

**PACIFIC SALMON COMMISSION  
TRANSBOUNDARY TECHNICAL  
COMMITTEE REPORT**

**SALMON MANAGEMENT AND ENHANCEMENT  
PLANS FOR THE STIKINE, TAKU  
AND ALSEK RIVERS, 2006**

**REPORT TCTR (07)-01**

This plan was finalized at the April 19, 2006 meeting of the  
Transboundary Technical Committee  
Whitehorse, Yukon

April 2007

## ACRONYMS

ADF&G	Alaska Department of Fish and Game
BEG	Biological Escapement Goal
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
PSARC	Pacific Scientific Advice Review Committee of DFO
PSC	Pacific Salmon Commission
PST	Pacific Salmon Treaty
SCMM	Stikine Chinook Management Model
SMM	Stikine Management Model
SPA	Scale pattern analysis
TAC	Total Allowable Catch
TCTR	Transboundary Technical Committee
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 and research 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 2006 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 2006 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 2006, identifying agency responsibility and contacts for the various functions within the projects.

## STIKINE RIVER

### *Chinook Salmon*

#### **Preseason Forecast**

The final preseason forecast for the Stikine River Chinook salmon terminal run is 60,600 fish.

Similar to 2005, the 2006 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 inriver return of age-5 fish based on the number of age-4 fish in 2005; the inriver return of age-6 fish based on the number age-5 fish in 2005; and the inriver return of age-7 fish based on the number of age-6 fish in 2005. The sum of the age-specific predictions (age 5 to age 7) generates an estimate of the total inriver return.

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

- age-4 in 2005 ( $N_{\text{age-4}(y-1)}$ ) to predict the number of age-5 in 2006 ( $N_{\text{age-5}(y)}$ ):

$$N_{\text{age-5}(y)} = 3.114 * N_{\text{age-4}(y-1)} + 5,406 \quad [1]$$

The correlation coefficient ( $r^2$ ) of this relationship = 0.84, n=9;

- age-5 in 2005 ( $N_{\text{age-5}(y-1)}$ ) to predict the number of age-6 in 2006 ( $N_{\text{age-6}(y)}$ ):

$$N_{\text{age-6}(y)} = 0.536 * N_{\text{age-5}(y-1)} + 9,980 \quad [2]$$

The correlation coefficient ( $r^2$ ) of this relationship = 0.71, n=9;

- age-6 in 2005 ( $N_{\text{age-6}(y-1)}$ ) to predict the number of age-7 in 2006 ( $N_{\text{age-7}(y)}$ ):

$$N_{\text{age-7}(y)} = 0.024 * N_{\text{age-6}(y-1)} - 88 \quad [3]$$

The correlation coefficient ( $r^2$ ) = 0.13, n=9.

The total estimated number of inriver Stikine Chinook age-4 in 2005 was 3,689; age-5 was 65,095; and age-6 was 28,120. Substituting these values into each of the respective equations [1] – [3] above and summing the results, yields a predicted inriver return of approximately 66,600 large Chinook salmon in 2006. This number estimates the total Stikine production entering District 108 and does not account for Chinook caught in marine water beyond District 108. Further, the forecast of age-4 fish is not included in this estimate.

### **Escapement Goals**

The current MSY escapement goal point estimate ( $N_{\text{MSY}}$ ) 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.

#### *Escapement Goal Background*

Prior to 1999, the interim index escapement goal was 5,300 large Chinook salmon through the Little Tahltan River weir (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 an escapement floor of 4,000 Chinook salmon for Little Tahltan or 20,000 for the total Stikine system for 1999. These escapement floors were near the midpoint of the ranges recommended by the Bernard et al. paper. 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 not fallen below the lower end of this range. 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. This arrangement 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 US. 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:

$$AC = \text{Terminal run} - \text{Base terminal run (BTR)}; \text{ where}$$

$$BTR = \text{escapement target} + \text{test fishery BLC} + \text{U.S. BLC} + \text{Cdn BLC}$$

BLCs are as follows:

- U.S. Stikine BLC: 3,400 large Chinook<sup>1</sup>;
- Canadian Stikine BLC: 2,300 large Chinook<sup>2</sup>;
- Test fishery: 1,400 large Chinook.

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

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.

<sup>2</sup> Includes average combined US gillnet, troll and sport catches of Stikine Chinook salmon in District 108.

<sup>3</sup> Includes average combined Canadian Aboriginal, commercial and sport catches of Stikine Chinook salmon.

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:

- a. non-Stikine Treaty Chinook salmon harvested in District 108 will continue to count toward the SEAK AABM harvest limit;
- b. the U.S. BLC of Stikine Chinook salmon in District 108 will count toward the SEAK AABM harvest limit;
- c. 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 Chinook Technical Committee as modified by (a) through (c) above.

