applied to the estimated number of fry outplanted in Tuya Lake in 1996 (BY 1995), 1997 (BY 1996) and 1998 (BY 1997).

The preseason forecast for last year, based on similar methodology, was 21,000 sockeye, 49% below the postseason estimated run size of 31,200 sockeye salmon.

Mainstem Sockeye Forecast

The method used to produce the mainstem sockeye forecast for 2001 is based on a sibling forecast technique using regression data from 1983 through 2000.

Linear regression of age-1.2 mainstem sockeye salmon (N1.2) on the following year's total run (catch and escapement, all ages) of mainstem sockeye salmon (N) for the years 1983 to 2000 yielded the following equation:

$$N_{t+1} = 19682 + 7.133601 \quad N_{1.2t} \qquad [2]$$

The coefficient of determination for this relationship is $r=0.677$. Based on equation [2] and a total run estimate of 4,233 age-1.2 mainstem sockeye salmon in 2000, the 2001 sibling forecast for mainstem sockeye salmon is approximately 49,900 fish.

The sibling forecast of 49,900 mainstem sockeye salmon for 2001 represents 66% of the 1991-2000 average mainstem run of 76,060 sockeye salmon. The 2000 forecast of 66,000 mainstem fish was 3 times the estimated mainstem run of 21,902 sockeye salmon.

Spawning Escapement Goals

Escapement goals have been established by the Transboundary Technical Committee (TTC) for two of the Stikine sockeye stocks: the total Tahltan and the mainstem stocks. The Tahltan and mainstem stocks are considered to be independent; surpluses or deficits in escapement realized in one stock are not used to balance deficits or surpluses in the other. In theory, the Tuya stock which is planted and has no natural current access to spawning and rearing grounds, has a spawning escapement goal of zero. In practice, since the Tahltan and Tuya stocks commingle and have the similar migratory timing and distribution, the harvest rate on Tuya fish should not exceed that which can be sustained by the Tahltan fish so as not to overharvest the latter stock.

Spawning escapement goals have been established as ranges which reflect biological data regarding stock productivity, the ability of existing management systems to deliver established goals, the accuracy and precision of estimates of escapement generated by stock assessment programs, and the degree of risk considered acceptable.

Management subjective categories have been defined for various escapement levels. A postseason estimate of escapement that falls within the Green Management Category shall be considered fully acceptable; one that falls within the Yellow Management Category shall be considered acceptable but not desired; and, one that falls within the Red Management Category shall be considered undesirable. The

escapement goal ranges by management category represent our best judgement of desired escapement levels.

Tahltan Stock

In 1993 the TTC established an escapement goal of 24,000 fish for the Tahltan stock, which takes into account an escapement goal of 20,000 naturally spawning fish and the approximately 4,000 fish needed for broodstock to meet the objectives of the current Canada/U.S. Stikine fry planting program. Management escapement goal ranges for the various management categories for the Tahltan stock are:

	TARGET = 24k				
Escapement	0 - 12k	13k - 18k	18k - 30k	30k - 45k	>45k
Mgmt. Category	Red	Yellow	Green	Yellow	Red

Mainstem Stock

Management escapement goal ranges for the various management categories for the mainstem stock are:

	TARGET = 30k				
Escapement	0 - 15k	15k - 20k	20k - 40k	40k - 75k	>75k
Mgmt. Category	Red	Yellow	Green	Yellow	Red

Data Exchange

The following data for the Tahltan sockeye stock will be collected and exchanged for use in evaluating escapement goals:

1. spawning escapements, separated by wild and planted components;
2. smolt production, separated by wild and planted components; and
3. stock specific catches in the various fisheries.

The following relationships for the Tahltan stock will be examined:

1. total run as a function of spawning escapement level;
2. smolt production as a function of the number of natural spawners and planted fry;
3. adult production as a function of the number of smolts; and
4. total run as a function of the return of age-4 sockeye salmon in the previous year.

The following data for the mainstem stock will be collected and exchanged for use in evaluating escapement goals:

1. survey counts of mainstem stock escapements;
2. the mainstem stock component of catches from the various fisheries; and
3. inventory and assessment data regarding the historical pattern of distribution, abundance, and timing of spawning fish.

The following relationships for the mainstem stock will be examined:

1. total escapement as a function of survey counts of escapement;

2. total run as a function of total spawning escapements;
3. total run as a function of the return of age-4 sockeye salmon in the previous year; and
4. relation of total run to patterns of distribution and timing.

The following data for the Tuya sockeye stock will be collected and exchanged for use in evaluating adult returns:

1. escapement estimate, generated from stock ID, CPUE, and inriver run estimates;
2. number of planted fry and age and size composition of smolt emigration; and
3. stock specific catches in the various fisheries.

The following relationships for the Tuya stock will be examined:

1. adult production as a function of the number of fry planted;
2. total run as a function of the return of age-4 sockeye salmon in the previous year.

Methodology for evaluating escapement goals is being developed by the TTC and will be used in reviewing escapement goals.

Harvest Sharing Objectives

The Pacific Salmon Commission negotiated long-term Pacific salmon harvest sharing agreements in June 1999. Stock assessment and harvest arrangements for Stikine sockeye stocks are found in Annex IV, Chapter 1, of the Pacific Salmon Treaty and in three associated joint enhancement Understandings dated February 1988 and February 1989, the third being developed in 1999. Harvest sharing in 2001 for Stikine sockeye salmon is similar to recent years.

Management plans for the 2001 Stikine harvest are for the TAC of Stikine sockeye salmon, both natural and planted, to be shared 50/50 between the Parties in the usual fisheries. However, if the usual fisheries do not manage to catch the entire TAC, terminal catches in Canada taken under "Excess Salmon to Spawning Requirement" (ESSR) licenses will be allowed to avoid over escapement (relative to escapement goal ranges).

Management Procedures

United States

The District 106 drift gillnet fishery occurs in the waters of northern Clarence Strait and Sumner Strait, in regulatory Sections 6-A, 6-B and 6-C, and portions of Section 6-D (Figure 1). The District 108 fishery encompasses the waters surrounding the terminus of the Stikine River (Figure 1). Due to their close proximity, management of these fisheries is interrelated, resulting in some major stocks being subject to harvest by both fisheries. Two distinct management areas exist within each district: the Frederick Sound (Section 8-A) and Wrangell (Section 8-B) portions of District 108, and the Sumner Strait (Subdistricts 106-41/42) and Clarence Strait (Subdistrict 106-30) portions of District 106. Fishing gear used in Districts 106 and 108 is similar, with common sockeye net sizes of between 5 and 5 ½ inches (130-140 mm) stretched mesh, 60 meshes deep and 300 fathoms (549 m) long. The sockeye salmon fishery in both districts will be managed in accordance with recent transboundary Pacific Salmon Treaty (PST) annex provisions.

The season will start at 12:00 noon on Sunday, June 17 for a 48-hour open period in District 106, District 108 will be closed. Subsequent openings will be determined in-season based on catches and stock proportion data.

Management actions during the sockeye fishing season will be based on analysis of in-river gillnet test fishery CPUE and stock identification data to determine the availability of Stikine fish. These stock abundance indicators will be incorporated into the Stikine Management Model. As the season progresses, this model will be the primary tool used to estimate the availability of sockeye salmon for harvest by the Alaskan fishery in District 108.

Management actions to reduce the harvest of Stikine sockeye salmon are expected in 2001. Due to the high potential for an extremely weak Tahltan return no openings should be expected in District 108 and no fishery extensions should be expected in District 6 for the first four to five weeks of the gillnet season. If in-season catch and stock data indicate that the Tahltan sockeye return is much larger than expected and that additional fishing time would not constitute a risk to the health of the stock then more liberal fishing periods may be allowed. If the sockeye runs to local Alaskan island systems are determined to be weak, area and time restrictions may be necessary in District 106.

Announcements for fishery openings throughout Southeast Alaska are made on Thursday afternoons for gillnet fisheries, which begin the following Sunday. Announcements for any fishery extensions or mid-week openings will be made on the fishing grounds by 10:00 a.m. of the last day of the regular fishery opening.

Pink salmon should begin entering District 106 in significant numbers by the third or fourth week of July. The early portion of the pink salmon fishery will be managed primarily on CPUE. By mid-August, pink salmon destined for local systems will begin to enter the fishery in greater numbers and at that time, management will be based on observed local escapements. In District 108, chum salmon runs into Frederick Sound are a management consideration beginning the end of June. Chum salmon run strength assessments are based upon CPUE in commercial fishery catches.

The coho salmon season will occur during late August and early September. Limited directed fishing in terminal areas is anticipated in District 108. Management of the District 106 fishery will be based predominantly on wild stock CPUE. Substantial contributions from several Alaskan hatcheries and from the remote release site at Neck Lake in upper Clarence Strait are expected to contribute coho salmon in the District 106 and 108 fisheries. In-season estimates from coded wire tag recovery data will be used to identify the hatchery component of the catch. Only the catch of wild coho will be used for fishery performance evaluation.

Troll fishery regulations for the 2001 experimental chinook fisheries in Frederick Sound and Chatham Strait, and Stikine and Clarence Straits are similar to those used in 2000. The experimental fishery in Sumner Strait in District 105 north of a line from Ruins Pt. to Pt St. Albans and in District 106 west of a line from Mitchell Pt. to Pt. Colpoys and will be open beginning April 30. The Frederick Sound Experimental fishery will be open on April 16. During the period April 16 to May 31, the experimental fishery in the District 110 portion of Frederick Sound will encompass the waters of District 110 south and east of a line extending from near Turnabout Island to Hobart Bay, and north and west of a line from Boulder Pt. (east entrance to Portage Bay) to Point Highland (north of Farragut Bay). For the remainder of the experimental openings the District 110 area will be expanded southward to the southern boundary of District 110. The District 109 experimental areas along the Kuiu Is. shoreline at Tebenkof Bay and the area around Kingsmill Pt to Pt. Macartney and along the southern Admiralty Is. shoreline east of Pt. Gardner are also in effect in 2001 from April 30 to June 29. The District 107 area west of Wrangell will be open beginning May 14.

The summer general chinook fishery is still being formulated and the details are not available at this time.

A personal use fishery in U.S. portions of the Stikine River will be open in 2001, as in recent years. Fishing will be allowed in the main channel of the river between the ADF&G cabin at Kakwan Point upstream to the Canadian border. The fishery is structured to allow the harvest of Tahltan sockeye salmon while limiting the harvest of other sockeye stocks and species. The fishery will be open only from July 1 to July 15, with a limit of 25 sockeye salmon per permit. This fishing period coincides with the peak of the Tahltan sockeye run in the lower river. Gillnet gear restrictions will include a maximum 5 ½ inch stretched mesh size and 15 fathom net length.

A subsistence drift gillnet fishery, targeting sockeye salmon and encompassing the waters of Sumner Strait near Point Baker, will again be allowed in 2001. The fishery is permitted in the waters of Sumner Strait within three nautical miles of the Prince of Wales shoreline north of "Hole-in-the-Wall" at 56°15'42" N. Lat. and west of the longitude of the western entrance to Buster Bay at 133°29; W. Long. The fishery is restricted to Alaska residents only and will be open each week from Thursday through Saturday during the period June 15 through July 31, with a limit of 25 fish (of any salmon species) per family per year. Gillnet gear restrictions include a maximum net length of 50 fathoms. It is anticipated that approximately 500 sockeye will be harvested in this fishery.

Canada

The Canadian lower Stikine River commercial fishery (Figure 1) will be managed on a weekly basis with management actions driven by results of stock, catch, and escapement projections derived from the Stikine Management Model. Weekly inputs to the model will include: effort data and stock specific catch from Alaska Districts 106 and 108; catch, effort and inseason stock composition data from the Canadian lower Stikine commercial and test fishery; and escapement requirements.

The lower river commercial fishery will open June 24 (statistical week 27) for an initial period of 24 hours. This opening is one week later than normal due to the below average sockeye forecast and uncertainty regarding the chinook run. Consideration for Tahltan sockeye stock management objectives should persist from the fishery opening, 12:00 noon June 24, to the end of July. Thereafter, management attention will be focused primarily on mainstem stock objectives. Actual time frames of responses to specific stock compositions will be fine-tuned inseason according to the weekly results of the stock identification program.

The achievement of escapement objectives is the foremost priority in management considerations. Inriver allocation priority will be to fulfill the requirements of the traditional aboriginal fishery. The commercial fisheries, therefore, will be managed to accommodate these fundamental priorities. The area of most intense management will be within the lower Stikine commercial fishery.

There are three fishery management responses anticipated in 2001 that reflect concern over the poor expected run of sockeye salmon run size and a desire to improve spawning escapement levels:

1. Although fishing time in the lower Stikine fishery will depend upon stock assessment and international and domestic catch allocation considerations, it is anticipated that fishing periods will be of short duration throughout the sockeye season.
2. For restricted openings, only one gillnet, either a drift net or a set net, will be permitted per licence. This marks a reduction in fishing gear over previous years; since 1994, two gillnets have

been allowed. The maximum allowable net length will remain at 135 meters and there will be a maximum mesh size restriction of 150 mm through noon July 16 to conserve chinook salmon.

3. Fishing boundaries will also be adjusted in 2001 in response to conservation concerns. The section of the Stikine River upstream from the Porcupine – Stikine confluence will be closed until further notice. This reduces the fishing area to what it was prior to 1997. In that year, the upstream fishery boundary in the Stikine River was moved approximately 25 km upstream to increase the available fishery area over previous years. Consideration for increasing the fishing area to the boundary sign located approximately 2 km above the Stikine-Flood confluence will only be given if the run size is forecast to be exceptional, escapement targets are expected to be exceeded and harvests are below allocation targets. However, extensions to the fishing area should be expected to follow extensions to fishing time and gear. In the Iskut River, the area will remain unchanged from previous years, i.e. from the mouth to a marker located approximately 2 km upstream from the mouth.

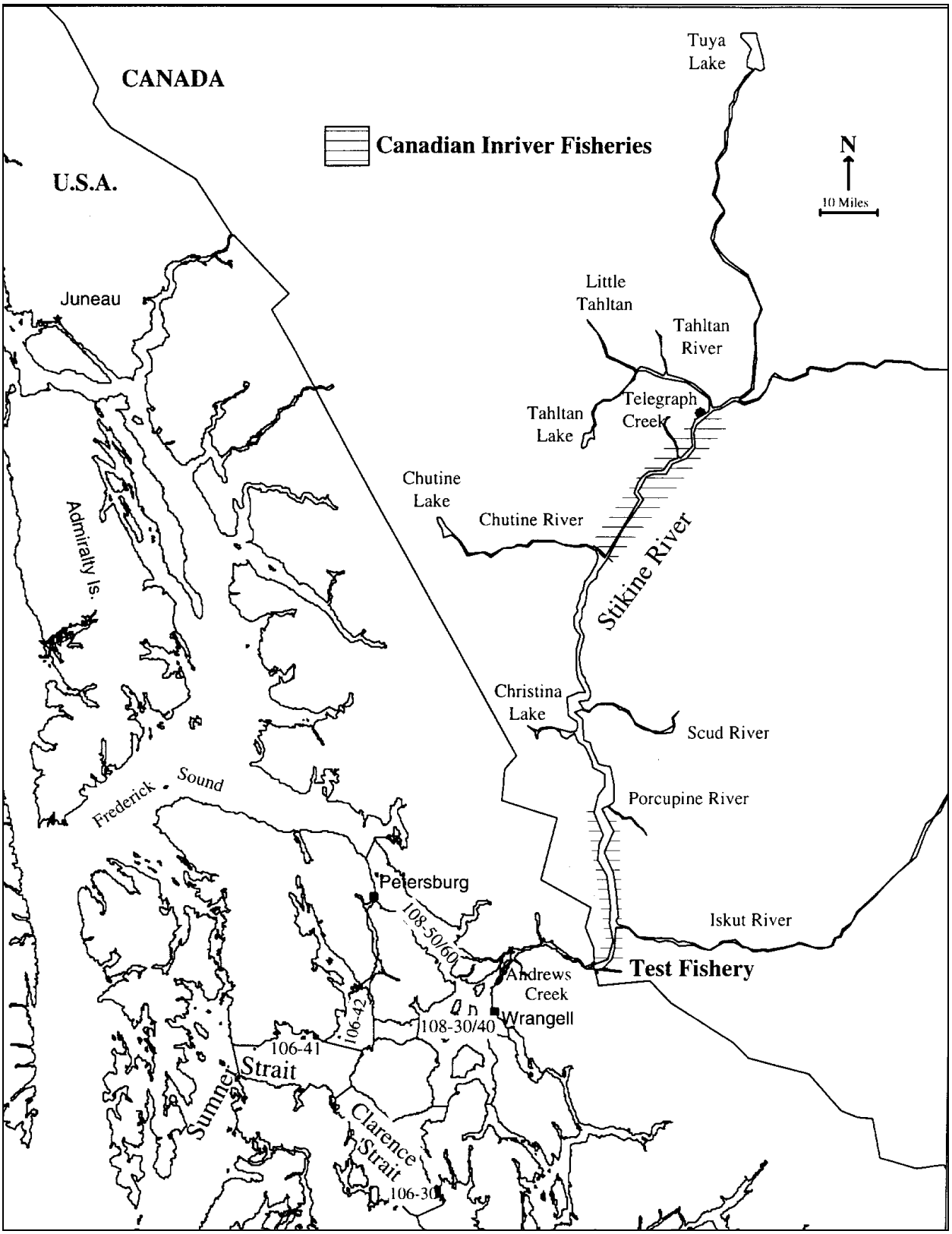

Figure 1. The Stikine River and principal U.S. and Canadian fishing areas.

