PACIFIC SALMON COMMISSION
JOINT TRANSBOUNDARY TECHNICAL
COMMITTEE REPORT

SALMON MANAGEMENT AND ENHANCEMENT
PLANS FOR THE STIKINE, TAKU
AND ALSEK RIVERS, 2010

REPORT TCTR (10)-1

This plan was finalized at the April, 2010 meeting of the
Transboundary Technical Committee Juneau, Alaska

ACRONYMS

AABM	Aggregate abundance based management
AC	Allowable catch
ADF&G	Alaska Department of Fish and Game
BEG	Biological Escapement Goal
BLC	Base level catch
CAFN	Champagne & Aishihik First Nation
CPUE	Catch per unit of effort
CTC	Chinook Technical Committee of the Pacific Salmon Commission
CWT	Coded-wire tag
DFO	Department of Fish and Oceans, Canada
DIPAC	Douglas Island Pink and Chum, Inc.
ESSR	Excess Salmon to Spawning Requirements
FN	First Nation
FSC	Food, social, ceremonial
GSI	Genetic stock identification
MSY	Maximum sustained yield
N_{MSY}	Spawning escapement goal point estimate
PSARC	Pacific Scientific Advice Review Committee of DFO
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
SCMM	Stikine Chinook Management Model
SEAK	South East Alaska
SEPP	Stikine Enhancement Production Plan
SMM	Stikine Management Model
SPA	Scale pattern analysis
SW	Statistical week
TAC	Total Allowable Catch
TCTR	Transboundary Technical Committee of the Pacific Salmon Commission
THA	Terminal Harvest Area
TIFN	Tahltan & Iskut First Nation
TRTFN	Taku River Tlingit First Nation
USFS	United States Forest Service

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INTRODUCTION

Management of transboundary river salmon to achieve conservation, allocation and enhancement objectives, as stipulated by the Pacific Salmon Treaty (PST), 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, stock assessment, research and enhancement on transboundary stocks of the Stikine, Taku, and Alsek rivers conducted by the Canadian Department of Fisheries and Oceans (DFO), the Tahltan and Iskut First Nations (TIFN), the Taku River Tlingit First Nation (TRTFN), the Champagne & Aishihik First Nation (CAFN) and the Alaska Department of Fish and Game (ADF&G).

The report contains, by river system and species, the 2010 salmon run outlooks, spawning escapement goals, a summary of harvest sharing objectives, and an outline of management procedures to be used during the conduct of the 2010 fisheries. Numerical forecasts are presented for: Stikine sockeye and Chinook and Taku Chinook, which are required by the PST; Taku sockeye and coho; and Alsek sockeye and Chinook salmon. Outlooks for other stocks are given qualitatively with reference to brood year escapement data where available. The report also contains joint plans for fry plants and egg collections and a detailed list of proposed field projects for 2010, identifying agency responsibility and contacts for the various functions within the projects.

CONSERVATION AND HARVEST SHARING ISSUES TO BE ADDRESSED IN 2010

Paragraph 4 of Annex IV, Chapter 1 of the Pacific Salmon Treaty obliges the Parties to annually review the performance of fisheries relative to the achievement of spawning escapement goals and harvest shares of Transboundary salmon. Failure to achieve agreed escapement goal ranges in three consecutive years (i.e. referred to by the Panel as Trigger 1) requires the Parties to review the overall management regime and recommend adjustments commencing the following year to better address conservation requirements. Paragraph 4 also stipulates that if the catch of either Party exceeds its allocation in any three of five consecutive years, (i.e. referred to as Trigger 2), that Party shall take corrective action to bring future catches in line with Treaty provisions commencing the following year. The Panel reviewed escapement and catch sharing performance as presented by the Transboundary Technical Committee at the 2010 February Pacific Salmon Commission meeting. Details of the review are summarized in Appendix 1, Appendix Tables 1 and Appendix Table 2.

Regarding escapement concerns, there are two stocks which met the criteria for review under Trigger 1: Little Tahltan Chinook salmon and Alsek Chinook salmon. One other stock requires precautionary management in 2010: Alsek sockeye has not achieved the lower end of the goal range in the past two years and failure to achieve the escapement goal range for this stock in 2010 will trigger a review next year. Regarding deviations from catch shares, Trigger 2 is activated for the following situations obliging the Parties to make changes in 2010:

a) Canada has overages in three of the last five years for the following three stock groupings: Taku Chinook; Taku wild sockeye and Stikine mainstem sockeye;
b) The U.S. has overages in three or more of the last five years for the following six stock groupings: Taku Chinook, Taku enhanced sockeye, Stikine Chinook, Tahltan Lake sockeye, Stikine mainstem sockeye and Tuya sockeye.

Recommended actions to address escapement and harvest sharing issues are also summarized in Appendix 1. Most of these actions have been incorporated into the drainage- and stock -specific management plans of the Parties as described in this document.

STIKINE RIVER

Chinook Salmon

Preseason Forecast

The final preseason forecast for the Stikine River Chinook salmon terminal run[1] is 22,922 fish.

Similar to 2005-09, the 2010 forecast is based solely on the sibling forecast with no credence given to the stock-recruitment forecast. (Previous to 2005, the Chinook forecast was based on the average of the sibling and stock-recruitment methodologies; however the stock recruitment component has been discarded due to poor performance.) The sibling forecast predicts the following components: the terminal return of age-5 fish based on the number of age-4 fish in 2009; the terminal return of age-6 fish based on the number age-5 fish in 2009; and the terminal return of age-7 fish based on the number of age-6 fish in 2009. The sum of the age-specific predictions (age 5 to age 7) generates an estimate of the terminal run.

The age-specific outlooks are based on the following linear regressions:

- age-4 in 2009 ($N_{age\text{-}4(y\text{-}1)}$) to predict the number of age-5 in 2010 ($N_{age\text{-}5(y)}$):

$$\mathbf{N_{age\text{-}5(y)} = 3.253 * N_{age\text{-}4(y\text{-}1)} + 5,603} \qquad \textbf{[1]}$$

The correlation coefficient (r^2) of this relationship = 0.91, df=14;

- age-5 in 2009 ($N_{age\text{-}5(y\text{-}1)}$) to predict the number of age-6 in 2010 ($N_{age\text{-}6(y)}$):

$$\mathbf{N_{age\text{-}6(y)} = 0.661 * N_{age\text{-}5(y\text{-}1)} + 6791} \qquad \textbf{[2]}$$

The correlation coefficient (r^2) of this relationship = 0.84, df=14;

- age-6 in 2009 ($N_{age\text{-}6(y\text{-}1)}$) to predict the number of age-7 in 2010 ($N_{age\text{-}7(y)}$):

$$\mathbf{N_{age\text{-}7(y)} = 0.019 * N_{age\text{-}6(y\text{-}1)} + 124} \qquad \textbf{[3]}$$

The correlation coefficient (r^2) = 0.17, df=14.

On average, the run consists of 11% age-4, 46% age-5 and 42% age-6 Chinook; other ages include age-3 and age-7 which make up the remainder. The total estimated number of terminal Stikine Chinook age-4 in 2009 was 1,804 fish; age-5 was 8,211 fish; and age-6 was 7,196 fish. Substituting these values into each of the respective equations [1] through [3] above and summing the results, yields a predicted terminal run of 22,922 large Chinook salmon in 2010. This outlook, which constitutes a below average run size, does not include Chinook salmon of age-4 or less.

[1] The Stikine River Chinook salmon terminal run size = total Stikine Chinook run size minus the US troll catch of Stikine Chinook salmon outside District 108.

Table 1. Stikine River Chinook salmon preseason run forecasts vs. post season run size estimates from 1995 to 2009.

Year	Pre-season Forecast	Post Season Run Size	Forecast Performance (c)
1995 a)	21,008	20,689	1.54%
1996 a)	32,747	36,775	-10.95%
1997 a)	37,662	37,580	0.22%
1998 a)	25,760	30,278	-14.92%
1999 a)	26,833	27,831	-3.59%
2000 a)	42,049	33,865	24.17%
2001 a)	72,638	69,291	4.83%
2002 a)	50,530	59,332	-12.95%
2003 b)	46,325	48,107	-3.70%
2004 b)	65,877	62,137	6.02%
2005 b)	80,258	90,375	-11.19%
2006 b)	60,605	66,952	-9.48%
2007 b)	37,355	42,495	-12.10%
2008 b)	46100	35,751	28.95%
2009 b)	31,928	15,617	104.4%

a) retrospective forecasts based on the sibling relationships from 1996-2009.
b) current year sibling forecast
c) relative to the actual run size determined from post season run reconstructions. Positive values indicate the forecast was higher than post run size estimates; negative values, the forecast was below post season run size estimates.

Escapement Goals

The current MSY escapement goal point estimate (N_{MSY}) for above-border Stikine River Chinook salmon is 17,400 fish (greater than 659 mm mid-eye to fork length) with a range of 14,000 to 28,000 fish (Bernard et al 2000). This goal is subject to periodic review by the Parties.

The target escapement range for Little Tahltan River Chinook is 2,700 to 5,300 large fish with a point target of 3,300 large fish. Target escapements goals for other stock groupings including, but not limited to, the Tahltan, Little Tahltan, mainstem Stikine (between Butterfly and Flood rivers), and Iskut rivers have not yet been established. A 2005 radio telemetry project indicated that these four stock groupings represented 41%, 13%, 8% and 14%, respectively, of the combined Stikine River spawning population.

Escapement Goal Background

Prior to 1999, the interim index escapement goal was 5,300 large Chinook salmon through the Little Tahltan River weir (at that time L. Tahltan represented approximately 19% of total Stikine Chinook escapement). A new goal of 3,500 L. Tahltan Chinook salmon was proposed to the TCTR in a joint paper: Bernard, D., S. McPherson, K. Pahlke, and P. Etherton. 1999 draft. *Optimum production of Chinook* *salmon from the Stikine River.* The TCTR recommended the paper be subjected to additional peer reviews by the Pacific Scientific Advice Review Committee (PSARC) of DFO and internal ADF&G review.

ADF&G (U.S.) peer review recommended accepting the paper's escapement goal range, although some minor errors in the data used were pointed out to the authors. On the other hand, PSARC did not accept 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. In response to the above reviews, the TCTR agreed to a minimum escapement 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. The TCTR concluded that due the paucity of data regarding marine harvests, it was not yet possible to manage by exploitation rates (hence the development of the Stikine Chinook CWT program which commenced in 2000).

Later in 1999, the Joint Chinook Technical Committee (CTC) of the PSC re-examined the Stikine escapement goal. Results of the analysis appear in the following report:

> **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 was 14,000 to 28,000 total Stikine River (above border) Chinook salmon and the point estimate of escapement that produced MSY was approximately 17,400 Chinook salmon. These targets were adopted by the TCTR in 2000. 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 fallen below the lower end of this range three times, in 2007, 2008 and 2009. The poor escapement in 2007 was attributed to extremely high water conditions in the Stikine drainage which appeared to have severely impacted the ability of salmon to reach the spawning grounds. The escapement has however, exceeded the upper end of the range in eleven years (1988, 1992, 1993, 1994, 1997, 2000, 2001, 2002, 2003, 2004, and 2005).

Harvest Sharing Objectives

New provisions for harvest sharing and management of directed fisheries for Stikine River Chinook salmon (Chinook greater than 659 mm mid-eye to fork length) were successfully negotiated by the Transboundary Panel and implemented in 2005. These arrangements, with slight adjustments, were adopted in the most recent round of PST negotiations in 2008. The new agreement is effective from 2009 through 2018 and now forms Paragraph 3(a) (3) of Annex IV, Chapter 1 of the PST.

The catch sharing provisions were developed to acknowledge the traditional catches in fisheries, referred to as base level catches (BLCs), which occurred prior to the new arrangements; these included incidental catches in Canadian and U.S. commercial gillnet fisheries, U.S. and Canadian sport fisheries, the Canadian First Nation fishery and the Canadian test fishery. For the new directed fisheries, the allowable catch (AC) will be calculated as follows:

$$\textbf{AC = Terminal run - Base terminal run (BTR);} \qquad \textbf{[4]}$$

where: BTR = escapement target + test fishery BLC + U.S. BLC + Cdn BLC.

BLCs are as follows:

- U.S. Stikine BLC: 3,400 large Chinook[2];
- Canadian Stikine BLC: 2,300 large Chinook [3];
- Test fishery: 1,400 large Chinook.

Harvest sharing and accounting of the AC shall be as described in Table 2 below:

Table 2. U.S. and Canadian allowable catches of Stikine Chinook salmon for directed fisheries.

Allowable Catch Range		Allowable Catch Share			
		U.S.		Canada	
Lower	Upper	Lower	Upper	Lower	Upper
0	5,000	0	500	0	4,500
5,001	20,000	501	11,000	4,500	9,000
20,001	30,000	11,001	17,500	9,000	12,500
30,001	50,000	17,501	30,500	12,500	19,500
50,001	100,000	30,501	63,000	19,500	37,000

Within each Allowable Catch Range, each Party's Allowable Catch Share will be calculated proportional to where the AC occurs within the range. The Transboundary Technical Committee has developed a spreadsheet to calculate specific catch shares. The Parties shall determine the domestic allocation of their respective harvest shares.

When the terminal run is insufficient to provide for the Party's Stikine Chinook BLC and the lower end of the escapement goal range, the reductions in each Party's base level fisheries, i.e. the fisheries that contributed to the BLCs, will be proportionate to the BLC shares, excluding the test fishery.

The U.S. catch of the Stikine Chinook salmon AC will not count towards the South East Alaska (SEAK) aggregate abundance based management (AABM) allocation (as described in Chapter 3 of the PST). In particular:

1. non-Stikine Treaty Chinook salmon harvested in District 108 will continue to count toward the SEAK AABM harvest limit;

2. the U.S. BLC of Stikine Chinook salmon in District 108 will count toward the SEAK AABM harvest limit;

3. the U.S. catch of Stikine Chinook salmon in District 108 above the U.S. BLC will not count towards the SEAK AABM allocation.

Accounting for the SEAK AABM Chinook salmon catches as pertains to transboundary rivers harvests will continue to be the responsibility of the CTC as modified by (a) through (c) above.

Management Procedures

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[2] Includes average combined US gillnet, troll and sport catches of Stikine Chinook salmon in District 108.

[3] Includes average combined Canadian Aboriginal, commercial and sport catches of Stikine Chinook salmon.

The 2009 Chinook agreement (see Paragraph 3(a) (3) of Annex IV, Chapter 1 of the PST) included the following management details for directed Stikine Chinook salmon fisheries (for Chinook greater than 659 mm mid-eye to fork length) that apply in 2010:

- Both Parties shall take the appropriate management action to ensure that the necessary escapement goals for Chinook salmon bound for the Canadian portions of the Stikine River are achieved. The Parties agree to share in the burden of conservation. Fishing arrangements must take biodiversity and eco-system requirements into account.

- Management of directed fisheries will be abundance-based through an approach developed by the Committee. The Parties agree to implement assessment programs in support of the abundance-based management regime.

- Unless otherwise agreed, directed fisheries on Stikine River Chinook salmon will occur only in the Stikine River drainage in Canada, and in District 108 in the U.S.

- A directed U.S. subsistence fishery in U.S. portions of the Stikine River will be permitted, with a guideline harvest level of 125 Chinook salmon to be taken between May 15 and June 20.

- Management of Stikine River Chinook salmon will take into account the conservation of specific stocks or conservation units when planning and prosecuting their respective fisheries. To avoid over-harvesting of specific components of the run, weekly guideline harvests will be developed by the Parties by apportioning their allowable harvest over the total Chinook season based on historical weekly run timing.

- Commencing in 2009, the Parties agree to develop and implement through the Committee an agreed Chinook stock identification program to assist the management of Stikine Chinook salmon.

- A preseason forecast of the Stikine River Chinook salmon terminal run size will be made by the Committee by 01 December of each year.

- Directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the midpoint of the MSY escapement goal range plus the combined Canada, U.S. and test fishery BLCs of Stikine River Chinook salmon. The preseason forecast will only be used for management until inseason projections become available.

- For the purposes of determining whether to allow directed fisheries using inseason information in 2010, such fisheries will not be implemented unless the projected terminal run size exceeds the escapement goal point estimate (N_{MSY}) plus the combined Canada, U.S. and test fishery BLCs of Stikine River Chinook salmon. The Committee shall determine when inseason projections can be used for management purposes and shall establish the methodology for inseason projections and update them weekly or at other agreed intervals.

- If the escapement of Stikine River Chinook salmon is below the lower bound of the agreed escapement range for three consecutive years, the Parties will examine the management of base level fisheries and any other fishery which harvests Stikine River Chinook salmon stocks, with a view to rebuilding the escapement.

Fishery openings will be based on weekly run strength and the TAC as defined by the 2008 PST Stikine River Chinook catch sharing agreement. The preseason forecast will serve as the principal run size estimator up to approximately 26 May. This will be replaced with inseason run projections once a reliable, inseason projection can be generated based on the performance of the Kakwan tagging activities, specifically catch per hour. On average, approximately 25% of the run has passed the Kakwan site (1996-2009) by May 26. The Kakwan-based estimate is generated by the Stikine Chinook Management Model (SCMM). An inseason run estimate before May 26 may be adopted if agreed to by Canada and the U.S. Reliable, weekly mark-recapture estimates are expected to be available by statistical week 23 (May 29-June 05). These weekly mark-recapture estimates may be used as the principal run size estimator or be used in concert with the SCMM in assessing weekly run sizes. Catch performance of the Lower Stikine River fishery in concert with daily water levels will be monitored and may be used to assess run size. There appears to be a fairly sound relationship between catch per unit effort and inriver run size of large Chinook salmon.

For the inseason run projections, abundance estimates will be expanded by timing models which include:

1. The average run timing of large Chinook salmon observed in the Canadian test fisheries in 2000-2003 and the 2005-08 run timing observed in the Canadian Chinook fishery. (The run timing in the 2009 commercial fishery was excluded due to frequent closures.) The inriver timing model is used to expand the point mark-recapture estimate to project the total inriver run sizes. Timing models are not used in the projections based on the SCMM which is a basic regression model, but may be adjusted if run timing behaviour is deemed to be unusual. Inriver timing models are also used to determine weekly guideline harvests for the lower Stikine commercial fishery; and

2. The average run timing of large Chinook salmon in the D-108 gillnet fishery. This is based on the D-108 gillnet catches for 1969-1973, 2005-2008, Canadian test fishery timing data for 2001-2003 lagged by 2 weeks and Kakwan Point tagging CPUE for 1996-97, 2001, 2003-04 lagged by 7 days. (*The select annual Kakwan Point CPUE data used for run timing was based on fishing conditions that were not unduly fettered by extraordinary high water conditions in any particular year*.) The timing model for D-108 is used to expand the cumulative catch to date to project the catch for the season which is added to the inriver run projection to give an estimate of terminal run size. It is also used to determine weekly guideline harvests for the D-108 fishery.

<u>United States</u>

The 2010 preseason forecast of approximately 22,900 large Stikine Chinook salmon is not robust enough to allow for directed Chinook salmon fisheries in District 108 starting in the beginning of May. Based on the preseason forecast, the U.S. does not have an allowable catch. Therefore, liberalized sport fishing regulations in District 8 and the Chinook salmon test fishery operated in 2009 are not anticipated to occur. Any directed fisheries for Chinook salmon in District 108 would require inseason run estimates to indicate a larger run than forecasted. However, the U.S. is not anticipating the Stikine Chinook salmon run to be larger than the preseason forecast given that the final run estimate over the past two seasons has been significantly lower than the preseason forecast. Therefore, the U.S. is not anticipating any directed Chinook salmon fisheries in District 108 in 2010 and will likely take management actions during the sockeye salmon fishery to ensure Chinook salmon escapement is met. In the event that reliable inseason run size estimates indicate the run is larger than anticipated, the U.S. may have directed fisheries in District 108. The U.S. would first look to liberalize sport fish regulations and then implement a gillnet test fishery. If the abundance of Stikine Chinook salmon is adequate, directed common property gillnet and troll fisheries in District 108 may occur.

If directed fisheries were to occur, historical run timing will be combined with the most recent terminal run size estimate to establish weekly harvest guidelines. Management actions in time and area may need to be taken to ensure adequate escapement of the smaller Chinook salmon stocks that spawn in the streams on the U.S. portion of the Stikine River (e.g. the Andrews Creek escapement goal is 800 large Chinook salmon with a range of 650-1500 fish).

The Chinook salmon sport fishery in District 108 could be liberalized again in 2010 as follows [as per, Title 5, Alaska Administrative Code, Chapter 47, Section 57]: sport fishing may be conducted by the use of two rods per angler; the resident bag limit is three Chinook 28 inches (71 cm) or greater in length with a possession limit of six fish; the nonresident bag and possession limit is two Chinook 28 inches (71 cm) or greater in length; and the nonresident annual limit is six Chinook (compared to five in 2008). The fishery will continue to be monitored through a creel census program.

A District 108 gillnet test fishery could occur starting the last week in May or the first week in June and continue through June 23. The test fishery would provide catch data in order to maintain a running data series to assess Stikine Chinook salmon run timing and monitor the relationship between District 108 drift gillnet fishery performance and run size. The test fishery would be managed to stay within the available U.S. allowable catch guidelines as dictated by the historical run timing and inseason projections of run size.

A directed common property gillnet fishery could occur beginning the last week of May or the first week of June. If the gillnet fishery were to proceed, gillnets would be restricted to 7-inch (178 mm) minimum stretched mesh, 60 meshes deep, and 300 fathoms (549 m) long. Gillnet openings would occur on Mondays at 8:00 a.m. unless fishing occurs during the week of Memorial Day (week of May 31), in which case the opening would occur on Tuesday at 8:00 a.m. The length of subsequent openings would depend upon the number of boats fishing, the number of Chinook salmon harvested, and results from stock assessment projects. The Stikine flats closure lines would likely remain in place. These lines close waters inside a line from Babbler Point to Hour Point along the shore of Wrangell Island to Point Highfield to the southern end of Liesnoi Island to the southern end of Greys Island to the small island near the eastern entrance of Blind Slough to the nearest point of Mitkof Island to the prominent point of Mitkof Island nearest Coney Island to the northern end of Coney Island to a point 500 yards north of Jap Creek on the mainland shore.

The CTC issued the 2010 Chinook salmon preseason abundance index for S.E. Alaska on March 30. The 2010 all-gear harvest target for Southeast Alaska is 221,800 Chinook salmon with a troll fishery allocation of 163,864 fish. The total allocation is approximately 3,000 fish higher than the 2009 allocation. The troll allocation is 80% of the all-gear harvest target after the net Chinook salmon allocations (16,970 fish) are subtracted. The remaining 20% is allocated to the sport fishery (40,966 fish).

The time and area for the troll fishery in District 108 is determined by the length of the gillnet openings. In January 2006, the Alaska Board of Fisheries developed a District 8 King Salmon Management Plan for managing Stikine River Chinook salmon. That management plan allows for a 3-day per week troll fishery throughout the district when the gillnet fishery is open for one day or less and a 5-day per week troll fishery whenever the gillnet fishery is open for more than one day. Since the directed Stikine Chinook salmon gillnet fishery will not be opening in the beginning of May, the directed Stikine Chinook salmon troll fishery will remain closed. If inseason assessment allows directed Stikine Chinook salmon gillnetting openings after the initial inseason estimate is produced, the troll fishery will open as well. Subsequent openings would be set based on the length of the gillnet openings as set forth in the District 8 King Salmon Management Plan. Prior to a possible directed Stikine Chinook salmon fishery, spring troll fishery areas will be managed according to the provisions of the spring troll fishery management plan as was done in 2009. Existing regulations allow spring salmon troll fisheries to target Chinook salmon from Alaskan hatcheries. Harvests of non-Alaska hatchery Chinook salmon are capped at levels based on the percentage of Alaska hatchery fish in the harvest; at higher Alaska hatchery percentages the non-Alaska hatchery Chinook salmon harvest caps increase. If inseason CWT results indicate a high proportion of Alaska hatchery fish in any given area, fishing time will be increased as appropriate. If tag results demonstrate low Alaska hatchery Chinook salmon harvests, then fishing time will be restricted. Only fish 28 inches (71 cm) or greater in length may be retained in the troll fishery.

A U.S. Federal Stikine River subsistence fishery for Chinook salmon will occur for the fifth consecutive year in 2010. The Chinook salmon fishery will be open from May 15 to June 20 with a guideline harvest level of 125 fish. Fishing will take place upriver from marine waters to the U.S./Canadian border. Fishing will not be allowed in tributaries or at fishing sites used by ADF&G and DFO to conduct stock assessment. The allowable fishing gear will include dipnets, spears, gaffs, rod and reel, beach seine, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 8 inches. The fishery will be monitored inseason by USFS biologists that will remain in contact with the ADF&G commercial fishery managers. The fishery will be closed if the guideline harvest level is met or exceeded before the fishery's closing date.

Canada

The preseason forecast of 22,900 large Chinook is below the threshold run size of 28,100 large Chinook that would trigger a traditional directed Chinook salmon fishery in Canada as defined in the PST Annex IV, chapter 1, (a)(3)(x). The preseason run size threshold is based on the sum of the BLC (5,700), the test fish allocation (1,400), and the mid point escapement goal of 21,000 large Chinook salmon. A preseason run size of this magnitude, however, provides for an inriver BLC of 2,300 large Chinook and an inriver test fishery allocation of 1,400 fish. Should an inseason run size estimate of 24,500 large Chinook or greater be generated, a directed commercial fishery will be considered. This shift in run size thresholds from a preseason of 28,100 to and an inseason of 24,500 large Chinook is an action resulting from the PST agreement whereby the midpoint (21,000) of the escapement goal range is used during fishing periods managed with the preseason estimate, while the MSY escapement goal (17,400) is used during fishing periods once the inseason estimate becomes available (PST Annex IV, chapter 1, (3)(x)). The shift in escapement targets reflects the greater uncertainty associated with the preseason forecasts.

Notwithstanding the trigger run size thresholds, a carefully controlled commercial assessment fishery will be conducted in the lower Stikine, to serve as a surrogate for the test fishery with a maximum catch of 1,400 large Chinook salmon. Fishing periods in this fishery will be limited and governed by weekly catch quotas as described in Table 3 below, which are based on apportioning the total catch of 1,400 by average weekly run timing. As on the Taku River, the purpose of the assessment fishery is to provide managers with information necessary to generate inseason estimates and provide rationale for openings or closures in traditional directed fisheries. These estimates will be based on the daily tag recoveries of tagged fish marked at Kakwan Point, as well as the CPUE of assessment fishery.

Table 3. Weekly catch quotas of large Chinook salmon in a "non traditional" lower Stikine River commercial fish, 2010.

Stat wk date end	19 (08 May)	20 (15 May)	21 (22 May)	22 (29 May)	23 (05 June)	24 (12 June)	25 (19 June)
Quota	67	190	230	213	175	257	268

The assessment fishery will occur in the lower Stikine fishing area (Figure 2) and managed on daily basis with management actions driven by daily catches and catch projections relative to the weekly catch quotas listed in Table 3. The lower river fishing zone in the Stikine River is bounded by the international boundary upstream to near the confluence of the Porcupine and Stikine rivers and includes the lower 10 km (approximately) of the Iskut River. The assessment fishery will commence at 0800 hrs May 06 for 12 hours. Fishers will be permitted one net each with a maximum length of 135 metres (430 ft). The net may be deployed as set net or a drift net. The maximum mesh size permitted is 20.3 cm (8 inches). Catches will be tallied by approximately 1400 hrs on a daily basis and catch projections will be compared to weekly quotas. Any decision to extend the fishing time will be based on the daily catch projections relative to the weekly goal.

Should an inseason estimate generate a run size greater than 24,499 large Chinook, conventional management processes will be implemented. These management actions will be driven by the results of terminal run size projections derived from the SCMM and in-season mark-recapture results. Weekly inputs to the model will include: catch data from Alaska District 108 gillnet, troll and sport fisheries; catch data from the Canadian Stikine commercial, test, First Nations, and sport fisheries; catch and effort from the Kakwan tagging site; and, escapement requirements. Openings will be governed by weekly abundance projections of large Chinook salmon based on historical weekly run timing. The inriver run timing model for 2010 is based on the average run timing of large Chinook salmon observed in the Canadian test fisheries in 2000-2003 and the 2005-08 (2009 run timing excluded) run timing observed in the Canadian lower Stikine commercial Chinook fishery.

The management of the lower river commercial fishery will, in all likelihood, switch to sockeye at 12:00 noon June 20 (statistical week 26), near the traditional opening date of the sockeye fishery. Should a Chinook conservation concern occur in statistical weeks 26-28, mesh size restrictions will be adopted, specifically limiting fishers to the use of 14 cm (5.5 inch) mesh size or less.

The achievement of escapement objectives is the foremost priority in management considerations. Inriver allocation priority will be to fulfill the food, social and ceremonial requirements of the traditional First Nation 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.

It is anticipated the three primary fishery management responses to in-season Chinook run size projections will include:

1. Adjusting fishing time. Fishing time in the lower Stikine fishery generally depends upon stock assessment and international and domestic catch allocation considerations. The preseason forecast is too low to support normal directed commercial fishing opportunities. Once in-season projections become available, should they indicate a run of sufficient strength to initiate directed fisheries, caution will be exercised in establishing fishing times.