### **Management Procedures**

The 2005 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):

- 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.
- By 2008, 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<sup>3</sup> size will be made by the Committee by February 1 of each year.
- In 2005 and 2006, directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the upper end of the MSY escapement goal range plus the combined Canada, U.S. and test fishery base level catches (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 2005 and 2006, such fisheries will not be implemented unless the projected terminal run size exceeds the mid-point of the escapement goal range 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 escapements in 2005 and 2006 are less than the escapement goal point estimate ( $N_{MSY}$ ), the Parties agree to review the 2005 and 2006 directed fisheries and implement additional precautionary management measures intended to achieve the escapement goal point estimate ( $N_{MSY}$ ) in 2007 and 2008.
- In 2007 and 2008, directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the escapement goal point estimate ( $N_{MSY}$ ) plus the combined Canada, U.S. and test fishery base level catches (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 2007 and 2008, 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 2005 PSC Chinook catch sharing agreement. The preseason forecast will serve as the principal run size estimator up to approximately 25 May. A reliable, inseason projection based on the performance of the Kakwan tagging activities, specifically catch per hour, will be generated by May 25 when, on average, 25% of the run has passed the Kakwan site (1996-2004). The Kakwan-based estimate is generated by the Stikine Chinook Management Model (SCMM). An inseason run estimate before the May 25 dead line may be adopted if agreed to by Canada and the U.S. In this regard a joint, preliminary inseason estimate will be generated by approximately May 17. Reliable, weekly mark-recapture estimates are expected to be available by statistical week 23 (week ending June 10). These weekly m-r estimates may be used as the principal run size estimator or be used in concert with the SCMM in assessing weekly run sizes.

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<sup>1</sup> Terminal run = total Stikine Chinook run size minus the US troll catch of Stikine Chinook salmon outside District 108.

## United States

The preseason forecast allows for a directed Chinook salmon fishery in District 8; based on the preseason forecast, the U.S. allowable catch is 14,835 large Chinook excluding the base level catch of 3,400 large Chinook. Gillnet mesh sizes used in the Chinook fishery will be restricted to a 7-inch minimum (178 mm) stretched mesh, 60 meshes deep and 300 fathoms (549 m) long. The Chinook salmon season will start in District 108 at 8:00 a.m. on Monday, May 1 and close at 8:00 a.m. on Wednesday, May 3. The length of subsequent openings will depend upon the number of boats fishing, the number of Chinook salmon harvested, and results from stock assessment projects. The old Stikine closure lines will be in effect for the initial openings. These lines will close waters inside a line from Babblers 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 locations of these boundaries may change subject to inseason assessments. For example, if the inseason run projection is above the preseason forecast, the dotted lines in Figure 1 may move towards the Stikine River mouth.

The allowable harvest for the first three weeks of the fishery will be based upon the pre-season forecast. The final three weeks of the fishery will be based upon inseason projections. Historical run timing will be combined with the forecasted terminal run size to establish weekly harvest guidelines. Management actions in time and area may need to be taken to ensure adequate escapement of the smaller Chinook stocks that spawn in the streams on the U.S. portion of the Stikine River (e.g. the Andrews Creek BEG is 800 large Chinook with a range of 650-1500 fish).

The CTC issued the 2006 Chinook salmon preseason abundance index for S.E. Alaska on March 31. The 2006 all-gear harvest target is 346,800 Chinook with the troll fishery allocation at 256,670 Chinook. The troll allocation is 80% of the all-gear harvest target after the net Chinook allocations (25,960 fish) are subtracted. The remaining 20% is allocated to the sport fishery (64,170 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 Chinook Fishery management plan directed at harvesting Stikine River Chinook salmon. That management plan allows for a 3-day per week troll fishery throughout the district anytime that 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. The first week of the troll fishery will begin at 12:01 a.m. on Monday, May 1 and will continue until 11:59 p.m., Friday, May 5 because the gillnet fishery is scheduled to be open two days that week. Subsequent openings have not been set and will be set based on the length of the gillnet openings as described in the gillnet section above. The entire district will be open to trolling except for small closed areas at the northern end of Wrangell Narrows in Frederick Sound and small areas near Greys Island, Babblers Pt. and the Wrangell harbor area in Stikine Strait. If the mid-season abundance projections drop to levels below which there is no allowable U.S. harvest, extended fishing time to target returning Stikine River Chinook will be discontinued and spring fishery areas will be managed according to the provisions of the spring troll fishery management plan as was done in 2004 and will not be set based on the opening length of the gillnet fishery. Existing regulations allow spring salmon troll fisheries to target Alaska hatchery Chinook salmon. 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 in-season 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.