In the upper Stikine commercial fishery, the fishery will open for the season at noon June 24 or 24 hours. Thereafter, weekly fishing times will generally follow those of the lower river lagged by one week. As in past years, weekly fishing times in the aboriginal fisher will not normally be restricted. Subject to conservation requirements, terminal catches in the lower Tuya River and/or at Tahltan Lake may occur under the ESSR license.

Restrictive management responses that could be used to reduce the sockeye harvest in the lower Stikine commercial fishery, in order of implementation, include: reducing fishing time, the major tool used in the regulation of the fishery; and, reducing the fishing area by relocating boundaries to protect isolated spawning populations. In the aboriginal fishery, reductions in fishing time would be considered only if no other adjustments could be made in the lower and upper river commercial fisheries.

In the event that a more liberal management regime is justified, extensions to fishing time in the commercial fisheries would be granted, dependent on stock specific escapement and catch considerations. This would be followed by increasing the gear allocation to two, then increasing the fishing area.

Summary

Attainment of escapement goals for both the Tahltan and mainstem stocks is the primary objective of Stikine sockeye management. Harvest sharing will be based upon the TAC projections derived from the Stikine Management Model. The TAC estimates will likely change from week to week as the model forecasts a new total run size from the cumulative CPUE each week. Variations in the TAC estimate will likely be larger early in the season, when CPUE is high, than later in the season. Management actions will reflect these week-to-week changes in the TAC estimates. Fishery managers from both countries will keep in weekly contact in order to evaluate the output from the Stikine Management Model and the outcome of their respective management actions.

Inseason Data Exchange and Review

Canada and the U.S. will conduct data exchanges by telephone on Wednesday afternoon or Thursday morning of each week during the fishing season. At that time, current catch statistics and stock assessment data will be updated, exchanged, and reviewed. Management plans for the next week for each country will be discussed at this time. It is anticipated that additional communications will be required each week. Weekly decision deadlines will be: a) for Districts 106 and 108, 11:00 a.m., Thursday, Alaska Daylight Time; and, b) for the Canadian Stikine fishery, 10:00 a.m., Friday, Pacific Daylight Time. A final weekly summary of the fisheries will be conducted Friday afternoon through a conference call between management offices of DFO and ADF&G.

DFO field personnel will provide weekly otolith samples from the lower Stikine commercial and test fisheries for pick-up by ADF&G on Wednesday (earlier if possible) each week for processing and analysis in Juneau.

Stock Assessment Program

This section summarizes agreements regarding the data which will be collected by each National Section and, when appropriate, procedures that will be used for analysis.

Catch Statistics

The U.S. shall report catches and effort in the following strata for each statistical week:

1. Subdistricts 106-41&42 (Sumner Strait);
2. Subdistrict 106-30 (Clarence Strait); and
3. District 108; and

Canada shall report catch and effort statistics in the following strata for each statistical week:

1. the lower river commercial fishery (all areas);
2. the lower river commercial fishery located near Flood Glacier;
3. the upper river commercial fishery;
4. the aboriginal fishery;
5. the lower Stikine River test fishery conducted near the international border; and
6. ESSR fishery catches will be reported as data become available.

Age Composition of Sockeye in Catches

Scales will be collected and used to age fish. Associated fish length and sex composition data will also be collected. The U.S. shall provide scale samples from Subdistricts 106-41&42, Subdistrict 106-30 and District 108 for each fishing week. Canada shall provide scale samples, matched with length and egg diameter data, collected from the lower river commercial and test fisheries each week. Scale samples may be collected from the upper river commercial and aboriginal fisheries; if not, samples collected at the Tahltan Lake weir will be used to characterize the age composition of catches of sockeye salmon in the upper river. Scale impressions will be available to ADF&G.

Stock Composition of U.S. Catches

During the season, otolith samples are taken from the catches in District 106-41/42, District 106-30, and District 108 and processed inseason to determine the contribution of planted Tahltan and Tuya sockeye salmon. The contributions of wild Tahltan and mainstem sockeye stocks in marine catches will be made by assuming the same ratio of planted Tuya to wild Tahltan and mainstem fish as in the inriver fisheries in the following week; for the current week the same weeks inriver estimates will be used.

After the fishing season, SPA will be used to recalculate actual contributions of Tahltan and mainstem sockeye stocks to the catches made each week in each subsection of District 106 (Clarence Strait and Sumner Strait), and District 108. Scales will be collected inseason and the desired sample size from each of these strata is 600 fish per week. It is recognized that small catches in District 108 may preclude temporal stratification at the desired level.

To evaluate the contribution of planted sockeye salmon to U.S. gillnet catches, 400 otolith samples will be collected per week in District 108, and 300 otolith samples will be collected from each sub-area in District 106 for inseason analyses. Besides indicating the relative strength of the planted Stikine stocks, results from the otolith sampling will also serve as a check on the validity of the stock composition estimates used to apportion catches in District 106 and 108 in the SMM. One hundred of the weekly otolith samples from District 106-41 will be matched with scale data for postseason assessment of stock composition accuracies.

Stock Composition of the Inriver Canadian Catch

Egg diameter data will be used inseason to estimate the combined Tahltan and Tuya component versus the mainstem contribution to the lower river sockeye catches during the fishing season. Tahltan fish generally have smaller diameter eggs compared to mainstem fish. The Tuya component will be determined from the analysis of otolith samples collected each week. Weekly sampling targets are 150 matched egg diameter, scale, and otolith samples and 50 otolith samples matched with scales from male fish. ADF&G will analyze the thermal marks from a subsample of at least 60 fish each week. Arrangements will be made to ensure timely transfer of samples and notification of results for use in management decisions no later than the week following when the samples are collected. As stated above, weekly pickup times for the otolith samples from the river will be on Wednesday unless otherwise agreed.

This will also be the data used postseasonally in conjunction with results from additional thermal mark analyses to estimate wild Tahltan and mainstem and the planted Tahltan and Tuya contributions. A total of 350 sockeye salmon will be randomly sampled each week for scales, size and sex. It is necessary to match the scale and egg data by fish to develop postseason stock-specific age-composition estimates, and for the development of postseason scale pattern standards.

Stock Composition and Run Timing in the Canadian Test Fishery

The proportions of Tahltan/Tuya and mainstem sockeye salmon in test fishery catches in the lower Stikine River will be estimated inseason in a similar manner to the commercial fishery. All test fishery catches of sockeye salmon will be sampled for scales and otoliths, and all females for egg diameter (all data to be matched). The test fishery otolith samples will be transferred to ADF&G, as per the arrangements made for the commercial samples, for inseason analysis. Additional sampling requirements will include the collection of spaghetti tags applied in the mark-recapture program, heads from any fish exhibiting adipose clips, and observation and recording of spaghetti tagged sockeye salmon.

The postseason, sockeye stock composition estimates will be based on egg diameter data and associated thermal mark analyses. As per the commercial fishery, the planted portion of the catch will be determined postseasonally from otolith sample.

Spawning Escapement Estimates

An adult enumeration weir will be used to estimate the Tahltan sockeye escapement. The age composition will be estimated from scale samples and contributions of planted sockeye salmon will be determined from otolith samples. Approximately 800 fish will be sampled during the season for scales, length, and sex; 400 otolith samples will be taken at the weir (subject to conservation concerns) and an additional 400 otolith samples from the spawning grounds and/or broodstock. The mainstem escapement will be estimated postseasonally using migratory timing information obtained from CPUE and stock ID data from the commercial and/or test fishery, combined with weekly stock compositions estimated from the commercial and/or test fishery catches. The Tuya escapement will be estimated postseasonally in a similar way.

Postseason SPA Standards

Scale pattern standards for Tahltan and mainstem sockeye stocks will be made from scale samples collected inriver. For the Tahltan stock, samples will be taken from both male and female sockeye salmon at the Tahltan Lake weir, and from female sockeye salmon caught in the lower river fisheries having small-diameter eggs and no thermal marks. For the mainstem stock, samples will be taken from female sockeye salmon caught in the lower river fisheries having large-diameter eggs. Standards for classifying marine catches will therefore be developed from scale samples collected from the Tahltan Lake weir and from both the commercial and test fishery catches in Canada.

Since the weekly proportion of Tahltan to mainstem sockeye salmon in the commercial or test fishery is used postseasonally to determine both the proportion of these two stocks in the entire run, and, the mainstem escapement, it is important to get the best estimate possible. It is agreed that egg diameters from both the commercial and test fishery sampled fish will be used to determine stock proportions in the test fishery catches for both inseason and postseason analyses.

Data Evaluation Procedures

Historical Database

Although Canadian commercial fishing began in the Stikine River in 1975, the methodology for estimating sockeye run sizes was not well standardized until 1982. Therefore, estimates of run size after this time are considered to be better than those made prior to 1982 (Table 1). Due to possible changes in efficiency in the commercial fishery, the CPUE data from the lower river test fishery will be used as the main predictor of inseason run strength. The historical databases from 1985 to 2000 for the Canadian lower Stikine and Alaskan District 106-41/42 commercial fisheries and 1986 to 2000 for the Canadian test fishery, used as input to the Stikine Management Model for 2001, are presented in Tables 2 to 4. The 2001 run size estimated by the model at the end of the fishing season will be updated in the fall of 2001 using postseason stock composition data for use in the database in future years.

Stikine Management Model

A model based on the linear relationship between CPUE and run size has been constructed and updated to make weekly inseason predictions of the total run and the TAC during the 2001 season. A description of the original model is given in the Transboundary Technical Committee Report: **TCTR (88)-2, Salmon Management Plan for the Transboundary Rivers, 1988**. Many subtle changes have been made in the model since that documentation was written and a new documentation is in progress. The purpose of the model is to aid managers in making weekly harvest decisions to meet U.S./Canada treaty obligations for harvest sharing and conservation of Stikine sockeye salmon.

The model for 2001 is based on CPUE data from 1985 to 2000 from District 106 and the Canadian commercial fishery in the lower river and from 1986 to 2000 from the lower Stikine test fishery. Linear regression is used to predict run size from cumulative CPUE for each week of the fisheries beginning in week 26 for all three fisheries. As in 2000, the intercept will be forced to be zero in order to correct for a tendency to overestimate the run size in the earlier weeks during years of low abundance. New for the model in 2001 is a refinement to the lower Stikine commercial CPUE, which excludes catch and effort data from the Flood Glacier area, i.e. the new area introduced in 1997. In addition, the annual weekly CPUE values were decreased by 25% for years 1994 through 2000 to account for the extra gear allowed starting in that year. This makes the historical CPUE data more comparable with the 2001 data.

The parameters from the linear regressions are presented in Table 5. In the past, three sets of CPUE data have been used to predict the total run. These include:

1. The District 106 cumulative CPUE of Stikine sockeye stocks is used to predict the total run of Stikine sockeye salmon.

2. The cumulative CPUE from the Canadian lower river commercial fishery is used to predict the inriver Stikine sockeye run. Starting with this year's analysis, the CPUE from 1994 on, when additional nets were introduced into the fishery, is reduced to 75% of the actual CPUE. The total run is then determined as the inriver run plus the estimated total season catch of Stikine sockeye salmon in District 108 (the minimum of 1) cumulative catch proportioned out to end of season using average run timing or 2) the TAC minus the assumed 106 catch of 10% of the run) and 106 (assumed to be 10% of the run). District catches will be determined from inseason model estimates of weekly Stikine catches for past weeks and using average migratory timing to determine catch for the remainder of the season.

3. Starting in 1995, the cumulative CPUE from the Canadian test fishery has been used to predict the inriver Stikine sockeye run. The inriver run estimate was expanded as per item 2 above to project total run size.

The 2001 inseason forecasts of abundance and TAC will be based on the following datasets:

1. Forecasts for weeks 25 through week 27 will be based on the preseason forecast;
2. The forecast for weeks 28 through 30 will be based on the SMM with inputs from the inriver test fishery for weeks 27 to week 29;
3. The forecasts after week 30, will be based on the week 30 forecast derived from the inriver test fishery in the lower Stikine. The SMM will continue to be updated after week 29, however run forecasts will not be used for management unless both Parties agree;
4. The lower river commercial CPUE data will be presented in the model for comparison with historical data but will not be used for abundance estimation;
5. Historical timing data will be used in the projections weekly guideline harvests in each country.

The reason for excluding forecast from District 106 data is that weekly regressions of CPUE on run size using the inriver data usually have higher coefficients of correlation compared to those based on the District 106 (Table 5). Predictions from the District 106 data will continue to be made to verify inseason estimates and provide postseason comparisons.

Separate projections of run size will be made for the total Stikine sockeye run (wild plus planted), Tahltan stock (wild plus planted), the planted Tuya stock, and the mainstem stock. This information will be used inseason to help management and, postseasonally, to help evaluate the performance of the model.

The part of the model which determines total and weekly TAC levels for the U.S. and Canadian fisheries has been formulated in EXCEL for use by managers inseason. This part of the model uses the coefficients from the linear regression model, the established escapement goals, and PST provisions of harvest sharing to determine the total TAC for each country. Estimates of weekly TAC and effort are provided as guidelines for the managers and are derived from the 1986 - 2000 average run timing of the stocks and the corresponding average CPUE levels of each fishery.

Inseason Use

For 2001, the model predictions will set the TAC levels; however, managers may use additional information on which to make decisions on the openings of their respective fisheries. They will evaluate the output of the model and look for discrepancies with other information they may have on run strength. The information and evaluation will be used to improve the model for the next year.

Postseason Evaluation

After the fishing season is over, the Transboundary Technical Committee will evaluate how well the model performed in predicting the entire run, where discrepancies occurred, and what might have caused them. The committee will also determine whether escapement goals were met according to the Spawning Escapement Goals section of this report. This information is presented in the annual catch and escapement reports prepared by the committee. For 2000, the preliminary evaluation may be found in: Preliminary Estimates of Transboundary River Salmon Production, Harvest, and Escapement and a Review of Joint Enhancement Activities, 2000, Transboundary Technical Committee, February, 2001. The summarized output of the Stikine Management Model during the 2000-fishing season is presented in Table 6.

Coho Salmon

Preseason Forecast

A qualitative prediction of the 2001 run of coho salmon is that it will be below average in magnitude. This outlook is based on the test fishery CPUE, or extrapolated Stikine test fishery CPUE, of coho salmon in the two principal brood years, 1997 and 1998. Based on a comparison of test fishery CPUE for coho salmon versus CPUE for sockeye salmon, the coho escapement was judged to be below average in 1997 and 1998 and below the interim escapement goal range of 30,000 to 50,000 coho salmon. Aerial surveys of several index coho spawning sites followed suit with the test fish estimates, in that the 1997 and 1998 counts were also below average.

Escapement Goal

The interim escapement goal range for Stikine coho salmon is 30,000 to 50,000 fish.

Harvest Sharing Objectives

The United States' management intent is to ensure that sufficient coho salmon enter the Canadian section of the Stikine River to meet the agreed spawning objective, plus an annual Canadian catch of 4,000 coho salmon in a directed coho salmon fishery [PST, Transboundary Rivers, Annex IV, 3.(a)(2)].

Stock Assessment Program

Each country shall:

1. report catch statistics for the same strata as sockeye salmon are reported;
2. sample its fisheries for appropriate tags, e.g., spaghetti and/or coded-wire tags. The first returns of CWT-ed coho salmon from the joint Canada/U.S. Stikine CWT program are expected in 2001; and
3. conduct escapement programs as resources permit.

Management Procedures

United States

The coho salmon season will occur during late August and early September. Limited directed fishing in terminal areas is anticipated in District 108. Management of the District 106 fishery will be based predominantly on wild stock CPUE. Substantial contributions from several Alaskan hatcheries and from the remote release site at Neck Lake in upper Clarence Strait are expected to contribute coho salmon in the District 106 and 108 fisheries. Inseason estimates from coded wire tag recovery data will be used to identify the hatchery component of the catch. Only the catch of wild coho will be used for fishery performance evaluation.