2. Adjusting the fishing area. Initially, fishing boundary locations will include the Stikine River upstream to near the mouth of the Porcupine River. The section of the Stikine River from the confluence of the Porcupine and Stikine rivers upstream to near the mouth of the Scud River may be opened if the Chinook abundance is well above spawning escapement and First Nation fishery requirements. In the Iskut River, the area will remain unchanged from previous years, i.e. from the mouth to a marker located approximately 10 km upstream from the mouth.

3. Adjusting the quantity of fishing gear. Initially, one drift, or one set, gillnet may be deployed. If there is a need to increase harvest, fishers may be permitted to use two gillnets, one of which can be a drift net. The maximum allowable net length will remain at 135 meters and, in the absence of a directed Chinook fishery, there will be a maximum mesh size restriction of 14 cm

In the upper Stikine commercial fishery, there will not be a targeted commercial Chinook salmon fishery, unless the inseason terminal run size estimate exceeds 24,499 large Chinook. The first inseason estimate is expected be generated by 26 May. Should the terminal run size estimate trigger a commercial fishery, the fishery openings will be based on the open times in the lower Stikine fishery, lagged one week. In the event of a directed Chinook fishery, the fishers will be permitted to use one net of the same dimensions as that used by fishers participating in the lower Stikine commercial fishery as noted above. The fishing zone is bounded in the south by the confluence of the Chutine and Stikine rivers, and in the north by the confluence of the Tuya and Stikine rivers. Daily and weekly catches will be collected by a DFO representative on site. The catches will be reported to the Whitehorse office on a weekly basis.

As in past years, restrictions in weekly fishing times in the First Nation fishery are not anticipated. Any reductions in fishing time would be considered only if no other adjustments could be made in the lower and upper river commercial fisheries. Daily and weekly catches will be collected by a DFO representative on site. The catches will be reported to the Whitehorse office on a weekly basis. Biological sampling to assess age, size, and stock identification will be conducted throughout the course of the fishery. Records will be delivered to the Whitehorse office of DFO at season's end.

The Canadian Stikine Chinook recreational fishery is centred around the Tahltan River near its confluence with the Stikine River. Minor recreational fishing occurs in the mainstem Stikine as well as the Iskut River. The Tahltan River will be open to recreational fishing July 01 to November 30. The Iskut River will be open from 01 May to 31 March. Fishers are permitted four Chinook per day, only two of which may be larger than 650 mm fork length. The possession limit consists of a two-day catch quota. The annual harvest by individual anglers is limited to ten large fish. Fishing activity, including harvest numbers and released numbers will be monitored by a field technician stationed near the Tahltan River. The technician will also be tasked with the collection of baseline biological data including sex, size, and age of harvested fish as well is the collection and collation of fish tags recovered by the fishery.

Catch reporting

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

1. District 108 gillnet, sport and troll fisheries;
2. Stikine River subsistence fishery; and
3. test fisheries in District 8.

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 (if it opens);
3. the upper river commercial fishery;
4. the First Nation fishery;
5. recreational fishery;
6. the lower Stikine River test fishery conducted near the international border; and
7. ESSR or other terminal fishery catches will be reported as data become available.

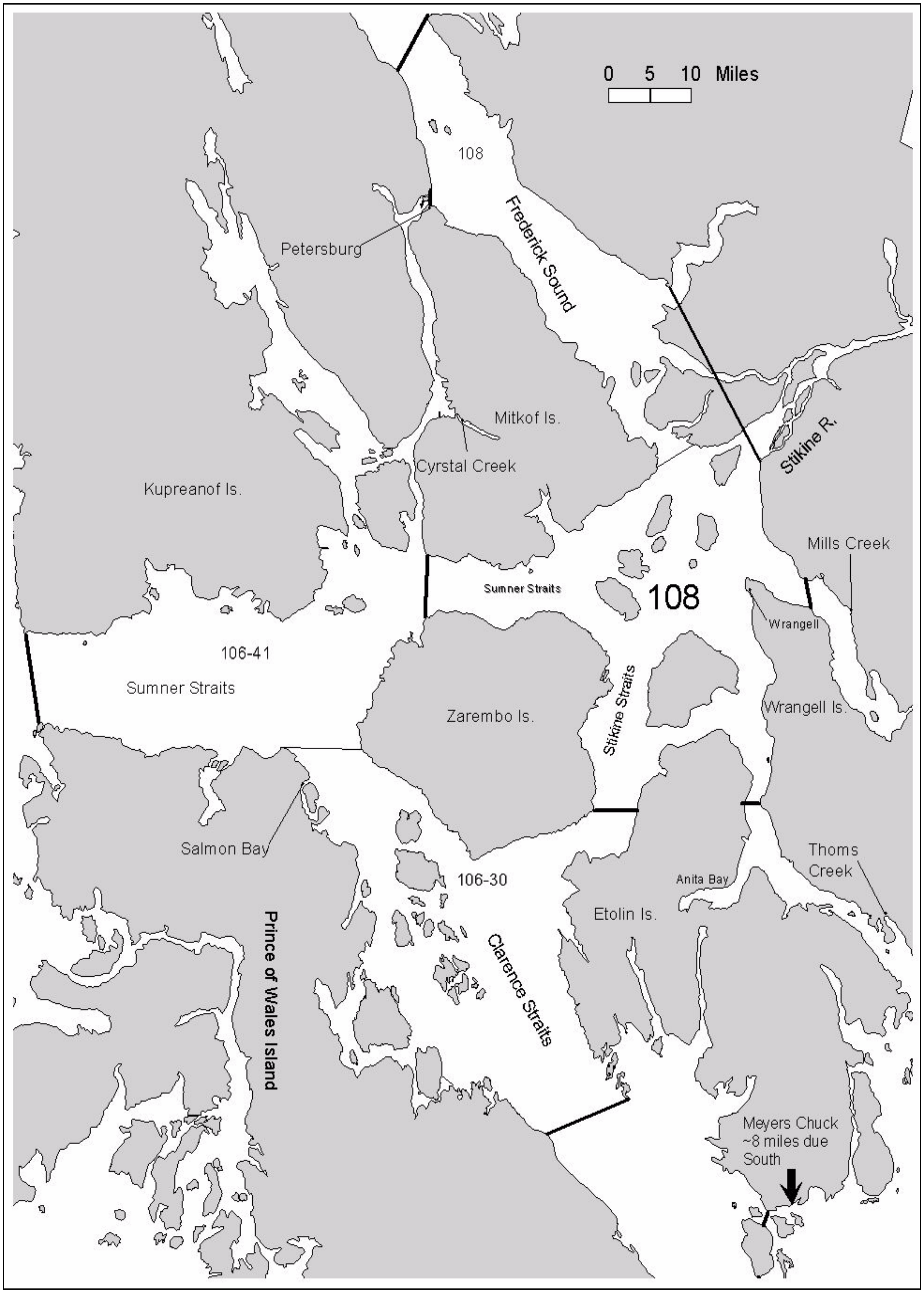

Figure 1. U.S. fishing areas adjacent to the Stikine River.

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 and spaghetti tags; and

3. conduct escapement and stock assessment programs as resources permit (see Appendix Table 3 for projects anticipated to be conducted in 2010).

Stock Composition of U.S. Harvests

Chinook salmon harvested in Alaska will be sampled for CWT's. The minimum sampling goal is 20% of the harvest; the target for 2010 is 30%. All test fish caught Chinook salmon will be sampled.

Tissue samples will be taken from the directed Chinook salmon fisheries in District 108 and from test fisheries if they occur and processed postseason in the Alaska Department of Fish and Game Gene Conservation Laboratory in Anchorage as funding allows.

Stock Composition of Canadian Harvests

Through funding potentially awarded under the Northern Fund of the Pacific Salmon Treaty, work will continue on developing a complete DNA baseline for Stikine Chinook salmon. It is expected that samples, consisting of two axillary processes, will be collected from spawning Chinook salmon located in Tahltan, Chutine, Craig, Katete rivers; and, Verrett, Bear, and Johnny Tashoots creeks. Further details on target samples and sampling protocol for 2010 appear in Appendix Table 7. Mixed stock DNA samples for future stock ID analysis will be collected in Lower Stikine commercial fishery and from fish netted in the Kakwan tagging project. A minimum of 50% of the Chinook salmon harvested in the lower commercial fishery will be sampled for CWT(s).

Sockeye Salmon

Stock Definitions

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

Preseason Forecast

For 2010, the terminal run[4] outlook for Stikine sockeye salmon is 187,700 fish, which roughly constitutes an average run size. For comparison, the recent ten-year average (2000-2009) total Stikine sockeye run size is approximately 184,200 fish. The 2010 forecast includes approximately 59,200 wild Tahltan (31%), 32,000 planted Tahltan (17%), 48,500 enhanced Tuya (26%), and 48,000 wild mainstem sockeye salmon (26%).

The 2010 overall Stikine sockeye prediction is based on the following components:

1. an outlook of approximately 91,200 Tahltan wild + enhanced sockeye of which 32,000 are expected from the enhancement project, and 59,200 are expected from natural spawners. This outlook is the average of the following run components: a sibling-based prediction of 87,300 sockeye for the total Tahltan stock, which includes approximately 36,300 enhanced sockeye; and, a smolt prediction of 95,100 Tahltan sockeye of which 27,700 are expected to originate from the enhancement project;
2. an outlook of 48,500 Tuya sockeye salmon, which is based on 2004-09 average age-specific fry-to-adult survival data for Tuya sockeye (age 4=1.8%, age 5=1.0%, age 6=0.15%); and
3. an outlook of 48,000 mainstem sockeye based on the average of a sibling-based prediction of 49,700 and a stock-recruitment outlook of 46,300 sockeye salmon.

For most of the analyses conducted to produce the run outlooks, age and stock-specific catch and escapement estimates are used to reconstruct annual runs for the Stikine sockeye stocks. Marine catch estimates from Districts 106 and 108 are based on ADF&G scale pattern analysis (SPA); estimates of catch occurring outside these areas do not currently exist. In-river catch estimates from the lower Stikine River are based on a variety of stock identification techniques (SPA, egg diameter and otolith data). The contribution of Tahltan stocks to upper river commercial and FN fisheries was 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 from analysis of otoliths for thermal marks combined with analysis of scale patterns and/or egg diameters. Tahltan Lake sockeye escapements are enumerated at the Tahltan Lake weir, whereas, mainstem and Tuya escapements are calculated. The calculations involve the following steps: reconstructing the in-river Tahltan run (weir count plus the inriver catches of Tahltan sockeye as determined through egg diameters and otolith marks); estimating the total inriver run by determining the overall contribution of the Tahltan stock to the inriver run as determined from the stock composition estimates of the in river run sampling program in the lower Stikine (test and commercial fishery sampling standardized by CPUE); applying the stock composition results based on egg diameters (large egg) to estimate the mainstem component and otolith thermal marks to estimate the Tuya component to the inriver run; and subtracting the estimated in-river catches of Tuya and mainstem sockeye stocks, determined from the stock composition estimates of inriver catches, from the in-river run estimates of the Tuya and mainstem components.

Due to fluctuations in survival for Stikine sockeye, there is a high level of uncertainty in the preseason outlooks. There have been wide discrepancies between past forecasts and actual runs. For example in 2008, the total preseason run forecast was 228,600 sockeye, whereas the estimate of actual run was only 110,800 sockeye. (*This unexpectedly low run size was probably due to poor marine survival as evident in the Tahltan smolt-to-adult survival of only 2.5% in 2008 vs. an overall average of 6.5 %*.) However, in 1999, the preseason forecast of 126,000 Stikine sockeye salmon was very close to the post-season estimate of approximately 124,600 sockeye. The performance of the preseason forecasts relative to final post-season estimates is summarized in Table 4. Despite problems with preseason forecasting, the

[4] Terminal run size = total run excluding allowance for harvests in marine areas outside the terminal Alaskan gillnet fisheries (e.g. Districts 106, 108 and 111).

outlooks are useful when used in concert with catch performance (CPUE) for management until in-season data becomes available for in-season run size projections.

Table 4. Stikine River sockeye salmon preseason run forecasts vs. post season run size estimates from 1982 to 2009.

Year	Pre-season forecast (a)	Post-season run size	Forecast performance (b)	Absolute deviation	Absolute % deviation
1982	84,000	111,507	-24.7%	27,507	24.7%
1983	62,900	77,465	-18.8%	14,565	18.8%
1984	37,500	84,014	-55.4%	46,514	55.4%
1985	91,000	214,494	-57.6%	123,494	57.6%
1986	262,000	98,373	166.3%	163,627	166.3%
1987	114,000	43,350	163.0%	70,650	163.0%
1988	123,500	45,096	173.9%	78,404	173.9%
1989	80,500	90,546	-11.1%	10,046	11.1%
1990	94,000	67,242	39.8%	26,758	39.8%
1991	94,000	154,351	-39.1%	60,351	39.1%
1992	127,338	231,936	-45.1%	104,598	45.1%
1993	135,000	280,730	-51.9%	145,730	51.9%
1994	312,000	208,036	50.0%	103,964	50.0%
1995	169,000	218,728	-22.7%	49,728	22.7%
1996	329,000	372,785	-11.7%	43,785	11.7%
1997	211,000	226,915	-7.0%	15,915	7.0%
1998	218,500	121,448	79.9%	97,052	79.9%
1999	126,000	119,138	5.8%	6,862	5.8%
2000	138,000	94,311	46.3%	43,689	46.3%
2001	113,000	141,000	-19.9%	28,000	19.9%
2002	80,000	87,724	-8.8%	7,724	8.8%
2003	184,000	241,362	-23.8%	57,362	23.8%
2004	289,500	305,163	-5.1%	15,663	5.1%
2005	477,120	259,968	83.5%	217,152	83.5%
2006	179,178	273,070	-34.4%	93,892	34.4%
2007	233,600	216,710	7.8%	16,890	7.8%
2008	228,600	110,800	106.3%	117,800	106.3%
2009	274,500	178,750	53.6%	96,000	53.6%
1982-2009	173,883	166,965	19.25%	67,276	50.48%
2000-2009	219,750	190,886	20.55%	69,417	38.95%

a) pre-season forecast based on combination of sibling, smolt and stock-recruitment forecast methods.

(b) the forecast expressed as % deviation from the post season run size estimate. Negative numbers indicate the forecast was lower than the actual run size.

The 2010 sockeye run outlook is characterized as average. The preseason outlook translates into an expected total allowable catch (TAC) for all Stikine sockeye salmon of 120,900 fish. Of this, approximately 1,800 sockeye are expected to be harvested in test fisheries (stock assessment) leaving approximately 119,100 sockeye to be shared 50:50 between Canada and the U.S., i.e. 59,550 to each country, excluding terminal Tuya catches in Canada. The TAC outlook is comprised of the following components:

1. a predicted TAC of 66,500 Tahltan sockeye (total TAC of 67,200 minus test catch of 700) with an allowable maximum exploitation rate on this stock of 0.74 at a the predicted stock size of 91,200 fish and an escapement target of 24,000 sockeye salmon;
2. a predicted TAC of 35,400 Tuya fish (total TAC of 35,700 minus test catch of 300) estimated by applying the allowable Tahltan exploitation rate (0.74) to the Tuya stock prediction of 48,500 This leaves a predicted 12,800 fish surplus for the Tuya stock which potentially would be available for Canadian terminal harvest in the Tuya River; and
3. a predicted TAC of 17,200 mainstem sockeye (total TAC of 18,000 minus test catch of 800) which is based on an escapement target of 30,000 spawners and the expected run size of 48,000 fish.

Spawning Escapement Goals

Escapement goals have been established by the Transboundary Technical Committee (TCTR) for two Stikine sockeye stock groups: 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 access to spawning and rearing grounds, has a spawning escapement goal of zero. In practice, since the Tahltan and Tuya stocks co-mingle and have the similar migratory timing and distribution, the harvest rate on Tuya fish in traditional fisheries should not exceed that which can be sustained by the Tahltan fish so as not to over harvest 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.

Subjective management categories have been defined for various escapement ranges. A post-season 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 judgment of desired escapement levels.

Tahltan Stock

In 1993, the TCTR established an escapement goal of 24,000 fish for the Tahltan stock (Wood et al unpublished data), which takes into account an escapement goal of 20,000 naturally spawning fish and up to 4,000 fish needed for broodstock to meet the objectives of the current Canada/U.S. Stikine fry planting program. 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

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. terminal 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;
4. terminal run as a function of the return of age-4 sockeye salmon in the previous year; and
5. the relationship between the terminal run estimates to patterns of distribution and timing. This will include comparisons of various estimates (Stikine Management Model (SMM), test fishing vs. commercial fishing CPUE, different stock ID results).

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

1. survey counts and escapement estimates based on reconstructions of in-river runs apportioned by stock ID data;
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. terminal run as a function of total spawning escapements;
3. terminal run as a function of the return of age-4 sockeye salmon in the previous year; and
4. the relationship of terminal run estimates to patterns of distribution and timing. This will include comparisons of various estimates (SMM, aerial surveys, mark-recapture, test fishing vs. commercial fishing CPUE, different stock ID results).

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

1. escapement estimates generated from stock ID, CPUE, and inriver run estimates;
2. number of planted fry; 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. terminal run as a function of the return of age-4 sockeye salmon in the previous year; and
3. the relationship of terminal run estimates to patterns of distribution and timing. This will include comparisons of various estimates (SMM, aerial surveys, test fishing vs. commercial fishing CPUE, different stock ID results).

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

Harvest Sharing Objectives

The Pacific Salmon Commission (PSC) re-negotiated Pacific salmon harvest sharing provisions in January 2008 for the period 2009 through 2018. Stock assessment and harvest arrangements for Stikine sockeye stocks are found in Annex IV, Chapter 1, of the PST and Appendix to Annex IV, Chapter 1 entitled "*Understanding on the Joint Enhancement of Transboundary River Sockeye Stocks*".

Management plans for the 2010 Stikine harvest are for the TAC of Stikine sockeye salmon, both natural and planted, to be shared 50/50 between the Parties in existing, i.e. customary, fisheries. If the existing fisheries do not manage to catch the entire TAC, terminal catches in Canada will be allowed to target surpluses (relative to escapement goal ranges). Under the new PSC harvest sharing provisions, the TAC will remain 50/50 commencing in 2009 through till 2013. Post 2013 through until 2018, the catch sharing provision will be predicated upon the efforts in carrying out the agreed enhancement activities contributing to years 2014-2018. This information will be documented in annual Stikine Enhancement Production Plans (SEPP) (see Annex IV, Chapter 1 (3) (a) (1) (iii) of the PST).

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 salmon fisheries in both districts will be managed in accordance with the current transboundary Pacific Salmon Treaty (PST) annex provisions.

The sockeye salmon season will start at 12:00 noon on Monday, June 14 (SW25) for an initial 48-hour fishing period in District 106. If the inseason Stikine River Chinook salmon run size estimate is similar to, or less than, the preseason forecast, District 108 will remain closed for this opening. District 108 will open no later than Monday, June 21 with large area restrictions likely in place. The first openings in each district are dependant on the final preseason forecast for Stikine River sockeye salmon, specifically the Tahltan component of the return. The duration of fishery openings can also be adjusted due to concerns for Chinook salmon conservation. Extended fishing time and midweek openings in both districts will be based on the preseason forecasts, in-fishery harvests, and stock proportion data during the first three weeks of the sockeye fishery. Preliminary analyses indicate that the preseason forecast for Tahltan sockeye will be close to average. It is likely that increased fishing time will be given during the initial openings of the gillnet fishery, particularly in District 108. Subsequent openings, extended fishing times, and midweek openings will be based primarily on in-season estimates produced by the Stikine Management Model for the remainder of the sockeye salmon season.

Due to an expected near-average return of Tahltan sockeye salmon, extra fishing time may be warranted during the first 3-4 weeks of the sockeye season. If that run appears to be weaker than forecasted, restrictions will primarily limit fishing time in District 108 and fishery extensions in District 106 would likely not occur. Estimates of mainstem Stikine sockeye salmon escapement indicate that escapement has been within the escapement goal range in 5 of the past 6 years. However, aerial survey counts on mainstem systems have been low and downward trending in recent years. The preliminary preseason forecast is for a below average run of mainstem sockeye salmon. In addition, the U.S. has exceeded its AC of mainstem fish for the past 3 seasons. Due to these factors the U.S. will take a more conservative management approach beginning SW 28 or 29. Management actions due to concerns for mainstem sockeye salmon are not expected to occur in District 106. Management actions would occur in District 108 and would most likely be in the form of limiting midweek fishing time and continue through SW 31 or 32. If sockeye salmon runs of Alaskan island systems are determined to be weak, time and area restrictions may also be necessary in District 106.

Pink salmon typically begin entering District 106 in significant numbers by the third or fourth week of July. The 2010 S.E. Alaska pink salmon run is forecasted to be just average with an expected return of 19 million fish. The early portion of the pink salmon fishery will be managed primarily on CPUE. By early to 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. If escapements are not evenly dispersed throughout the district, area and/or time restrictions may be necessary. Openings throughout August should be comparable to historical average time.

Chum salmon run strength assessments are based upon CPUE in commercial fishery harvests. Chum salmon returns to the Anita Bay THA are expected to be similar to the 2009 return (approximately 279,000 total fish forecasted) and will likely attract fishing effort in District 108 (outside of the THA) throughout the month of July. However, during this time period, management actions will be based on Stikine sockeye salmon run performance and the U.S. harvest of Stikine River sockeye salmon.

Announcements for fishery openings throughout S.E. Alaska are made on Thursday afternoons for gillnet fisheries which begin the following Sunday, except for SW25 and SW26 which will commence noon Monday. 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.

A U.S. Federal Stikine River subsistence fishery for sockeye salmon will occur for the seventh year in 2010. The fishery will be managed by the USFS. A permit issued by the USFS to federally qualified users will be required. The fishery will take place on the Stikine River upriver from marine waters to the U.S./Canadian border. Fishing in tributaries or side channels and at stock assessment sites is prohibited. The guideline harvest level for sockeye salmon is set at 600 fish. The open dates are June 21 to July 31 for the sockeye salmon fishery. The allowable fishing gear for the fishery includes dipnets, spears, gaffs, rod and reel, beach seine, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 5½ inches. The fishery will be monitored inseason by USFS biologists that will remain in contact with ADF&G commercial fishery managers.

An Alaska State subsistence drift gillnet fishery, targeting sockeye salmon and encompassing the waters of Sumner Strait near Point Baker, will again be allowed in 2010. 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°29’00”; W. Long. The fishery is restricted to Alaska residents only and will be open each week from Wednesday noon through Sunday noon during the period June 14 through July 31, with a limit of 25 sockeye per family per year. Gillnet gear restrictions include a maximum net length of 50 fathoms. The harvest for the past five years has ranged from 21 to 25 sockeye with two permits fished and it is anticipated that fewer than 100 sockeye will be harvested in this fishery.

Canada

The Canadian lower Stikine River commercial fishery (Figure 2) will be managed on a weekly basis with management actions driven by results of stock, catch, and escapement projections derived from the SMM, in river catch performance compared to historical catch performance and run size and water levels, and in-season escapement monitoring projects. Weekly inputs to the model will include: effort and catch data from Alaska District 106 and 108 gillnet fisheries; catch, effort and in-season stock composition data from the Canadian lower Stikine commercial and test fisheries; and escapement requirements.

It is anticipated that the management of the lower river commercial fishery will switch from Chinook to sockeye at 12:00 noon June 20 (statistical week 26) for an initial period of 48 hours. Consideration for Tahltan Lake sockeye stock management objectives should persist through till 17 July (statistical week 29). Thereafter, management attention will be focused primarily on mainstem sockeye stock objectives. The mainstem sockeye management period will be moved one week earlier in 2010 in an initial attempt at rebuilding this stock component which has been trending downward over the past seven years and has only met the point estimate escapement goal in two of the last seven years. Actual time frames of responses to specific stock compositions may be fine-tuned in-season according to the weekly results of the stock ID program.

The achievement of escapement objectives is the foremost priority in management considerations. Inriver allocation priority will be to fulfill the food, social and ceremonial requirements of the traditional First Nation 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.

The three primary fishery management responses to in-season sockeye run size projections will include:

1. Adjusting fishing time. Fishing time in the lower Stikine fishery generally depends upon stock assessment and international and domestic catch allocation considerations. Although the preseason expectation is for a run size capable of providing commercial fishing opportunities, initial fishing periods will likely be of shorter duration due to uncertainty over the preseason run outlook. Once in-season projections become available, caution will be exercised in providing extensions to fishing times.

2. Adjusting the fishing area. Initially, fishing boundary locations will extend from the Canada/US boundary upstream to a location near the mouth of the Porcupine River. The area includes the lower 10 km reach of the Iskut River. The section of the Stikine River upstream from the Porcupine-Stikine confluence will be closed for the initial sockeye fishing periods. Consideration

3. Adjusting the quantity of fishing gear. Initially, only one net per licence will be permitted and may be deployed as a set or drift gillnet. Gear may be increased to two gillnets should an increase in exploitation rate be warranted based on inseason terminal run size estimates. The maximum allowable net length will remain at 135 meters and, in the absence of directed Chinook fishery, there will be a maximum mesh size restriction of 140 mm (5.5”) through noon July 18 to conserve Chinook salmon.

4. Release of bycatch. The live release of large Chinook salmon may be prosecuted during the course of the targeted sockeye fishery. For fish mortality calculation, including harvest and release fish, an estimated mortality rate of 25-50% may be applied to the large Chinook live released.

In the upper Stikine commercial fishery, the sockeye fishery will open on 27 June (SW 27) for a 48 hour period. Thereafter, weekly fishing times will generally follow those of the lower river lagged by one week. Management regimes designed to reduce exploitation include reducing weekly fishing times and reducing gear from two nets to one net.

As in past years, weekly fishing times in the First Nation fishery are not expected to be restricted. Subject to conservation requirements, terminal catches in the lower Tuya River and/or at Tahltan Lake may occur under ESSR or other authorizations. In the First Nation fishery, reductions in fishing time would be considered only if no other adjustments could be made in the lower and upper river commercial fisheries.

Summary

Attainment of escapement goals for both the Tahltan Lake and mainstem stocks is the primary objective of Stikine sockeye management. Harvest sharing will be based upon the TAC projections derived primarily from the SMM and other agreed methods. Other factors that may influence harvest management include results from in-season escapement projections, e.g. projected Tahltan Lake weir counts and water levels. The TAC estimates will likely change from week to week as the SMM updates the projected run sizes from the cumulative CPUE’s each week. Variations in the TAC estimates 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 have weekly contact in order to evaluate the output from the SMM and other stock assessment tools and to update the outcome of their respective management actions.

In-season Data Exchange and Review

Canada and the U.S. will conduct data exchanges by telephone and/or email 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.

Weekly summaries of the fisheries results will be conducted frequently throughout fishing periods through telephone calls between management offices of DFO and ADF&G.

DFO field personnel will endeavour to provide weekly otolith samples from the lower Stikine commercial and test fisheries for pick-up by ADF&G; or, the otoliths may be delivered to Wrangell via select commercial fishers, Tuesday each week for processing and analysis in Juneau. Results from preliminary analysis can be expected by Thursday of the current week. Scale samples will be processed by ADF&G (acetate copies taken) and the original samples returned to the DFO Nanaimo office by mid September.

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);
3. District 108; and
4. Stikine River subsistence fishery.

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 (if it opens);
3. the upper river commercial fishery;
4. the First Nation fishery;
5. the lower Stikine River test fishery conducted near the international border; and
6. ESSR or other terminal fishery catches will be reported as data become available.

Stock Composition of U.S. Catches

Otolith samples will be 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 in-season run forecast will be characterised as small, average or large and the contributions of Tahltan sockeye stocks to marine catches will be assumed to be similar to historical average stock compositions characterised by: small run sizes (1986-1990, 1998, 2000-2002 with run sizes <40,000); medium run sizes (long term average; run sizes 40,000-80,000); and, large runs (1985, 1991-1997, 2003-2007 with run sizes >80,000). The estimated contribution of wild Tahltan sockeye will be determined by subtracting the enhanced contribution, determined from in-season otolith analyses, from whichever historical average total Tahltan contribution is being used. For mainstem stock contributions, a low run forecast will use the average of the contributions from 1987, 1988, 1990, 1998-2000, 2002 (run sizes <40,000). An average run size (run size of 40,000-80,000) will use the long-term average contributions, and for high run size forecasts, the average of the contributions from 1985, 1992, 1993, 1995, 1996, 2003, 2004 and 2005 (run sizes >80,000) will be used.