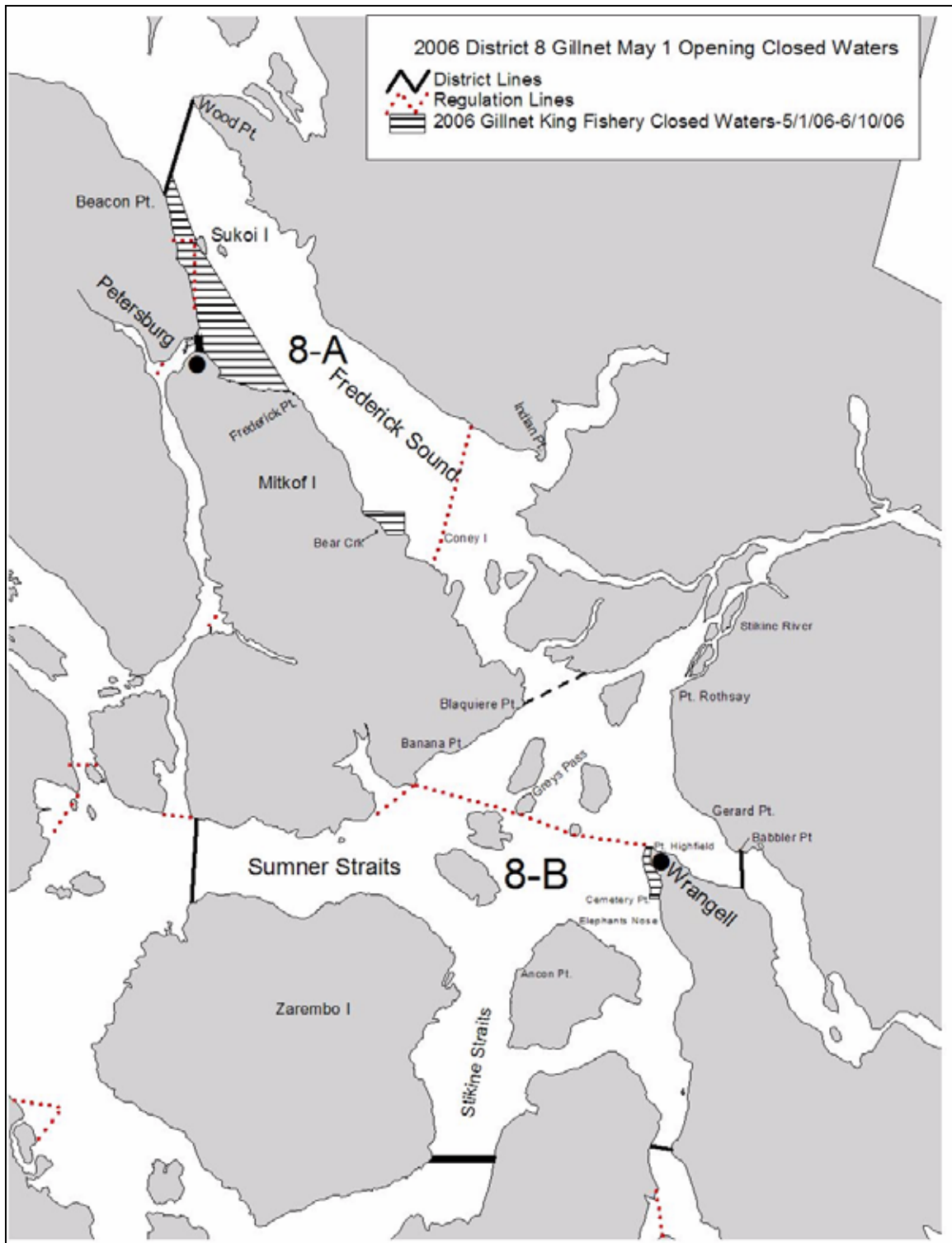


Figure 1. U.S. District 8 fishing boundaries for the initial Chinook salmon gillnet fishery in 2006. Boundaries may change subject to inseason assessment.

The Chinook salmon sport fishery in District 108 will be liberalized again in 2006 as follows: 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 five Chinook. The fishery will continue to be monitored through a creel census program.

A U.S. Federal Stikine River subsistence fishery for Chinook will occur for the second consecutive year in 2006. The Chinook fishery will be open from May 15 to June 20 with a guideline harvest limit of 125 Chinook. Fishing will take place upriver from marine waters to the U.S./Canadian border. Fishing will not be allowed in clear water tributaries or at fishing sites that ADF&G and DFO personnel use to conduct stock assessment research. 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 in-season by United States Forest Service (USFS) biologists that will remain in contact with the ADF&G commercial fishery managers. The fishery will be closed if the guideline harvest limits are taken before the fisheries closing dates.

### Canada

The preseason forecast allows for a directed Chinook salmon fishery in Canada; based on the preseason forecast, the Canadian allowable catch is 11,065 large Chinook excluding the base level catch of 2,300 large Chinook.

The Canadian lower Stikine River commercial fishery (Figure 2) will be managed on a weekly basis with management actions driven by 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 of large Chinook salmon based on historical weekly run timing. The inriver run timing profile for 2006 is based on the average run timing of large Chinook salmon observed in the Canadian test fisheries in 2000-2003 and the 2005 run timing observed in the Canadian commercial Chinook fishery.

The fishery will commence at 1200 hrs May 7. The initial opening will be for three days. Fishers are permitted two nets each with a maximum length of 135 metres (430 ft), of which only one net be deployed as a drift net. The maximum mesh size permitted is 20.3 cm (8 inch).

The fishing zone is bounded by the international boundary upstream to near the confluence of the Scud and Stikine rivers. The Iskut River is open to commercial fishing from its mouth upstream approximately 5 km. The management of the lower river commercial fishery will, in all likelihood, switch to sockeye at 12:00 noon June 18 (statistical week 25), the traditional start date of the sockeye fishery. Should a Chinook conservation concern occur in statistical weeks 25-28, mesh size restrictions will be adopted, specifically limiting fishers to the use of 15 cm (6 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. 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 include the Stikine River upstream to near the mouth of the Porcupine River (Figure 2). The section of the Stikine River upstream from the Porcupine – Stikine confluence may be opened should the Chinook return arrive in numbers that are above escapement and First Nation's catch targets. In the Iskut River, the area will remain unchanged from previous years, i.e. from the mouth to a marker located approximately 5 km upstream from the mouth.
3. Adjusting the quantity of fishing gear. Initially, two gillnets, one of which can be a drift net, will be permitted per licence. 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 150 mm through noon July 13 to conserve Chinook salmon and permit sockeye harvest.