If there is a conservation concern, the District 108 fishery will be restricted.

Canada

If there is a conservation concern, the Canadian fishery will be restricted.

Chinook Salmon

Preseason Forecast

The Little Tahltan River chinook weir count in 1995, the primary contributing brood year for the 2001 run, was 3,072 large chinook salmon; this was 47% below the 1991-2000 average of 5,861 chinook, but within the biologically-based escapement goal range of 2,300 to 5,300 and close to point estimate of 3,300 suggested in recent analysis. The escapement in 1996, which should also contribute significantly to this year's run, was below average at 4,821 chinook salmon, but again within the escapement goal range. On average, age-6 chinook salmon account for 72% of the age composition of Little Tahltan chinook stock whereas, age-5 fish comprise 20%. The primary-parent year escapements in 1995 and 1996 suggest that the 2001 chinook run to the Stikine River will be average.

Escapement Goal

Little Tahltan: 2,700 to 5,300; point 3,300;
Stikine total: 14,000 to 28,000; point 17,400.

Prior to 1999, the interim index (Little Tahltan, approx. 19% of total Stikine) escapement goal was 5,300 chinook salmon (excluding jack chinook salmon) through the Little Tahltan River weir. A new goal of 3,500 chinook salmon for the index systems was proposed in a joint paper (Bernard, McPherson, Pahlke, & Etherton. 1999 draft). Optimum production of chinook salmon from the Stikine River) and was tentatively accepted by the TTC at their April 1999 meeting in Juneau.

PSARC (Canadian) review did not recommend accepting the new goal range, but instead recommended developing an escapement floor and a target exploitation rate of 30%, in order to get a wider range of returns per spawner for subsequent analyses. However, at the current time we have no way of managing for exploitation rates, but hope that the CWT program initiated in 2000 can be developed so that we may begin to estimate ocean harvest.

ADF&G (U.S.) review recommended going with the paper's escapement goal range, although some minor errors in the data used were pointed out to the authors.

In response to the above reviews, the TTC accepted an escapement floor of 4,000 chinook salmon for Little Tahltan or 20,000 for the total Stikine system for 1999. These escapement floors were near the midpoint of the ranges recommended by the Bernard et al. paper.

Later in 1999, the Joint Chinook Technical Committee of the PSC re-examined the Stikine escapement goal. Results of the analysis appear in: **Pacific Salmon Commission Joint Chinook Technical Committee Report TCCHINOOK (99)-3. 1999.** *Maximum sustained yield or biologically-based escapement goals for selected chinook salmon stock used by the Pacific Salmon Commission's Chinook Technical Committee for escapement assessment.* The goal recommended in this report is 14,000 to 28,000 total Stikine River (above border) chinook salmon; this was adopted by the Transboundary Technical Committee (TTC) in 2000. The point estimate of escapement that produces MSY is approximately 17,400 chinook salmon. Based on mark-recapture data, the overall escapement goal range translates into a Little Tahltan River escapement goal of 2,700 to 5,300 large chinook salmon with a point target of 3,300 fish. Since 1985, when the weir was first installed, the escapement has not fallen below the lower end of this range. The escapement has however, exceeded the upper end of the range in five years (1988, 1992, 1993, 1994, 1997).

Harvest Sharing Objectives

Both parties are to take appropriate management actions to ensure that the escapement goal range for chinook salmon bound for the Canadian portions of the Stikine River is achieved in 2001. Given the past success in achieving the escapement goal range, no changes in management procedures are required. The Parties have agreed not to initiate any new directed fisheries until an appropriate abundance-based management regime is develop and implemented. The target date for this is 2004.

Management Procedures

United States

District 108 will not open during the early portion of the season due to concerns regarding Tahltan Lake sockeye salmon, this management action will also substantially reduce the drift gillnet harvest of Stikine River chinook salmon. Chinook catches will also be a management concern in District 106 throughout the season and, if large numbers of small feeder chinook salmon are caught, night closures may be instituted.

Troll fishery regulations for the 2001 experimental chinook fisheries in Frederick Sound and Chatham Strait, and Stikine and Clarence Straits are similar to those used in 2000. The Frederick Sound and Chatham Strait experimental fisheries will be open on April 16. Frederick Sound will be open until further notice and Chatham will be opened on Monday-Tuesday pending inseason CWT data. If CWT results indicate a high proportion of Alaska hatchery fish, fishing time will be extended. Other experimental troll areas in the Petersburg-Wrangell management area have the same descriptions and will have similar management actions as in 2000, that is Monday–Tuesday openings to be extended if inseason CWT data indicate high abundance of Alaska hatchery fish.

The general summer troll chinook salmon fishery is still being formulated and the details are not available at this time.

The sport fishery will be managed in a manner very similar to the 2000 season. This includes a one fish daily bag limit for all sport fishermen and reduced seasonal bag limits for charter operators and non-residents.

Canada

Chinook salmon will be harvested in the commercial fisheries incidentally during the early sockeye fishery. Mesh size restrictions (maximum 150 mm) will be in effect through noon July 16 to conserve chinook salmon.

Stock Assessment Program

Each country shall:

1. report catch statistics for the same strata as sockeye salmon are reported;
2. sample its fisheries for coded-wire tags; and
3. conduct escapement programs as resources permit.

A CWT program on wild chinook fry/smolt was initiated in 2000 and will continue to be developed as part of a program to estimate marine harvest on Stikine chinook salmon.

Table 1. Stikine sockeye run sizes: 1979 - 2000 (note: [a] Escapement includes fish later captured for broodstock).

Year	Inriver Run Size	Inriver Catch	Escapement	Marine Catch	Total Run Size
Total Stikine Sockeye Stocks					
1979	40,353	13,534	26,819	8,299	48,652
1980	62,743	20,919	41,824	23,206	85,949
1981	138,879	27,017	111,862	27,538	166,417
1982	68,761	20,540	48,221	42,804	111,565
1983	71,683	21,120	50,563	5,782	77,466
1984	76,211	5,327	70,884	7,810	84,021
1985	184,747	26,804	157,943	29,747	214,494
1986	69,036	17,846	51,190	6,420	75,456
1987	39,264	11,283	27,981	4,085	43,350
1988	41,915	16,538	25,377	3,181	45,096
1989	75,054	21,639	53,415	15,492	90,546
1990	57,386	19,964	37,422	9,856	67,242
1991	120,152	25,138	95,014	34,323	154,476
1992	154,542	29,242	125,300	77,394	231,936
1993	176,100	52,698	123,402	104,630	280,730
1994	127,527	53,380	74,147	80,509	208,036
1995	142,308	66,777	75,531	76,420	218,728
1996	184,400	90,148	94,252	188,385	372,785
1997	125,657	68,197	57,460	101,258	226,915
1998	90,459	50,486	39,973	30,989	121,448
1999	65,879	47,202	18,677	58,735	124,614
2000	56,354	31,535	24,819	37,957	94,311
Tahltan sockeye run size					
1979	17,472	7,261	10,211	5,076	22,548
1980	19,137	8,119	11,018	11,239	30,376
1981	65,968	15,178	50,790	16,189	82,157
1982	42,493	14,236	28,257	20,890	63,383
1983	32,684	11,428	21,256	5,072	37,757
1984	37,571	4,794	32,777	3,097	40,668
1985	86,008	18,682	67,326	25,197	111,205
1986	31,015	10,735	20,280	2,757	33,771
1987	11,923	4,965	6,958	2,259	14,182
1988	7,222	4,686	2,536	2,129	9,351
1989	14,110	5,794	8,316	1,561	15,671
1990	23,923	8,996	14,927	2,307	26,230
1991	67,394	17,259	50,135	23,612	91,006
1992	76,681	16,774	59,907	28,218	104,899
1993	84,068	32,458	51,610	40,036	124,104
1994	77,239	37,728	39,511	65,101	142,340
1995	82,290	50,713	31,577	51,665	133,955
1996	95,706	57,545	38,161	147,435	243,141
1997	37,319	25,214	12,105	43,408	80,727
1998	27,941	15,673	12,268	7,086	35,027
1999	35,918	25,599	10,319	23,431	59,349
2000	14,330	8,660	5,670	12,841	27,171
Tuya sockeye run size					
1995	2,216	1,112	1,104	586	2,802
1996	19,158	8,919	10,239	19,442	38,600
1997	28,738	20,819	7,919	37,520	66,258
1998	31,442	22,911	8,531	15,941	47,383
1999	16,165	13,877	2,288	15,217	31,382
2000	21,982	14,476	7,505	14,184	36,166
Mainstem sockeye run size					
1979	22,880	6,273	16,608	3,223	26,103
1980	43,606	12,800	30,806	11,967	55,573
1981	72,911	11,839	61,072	11,349	84,260
1982	26,267	6,304	19,964	21,914	48,182
1983	38,999	9,692	29,307	710	39,709
1984	38,640	533	38,107	4,714	43,354
1985	98,739	8,122	90,617	4,550	103,289
1986	38,022	7,111	30,910	3,663	41,685
1987	27,342	6,318	21,023	1,826	29,168
1988	34,693	11,852	22,841	1,052	35,745
1989	60,944	15,845	45,099	13,931	74,875
1990	33,464	10,968	22,495	7,549	41,013
1991	52,758	7,879	44,879	10,712	63,470
1992	77,861	12,468	65,393	49,176	127,037
1993	92,033	20,240	71,792	64,594	156,627
1994	50,288	15,652	34,636	15,408	65,696
1995	57,802	14,953	42,850	24,169	81,971
1996	69,536	23,684	45,852	21,508	91,044
1997	59,600	22,164	37,436	20,330	79,930
1998	31,077	11,902	19,175	7,962	39,039
1999	13,797	7,726	6,071	20,087	33,884
2000	20,042	8,398	11,643	10,932	30,974

Table 2. CPUE for all sockeye salmon and the proportion of Tahltan, Tuya, and Mainstem stocks in the catch from the Canadian lower river commercial fishery, 1985-2000. For periods when the fishery was closed, values were filled in with averaging and interpolation techniques (these values italicized and underlined in the table).

Week	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Inriver commercial fishery CPUE on all sockeye salmon																
25	*3.8*	*2.0*	*1.4*	*1.9*	*2.4*	*2.2*	*2.5*	*3.7*	*3.8*	*2.7*	*2.5*	*3.8*	2.5	3.9	*2.6*	*2.9*
26	67.6	2.8	*16.5*	*22.4*	25.5	13.0	14.8	*43.9*	*45.9*	*31.8*	59.9	89.4	43.3	67.3	0.4	*34.6*
27	*119.5*	18.8	11.9	21.8	48.1	49.6	120.3	111.1	163.2	33.9	92.4	234.2	112.6	111.3	41.3	125.0
28	*100.1*	79.8	10.6	35.5	23.1	78.6	121.0	155.0	185.4	123.5	94.5	168.3	97.5	137.1	112.9	185.9
29	260.0	58.1	57.9	69.2	105.5	110.3	114.4	144.0	135.4	110.7	90.0	106.6	68.0	116.0	164.4	105.4
30	147.9	84.7	67.8	71.9	140.8	81.4	53.7	166.0	118.3	109.1	79.9	106.9	98.6	111.0	140.9	113.3
31	104.7	81.9	27.6	61.9	73.9	62.1	83.8	88.3	71.6	83.3	64.5	56.2	96.5	64.7	54.5	37.2
32	73.6	55.6	76.6	89.2	60.8	54.4	31.6	91.5	83.7	61.4	38.5	40.6	67.9	51.0	46.1	52.3
33	58.6	34.1	32.3	33.3	28.4	16.2	15.7	43.2	31.1	31.8	19.7	22.1	16.3	21.7	3.4	19.6
34	18.2	25.9	16.5	23.1	16.4	12.4	1.0	12.5	39.3	24.3	14.4	5.8	19.4	17.3	20.8	5.2
35	10.3	9.4	5.4	11.0	6.2	13.1	4.2	4.5	11.5	7.7	8.8	1.8	9.4	4.6	0.0	0.9
Tahltan as a proportion of the sockeye catch																
25													0.619	0.182		
26	0.890	0.730			0.650	0.730	0.800				0.970	0.808	0.545	0.337	0.720	
27		0.770	0.740	0.770	0.490	0.800	0.830	0.870	0.793	0.944	0.921	0.731	0.503	0.382	0.552	0.384
28	0.900	0.830	0.880	0.690	0.380	0.690	0.860	0.780	0.831	0.881	0.814	0.555	0.429	0.386	0.566	0.218
29	0.790	0.730	0.660	0.420	0.210	0.350	0.750	0.550	0.677	0.793	0.665	0.429	0.410	0.452	0.604	0.278
30	0.420	0.520	0.240	0.270	0.030	0.250	0.370	0.240	0.464	0.631	0.440	0.256	0.282	0.304	0.563	0.289
31	0.290	0.190	0.110	0.100	0.020	0.060	0.120	0.260	0.342	0.426	0.261	0.201	0.288	0.158	0.392	0.131
32	0.200	0.090	0.050	0.040	0.020	0.030	0.080	0.090	0.149	0.253	0.157	0.125	0.179	0.073	0.194	0.155
33	0.200	0.020	0.040	0.070	0.020	0.030	0.000	0.020	0.073	0.126	0.134	0.102	0.114	0.077	0.088	0.168
34	0.000	0.010	0.070	0.090	0.020	0.030	0.000	0.000	0.166	0.063	0.130	0.037	0.110	0.043	0.019	0.154
35	0.000	0.010	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.000	0.000	0.045	0.008	0.038	0.133
Tuya as a proportion of the sockeye catch																
25													0.286	0.818		
26											0.000	0.122	0.354	0.635	0.200	
27											0.030	0.128	0.339	0.566	0.405	0.551
28											0.044	0.164	0.358	0.504	0.407	0.648
29											0.012	0.102	0.276	0.298	0.345	0.442
30											0.010	0.063	0.239	0.228	0.245	0.140
31											0.000	0.013	0.110	0.165	0.150	0.107
32											0.000	0.026	0.117	0.084	0.049	0.027
33											0.000	0.000	0.059	0.000	0.038	0.019
34											0.000	0.037	0.017	0.000	0.019	0.051
35											0.000	0.000	0.023	0.016	0.000	0.000
Mainstem as a proportion of the sockeye catch.																
25													0.095	0.000		
26	0.110	0.270			0.350	0.270	0.200				0.030	0.071	0.102	0.028	0.080	
27		0.230	0.260	0.230	0.510	0.200	0.170	0.130	0.207	0.056	0.049	0.141	0.158	0.051	0.043	0.065
28	0.100	0.170	0.120	0.310	0.620	0.310	0.140	0.220	0.169	0.119	0.142	0.281	0.214	0.109	0.026	0.134
29	0.210	0.270	0.340	0.580	0.790	0.650	0.250	0.450	0.323	0.207	0.323	0.469	0.315	0.250	0.051	0.280
30	0.580	0.480	0.760	0.730	0.970	0.750	0.630	0.760	0.536	0.369	0.550	0.681	0.479	0.468	0.192	0.572
31	0.710	0.810	0.890	0.900	0.980	0.940	0.880	0.740	0.658	0.574	0.739	0.786	0.601	0.677	0.458	0.761
32	0.800	0.910	0.950	0.960	0.980	0.970	0.920	0.910	0.851	0.747	0.843	0.850	0.704	0.843	0.757	0.818
33	0.800	0.980	0.960	0.930	0.980	0.970	1.000	0.980	0.927	0.874	0.866	0.898	0.827	0.923	0.875	0.813
34	1.000	0.990	0.930	0.910	0.980	0.970	1.000	1.000	0.834	0.937	0.870	0.926	0.873	0.957	0.962	0.795
35	1.000	0.990	0.920	1.000	1.000	1.000	1.000	1.000	1.000	0.976	1.000	1.000	0.932	0.976	0.962	0.867

Table 3. CPUE for all sockeye salmon and the proportion of Tahltan, Tuya, and Mainstem stocks in the catch from the U.S. District 106-41/42 commercial fishery, 1985-2000. For periods when the fishery was closed, values were filled in with averaging and interpolation techniques (these values italicized and underlined in the table).