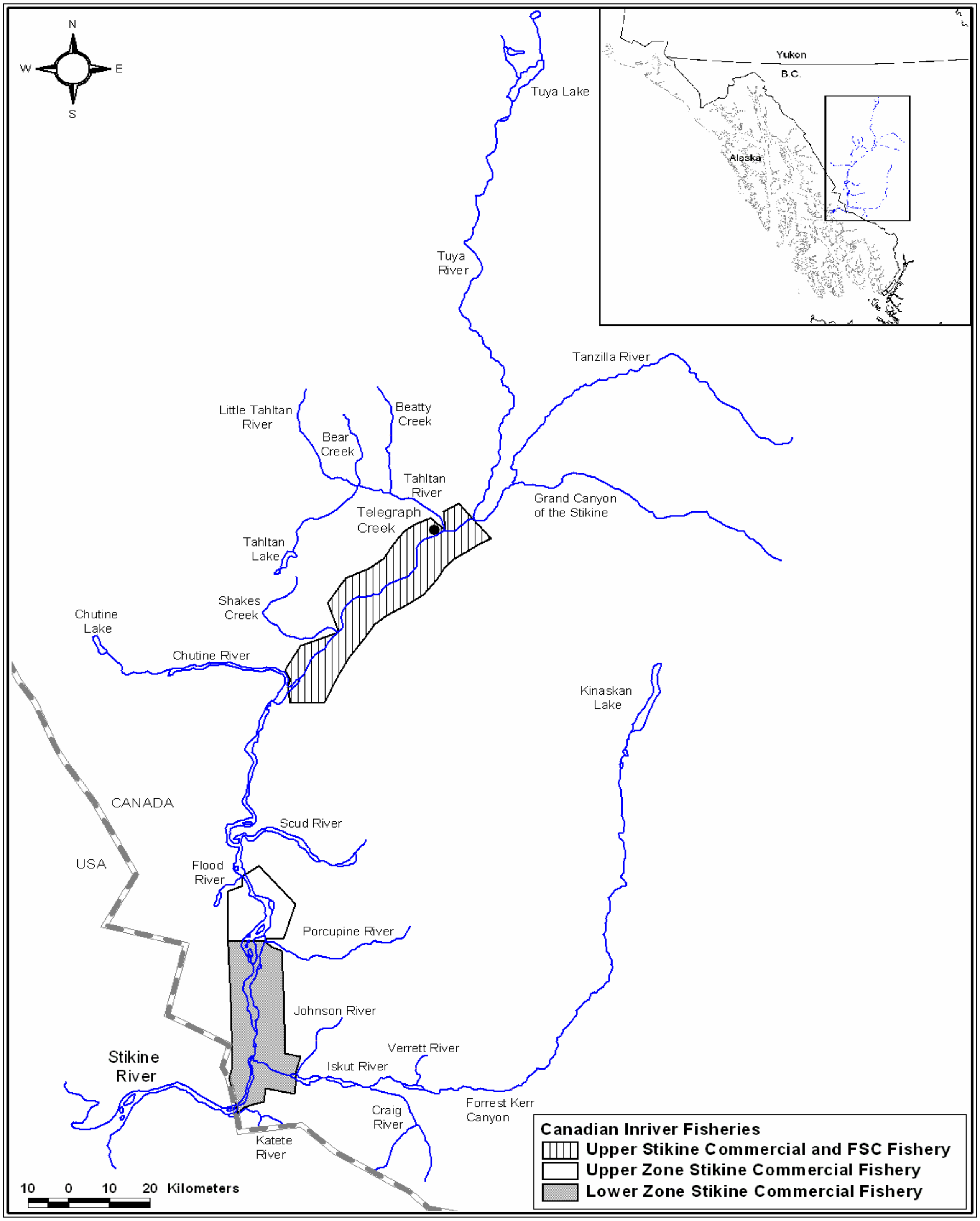

Figure 2. The Stikine River and Canadian fishing areas.

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 in-season 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, 520 otolith samples will be collected per week in District 108, and 520 otolith samples/week will be collected from each sub-area in District 106 for in-season analyses. These samples will be matched with genetic tissue and scale samples. Inseason processing of thermal marks will be completed within 2 days of the end of the fishing period. 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 (based on historical averages) used to apportion catches in District 106 and 108 in the SMM.

Stock Composition of the Inriver Canadian Catch

Egg diameter data will be used inseason to estimate the combined Tahltan and Tuya sockeye component versus the mainstem contribution to the lower river sockeye catches during the fishing season. Tahltan fish generally have smaller diameter eggs (<3.7 mm) compared to mainstem fish. The Tuya component will be determined from the analysis of otolith samples collected each week. Attempts will be made in 2010 to develop and/or implement a GSI program to verify stock composition estimates based on egg diameters and to develop a blind test for SPA vs. GSI using the large egg fish as the mainstem conglomerate.

In the lower Stikine commercial fishery, 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 sub-sample 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/delivery times for the otolith samples from the river will be on Tuesday, unless otherwise agreed. Egg and otolith data will be used both in- and post- season to estimate wild Tahltan and mainstem sockeye and the planted Tahltan and Tuya contributions. A total of 350 sockeye salmon will be randomly sampled each week for scales, size and gender. It will be necessary to match the scale and egg data by fish to develop post-season stock-specific age-composition estimates, and for the development of post-season scale pattern standards. In addition, at least 125 genetic samples will be collected each week for future stock composition analysis. If samples are not available in August due to lack of fishing effort, samples may be augmented from the test fishery.

In the upper Stikine fishing area, up to 600 sockeye will be sampled for age, sex, size, egg diameters and otoliths from the combined commercial and First Nation fisheries.

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 in-season in a similar manner to the commercial fishery. Up to 400 sockeye caught in the test fishery per week will be sampled for scales and otoliths, and all females in that sample will be examined 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 in-season analysis.

The post-season sockeye stock composition estimates will be based on egg diameter data and associated thermal mark analyses. Similar to the commercial fishery, the planted portion of the catch will be determined post-seasonally from otolith samples.

Spawning Escapement Estimates

An adult enumeration weir will be used to estimate the Tahltan Lake 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 will be taken from the spawning grounds and/or broodstock.

The mainstem escapement will be estimated post-seasonally 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. Aerial surveys of six mainstem sockeye spawning indices will be conducted to serve as ancillary escapement information. The Tuya sockeye escapement will be estimated post-seasonally in a similar way.

Up to 400 Tuya River sockeye salmon will be sampled for age, size and sex composition and otoliths.

Post-season SPA Standards

Scale pattern standards for Tahltan and mainstem sockeye stocks will be derived 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, i.e. <3.7 mm, and no thermal marks. For the mainstem stock, samples will be taken from female sockeye salmon caught in the lower river fisheries having egg diameters 3.7 mm or greater. 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.

The weekly proportions of Tahltan, mainstem and Tuya sockeye salmon in the commercial or test fishery are used post-seasonally to estimate the respective abundances of these stock groupings in the entire run and the Tuya and mainstem escapement. Egg diameters from samples collected from both the commercial and test fishery will be used to determine stock proportions in the inriver fishery catches for both in-season and post-season analyses. GSI results may be used to verify and estimate error rates in the stock composition estimates derived from egg data.

Data Evaluation Procedures

Historical Database

Although Canadian commercial fishing began in the Stikine River in 1975, the methodology for estimating sockeye terminal 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 5). Due to possible changes in efficiency in the commercial fishery, the CPUE data from the lower river *test* fishery, if available, will be used as the main predictor of in-season run strength. If the test fishery data is insufficient (due to no/limited test fish effort), the CPUE from the lower river commercial fishery will be used as the primary predictor. The historical databases from 1985 for the Canadian lower Stikine and

Alaskan District 106-41/42 commercial fisheries, and from 1986 for the Canadian test fishery, will be used in the development of the SMM for 2009. *(note: the incomplete fishing pattern and unusual migratory behavior observed in the Canadian Lower Stikine commercial fishery in some years may preclude the use of the data from those years in the model).* The 2010 run size estimated by the model at the end of the fishing season will be replaced in the fall/winter of 2010 using post-season stock composition data for use in the database in future years.

Stikine Management Model

A model based on the relationship between CPUE and run size has been constructed and updated to make weekly in-season predictions of the total terminal run size and the TAC during the 2010 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. In concert with the SMM, managers may use other inseason information such as a comparison of current year inriver catch performance by stock grouping against past catch performance and run size, and perceived changes in current year run timing information from the run timing regime identified in the model.

The model for 2010 is based on CPUE data from District 106, the Canadian commercial fishery in the lower river and the lower Stikine test fishery. Actual years to be included in the model will be determined prior to the season (analyses in progress). Linear regression is used to predict terminal run sizes from cumulative CPUE's for each week of the fisheries beginning in statistical week 26 for all three fisheries. Since the run abundance is expected to be average in 2010, the intercept will not be forced to be zero. If the management regime permits two nets and a fishing zone extended upstream to the mouth of the Flood River, as occurred in 2003-2009, the model will use adjusted data for the lower Stikine commercial CPUE which will exclude catch and effort data from the Flood Glacier area, i.e. the extended fishing area fished during 1997-2000, 2004-2007, 2009. In addition, the weekly CPUE data from 1994-2000, 2005-2009 (excluding the Flood area CPUE data) were decreased by 25% to account for the extra gear allowed during this period. This makes the historical CPUE data comparable with the 2010 data.

In the past, three sets of CPUE data have been used to predict the terminal run. These included:

1. The District 106 cumulative CPUE of Stikine sockeye stocks was used to predict the terminal run of Stikine sockeye salmon;

2. The cumulative CPUE from the Canadian lower river commercial fishery was used to predict the inriver Stikine sockeye run. In this year's analysis, the CPUE from 1994-2000, 2004-08 (excluding the upper fishing area catches and when additional nets were introduced into the fishery), will be standardized, depending on the management regime expected to be in place, to ensure the annual CPUE values are comparable. In 2010, the historical CPUE values will reflect those of a one net regime; model inputs of the CPUE from the lower river commercial fishery will be adjusted accordingly depending on whether one or two nets are being fished.

   To estimate the terminal run, the following calculations will be made: 1. the projected inriver run will be added to the projected total season catch of Stikine sockeye salmon in District 108. The projected catch in District 108 will be based on an assumed 90% contribution of Stikine sockeye to the cumulative catch expanded by historical run timing; and 2. the projected District 106 catch will be based on the assumption that 10% of the terminal run will be harvested in District 106, i.e.

the run entering District 108 calculated as per paragraph 1 above will represent 90% of the terminal run. The terminal run projection will be the sum of the projections for the inriver run and the District 108 catch expanded by 1/0.9.

3. From 1995 through 2000, the cumulative CPUE from the Canadian test fishery was used to predict the inriver Stikine sockeye run. The inriver run estimate was expanded as per item 2 above to project the total terminal run size. Since that time, projections based on the test fishery have been used infrequently due to the incomplete coverage of the total run. However, the test fishery is used when necessary to estimate a commercial CPUE value for the model in the absence of a commercial fishery (via linear regression of historical test and commercial CPUE).

The 2010 in-season projections of abundance and TAC will be based on the following datasets:

1. Projections through week 26 will be based on the preseason forecast;

2. The forecasts for weeks 27 through 30 will be based on the SMM with inputs from the inriver commercial fishery for weeks 25 through 29. The test fishery data may be used to supplant the commercial fishery data post week 32 when, on average, the lower commercial fishing effort ends or is radically reduced. [Note: the test fishery CPUE will be converted to commercial CPUE based on a linear regression equation]. Forecasts from District 106 data are generally viewed with lower confidence because weekly regressions of CPUE on terminal run size using the inriver data usually have higher coefficients of correlation compared to those based on the District 106. Predictions from the District 106 data will continue to be made to verify in-season estimates and provide post-season comparisons;

3. After week 30, the SMM will continue to be updated from the lower Stikine inriver test/commercial fishery data; however, run projections tend to be less reliable after week 30 and should be viewed accordingly;

4. Historical timing data will be used to provide weekly guideline harvests for each country;

5. Weekly management decisions may include other considerations such as:

    a. The lower river commercial CPUE of the Tahltan Lake stock grouping may be used to calculate inriver run size by a linear regression equation independent of the model. The run size of the Tuya and mainstem stock grouping will be determined based on the proportion of the CPUE of these stock groupings in the current statistical week and expanded by run timing (note: water levels and associated changes in exploitation rates will be monitored and used in assessing the run size);

    b. The current week's inriver run size of Tahltan Lake sockeye may be calculated based on the estimated harvest rate in the lower Stikine commercial fishery expanded by run timing. The harvest rate is estimated based on the historical relationship between effort and inriver run size. The run size projections for the Tuya and mainstem stock groupings will be determined based on the proportion of the CPUE of these stock groupings through the current statistical week and expanded by run timing (note: water levels and associated changes in exploitation rates will be monitored and used in assessing the run size); and

    c. Catch rates in existing fisheries compared to historical averages, run sizes, and water levels.

Table 5. Stikine sockeye run sizes: 1979 – 2009 (2008 and 2009 data preliminary).

Year	Inriver Run Size	Inriver Catch[a]	Escapement[b]	Marine Catch	Terminal Run Size[c]
i) 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	53,145	31,535	21,610	25,359	78,504
2001	103,755	29,341	74,414	23,500	127,255
2002	68,635	22,607	46,028	8,076	76,711
2003	194,425	69,571	124,854	46,552	240,977
2004	189,415	88,451	100,964	122,349	311,764
2005	167,570	88,089	79,482	92,110	259,680
2006	193,768	102,333	91,435	74,426	268,194
2007	110.,132	61,121	49,011	86,408	196,540
2008	68,005	36,646	31,359	42,785	110,790
2009	114,157	49,201	64,957	64,579	178,736
ii) 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	13,803	8,133	5,670	5,340	19,143
2001	20,985	6,224	14,761	6,339	27,324
2002	24,736	7,396	17,340	2,055	26,791
2003	81,808	28,275	53,533	16,298	98,106
2004	125,677	62,725	62,952	91,535	217,213
2005	110,903	67,857	43,046	63,714	174,617
2006	130,174	76,319	53,855	54,923	185,097
2007	59,537	38,463	21,074	63,330	122,867
2008	27,490	16,974	10,516	19,225	46,715
2009	55,563	24,890	30,673	33,537	89,100

Table 5 (continued).

Year	Inriver Run Size	Inriver Catch[a]	Escapement[b]	Marine Catch	Total Run Size[c]
iii) 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	20,779	14,971	5,806	13,255	34,034
2001	27,783	8,985	18,798	12,968	40,751
2002	9,707	7,020	2,687	4,058	13,765
2003	30,814	17,465	13,349	8,760	39,574
2004	4,909	3,645	1,264	4,257	9,166
2005	3,325	1,677	1,648	131	3,330
2006	27,806	17,829	9,977	10,122	37,928
2007	18,176	11,105	7,071	18,050	36,227
2008	20,947	14,596	6,351	14,883	35,829
2009	24,986	12,922	12,063	17,370	42,355
iv) 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	18,563	8,431	10,132	6,764	25,327
2001	54,987	14,132	40,855	4,193	59,180
2002	34,191	8,191	26,001	1,963	36,154
2003	81,803	23,831	57,972	21,494	103,297
2004	58,828	22,080	36,748	26,556	85,385
2005	53,343	18,555	34,788	28,391	81,734
2006	35,788	8,185	27,606	9,381	45,169
2007	32,488	11,553	20,865	5,027	37,445
2008	19,568	5,076	14,492	8,677	28,246
2009	33,608	11,388	22,221	13,672	47,281

Note: [a]Inriver catch includes test fishery catches.
[b] Escapement includes fish later captured for broodstock, sampled and/or taken in ESSR fisheries.
[c]Excludes marine catches outside Districts 106 and 108.

Separate projections of terminal run size will be made for the combined Stikine sockeye stocks (wild plus planted), the Tahltan Lake stock (wild plus planted), the planted Tuya stock, and the mainstem stock. This information will be used in-season to assist in fisheries management and, post-seasonally, will be evaluated along with other measures of abundance.

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 in-season. This part of the model uses the coefficients from the linear regression model, the established escapement goals, and PST harvest sharing provisions to determine the TAC for each country. Estimates of weekly TAC and effort are provided as guidelines for the managers and are derived from the 1986-2008 average run timing of the stocks and the corresponding average CPUE levels of each fishery.

In-season Use

For 2010, the model predictions will set the TAC levels; however, additional information may be used to calculate run size to inform decisions regarding fishery openings. The model output will be evaluate and compared with discrepancies from other information available on the run strength (e.g. inriver Tahltan Lake CPUE and water level). The post-season evaluation will be used to improve the model for the next year.

Post-season Evaluation

After the fishing season is over, the TCTR will evaluate how well the model performed in predicting the terminal run, where discrepancies occurred, and what might have caused them. The TCTR will also determine whether escapement goals were met according to the Spawning Escapement Goals section of this report. Results from the evaluation will be presented in the annual catch and escapement report prepared by the committee. For 2009, the preliminary evaluation may be found in: Preliminary Estimates of Transboundary River Salmon Production, Harvest, and Escapement and a Review of Joint Enhancement Activities, 2009, Transboundary Technical Committee, December, 2009. The summarized output of the Stikine Management Model during the 2009 fishing season is presented in Table 6.

Table 6. Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as estimated inseason by the Stikine Management Model and other methods, 2009.

		total run		TAC			Cumulative Catches	
Stat Week	Start Date	Estimate	Method	Total	US	Canada	U.S.	Canada
Canadian Estimates								
25	12-Jun	274500	preseason	206600	103300	103300		2463
26	19-Jun	274500	preseason	206600	103300	103300		15365
27	26-Jun	235500	model	173000	86500	86500		23677
28	03-Jul	182300	inriver reg	116000	58000	58000		30435
29	10-Jul	140000	avg mod/regression[a]	75600	37800	37800		38263
30	17-Jul	132700	avg mod/regression[a]	68800	34400	34400		41803
31	24-Jul	133400	avg mod/regression[a]	68800	34400	34400		43533
32	31-Jul	162300	avg run reconstn/mod	101600	50800	50800		44829
33	07-Aug	165500	avg run reconstn/mod	100200	50100	50100		45390
34	14-Aug	155300	run reconstruction	89000	44500	44500		45765
35	21-Aug	160500	run reconstruction	95200	47600	47600		45880
36	28-Aug	160500	run reconstruction	95200	47600	47600		45904
US Estimates								
25	12-Jun	274500	preseason	206108	103054	103054	10694	
26	19-Jun	274500	preseason	206108	103054	103054	28366	
27	26-Jun	274500	preseason	206108	103054	103054	39607	
28	02-Jul	231300	model	168344	84172	84172	51278	
29	09-Jul	190600	model	126418	63209	63209	55069	
30	16-Jul	186400	model	121944	60972	60972	57398	
31	23-Jul	176500	model	112116	56058	56058	60692	
32	30-Jul	185400	model	120284	60142	60142	62218	
33	06-Aug	179500	model	115104	57552	57552	63485	
34	14-Aug	181800	model	117970	58985	58985		
Preliminary Final		179,300			56300	56300		

[a] average of model, and inriver regression

[b] average model/run reconstruction

Coho Salmon

Preseason Forecast

The preseason forecast of Stikine River coho salmon is based on multiplying the estimated escapement of female coho salmon by a DFO "biological standard" production factor of 5.7. This factor was generated by the Canadian Salmon Enhancement Programme and is used as a general multiplier in assessing potential production in the absence of more precise data.

The brood year escapement information contributing to the Stikine coho salmon run in 2010 was approximately 55,100 (2006) and 15,400 (2007). These escapement estimates were based on the performance of the 2006 coho test fisheries compared to the performance of the 2006 sockeye test fisheries and the resultant sockeye inriver run size from the latter. For example, the 2006 cumulative average weekly CPUE of coho was 5.54 fish per test drift, while the sockeye cumulative average weekly CPUE was 19.06 fish per drift. The coho CPUE was 29.1% of the sockeye CPUE. The total inriver coho run size, therefore, was estimated to be 29.1% of the inriver run size of sockeye salmon or 55,713 coho salmon. The inriver coho catch of 596 fish subtracted from the inriver run size estimate results in an estimated escapement of 55,117 coho. The 2007 brood year escapement was based on expanding the aerial survey count of 494 by the average percentage (3.21%) of the total inriver spawning escapement counted in the index areas. It should be noted that the applicability of extrapolating coho escapement from the sockeye test fishery and run analysis has not yet been determined, nor has the efficacy of expanding aerial survey index counts to generate the total coho escapement.

Based on the 2005-06 brood year escapements of 55,100 and 15,400 respectively, the 2010 return of Stikine River coho is expected to be above average. Brood year aerial survey results, however, indicated that the spawning escapement was below average. Aerial surveys are conducted once annually and are subject to various surveying and run timing variables that may or may not reflect the true nature of the return.

The lack of reliable escapement and marine survival data for Stikine coho precludes the development of a reliable outlook for this stock.

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 5,000 coho salmon in a directed coho salmon fishery (PST, Transboundary Rivers, Annex IV, para. 3(a)(2)(ii)).

Stock Assessment Program

Each country shall:

1. report catch statistics for the same strata as sockeye salmon;
2. sample its fisheries for appropriate tags, e.g., spaghetti and/or coded-wire tags; and
3. conduct escapement programs as resources permit.

Management Procedures

<u>United States</u>

The drift gillnet coho salmon fishery season will start during late August or early September. Alaskan hatcheries and the remote release site at Neck Lake in upper Clarence Strait contribute substantially to coho salmon harvest in the District 106 and 108 fisheries. Inseason estimates from CWT recovery data will be used to identify the hatchery component of the harvest. Only the harvest of wild coho salmon will be used for fishery performance evaluation.

By regulation, coho salmon may not be retained in the salmon troll fishery until June 15. Spring salmon troll fisheries (from the end of the winter fishery to June 30) are managed to target Alaskan hatchery Chinook salmon and must stay within certain Treaty Chinook salmon harvest limits adopted by the Alaska Board of Fisheries. Coho salmon are harvested incidentally during the last two weeks of the spring troll fishery and harvests during that time period are typically very low. During the summer salmon troll fishery (July 1 to September 30), the salmon troll fishery in District 108 is open only on days when the drift gillnet fishery is open. When first opened, the summer fishery targets Chinook and coho salmon. When the Chinook salmon harvest target is reached, the fishery is closed to Chinook salmon retention but remains open for coho salmon. The coho salmon season usually remains open through September 20 but may be closed earlier for conservation and/or allocative reasons in July or August. An extension of the coho season to September 30 may occur during years of high abundance as specified by regulations adopted by the Alaska Board of Fisheries.

If there is a conservation concern for Stikine River coho salmon, the District 108 drift gillnet and troll fisheries will be restricted.

A U.S. Federal Stikine River subsistence fishery for coho salmon will occur for the sixth consecutive season in 2010. The coho fishery will be open from August 1 to October 1 with a guideline harvest level of 400 fish. The fishery will take place upriver from marine waters to the U.S./Canadian border. Fishing will be allowed in the mainstem of the Stikine River; excluding fishing sites that ADF&G and DFO use to conduct stock assessment research. The allowable fishing gear for the fishery includes dipnets, spears, gaffs, rod and reel, beach seine, or gillnets not exceeding 15 fathoms in length with mesh size no larger than 5½ inches (~14 cm). The fishery will be monitored inseason by USFS biologists that will remain in contact with ADF&G commercial fishery managers.

An Alaska State subsistence fishery, targeting coho salmon, will be conducted again in 2010. The fishery is permitted in all streams of District 105 north of a line from Pt. Saint Albans to Cape Pole, District 106 west of line from Macnamara Pt. to Mitchell Pt. and west of the longitude of Macnamara Pt., District 107 and District 108: excluding the Stikine River. The fishery is restricted to Alaska residents only and will be open from August 16 to October 31, with a limit of 40 coho per family per year.

<u>Canada</u>

In general, the Canadian fleet does not generally target coho salmon. Most of the coho catch is harvested during the prosecution of the sockeye fishing season, which extends from late June through till mid August. Should the fleet decide to target coho salmon, appropriate management regimes will be implement in stat week 35 (22-28 Aug). If there is a conservation concern, the Canadian fishery will be restricted.

TAKU RIVER

Preseason Forecasts

Chinook Salmon

The preseason terminal run forecast for large (greater than 659 mm mid-eye-to-fork length) Taku River Chinook salmon in 2010 is 41,328 fish. This forecast is based on sibling returns and is 15% below the ten-year average terminal run of 48,100 large Chinook salmon. The principal brood years contributing to the 2010 Chinook run are 2004, 2005 and 2006. The 2004 escapement of 75,032 was above the upper limit of the goal range of 30,000-55,000 large fish, whereas, the 2005 escapement of 38,725 and 2006 escapement of 42,296 large Chinook were above/close to the MSY point goal of 36,000 fish. In 2009, the spawning escapement goal was revised to an interim MSY point estimate of 25,500 fish within a target range of 19,000 to 36,000 fish; this goal will also be in effect in 2010. Although the 2010 preseason forecast is sufficient for directed fisheries in both the U.S. and Canada, the tendency for forecasts to over-estimate the actual run size in recent years will require a precautionary approach in implementing directed fisheries this year (Table 7).

The age-specific outlooks are based on the following linear regressions:

- age-4 in 2009 ($N_{age\text{-}4(y\text{-}1)}$) to predict the number of age-5 in 2010 ($N_{age\text{-}5(y)}$):

$$\mathbf{N_{age\text{-}5(y)} = 1.599 * N_{age\text{-}4(y\text{-}1)} + 13{,}975} \qquad \textbf{[5]}$$

The correlation coefficient (r^2) of this relationship = 0.44, df = 12;

- age-5 in 2009 (Nage-5(y-1)) to predict the number of age-6 in 2010 (Nage-6(y)):

$$\mathbf{N_{age\text{-}6(y)} = 0.801 * N_{age\text{-}5(y\text{-}1)} - 8{,}817} \qquad \textbf{[6]}$$

The correlation coefficient (r^2) of this relationship = 0.70, df =12;

- age-6 in 2009 ($N_{age\text{-}6(y\text{-}1)}$) to predict the number of age-7 in 2010 ($N_{age\text{-}7(y)}$):

$$\mathbf{N_{age\text{-}7(y)} = 0.010 * N_{age\text{-}6(y\text{-}1)} + 56} \qquad \textbf{[7]}$$

The correlation coefficient (r^2) = 0.78, df =11.

On average, the run consists of 26% age-4, 44% age-5 and 28% age-6 Chinook; other ages include age-3 and age-7 which make up the remainder. The total estimated number of inriver Taku Chinook age-4 in 2009 was 11,525; age-5 was 22,376; and age-6 was 9,266. Substituting these values into each of the respective equations [5] through [7] above and summing the results, gives a predicted inriver return of 41,328 large Chinook salmon in 2010. This outlook, which constitutes a below average run size, does not include Chinook salmon of age-4 or less.

Table 7. Taku River Chinook salmon preseason forecasts vs. post season estimates, 1994 to 2009. Values for 1997 – 2003 are for spawning escapement; 2004 – 2008 are for terminal run.

Year	Pre-season Forecast (a)	Post Season Estimate	Forecast Performance (b)
1997	106,103	114,938	-8%
1998	47,827	31,039	+54%
1999	24,525	19,734	+24%
2000	32,130	30,529	+5%
2001	38,559	42,980	-10%
2002	40,092	52,409	-24%
2003	43,061	36,435	+18%
2004	56,774	68,199	-17%
2005	99,610	68,602	+45%
2006	64,150	63,598	+1%
2007	38,720	22,385	+73%
2008	39,406	31,730	+24%
2009	50,164	43,284	+17%
2010	41,238		
1997-2008	Average absolute difference from post season run size		+/- 25%

a) pre season forecast based on sibling data.
b) the forecast expressed as % deviation from post season estimate. Negative numbers indicates the forecast was lower than the actual return.
c) preliminary estimate

Sockeye Salmon

The DFO preseason forecast for the terminal run of wild Taku River sockeye salmon is approximately 205,000 fish, which is below the recent ten-year average run size of 226,500 fish. The 2010 forecast for wild fish is based on a stock-recruitment model. However, it should be noted that the pre-season forecasts over the past three years have overestimated the actual run size by an average of approximately 37% (Table 8). Final 2009 U.S. catch estimates are not yet available for the development of a final sibling forecast, however, based on preliminary data this is approximately 175,000 fish.

The forecast for wild fish 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:

$$\ln (R/S) = 2.2 - 0.000014 \bullet S \qquad \textbf{[8]}$$

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

Equation [8] above is based on the estimated return of spawners from the 1984 to 2003 brood years and the subsequent age-specific returns from these escapements.[5] The relationship is significant at a level of α=0.05. The estimated numbers of spawners from the principal brood years were 119,126 in 2005 and 143,496 in 2006. The calculated returns per spawner for these years based on equation [8] are 1.8 and 1.3, respectively. Assuming that the fish from these brood years mature as per the average age-at-maturity

[5] Escapement estimates for 1981 and 1985 on were based on the Canyon Island mark-recapture program. Annual age-specific returns were estimated assuming the inriver age composition, determined from sampling in the Canadian commercial fishery, was representative of the entire run.

(62% age-5, 29% age-4, 4% age-6, and 5% age-3), the forecast terminal run size for 2010 is 205,418 wild sockeye, based on stock-recruitment data.

Table 8. Taku River sockeye salmon preseason run forecasts vs. post season run size estimates, 1994 to 2009 (2009 is terminal run; previous years are total run).

Year	Pre-season Forecast (a)	Post Season Run Size	Forecast Performance (b)
1994	237,500	241,828	-2%
1995	211,300	245,314	-14%
1996	219,000	334,249	-34%
1997	285,200	181,142	+57%
1998	238,100	146,414	+63%
1999	202,884	186,672	+9%
2000	273,168	258,445	+6%
2001	250,451	406,355	-38%
2002	293,113	265,120	+11%
2003	303,802	343,598	-12%
2004	231,153	213,009	+9%
2005	272,106	196,568	+38%
2006	169,284	239,913	-29%
2007	211,733	169,920	+25%
2008	181,038	161,640	+12%
2009	213,000	123,479(c)	+73%
1994-2009	Average absolute difference from post season run size		+/- 25%

a) pre season forecast based on an average of sibling and stock-recruitment forecasts except for 1995 and 2007-2009 which were based solely on stock-recruitment.
b) the forecast expressed as % deviation from post season estimate. Negative numbers indicates the forecast was lower than the actual return.
c) preliminary estimate

Tatsamenie sockeye salmon: The outlook for Tatsamenie sockeye is for an average to below average run. The escapements to Tatsamenie Lake in 2005 and 2006, the primary brood years for 2010 returns, were 3,372 and 22,475 (close to record high) fish, respectively. For comparison, the previous ten-year average is approximately 7,800 fish. Combining separate forecasts for wild and enhanced components of the run, the 2010 forecast is approximately 14,200 sockeye, which is close to the average of 15,500 fish.