In the upper Stikine commercial fishery, the fishery will commence at 1200 hrs May 7 for 72 hrs. The openings hence forth will be based on the openings fished at the lower Stikine commercial fishery, lagged one week. The upper Stikine fishers are permitted to use gear 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 north by the confluence of the Tahltan and Stikine rivers. Daily and weekly catches are collected by a DFO representative on site. The catches will be reported to the Whitehorse office on a weekly basis.

As in past years, weekly fishing times in the First Nation fishery will not normally be restricted. 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. Daily and weekly catches are 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 Stikine Chinook recreational fishery is centred in 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 samples including sex, size, and age of harvested fish as well as the collection and collation of fish tags recovered by the fishery.

### **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 A.1 for projects anticipated to be conducted in 2006).

#### 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.

Tissue samples will be taken from the directed Chinook salmon fisheries in District 108 and processed postseason in the Alaska Department of Fish and Game Gene Conservation Laboratory in Anchorage. The Northern Fund will provide funding for this project.

#### Stock Composition of Canadian Harvests

Work will continue opportunistically on developing the DNA baseline for Stikine Chinook salmon. Mixed stock DNA samples may be collected in Canadian fisheries for future stock ID analysis.

### *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 2006, the terminal run<sup>4</sup> outlook for Stikine sockeye salmon is 179,500 fish, which constitutes a below average run. For comparison, the recent ten-year average (1996-2005) total Stikine sockeye run size is approximately 194,000 fish. The 2006 forecast includes approximately 76,800 wild Tahltan (43%), 48,300 planted Tahltan (27%), 2,300 enhanced Tuya (1%), and 52,100 wild mainstem sockeye salmon (29%). However, as can be seen below, there are discrepancies in some of the individual run component outlooks depending on which method is used.

The 2006 overall Stikine sockeye prediction is based on the following components:

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<sup>4</sup> 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).



1. an outlook of approximately 125,100 Tahltan wild + enhanced sockeye of which 48,300 are expected from the enhancement project. This is the average of: a sibling-based prediction of 101,300 sockeye for the total Tahltan stock, which includes approximately 28,800 enhanced sockeye; and, a smolt prediction of 148,800 Tahltan sockeye of which 67,800 are expected to originate from the enhancement project;
2. an outlook of 2,300 Tuya sockeye salmon, which is based on 1997-05 average age-specific fry-to-adult survival data for Tuya sockeye; and
3. an outlook of 52,100 mainstem sockeye based on the average of a sibling-based prediction of 41,100 and a stock-recruitment outlook of 63,000 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 had been assumed to be 90% prior to 1997 and has been estimated from egg diameter analysis since 1997. The contributions of planted Tuya and Tahltan fish to various harvests are estimated 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 through the subtraction of the reconstructed in-river Tahltan run and the estimated in-river catches of Tuya and mainstem sockeye stocks from the total in-river run estimates.

Due to fluctuations in survival for Stikine sockeye, there is a high level of uncertainty in the preseason outlooks. The various preseason outlook techniques suffer from a relatively short time series of data and, therefore, not surprisingly, there have been wide discrepancies between past forecasts and actual runs. For example in 1998, the total preseason run forecast was 218,500 sockeye, whereas the estimate of the actual run was only 121,400 sockeye; this unexpectedly low run size was due to poor marine and freshwater survival. 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. Other examples exist where actual run sizes exceeded pre-season outlooks. The performance of the preseason forecasts relative to final post-season estimates is summarized in Table 1. Despite problems with preseason forecasting, the outlooks are useful for management until in-season data becomes available for in-season projections.

**The overall 2006 sockeye run outlook is characterised as below average comprised of an above average Tahltan Lake sockeye run and below average mainstem and Tuya components.** The preseason outlook translates into an expected total allowable catch (TAC) for all Stikine sockeye salmon of 125,000 fish. Of this, approximately 3,000 sockeye are expected to be harvested in test fisheries (stock assessment) leaving approximately 122,000 sockeye to be shared 50:50 between Canada and the U.S., i.e. 61,000 to each country, excluding terminal Tuya catches in Canada. The TAC outlook is comprised of the following components:

1. a predicted total allowable catch (TAC) of 101,100 Tahltan sockeye with an allowable maximum exploitation rate on this stock of 0.80 at a the predicted stock size of 125,100 fish and an escapement target of 24,000 sockeye salmon for the total Tahltan stock;
2. a predicted TAC of 1,800 Tuya fish estimated by applying the allowable Tahltan exploitation rate to the Tuya stock prediction of 2,300 fish (since Tuya stocks are mixed with Tahltan Lake

stocks). This leaves a predicted 500 fish surplus for the Tuya stock which potentially would be available for Canadian terminal harvest in the Tuya R.; and

3. a projected TAC of 22,100 mainstem sockeye which allows for an escapement target of 30,000 spawners.

Table 1. Stikine River sockeye salmon preseason run forecasts vs. post season run size estimates, 1982 to 2005.