Week	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
District 106-41/42 Commercial Fishery: CPUE all sockeye stocks																
25	91.0	14.1	*42.5*	*33.9*	46.8	29.2	51.4	*40.3*	*41.7*	*47.0*	53.9	30.5	40.0	*24.9*	*20.6*	*28.3*
26	*109.9*	16.9	29.1	22.9	51.9	33.6	116.5	56.6	27.4	61.2	72.9	200.8	99.2	41.1	52.6	40.3
27	162.9	62.9	52.2	58.7	66.1	78.2	52.9	110.2	95.6	96.8	61.1	77.6	96.1	47.7	38.3	95.8
28	176.2	*68.6*	103.9	66.8	147.1	84.5	99.6	108.8	96.9	131.2	112.7	62.6	64.7	79.5	46.3	80.4
29	114.5	*68.0*	83.9	103.6	109.4	116.1	73.5	111.4	109.7	165.1	79.5	124.7	60.0	59.4	59.8	64.8
30	110.0	100.5	155.9	87.6	89.4	176.9	95.5	103.6	94.2	104.8	125.3	107.4	70.3	62.9	61.3	63.0
31	293.6	105.7	106.6	59.3	93.4	78.4	74.1	70.2	99.3	95.3	95.3	98.1	53.9	59.2	41.6	73.8
32	69.0	82.1	115.4	92.2	36.2	45.1	40.0	59.6	87.6	47.3	98.3	77.3	25.0	40.2	29.2	37.1
33	100.5	60.1	88.3	67.6	33.5	30.6	65.4	41.0	55.1	65.3	58.5	37.1	30.0	22.4	14.6	25.9
34	37.8	28.8	*23.8*	20.5	7.7	12.6	16.7	21.3	40.4	36.6	25.8	18.1	34.3	10.9	9.9	5.1
35	12.0	8.9	3.4	11.0	2.9	4.2	4.4	15.8	15.0	9.8	6.9	8.4	30.3	7.9	3.2	2.1
Tahltan as a proportion of the catch																
25	0.103	0.000			0.032	0.018	0.231				0.390	0.436	0.122			
26		0.020	0.013	0.085	0.085	0.026	0.396	0.438	0.460	0.466	0.424	0.672	0.115	0.026	0.334	0.045
27	0.347	0.090	0.013	0.071	0.027	0.025	0.256	0.180	0.410	0.501	0.391	0.459	0.215	0.129	0.145	0.089
28	0.240		0.051	0.050	0.000	0.012	0.099	0.140	0.313	0.380	0.130	0.343	0.075	0.004	0.085	0.004
29	0.129		0.008	0.011	0.000	0.008	0.012	0.030	0.162	0.179	0.018	0.169	0.016	0.007	0.075	0.043
30	0.000	0.000	0.008	0.006	0.000	0.001	0.100	0.010	0.078	0.113	0.003	0.070	0.017	0.007	0.043	0.003
31	0.000	0.037	0.000	0.000	0.000	0.000	0.000	0.016	0.045	0.019	0.005	0.000	0.002	0.003	0.004	0.000
32	0.000	0.000	0.000	0.000	0.000	0.000	0.016	0.012	0.013	0.060	0.003	0.021	0.000	0.009	0.000	0.006
33	0.000	0.009	0.000	0.000	0.000	0.000	0.052	0.000	0.057	0.049	0.013	0.000	0.000	0.001	0.000	0.000
34	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.069	0.083	0.000	0.000	0.000	0.001	0.000	0.000
35	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.077	0.000	0.000	0.008	0.001	0.000	0.000
Tuya as a proportion of the catch																
25											0.000	0.046	0.181			
26											0.000	0.093	0.215	0.507	0.203	0.273
27											0.000	0.125	0.183	0.293	0.206	0.313
28											0.000	0.061	0.175	0.076	0.140	0.221
29											0.010	0.010	0.007	0.061	0.131	0.015
30											0.000	0.010	0.010	0.035	0.029	0.010
31											0.000	0.000	0.000	0.014	0.004	0.034
32											0.000	0.000	0.000	0.001	0.001	0.005
33											0.000	0.000	0.000	0.000	0.006	0.000
34											0.000	0.000	0.000	0.022	0.009	0.000
35											0.000	0.000	0.000	0.022	0.009	0.000
Mainstem as a proportion of the catch																
25	0.000	0.000			0.060	0.055	0.094				0.040	0.000	0.003			
26		0.000	0.000	0.000	0.100	0.022	0.018	0.060	0.036	0.018	0.053	0.019	0.000	0.000	0.000	0.010
27	0.013	0.032	0.000	0.000	0.160	0.020	0.028	0.153	0.036	0.015	0.000	0.039	0.018	0.002	0.009	0.029
28	0.005		0.003	0.000	0.045	0.022	0.012	0.064	0.091	0.017	0.016	0.000	0.053	0.000	0.036	0.009
29	0.008		0.000	0.000	0.005	0.005	0.085	0.030	0.280	0.048	0.014	0.000	0.006	0.000	0.041	0.011
30	0.029	0.005	0.015	0.000	0.004	0.008	0.031	0.044	0.083	0.056	0.072	0.000	0.007	0.002	0.182	0.036
31	0.000	0.001	0.000	0.000	0.015	0.039	0.054	0.113	0.301	0.047	0.020	0.000	0.013	0.000	0.286	0.051
32	0.000	0.000	0.000	0.009	0.011	0.049	0.010	0.090	0.173	0.000	0.089	0.000	0.009	0.000	0.185	0.004
33	0.015	0.000	0.000	0.000	0.012	0.004	0.000	0.258	0.183	0.000	0.034	0.043	0.003	0.000	0.152	0.000
34	0.042	0.000		0.000	0.012	0.016	0.000	0.155	0.102	0.005	0.134	0.005	0.016	0.000	0.129	0.015
35	0.042	0.000	0.000	0.000	0.012	0.016	0.000	0.155	0.102	0.005	0.134	0.005	0.000	0.000	0.129	0.000

Table 4. CPUE for all sockeye salmon and the proportion of Tahltan, Tuya, and Mainstem stocks in the catch from the Canadian lower river test fishery, 1986-2000. For periods when the fishery was closed, values were filled in with averaging and interpolation techniques (these values italicized and underlined in the table).

Week	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Inriver Test Fishery: CPUE all sockeye stocks															
25	*0.45*	*0.22*	*0.32*	0.42	0.03	0.04	*0.49*	*0.61*	*0.31*	0.67	0.35	0.66	0.58	0.00	*0.26*
26	*0.95*	0.13	0.10	0.48	0.38	0.50	0.91	1.25	0.18	1.90	1.93	1.40	1.23	0.22	*0.53*
27	0.48	0.08	0.60	0.70	1.28	2.92	1.32	2.00	1.47	3.16	3.85	3.00	1.40	2.08	0.76
28	2.24	0.93	0.58	0.37	2.18	2.08	2.75	2.50	2.40	1.47	1.93	1.73	1.07	2.60	2.10
29	2.06	1.18	1.15	1.57	1.70	1.56	2.30	2.75	1.80	1.33	2.53	1.80	0.80	2.17	1.48
30	2.17	1.67	0.92	1.76	1.77	1.48	2.37	3.15	*1.40*	1.00	1.53	1.80	1.00	1.60	1.00
31	3.17	1.15	2.55	1.16	0.90	1.25	1.75	1.85	*1.19*	0.96	1.13	1.00	0.50	1.13	1.10
32	1.89	0.76	2.20	0.63	0.70	0.58	1.45	2.20	*0.83*	0.60	0.73	1.20	0.20	0.38	0.76
33	1.00	0.52	1.15	0.23	*0.50*	0.50	1.10	1.46	*0.51*	0.35	0.40	0.47	0.37	0.33	0.34
34	0.52	0.10	0.18	0.10	0.18	0.48	0.50	0.63	1.64	0.55	0.20	0.53	0.13	0.33	0.02
35	*0.21*	0.02	0.12	0.03	0.00	0.23	0.07	0.15	1.30	0.00	0.12	0.15	0.00	0.05	0.00
Tahltan as a proportion of the catch															
25				0.756	0.583	0.763				0.900	0.710	0.696	0.517	0.000	
26		0.882	0.875	0.632	0.906	0.958	0.927	0.888	0.876	0.910	0.745	0.886	0.595	0.444	
27	0.770	0.714	0.759	0.519	0.821	0.885	0.931	0.793	0.908	0.905	0.760	0.511	0.214	0.585	0.401
28	0.830	0.761	0.406	0.237	0.623	0.775	0.846	0.687	0.903	0.891	0.787	0.346	0.656	0.587	0.222
29	0.730	0.463	0.324	0.165	0.406	0.584	0.571	0.660	0.826	0.400	0.136	0.185	0.625	0.573	0.267
30	0.520	0.192	0.132	0.036	0.143	0.384	0.256	0.457		0.438	0.231	0.333	0.050	0.482	0.193
31	0.190	0.063	0.055	0.000	0.104	0.236	0.221	0.282		0.291	0.155	0.200	0.000	0.346	0.180
32	0.090	0.038	0.068	0.011	0.129	0.073	0.184	0.103		0.218	0.000	0.458	0.000	0.207	0.135
33	0.020	0.010	0.111	0.000		0.050	0.078	0.118		0.135	0.000	0.143	0.000	0.113	0.071
34	0.010	0.061	0.000	0.000	0.037	0.016	0.278	0.010	0.037	0.000	0.100	0.125	0.000	0.041	0.000
35		0.111	0.000	0.000	0.000	0.000	0.056	0.048	0.042	0.000	0.000	0.000	0.000	0.000	0.000
Tuya as a proportion of the catch															
25										0.000	0.029	0.217	0.345	0.000	
26										0.009	0.159	0.086	0.378	0.543	
27										0.015	0.145	0.444	0.643	0.371	0.533
28										0.055	0.057	0.462	0.188	0.323	0.655
29										0.000	0.026	0.074	0.125	0.232	0.329
30										0.000	0.000	0.037	0.100	0.181	0.132
31										0.000	0.000	0.050	0.000	0.062	0.011
32										0.000	0.000	0.000	0.000	0.018	0.000
33										0.000	0.000	0.000	0.000	0.000	0.000
34										0.000	0.000	0.000	0.000	0.000	0.000
35										0.000	0.000	0.000	0.000	0.000	0.000
Mainstem as a proportion of the catch															
25				0.244	0.417	0.237				0.100	0.261	0.087	0.138	1.000	
26		0.118	0.125	0.368	0.094	0.042	0.073	0.112	0.124	0.080	0.095	0.029	0.027	0.012	
27	0.230	0.286	0.241	0.481	0.179	0.115	0.069	0.207	0.092	0.080	0.095	0.044	0.143	0.044	0.066
28	0.170	0.239	0.594	0.763	0.377	0.225	0.154	0.313	0.097	0.055	0.156	0.192	0.156	0.090	0.123
29	0.270	0.537	0.676	0.835	0.594	0.416	0.429	0.340	0.174	0.600	0.838	0.741	0.250	0.195	0.403
30	0.480	0.808	0.868	0.964	0.857	0.616	0.744	0.543		0.563	0.769	0.630	0.850	0.337	0.675
31	0.810	0.937	0.945	1.000	0.896	0.764	0.779	0.718		0.709	0.845	0.750	1.000	0.592	0.809
32	0.910	0.962	0.932	0.989	0.871	0.927	0.816	0.897		0.782	1.000	0.542	1.000	0.775	0.865
33	0.980	0.990	0.889	1.000		0.950	0.922	0.882		0.865	1.000	0.857	1.000	0.887	0.929
34	0.990	0.939	1.000	1.000	0.963	0.984	0.722	0.990	0.963	1.000	0.900	0.875	1.000	0.959	1.000
35		0.889	1.000	1.000	1.000	1.000	0.944	0.952	0.958	1.000	1.000	1.000	1.000	1.000	1.000

Table 5. The 2001 Stikine Management Model parameters, including average run fraction by week, average weekly CPUE, and regression parameters for run size regressed on cumulative CPUE.

	All Stikine Sockeye Stocks						Tahltan Sockeye Stock					
Week	Run Fraction	Intercept	Slope	R Square	Slope of 0 incpt	Ave. CPUE	Run Fraction	Intercept	Slope	R Square	Slope of 0 incpt	Ave. CPUE
Lower River Commercial Fishery, 1985-2000												
27	0.147	50987	624	0.524	1087	80.5	0.241	13700	555	0.696	707	57.7
28	0.177	41580	331	0.459	547	96.9	0.268	1491	355	0.839	368	64.0
29	0.189	15933	292	0.546	361	98.0	0.250	-2660	259	0.837	251	56.0
30	0.176	1364	253	0.528	273	90.3	0.141	-5476	231	0.812	215	31.8
31	0.116	-17673	256	0.593	235	62.7	0.059	-5784	218	0.814	201	13.8
32	0.101	-32748	255	0.593	210	54.3	0.027	-5866	212	0.809	196	6.6
33	0.044	-37626	251	0.607	200	25.9	0.009	-5630	209	0.805	194	2.5
34	0.028	-42095	252	0.612	194	15.4	0.004	-5706	209	0.804	193	1.1
35	0.011	-45036	254	0.618	192	6.3	0.000	-5743	209	0.804	193	0.1
36	0.006	-45213	253	0.627	190	3.4	0.000	-5752	209	0.804	193	0.0
District 106-41/42 Commercial Fishery 1985-2000												
25	0.092	61919	9440	0.582	13529	10.3	0.098	26347	7382	0.659	9307	7.0
26	0.251	85404	1918	0.688	2984	28.2	0.307	32542	1566	0.851	1999	21.9
27	0.233	56074	1595	0.816	2156	26.2	0.256	19511	1236	0.937	1437	18.3
28	0.160	47072	1357	0.841	1754	18.0	0.179	18965	981	0.906	1138	12.8
29	0.095	48866	1183	0.842	1536	10.7	0.088	20590	863	0.887	1015	6.3
30	0.057	47484	1120	0.832	1445	6.4	0.039	20524	830	0.884	975	2.8
31	0.047	45789	1080	0.831	1382	5.3	0.011	20041	828	0.884	969	0.8
32	0.026	45108	1057	0.835	1346	2.9	0.007	20140	820	0.883	962	0.5
33	0.022	45218	1032	0.838	1314	2.5	0.010	20123	813	0.880	953	0.7
34	0.012	45499	1017	0.837	1296	1.3	0.005	20310	806	0.877	946	0.4
35	0.004	45456	1013	0.838	1290	0.5	0.001	20338	804	0.877	945	0.1
36	0.001	45446	1013	0.838	1290	0.1	0.000	20348	804	0.876	945	0.0
Lower River Test Fishery, 1986-2000												
26	0.071	54568	57374	0.515	101355	0.8	0.133	21114	38280	0.430	58259	0.6
27	0.148	40705	24267	0.629	36034	1.7	0.251	10676	18916	0.698	22709	1.2
28	0.158	11371	20939	0.674	23543	1.8	0.251	-4509	16389	0.876	15277	1.2
29	0.154	-8160	18111	0.704	17234	1.7	0.169	-10621	14516	0.881	12346	0.8
30	0.145	-24181	16323	0.716	13688	1.6	0.102	-8650	12426	0.825	10862	0.5
31	0.122	-33860	14893	0.631	11623	1.4	0.050	-7540	11537	0.795	10255	0.2
32	0.089	-25937	12614	0.553	10396	1.0	0.028	-7639	11235	0.781	9968	0.1
33	0.054	-19716	11305	0.514	9748	0.6	0.010	-7690	11133	0.778	9870	0.0
34	0.036	-21839	11081	0.544	9391	0.4	0.005	-7682	11080	0.780	9824	0.0
35	0.014	-21791	10917	0.552	9251	0.2	0.001	-7702	11073	0.781	9815	0.0
36	0.006	-21731	10844	0.557	9193	0.1	0.000	-7712	11071	0.781	9812	0.0

Table 6. Evaluation of the Stikine Management Model for the 2000 sockeye fishery as run by both the U.S. and Canada. Weekly forecasts of run size are given along with the predicted total allowable catch (TAC) for Stikine sockeye salmon.

		Forecast	TAC			Cumulative Catches [a]	
Stat. Week	Start Date	Run Size	Total	U.S.	Canada	U.S.	Canada
Model runs generated by Canada							
26	18-Jun	138,000	64,882	32,441	32,441	1,907	0
27	25-Jun	138,000	64,882	32,441	32,441	11,376	3,591
28	2-Jul	94,699	19,699	9,626	9,626	14,057	9,455
29	9-Jul	179,566	77,508	38,754	38,754	22,134	15,131
30	16-Jul	177,143	68,234	34,117	34,117	25,829	18,839
31	23-Jul	173,037	70,317	35,159	35,159	29,657	23,382
32	30-Jul	159,808	57,645	28,822	28,822	28,043	26,367
33	6-Aug	156,735	53,585	26,793	26,793	29,531	27,343
34	13-Aug	153,635	50,935	25,467	25,467	29,531	27,585
35	20-Aug	149,574	46,870	23,435	23,435	29,531	27,585
Model runs generated by the U.S.							
26	18-Jun	138,000	64,882	32,441	32,441	2,900	
27	25-Jun	138,000	64,882	32,441	32,441	16,321	3,595
28	2-Jul	140,980	62,655	31,328	31,328	18,895	9,455
29	9-Jul	182,956	99,409	49,705	49,705	24,413	13,258
30	16-Jul	177,766	71,731	35,866	35,866	20,798	16,233
31	23-Jul	168,736	55,931	27,965	27,965	26,430	17,775
32	30-Jul	159,795	57,130	28,565	28,565	28,043	24,652
33	6-Aug	157,594	53,879	26,939	26,939		
Preliminary end-of-season estimate							
		73,127					

[a] Does not include ESSR or test fishery catches.