The 2010 forecast for the terminal run of enhanced Tatsamenie Lake sockeye is 2,300 fish, which is below the recent ten-year average of 5,400 fish. This outlook is the average of smolt- and sibling- based forecasts. The smolt-based forecast, 3,045 fish, uses out-migration estimates at Tatsamenie Lake over the period 2005-2008, average age-at-return of 17%, 69%, 13%, and 2% for age classes 1.2, 1.3, 1.4, and 1.5 respectively, and the recent five-year average enhanced smolt to adult survival of 6.7%. The 2007 and 2008 out-migrations of 26,000 and 120,000 enhanced smolts, respectively, are expected to be the primary contributors to the 2010 run, returning as age 1.2 and 1.3 fish. Smolt size has been shown to be positively correlated with survival; the body weights of the 2007 and 2008 smolts were 4.6 and 3.3 grams respectively, which are below the previous 10-year average of 5.0 grams. Regarding the sibling forecast, the return of enhanced age 1.2 fish in 2009 is estimated at only 53 fish; using the sibling relationship (r-square = 0.6), a total of 1,049 age 1.3 fish can be expected. Expanding this based on the average age-at-return as noted above amounts to a sibling-based forecast of 1,521 fish.

The estimated outmigrations of wild smolts from Tatsamenie Lake in 2007 and 2008, the primary outmigrations contributing to the 2010 run, were 47,500 (record low) and 408,000, respectively. In comparison, the previous ten-year average smolt outmigration was 426,000 fish. Assuming that the survival rate of wild smolt is comparable to that of enhanced smolt (6.7%), and using the average age composition of 30%, 1%, 62%, and 7% for age classes 1.2, 2.1, 1.3, and 2.2 respectively, a run of about 11,900 wild fish is expected in 2010. For comparison, the average run size of wild fish is approximately 12,400 fish assuming the average exploitation rate for wild fish is the same as that for enhanced fish (0.58). The body weights of age 1+ wild smolt in 2007 and 2008 were 4.4 and 3.0 grams, respectively, which are below the recent ten-year average of 4.7 grams.

The below average body weights and the poor marine survival observed in 2009 suggest that the above forecast may be optimistic.

Escapement of sockeye salmon to Tatsamenie Lake has occasionally limited the magnitude of the U.S./Canada egg take program. Based on the average fecundity of approximately 4,000 eggs per female, equal sex ratios and the enhancement guideline that no more than 30% of the escapement can be utilized for enhancement purposes, an escapement of at least 3,300 sockeye salmon will be needed to reach the egg take goal of 2.0 million in 2010; an eggtake of 1.5 million would require an escapement of at least 2,500 Tatsamenie sockeye.

A small number of additional enhanced fish are expected from Trapper Lake egg-takes associated with the Trapper Lake barrier removal feasibility study. In the spring of 2007, a total of 896,000 fry was planted into the lake; it is unknown how many of these fish survived to the smolt stage. However, only 2-ocean fish will be returning in 2010. Assuming a survival of 5% to the smolt stage, 8% to the adult stage, and a maturity schedule as per Tatsamenie enhanced fish (i.e. 17% return after two years in the ocean), the return would be approximately 600 fish. This would bring the forecast for the total return of enhanced fish (Tatsamenie and Trapper) to 2,900 fish.

Coho Salmon

It is expected that the abundance of Taku coho salmon will be below average in 2010. Based on catch rates in the Taku River CWT program, an estimated 1.96 million coho salmon smolts emigrated during the spring of 2009; these fish will be returning as adults in 2010. If the marine survival rate for these fish is similar to the 10-year average (8.6%), a total run of 162,900 should be observed in 2010. This is below the 2000 to 2009 average run size of 202,200 fish. If U.S. exploitation rates are also average (39%), the border escapement should be approximately 99,900 fish. For reference, the 2009 return experienced marine survival and U.S. exploitation rates of 7.8% and 52% exploitation, respectively.

The estimated spawning escapements in the two primary brood years that will contribute to the 2010 coho run were 122,300 fish in 2006 and 49,700 in 2007. 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 115,400 over the 2000 to 2009 period.

Pink Salmon

Pink salmon returning in 2010 will be the product of the 2008 escapement. Based on the 2008 Canyon Island fish wheel catch of 4,704 pink salmon, relative to the previous ten-year average of 14,200 (even year ten-year average of 11,930 fish), the escapement is believed to have been well below average. Therefore, the return in 2010 could be well below average in magnitude.

Chum Salmon

Canyon Island fish wheel chum salmon catches in 2005 and 2006 (258 and 466, respectively) suggest that the 2010 parent year spawning escapements were about average. The previous ten-year average Canyon Island fish wheel chum salmon catch was 333 fish and the run appears to have been depressed since the early 1990's. The 2010 fall chum run is expected to be similar to the recent ten year average.

Escapement Goals

Annex IV, Chapter 1 of the PST required the Parties to review an appropriate escapement goal for Taku Chinook salmon by January 15, 2009 and to pass a jointly prepared technical report through accelerated domestic review processes in time for a revised goal to be applied to the 2009 season. Detailed analyses of harvest and spawning abundance by age class and smolt production were used to generate a recommendation for a 19,000 to 36,000 adult fish (3-5 ocean and mid-eye to fork length of >659 mm) escapement goal range with a point goal of 25,500 large Chinook (McPherson et al 2009, *in prep*). This goal will be in place on an interim basis pending a formal review expected in the fall of 2010.

Escapement goals for other Taku River salmon species are based on limited analyses of historical harvest 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. In 1999, the PST called for developing a revised escapement goal for coho salmon no later than May 1, 2004. A detailed analysis of the Taku River coho salmon escapement goal was completed in 2004. Staff who conducted that analysis recommended that a modified escapement goal not be adopted until production from the very high escapements in 2002 and 2003 could be included in the analysis. The recently revised Transboundary Chapter of Annex IV of the PST obliges the Parties to develop an agreed MSY escapement goal prior to the 2010 fishing season. This work is still in progress and is expected to be submitted for formal technical review in the fall of 2010.

Current escapement goals accepted by the TCTR for salmon spawning in Canadian portions of the Taku River are as described in Table 9 below:

Table 9. Interim escapement goals for Taku River salmon.

Species	**Year established or status**	**Interim escapement goal ranges**	
		from	**to**
Sockeye	1985	71,000	80,000
Coho	under review	27,500	35,000
Chinook	2009 (interim)	19,000	36,000
Pink	1985	150,000	250,000
Chum	1985	50,000	80,000

Harvest Sharing Objectives

Harvest sharing agreements between Canada and the United States for Taku River sockeye and coho salmon are in place as a result of negotiations of Annex IV, Chapter 1 of the PST most recently concluded by the Pacific Salmon Commission in February 2008. Those harvest sharing arrangements are in effect for 2009 through 2018. The Transboundary Panel originally negotiated harvest sharing provisions for Taku River Chinook salmon (Chinook greater than 659 mm mid-eye to fork length) in February 2005 for the period 2005 through 2008. Most of these arrangements have been carried forward and are now included in Paragraph 3(a) (3) of Annex IV, Chapter 1 of the PST. The details of the harvest sharing arrangements for Taku River Chinook, sockeye, and coho salmon in 2010 are summarized below.

Chinook Salmon

The catch sharing provisions were developed to acknowledge the traditional catches in fisheries, referred to as base level catches (BLCs), which occurred prior to the new arrangements; these included incidental catches in Canadian and U.S. commercial gillnet fisheries, U.S. and Canadian sport fisheries, the Canadian First Nation fishery and the Canadian test fishery. For the new directed fisheries, the allowable catch (AC) will be calculated as follows:

AC = Terminal run - Base Terminal Run (BTR); where [9]

BTR = escapement target + test fishery BLC + U.S. BLC + Cdn BLC

BLCs are as follows:

- U.S. Taku BLC: 3,500 large Chinook [6]
- Canadian Taku BLC: 1,500 large Chinook [7]
- Test fishery: 1,400 large Chinook;

Harvest sharing and accounting of the AC shall be as follows:

Table 10. U.S. and Canadian allowable catches of Taku Chinook salmon for directed fisheries.

Allowable Catch Range		Allowable Catch Share			
		U.S.		Canada	
Lower	Upper	Lower	Upper	Lower	Upper
0	5,000	0	0	0	5,000
5,001	20,000	1	11,000	5,000	9,000
20,001	30,000	11,001	17,500	9,000	12,500
30,001	50,000	17,501	30,500	12,500	19,500
50,001	100,000	30,501	63,000	19,500	37,000

Within each Allowable Catch Range, each Party's Allowable Catch Share will be calculated proportional to where the AC occurs within the range. The Transboundary Technical Committee has developed a spreadsheet to calculate specific catch shares. The Parties shall determine the domestic allocation of their respective harvest shares.

[6] Includes average combined US gillnet and sport catches of Taku Chinook salmon in District 111.
[7] Includes average combined Canadian Aboriginal, commercial and estimated sport catch of Taku Chinook salmon.

When the terminal run is insufficient to provide for the Party's Taku Chinook BLC and the lower end of the escapement goal range, the reductions in each Party's base level fisheries, i.e. the fisheries that contributed to the BLCs, will be proportionate to the BLC shares, excluding the test fishery.

The U.S. catch of the Taku Chinook salmon AC will not count towards the South East Alaska (SEAK) aggregate abundance based management (AABM) allocation (as described in Chapter 3 of the PST). In particular:

1. non-Taku Treaty Chinook salmon harvested in District 111 will continue to count toward the SEAK AABM harvest limit;
2. the U.S. BLC of Taku Chinook salmon in District 111 will count toward the SEAK AABM harvest limit;
3. the U.S. catch of Taku Chinook salmon in District 111 above the U.S. BLC will not count towards the SEAK AABM allocation.

Accounting for the SEAK AABM Chinook salmon catches as pertains to transboundary rivers harvests will continue to be the responsibility of the Chinook Technical Committee as modified by (a) through (c) above.

Sockeye Salmon

Sockeye arrangements for the 2009-2018 period as specified in the PST include the following:

1. Directed fisheries on Taku River sockeye salmon will occur only in the Taku River drainage in Canada, and in District 111 in the U.S.

2. Annual abundance of the wild run of Taku River sockeye salmon will be estimated by adding the catch of wild run sockeye salmon in U.S. District 111 to the estimated above-border passage of wild run sockeye salmon. The annual Total Allowable Catch (TAC) of wild run Taku River sockeye salmon will be estimated by subtracting the agreed spawning escapement goal from the annual abundance estimate.

3. The management of U.S. and Canadian fisheries shall be based on weekly estimates of the TAC of wild sockeye salmon.

4. For inseason management purposes, identifiable enhanced Taku River origin sockeye salmon will not be included in the calculations of the annual TAC. Notwithstanding paragraph (vi) below, enhanced sockeye will be harvested in existing fisheries incidentally to the harvest of wild Taku sockeye salmon.

5. The primary management objective of the Parties is to achieve the agreed spawning escapement goal. If the projected in-river escapement of wild run sockeye salmon is greater than 1.6, or other agreed factor, times the agreed spawning escapement goal, Canada may, in addition to its share of the TAC, harvest the projected surplus in-river escapement apportioned by run timing.

6. It is anticipated that surplus enhanced sockeye salmon will remain unharvested in existing commercial fisheries due to management actions required to ensure the wild spawning escapement. Canada may implement additional fisheries upstream of the existing commercial fishery to harvest surplus enhanced sockeye salmon.

7. Both Parties agree to the objective of increasing sockeye salmon runs in the Taku River. The United States long-term objective is to maintain the 82% U.S. harvest share of wild Taku sockeye salmon only adjusted based on documented enhanced sockeye salmon returns. Canada's long-term objective is to achieve an equal sharing arrangement for sockeye salmon. The Parties agree to continue to develop and implement a joint Taku enhancement program intended to eventually produce annually 100,000 returning enhanced sockeye salmon.

8. The Parties annual TAC share of Taku River sockeye salmon will be as described in Table 11 below:

Table 11. U.S and Canadian harvest shares of Taku River sockeye salmon.

Enhanced Production	U.S. TAC Share	Canadian TAC Share
0	82%	18%
1 – 5,000	80%	20%
5,001 – 15,000	79%	21%
15,001 – 25,000	77%	23%
25,001 – 35,000	75%	25%
35,001 – 45,000	73%	27%
45,001 – 55,000	71%	29%
55,001 – 65,000	69%	31%
65,001 – 75,000	68%	32%
75,001 – 85,000	67%	33%
85,001 – 95,000	66%	34%
95,001 – 100,000	65%	35%

The Parties' performance relative to these catch shares will be based on the post season analysis of documented production of enhanced sockeye salmon.

9. A Taku Enhancement Production Plan (TEPP) shall be prepared annually by the Committee by February 1. The TEPP will detail the planned enhancement activities to be undertaken by the Parties and the expected production from site specific egg takes, access improvements and all other enhancement activities outlined in the annual TEPP. The Committee will use these data to prepare an initial enhancement production forecast based on the best available information.

10. The Panel shall review the annual TEPP and make recommendations to the Parties concerning the TEPP by February 28.

11. The Committee shall annually review and document joint enhancement projects and activities undertaken by the Parties, including the estimated returns of identifiable and unidentifiable enhanced sockeye salmon, and present the results to the Panel during the annual post season review.

Coho salmon

Coho salmon arrangements for the 2009-2018 period as specified in the PST include the following:

1. … the Parties agree to implement an abundance-based approach to managing coho salmon on the Taku River. The Parties agree to develop a joint technical report and submit it through the various Parties review mechanisms with the aim of identifying and establishing a bilaterally agreed to MSY goal for Taku coho prior to the 2010 fishing season.

2. 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 River 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/US 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 is allowed.

3. The annual catch limits specified for the Canadian harvest of coho salmon in the Taku River in paragraph 3(b)(2)(ii) above may be exceeded provided that bilaterally agreed in-season run assessments indicate that salmon passage into Canada has exceeded or is projected to exceed the specified Canadian harvest limit plus bilaterally agreed spawning requirements.

Management Procedures

The management co-ordination between U.S. and Canadian fishery managers will involve weekly communication between designated members or alternates. Canadian and U.S. fishery managers will conduct data exchanges by telephone and/or email on Wednesday afternoon or Thursday morning of each week during the fishing season. At that time, current catch statistics and stock assessment data including mark recapture 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 District 111, 11:00 a.m., Thursday, Alaska Daylight Time; i.e. noon Pacific Daylight Time; and, b) for the Canadian Taku fishery, 10:00 a.m., Friday, Pacific Daylight Time. Weekly summaries of the fisheries results will be conducted frequently throughout fishing periods through telephone calls between management offices of DFO and ADF&G.

Chinook Salmon

The 2009-2018 Chinook agreement (see Paragraph 3(a) (3) of Annex IV, Chapter 1 of the PST) includes the following management details for directed Taku Chinook salmon fisheries (for Chinook greater than 659 mm mid-eye to fork length):

- This agreement shall apply to large (greater than 659 mm mid-eye to fork length) Chinook salmon originating in the Taku River.

- Both Parties shall take the appropriate management action to ensure that the necessary escapement goals for Chinook salmon bound for the Canadian portions of the Taku River are achieved. The Parties agree to share in the burden of conservation. Fishing arrangements must take biodiversity and eco-system requirements into account.

- … management of directed fisheries will be abundance-based through an approach developed by the Committee. The Parties agree to implement assessment programs in support of the abundance-based management regime.

- Unless otherwise agreed, directed fisheries on Taku River Chinook salmon will occur only in the Taku River drainage in Canada, and in District 111 in the U.S.

- Management of Taku River Chinook salmon will take into account the conservation of specific stocks or conservation units when planning and prosecuting their respective fisheries. To avoid over-harvesting of specific components of the run, weekly guideline harvests, or other agreed management measures, will be developed by the Committee by apportioning the allowable harvest of each Party over the total Chinook season based on historical weekly run timing.

- Commencing 2009, the Parties agree to implement through the Committee an agreed Chinook genetic stock identification (GSI) program to assist the management of Taku Chinook salmon. The Parties agree to continue the development of joint (GSI) baselines.

- The Parties agree to periodically review the above-border Taku River Chinook spawning escapement goal which will be expressed in terms of large Chinook fish (greater than 659 mm mid-eye to fork length).

- A preseason forecast of the Taku River Chinook salmon terminal run[8] size will be made by the Committee by December 1 of each year.

- Directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the midpoint of the MSY escapement goal range plus the combined Canada, U.S. and test fishery base level catches (BLCs) of Taku River Chinook salmon. The preseason forecast will only be used for management until inseason projections become available.

- For the purposes of determining whether to allow directed fisheries using inseason information, such fisheries will not be implemented unless the projected terminal run size exceeds the bilaterally agreed escapement goal point estimate (N_{MSY}) plus the combined Canada, U.S. and test fishery BLCs of Taku River Chinook salmon. The Committee shall determine when inseason

[8] Terminal run = total Taku Chinook run size minus the US troll catch of Taku Chinook salmon outside District 111.

projections can be used for management purposes and shall establish the methodology for inseason projections and update them weekly or at other agreed intervals.

- When the terminal run is insufficient to provide for the Party's Taku Chinook BLC and the lower end of the escapement goal range, the reductions in each Party's base level fisheries, i.e. the fisheries that contributed to the BLCs, will be proportionate to the Taku Chinook BLC shares, excluding the test fishery.

- When the escapement of Taku River Chinook salmon is below the lower bound of the agreed escapement range for three consecutive years, the Parties will examine the management of base level fisheries and any other fishery which harvests Taku River Chinook salmon stocks, with a view to rebuilding the escapement.

To foster cooperative Chinook salmon management inseason, once mark recapture data results in a joint inseason inriver run estimate of sufficient magnitude to permit directed fishing, weekly projections of the terminal run will be made using the following calculations:

$$\mathbf{TR = [(P_t + Cus_{(t-1)})/\mathit{p}_t)\ ]} \qquad \mathbf{[10]}$$

Where:

	TR	=	the projected terminal run of large Chinook for the season;
	P_t	=	the inriver population estimate from the mark-recapture program through week "t";
	Cus_{t-1}	=	the cumulative US Chinook catch to week "*t-1*", i.e. US catch lagged one week to account for migration timing;
	p_t	=	the estimated cumulative proportion of run through to week *t* determined from the average inriver run timing based on historical catch data from Canyon Island. (Both Parties must agree prior to adjusting run timing estimates in-season).

The PST harvest sharing provisions will be applied to the weekly Chinook AC projections to guide the management of the Parties respective commercial fisheries. Run timing will be used to apportion the Parties allowable catches each week to provide guideline harvest levels for use in management.

Catch reporting

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

1. District 111 gillnet, sport and troll fisheries;
2. Taku River personal use fishery (season estimate); and

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

1. the Taku commercial fishery;
2. the First Nation fishery (season estimate);
3. recreational fishery (season estimate); and
4. test fisheries conducted near the international border.

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 and spaghetti tags; and
3. conduct escapement and stock assessment programs as resources permit (see Appendix Table 4 for projects anticipated to be conducted in 2010).

Stock Composition of U.S. Harvests

Chinook salmon harvested in Alaska will be sampled for CWT's. The minimum sampling goal is 20% of the harvest; the target for 2010 is 30%.

Tissue samples will be taken from the directed Chinook salmon fisheries in District 111 and processed postseason in the Alaska Department of Fish and Game Gene Conservation Laboratory in Anchorage as funding allows.

For sockeye salmon, otoliths will be sampled weekly to determine contributions of enhanced sockeye salmon to the catch. The origin of wild sockeye will be determined post-seasonally using scale pattern and parasite analyses.

Coho salmon will be sampled for CWT's to determine the contribution of Taku origin fish.

Stock Composition of Canadian Harvests

Weekly sampling of sockeye otoliths will be conducted to determine the contribution of enhanced sockeye salmon to the commercial catch. Through funding awarded under the Northern Fund of the Pacific Salmon Treaty, work will continue on developing a complete DNA baseline for Taku Chinook and sockeye salmon. Further details on target samples and sampling protocol for 2010 appear in Appendix Table 7. Mixed stock Chinook and sockeye DNA samples will be collected in Taku commercial fishery for future stock ID analysis. A minimum of 40% of the Chinook salmon harvested in the commercial fishery will be sampled for CWT(s). Commercial and test fisheries will be sampled for coho CWT's. Further details on these sampling programs are summarized in Appendix Table 4.

Sockeye salmon

A similar management process as described for Chinook salmon will be followed for sockeye whereby inriver population estimates from the joint mark - recapture program will be used to project inseason run sizes. Although the management agencies have developed similar approaches for projecting run sizes from the mark recapture estimates, the respective projections will be available throughout the season. The 2009 sockeye salmon agreement (see Paragraph 3(b) (1) of Annex IV, Chapter 1 of the PST) included the following management details for directed Taku sockeye salmon fisheries:

- Directed fisheries on Taku River sockeye salmon will occur only in the Taku River drainage in Canada, and in District 111 in the U.S.

- Annual abundance of the wild run of Taku River sockeye salmon will be estimated by adding the catch of wild run sockeye salmon in U.S. District 111 to the estimated above-border passage of wild run sockeye salmon. The annual Total Allowable Catch (TAC) of wild run Taku River sockeye salmon will be estimated by subtracting the agreed spawning escapement goal from the annual abundance estimate.

- The management of U.S. and Canadian fisheries shall be based on weekly estimates of the TAC of wild sockeye salmon.

- The primary management objective of the Parties is to achieve the agreed spawning escapement goal. If the projected in-river escapement of wild run sockeye salmon is greater than 1.6, or other agreed factor, times the agreed spawning escapement goal, Canada may, in addition to its share of the TAC, harvest the projected surplus in-river escapement apportioned by run timing.

- For inseason management purposes, identifiable enhanced Taku River origin sockeye salmon will not be included in the calculations of the annual TAC. Notwithstanding the last bulleted paragraph below, enhanced sockeye will be harvested in existing fisheries incidentally to the harvest of wild Taku sockeye salmon.

- It is anticipated that surplus enhanced sockeye salmon will remain unharvested in existing commercial fisheries due to management actions required to ensure the wild spawning escapement. Canada may implement additional fisheries upstream of the existing commercial fishery to harvest surplus enhanced sockeye salmon.

A coordinated management focus will occur on Tatsamenie sockeye in Taku Inlet in the U.S. drift gillnet fishery during SW 30-32 (July 18-August 07) and during SW 31-33 (July 25- August 14) in the Canadian fishery. Management measures during these periods will attempt to ensure adequate numbers of sockeye salmon escape to Tatsamenie Lake (a minimum 2,500 sockeye to the weir to meet an egg-take of 1.5 million, or 3,300 escapement to meet a target of 2.0 million eggs). If conservation concerns arise, e.g. due to depressed CPUE in fisheries and/or inriver assessment programs, management actions may include conservative and/or reduced fishing time. Given the outlook for an average to below average Tatsamenie run in 2010, as per previous years with conservation concerns, it is anticipated that weekly fishing times may be limited to two days/week during the time when Tatsamenie stocks are most abundant in respective fisheries as described above. The fishery managers of the two countries will discuss weekly fishing plans and potential extensions of fishing time in each country's fisheries prior to implementation.

United States

The 2010 bilaterally agreed on preseason forecast of 41,328 large Chinook salmon is sufficient to open the District 11 directed Chinook salmon fishery in May. Directed Chinook drift gillnet openings in Section 11-B may begin, by regulation, on the first Monday in May. However, in consideration of the small Allowable Catch (AC), the U.S. commercial fishery will not open until the first inseason estimate is available, likely in early to mid May. The department anticipates weekly openings will consist of no more than one, 24-hour, fishing period per week. There will be no openings on weekends or holidays. The length of openings and amount of area open will ultimately depend upon the numbers of boats fishing, the numbers of Chinook salmon harvested, and results from stock assessment projects. Commercial troll areas in Section 11-A and 11-B will open each week on the same day as the drift gillnet fishery opens. Troll openings will begin at 12:01 a.m. and end at 11:59 p.m. on the days specified. Commercial troll areas will be open for commercial trolling for three days in a week when drift gillnetting is open for 24 hours, and for a maximum of five days in a week that drift gillnetting is open for more than 24 hours.

Regulations adopted by the BOF in 2006 provide for a 7-inch (17.8 cm) minimum mesh size, with no maximum mesh restriction through the third Sunday in June for the District 11 gillnet fishery. The standard 200-fathom (~364 metres) length and 60-mesh deep net restrictions will be used in this fishery.

Chinook salmon less than 660 millimeters (mid-eye to fork length) that are harvested in the commercial drift gillnet fisheries may be retained and sold as usual. Chinook salmon less than 660 millimeters (mid-eye to fork length) and those of Alaska hatchery origin will not be counted against the Alaskan share of the allowable harvest. Due to current U.S. regulations, only fish 28 inches (approximately 711 millimeters) in total length (tip of snout to tip of tail) or greater may be retained in the troll fishery.

The waters open to directed Chinook salmon fishing are the waters of Section 11-B north of the latitude of Graves Point and south and east of a line from a point at 58° 12.33.00' N. latitude, 134° 10.00' W. longitude to Point Arden. The waters open to commercial trolling in Section 11-A are south and east of a line from Piling Point to Middle Point, and south and west of a line from Marmion Island Light to Circle Point. In Section 11-B, the waters open to trolling are south of a line from Marmion Island Light to Circle Point. [Note: the Marmion Island Light to Circle Point line allows trollers some area to transit between Section 11A and 11B without pulling in their gear]. Section 11B from this line to Graves Point Light is open to both trolling and gillnetting. No trolling is allowed in District 11 from May 1 through July 1 unless the return to the Taku River is large enough for an allowable U.S. harvest.

If there is no allowable harvest for Taku River Chinook, the sport fishery regulations in District 11 are the same as the regional regulations that are specified in the Southeast Alaska King Salmon Management Plan [5 AAC 47.055]. Sport fishing regulations in District 11 will be liberalized when there is any allowable harvest [5 AAC 47.021 (e)]. Changes to the regulations are summarized below:

Regulation	If AC exists
Taku Inlet north of Cooper Point	open
Resident daily bag limit (daily/possession)	3/3
Non-resident daily bag limit (May/remainder of year)	2/2
Non-resident annual limit	5
Number of rods an angler can fish (spring & summer)	2

To address the obligation to develop stock ID capabilities, the U.S. harvests will be sampled for CWT with a sampling goal of at least 30% of the harvest. In addition, tissue samples will be taken from any Chinook salmon harvests in directed fisheries in District 11 and processed postseason in the Alaska Department of Fish and Game Gene Conservation Laboratory in Anchorage if funding is available.

For the sockeye season, Section 11-B (Figure 3) will open for a 72-hour fishing period beginning at noon on the third Sunday in June (June 20, statistical week 26). If there is an identified Chinook conservation concern prior to this opening, restrictions in time, mesh size, and area may be imposed. The fishery will be managed through mid-August primarily on the basis of sockeye abundance. Run strength will be evaluated using fishery harvest 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 harvest. The above data will be used to generate weekly estimates and 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 harvest and escapements.

Returns from domestic hatchery programs are expected to contribute significantly to the District 11 fishery in 2010. The return of Snettisham Hatchery sockeye salmon is expected to be about 198,000 sockeye and the DIPAC summer chum return to Gastineau Channel and Limestone Inlet is expected to be 973,000 chum salmon. A substantial return of coho salmon is also expected to the Macaulay Hatchery in Gastineau Channel. Portions of these runs will be available for incidental harvest in the directed wild sockeye and coho fisheries in Taku Inlet. Fishing time may be extended in Stephens Passage south of Circle Point during July to harvest hatchery runs of summer chum salmon to Limestone Inlet and during August to harvest returns 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 well below the long-term average; it is not likely there will be surplus pink salmon to escapement needs in 2010.

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 4). If a harvestable surplus of pink salmon returning to this area occurs in 2010, a July seine fishery may occur along the Hawk Inlet shore area. The purse seine fishery in this area has an Alaska Board of Fisheries mandated wild sockeye salmon total harvest cap of 15,000 fish during July. 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 strength of coho salmon. Inseason management will be based on evaluation of fishery harvest, 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.

U.S. management will consider fall chum concerns salmon during statistical weeks 35-36 (August 22–September 4). Actions may include limited fishing time in Taku Inlet in the U.S. drift gillnet, in conjunction with measures taken in the Canadian fishery to ensure stocks pass through for escapement. Fishing time in Taku Inlet may be limited to not exceed historical effort as expressed in boat-days during weeks 35-36.

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 2010. 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 fish wheels.………..…

Canada

As in past years, weekly fishing times in the Canadian First Nation fishery will not normally be restricted. Reductions in fishing time would be considered only if no other adjustments could be made in the commercial fishery. Catches will be collected by TRTFN representatives and reported to DFO.

The Taku recreational fishery takes place primarily on the Nakina River; some additional fishing occurs on the Tatsamenie Lake outlet stream and other Taku River tributaries. The Nakina fishery will be closed to recreational fishing July 20 through August 15. The Tatsamenie Lake outlet stream will be closed from January 1 through June 30 and then from August 20 through September 15. Fishers are permitted four Chinook per day, only two of which may be larger than 65 cm fork length. They are also permitted four coho per day, only two of which may be larger than 50 cm fork length. The aggregate daily limit for all species of Pacific Salmon excluding kokanee is four fish and the possession limit is eight fish. The annual harvest of Chinook over 65 cm fork length is limited to ten fish.