Year	Pre-season Forecast (a)	Post Season Run Size	Forecast Performance (b)
1982	84,000	111,507	-24.67%
1983	62,900	77,465	-18.80%
1984	37,500	84,014	-55.36%
1985	91,000	214,494	-57.57%
1986	262,000	98,373	166.33%
1987	114,000	43,350	100.00%
1988	123,500	45,096	173.86%
1989	80,500	90,546	-11.10%
1990	94,000	67,242	39.79%
1991	94,000	154,351	-39.10%
1992	127,338	231,936	-45.10%
1993	135,000	280,730	-51.91%
1994	312,000	208,036	49.97%
1995	169,000	218,728	-22.74%
1996	329,000	372,785	-11.75%
1997	211,000	226,915	-7.01%
1998	218,500	121,448	79.91%
1999	126,000	119,138	5.76%
2000	138,000	94,311	46.32%
2001	113,000	141,000	-19.86%
2002	80,000	87,724	-8.80%
2003	184,000	241,362	-23.77%
2004	289,500	305,200	-5.17%
2005	477,100	261,300	82.59%
1982-2005			+/-50.43%
1996-2005			+/-29.09%

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

b) the forecast expressed as % deviation from post season estimate. Negative numbers indicates the projection was lower than the actual return.

## Spawning Escapement Goals

Escapement goals have been established by the Transboundary Technical Committee (TCTR) for two of the 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 the approximately 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:

	<b>TARGET = 24k</b>				
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:

	<b>TARGET = 30k</b>				
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), mark-recapture, 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, mark-recapture estimates of mainstem stock escapements 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; and
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 (including mark-recapture 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, mark-recapture, test fishing vs. commercial fishing CPUE, different stock ID results).

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

### **Harvest Sharing Objectives**

The Pacific Salmon Commission (PSC) re-negotiated Pacific salmon harvest sharing provisions in June 1999 for the period 1999 through 2008. Provisions for a U.S. subsistence sockeye fishery on the Stikine were negotiated by the Transboundary Panel and first implemented in 2004. Minor revisions to the dates of this fishery were agreed to by the Panel and implemented in 2005. 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 2006 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).

### **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 recent transboundary Pacific Salmon Treaty (PST) annex provisions.

The sockeye season will start at 12:00 noon on Sunday, June 11 for a 72-hour open period in District 106 and 108. The open period is dependant on the final pre-season forecast for Stikine River sockeye salmon, specifically the Tahltan component of the return. Extended fishing time and midweek openings in both districts will be based on the pre-season forecasts, in-fishery harvests and stock proportion data during the first three weeks of the sockeye fishery. Subsequent openings, extended fishing times, midweek openings and extensions will be based primarily on in-season forecasts produced by the Stikine Management Model (SMM) for the remainder of the sockeye season.

Management actions to reduce the harvest of Stikine sockeye salmon may occur in 2006. If there is a high potential for a weak Tahltan return, no openings should be expected in District 108 and no fishery extensions should be expected in District 106 for the first three to four weeks of the gillnet season. If the pre-season forecast indicates that the Tahltan sockeye return is large, or in-season harvest and stock data indicate that the Tahltan sockeye return is larger than anticipated and that additional fishing time would not constitute a risk to the health of the stock, then more liberal fishing periods may be allowed. Likewise, if the pre-season or in-season forecast indicate the mainstem sockeye returns may be weak, then fishing timing may be limited in both districts. If the sockeye runs to local Alaskan island systems are determined to be weak, area and time restrictions may be necessary in District 106.

Pink salmon typically begin entering District 106 in significant numbers by the third or fourth week of July. The S.E. Alaska pink salmon run outlook is above average. 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 returns are not evenly dispersed throughout the district, area restrictions may be necessary.

In District 108, chum salmon runs into Frederick Sound are a management consideration beginning the end of June. Chum salmon run strength assessments are based upon CPUE in commercial fishery harvests. The outlook for S.E. Alaska chum salmon is at least average.

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

A U.S. Federal Stikine River subsistence fishery for sockeye salmon will occur for the third year in 2006. The fishery will be managed by the United States Forest Service. 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 "clearwater" tributaries or side channels and at stock assessment sites is prohibited. The Guideline Harvest Level for sockeye 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 in-season by United States Forest Service (USFS) biologists that will remain in contact with the ADF&G commercial fishery managers. The fishery will be closed if the guideline harvest limits are taken before the fisheries closing dates.

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 2006. 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 15 through July 31, with a limit of 25 sockeye per family per year. Gillnet gear restrictions include a maximum net length of 50 fathoms. It is anticipated

that fewer than 100 sockeye will be harvested in this fishery. The harvest for the past 5 years has ranged from 21 to 27 sockeye with 1 to 2 permits fished.

## 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 and in-season mark-recapture results. 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.

The management of the lower river commercial fishery will switch to sockeye at 12:00 noon June 18 (statistical week 25) for an initial period of 48 hours. Consideration for Tahltan Lake sockeye stock management objectives should persist through the end of July. Thereafter, management attention will be focused primarily on mainstem sockeye stock objectives. Actual time frames of responses to specific stock compositions will 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.

It is anticipated 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, the section of the Stikine River upstream from the Porcupine – Stikine confluence will be closed until further notice. Consideration for increasing the fishing area to the boundary sign located approximately 2 km above the Stikine-Scud confluence will only be given if the in-season indicators indicate a strong run, escapement targets are expected to be exceeded and harvests are below allocation targets. In the Iskut River, the area will remain unchanged from previous years, i.e. from the mouth to a marker located approximately 2 km upstream from the mouth.
3. Adjusting the quantity of fishing gear. Initially, two gillnets, one of which can be a drift net, will be permitted per licence. 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 150 mm through noon July 13 to conserve Chinook salmon.