TAKU RIVER

Preseason Forecasts

Sockeye Salmon

The TTC has not developed a joint preseason forecasting method for Taku sockeye salmon. Both ADF&G and DFO agree that joint work needs to be done in the future to develop a single committee forecast.

The DFO preseason forecast for the 2001 Taku sockeye salmon total run is approximately 250,000 fish and constitutes an average run size. In comparison, the recent 10-year average (1991-2000) estimated run size is 249,300 sockeye salmon. The 2001 forecast is the average of a sibling-based forecast of 264,300 sockeye, and a stock-recruitment based forecast of 236,600. If the run comes in as expected, the 2001 TAC will be approximately 175,000 sockeye salmon.

The sibling forecast is based on the historical relationship between the number of age-5 sockeye in year (t) and the number of age-4 sockeye in year (t-1). The relationship for the 1989-2000 period is described as follows:

$$N_{5(t)} = 113{,}990 + 0.57 \bullet N_{4(t-1)} \qquad [2]$$

where: $N_{5(t)}$ = return of age-5 in year(t); and
$N_{4(t-1)}$ = return of age-4 in year(t-1).

The preliminary estimate of the return of age-4 in 2000 is approximately 108,800 fish, which, when substituted into equation [2] above, gives a predicted age-5 return of approximately 176,200 fish in 2001. On average, approximately 67% of the run is composed of age-5 sockeye. Assuming the year 2001 age-5 proportion of the run will be average, the predicted 176,200 age-5 return translates into a total run forecast of approximately 264,308 sockeye in 2001.

The sibling relationship is significant at a level of α=0.05, however the coefficient of determination (r^2) is only *0.11*. Consequently this sibling forecast should be viewed cautiously. Based on a relatively poor return of 5-year old fish in 2000, it is believed it may be somewhat high.

The 2001 stock-recruitment forecast is based on the historical relationship between the number of spawners (composite of all Taku stocks) and the subsequent returns described by the following equation:

$$\ln (R/S) = 2.026 - 0.000012 \bullet S \qquad [3]$$

where: R = total adult return; and
S = number of spawners.

Equation [3] above is based on the estimated return of spawners from the 1984 to 1995 brood years and the subsequent age-specific returns from these escapements.[1] The coefficient of determination for this relationship is $r=0.37$. The relationship is significant at a level of α=0.05. The estimated numbers of spawners from the principal brood years were 113,700 in 1995 and 92,600 in 1996 and 71,100 in 1997;

[1] Escapement estimates for 1981 and for all years after 1984 were based on the Canyon Island mark-recapture program. Annual age-specific returns were estimated assuming the inriver age composition, as determined from sampling in the Canadian commercial fishery, was representative of the entire run.

calculated returns per spawner for these years based on equation [2] are 2.0, 2.6, and 3.3, respectively. Assuming that the age composition of the 2001 run will be average (67% 5-year olds, 25% 4-year olds, 6% 6-year olds, and 2% 3-year olds), the run size for 2001, predicted using stock-recruitment data, is 236,600 sockeye.

A trend in return per spawner has been noted showing a consistent decline for brood years 1988 to 1994 (3.9, 2.9, 2.3, 2.3, 1.9, 1.8, 1.6, respectively), with a slight improvement for the 1995 brood year (1.8). However, a large return of age-4 fish was observed in 2000 from the 1996 brood year. This may signal an improvement in environmental conditions or a shift to earlier maturity (since the 1995 year class also had a strong age-4 component).

Tatsamenie sockeye salmon: Escapement of sockeye salmon to Tatsamenie Lake has occasionally limited the magnitude of the joint U.S./Canada egg take program. Based on standard assumptions of fecundity (4,000 eggs per female), equal sex ratios and the Canadian requirement that no more than 30% of the escapement can be utilized for enhancement purposes, an escapement of approximately 5,000 to 8,300 sockeye salmon will be needed to reach the egg take target of 3-4 million sockeye salmon in 2001. Tatsamenie Lake escapements have averaged 5,300 fish during the last 5 years, and have ranged from a high of 13,000 (1985) to a low of 1,888 (1999) fish. An above average run of Tatsamenie sockeye is expected in 2001 based on parent-year escapements of 8,000 in 1996 and 6,000 in 1997 and the estimated Tatsamenie Lake smolt outmigration of 2,444,000 in 1998 (which should return as age-1.3 (5_2) and 2.3 (6_3) in 2001).

Coho Salmon

Coho runs to the Taku River from 1991 through 1994 appeared to have benefited from high marine survivals and other factors. However, with the exception of 1998, run strength has been reduced since 1994 as the result of some years of poor freshwater survival and some years of poor marine survival.

The estimated spawning escapements in the two primary brood years that will contribute to the year 2001 run were 38,900 fish in 1997, and 61,400 fish in 1998. These both exceeded the interim escapement goal range for Canadian-origin Taku coho of 27,500 to 35,000 fish. Taku coho salmon escapement has averaged approximately 75,500 over the 1991 to 2000 period.

Very good catches of juvenile coho salmon, i.e. estimated total smolt production of 1.5 million, in the joint ADF&G and DFO Taku River coded-wire-tagging program during the spring of 2000 are believed to reflect increased smolt production from the drainage. If the marine survival rate for these fish is average, an above-average run should be observed in 2001.

Chinook Salmon

The principal brood years contributing to the 2001 chinook run are 1995, 1996 and 1997. Brood year escapements greatly exceeded the escapement goal range of 30,000-50,000 large fish, except for the 1995 escapement, which was within the range. However, returns-to-date from the 1995 brood year have been slightly below average (although much improved from the 1993 brood year). The preliminary forecast for large chinook salmon (>=660 mm mid-eye to tail-fork) in 2001 is based on sibling returns and is 37,000 fish (range 23,000 to 51,000). This constitutes a below average run.

Pink Salmon

Pink salmon returning in 2001 will be the product of the 1999 escapement. Although the total pink salmon escapement in 1999 is unknown, it is believed to have been above average based on the Canyon Island

fishwheel catch of 23,503 pink salmon. The 1990-1999 average odd-year Canyon Island fishwheel catch of pink salmon was 11,071 fish.

Prior to 1993, odd-year runs of Taku pink salmon were dominant cycle years. However, in 1993 there was a near-complete failure of the odd-year return. This affected the 1995 and 1997 Canyon Island fishwheel counts, which were only 1,712 and 4,962 respectively. However, the odd-cycle year appeared to recover in 1999, which saw an improved U.S. catch and a fishwheel count of 23,503 pink salmon. Due to the apparent good escapement in 1999, an above average run is expected. However, it should be noted that the pink salmon run in 2000 was below average and that run was produced from a similar escapement as in 1999.

Chum Salmon

Low fall chum catches and CPUE in the District 111 fishery and Canyon Island fishwheels catches in 1996 and 1997 suggest that the spawning escapement that will produce the year 2001 run was poor. Consequently, a below average to poor fall chum run is expected in 2001.

Escapement Goals

The new Annex IV, Chapter 1 agreement required the Parties to review an appropriate escapement goal for Taku chinook salmon by May 1999 and thereafter establish a new goal as soon as practicable. Detailed analyses of harvest and spawning abundance by age class and smolt production were used to generate a recommendation for a 30,000 to 55,000 adult fish (3-5 ocean) escapement goal range. This analysis and recommendation has been reviewed and approved by the Chinook Technical Committee (TCCHINOOK (99)-3), internal review committees of ADF&G and DFO and by the TTC.

Escapement goals for other Taku River salmon species are based on limited analyses of historic catch and escapement data. These escapement goals are considered as 'interim goals' and are subject to change as additional stock recruitment data and detailed analyses are performed. The new Annex IV, Chapter 1 agreement also calls for developing a revised escapement goal for coho salmon no later than May 1, 2004. Current escapement goals accepted by the Transboundary Technical Committee for salmon spawning in Canadian portions of the Taku River are as follows:

Species	Year established or status	Interim Escapement Goal Ranges	
		From	To
Sockeye	1985	71,000	80,000
Coho	Review by May 1, 2004	27,500	35,000
Chinook	1999	30,000	55,000
Pink	1985	150,000	250,000
Chum	1985	50,000	80,000

Harvest Sharing Objectives

Long-term harvest sharing agreements between Canada and the United States for Taku River salmon are in place as a result of negotiations of Annex IV, Chapter 1 of the Pacific Salmon Treaty. The arrangements that are expected to apply for the 1999 to 2008 period as follows:

(1) Sockeye salmon:

(i) Except as noted below, Canada shall harvest no more than 18% of the TAC of the wild sockeye salmon originating in the Canadian portion of the Taku River each year;

(ii) If the projected inriver escapement is greater than 100,000 sockeye salmon, Canada may, in addition harvest 20% of the projected inriver escapement above 100,000 sockeye salmon;

(iii) The Parties agree to manage the runs of Taku River sockeye salmon to ensure that each country obtains catches in their existing fisheries equivalent to each country's share of wild sockeye salmon and a 50% share of fish originating from Taku fry plants;

(iv) The Parties agree to continue the existing joint Taku enhancement program designed to produce annually 100,000 returning sockeye salmon.

(2) Coho salmon:

(i) The Parties agree to develop and implement an abundance-based approach to managing coho salmon on the Taku River no later than May 1, 2004. The Parties commit to developing a revised MSY escapement goal to be implemented no later than May 1, 2004.

(ii) Until a new abundance-based approach is developed, the management intent of the United States is to ensure a minimum above-border inriver run of 38,000 coho salmon, and the following arrangements will apply:

a. no numerical limit on the Taku coho catch will apply in Canada during the directed sockeye salmon fishery (through statistical week 33);

b. if inseason projections of above-border run size are less than 50,000 coho salmon, a directed Canadian harvest of up to 3,000 coho salmon is allowed for assessment purposes as part of the joint Canada/U.S. Taku River mark-recapture program;

c. if inseason projections of above-border run size exceed 50,000 coho salmon, a directed Canadian harvest of 5,000 coho salmon is allowed;

d. if inseason projections of above-border run size exceed 60,000 coho salmon, a directed Canadian harvest of 7,500 coho salmon is allowed;

e. if inseason projections of above-border run size exceed 75,000 coho salmon, a directed Canadian harvest of 10,000 coho salmon is allowed.

(3) Chinook salmon:

(i) Both Parties shall take appropriate management action to ensure that the necessary escapement goals for chinook salmon bound for Canadian portions of the Taku River are achieved.

(ii) The Parties agree that new fisheries on Taku River chinook salmon will not be developed without the consent of both Parties. Management of new directed fisheries will be abundance-based through an approach to be developed by the Committee no later than May 1, 2004. The Parties agree to implement assessment programs in support of the development of an abundance-based management regime.

It is assumed that both Parties will continue to take appropriate management actions to ensure that the escapement goals for chinook and other species of salmon bound for Canadian portions of the Taku River are achieved in 2000.

Management Procedures

The management co-ordination between U.S. and Canadian fishery managers will involve weekly conferences between designated members or alternates. The agencies have agreed to coordinate management of their respective fisheries to increase the likelihood that Tatsamenie escapements are adequate to achieve escapement and brood stock needs. Since there is potential for a significant run of enhanced Tatsamenie sockeye in 2001, attempts will be made to estimate the enhanced run in addition to the wild and total sockeye runs.

As in interim measure, the following arrangements will be used to actively manage for the enhanced stocks in 2001:

1. for purposes of calculating the TAC of the enhanced fish, an exploitation rate of 60% will be applied to the total enhanced run forecasts. This exploitation rate is just less than midway between the 1990-1999 average actual harvest rate of 56% and the theoretical average exploitation rate of 66% for this period.
2. The stock comp in D-11 will be used to initially estimate proportion of run forecasts produced from the joint Canada/US mark-recapture program attributed to the enhanced fish. When available, inriver stock ID data will be used to update the estimates.
3. Average run timing of the Tatsamenie stock, from historical tagging and/or stock ID data, will be used in the Tatsamenie projections.

United States

Section 11-B (Figure 2) will open for a 72-hour fishing period beginning at noon on the third Sunday in June (June 17, statistical week 25). The fishery will be managed through mid-August primarily on the basis of sockeye abundance. Run strength will be evaluated using fishery catch and CPUE data and weekly inriver run size estimates from the Taku River mark-recapture program operated jointly by ADF&G and DFO. Contributions of enhanced sockeye salmon will be estimated inseason by analysis of salmon otoliths sampled from the commercial harvests. For purposes of inseason run size estimation, average weekly historical stock composition data will be used to estimate the contribution of wild Taku River and Port Snettisham sockeye contributions to the catch. The above data will be used to generate weekly estimates and total season projections of total Taku sockeye run size, U.S. Taku TAC and U.S. harvest. The age and stock compositions of the harvest of wild sockeye stocks will be revised after the fishing season by analysis of scale pattern and brain parasite incidence data from samples from the commercial catch and escapements.

To increase numbers of Tatsamenie sockeye returning to the lake, a coordinated management focus will occur during statistical weeks 31-33 (July 29-August 18). Actions may include reduced fishing time in Taku Inlet in the U.S. drift gillnet followed by measures taken in the Canadian fishery to ensure stocks

pass through for escapement. Extensions of fishing time in each country's fisheries will be discussed by the fishery managers of the two countries prior to implementation.

Nighttime fishing closures may be imposed to limit incidental catches of immature chinook salmon. Harvests in the Juneau recreational fishery and initial gill net openings will be evaluated to determine the need for night closures during the 2001 season.

Returns from domestic hatchery programs are expected to contribute significantly to the District 11 fishery in 2001. For example, the return of Snettisham hatchery sockeye salmon is expected to be 353,000 sockeye (approximately two times the run size in 2000) and the summer chum return is expected to be 490,000 chum salmon (about one half the number in 2000). Substantial runs of coho salmon are also expected to Douglas Island Pink and Chum, Inc. hatcheries in Gastineau Channel. Portions of these runs will be available for incidental harvest in the directed wild sockeye and coho fisheries in Taku Inlet. Extended fishing time is expected in Stephens Passage during July to harvest hatchery runs of summer chum salmon to Limestone Inlet and during August to harvest runs of Snettisham Hatchery sockeye salmon.

Pink salmon will be harvested in Section 11-B incidental to the sockeye and summer chum fisheries. Fishing time for pink salmon in Section 11-C will depend on the strength of runs to lower Stephens Passage, Seymour Canal, and the northern portions of District 10. Parent-year pink escapements in Stephens Passage and Seymour Canal were excellent and some surplus to escapement needs may occur in 2001.

In 1989 the Alaska Board of Fisheries reopened the purse seine fishery in a small area in northern Chatham Strait (a portion of subdistrict 112-16) during the month of July in order to harvest pink stocks migrating northward to Taku River, Lynn Canal and upper Stephens Passage. The area encompasses waters along the western shore of Admiralty Island north of Point Marsden (Figure 3). If a harvestable surplus of pink salmon returning to this area occurs in 2001, a July seine fishery may occur in the Hawk Inlet shore area. During August, fishery openings along the Hawk Inlet shore may extend northward to the latitude of Hanus Reef when north-migrating pink stock strength warrants. If north-migrating runs are poor and south-migrating stocks are strong, seining may be limited to south of Point Marsden.

Beginning in mid-August management of the District 11 gillnet fishery will be based on the run strengths of coho and fall chum salmon. Inseason management will be based on evaluation of fishery catch, effort and CPUE relative to historical levels, recovery of coded-wire-tags from fishery sampling, and inriver run size estimates from the Taku River mark-recapture program. As specified in the Annex IV, Chapter 1 agreement, the U.S. will manage its fishery to achieve a minimum above-border run of 38,000 Taku coho salmon.

Sport fishing regulations for 2001 will be similar to those in 2000. The chinook sport fishing season will be open in marine waters near Juneau throughout the year. Sport fishing inside Taku Inlet, however, is closed north of a line from Cooper Point to Dorothy Creek from April 16 through June 14 to protect returning Taku chinook salmon.

A personal use fishery in U.S. portions of the Taku River was established by the Alaska Board of Fisheries in 1989 and will operate during the month of July in 2001. The legal gear type is set nets, not to exceed 15 fathoms in length. The seasonal bag limit is five sockeye salmon per person or ten sockeye salmon per household. Fishing is not allowed within 100 yards of the U.S./Canada research fishwheels.

Canada

The Canadian fishery will open 12:00 noon Sunday, June 17 for an initial 48-hour period to target early sockeye runs. A maximum mesh size restriction of 150 mm (approximately 5.9 inches) will be in effect through 12:00 noon July 15 to conserve chinook salmon during the early season sockeye fishery.