The commercial Chinook fishery will open at a reduced directed fishery level at noon on Wednesday, April 28 for an initial 48-hour period. Extensions to this, and subsequent weekly fishing periods will be considered if the weekly guidelines are not achieved. Net mesh sizes will be restricted to between 100 mm (four inches) and 204 mm (8 inches) and length will be up to 36.6 m (120 ft), for both drift- and set-nets. The use of set-nets will not be permitted prior to May 12. Canadian Chinook management decisions for the Taku River fishery will be based on the targets identified below (which comprise test fishery targets plus 600 fish "directed catch" for the early part of the season followed by strictly assessment level targets) until an inseason estimate can be generated. Thereafter Canada/U.S. weekly projections of terminal run size will be generated and the resulting weekly guideline harvests will be adjusted with the objective of meeting escapement and agreed harvest sharing objectives.

The inseason management of Taku River Chinook salmon depends on abundance estimates generated from the joint mark-recapture program in the lower Taku River with tags being applied at Canyon Island and recoveries being made in the Canadian test and/or commercial fisheries. In the event the run does not return as forecast, and the directed commercial fishery can not open due to conservation concerns, it will be reduced to a strictly assessment mode and serve as the test fishery identified in the PST agreement (as occurred in 2007 and 2008).

The fishery will be managed to the weekly guidelines as described in Table 12. During the first three weeks of the season, the fishery will be managed based on the assessment catch (test fishery target of 1,400 large Chinook apportioned by run timing) plus a reduced AC of 600 large Chinook apportioned over the season by average run timing. The AC of 600 constitutes a voluntary reduction from the AC provided by the preseason forecast; for example, for a run size of 41,328 (preseason forecast) the Canadian AC is 5,647 large Chinook. The AC was reduced in recognition that preseason forecasts have been overly optimistic in recent years and Chinook productivity appears to be lower than that predicted in the forecast models. Once inseason projections are available, the fishery will be managed to weekly guidelines consisting of the assessment catch plus the inseason estimate of the AC apportioned by run timing. As in previous years, reliable inseason projections are not expected until after mid-May and/or 2-3 three weeks of fishing.

Table 12. Weekly large Chinook guideline harvests for the Canadian commercial fishery in 2010.

Week	Week Starting(Sunday)	Assessment Catch	"Directed" catch	Total
1	April 25	93	26	119
2	May 2	185	67	252
3	May 9	277	101	378
4	May 16	270	Inseason estimate	Inseason estimate
5	May 23	171	Inseason estimate	Inseason estimate
6	May 30	168	Inseason estimate	Inseason estimate
7	June 6	145	Inseason estimate	Inseason estimate
8	June 13	91	Inseason estimate	Inseason estimate
total		1,400		

For the sockeye season, the Taku River commercial fishery will open 12:00 noon Sunday, June 19 for an initial 72-hour period to target early sockeye runs unless otherwise modified based on Chinook salmon considerations. As per the Chinook fishery, the maximum net length will be 36.6 m (120 ft) for both drift- and set-nets. If the directed Chinook fishery is closed for conservation concerns, a maximum mesh size restriction of 140 mm (approximately 5.5 inches) will be in effect through mid-July to conserve Chinook salmon during the early season sockeye fishery. Canadian sockeye management decisions for the Taku River fishery (Figure 3) will be based on weekly projections of terminal run sizes of wild and enhanced fish, TAC, and the escapement of wild stocks.

The weekly sockeye TAC projections (wild stocks) will be made using the following calculations:

$$\mathbf{TAC_{(w)} = [(E_{w(t)} + C_{w(t)} + A_{w(t-1)}) / \rho_{w(t)}] - E_w} \qquad \mathbf{[11]}$$

Where:

- $TAC_{(w)}$ = the projected total allowable catch of wild *w* sockeye for the season;
- $E_{w(t)}$ = the cumulative 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).
- $\rho_{w(t)}$ = 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 in-season according to in-season 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 which is close to the midpoint in the interim range of 71,000 to 80,000).

The PST harvest sharing provisions will be applied to the weekly wild sockeye TAC projections to guide the management of the commercial fishery. Run timing will be used to apportion the projected Canadian allowable catch each week and to make projections of the total escapement. The Canadian catch will be adjusted with the objective of meeting escapement and agreed Canada/US harvest sharing objectives. Since it is expected the production of enhanced sockeye will be less than 5,000 fish, Canada's harvest share will be 20% of the TAC. If inseason projections of enhanced fish are >5,000, Canada's share will be adjusted as per the harvest sharing provisions of the PST.

During SW 31-33 (July 26- August 15), management attention will focus on Tatsamenie sockeye to ensure adequate numbers of sockeye salmon escape to Tatsamenie Lake or the joint enhancement project.

After mid-August, management actions will shift to coho salmon. The in-river coho projections will be based on the following simplified formula:

$$\boldsymbol{R_{IR(ACI)} = R_{IR(ACI)}t/T} \qquad \textbf{[12]}$$

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 in-season run projections and the PST coho harvest sharing provisions. The annual catch limits specified in the PST for the Canadian harvest of coho salmon in the Taku River may be exceeded provided that bilaterally agreed in-season run assessments indicate that salmon passage into Canada has exceeded or is projected to exceed the specified Canadian harvest limit plus bilaterally agreed spawning requirements.

To address chum salmon conservation concerns, the retention of chum salmon will be prohibited throughout the season. In addition, fishers must release any steelhead caught. It is anticipated the fishery will remain closed for pink salmon unless market conditions improve.

Modifications to the fishing area implemented in 1998 to include a 50 metre (165 ft) closed section just upstream of the Canada/US border will continue to be in effect in 2010. The upper boundary near Yellow Bluff will remain unchanged from previous years.

The Canadian fishery will be monitored by DFO personnel. Both catch and tag recapture data will be collected daily. This 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 or email communication.

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. Further details regarding the various stock assessment projects appear in Appendix Table 4.

<u>Catch Statistics</u>

The U.S. shall report catches and effort in the following strata for each statistical week:
1. District 111 (sub-Areas 11- 20, 31, 32, 33, 34);
2. Taku personal use (season estimate) fishery.

Canada shall report catch and effort statistics in the following strata for each statistical week:
1. Taku river commercial fishery;
2. the First Nation fishery (season estimate).

<u>Stock Composition of U.S. Catches</u>

Otolith samples will be taken from the catches in District 111-31,32 and processed in-season to determine the contribution of planted Tatsamenie, Trapper and Port Snettisham sockeye salmon.

After the fishing season, SPA will be used to estimate actual contributions of wild Taku and Snettisham sockeye stocks to the catches made each week in each of subsections 11-31 and 11-32. Scales will be collected in-season and the desired sample size from each of these strata is 400 fish per week.

To evaluate the contribution of planted sockeye salmon to U.S. gillnet catches, 400 otolith samples will be collected per week in sub-District 11-31 and 32. These samples will be matched with genetic tissue and scale samples. Inseason processing of thermal marks will be completed within 2 days of the end of the fishing period.

Stock Composition of the Inriver Canadian Catch

In the Taku commercial fishery, weekly sockeye salmon sampling targets are 200 matched scale and length, and 96 otolith samples. ADF&G will analyze the thermal marks from the samples provided 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. Weekly pickup/delivery times for the otolith samples from the river will be on Friday, unless otherwise agreed. Otolith data will be used both in- and post- season to estimate marked Tatsamenie and Trapper contributions. In addition, at least 125 genetic samples will be collected each week for future stock composition analysis. If samples are not available in August due to lack of fishing effort, samples may be augmented from the coho test fishery.

Spawning Escapement Estimates

System-wide escapement will be determined by the joint Canada/U.S. mark recapture program. Adult enumeration weirs will be used to estimate escapements of sockeye to Tatsamenie, Little Trapper, Kuthai and possibly King Salmon lakes. The age composition will be estimated from scale samples, and contributions of planted sockeye salmon will be determined from otolith samples. Approximately 750 fish will be sampled during the season for scales, length, and sex; 400 otolith and scale samples will be taken from Tatsamenie broodstock, and additional otolith/scale samples may be taken from at Little Trapper.

Post-season SPA Standards

Scale pattern analysis will be used to estimate the contributions of the following spawning populations: Kuthai, Little Trapper, Tatsamenie, King Salmon and mainstem sockeye stocks. Standards for classifying marine and inriver catches will, therefore, be developed from scale samples collected from the spawning areas in Canada as well as from Crescent and Speel lakes.

The weekly proportions of the various sockeye stocks in the commercial fisheries are used post-seasonally to estimate the respective abundances of these stock groupings in the entire run. In time, GSI results may be used to verify and estimate error rates in the stock composition estimates derived from SPA.

In-season Data Exchange and Review

Canada and the U.S. will conduct data exchanges by telephone and/or email 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 111, 11:00 a.m., Thursday, Alaska Daylight Time; and, b) for the Canadian Taku fishery, 10:00 a.m., Friday, Pacific Daylight Time. Weekly summaries of the fisheries results will be conducted frequently throughout fishing periods through telephone calls and/or email between management offices of DFO and ADF&G.

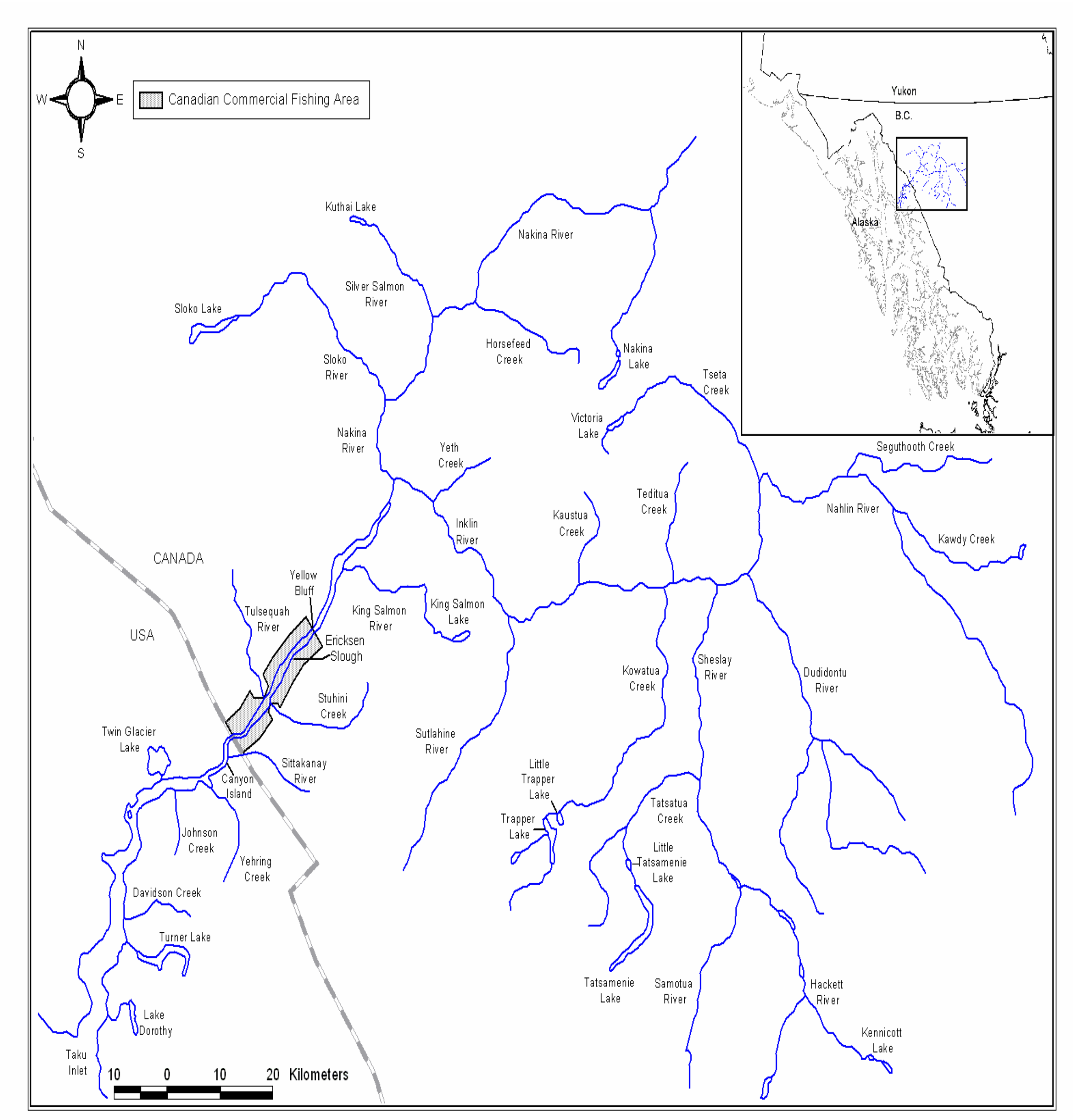

Figure 3. The Taku River and principal U.S. and Canadian fishing areas.

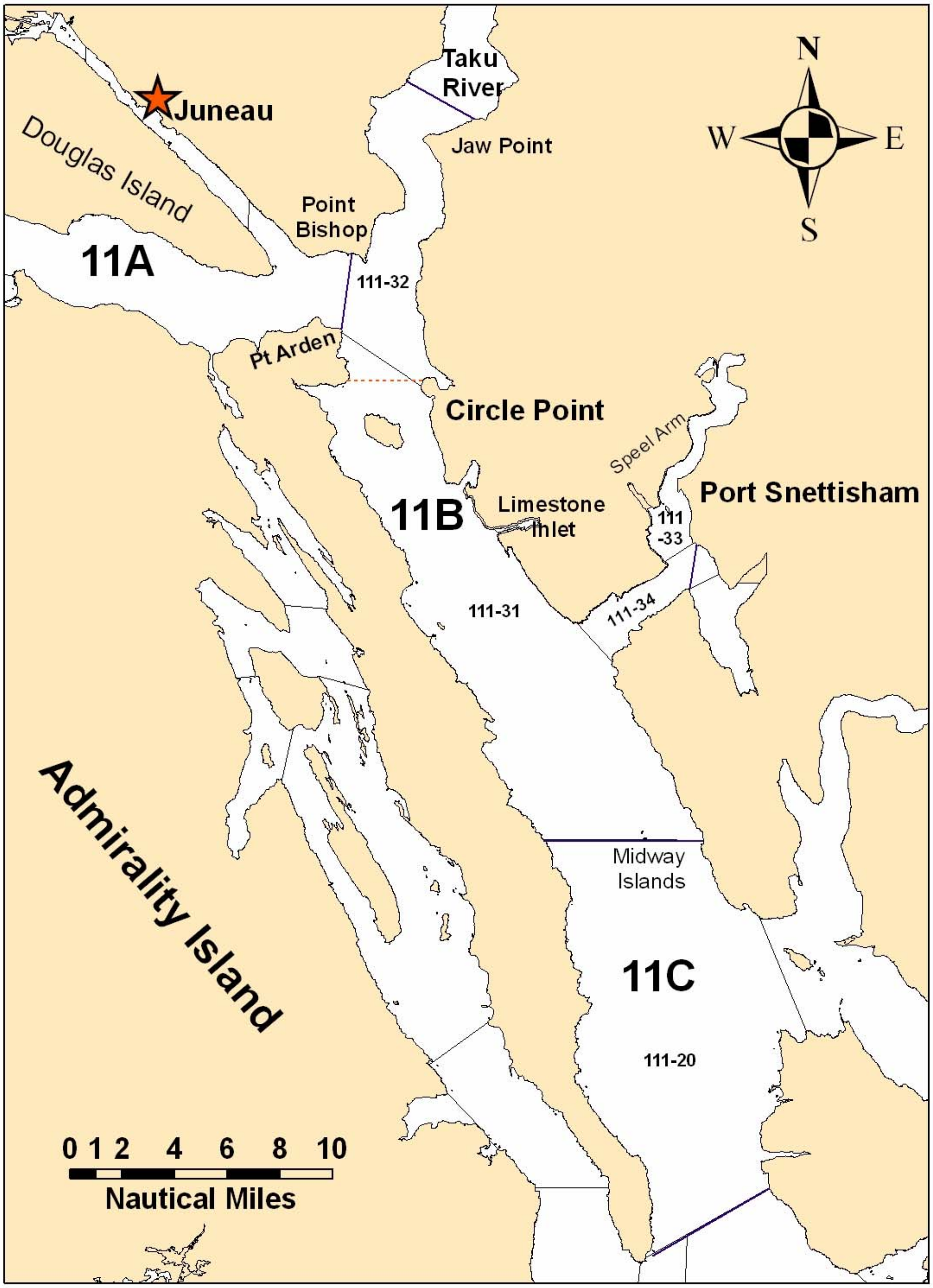

Figure 4. U.S. fishing areas adjacent to the Taku River (see Figure 5 for specific Chinook management areas).

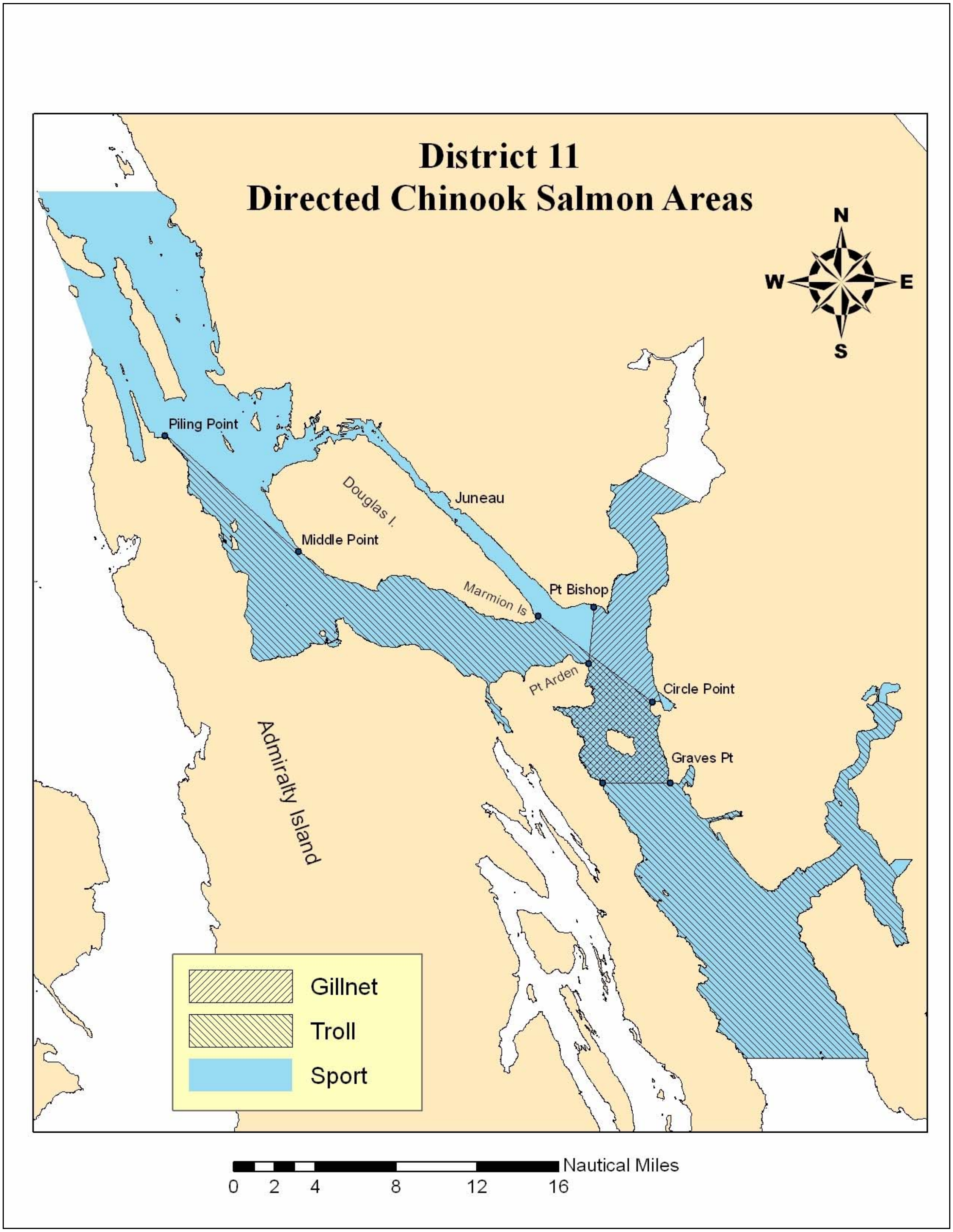

Figure 5. U.S. directed Taku Chinook salmon fishing areas.

ALSEK RIVER

Salmon stocks returning to the Alsek River drainage (Figure 6) are jointly managed by DFO, the Champagne and Aishihik First Nation (CAFN) and ADF&G through the joint TCTR of the PSC.

The principal U.S. fishery that targets Alsek stocks is a commercial set gillnet fishery that operates in Dry Bay at the mouth of the Alsek River. 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 (FSC) fishery takes place in the upper Tatshenshini drainage. At present, 100-150 members of CAFN harvest salmon via traditional and current methods (gaffs, traps, rod and reel, nets, weir), primarily, in the Klukshu River, and to a lesser extent, in Village Creek, Blanchard River, and Goat Creek. Recreational fisheries take place primarily on the Tatshenshini River in the Dalton Post area and on the Takhanne and Blanchard rivers.

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

Preseason Run Outlooks

The 2010 overall Alsek drainage sockeye run is expected to be approximately 40,700 sockeye; this is well below the recent 10-year average run size estimate of approximately 62,000 sockeye (based on the Klukshu weir count expanded by 0.27 to account for other in-river escapement and an assumed U.S. harvest rate of 0.25). The outlook for 2010 is based on a predicted run of 11,000 Klukshu sockeye salmon derived from historical Klukshu stock-recruitment data and an assumed Klukshu contribution to the total run of 27%, based on radio telemetry (2001-03) and mark-recapture (2000-04) results. Principal contributing brood years will be 2005 (Klukshu escapement of only 3,167 sockeye salmon) and 2006 (Klukshu escapement of 12,890 sockeye salmon); the 2000-2009 average Klukshu sockeye escapement is approximately 11,697 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. Currently, the Klukshu sockeye goal is being reviewed to determine if the current range is still appropriate.

The Klukshu early sockeye run counts in 2005 and 2006 were 994 and 247 fish, respectively. The recent ten year average count is approximately 2,500 sockeye salmon which is above the optimum escapement level of 1,500 as determined through separate stock-recruitment analyses of the early run conducted by DFO. The early run to the weir is expected to be near this level in 2010.

The Klukshu Chinook escapements in 2004 and 2005 were 2,445 and 963 Chinook salmon, respectively. For comparison the recent 10-year average is approximately 1,350 Chinook. Both brood year escapements were close to the optimum escapement goal range of 1,100 to 2,300 Chinook salmon as determined from initial stock-recruitment analysis. Currently, escapement goals for the Klukshu River and drainage wide Chinook stocks are under review. Based on these primary brood year escapements, the outlook for 2010 is 2,800 Klukshu Chinook salmon, well above the recent ten year average run size of approximately 1,600 Chinook salmon.

The coho escapements at the Klukshu River weir in 2006 (420 fish) and 2007 (299 fish) suggest the run in 2010 will be below average. (Note: although Klukshu coho weir counts are incomplete, they may serve as a reasonable indicator of escapement.) The recent 10-year average weir count is approximately 2,600 coho salmon.

There is much uncertainty with these outlooks. Recent year survivals of Chinook and sockeye have been poor and well below preseason expectations.

Management Approach for the 2010 Season

The principal escapement monitoring tool for Chinook stocks in the Alsek River is the Klukshu River weir. A joint escapement goal for the Klukshu stock was developed 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 2010. As noted above, the current escapement goal is under review.

The principal escapement monitoring tool for sockeye stocks on the Alsek River is the Klukshu River weir. 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 2010. The Department of Fish and Game will manage the Dry Bay commercial set gillnet fishery to achieve the agreed upon escapement goal range plus 3,000 sockeye salmon as per the 2009-2018 agreement reached during successful Transboundary PST negotiations in February 2008. As with Chinook, the current sockeye escapement goal for Klukshu is under review.

United States

U.S. fisheries will operate similar to regimes in 2005-2009, with the fishery opening on June 6 for one day. The remainder of this fishery will be managed on sockeye salmon run strength which is expected to be below average. The BEG for sockeye salmon has not been attained for two years in a row, and management strategies will be very conservative in 2010 in an attempt to meet the BEG. The U.S. fishery opens after the peak of the Chinook salmon return has 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 salmon tagging studies conducted from 1997 through 2003 indicated that approximately 15-30% 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 2010 harvests most likely will not be greater than this amount. Although Chinook salmon returns to the Klukshu are expected to be within the BEG range in 2010, there have been problems achieving the goal in four of the last five years (the goal was achieved in 2009). Hence, gill nets will be restricted to a maximum mesh size of 6 inches (152 mm) through July 1 to minimize Chinook harvests and continue efforts to rebuild this run.

As was the case in 2009, the U.S. will not conduct an Alsek River Chinook salmon test fishery in 2010 as agreed to bilaterally in the Transboundary Panel in February 2005. The Chinook salmon escapement goal of 1,100 fish has not been attained in four of the past five years and the test fishery is being suspended in order to facilitate Chinook salmon escapement.

Coho salmon will be managed by monitoring fishery performance data and comparing it to historical fishery performance data. The 2010 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.

Canada

Canadian fisheries for Alsek salmon will proceed similar to regimes in recent years. Next to conservation, the priority in management will be to provide for the basic food, social and ceremonial needs of the CAFN. The basic needs levels are 200 Chinook and 3,000 sockeye salmon, as documented in the CAFN final land claim agreement. As in recent years, some First Nation's salmon harvest will be allowed to occur at the weir which will also provide opportunities to collect biological data and samples. Restrictions in the First Nation fishery will be considered if the projected Klukshu weir counts are below 1,100 Chinook salmon, 1,500 early sockeye and/or 7,500 total sockeye. Decisions to implement restrictions will take into account management actions taken to conserve stocks in both the Canadian recreational fishery and the U.S. Dry Bay fishery.

In the recreational fishery, the following closed/open times will be in effect for 2010: the Dalton Post area of the Tatshenshini River will be open seven days per week; the closed times for Klukshu River, Nesketaheen Lake and Village Creek will be from June 15 to November 30; the salmon non-retention periods on the Takhanne and Blanchard rivers will be from July 24 to August 31; and salmon non-retention in Klukshu Lake will be in effect year round. Normal Chinook limits of one per day, two in possession will be in effect subject to conservation concerns. In the event that the run size into the Klukshu River is well above the minimum target (a Klukshu weir count of 1,300 Chinook salmon), Canadian managers may liberalize harvest opportunities. If run forecasts are below the minimum weir target, further restrictions in the recreational fishery will be considered. Non-retention of sockeye will be in effect through mid August to conserve early runs and address domestic allocation priorities. However, if the early sockeye run size into the Klukshu River is projected to be greater than 4,500 sockeye salmon, Canadian managers may allow sockeye retention in the recreational fishery prior to August 15. After August 15, normal sockeye catch limits of 2 per day, 4 in possession will be in effect. However, if the projected total sockeye weir count is less than 10,500 sockeye, catch restrictions may be necessary. For coho salmon, additional harvesting opportunities through increased catch limits in the recreational fishery may be provided subject to conservation concerns.

Stock Assessment Program

The escapements of Chinook, sockeye, and coho salmon through the Klukshu weir and sockeye salmon through the Village Creek electronic counter serve as an in-season indicator of stock strength. Adjustments to fisheries may be made on the basis of these counts. Aerial surveys (subject to funding and weather conditions) are used to augment escapement information on Chinook and sockeye stocks in the Alsek drainage and are reported in the TCTR post-season annual report. A summary of the anticipated field projects in the Alsek River drainage is presented in Appendix Table 5.