In the upper Stikine commercial fishery, the fishery will switch to sockeye management at noon June 18 for 48 hours. Thereafter, weekly fishing times will generally follow those of the lower river lagged by one week. In the event that a more liberal management regime is justified, extensions to fishing time in the commercial fisheries would be granted, dependent on stock-specific escapement and catch considerations. This would be followed by increasing the gear allocation to two, and/or increasing the fishing area.

As in past years, weekly fishing times in the First Nation fishery will not normally 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.

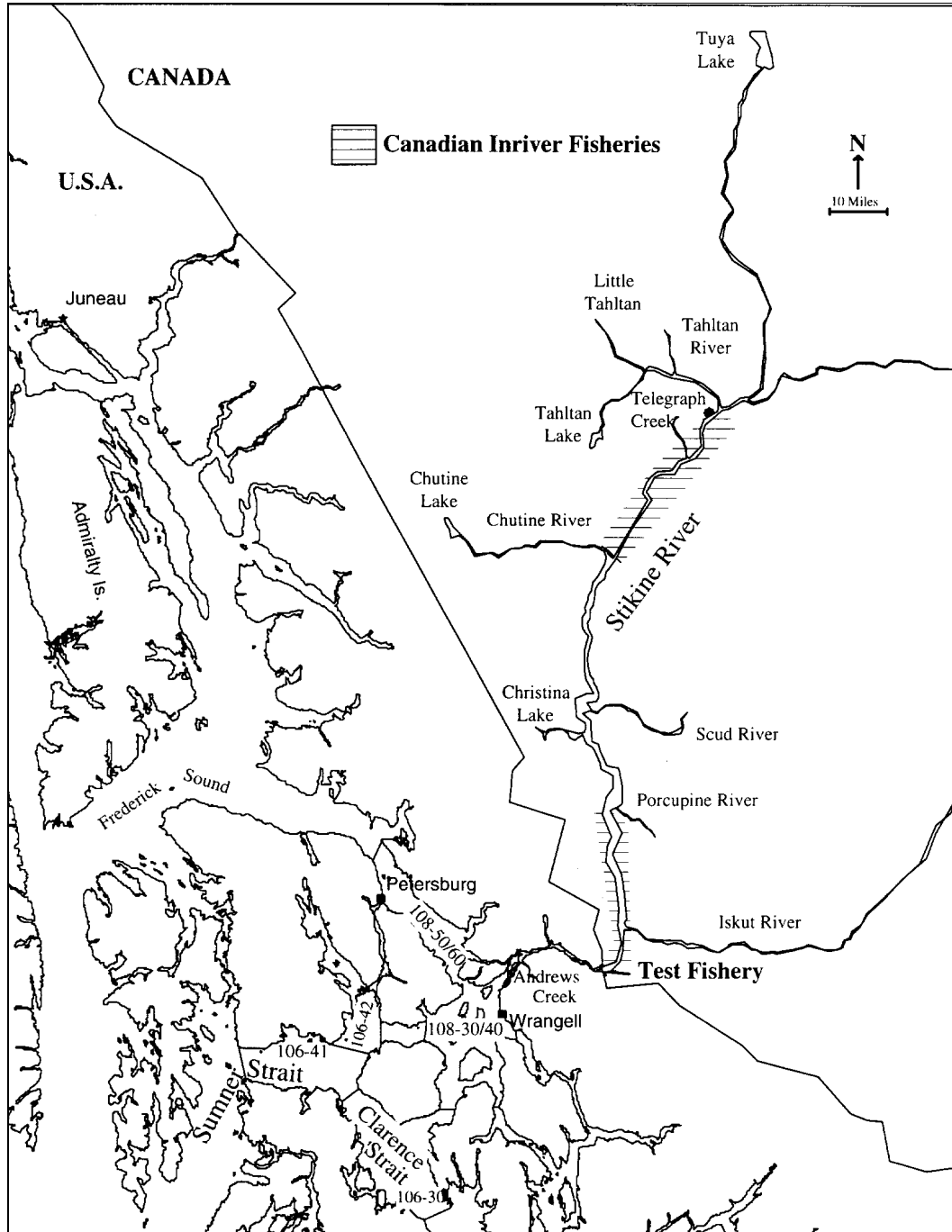


Figure 2. The Stikine River and principal U.S. and Canadian fishing areas.



## 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. Other factors that may influence harvest management include results from in-season mark-recapture program and in-season escapement projections, e.g. projected Tahltan Lake weir counts. 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 keep in weekly contact in order to evaluate the output from the SMM and the outcome of their respective management actions.

## **In-season Data Exchange and Review**

Canada and the U.S. will conduct data exchanges by telephone on Wednesday afternoon or Thursday morning of each week during the fishing season. At that time, current catch statistics and stock assessment data 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 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 endeavor to provide weekly otolith samples from the lower Stikine commercial and test fisheries for pick-up by ADF&G on Tuesday each week for processing and analysis in Juneau; results from preliminary analysis can be expected by Thursday.