Canadian sockeye management decisions for the Taku River fishery (Figure 2) will be based on weekly projections of total run size, TAC and escapement for wild stocks. The weekly projections (wild stocks) will be made using the following calculations:

$$TAC_{(w)} = [(E_{w(t)} + C_{w(t)} + A_{w(t-1)}) / \rho_{w(t)}] - E_w \quad [5]$$

Where: $TAC_{(w)}$ = the projected total allowable catch of wild *w* sockeye for the season;
$E_{w(t)}$ = the cumulative wild escapement to week *t* based on mark-recapture data;
$C_{w(t)}$ = the cumulative Canadian wild catch to week *t*;
$A_{w(t-1)}$ = the estimated cumulative U.S. catch of wild Taku sockeye salmon to the preceding week t-1 (preceding week used to allow for migration time). Catches in Districts 111 and 112 will be considered for inclusion in this estimate;
$\rho_{w(t)}$ = the estimated proportion of run through to week t determined from the average inriver run timing based on historical CPUE data from the Canadian fishery. (Run timing estimates will be adjusted inseason according to inseason CPUE data relative to historical data in both U.S. and Canadian fisheries); and
E_w = the system-wide escapement goal for wild stocks. (A value of 75,000 will be used reflecting the midpoint in the interim range of 71,000 to 80,000).

Weekly TAC and U.S. catch projections for sockeye salmon will be used to guide the management of the commercial fishery. Run timing will be used to project the total escapement and U.S. harvest; the Canadian catch will be adjusted with the objective of meeting escapement and agreed Canada/US harvest sharing objectives.

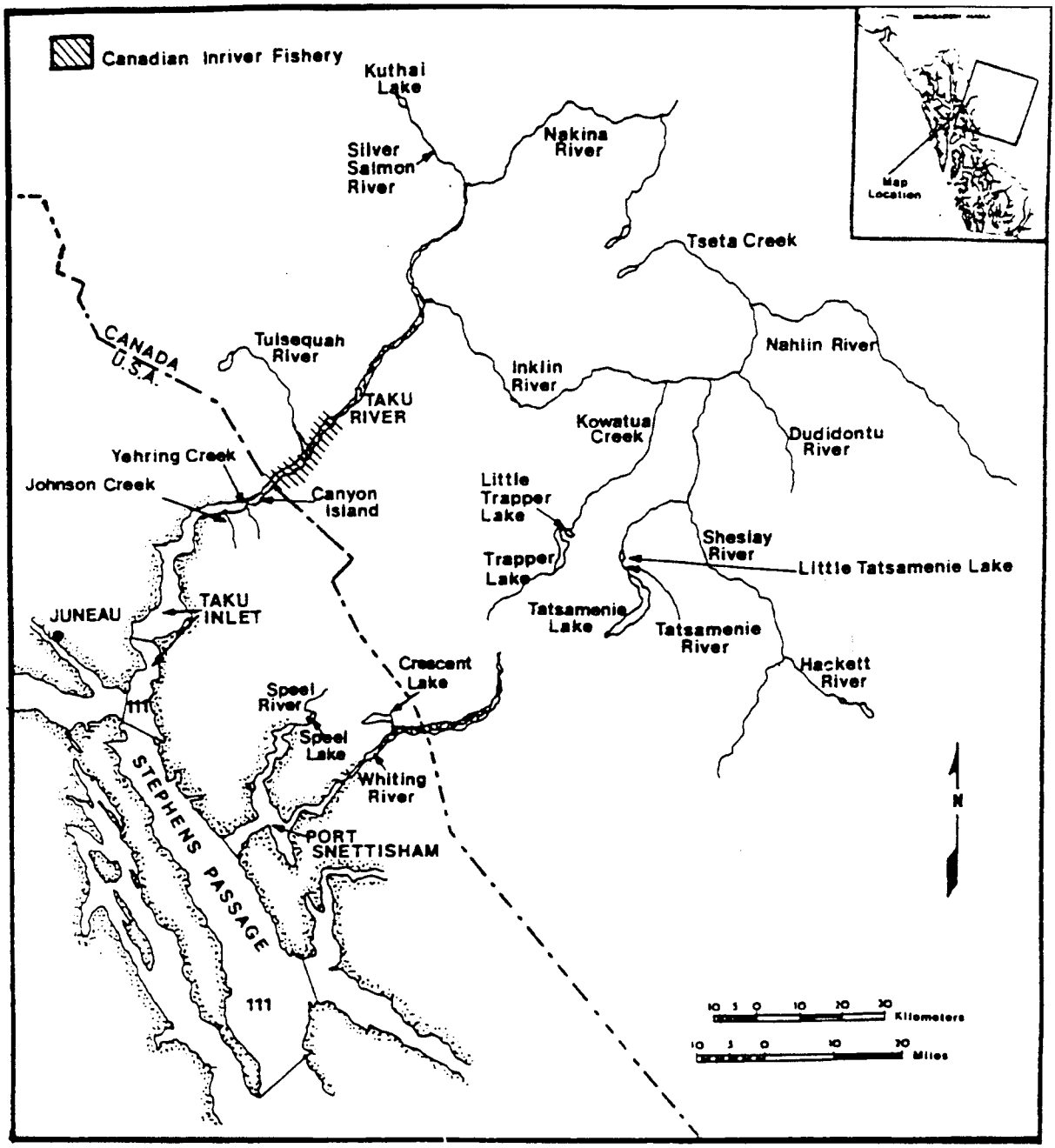

Figure 2. The Taku River and principal U.S. and Canadian fishing areas.

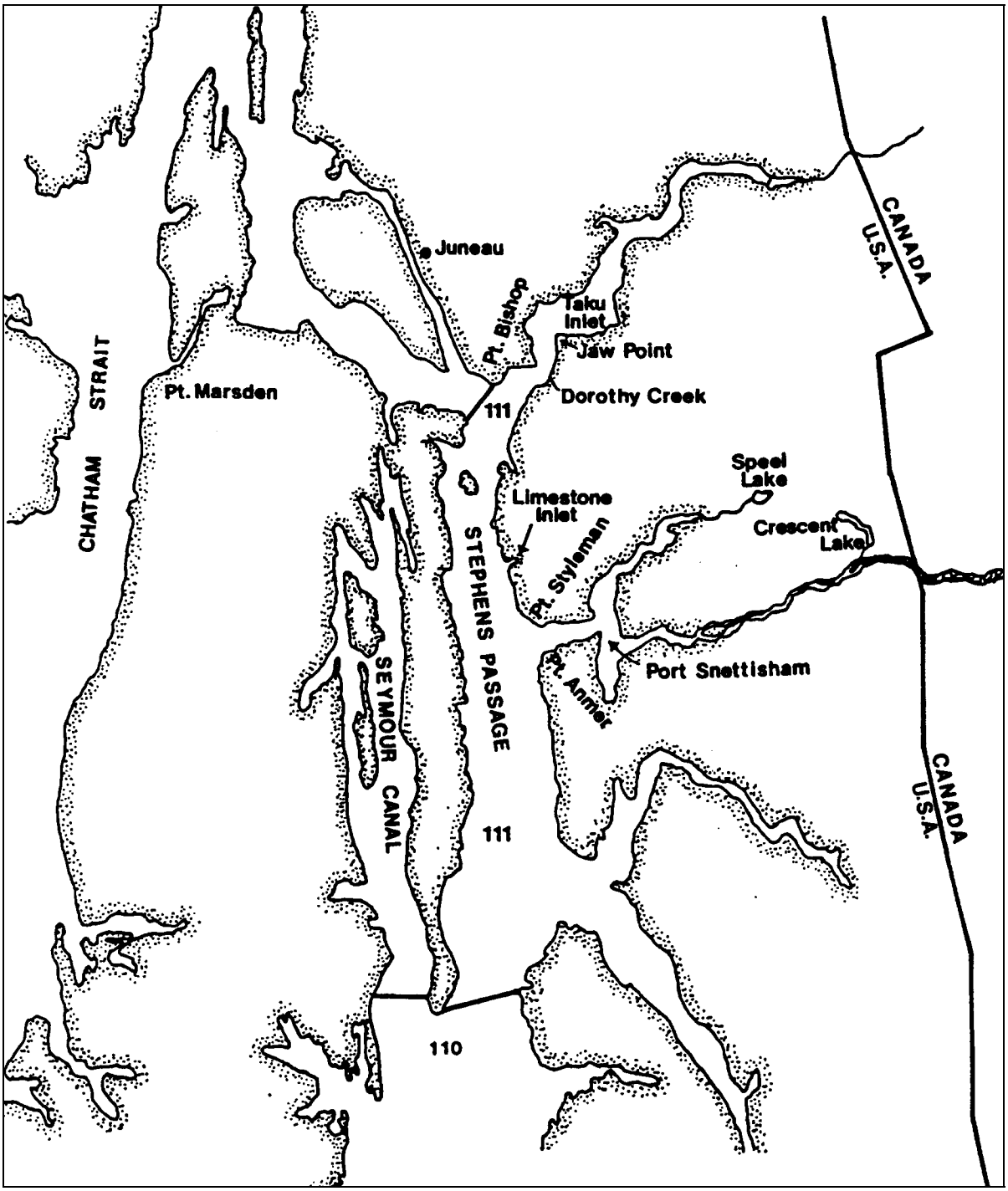

Figure 3. U.S. fishing areas adjacent to the Taku River.

During statistical weeks 31-33 (July 29-August 18), management attention will focus on Tatsamenie sockeye run strength. Management decisions during these weeks will take into account the objective of increasing spawning escapement levels in Tatsamenie Lake as well as providing sufficient fish to meet broodstock targets for the joint enhancement project.

After mid-August, management actions will shift to coho salmon. Early indications of total run strength will be based on the projected Alaskan troll catch of "Above Canyon Island" (ACI) Taku River coho salmon based on inseason CWT sampling data. The relationship between the troll catch and total run size for the 1992 to 2000 period is described by the following equation:

$$R_{(ACI)} = 3.0079C_T + 34{,}936$$

where: $R_{(ACI)}$ = projected total run size of ACI coho salmon;
C_T = projected troll catch of ACI Taku coho salmon.

The coefficient of determination for this relationship is $r=0.952$. The projected troll catch will be estimated by expanding the catch-to-date by historical timing.

The troll-based inseason run forecasts will be used for consideration in management decisions until reliable in-river abundance estimates are available, usually by early September. The in-river forecasts will be based on the following simplified formula:

$$R_{IR(ACI)} = R_{IR(ACI)}t/T$$

Where: $R_{IR(ACI)}$ = projected total inriver run above Canyon Island;
$R_{IR(ACI)}t$ = estimated run size to time "t" based on mark-recapture data;
T= average cumulative run timing at Canyon Island through time "t".

Adjustments to fishing time will be made based on the forecasts and the coho harvest provisions of the PST.

To address chum salmon conservation concerns, the retention of chum salmon will be prohibited. Fishers will also be encouraged to live-release any steelhead caught as per previous years.

Modification to the fishing area implemented in 1998 to include a 50 meter closed section just upstream of the Canada/US border will be continued in 2001. The upper boundary near Yellow Bluff will remain unchanged from previous years.

The Canadian fishery will be monitored daily by DFO personnel who will collect catch and tag recapture data. Catch information will be relayed to the DFO office in Whitehorse, collated, and exchanged with a designated ADF&G contact person during weekly, more often if needed, telephone contacts.

ALSEK RIVER

Fisheries

Salmon stocks returning to the Alsek River drainage (Figure 4) are jointly managed by the Canadian Department of Fisheries and Oceans (DFO) and the Alaska Department of Fish and Game (ADFG) through the joint Transboundary Technical Committee (TTC) of the Pacific Salmon Commission.

The principal U.S. fishery that targets Alsek stocks is a commercial set gillnet fishery which operates in Dry Bay. A small subsistence fishery also operates in Dry Bay. U.S. fishers harvest the full mixture of Alsek stocks. The principal Canadian fisheries occur in the upper Tatshenshini drainage. A traditional aboriginal fishery takes place in the Klukshu River and Village, Goat and Blanchard creeks. At present, between 100-150 members of the Champagne Aishihik First Nations harvest salmon via fish traps and gaffs, primarily in the Klukshu River, and to a lesser extent at Village, Blanchard and Goat Creeks. Sport fisheries take place primarily on the Tatshenshini River in the Dalton Post area and on Takhanne and Blanchard rivers. The Canadian fisheries harvest upper Tatshenshini River salmon stocks.

Most Alsek chinook salmon appear to spawn in Canada, but some spawners have been observed in U.S. tributaries. Most sockeye and coho salmon probably also spawn in Canada, but substantial spawning has been documented in U.S. tributaries as well.

Preseason Forecasts

The overall sockeye run to the Klukshu River in 2001 is expected to be below average in strength. Principal contributing brood years to this year's run will be 1996 (Klukshu escapement of 7,891 sockeye salmon) and 1997 (Klukshu escapement of 11,303 sockeye salmon); the 1991-00 average Klukshu escapement is approximately 12,800 fish. Based on historical stock-recruitment analysis, the range of Klukshu escapements that appear most likely to produce maximum sustained yields is 7,500 to 15,000 sockeye salmon (Clark and Etherton, 2000). This paper should be peer-reviewed in Canada in the autumn 2001.

The 2001 overall Alsek sockeye run is expected to be approximately 26,600 sockeye. This estimate is based on the average of:

1. a predicted run of 11,402 Klukshu sockeye (32,600 total Alsek River return) derived from historical Klukshu stock-recruitment data, an assumed Klukshu contribution to the total run of 35%, and an adjustment factor of approximately 0.60 to account for the tendency of the method to over predict the Klukshu weir counts since 1995; and
2. a return per spawner of two (2) fish which generates an estimate of 5,730 sockeye salmon to Klukshu and 20,500 total Alsek River sockeye production.

The expected run size of 26,600 sockeye is below the recent 10-year average run size estimate of approximately 46,000 sockeye (based on the Klukshu weir count expanded by 1/0.35 to account for other inriver escapement and an assumed U.S. harvest rate of 0.20).

The Klukshu early sockeye run escapements in 1996 and 1997 were 1,502 and 6,505, respectively. The principal brood year, 1996, was below the optimum level of 2,500 sockeye spawners as determined through separate stock-recruitment analyses of the early run by DFO. The weir count in 1997, a minor contributor of age-4 sockeye to the 2001 return, was well above the optimum escapement goal as determined from DFO analysis. The early run return to the weir is expected to be 2,000 fish, below both DFO's optimum escapement goal of 2,500 and below the recent ten year average of 3,300 sockeye salmon. It should be noted that returns in 1998 through 2000 were far below expectations that were developed in a similar manner.

The Klukshu chinook escapements in 1995 and 1996, 5,400 and 3,400 chinook salmon, respectively, were above average with the 1995 escapement being the highest on record. However, the escapements were above the optimum escapement range of 1,100 to 2,300 chinook salmon as determined from current stock-recruitment analysis. As a result, the preliminary outlook is for a below average run.

The coho escapements observed at the Klukshu River weir in 1997 (300 coho salmon) and 1998 (1,921 coho salmon) suggests the run in 2001 will be below average. (Note: the weir count and hence coho escapement estimates are incomplete.) The recent 10-year average escapement is 2,800 coho salmon.

Management Approach for the 2001 Season

Sockeye Salmon

The principal escapement monitoring tool for sockeye stocks on the Alsek River is the Klukshu weir, operated by DFO and the Champagne-Aishihik First Nation. The biologically-based escapement goal for the Klukshu stock is 7,500 to 15,000 fish (Clark and Etherton, 2000). As a result of this analysis, Canadian and U.S. managers have set a spawning escapement goal range of 7,500 to 15,000 sockeye salmon for 2001.

United States

U.S. fisheries will operate similar to regimes in 1996-2000, with the first opening the first week in June for one day. The remainder of this fishery will be operated on sockeye run strength. The fishery will be managed on run strength judged by comparison of CPUE to historical averages. A cautious approach will be taken recognizing that fishery CPUE is poorly correlated with run size. As noted above the U.S. fisheries target the full mixture of Alsek sockeye stocks, which include stocks in the U.S. such as Tanis and Basin creeks, as well as Canadian upriver stocks such as Klukshu River and Village Creek.

The initial opening for the Alsek River fishery (Dry Bay, Figure 4) occurs on or after the first Monday in June by regulation; prior to 1963 the fishery opened in May. In 2001 weekly openings will initially be set at 24 hours. The duration of the weekly fishing periods will be based on fisheries performance and weir data. The first opening will occur on June 4, 2001.

The Alsek River surf fishing area will be open during the same time period as the inriver fishery. The surf fishery areas include the shoreline, 3/4 of a mile (1.2 km) in each direction from the river mouth to the outermost bar where the surf breaks.