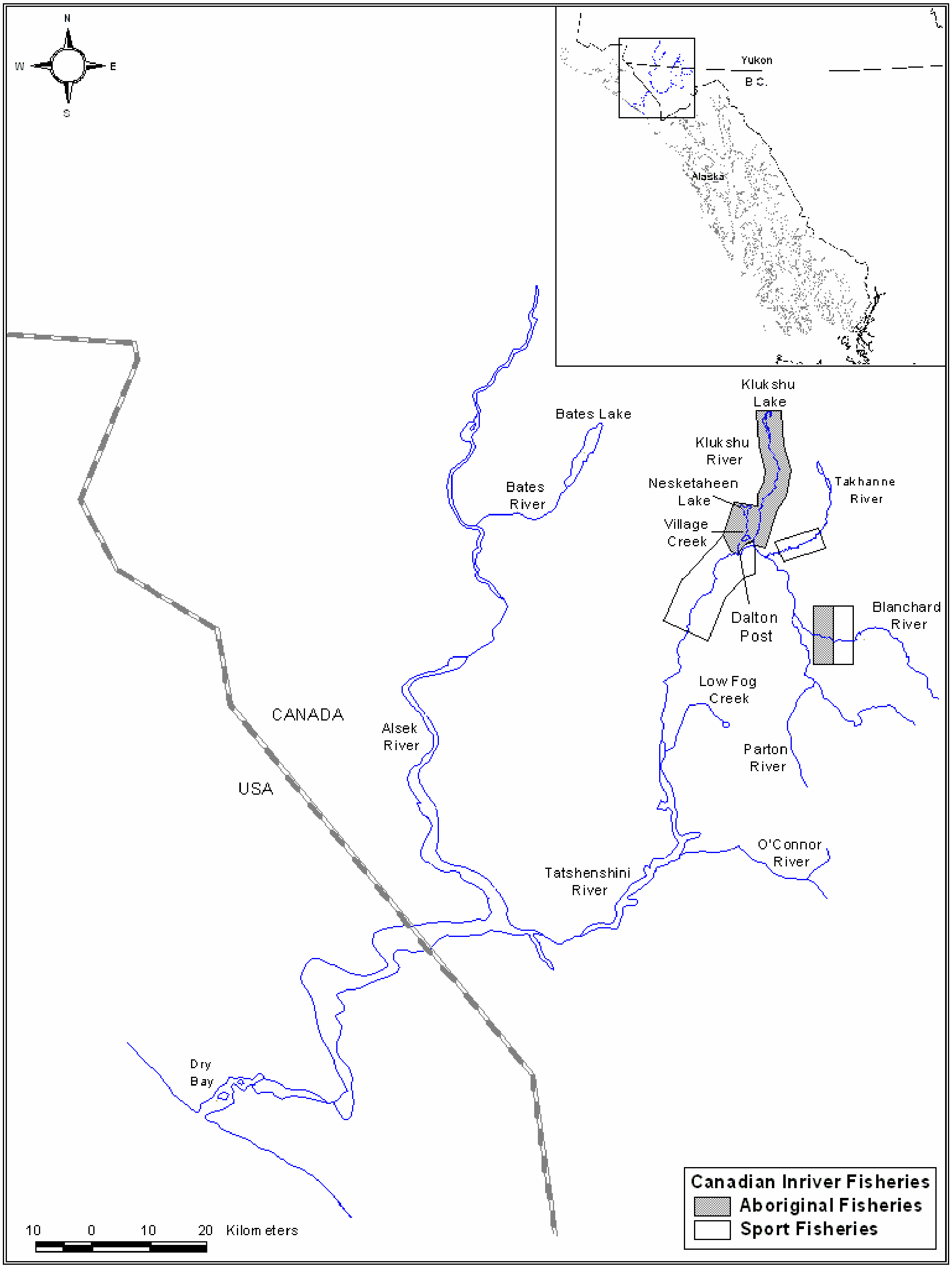

Figure 6. The Alsek River and principal U.S. and Canadian fishing areas.

TRANSBOUNDARY ENHANCEMENT PLANS

Overview

Joint sockeye enhancement projects are conducted on the Stikine and Taku rivers. Broodstock are taken in Canada at Tahltan Lake in the Stikine drainage and from Tatsamenie Lake in the Taku drainage. The eggs are incubated and thermally marked at the Snettisham Central Incubation Facility in Alaska. The fry originating from Tahltan Lake broodstock are back-planted into Tahltan and/or Tuya lakes (both Stikine drainage); fry from the Tatsamenie Lake egg-take are returned to their lake of origin. Two other projects of interest on the Taku River include: the investigation of the suitability of Trapper Lake for anadromous salmon production; and feasibility of broodstock capture in King Salmon Lake. A limited number of eggs are being collected at Little Trapper Lake and will be planted into Tunjony Creek which drains into Trapper Lake to determine the production potential from this creek. In each year from 2004-09 approximately 50-200k eggs were planted directly in Tunjony Creek. Information will be used to help decide whether to provide future fish passage to the lake.

A number of assessment projects are conducted to monitor the recipient lakes (e.g. plankton, water chemistry) and the survival of outplanted fry (e.g. smolt enumeration, hydro-acoustic surveys, fry sampling).

A summary of the enhancement field and incubation projects is presented in Appendix Table 6.

Fry Plants

Fry plants from the transboundary sockeye egg-takes in 2009 are scheduled to occur in May and June 2010. It is expected the following number of sockeye fry will be out-planted:

Stikine drainage:	Tahltan Lake: 2.0 million Tuya Lake: 1.15 million
Taku drainage:	Tatsamenie Lake: 0.506 million unfed fry (traditional release) Tatsamenie extended rearing: 0.210 million

At Tahltan Lake, the plan is to transport fry on five flights during the period from May 25 to May 30. Fry will be held for approximately 24 hours in net pens for observations. Fry destined for Tuya Lake are expected to be transported in two flights the first week in June and released directly.

At Tatsamenie Lake, the plan is to transport fry on several flights during the last two weeks of May. The 2010 extended rearing program will involve holding and feeding 200,000 fry weighing approximately 1.0g in a series of on shore-based fish tanks designed to capture flow from an unnamed, salmon free, and presumably pathogen free stream. The fish will be transferred to floating net pens once a threshold weight of 3 grams is achieved. The fed fry will be released at a site located in the mid-lake area (pelagic zone) approximately 2 km upstream from the out of the lake in late August. The fry that are not subject to the grow-out experiment, n=506,000, will be released near shore at various sites within the north section of the lake.

Egg-Take Goals

Target sockeye eggtakes for the fall of 2010 are as follows:

Tahltan Lake: 6.0 million.

- In consideration of the desire for some natural spawning to take place at the adult collection sites, the last date that eggs will be collected at Tahltan Lake is September 25.

Tatsamenie Lake: 2.0 million.

- It is expected that 30% of the estimated three thousand fish returning to Tatsamenie weir will be used for broodstock, producing approximately 1.5 million eggs. A total 200,000 fry will be used in the Tatsamenie extended rearing project. For planning purposes, a maximum of 2.0 million eggs may be collected.

Little Trapper Lake: 0.150 million.

- The plan is to take 150 thousand eggs for egg plants in Tunjony Creek. Egg-take plans are dependent on approval by the Canadian Transplant Committee.

King Salmon: 100,000
The tentative plan is to take up to 100,000 eggs for fry out-planting into King Salmon Lake pending funding, review of assessment activity, and permitting. Egg-take plans are dependent on approval by the Canadian Transplant Committee and funding.

Special Studies

Tuya Terminal Harvest Improvements:

Canada with Alaska Fish and Game participation intends to continue to examine the improvement of terminal harvest capability in the Tuya River. Emphasis this year will be on: designing and costing out a fish weir structure which will be used in conjunction with a trapping apparatus to harvest sockeye salmon in the Tuya River upstream from the blast site; and surveying an access trail to the weir site.

Tahltan Lake broodstock collection improvements:

Concerns over the tendency for the Tahltan Lake sockeye eggtake to fall short of the annual 6.0 million target were discussed at the February meeting of the Transboundary River Panel. These discussions resulted in the following assignment:

> *The Co-Chairs of the Transboundary Panel task the Enhancement Sub-Committee of the Transboundary Technical Committee with conducting a review of the Tahltan sockeye salmon egg take with the aim of identifying measures that could be taken to better ensure that the egg take goals as described in the annual Stikine Enhancement Production Plan are fully achieved each year and that those eggs that are taken are effectively transported to Snettisham Hatchery to ensure maximum possible survival. The Sub-Committee should provide their written recommendations on this topic to the Co-Chairs of the Panel by May 1, 2010, such that the Co-Chairs have adequate time to the pursue various policy matters needed to allow implementation of actions recommended by the Sub-Committee in time for the 2010 Tahltan sockeye egg take (additional funding, assignment of existing agency staff, improved logistics, etc.).*

The Enhancement Sub-committee completed a thorough review of the egg-take program and made the following recommendations which potentially will increase the likelihood of achieving the eggtake goal:

1. Increase holding of green female broodstock from primary collection site.
2. Adjust start date of field program to earlier timeframe.
3. Maintain guideline of last fishing day (Sept 25) to allow for natural escapement.
4. Adjust fishing schedule and egg takes.
5. Investigate alternative flight plans.
6. Investigation and collection of broodstock from alternative collection site(s).

Details on each of these recommendations appear in Appendix III, which includes the memorandum submitted from the co-chairs of the Enhancement Sub-committee to the Transboundary Panel co-chairs in fulfillment of the assignment.

LITERATURE CITED

Bernard, D.R., S.A. McPherson, K.A. Pahlke, and P. Etherton. 2000. *Optimal production of Chinook salmon from the Stikine River*. Alaska Department of Fish and Game, Fishery Manuscript 00-1, Anchorage.

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.

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.*

Pacific Salmon Commission Transboundary Technical Committee Report. 2008. *Preliminary Estimates of Transboundary River Salmon Production, Harvest and Escapement and a Review of Joint Enhancement Activities in 2007.*

APPENDIX I: SUMMARY OF TRANSBOUNDARY PANEL RESPONSES TO DEVIATIONS FROM SPAWNING ESCAPEMENT AND CATCH SHARING GOALS

February 10, 2010

Background

As outlined below, Paragraph 4 of Annex IV, Chapter 1 obliges the Parties to annually review the performance of fisheries relative to the achievement of spawning escapement goals and harvest shares of Transboundary salmon. The paragraph reads as follows; specific points that trigger responses are identified for clarification:

> *4. The Parties agree to manage their fisheries to the best of their abilities to achieve agreed escapement goals and harvest sharing provisions of this Chapter. The performance of the fisheries, including the ability to meet escapement goals and the relationship between actual harvests vs. TAC allocations, will be reviewed and updated annually by the Committee and presented to the Panel. These assessments will be based on bilaterally agreed to post-season run reconstructions developed by the Committee.*
>
> *Deviations from target escapements and harvests are anticipated to occur as a result of imprecision in management, pre-season forecast errors, inseason run projection errors, and other factors such as environmental conditions. Notwithstanding annual review and subsequent modifications to address conservation concerns, failure to achieve agreed escapement goal ranges in three consecutive years will require the Parties to review the overall management regime and recommend adjustments commencing the following year to better address conservation requirements –* ***TRIGGER 1****.*
>
> *If the catch of either Party exceeds its allocation in any three of five consecutive years, that Party shall take corrective action to bring future catches in line with Treaty provisions commencing the following year. By the end of the January meeting of the Panel, proposals regarding what actions will be taken and the expected outcomes thereof will be discussed with the other Party prior to implementation –* ***TRIGGER 2****.*
>
> *The Parties agree that if the TAC of one Party is not attained due to management actions by the other Party, compensatory adjustment shall be made in subsequent years. If a shortfall in the actual catch of a Party is caused by management action of that Party, no compensation shall be made. At the beginning and mid-point of the Chapter period, the Parties agree that the harvest sharing performance over the previous five years will be evaluated and adjustments made over the next five year period, if necessary. At the end of the chapter period, cumulative overages or underages will be carried forward to the next Chapter period –* ***TRIGGER 3****.*

Results

A summary of escapements and catch information was prepared by the Transboundary Technical Committee and presented to the Transboundary Panel on February 10, 2010 (see PowerPoint presentation delivered by S. Johnston). The presentation was a summary of the data presented in the attached spreadsheet Tables 1 and 2. As required by Paragraph 4, these data need to be updated and presented annually; consideration should be given to including them in the annual Transboundary Technical Committee report.

Regarding deviations from spawning escapement goal ranges that require a review under Trigger 1, the Panel agreed that the primary focus should be on stocks with escapements that fall below the lower end of the spawning escapement goal range (rather than including stocks where escapements are above the range). As such, there are two stocks which meet the criteria for review under Trigger 1: Little Tahltan Chinook salmon and Alsek Chinook salmon. One other stock requires precautionary management in 2010: Alsek sockeye has not achieved the lower end of the goal range in the past two years. Failure to achieve the escapement goal range for this stock in 2010 will trigger a review next year.

Regarding deviations from catch shares, Trigger 2 is activated for the following situations obliging the Parties to make changes in 2010:

c) Canada has overages in three of the last five years for the following three stock groupings: Taku Chinook; Taku wild sockeye and Stikine mainstem sockeye;
d) The U.S. has overages in three or more of the last five years for the following six stock groupings: Taku Chinook, Taku enhanced sockeye, Stikine Chinook, Tahltan Lake sockeye, Stikine mainstem sockeye and Tuya sockeye.

Panel Discussion and Considerations

Escapement Concerns – Trigger 1:

<u>Little Tahltan Chinook salmon</u>

Due to the 2010 preseason forecast falling below the threshold that allows for new directed fisheries for Stikine Chinook salmon, openings in these fisheries will not be considered unless <u>in-season</u> run projections exceed 24,500 large Chinook salmon. The closure of new directed fisheries early in the season (likely until at least the third week of May when the first inseason run projection becomes available) is expected to particularly benefit the spawning escapements of early timed stocks including Little Tahltan Chinook salmon. To alleviate problems foreseen with limited/no tag recovery due to lack of fishing in the lower Stikine, a test fishery will be conducted starting in early May to provide information required to generate an inseason run size estimate. The structure of the test fishery may be similar to that conducted on the Taku River; it is a closely monitored, scaled-down, assessment fishery involving commercial fishers with explicit weekly guideline catches up to a maximum total catch of 1,400 large Chinook, which is the number of fish allocated in the PST for a test fishery.

Traditional fisheries, i.e. base level fisheries, will open but historically they have exerted a relatively low harvest rate on Stikine Chinook salmon with a combined U.S. and Canadian base level catch of 7,100 large Chinook salmon. However, if inseason run projections fall below the number required to satisfy the lower end of the escapement goal range and the base level catch, i.e. 14,000+7,100= 21,100, paragraph 3(a)(3)(xvii) obliges the Parties to make proportionate reductions in base level catches, excluding the test fishery. Accordingly, measures would need to be taken in the traditional fisheries to, for example to action the following: reduce catches sport fisheries; reduce incidental catches of Chinook salmon in early directed sockeye gillnet fisheries; and/or reduce catches in subsistence and/or aboriginal fisheries. Allocation polices of respective Parties will guide which of these actions will be implemented and hence may differ.

<u>Alsek chinook salmon</u>

Exploitation rates on Alsek chinook salmon are already very low and most fishing activity targeting them has been curtailed. Despite this however, the spawning escapement at the Klukshu River, the primary index stock for the Alsek drainage, has fallen well below the escapement target in four of the past five years. At the February 2010 meeting, the Panel viewed a presentation on analyses investigating a revised escapement goal for Klukshu and Alsek Chinook salmon. The new analyses suggest the appropriate goal range should be 800 to 1,200 Klukshu Chinook salmon, down somewhat from the present minimum goal of 1,100. Even if the new goal is applied over the past five years, there still remains three consecutive years in which it would not have been achieved: 2006 to 2008.

The Panel discussion revealed few options that could be considered to reduce catches of Alsek Chinook salmon since most fisheries are already restricted. The highest catch has occurred in the U.S. Dry Bay gillnet fishery which has been reduced to one day of fishing during the early part of the sockeye season to limit the incidental catch of Chinook salmon. Canada has implemented closures in both the sport and aboriginal fishery when it appears the escapement target is in jeopardy. The Technical Committee will again consider cancellation of the test fishery in Dry Bay in 2010 to protect Chinook salmon.

Harvest share concerns – Trigger 2:

Proposed measures to address Canadian overages:

Canada has overages in 3 of the last 5 years for the following 3 stock groupings: Taku Chinook; Taku wild sockeye and Stikine mainstem sockeye. The following describes corrective actions Canada proposes to bring future catches in line with Treaty provisions commencing 2010.

Taku Chinook salmon:
Canadian and U.S. managers cite the recent tendency for pre-season and inseason run projections to over-estimate the actual run size as a primary factor contributing to catch overages. Canada, in conjunction with an initiative spearheaded by the U.S., will seek to improve the inseason run assessment program by increasing the sampling and recovery efforts associated with the joint mark recapture program. Canada will also participate where required in an analysis of the performance of pre- and in- season forecasts.

In addition to these measures, although the pre-season forecast indicates a Canadian allowable catch (AC) of approximately 6,100 large Chinook salmon in a new directed fishery plus a base level catch of 1,500 large Chinook, Canada will reduce the AC portion by approximately 90% to start off the season. Canada plans to conduct only a limited assessment fishery which will initially be managed to weekly guideline harvests based on apportioning a total catch of 2,000 large Chinook over the Chinook season (600 AC + 1,400 assigned for assessment). Once in-season run projections become available, weekly guidelines will be modified accordingly. If the in-season run projections fall below the threshold for a directed fishery, the weekly guideline harvests will be reduced to what they would be using a seasonal assessment catch of 1,400 large Chinook salmon, i.e. the test fishery target. Base level catches will occur but will be subject to run abundance and provisions described in paragraph 3(b)(3)(xvi).

Taku wild sockeye
Many of the issues regarding overages of Taku sockeye in Canada and the U.S. have been associated with the previous Annex arrangements which had different harvest shares for wild Canada:US (0.18:0.82) and enhanced sockeye (0.50:0.50). For Canada, this sometimes meant catches of wild sockeye were slightly over target, whereas catches of enhanced sockeye were below target, usually by greater amounts than the catch of wild sockeye was over. For the U.S. it often meant the opposite; the catch of wild sockeye was generally below target, whereas catches of enhanced sockeye were often above target. It is felt the new Annex provisions will address these issues in which a Party's harvest shares for wild and enhanced sockeye will be the same, but will fluctuate depending upon the magnitude of the enhanced run size as per the schedule in the new Annex.

Stikine mainstem sockeye

Although the calculated escapements of Stikine mainstem sockeye do not require a Trigger 1 review, Canada expressed concerns over the trend in aerial survey observations of key index areas as summarized in the following figure:

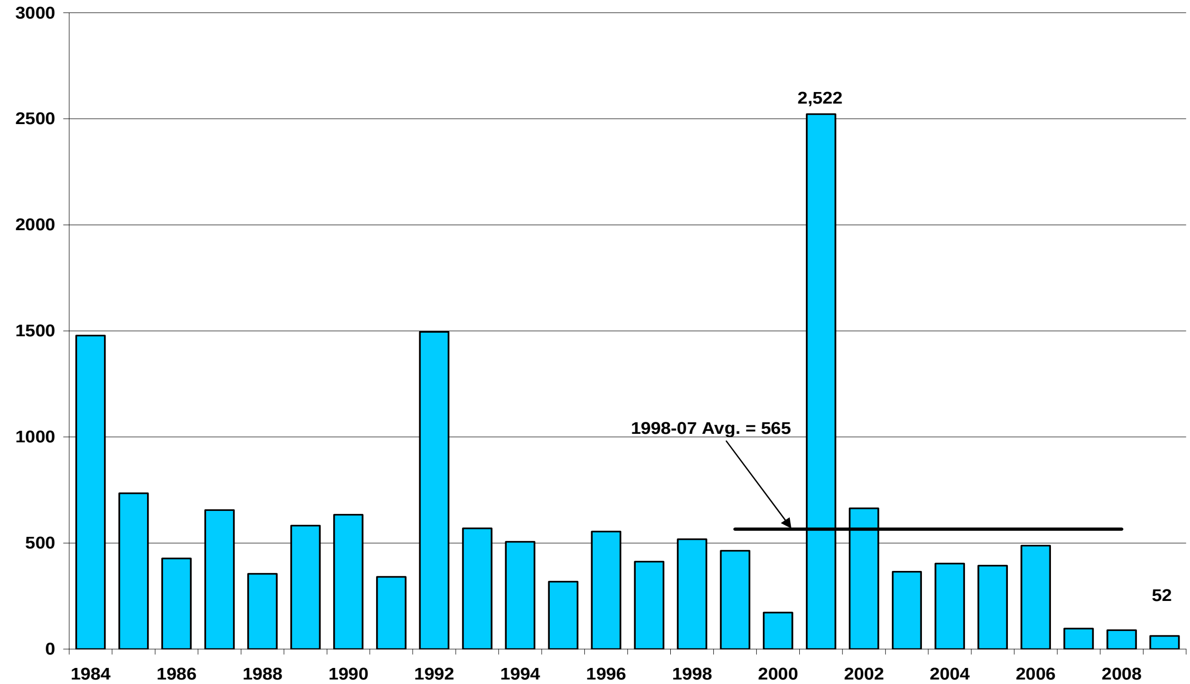

Fig 20 . Stikine R. sockeye aerial surveys, 1984-2009. (Scud, Porcupine and Verrett rivers)

Canada believes it is important to review the Stikine Management Model (SMM) and re-calibrate it if necessary. This was discussed by the Panel and the TTC was urged to re-submit the proposal to the Northern Fund which was not approved last year due to problems with funding and timing.

Canada attributes the tendency to over-harvest mainstem sockeye to the failure of the SMM to accurately project the mainstem run size and TAC. In addition to pursuing the funding to work on the SMM, Canada proposes to advance the change-over to mainstem sockeye management by one week in 2010. As illustrated below, this means that management of mainstem sockeye will take priority commencing statistical week 30 rather than SW31 as has been the normal practice. The expected outcome of this proposed action will be greater flexibility in fine tuning catches of mainstem sockeye. However one consequence may be the under-utilisation of co-migrating Tahltan Lake and Tuya sockeye unless efforts are made to increase exploitation on these sockeye stocks prior to SW 30.

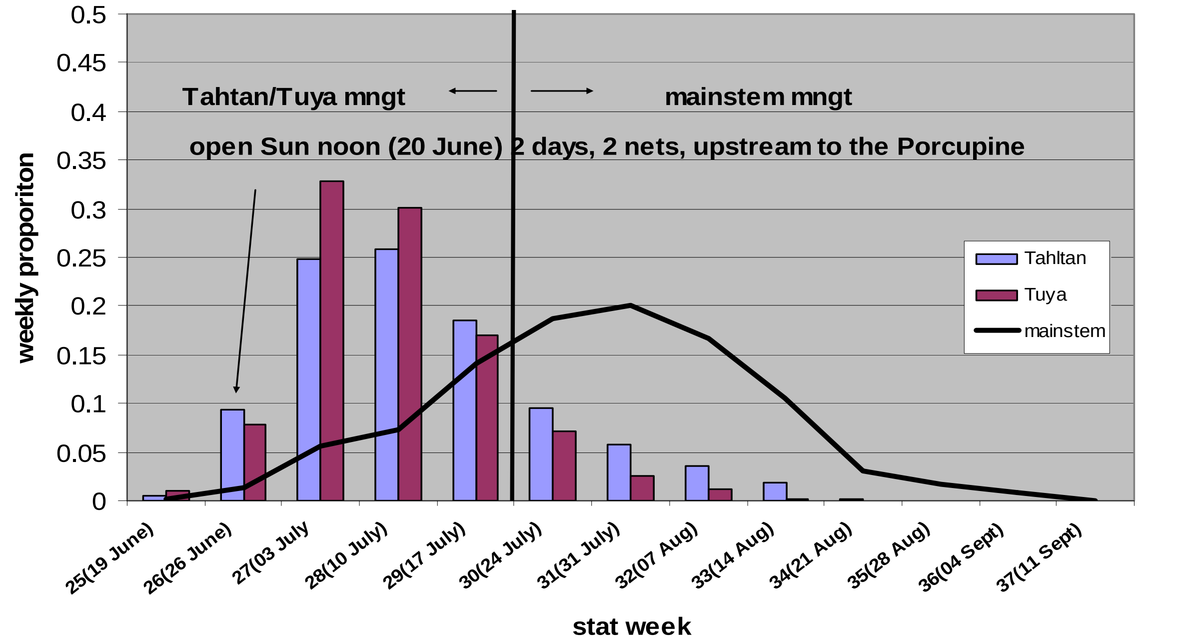

Fig . Run timing of Tahltan Lk, Tuya, and mainstem sockeye, 2000-09 avg.

Proposed measures to address US overages

The U.S. has overages in 3 or more of the last 5 years for the following 6 stock groupings: Taku Chinook, Taku enhanced sockeye, Stikine Chinook, Tahltan Lake sockeye, Stikine mainstem sockeye and Tuya sockeye. The following describes corrective actions the U.S. proposes to bring future catches in line with Treaty provisions commencing 2010.

Taku Chinook salmon:
As explained previously, U.S. and Canadian managers cite the recent tendency for pre-season and inseason run projections to over-estimate the actual run size as a primary factor contributing to overages. In response, the U.S. has pursued new LOA funding to improve the inseason run assessment program as follows: increasing the number of marks out; increasing the sampling and recovery efforts in close proximity to the tag deployment site; and, increasing the sampling and tag recapture effort in spawning tributaries. Canada has agreed to participate in these new initiatives where possible. The U.S. has also secured funding to conduct an analysis of the performance of pre- and in- season forecasts.

In addition to these measures, although the pre-season forecast indicates a U.S. allowable catch (AC) of approximately 3,200 large chinook in a new directed fishery plus a base level catch of 3,500 large chinook, the U.S. does not plan to conduct a directed gillnet or troll fishery in 2010 unless supported by inseason run projections; these projections will not likely be available to late May. Since an allowable harvest was indicated based on the pre-season forecast produced by December 01, 2009, by regulation the Taku Inlet sport fishery will be allowed more liberal gear and creel limits. This is expected to increase the catch over what it might have been without the additional gear and creel limits marginally, perhaps by no more than 200 large Chinook salmon. Base level catches will occur but will be subject to run abundance and provisions described in paragraph 3(b)(3)(xvi).

Taku enhanced sockeye

As previously mentioned in the section regarding Taku wild sockeye, it is felt the new Annex provisions will decrease the issues of overages on enhanced sockeye. Catches of enhanced Taku sockeye salmon may have been above targets because, in the previous Annex, the U.S. harvest share on wild Taku sockeye, which was much more abundant than the enhanced component, was 82% vs. the 50:50 share for enhanced Taku sockeye. Commencing 2009, a Party's harvest shares for both wild and enhanced Taku sockeye will be the same, although they will fluctuate based on the production of enhanced sockeye.

Stikine Chinook salmon

As described in the Canadian section for Little Tahltan Chinook salmon, the 2010 preseason forecast for Stikine Chinook salmon is below the threshold that allows for new directed fisheries for Stikine Chinook salmon. Hence, openings in these fisheries will not be considered unless in-season run projections exceed 24,500 large Chinook salmon. The closure of new directed fisheries early in the season (likely until at least the third week of May when the first inseason run projection becomes available) is expected to reduce the potential for overages. Base level catches will still occur but will be subject to run abundance and provisions described in paragraph 3(a)(3)(xvii) .

Tahltan Lake sockeye

The primary response to reducing the potential for overages will be a reduction in the frequency and/or duration of extended openings during the early portion of the sockeye season in District 108.

Tuya sockeye

Since Tahltan and Tuya stock timing overlaps closely, actions taken to bring the catch of Tahltan Lake sockeye better in line with allocations should also address potential overages of Tuya sockeye.

Stikine Mainstem

The U.S. plans to support attempts to secure funding for review and revisions to the SMM. Fishery responses to reduce the potential to over harvest mainstem Stikine sockeye will include a more conservative management approach beginning SW 28 or 29.

Appendix Table 1. Summary data for Annex IV, Chapter 1, Paragraph 4 analyses of the TBR provisions: ESCAPEMENT deviations: 2004-2009.

				Esc. Goal Range		Point	Actual	deviation	deviation	Trigger 1
Drainage	**Sp**	**Stock**	**Year**	**lower**	**upper**	**Target**	**Escap't**	**from point**	**from range**	**Y/N**
Stikine	CN	all	2004	14,000	28,000	17,400	48,900	31,500	20,900	N
			2005	14,000	28,000	21,000	39,806	18,806	11,806	N
			2006	14,000	28,000	21,000	24,405	3,405	0	N
			2007	14,000	28,000	17,400	15,953	-1,447	0	N
			2008	14,000	28,000	17,400	18,843	1,443	0	N
			2009	14,000	28,000	17,400	11,086	-6,314	-2,914	N
	CN	L.Tahltan	2004	2,700	5,300	3,300	16,381	13,081	11,081	N
			2005	2,700	5,300	3,300	7,387	4,087	2,087	N
			2006	2,700	5,300	3,300	3,860	560	0	N
			2007	2,700	5,300	3,300	562	-2,738	-2,138	N
			2008	2,700	5,300	3,300	2,663	-637	-37	N
			2009	2,700	5,300	3,300	2,245	-1,055	-455	**Y**
	SO	Tahltan Lk	2004	18,000	30,000	24,000	63,372	39,372	33,372	N
			2005	18,000	30,000	24,000	43,446	19,446	13,446	N
			2006	18,000	30,000	24,000	53,855	29,855	23,855	**Y**
			2007	18,000	30,000	24,000	21,074	-2,926	0	N
			2008	18,000	30,000	24,000	10,516	-13,484	-7,484	N
			2009	18,000	30,000	24,000	30,673	6,673	673	N
	SO	Mainstem	2004	20,000	40,000	30,000	36,748	6,748	0	N
			2005	20,000	40,000	30,000	34,788	4,788	0	N
			2006	20,000	40,000	30,000	27,603	-2,397	0	N
			2007	20,000	40,000	30,000	20,865	-9,135	0	N
			2008	20,000	40,000	30,000	10,672	-19,328	-9,328	N
			2009	20,000	40,000	30,000	22,221	-7,779	0	N
Taku	CN	all	2004	30,000	55,000	42,500	75,032	32,532	20,032	N
			2005	30,000	55,000	42,500	38,725	-3,775	0	N
			2006	30,000	55,000	42,500	42,296	-204	0	N
			2007	30,000	55,000	36,000	14,854	-21,146	-15,146	N
			2008	30,000	55,000	36,000	27,383	-8,617	-2,617	N
			2009	19,000	36,000	25,500	20,762	-4,738	0	N
	SO	all (wild)	2004	71,000	80,000	75,000	106,688	31,688	26,688	N
			2005	71,000	80,000	75,000	120,053	45,053	40,053	N
			2006	71,000	80,000	75,000	146,151	71,151	66,151	Y
			2007	71,000	80,000	75,000	81,799	6,799	1,799	Y
			2008	71,000	80,000	75,000	82,456	7,456	2,456	Y
			2009	71,000	80,000	75,000	71,840	-3,160	0	N
	CO	all	2004	27,500	35,000	35,000	129,327	94,327	94,327	Y
			2005	27,500	35,000	35,000	91,552	56,552	56,552	Y
			2006	27,500	35,000	35,000	121,778	86,778	86,778	Y
			2007	27,500	35,000	35,000	74,326	39,326	39,326	Y
			2008	27,500	35,000	35,000	95,360	60,360	60,360	Y
			2009	27,500	35,000	35,000	103,950	68,950	68,950	**Y**

Alsek	CN	Klukshu	2004	1,100	>1,100		2,457	0	0	N
			2005	1,100	>1,100		1,070	-30	-30	N
			2006	1,100	>1,100		561	-539	-539	N
			2007	1,100	>1,100		676	-424	-424	Y
			2008	1,100	>1,100		465	-635	-635	**Y**
			2009	1,100	>1,100		1,535	0	0	N
	SO	Klukshu	2004	7,500	15,000	11,250	13,721	2,471	0	N
			2005	7,500	15,000	11,250	3,167	-8,083	-4,333	N
			2006	7,500	15,000	11,250	12,890	1,640	0	N
			2007	7,500	15,000	11,250	8,310	-2,940	0	N
			2008	7,500	15,000	11,250	2,741	-8,509	-4,759	N
			2009	7,500	15,000	11,250	5,509	-5,741	-1,991	N

Appendix Table 2. Summary data for Annex IV, Chap. 1, Para. 4 analyses of CATCH deviations: 2004-2009.