## **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.

### Age Composition of Sockeye in Catches

Scales will be collected and used to age fish. Associated fish length and sex composition data will also be collected. The U.S. shall provide scale samples from Subdistricts 106-41&42, Subdistrict 106-30 and District 108 for each fishing week. Canada shall provide scale samples, matched with length and egg diameter data, collected from the lower river commercial and test fisheries each week. Scale samples will be collected from the upper river commercial and the First Nation fisheries. Scale impressions will be available to ADF&G.

### 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 in-season to determine the contribution of planted Tahltan and Tuya sockeye salmon. The in-season run projections will be characterised as small, average or large and the contributions of Tahltan Lake 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, 2004, 2005 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 and 2004 (run sizes >80,000) will be used.

After the fishing season, SPA will be used to recalculate actual contributions of Tahltan and mainstem sockeye stocks to the catches made each week in each subsection of District 106 (Clarence Strait and Sumner Strait), and District 108. Scales will be collected 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, 400 otolith samples will be collected per week in District 108, and 300 otolith samples will be collected from each sub-area in District 106 for in-season analyses. 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. One hundred of the weekly otolith samples from District 106-41 will be matched with scale data for post-season assessment of stock composition accuracy.

### Stock Composition of the Inriver Canadian Catch

Egg diameter data will be used in-season 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 compared to mainstem fish. The Tuya component will be determined from the analysis of otolith samples collected each week.

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 times for the otolith samples from the river will be on Tuesday unless otherwise agreed. Egg and otolith data will be used post-seasonally 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 sex. It is 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 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 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. Additional sampling requirements will include the collection of spaghetti tags applied in the mark-recapture program. DNA samples collected in previous years from females matched with egg diameter measurements will be analyzed to confirm stock ID results from egg measurements.

The post-season sockeye stock composition estimates will be based on egg diameter data and associated thermal mark analyses. As per the commercial fishery, the planted portion of the catch will be determined 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.

The Tuya sockeye escapement will be estimated post-seasonally in a similar way. Mark-recapture results will be used to qualify these estimates.

### 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 large-diameter eggs. Standards for classifying marine catches will therefore be developed from scale samples collected from the Tahltan Lake weir and from both the commercial and test fishery catches in Canada.

Since the weekly proportion of Tahltan - to - mainstem sockeye salmon in the commercial or test fishery is used post-seasonally to determine both the proportion of these two stocks in the entire run, and, the mainstem escapement, it is important to get the best estimate possible. It is agreed that egg diameters from 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. DNA results will 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 2). 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 2006 run size estimated by the model at the end of the fishing season will be updated in the fall/winter of 2006 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 2006 season. A description of the original model is given in the Transboundary Technical Committee Report: **TCTR (88)-2, Salmon Management Plan for the Transboundary Rivers, 1988**. Many subtle changes have been made in the model since that documentation was written and a new documentation is in progress. The purpose of the model is to aid managers in making weekly harvest decisions to meet U.S./Canada treaty obligations for harvest sharing and conservation of Stikine sockeye salmon.

The model for 2006 is based on stock-specific CPUE data from 1985 to 2004 from District 106 and the Canadian commercial fishery in the lower river, and from 1986 to 2004 from the lower Stikine test fishery. 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 below average in 2006, the intercept will be forced to be zero as it has been in years of low abundance. There is a tendency to over-estimate the run size in the earlier weeks during years of low abundance unless it is forced to zero. As in 2003-2005, the model in 2006 will use adjusted data for 1997-2000 in the lower Stikine commercial CPUE which excludes catch and effort data from the Flood Glacier area, i.e. the new area fished during 1997 through 2000. In addition, the weekly CPUE data from 1994-2000 (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 2006 data.

Table 2. Stikine sockeye run sizes: 1979 - 2005

Year	Inriver Run Size	Inriver Catch <sup>a</sup>	Escapement <sup>b</sup>	Marine Catch	Terminal Run Size <sup>c</sup>
<b>a) Total Stikine Sockeye Stocks</b>					
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
<b>b) Tahltan sockeye run size</b>					
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

Table 2 (continued).

Year	Inriver Run Size	Inriver Catch	Escapement	Marine Catch	Total Run Size
<b>c) Tuya sockeye run size</b>					
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	5	3,330
<b>d) Mainstem sockeye run size</b>					
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

Note: <sup>a</sup>Inriver catch includes test fishery catches.

<sup>b</sup>Escapement includes fish later captured for broodstock, sampled and/or taken in ESSR fisheries.

<sup>c</sup>Excludes marine catches outside Districts 106 and 108.

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 to 2000 (excluding the upper fishing area catches when additional nets were introduced into the fishery), is reduced to 75% of the actual CPUE. The terminal run is then determined as the inriver run plus the projected total season catch of Stikine sockeye salmon in Districts 108 and 106. Projections of the District 108 catch will be based on the minimum of: i) the cumulative catch expanded using average run timing; or ii) the U.S. TAC minus the projected District 106 catch. The projected District 106 catch will be based on an assumed harvest rate of 10% on Stikine sockeye, i.e. catch = 10% of the terminal run size; and
3. Starting in 1995, 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.