Canada

Canadian fisheries for sockeye salmon will proceed similar to regimes in recent years. Next to conservation, the priority in management will be to provide for the basic needs harvest of the Champagne-Aishihik First Nation. The basic needs level for sockeye is 3,000 fish, as documented in the CAFN final land claims agreement. An option being considered in 2001 is allowing some First Nations' harvest to occur at the weir, which would provide biological samples and tag recovery information. In the sport fishery, non-retention of sockeye will be in effect through mid August to conserve early runs and address domestic allocation priorities. In the event that the run size into the Klukshu is above the minimum targets, Canadian managers will liberalize harvest opportunities.

It is likely the Klukshu weir will be relocated approximately 500 meters upstream from the position it has been in since 1991. It is anticipated that a new area closed to fishing will be created below the weir to protect holding fish.

Chinook Salmon

The principal escapement monitoring tool for chinook stocks on the Alsek River is also the Klukshu weir. A joint report for an escapement goal for the Klukshu stock has been reviewed and accepted by both DFO and ADF&G, which recommends an escapement goal range of 1,100 to 2,300 chinook spawners in the Klukshu drainage (McPherson, Etherton and Clark 1998). Canadian and U.S. managers have agreed to a minimum escapement goal of 1,100 spawners in the Klukshu drainage in 2001.

United States

U.S. fisheries will operate similar to regimes in 1996-2000, with the fishery opening the first week in June for one day. The remainder of this fishery will be operated on sockeye run strength (see above). The U.S. fishery will likely have little effect on the weir count since it opens after the peak of the chinook salmon have passed through Dry Bay; the peak timing appears to be in late May based on past fishery data (McPherson, Etherton and Clark, 1998) and recent tagging data. Chinook tagging studies conducted from 1997 through 2000 indicated that approximately 15-24% of the chinook salmon passing through Dry Bay were bound for the Klukshu drainage. U.S. Alsek chinook harvests have been less than 1,000 chinook salmon each year since 1981, and the 2001 harvests most likely will not be greater than this figure. Gill nets will be restricted to a maximum mesh size of 6 inches (152 mm) through July 1 to minimize chinook harvests.

Canada

Canadian fisheries for chinook salmon will proceed similar to regimes in recent years. As with sockeye management, the priority in management will be to achieve escapement goals and provide for the basic needs harvest of the Champagne-Aishihik First Nation. According to the CAFN land claims agreement, the basic needs level for chinook salmon is 200 fish. In the event that the run size into the Klukshu River is above the minimum targets, Canadian managers may liberalize harvest opportunities. If run forecasts are below minimum weir targets, fishery restrictions will be considered beginning in the sport fishery.

Coho Salmon

Coho salmon in U.S. and Canadian fisheries will be managed by monitoring fishery performance data and comparing it to historical fishery performance data. In the U.S. fisheries, the 2001 CPUE will be compared to historical CPUE for a given opening; time and area openings will be adjusted, similar to the plan for sockeye salmon. In Canada, additional harvesting opportunities may be provided subject to conservation concerns.

Stock Assessment Program

The escapement of chinook, sockeye, and coho salmon through the Klukshu weir and sockeye salmon through the Village Creek electronic counter serves as an inseason indicator of stock strength and adjustments to the fisheries may be made on the basis of these counts. Aerial surveys are used to augment escapement information on sockeye and chinook stocks in the Alsek drainage and are reported in the TTC postseason annual report.

A sockeye tagging project will be conducted again this year to determine the distribution of these stocks within the drainage with the aim of determining the proportion of the spawning that occurs in the Klukshu

drainage. The proportion of the Alsek sockeye run represented by the Klukshu River stock is not known inseason. A sockeye tagging study in 1993 indicated that approximately 37% of the "upriver escapement" (McBride and Bernard 1984) was bound for the Klukshu River; however, the tagging study did not cover the entire sockeye run. That estimate was, however, expanded to represent the entire run by assuming normal timing and proportions for the early run. The preliminary estimate from the tagging program conducted in 2000 indicated that approximately 14% of the inriver run into Canada was comprised of Klukshu sockeye. The tagging study will also be used to develop an improved inseason forecasting method for sockeye salmon particularly in the lower Alsek River. To this end, DFO and ADF&G, will assess the feasibility of obtaining inriver run size estimates in the lower Alsek River as well as preliminary stock specific run timing information. If successful, this technique could be useful in developing an abundance-based management regime as required by the Treaty. To augment the 2001 sockeye mark-recapture study and to better determine sockeye distribution and stock specific run timing of Alsek River sockeye salmon, 350 radio tags will be applied to sockeye salmon entering the Alsek River. These fish will be monitored via streamside receivers and sporadic overflights.

Another mark-recapture project will take place during 2001 to estimate total escapement of chinook salmon in the Alsek drainage and estimate the fraction represented by the Klukshu stock. This project was initiated in 1997 by ADF&G with assistance from DFO in tag recovery and will be used to improve inseason management of chinook salmon. Fish will be tagged in the lower Alsek River in Alaska and recoveries will be made in tributaries primarily in the Tatshenshini watershed. The Klukshu weir will also be used for tag recovery. Chinook tagging studies conducted from 1997 through 2000 indicated that approximately 15-24% of the chinook salmon passing through Dry Bay were bound for the Klukshu drainage.

A summary of the field projects on the Alsek River is presented in Appendix Table A3.

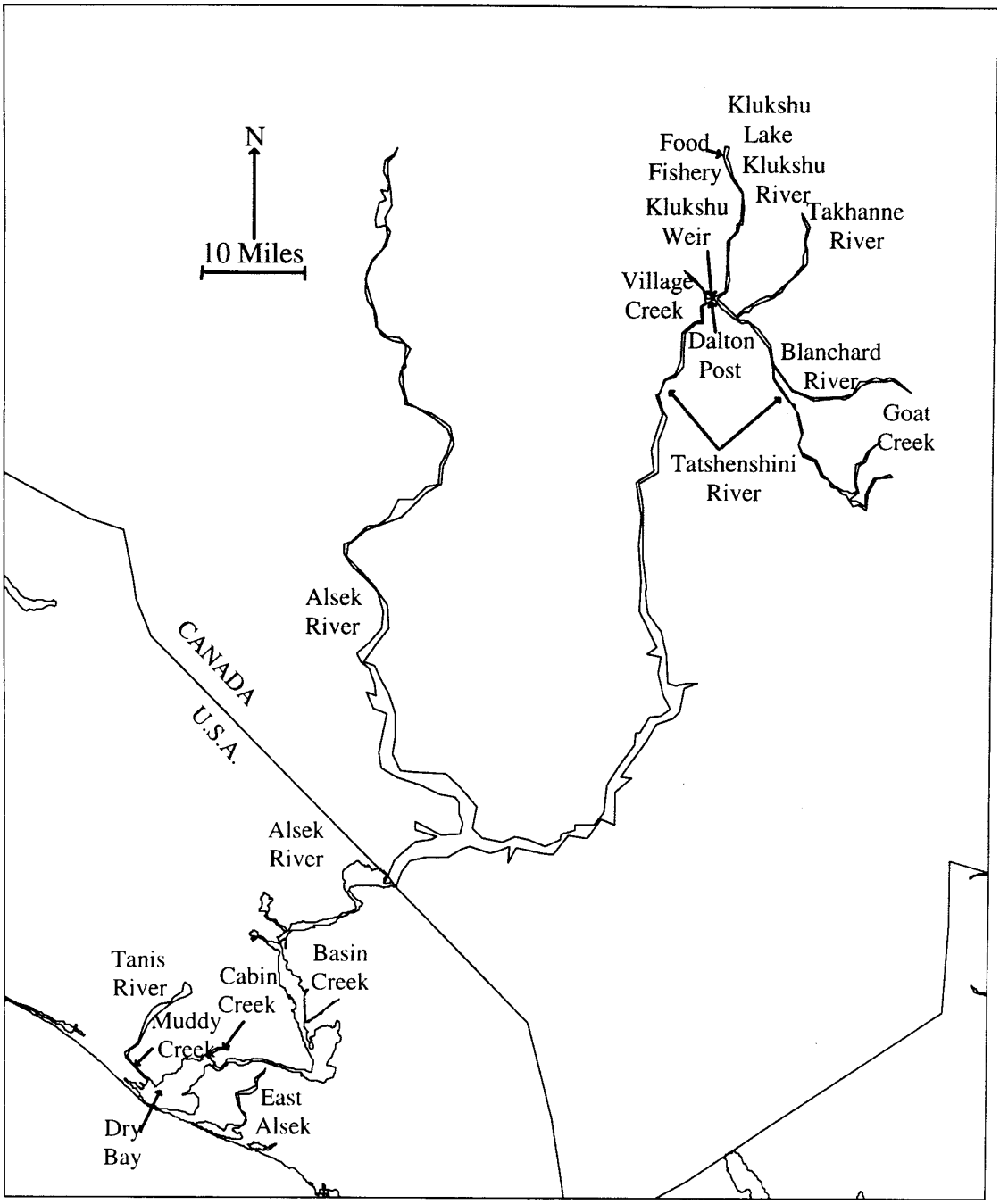

Figure 4. The Alsek River and principal U.S. and Canadian fishing areas.

TRANSBOUNDARY ENHANCEMENT PLANS

Overview

Joint sockeye enhancement projects are conducted on the Stikine and Taku rivers. Broodstock are taken at Tahltan Lake on the Stikine and from Tatsamenie Lake on the Taku; the eggs are incubated and thermally marked at the Snettisham Central Incubation Facility; and the fry are back planted into Tahltan and Tuya lakes on the Stikine and into Tatsamenie Lake on the Taku. In addition, plankton samples are taken from the various lake systems and analyzed. A summary of the enhancement field and incubation projects is presented in Appendix Table A4.

Fry Plants

Fry plants from the transboundary sockeye enhancement program in 2001 are scheduled to occur in May and June. We expect to plant the following numbers of sockeye fry:

Stikine drainage:	Tahltan Lake 1.9 million
	Tuya Lake - none
Taku drainage:	Tatsamenie Lake 2.4 million

The plan at Tahltan Lake is to transport fry on four flights on the dates of May 15 and 16. If net pens are available the fry will be held for approximately 24 hours for observation. Due to the low escapement last year at Tahltan Lake all fry are being released there and no fry are scheduled for planting in Tuya Lake.

At Tatsamenie Lake the first two transports of approximately 1.1 million fry are planned for May 20. Those fry will be fed in net pens until they double or even triple in size. Their release should coincide with the arrival of the remainder of the fry (1.3 million in 2 transports) on June 10.

Egg-Take Goals

Target sockeye eggtakes for the fall of 2001 are as follows:

Tahltan Lake: 6.0 million.

Tatsamenie Lake: 5.0 million.

- The recommended egg-take goal is 5.0 million (or a maximum of 30% of the escapement)
- Up to 1 million of the eggs will be incubated in a passive flow incubator in Tatsamenie Lake; the remainder will be incubated at Snettisham Hatchery.
- Determination of the numbers of eggs placed in passive flow incubators will be based on survivals of the 2000 brood eggs in those incubators.

Special Studies

The State of Alaska has received some special funds designated for Tatsamenie Lake studies. Plans for activities to be supported by those funds are underway. The two main study focus areas are water chemistry and size related differential predation rates on enhanced fry.

Water samples from Snettisham Hatchery and sockeye lakes will be compared to see if there are water chemistry differences that might explain why survivals of planted fry in Tatsamenie generally do poorly.

An intensive sampling program to evaluated fry movement and survival in Tatsamenie Lake would be undertaken. Beach seine samples as well as tow net samples of enhanced and wild fry would be compared as well as prey samples collected from the guts of predators in the lake.

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Clark, J.H. and P. Etherton. 2000. Biological escapement goal for Klukshu River system sockeye salmon. Alaska Department of Fish and Game. Division of Commercial Fisheries. Regional Information Report 1J00-24.

McPherson, Scott A., Peter Etherton, and John H. Clark. 1998. Biological escapement goal for Klukshu River chinook salmon. Alaska Department of Fish and Game, Fishery Manuscript 98-02, Anchorage.

McPherson, S.A., D. R. Bernard and J.H. Clark. 2000. Optimal production of chinook salmon from the Taku River. Alaska Department of Fish and Game, Fishery Manuscript 00-2, Anchorage.

APPENDIX: 2001 TRANSBOUNDARY FIELD PROJECTS

Proposed projects regarding the Stikine, Taku, and Alsek salmon stocks are summarized in Appendix Tables A1 to A3. Enhancement projects are given in Table A4. For each project listed, information regarding the dates of operation, primary objectives, and agency roles are described. Contacts are listed at the bottom of each table.

Table A1. Proposed Stikine River field projects, 2001.

Project/Dates	Function	Agency	Involvement
Stikine Chinook Mark-Recapture			
5/5 - 7/10	• Tag a minimum of 800 Stikine River chinook salmon captured from the Kakwan point drift net site.	ADF&G/ DFO	All aspects except tag recovery
	• Recover tags from the Canadian fisheries and from the Little Tahltan weir and from Verrett Creek. Tags may also be recovered from other spawning sites.	DFO/TFN	All aspects
	• Recover coded-wire tags from the fish caught at the tagging site.	ADG&G/ DFO/TFN	All aspects
Tahltan Lake Smolt Estimation			
5/7 - 6/30	• Enumerate Tahltan Lake sockeye smolts.	DFO/TFN	All aspects
	• Sample up to 800 smolts for age, size, and otoliths.		
Upper Stikine Sampling			
6/12 - 8/25	• Sample up to 800 sockeye for age, sex, size, otoliths proportionally from the Aboriginal and commercial fishery at Telegraph Creek; collect spaghetti tags.	TFN	Collect data
	• Sample up to 500 chinook for age, sex, size, and tags.	DFO	Data analysis
Stikine sockeye mark-recapture			
6/19 – 1/9	• Tag a minimum of 1,200 Stikine River sockeye salmon captured from the Rock Island set net site; collect weekly DNA samples.	DFO/ ADF&G	All aspects except tag recovery
	• Recover tags from the Canadian fisheries and from the Tahltan weir and at Tuya. Tags may also be recovered from other spawning sites.	DFO/TFN	All aspects
Little Tahltan Chinook Enumeration			
6/15 - 8/18	• Enumerate Little Tahltan chinook salmon from a weir located at the mouth of the river.	DFO/TFN	All aspects
	• Sample up to 1100 fish for age, sex, size, and tags.		
	• Enumerate and record tags observed.		

Table A1. (page 2 of 4)

Project/Dates	Function	Agency	Involvement
Stikine Coho Mark-Recapture			
9/2-10/20	• Tag a minimum of 900 Stikine River coho salmon captured from the Rock Island set net site; collect weekly DNA samples.	DFO/ ADF&G	All aspects except tag recovery
	• Recover tags from the Canadian fisheries. Tags may also be recovered from other spawning sites.	DFO/TFN	All aspects
	• Recover coded-wire tags from the fish caught at the tagging site.	ADF&G/ DFO/TFN	All aspects
Test Fishery in Lower Stikine			
5/8 - 10/22	• Conduct a test fishery as required (to fill in when no commercial fishing) to assess run size and run timing of chinook, sockeye and coho salmon. Collect age-sex-size information and recover CWTs from all salmon. Collect tagged salmon.	DFO/TFN	All aspects
	• Sample all salmon from test fishery for scales and all female sockeye for egg diameters (used for stock ID). Females will also be sampled for DNA to check stock ID based on egg diameters	DFO/TFN	All aspects
	• Otolith sampling requirements are 150/week for weekly samples (matched with scales) and with egg diameters for females. Transfer otolith samples to ADF&G for inseason processing.	DFO ADF&G	Sampling. Inseason processing of otoliths
Commercial Inriver Fishery Stock ID Sampling			
6/25-9/4	• Commercial catch sampling for sockeye to include 350/week for age-sex-size, including up to 150 matched egg-diameter/otolith samples and otoliths from 50 males (if possible).	DFO	All aspects
	• Collect 100 DNA samples matched with egg diameters and otoliths.	DFO	All aspects
	• Transfer up to 200 otolith samples per week to ADF&G for inseason processing.	ADF&G	Inseason processing of otoliths
District 106 &108 Stock ID Sampling			
6/21 - 9/20	• Sample 20% of chinook, coho, chum and sockeye catches per district for CWTs; sample sockeye and coho for scales (for aging), sex, and size (scale sampling goals are 600 sockeye per D108, D106-41, D106-30 per week and 600 coho from D106 during the season).	ADF&G	All aspects

Table A1. (page 3 of 4)

Project/Dates	Function	Agency	Involvement
District 106 &108 Stock ID Sampling cont'd			
	• Collect 400 otoliths/week in District 108 (if open), 300 in Subdistrict 106-41 (100 matched with scale samples), 300 in Subdistrict 106-30.		
Andrew Creek Salmon Enumeration			
7/25 - 9/10	• Survey Andrew Creek, enumerate chinook salmon and recover tags.	ADF&G	All aspects
Tahltan Lake Salmon Enumeration			
7/5 - 9/10	• Enumerate Tahltan Lake sockeye entering the lake at weir.	DFO/TFN	All aspects
	• Live-sample up to 800 fish for age, sex and size.	DFO/TFN	All aspects
	• If escapement goal is achieved, sample up to 400 sockeye for both otoliths and egg diameters (400 additional fish will be sampled from the brood stock take). If the return is weak, fish will not be sacrificed for otoliths. Attempts will be made to obtain samples from broodstock or carcass samples.	DFO/TFN	All aspects
Tuya ESSR Fishery & Sampling			
7/12 - 8/27	• Continue feasibility study for terminal sockeye fishery at Tuya River.	TFN	Fishery feasibility/ collect data
	• Sample up to 400 sockeye (combined sexes) for otoliths, scales, and size.	DFO/TFN	
	• Sample up to 400 female sockeye for egg diameters.	DFO	Data analysis
Tuya River Radio Tagging			
1/7 – 30/9	• Apply 50 (or more if available) radio tags to Tuya River sockeye salmon captured at the ESSR fishing site and flown above the Tuya River barrier. Tagged fish will be monitored to determine whether these fish will access Tuya Lake. In addition to the radio tagged fish, unmarked fish may be transported and released above the barrier (target >200).	DFO	All aspects
Chinook and Coho CWT			
4/5 – 6/16	• Targets are 20k chinook smolts and 40k coho smolts.	ADFG/ DFO	All aspects
	• Sample fish for age and size.		
Chinook and Sockeye DNA Stock ID Baseline			
8/1 – 9/30	• Target is 150 samples/stock	DFO	All aspects
	• Up to four separate stocks to be sampled/spp.		