River	Sp	Stock	Year	Terminal Run Size	Escap't Goal	TAC	U.S. TAC	U.S. Actual	U.S. Deviation	Trigger 2 Y/N	Cdn TAC	Cdn Actual	Cdn Deviation	Trigger 2 Y/N
Stikine	**CN**	**all**	2004	62,137	17,400	44,737	na							
			2005	89,615	21,000	68,615	41,385	29,760	-11,625	N	25,830	19,898	-5,932	N
			2006	66,952	21,000	45,952	26,654	26,771	117	N	17,898	15,736	-2,162	N
			2007	40,541	17,400	23,141	11,629	12,427	798	N	10,112	10,505	393	N
			2008	36,687	17,400	19,287	8,931	9,702	771	Y	8,956	7,860	-1,096	N
			2009	14,998	17,400	0	0	1,579	1,579	Y	0	2,112	2,112	N
	SO	**Tahltan**	2004	217,213	24,000	192,527	96,264	91,535	-4,729	N	96,264	61,620	-34,644	N
			2005	174,617	24,000	149,722	74,861	63,714	-11,147	N	74,861	66,562	-8,299	N
			2006	185,097	24,000	160,768	80,384	54,923	-25,461	N	80,384	75,990	-4,394	N
			2007	122,867	24,000	98,577	49,289	63,330	14,042	N	49,289	38,173	-11,116	N
			2008	46,234	24,000	21,806	10,903	17,787	6,884	N	10,903	16,912	6,009	N
			2009	89,107	24,000	64,720	32,360	33,537	1,177	Y	32,360	23,960	-8,400	N
		mainstem	2004	85385	30,000	54,777	27,389	26,556	-833	N	27,389	21,958	-5,431	N
			2005	81608	30,000	50,860	25,430	28,265	2,835	N	25,430	17,807	-7,623	N
			2006	45169	30,000	14,583	7,292	9,381	2,090	N	7,292	7,599	308	N
			2007	37445	30,000	6,711	3,356	5,027	1,672	Y	3,356	10,819	7,464	N
			2008	27213	30,000	-3,174	0	10,007	10,007	Y	0	5,122	5,122	Y
			2009	47281	30,000	16,573	8,287	13,672	5,386	Y	8,287	10,225	1,939	Y
		Tuya	2004	9,166	na	8,124	4,062	4,257	195	N	4,062	1,926	-2,136	N
			2005	3,456	na	2,963	1,482	131	-1,351	N	1,482	1,521	39	N
			2006	37,928	na	32,943	16,471	10,122	-6,349	N	16,471	17,816	1,345	N
			2007	36,227	na	29,065	14,533	18,050	3,517	N	14,533	11,021	-3,512	N
			2008	30,513	na	14,391	7,196	17,721	10,525	N	7,196	12,072	4,876	Y
			2009	42,355	na	30,763	15,382	17,370	1,988	Y	15,382	11,720	-3,662	N
	CO	**all**	2004								4,000	29	-3,971	N
			2005								5,000	0	-5,000	N
			2006								5,000	0	-5,000	N
			2007								5,000	0	-5,000	N
			2008								5,000	2337	-2,663	N
			2009								5,000	5061	61	N
Taku	**CN**	**all**	2004	82,838	42,500	40,338	na	3,599						
			2005	66,484	42,500	23,984	12,728	20,042	7,314	N	9,856	7,717	-2,139	N
			2006	62,750	42,500	20,250	9,990	12,119	2,129	N	8,860	7,705	-1,155	N
			2007	19,342	36,000	0	0	1,945	1,945	Y	0	1,147	1,147	N
			2008	32,082	36,000	0	478	2,280	1,802	Y	205	1,020	815	N
			2009	33,885	25,500	8,385	3,500	6,086	2,586	Y	3,485	7,037	3,552	Y
	SO	**wild**	2004	202,359	75,000	127,359	104,434	76,201	-28,233	N	22,925	20,002	-2,923	N
			2005	186,740	75,000	111,740	91,627	45,414	-46,213	N	20,113	21,601	1,488	N
			2006	227,918	75,000	152,918	125,393	65,248	-60,145	N	27,525	20,379	-7,146	N
			2007	153,142	75,000	78,142	64,076	60,613	-3,463	N	14,066	14,907	841	N
			2008	164,076	75,000	89,076	73,042	74,687	1,645	N	16,034	17,539	1,505	N
			2009	127,096	75,000	52,096	41,677	45,022	3,345	N	10,419	10,978	559	Y

		enh'd	2004	1,656		1,042	521	676	155	N	521	266	-255	N
			2005	1,505		901	450	579	129	N	450	257	-193	N
			2006	5,506		3,694	1,847	2,210	363	**Y**	1,847	805	-1,042	N
			2007	8,381		4,276	2,138	3,691	1,553	**Y**	2,138	1,618	-520	N
			2008	16,213		8,802	4,401	10,140	5,739	**Y**	4,401	1,906	-2,495	N
			2009	1,285		527	421	259	-162	**Y**	105	82	-23	N
	CO	**all**	2004	256,777	35,000	221,777	206,165	112,524	-93,641	N	10,000	3,820	-6,180	N
			2005	159,068	35,000	124,068	109,483	79,179	-30,304	N	10,000	3,674	-6,326	N
			2006	231,876	35,000	196,876	179,127	92,641	-86,486	N	10,000	3,920	-6,080	N
			2007	139,981	35,000	104,981	90,078	49,157	-40,921	N	10,000	3,049	-6,951	N
			2008	173,270	35,000	138,270	125,468	74,071	-51,397	N	10,000	1,037	-8,963	N
			2009	186,413	35,000	151,413	135,071	72,697	-62,374	N	78,950	3,424	-75,526	N
Alsek	**SO**	**Klukshu**	2004						na	N				
			2005						na	N				
			2006						na	N				
			2007						na	N				
			2008						na	N				
			2009						1,788	N				

APPENDIX II: 2010 ANTICIPATED TRANSBOUNDARY FIELD PROJECTS

Proposed projects regarding the Stikine, Taku, and Alsek salmon stocks are summarized in Appendix Tables 3 to 5. Enhancement projects are given in Appendix Table 6. 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.

Appendix Table 3. Proposed Stikine River field projects, 2010.

Project/ Approx.Dates	Function	Agency	Involvement
Stikine Chinook Mark-Recapture			
5/3 - 7/15	• Tag a target of 445 large Stikine River Chinook salmon captured from Kakwan Point drift net site.	ADF&G/ DFO/TIFN	All aspects except tag recovery.
	• Collect GSI samples (from each fish tagged) separated by week.	ADF&G/ DFO/TIFN	
	• Recover spaghetti tags and CWT's from: Canadian fisheries; Little Tahltan weir; and from Iskut tributaries (Verrett). Tags may also be recovered from other spawning sites (e.g. Shakes, Craig, Tashoots).	DFO/TIFN	All aspects
	• Recover CWT's from the fish caught at the tagging site.	ADF&G/ DFO/TIFN	All aspects
Tahltan Lake Smolt Estimation			
5/5 - 6/19	• Enumerate Tahltan Lake sockeye smolts.	DFO/TIFN	All aspects
	• Sample up to 800 smolts for age, size, and otoliths.		
Upper Stikine Sampling			
6/14 - 8/20	• Sample up to 600 sockeye for age, sex, size, egg diameters and otoliths proportionally from the TIFN and commercial fishery at Telegraph Cr.	TIFN/	Collect samples and data.
		DFO	Data analysis
	• Sample up to 500 Chinook for age, sex, size, CWT's and spaghetti tags. ASL all CWTed Chinook.	TIFN	Sampling
		DFO	Data analysis
Little Tahltan Chinook Enumeration			
6/15 - 8/14	• Enumerate Little Tahltan Chinook salmon from a weir located at the mouth of the river.	DFO/TIFN	All aspects
	• Enumerate and record tags observed.	DFO/TIFN	All aspects

Appendix Table3 (cont'd)

Project/ Approx. Dates	Function	Agency	Involvement
Little Tahltan Chinook Enumeration – cont'd			
	• Sample target of 2,000 fish for marks (CWT, spaghetti, secondary marks), sex and size; sample 650 of these fish for age. Attempt to sample all clipped fish for CWT recoveries. CWT samples to go to DFO, unless other arrangements are made. ASL all CWT-ed Chinook. Attempts to improve achievement of sampling goals will include installation of electric fencing around the weir to reduce bear problems and new trap upstream of counting chamber.	DFO/TIFN	All aspects
Test Fishery in Lower Stikine			
6/05 - 10/16	• Conduct test fisheries for Chinook, sockeye and coho as required (to fill in when no commercial fishing) to assess run size and run timing.	DFO/TIFN	All aspects
	• Sample all Chinook for tags/ tag loss, CWTs and for age-sex- size. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made.	DFO	All aspects
	• Sample up to 400 sockeye per week for otoliths matched with scales and, for females, with egg diameters. Transfer otolith samples to ADF&G weekly for in-season processing. For inseason analysis, a combined sample of 60-200 otoliths per week from the lower river test fishery will be analyzed for stock ID.	DFO/TIFN, ADF&G	All aspects, Otolith analysis
	• Collect up to 200 weekly GSI samples from Chinook and sockeye.	DFO/TIFN	All aspects
	• Sample all coho for CWTs; test fishery sampling target is 500 for age-sex-size. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made.	DFO/TIFN	All aspects
Commercial Inriver Fishery Stock ID Sampling			
6/14 - 9/4	• Commercial catch sampling for sockeye to include 350/week for age-sex-size, plus up to 150 matched egg-diameter/otolith samples. Otolith deliveries to be arranged with ADF&G and will require delivery by boat to Wrangell. Analyze 60 to 200 sockeye otolith samples per week. Collect sockeye GSI samples as part of NF project (125 per week).	DFO/TIFN, ADF&G	All aspects, Otolith analysis

Appendix Table 3 (cont'd)

Project/ Approx. Dates	Function	Agency	Involvement
Commercial Inriver Fishery Stock ID Sampling – cont'd			
6/20 - 8/31	• Incidental commercial catch sampling for Chinook during targeted sockeye fishery to include up to 200/week for age-sex-size and secondary marks (opercular punch), plus observe >50% of the catch for adipose clips. Collect heads and ASL information from all clipped fish observed. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made. Collect 120 GSI samples/week.	DFO	All aspects
8/24 - 9/14	• Sample all adipose clipped coho for CWT's and ASL; commercial fishery sampling target is 500 for age-sex-size. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made.	DFO/TIFN	All aspects
District 106 &108 Stock ID Sampling			
5/24 - 10/19	• Sample 20% of Chinook catches per district for CWTs; sample Chinook for scales (for aging), sex, and size (scale sampling goals are 600 for the season for D108 and D106). Collect GSI samples from Chinook in D108 during the season. Sampling target is 120/week if directed fishery occurs. Goal for non-directed incidental catch is 80/week.	ADF&G	All aspects
	• Collect 520 sockeye samples/week for ASL, GSI, and otoliths matched samples in each of Districts 106-41, 106-30 and 108.	ADF&G	All aspects
	• Sample 20% of coho catches per district for CWT and sample 600 coho for ASL (sampling goals are 600 per district for the season).	ADF&G	All aspects
Andrew Creek Salmon Enumeration			
7/25 - 8/30	• Survey Andrew Creek, count all species and recover tags opportunistically.	ADF&G	All aspects
	• Sample a minimum 225 Chinook for age-sex-size, spaghetti- and coded-wire tags.	ADF&G	All aspects
	• Opportunistically get sockeye GSI samples (target is 200).		
Tahltan Lake Salmon Enumeration			
7/6 - 9/15	• Enumerate Tahltan Lake sockeye entering the lake at weir.	DFO/TIFN	All aspects
	• Live-sample a minimum of 600 sockeye for age, sex and size and 125 fish per day for sex.	DFO/TIFN	All aspects
	• Endeavour to conduct terminal fishery at Tahltan Lake if escapement targets are likely to be exceeded.	DFO/TIFN	All aspects

Appendix Table 3 (cont'd)

Project/ Approx. Dates	Function	Agency	Involvement
Tahltan Lake Salmon Enumeration – cont'd			
	• 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 carcasses.	DFO/TIFN	All aspects
	• Sample available post-spawn Chinook in Johnny Tashoots Creek for age, size, sex and spaghetti tags and CWT's. Collect GSI baseline samples to top up inventory (137 needed).	DFO/TIFN	All aspects
Tuya Terminal Harvest Feasibility			
5/4 - 12/23	• Assess access and fish harvest possibilities above blast site via Tuya Steering Committee.	DFO/TIFN	All aspects
	• Detailed survey of access road/trail access to potential harvest site and estimate costs.	DFO & steering committee	All aspects
	• Design engineering and estimate costs of fish harvest structure (weir/trap combination).	DFO & steering committee	All aspects
	• Sample up to 600 sockeye for otoliths, age-sex-size, and egg diameters.	DFO/TIFN	All aspects
7/20 – 8/8	• Conduct a test fishery in the mainstem Stikine between the mouths of the Tuya and Tahltan rivers to assess the feasibility of capturing the majority of Tuya bound sockeye salmon. Sample 500 sockeye for otoliths and egg diameters. Release all live Chinook.	DFO/TIFN	All aspects
Chinook and Coho Coded Wire Tagging			
4/12 - 5/28	• Targets are 40k Chinook smolts and 30k coho smolts.	ADFG/ DFO/TIFN	All aspects
	• Sample every 100th CN and 115th CO smolt for length (FL)	ADFG/ DFO/TIFN	All aspects
Chinook Creel Census			
6/07 - 8/06	• Survey anglers in the Tahltan River (and sample FSC fish at same sites).	TIFN/DFO	All aspects
	• Sample for spaghetti- and coded-wire tags, age, size, sex.	TIFN/DFO	All aspects

Appendix Table 3 (cont'd)

Project/ Approx. Dates	Function	Agency	Involvement
Chinook Aerial Surveys			
7/25 - 8/15	• Enumerate Chinook salmon spawning in Little Tahltan and Andrew Cr. tributaries. If time and funding permits, add surveys on Christina and/or Verrett creeks.	ADF&G	All aspects
Coho and Sockeye Aerial Surveys			
9/07, 11/02	• Enumerate Stikine R. sockeye and coho salmon spawning in index areas within the Canadian portion of the river.	TIFN/DFO	All aspects

Contacts:	**Stikine Projects**		
	Pete Etherton/ Bill Waugh	(DFO)	All DFO projects.
	Sandy Johnston	(DFO)	All DFO projects.
	Cheri Frocklage or Carmen McPhee	(TIFN)	Inriver sampling projects.
	Keith Pahlke, Phil Richards	(ADF&G)	Chinook tagging and surveys; Andrew Creek sampling.
	Kathleen Jensen/ Jim Andel	(ADF&G)	106&108 samples, stock assessment.

Canadian staff associated with Stikine projects that may be crossing the Canadian/US border:

Peter Etherton, Cheri Frocklage, Alex Joseph, Peter Beck, Andy Carlick, Bill Waugh, Kyle Inkster, Kerry Carlick, Jassin Godard, Carmen McPhee, Jared Dennis, others

US staff associated with Stikine projects that may be crossing the Canadian/US border:

Kathleen Jensen, Keith Pahlke, Jim Andel, Troy Thynes, Kevin Clark, Sara Gilk, Stephanie Warnement, John Der Hovanisian, Phil Richards, Peter Bransen, Micah Sanguenetti, Stephen Todd, Ed Jones, others

Appendix Table 4. **Proposed Taku River field projects, 2010**.

Project/Dates	Function	Agency	Involvement
Canyon Island Marking Program			
mid April	• Set up camp, build and place fish wheels.	ADF&G/ DFO/ TRTFN	All aspects
4/20 - 10/5	• Fish wheel/ gillnet operation. • Mark all Chinook, sockeye, coho salmon with spaghetti tags. Tagging goals for each species are: - at least 1,000 large, 500 medium and 250 small Chinook – 25-30% precision goal; - 4,000-5,000 sockeye – precision goals 50% for weekly estimates, 10% for post season; - 2,500 coho – try for 25% precision, (95% rp). - Gillnet effort to 6 hours/day for Chinook when fish wheels inoperative.	ADF&G DFO TRTFN	3 staff 2 staff 1 staff
	• Sample for age-sex-length information: - 260 sockeye/week throughout sockeye run, - 600 coho for the entire season, - all Chinook.	ADF&G/ DFO/ TRTFN	
	• Sacrifice all adipose-clipped Chinook and coho caught for CWTs. CWT samples to go to ADF&G lab.	ADF&G/ DFO/ TRTFN	
Smolt Tagging – CWT lower Taku			
4/1 - 6/15	• CWT-ing goals are 40,000 Chinook and 30,000 coho smolt. • Sample every 100th CN and 115th CO smolt for length (FL) and weight • Sample 300 CO smolt for age (12-15 scales) • Experiment with additional beach seining/other methods.	ADF&G DFO	All aspects 5 staff 2 staff
Canadian Aboriginal Fishery Sampling			
5/1 - 10/11	• Collect and record FN catch information.	TRTFN	All aspects
Nahlin Sampling			
8/3 - 8/7	• sample 200 sockeye and up to 600 Chinook in Nahlin River for age-sex-length, spaghetti tags/tag loss, and (Chinook only) CWTs. CWT samples to go to DFO lab.	DFO/ TRTFN/ ADFG/TIFN	All aspects
Dudidontu Sampling			
8/8 - 8/15	• Sample up to 400 Chinook in Dudidontu River for age-sex-length, CWTs, and spaghetti tags/tag loss. CWT samples to go to DFO lab.	DFO/ TRTFN/ ADFG/TIFN	All aspects
Tseta Chinook sampling			
07/28 – 08/15	• Sample up to 400 Chinook for age-sex-length, CWTs and spaghetti tags/tag loss.	DFO/ TRTFN/ ADFG/TIFN	

Appendix Table 4 (cont'd)

Project/Dates	Function	Agency	Involvement
Canadian Commercial Fishery Sampling			
4/28 - 10/07	• Collect and record commercial catch information; forward to ADF&G Juneau via Whitehorse.	DFO	All aspects
	• Sample Chinook, sockeye and coho salmon for age-sex-length, tag scars/secondary marks; 200 samples per week for sockeye; 520 per season for coho; 50 -150 scale samples per week for Chinook. Examine a minimum of 40% of Chinook and 20% of coho catch for adipose clips. • The initial AC (reduced to 600 large Chinook until inseason estimates are available) will be apportioned by run timing and treated the sampled as per the test fishery. • Sample 120 Chinook and 125 sockeye per week for GSI samples.	DFO	All aspects
	• Collect 96 sockeye otolith samples per week to estimate contribution of enhanced fish; send otolith samples to ADF&G for processing via Canyon Island.	DFO	All aspects
	• In-season otolith analysis.	ADF&G	All aspects
	• Collect and record all spaghetti tags caught in commercial fisheries, pay fishers for tag recoveries.	DFO	All aspects
	• Collect salmon roe as required for CWT program.	DFO	All aspects
Canadian Chinook Test Fishery (as necessary)			
5/3 - 6/21	• Capture and examine a total of 1,400 large (>659mm MEF) Chinook for spaghetti tags and adipose-clips as per weekly targets: SW18 – 100; SW19 – 200; SW20 – 300; SW21 - 228; SW22 – 170; SW23 - 167; SW24 – 145; SW25 - 90.	DFO	All aspects
	• Sample 50% fish for age; 100% for sex-size, CWTs, spaghetti tags/tag loss. Scales will be collected from all ad-clipped fish. CWT samples to go to ADF&G Juneau.	DFO	All aspects
Canadian Coho Test Fishery			
End of commercial fishery to 10/7	• Capture and sample up to 700 coho per week for spaghetti- and coded-wire tags. Sample 520 coho for the season for age-sex-length and tag scars. CWT samples to go to ADF&G Juneau.	DFO	All aspects
District 111 Fishery Sampling			
5/24 – 10/17	• Collect and record commercial catch information; forward to DFO Whitehorse via Juneau.	ADF&G	All aspects

Appendix Table 4. (cont'd)

Project/Dates	Function	Agency	Involvement
District 111 Fishery Sampling – cont'd			
5/24 - 10/17	• Sample a minimum of 20% of Chinook and coho catches for CWTs; all species except pinks for age-sex-length, as well as Chinook for maturity (600 per season for Chinook, chum, and coho).	ADF&G	All aspects
	• Sample commercial Chinook catch for GSI samples; target is 120/week if directed fishery occurs. Goal for non-directed incidental catch is 80/week.	ADF&G	All aspects
	• Collect 400-800 matched genetics/brain-parasite/scale/otolith samples per week from sockeye with sub-district specific goals.	ADF&G	All aspects
Kuthai Sockeye Sampling			
7/1 - 8/30	• Operate the adult sockeye salmon weir at Kuthai Lake; enumerate and sample for age-sex-length-spaghetti tag loss (750 samples) and recover spaghetti tags.	TRTFN	All aspects
	• Opportunistically sample up to 100 sockeye (food fish perhaps) for brain parasites.	TRTFN	All aspects
mid-Sept.	• Conduct an aerial survey in Kuthai Lake to enumerate sockeye and compare with weir count.	TRTFN	All aspects
Improved Chinook M/R elements (LOA project)			
05/01 – 07/15	• Operate heavier gauge set net gillnet near Flannigan's Slough to live-capture Chinook – target is as many as possible. Examine all Chinook for CWT's, secondary marks and spaghetti tags and sample for age-size and sex composition. Spaghetti tag all untagged Chinook and apply secondary mark.	ADF&G	All aspects
07/28 – 08/15	• Determine tag:untagged ratio in headwater location – Tseta Creek with intensive on ground sampling effort. Chinook to be sampled via snagging and/or carcass sampling. All Chinook to be sampled for spaghetti tags and secondary marks, CWT's and ASL. Opportunistic sampling for genetic samples from spawned out sockeye and ASL and brain samples.	ADF&G – 2; DFO– 2.	
4/29 - 6/19	• Increase sampling in Canadian assessment and commercial fishery by sampling all fish in assessment fishery and 40% in commercial fishery. Sampling to include: examination for secondary marks, adipose clips (also to be sampled for age and length). All fish in assessment fishery will be sampled for ASL.	DFO ADF&G	

Appendix Table 4. (cont'd)

Project/Dates	Function	Agency	Involvement
Improved Chinook M/R elements (LOA project) –cont'd			
Complete by 12/31/10.	• Examine the performance of pre-season forecasts against inseason projections and post season reconstructions. Make recommendations on improvements to forecast and projection models.	ADF&G	ADF&G, DFO
Little Trapper Weir			
7/20 - 9/12	• Operate the adult sockeye salmon weir at Little Trapper Lake; enumerate and sample for age-sex-length-spaghetti tag loss (750 samples) and recover spaghetti tags. Brood stock will be sampled for sex and length and otoliths taken matched with 3-4 scales/fish.	DFO	All aspects
King Salmon Weir			
7/01 – 8/30	• Operate the adult sockeye salmon weir at King Salmon Lake; enumerate and sample for age-sex-length-spaghetti tag loss (750 samples) and recover spaghetti tags. Brood stock will be sampled for sex and length and brain samples taken matched with 3-4 scales/fish.	TRTFN	All aspects
	• Conduct an aerial survey in King Salmon Lake to enumerate sockeye and compare with weir count.		
Aerial Chinook surveys			
7/21 - 8/25	• Aerial surveys of spawning Chinook salmon in the Nakina, Nahlin, Dudidontu, Tatsatua, Kowatua, and Tseta rivers.	ADF&G DFO	All aspects
Sport Fishery Sampling			
4/21 – 7/12	• Conduct creel censuses and sample Juneau, Ketchikan, Sitka sport fisheries and sample for CWTs, age-sex-length and maturity.	ADF&G	All aspects
4/28 – 7/19	• Sample Petersburg and Wrangell sport fisheries for hatchery contribution (CWTs) and conduct post season surveys (State-wide survey) to obtain harvest data. Target is to sample 20% of catch for CWTs. Includes derby sampling.	ADF&G	All aspects
Troll sampling			
	• Sample goal is a minimum 20% of troll catch for CWTs	ADF&G	All aspects
Nakina Chinook Escapement Sampling			
7/27 - 8/28	• Operate the Chinook carcass weir on the Nakina R.	TRTFN	All aspects
	• Examine all Chinook salmon for sex-length, spaghetti tags/ tag loss, and adipose clips; collect heads or extract CWTs from all clipped fish. CWT samples to go to DFO lab. A sub-sample of 600 (ideally 1,000) will be sampled for age.	TRTFN	All aspects

Appendix Table 4. (cont'd)

Project/Dates	Function	Agency	Involvement
Nakina Chinook Escapement Sampling – cont'd			
	• Opportunistically obtain genetic samples from Nakina sockeye (target is 200 over long term).	TRTFN	All aspects
Tatsamenie Sockeye Weir			
8/3 - 9/30	• enumerate adult sockeye through weir and sample for age-sex-length-spaghetti tag loss (750 samples), recover spaghetti tags. Brood stock will be sampled for sex and length and otoliths taken matched with 3-4 scales/fish (target is 400 matched samples).	DFO	All aspects
Tatsamenie Area Chinook sampling			
9/1 - 10/1	• at upper Tatsamenie, sampling target is 100-200 Chinook for age-sex-length, spaghetti tags/tag loss, and CWTs. CWT samples to go to DFO lab.	DFO	All aspects
8/20 - 9/16	• operate the carcass weir at Lower Tatsamenie and sample all Chinook recovered for age-sex-length, spaghetti tags/tag loss, and CWTs. Target sample size is 600-900 all sizes. CWT samples to go to DFO lab in Vancouver.	DFO – 2 ADF&G -1	All aspects
Kowatua Sampling			
9/1 - 10/1	• Sample a minimum of 200 Chinook for age-sex-length, spaghetti tags/tag loss, and CWTs. CWT samples to go to DFO lab.	DFO	All aspects
Mainstem Escapement Sampling			
9/8 - 10/17	• Sample sockeye escapement in mainstem areas for age-sex-length, spaghetti tags/tag loss (600 samples).	DFO/ ADF&G	All aspects
	• Obtain brain samples match with A-W-L data from any spawned out sockeye encountered.	DFO/ ADF&G	All aspects

Contacts:	**Taku Projects**		
	Ed Jones	(ADF&G)	Smolt tagging, adult Chinook escapement sampling.
	Jim Andel	(ADF&G)	Canyon Island adult tagging.
	Kathleen Jensen	(ADF&G)	All ADF&G Com Fish Research Programs.
	Keith Pahlke	(ADF&G)	Chinook surveys.
	Sara Gilk	(ADF&G)	Genetics
	Ian Boyce	(DFO)	All DFO Taku programs.
	Sandy Johnston	(DFO)	All DFO Taku programs.
	Cheri Frocklage	(TIFN)	All TIFN programs.
	Nicole Gordon	(TRTFN)	All TRTFN programs.
	Richard Erhardt	(TRTFN)	All TRTFN programs.

Canadian staff associated with Taku projects that may be crossing the Canadian/US border:

Ian Boyce, Patrick Jackson, Kirstie Falkevitch, Mathieu Ducharme, Christian Ducharme, Mike Lake, Mike Martin, Natasha Ayoub, Jassin Godard, Richard Erhardt, Mark Connor, Mike Smarch, Lino Battaja, Patrick O'Shea, Vernon Williams, Keith Carlick, Michelle Williams, Brian Mercer, others.

US staff associated with Taku projects that may be crossing the Canadian/US border:

Jim Andel, Kathleen Jensen, Ed Jones, Keith Pahlke, Dale Brandenburger, Sara Gilk, Kent Crabtree, Scott McPherson, Kevin Monagle, Dave Harris, Scott Kelley, Phil Richards, Mike LaFollette, Bess Ranger, David Dreyer, Ron Josephson, others.

Appendix Table 5. Proposed Alsek River field projects, 2010.

Project/Dates	Function	Agency	Involvement
Klukshu River Sampling			
6/8 - 10/13	• Enumerate Chinook, sockeye and coho salmon at weir.	DFO/CAFN	All aspects
	• Estimate sport and aboriginal fishery catches.	DFO/CAFN	All aspects
	• Opportunistically collect age-sex-length information from sockeye caught by First Nations (600 scale samples per species) except Chinook, see below.	DFO/CAFN	All aspects
	• Opportunistically sample 200 Chinook in each of sport and aboriginal harvest for scales, sex, length (MEF), and CWTs.	DFO/CAFN	All aspects
	• Sample 600 Chinook and 600 sockeye at weir for scales, sex, length (MEF), CWTs (Chinook only).	DFO/CAFN	All aspects
	• Sample 600 coho at weir for age, sex, length (MEF).	DFO/CAFN	All aspects
Village Creek sockeye enumeration			
6/15 - 9/30	• Enumerate sockeye salmon using an electric counter at Village Creek – subject to availability of new counter.	DFO/CAFN	All aspects
Lower Alsek Sampling			
6/08 - 9/15	• Collect age-sex-length (MEF), GSI data (sockeye-800, Chinook-600, coho-500 no GSI) from Dry Bay commercial fishery.	ADF&G	All aspects
Escapement Surveys			
8/1 - 8/15	• Aerial surveys of spawning sockeye salmon in index areas of Cabin, Tanis, Muddy and Basin creeks (in Alaska) – depends on weather and aircraft availability	ADF&G	All aspects
10/1 - 10/15	• Aerial surveys of spawning coho salmon in index areas of Cabin, Tanis, Muddy and Basin creeks.	ADF&G	All aspects

Contact:	**Alsek Projects**		
	Bill Waugh	(DFO)	All DFO projects
	Sandy Johnston	(DFO)	All DFO projects
	Keith Pahlke	(ADF&G)	Chinook aerial surveys
	Kathleen Jensen/ Jim Andel	(ADF&G)	Lower Alsek and East Rivers commercial catch sampling
	Gordie Woods	(ADF&G)	Sockeye and coho aerial surveys & Dry Bay fishery
	Nicole Zeiser	(ADF&G)	Dry Bay fishery
	Linaya Workman	(CAFN)	CAFN projects

<u>Canadian staff associated with Alsek projects that may be crossing the Canadian/US border:</u>

Mark McFarland, Bill Waugh, Peter Etherton, Shawn McFarland, Linaya Workman, others

<u>US staff associated with Alsek projects that may be crossing the Canadian/US border:</u>

Gordie Woods, Keith Pahlke, Kathleen Jensen, Jim Andel, Richard Chapell, others

Appendix Table 6. Proposed 2010 enhancement projects for transboundary Stikine and Taku Rivers.

Project	Function	Agency	Involvement
Tahltan/Tuya Enhancement Project			
5/5 - 6/20	• Enumeration and sampling of smolts from Tahltan Lake (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.	DIPAC/ ADF&G	All aspects
6/01 – 6/10	• Tuya smolt sampling – if funding available	DFO/TFN	All aspects
6/1 - 8/30	• Limnological samples from Tahltan Lake monthly.	DFO	All Aspects
6/1 - 9/30	• Two limnological surveys of Tuya Lake to evaluate success of fry outplant (spring and late summer).	DFO	All aspects
9/5 - 9/30	• Collect up to 6.0 million sockeye eggs from Tahltan Lake and transport to Snettisham Hatchery in Alaska. (Dates are subject to onsite conditions). Implement additional programs resulting from Enhancement Sub-committee recommendations regarding improved broodstock collection measures (see *Special Studies* section) if approved by Panel chairs and funding is provided.	DFO	Egg-take and transport
9/5 - 9/30	• Sample 200 male and 200 female adult sockeye from Tahltan Lake broodstock for otolith samples.	DFO	All aspects
Tuya Straying Assessment			
9/1 – 9/30	• Survey Shakes Creek spawning area for incidence and success of sockeye spawning	DFO–support from TFN?	All aspects
Tatsamenie Lake Enhancement Project			
5/10 – 8/15	• Sample smolt out-migration from Tatsamenie (Taku River, in Canada) and conduct mark-recapture program on smolt from Tatsamenie Lake.	DFO – funding	All aspects
5/15 - 5/30	• Back-plant sockeye fry from Snettisham Hatchery into Tatsamenie Lake.	DIPAC/ ADF&G	All aspects
6/1 – 8/1	• Onshore extended rearing - net pen rearing of ~ 200,000 sockeye fry. Expected growth from 0.35 g to 4.0 grams.	DFO/ADFG	All Aspects
6/1 - 9/30	• Collect plankton samples from Tatsamenie Lake; conduct hydroacoustic and limnological surveys at Tatsamenie Lake to evaluate the success of fry outplants.	DFO	All aspects

Appendix Table 6 (cont'd)

Project		Function	Agency	Involvement
Tatsamenie Lake Enhancement Project – cont'd				
8/15 - 10/30	•	Collect up to 30% available brood stock (~1.5 million sockeye eggs) from Tatsamenie Lake and transport to Snettisham Hatchery in Alaska.	DFO	Egg-take and transport
Trapper Lake Enhancement				
6/1 - 9/30	•	Collect plankton samples from Trapper Lake; conduct hydroacoustic and limnological surveys at Trapper Lake to evaluate the success of fry outplants. Beach seining and other sampling to better define distribution of enhanced and wild fish in Trapper Lake.	DFO thru Northern Fund	All aspects
8/15 - 10/30	•	Collect up to 0.15 million sockeye eggs from Little Trapper Lake and plant in Tunjony Lake	DFO thru Northern Fund	Egg-take and transport
King Salmon and Kuthai Lake Investigations				
9/10 – 9/30	•	Spawner count and distribution mapping at King Salmon and Kuthai Lakes	TRTFN	All aspects
7/1 – 9/15	•	Operate Adult Weirs at both systems	TRTFN	All aspects
9/12 – 9/18	•	Pilot egg take (~100K) at King Salmon Lake	TRTFN – pending funding	All aspects
Salmon Egg Incubation				
9/1 - 6/15	•	Incubation and thermal marking of juvenile sockeye (eggs & alevins) collected from Tahltan Lake (Stikine River), Tatsamenie and King Salmon (Taku River) lakes at the Snettisham Incubation Facility in Alaska.	DIPAC/ ADF&G	All aspects

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:

Snettisham Hatchery Staff, Eric Prestegard, Garold Pryor, Rod Neter, Ron Josephson flight crew from Ward Air airline

Appendix Table 7. Proposed Genetic stock ID field projects, 2010.

Project/Dates	Function	Priority	Agency
Stikine Chinook baseline samples (sample goal 200 per population)			
	Farragut– need 65	M	ADF&G/NMFS
	East or North Bradfield – need 200	H	ADF&G/NMFS
	Harding – need 155	M	ADF&G/NMFS
	Tahltan R. – need 21		DFO/ADF&G
	Chutine – need 200	M	DFO
	Tuya – need 196	M	DFO
	Beatty – need 200	M	DFO/ADF&G
	Bear – need 198	H	DFO
	Johnny Tashoots Creek – need 137	H	DFO
	Craig - need 87	M	DFO
	Katete - need 200	L	DFO
	Stikine (above Chutine) - need 200	L	DFO
	Stikine (below Chutine) - need 200	M	DFO
	N. Arm (US section) - need 182	L	ADF&G
	Goat (US section) - need 177	L	ADF&G
	Alpine/Clear (US section) - need 136	L	ADF&G
	Kikahe (US section) - need 183	L	ADF&G
Stikine Chinook fishery samples			
	Lower Stikine commercial fishery – target is 120 per week		DFO
	Kakwan Pt tagging site – collect tissues from each fish		ADF&G/DFO
	D-108 GN – 120/wk (directed); 80/wk (non-directed)		ADF&G
	D-108 sport - Petersburg target sample is 450; Wrangell is 200 spread over season.		ADG&G
	D-108 spring troll - Petersburg target sample is 100; Wrangell is 300 spread over season.		ADF&G
Stikine sockeye baseline samples (sample goal 200 per population)			
	Scud – need 0		DFO
	Porcupine – need 158	H	DFO
	Tahltan R – need 200	L	DFO
	Stikine mainstem – Andy Smith – need 168	H	DFO
	Stikine mainstem – Fowler – need 172	H	DFO
	Verrett River – need 200	H	DFO
	Iskut – Verrett Slough – need 200	H	DFO
	Iskut – Inhini Slough– need 200	H	DFO
	Iskut - Bronson Slough– need 121	L	DFO
	Iskut – Bugleg Slough – need 200	L	DFO
	Iskut - Twin – need 200	L	DFO
	Iskut – Craigson Slough - 157	H	DFO
	Craig – need 189	H	DFO
	Chutine Lake – need 135	H	DFO
	Chutine R. – need 0		DFO
	Christina Lake (lake and inlet spawners) – need 200 each	H	DFO
	Katete – need 200	M	DFO

Appendix Table 7 (cont'd)

Project/Dates	Function		Agency
Stikine steelhead baseline samples			
	Collect bulk samples opportunistically from inriver fisheries.		
	Shakes Sl (US section) – need 146	L	ADF&G
	Andrew Cr (US section) – need 197	L	ADF&G
Stikine sockeye fishery samples			
	Lower Stikine commercial fishery – target is 120 per week		DFO
	Lower Stikine test fishery – target is 120 per week		DFO
	Upper Stikine test fishery – sample goal is 200.		
	D-108 – sample goal for Petersburg and Wrangell 520/wk/combined		ADF&G
	D-106 – sample goal for Sumner and Clarence is 520/wk/ea – 106-30, 106-41		ADF&G
Taku Chinook baseline samples			
	Yeth- need 153	H	DFO
	King Salmon- need 185	H	DFO
	Sloko- need 200	M	DFO
	mainstem Taku- need 200	L	DFO
	Sutlahine- need 200	L	DFO
	Tseta- need 39	M	
Taku Chinook fishery samples			
	Taku assessment fishery – sample target is 120/wk		DFO
	Taku commercial fishery – target is 120/wk		DFO
	D-111 – sample target is 120/wk (directed); incidental non-directed, n=80/wk		ADF&G
	Juneau area sport – sample target is 600		ADF&G
Taku sockeye baseline samples			
	King Salmon - need 200	H	DFO/TRT
	Taku Mainstem –		
	Yellow Bluff – need 166	L	DFO/ADF&G
	Tuskwa Creek- need 181	L	DFO/ADF&G
	Takwahoni – need 131	M	DFO/ADF&G
	Yonakina – need 200	L	DFO/ADF&G
	Other Taku mainstem – opportunistic	L	DFO/ADF&G
	Hackett- need 6	L	DFO
	Nakina– need 194	M	TRT
	Fish Cr (US section) – need 126	H	ADF&G
	Yehring (US section) – need 19	H	ADF&G
	Johnson (US section) – need 200	L	ADF&G
	Samotua - need 200	L	DFO
Taku steelhead baseline samples			
	Collect bulk samples opportunistically from the fish wheels and inriver fisheries.		

Appendix Table 7. (cont'd)

Project/Dates	Function		Agency
Taku sockeye fishery samples			
	Taku Inriver commercial fishery – target is 125 per week		DFO
	D-111 – sample target is up to 800 weekly		ADF&G
Alsek Chinook baseline samples			
	Goat Cr. – need 109	H	DFO
	Lofog – need 200	L	DFO
	mainstem Tatshenshini (middle, i.e. Kudwat) – need 169	H	DFO
	mainstem Tatshenshini (lower) – need 200	H	DFO
	mainstem Tatshenshini (upper) – need 200	H	DFO
	mainstem Alsek – need 200	L	DFO
	Tweedsmuir – need 195		
Alsek sockeye baseline samples			
	Klukshu River early – need 193	H	DFO
	Blanchard Lake- need 21	H	DFO
	Takhanne R. – need 200	H	DFO
	Goat Cr – need 188	M	
	Mainstem Tatshenshini (upper) – need 200	H	DFO
	Mainstem.Tatshenshini (lower) –		DFO
	Tats Lake- need 200	M	DFO
	Detour- need 200	L	DFO
	Kudwat- need 148	M	DFO
	Stinky- need 200	L	DFO
	Alsek mainstem (Can) – need 15	H	DFO
	Vern Ritchie – need 10	L	
	Tweedsmuir – need 78	M	
	Alsek mainstem (US) - need 163	L	ADF&G
	Border Slough – need 98	M	
	Tanis (US section) - need 200	L	ADF&G
	Basin (US section) - need 200	H	ADF&G
	Ahrnklin R- need 10	L	ADF&G
	Akwe- need 7	L	ADF&G
	Italio- need 200	L	ADF&G
	Lost- need 13	M	ADF&G
	Dangerous- need 0		ADF&G
Alsek fishery samples			
	Chinook test fishery – all fish		ADF&G
	Dry Bay commercial – Chinook and sockeye – target is 800 sockeye and 600 Chinook spread over run.		ADF&G

Appendix Table 7. (cont'd)

GSI sampling protocol:

- the target sample size is 200 adult samples per population.
- the preferred tissue to sample is the axillary appendage. For baseline samples, each fish will be sampled for two appendages; one to be sent to the DFO lab and the other to the ADF&G lab. For fishery samples, each fish will be sampled for one axillary appendage which will be shared if requested.
- if opercular punches are taken, two punches will be taken from each fish, again one for each of the respective labs. To eliminate problems associated with potential delamination of punches in composite samples i.e. where punches from one population and/or location are all stored in one vial as has been the practice, opercular punches will now be stored in individual labeled vials.
- Axillary appendages and opercular punches will be stored in ethanol (full strength) and each sample appropriately labeled (date, location (**GPS**), species, number of samples, fixative and volume thereof, collector, contact name, agency, phone number).
- although it is recognised that there are potential efficiencies in terms of effort, time, storage, shipping and archiving associated with using scale samples for GSI, this should not be a tissue of choice when obtaining fishery or other samples for GSI (e.g. out of a tote) but may be used as last resort.

APPENDIX III: ENHANCEMENT SUB-COMMITTEE RECOMMENDATIONS REGARDING IMPROVING THE EGGTAKE AT TAHLTAN LAKE.

The following excerpt is from a memorandum sent on April 29, 2010 from the co-chairs of the Enhancement Sub-committee to the Transboundary Panel Co-chairs as fulfillment of a task from the Transboundary Panel to develop recommendations on how to increase the likelihood of achieving the annual eggtake target of 6.0 million eggs at Tahltan Lake.

<u>Recommendations to the Co-Chairs of the Transboundary Panel: Tahltan Lake Sockeye Egg Take</u>

The Co-chairs of the Transboundary Panel tasked the Enhancement Sub-Committee of the Transboundary Technical Committee with conducting a review of the Tahltan Lake sockeye salmon egg take and to provide recommendations to maximize the likelihood that the egg take goals of the SEPP would be fully achieved each year. The assignment given to the Enhancement Sub-Committee was:

> *The Co-Chairs of the Transboundary Panel task the Enhancement Sub-Committee of the Transboundary Technical Committee with conducting a review of the Tahltan sockeye salmon egg take with the aim of identifying measures that could be taken to better ensure that the egg take goals as described in the annual Stikine Enhancement Production Plan are fully achieved each year and that those eggs that are taken are effectively transported to Snettisham Hatchery to ensure maximum possible survival. The Sub-Committee should provide their written recommendations on this topic to the Co-Chairs of the Panel by May 1, 2010, such that the Co-Chairs have adequate time to the pursue various policy matters needed to allow implementation of actions recommended by the Sub-Committee in time for the 2010 Tahltan sockeye egg take (additional funding, assignment of existing agency staff, improved logistics, etc.).*

On February 24-25, 2010, the Enhancement Sub-Committee met in Whitehorse to review and discuss the Tahltan sockeye egg take program and to identify measures that could be taken to maximize the likelihood that the egg take goals of the SEPP are fully achieved each year and that those eggs are effectively transported to Snettisham Hatchery.

The following recommendations to maximize the likelihood that the 2010 SEPP egg take goal is achieved are provided to the Co-Chairs of the Transboundary Panel. Recommendations will apply to the 2010 fishing season and some recommendations may be dropped in subsequent years if proven unnecessary or inappropriate, additional recommendations may be applied to future fishing years as required. The underlying assumption is that there will be adequate numbers of fish reaching Tahltan Lake to meet escapement and egg-take goals. There may be circumstances where achieving the SEPP egg take goal is not possible (e.g. low escapement), in these circumstances the 30% escapement target will be used.

Appendix A includes further discussion on the recommendations and the attached table outlines a range of measures that have been considered in the undertaking of this assignment.

Recommendations:
1) Holding of broodstock from primary collection site.

Opportunity: A significant number of female sockeye are un-ripe (green) when seined off of the primary spawning grounds (~40% green fish). Holding of green females in net pens until ripe should increase the efficiency and effectiveness of egg collection.

Challenge: Extended holding of green fish may result in reduced fitness or mortality of some fish.

2) Adjust start date of field program.

Opportunity: Align the start date of fishing to coincide closer to when the fish first start to appear on the primary spawning grounds. Mobilization of the field crew(s) earlier in the season to: begin collection of green/ripe females to be held until significant numbers are available for egg takes ; to investigate and establish alternative collection site(s); to give crew time for familiarization with new equipment where deployed; and to provide time for familiarization with new collection method(s) if adopted.

Challenge: Earlier crew mobilization and or additional crew(s) will result in increased costs to implement program (wages, groceries, logistics, etc) and will require increased infrastructure on site (accommodation, vessels etc). Amendments to contract conditions will need to be identified early to allow sufficient time for contractor to plan and implement.

3) Maintain guideline of last fishing day (Sept 25) to allow for natural escapement.

Opportunity: Maintain last fishing day guideline of Sept 25 as agreed to in 2010 SEPP to allow for natural spawning to occur. Last fishing day guideline may be adjusted (earlier or later) with decision being made by DFO in season based on run timing, consultation with First Nations, fishing results, projected egg take numbers and health and safety consideration.

Challenge: Extending last day of fishing beyond SEPP guideline increases the risk of impacting the natural spawning at the primary site and will likely require consultation with affected parties.

4) Adjust fishing schedule and egg takes.

Opportunity: Adjust fishing and egg take schedules to allow for multiple fishing days from primary and alternative site(s) in conjunction with extended holding of fish, followed by egg takes and transport to hatchery.

Challenge: Multiple fishing days on primary site or alternative site(s) may not be productive if the spawning grounds do not have adequate time to recharge. Holding of ripe fish may cause some additional incidental harm or mortality.

5) Investigate alternative flight plans.

Opportunity: Feasibility of fixed wing or rotary wing transport to hatchery to be determined based on fishing schedule, egg takes and health and safety considerations.

Challenges: Flight plans need to be provided to U.S. Customs in advance of flight. Regulatory and logistical challenges need to be incorporated in up-front planning for alternative flight plans, especially when in response to inclement weather conditions. Rotary wing transport of eggs to hatchery will increase cost of transport.

6) Investigation and collection of broodstock from alternative collection site(s).

Opportunity: Alternative collection sites and methods (e.g. tangle and trap nets, snagging) will be further investigated during the 2010 season and where feasible, broodstock collection will be attempted.

Challenge: Additional field crew(s), additional or new collection equipment and/or egg take facilities and vessel(s) may be required for egg takes at alternative sites. Alternative collection site(s) may have unsuitable substrate or debris on lake bed that could impede effective brood stock collection.

APPENDIX A

The Enhancement Sub-Committee undertook a review of the Tahltan Lake sockeye salmon egg take with the aim of identifying measures that could be taken to better ensure the egg take goal is achieved.

The Sub-Committee recommends that a number of different approaches should be employed at Tahltan Lake. Primarily we encourage more flexibility in the methods used for collecting brood stock, holding brood stock and the conduct of the egg take. The attached tables outline a range of measures that should be considered, and the opportunities and challenges that exist for each. We also listed the operational and policy matters that are present.

Broodstock Collection

We recommend that various new approaches be investigated for broodstock collection including the collection of broodstock at other sites on the lake. Fundamentally the approach should be to collect the necessary broodstock numbers as efficiently as possible while employing improved methods of holding and sorting fish.

The use of the web style net pens is planned and we expect this will allow holding of more fish as well as easier handling and sorting of broodstock. Green fish should be sorted relatively infrequently rather than getting a small number of ripe fish out of a pen.

Changes in fish collection approaches are likely to allow more natural spawning to take place without disturbance while increasing efficiency. For example, there may be advantages to seining across the primary collection beach a single time each day for two consecutive days followed by an egg take on the third day; rather that seining twice on an every other day schedule. This could allow the collection of the broodstock numbers with less effort and allow for bigger egg takes. Testing of this approach would be best done during mid-September when more fish are available. By seining at the primary site with a single pass this should allow time to move across the lake to collect fish at alternate sites. This may necessitate additional crew members.

The testing of a fish trap is also recommended; this is a set-up where a long lead is set perpendicular to the shore to lead fish into a trap in deeper water. DFO staff knows of a trap that they think will be available for use in 2010. A fish trap should only be operated during the day when it can be monitored.

While collecting at the weir as fish enter the lake provides an opportunity to collect fish in a relatively easy manner past experience resulted in high mortality and low egg quality. However, late in the escapement period there are nearly ripe fish that pass through the weir and collection of these fish is recommended. It is possible that 100 or more females could be collected in this manner. Holding should be in an area where bear disturbance is minimized.

Broodstock Holding

Broodstock holding has been limited to overnight in most years of operation at Tahltan Lake. Last year fish that appeared nearly ripe were held for longer periods with minimal loss. We recommend that this approach be expanded and more of the green females should be held. Most captured fish will be within a week or two of spawning and by holding these fish the amount of seining and repeat handling can be reduced. As mentioned above the used of web pens of the design used at Tatsamenie Lake will facilitate broodstock handling and have a good history of minimizing loss.

Bears are recognized as a problem and the practice of holding pens far out from shore should be continued.

Egg Takes

The minimum recommended egg take is approximately 96 females or 8 coolers. Early in the year there may be conditions that require a relaxation of this guideline. Egg takes in increments of 8 coolers would allow the hatchery to operate most efficiently. The committee felt that the advantages of waiting a day or two to collect more fish for a more efficient egg take out weighed the need to spawn fish. Sockeye have been shown to hold well even when ripe.

We discussed the advantages of larger, less frequent egg takes coupled with a planned helicopter transport as an approach worth considering. The egg takes could even take place over two days with most of the eggs collected the first day and appropriately chilled, followed by a smaller egg take the second day. By scheduling for a helicopter there would be a much greater certainty of eggs being delivered on time and the trip should be less weather dependent.

Enhancement Sub Committee Summary of Potential Activities for the Tahltan Egg Take - February 24-25, 2010		
Proposed Measures	**Opportunities (O)/ Challenges (C)**	**Operational/Policy Matters**
Brood stock collection		
Primary Collection Site	O – 40% of females during brood stock collection are green, opportunity for holding C- extended handling, holding of green females - experimental – do not know impact of holding/handling repeatedly	• Possible additional costs if fishing/egg takes begin earlier. Minimum 6-7 crew members. • Licensing BC/YT
Weir Primary Collection site (collection of green fish at weir)	O - fish through weir generally several weeks away from spawn at start of migration, however later in season there are fish that appear close to spawning C – collection of brood-stock at weir (early in program) not successful, green fish and extended holding, resulted in high mortality and poor egg quality C- fishing spawning site at weir site in recent years does not produce large numbers of females. CPUE variable and not predictable	• Where opportunity presents itself, collect fish for brood stock from late run • Opportunity to collect brood stock efficiently at late portion of run
Use of/Investigation of alternative (secondary) collection sites	O - Holding nets/pens at secondary sites - Take females and transport to egg take site O - Expect 300-500 additional fish from secondary grounds (escapement dependent) C – need additional people to work/transport fish from secondary site C - Or establish secondary egg take site at alternative location (equipment, materials etc). C – existing flat bottom boat not very suitable for lake travel. O - Aerial survey of alternative sites (~Sept 7-12) – to confirm sites and conditions at site (substrate, obstructions etc). C – net damage due to obstructions O – use different gear (tangle nets, snagging, smaller seines, trap net etc) O – trap nets at secondary sites, set and retrieve during daylight. C – incidental take, bears, otters. C - tangle nets – need to monitor nets constantly C – clearing of obstructions on bottom – regulatory requirements.	• Provision of additional net pen or use of existing net pen (vexar) (TBD - DFO). • 2-3 additional crew members. Contract additions (DFO). • Additional egg take facilities – based on results of 2010 program. Contract additions (DFO). • Possible addition of new vessel(s) for use on the lake. (TBD – DFO – O&M) Currently two boats used for program, suggestion of additional 2 boats required (OHS). • Aerial Survey – cost neutral, existing undertaking • Gear type – trap nets (YG loan – insurance, replacement costs, familiarization of use, upfront cost), snagging – purchase of equipment, smaller seines, length and depth (100x8ft, 1inch mesh), existing supply/condition (DFO or ADFG)– or purchase), • tangle nets – provision of net (cost - DFO),

		• Clearing obstructions from lake bottom, if required – regulatory (EA?) - earlier crew to remove obstructions (contract costs).
Weir Primary Collection site (collection of green fish at weir)	O - fish through weir generally several weeks away from spawn at start of migration, however later in season there are fish that appear close to spawning C – collection of brood-stock at weir (early in program) not successful, green fish and extended holding, resulted in high mortality and poor egg quality C- fishing spawning site at weir site in recent years does not produce large numbers of females. CPUE variable and not predictable	• Where opportunity presents itself, collect fish for brood stock from late run • Opportunity to collect brood stock efficiently at late portion of run
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Additional HR and O&M	C – number of additional crew members (dependent on schedule and process) C- costs, accommodation, etc.	• Contract costs increase with larger crew, accommodation increases and costs.

Brood stock holding		
6 new net pens – hold fish for brood stock • 2 pens for holding ripe fish (male and female pens) 4 pens for holding near ripe fish (mixed male and female)	C- collecting sufficient number of females, locations for collection (weir, primary spawning grounds, alternative sites), increased handling fish O – use separate net pens to hold fish based on fishing days, allows for tracking of duration of held fish and estimation of days held to ripe, mark/label pens for easy identification/day of deposit etc., holding fish in pens, allow for inclement weather egg take on non-fishing days. C – Bears access to net pens • Tarp pens to avoid noise/attraction • Hold pens further in lake.	• Nets purchased Feb 2010 (DFO). • Training/familiarization with set up (DFO - Brian Mercer crew member –possible) – first week of Sept. • Prefab frames and tarps for pens (DFO) • Deploy to site (DFO) • Numbering/marking of net pens (Contractor)
Additional HR and O&M	C – number of additional crew members (dependent on schedule and process) C- costs, accommodation, etc.	• Contract costs increase with larger crew, accommodation increases and costs.
Egg take/transportation		
Ideal egg take	Minimum of 8 Coolers/delivery Ideal number of females for Snettisham is 176 , but greater numbers are easily accommodated O - consider fishing until sufficient females are secured to warrant an egg take (92 fish min) – maximize number of eggs/flight. Incubator can hold 250 -300K eggs. Hold ripe females until sufficient number is achieved to take eggs to maximize delivery - first few egg takes based on observed maturation rates may dictate less that 92 females - avoid holding ripe fish until ideal number is achieved.	• Maximize incubator usage • Maximize flight capacity. • Additional coolers (ADFG)
Egg take start and end dates (guideline date Sept 25)	O – drop guideline of last day of fishing, given holding of fish is successful – pending future results? O – guideline of last fishing day to remain to allow natural spawning to occur – opportunity to move guideline to earlier in Sept pending results of holding brood stock	• Biological rationale for maintaining guideline. • Opportunity to either drop guideline or make guideline end date earlier, will be determined on success of net pen holding in current and subsequent years.

	C – what to do when holding fish past guideline day (use alt transport method to transport eggs past last fishing day). C- helicopter increased costs. O – adjust start date of fishing – indicator: fish at weir and 12C trigger. C- having crew on site too early without available fish C- familiarizing crew with new net pens, set up etc – mobilize crew earlier to accomplish this. O – tag fish in july/august at weir for monitoring purposes – target portions of run during egg take	• Begin contract earlier to allow for mobilization and set up, establishment of alternative sites, familiarization with recommended process – intent catch more fish (contract adjustment – DFO) • Amendment of contract to adjust last day of fishing – increased costs, availability of crew etc. (DFO) • Contingency plans for extending fishing dates or egg take from held fish (DFO) • Contingency plan for worst case scenario – fishing crew needs to leave early. (DFO – Contractor) • Increased cost from alternative transportation costs if holding fish/delayed egg takes. • Tagging of fish (DFO-STAD) 600-800 spaghetti tags (cost – DFO or donation)
Fishing Schedule and Number of egg takes.	Currently fishing every second day to allow grounds to recharge. O - fishing main site multiple days in a row followed by egg take – possibly not productive as grounds may not recharge. O - fish main site on day 1, fish secondary site on alternate day, 3rd day egg take – repeat. Or have secondary crew fish while prim crew collects eggs. Used in conjunction with alternative transport methods. O – fish/take two days and use helicopter to fly eggs out C – flights and customs – logistics of achieving timely delivery – weather delays.	• Guideline of Sept 25 (in 2010 SEPP) stick with last day of fishing on Sept 25, unless rational to extend is approved bilaterally. • Crew accommodations increased depending on crew requirements (DFO) • Alternative flights (helicopter vs fixed wing) increased costs (contract – DFO) • Customs…no control
Transport of eggs to hatchery	O – use of alternative transport to get eggs to hatchery (helicopter vs fixed wing) C – cost differential b/w transport methods	• Addressed above
Additional HR and O&M	C – number of additional crew members (dependent on schedule and process) C- costs, accommodation, etc.	• Addressed above