Table A1. (page 4 of 4)

Project/Dates	Function	Agency	Involvement
Chinook Creel Census			
6/26 – 8/4	• Survey anglers in the Tahltan River	DFO/TFN	All aspects
	• Sample for tags, age, size, sex.		
Chinook at Shakes Creek			
7/26 - 8/20	• Collect age and size data from spawned out chinook	TFN	All aspects
	• Enumerate spawning escapement of chinook		
Chinook Aerial Surveys			
8/10 - 8/15	• Enumerate chinook salmon spawning in Little Tahltan, Beattie, and Andrew tributaries.	ADF&G	All aspects
Coho and Sockeye Aerial Surveys			
9/4 - 10/31	• Enumerate Stikine River coho and sockeye salmon spawning in select index areas within the Canadian portion of the Stikine River.	TFN/DFO	All aspects
10/05 - 10/31	• Enumerate coho salmon spawning in the US section of the Stikine River	ADF&G	All aspects

Contacts:		
Sandy Johnston or Pete Etherton	(DFO)	All DFO projects.
Cherri Frocklage or Marilyn Norby	(TFN)	Inriver sampling projects.
Keith Pahlke	(ADF&G)	Chinook tagging and surveys; Andrew Creek weir.
Kathleen Jensen	(ADF&G)	106&108 samples, stock assessment, and sockeye tagging.
Ryan Hardy	(ADF&G)	Coho aerial surveys.

Canadian staff that may be crossing the Canadian/US border:

Peter Etherton, Cherri Frocklage, Alex Joseph, Gerald Quash, Nigel Young, Andy Carlick, Wayne Dennis, Derrick Louis, Sean Demarche, Frances Naylen, others

US staff that may be crossing the Canadian/US border:

Tom Rockne, Kathleen Jensen, Brian Lynch, Keith Pahlke, Jim Andel, Ryan Hardy, others

Table A2. Proposed Taku River field projects, 2001.

Project/Dates	Function	Agency	Involvement
Canyon Island Marking Program			
mid April	• Set up camp, including 2 boats & motors, food/tagging equipment.	ADF&G/ DFO	All aspects
4/26 – 10/5	• Fishwheel/ gillnet operation • Mark all chinook, sockeye, coho captured with spaghetti tags. • Sample for age-sex-length information: 260 sockeye/week throughout sockeye run, 634 coho for the entire season, all chinook. • Recover all adipose-clipped chinook and coho caught.	ADF&G DFO TRTFN	3 staff 2 staff 1 staff
Smolt Tagging			
4/7-6/27	• Tagging (CWT) up to 40,000 chinook and 20,000 coho smolt.	ADF&G DFO	All aspects 2 staff
Canadian Aboriginal Fishery Sampling			
5/1 - 9/30	• Collect and record AFS catch information including spaghetti tags.	TRTFN	All aspects
Nahlin Sampling			
6/1- 8/20	• Adult chinook and opportunistic sampling of sockeye salmon at Nahlin; sample for age-sex-length (600 chinook and 600 sockeye), recover and record all spaghetti tags. Recover heads of all adipose-clipped chinook salmon.	TRTFN	All aspects
Canadian Fishery Sampling			
6/15- 10/16	• Collect and record commercial catch information - Catch information shall be sent to DFO Whitehorse; whose staff will provide/relay catch information to management staff, ADF&G (Juneau). • Sample commercial chinook, sockeye and coho salmon for age-sex-length (and CWTs if heads avail.) and tag loss; 200 samples per week for sockeye; 520 per season for coho; 300 scale samples per season for chinook.	DFO	All aspects

Table A2. (page 2 of 3)

Project/Dates	Function	Agency	Involvement
	• Collect 60 sockeye otolith samples per week to estimate contribution of enhanced fish; send otolith samples to ADF&G for processing.		
	• Collect and record all spaghetti tags caught in commercial fisheries, pay fishers for tag recoveries.		
	• Collect age-length-sex, tag, tag loss, and CWT data in coho and chinook test fisheries as per associated operational plan.		
Chinook Creel Census			
6/26 – 8/4	• Survey anglers in the Nakina River • Sample for tags, age-length-sex.	DFO/ TRTFN	All aspects
District 111 Fishery Sampling			
6/21 - 9/30	• Sample a minimum of 20% of chinook and coho catches for CWTs; all species except pinks for age-sex-length (goals are 600 per week for sockeye and 600 per season for chinook, chum, and coho).	ADF&G	All aspects
	• Collect 600 matched brain-parasite/scale/otolith samples per week from sockeye with sub-district specific goals		
Kuthai Sockeye Sampling			
7/10- 9/01	• Maintain adult sockeye salmon weir at Kuthai Lake; enumerate and sample for age-sex-length (600 samples) and recover spaghetti tags.	TRTFN	All aspects
Little Trapper Sampling			
7/16- 9/12	• Maintain adult sockeye salmon weir at Little Trapper Lake; enumerate and sample for age-sex-length (750 samples) and recover spaghetti tags.	DFO	All aspects
	• Sample chinook salmon for age-length-sex, tags, secondary marks and adipose-clips, collect CWT heads.		
Aerial chinook surveys			
7/25- 8/25	• Aerial surveys of spawning chinook salmon in index tributaries of Nakina, Nahlin, Dudidontu, Tatsatua, Kowatua, and Tseta rivers	ADF&G	All aspects
Nakina Chinook Escapement Estimation			
7/28 - 8/28	• Maintain chinook carcass weir enumerate chinook.	TRTFN	All aspects
	• Sample every fourth (minimum 600) chinook for age-sex-length and all other chinook for sex-length and tags.		

Table A2. (page 3 of 3)

Project/Dates	Function	Agency	Involvement
Nakina Chinook Escapement Estimation cont'd			
	• Examine all chinook salmon for tags, secondary marks and adipose clips; collect CWT heads.		
Sockeye Sampling			
7/28 - 8/28	• Sample Nakina and Silver Salmon origin sockeye for age-sex-length.	TRTFN	All Aspects
Tatsamenie Sampling			
5/15 – 6/24	• Conduct sockeye smolt mark-recapture study to estimate abundance of wild and enhanced smolt; • Sample for age, size and stock (wild vs enh'd).	DFO	All aspects
8/5- 9/30	• Maintain adult sockeye salmon weir - Enumerate sockeye, sample for age-sex-length (750 samples) and recover spaghetti tags. - Collect otoliths from sockeye broodstock taken at weir. - Examine chinook salmon for tags & secondary marks.	DFO	All aspects
8/23- 9/7	• Chinook salmon carcass weir at Lower Tatsamenie - Sample for age-sex-size and examine for tags and secondary marks on all chinook salmon recovered.	ADF&G/ DFO	All aspects
Sockeye Escapement Sampling			
9/5- 9/25	• Sample sockeye escapement in mainstem areas for age-sex-length (600 samples per area) and recovery of spaghetti tags.	ADF&G	All aspects
Chum Aerial Survey			
10/15	• Aerial survey for chum on mainstem, King Salmon Flats.	TRTFN	All aspects

Contacts:

Scott McPherson	(ADF&G)	Lower river smolt tagging, adult chinook/coho tagging.
Jim Andel	(ADF&G)	Canyon Island adult sockeye tagging.
Kathleen Jensen	(ADF&G)	All ADF&G Com Fish Research Programs.
Keith Pahlke	(ADF&G)	Chinook surveys.
Ian Boyce	(DFO)	All DFO Taku programs
Sandy Johnston	(DFO)	All DFO Taku programs.
Nina Tevely or Richard Erhardt	(TRTFN)	All TRTFN programs.

Canadian staff that may be crossing the Canadian/US border:

Ian Boyce, Sean Stark, Mike Martin, Scott Heron, James Grier, Pam Vust, others

US staff that may be crossing the Canadian/US border:

Clyde Andrews, Mark Olsen, Kent Crabtree, Jim Andel, Kathleen Jensen, Ed Jones, Keith Pahlke, others

Table A3. Proposed Alsek River field projects, 2001.

Project/Dates	Function	Agency	Involvement
Sockeye Mark-Recapture			
6/12-8/25	• Spaghetti tag all fish captured; target is 1,400;	DFO/ADFG	All aspects
	• Recover tags at Klukshu weir and other headwater tributaries; minimum sampling goal is 2,000 fish.	DFO/CAFN	
Chinook Tagging Project			
5/8-9/30	• Tag chinook and sockeye salmon to determine distribution.	ADF&G	All aspects
	• Tag recovery at various locations (see below)	DFO	Tag recovery
Klukshu River Sampling			
6/03 - 10/15	• Enumerate chinook, sockeye and coho salmon at adult weir.	DFO/CAFN	All aspects
	• Estimate sport and aboriginal fishery catches.		
	• Collect age-sex-length information from salmon caught by First Nations (live sampling discontinued) (750 scale samples per species) except chinook, see below.		
	• Sample 300 chinook in sport harvest for scales, sex, length (MEF), CWTs and spaghetti tags.		
	• Sample 1100 chinook at weir for sex, length (MEF), CWTs and spaghetti tags.		
	• Look for chinook and sockeye tagged fish.		
Village Creek sockeye enumeration			
6/10- 10/18	• Enumerate sockeye salmon using an electric counter at Village Creek.	DFO	All aspects
Chinook and Sockeye DNA Stock ID Baseline			
8/1 – 9/30	• Target is 150 samples/stock	DFO	All aspects
	• Up to four separate stocks to be sampled/spp		
Lower Alsek Sampling			
6/14- 9/15	• Sample commercial catches of all salmon at lower Alsek and East River.	ADF&G	All aspects
	• Collect age-sex-length (MEF) data (sockeye-600, chinook-600, coho-500); recover tags from chinook and sockeye.		

Table A3. (page 2 of 2)

Project/Dates	Function	Agency	Involvement
Escapement Surveys			
8/01- 8/15	• Aerial surveys of spawning sockeye salmon in index areas of Cabin, Tanis Muddy and Basin creeks (in Canada)	ADF&G	All aspects
8/10	• Aerial surveys of spawning chinook salmon in index areas of Blanchard, Takhanne, Klukshu rivers and Goat Creek (in Canada)	ADF&G	All aspects
10/01- 10/15	• Aerial surveys of spawning coho salmon in index areas of Cabin, Tanis, Muddy and Basin creeks (in Canada)	ADF&G	All aspects

Contact:

Peter Etherton	(DFO)	All DFO projects
Sandy Johnston	(DFO)	All DFO projects
Keith Pahlke	(ADF&G)	Chinook aerial surveys, and tagging
Kathleen Jensen	(ADF&G)	Lower Alsek and East Rivers commercial catch sampling
Gord Woods	(ADF&G)	Adult chinook tagging, sockeye and coho aerial surveys
Linaya Workman	(CAFN)	CAFN projects

Canadian staff that may be crossing the Canadian/US border:

Mark McFarland, Matthew Waugh, Frances Naylen, Liz Fillatre, Peter Etherton, Robert Jackson, Ron Chambers, others

US staff that may be crossing the Canadian/US border:

Gordie Woods, Robert Johnson Keith Pahlke, Kathleen Jensen, Jim Andel, Kris Widdows, others

Table A4. Proposed enhancement projects for transboundary Stikine and Taku rivers, 2001.

Project	Function	Agency	Involvement
Tahltan/Tuya Enhancement Project			
5/8 - 6/30	• Enumeration and sampling of smolts from Tahltan and Tuya lakes (sample only) (Stikine River, in Canada) and collection of otolith samples to determine planted contribution.	DFO	All aspects
5/15 - 6/30	• Backplant sockeye fry from Snettisham Hatchery into Tahltan and Tuya lakes and collect plankton data from Tuya Lakes.	DIPAC/ ADF&G	All aspects
6/1 - 9/15	• Plankton samples from Tahltan Lake.	DFO	All Aspects
6/1 - 9/30	• Hydroacoustic/limnological surveys of Tahltan and Tuya lakes to evaluate success of fry outplant.	DFO	All aspects
9/1 - 9/30	• Collect up to 6.0 million sockeye eggs from Tahltan Lake and transport to Snettisham Hatchery in Alaska.	DFO	Egg-take and transport
9/6 - 10/8	• Sample 200 male and 200 female adult sockeye from Tahltan Lake broodstock for otolith samples.	DFO	All aspects
Tatsamenie Lake Enhancement Project			
5/10 - 6/4	• Sample smolt outmigration from Tatsamenie (Taku River, in Canada) and conduct mark-recapture program on smolt from Tatsamenie Lake.	DFO	All aspects
5/22 – 7/15	• Conduct feeding experiments with subsample of planted fry.	DFO	All aspects
5/15 - 5/30	• Backplant sockeye fry from Lake Snettisham Hatchery into Tatsamenie Lake.	DIPAC/ ADF&G	All aspects
6/1 - 9/30	• Collect plankton samples from Tatsamenie and King Salmon Lakes; conduct hydroacoustic and limnological surveys in Tatsamenie and King Salmon Lakes to evaluate the success or potential success of fry outplants.	DFO	All aspects
8/15 - 10/15	• Collect up to 5.0 million sockeye eggs from Tatsamenie Lake and transport to Snettisham Hatchery in Alaska.	DFO	Egg-take and transport
Fall-winter	• Test passive flow incubator in Tatsamenie Lake	DFO	All aspects
Aug - Sep	• Conduct barrier assessments of Trapper Lake outlet and Nakina Lake access.	DFO	All aspects

Table A4. (page 2 of 2)

Project	Function	Agency	Involvement
Tatsamenie Lake Enhancement Project cont'd			
9/6 - 10/8	• Sample 400 adult sockeye from Tatsamenie Lake egg-take for otolith samples.	DFO	All aspects
Salmon Egg Incubation			
9/97 - 6/98	• Incubation and thermal marking of juvenile sockeye (eggs & alevins) collected from Tahltan (Stikine River) and Tatsamenie (Taku River) lakes at the Snettisham Incubation Facility in Alaska.	DIPAC/ ADF&G	All aspects

Contacts:

Pete Hagen	(ADF&G)	Otolith marking
Ron Josephson	(ADF&G)	Snettisham Hatchery
Kathleen Jensen	(ADF&G)	Inseason & postseason estimates of planted fish in marine catches.
Eric Prestegard	(DIPAC)	Snettisham Hatchery/DIPAC programs
Steve Reifenstuhl	(NSRAA)	Snettisham Hatchery
Sandy Johnston, Pat Milligan, or Doug Lofthouse	(DFO)	All DFO projects
Peter Etherton	(DFO)	Stikine River drainage programs
Ian Boyce	(DFO)	Taku River drainage programs
Kim Hyatt	(DFO)	Hydroacoustic and evaluation program
Cheri Frocklage	(TFN)	All TFN programs

Canadian staff that may be crossing the Canadian/US border:

Flight crew and egg-take crew

US staff that may be crossing the Canadian/US border:

Eric Prestegard, Kevin Stack, flight crew from Alaska Coastal airline, Ron Josephson and Renate Riffe