The 2006 in-season projections of abundance and TAC will be based on the following datasets:

1. Projections through week 25 will be based on the preseason forecast;
2. Projections for weeks 26 and 27 will be based on the preseason forecast augmented with inseason CPUE data from D-108 and inriver;
3. The forecasts for weeks 28 through 30 will be based on the SMM with inputs from the inriver test fishery for weeks 27 through 29. If the test fishery is shortened to less than two days/week due to commercial fishery extensions (note: the test fishery does not operate during commercial openings), commercial data will be used to supplant the test fishery data;
4. After week 30, the SMM will continue to be updated from the lower Stikine inriver test/commercial fishery data, however run forecasts tend to be less reliable after week 30 and should be viewed accordingly;
5. The lower river CPUE data will be presented in the model for comparison with historical data but will not be substantively used for management decisions unless test fish data is inadequate;
6. Historical timing data will be used to provide weekly guideline harvests for each country;
7. Results from the mark-recapture program may be used in conjunction with the SMM to guide decisions in respective fisheries at the manager's discretion. Decisions about which dataset(s) will be used each week will be coordinated by the managers during weekly teleconferences between the Parties.

The reason for excluding forecasts from District 106 data is that 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.

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 1986-2005 average run timing of the stocks and the corresponding average CPUE levels of each fishery.

Table 3. Weekly forecasts of run size and total allowable catch for Stikine River sockeye salmon as estimated inseason by the Stikine Management Model, 2005.

Stat. Week	Start Date	Forecast Run Size	TAC			Cumulative Catches <sup>a</sup>	
			Total	U.S.	Canada	U.S.	Canada
Model runs generated by Canada							
25	12-Jun	477,120	422,909	211,455	211,455		
26	19-Jun	477,120	422,909	211,455	211,455	18,115	659
27	26-Jun	477,120	422,909	211,455	211,455	37,535	14,401
28	03-July	191,917	134,297	67,148	67,148	60,270	30,944
29	10-Jul	189,540	132,564	66,282	66,282	80,783	51,654
30	17-Jul	223,762	167,090	83,545	83,545	91,020	66,465
31	24-Jul	237,574	180,919	90,459	90,459	94,582	75,337
32	31-Jul	253,786	197,199	98,599	98,599	96,695	82,795
33	07-Aug	253,350	196,760	98,380	98,380	100,046	85,782
34	14-Aug	273,724	217,179	108,590	108,590	100,735	85,863
Model runs generated by the U.S.							
25	12-Jun	477,120	421,096	210,548	210,548	464	0
26	19-Jun	477,120	421,096	210,548	210,548	4,063	832
27	26-Jun	477,120	421,096	210,548	210,548	24,197	6,822
28	03-July	174,037	116,068	58,034	58,034	43,838	18,409
29	10-Jul	178,491	132,433	66,221	66,221	70,674	32,351
30	17-Jul	222,687	166,052	83,026	83,026	100,790	52,368
31	24-Jul	247,178	191,640	95,820	95,820	93,645	67,617
32	31-Jul	237,385	180,695	90,348	90,348	95,961	75,888
33	07-Aug	253,791	197,174	98,587	98,587	98,348	79,408
34	14-Aug	274,896	209,154				
Postseason estimate (Table 2)			= 259,680	208,382	103,585	103,585	

<sup>a</sup> does not include test fishery catches

### In-season Use

For 2006, the model predictions will set the TAC levels; however, managers may use additional information to make decisions regarding the openings in their respective fisheries. They will evaluate the output of the model and look for discrepancies with other information they may have on run strength (e.g. mark-recapture results). 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 2005, the preliminary evaluation may be found in: Preliminary Estimates of Transboundary River Salmon Production, Harvest, and Escapement and a Review of Joint Enhancement Activities, 2005, Transboundary Technical Committee, January, 2006. The summarized output of the Stikine Management Model during the 2005 fishing season is presented in Table 3.

## *Coho Salmon*

### **Preseason Forecast**

A qualitative prediction of the 2006 run of coho salmon is that it will be above average in magnitude. This outlook is based on the test fishery CPUE, or extrapolated Stikine test fishery CPUE, of coho salmon in the two principal brood years: 2002 and 2003. Based on a comparison of test fishery CPUE for coho salmon vs. the CPUE for sockeye salmon, the coho escapements of 50,000 in 2002 and 47,000 in 2003 were judged to be above average and within the interim escapement goal range of 30,000 to 50,000 coho salmon. Aerial surveys of several index coho spawning sites followed suit with the 2002 test fish estimate, in that the 2002 count, a record 12,700, was approximately three times the average count (4,100 coho).

### **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**

### United States

The coho salmon drift gillnet fishery season will start during late August or early September. Substantial contributions from several Alaskan hatcheries and from the remote release site at Neck Lake in upper Clarence Strait are expected to contribute coho salmon in the District 106 and 108 fisheries. In-season estimates from CWT recovery data will be used to identify the hatchery component of the harvest. Only the harvest of wild coho 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 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 second consecutive season in 2006. The coho fishery will be open from August 15 to October 1 with a guideline harvest limit 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 personnel use to conduct stock assessment research. The allowable fishing gear for the fishery include 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 in-season by USFS biologists that will remain in contact with the ADF&G commercial fishery managers. Subsistence coho fishing will be closed if the guideline harvest limits are taken before the closing date.

An Alaska State subsistence fishery, targeting coho salmon, will be conducted again in 2006. 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 not including 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.

### Canada

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

## TAKU RIVER

### *Preseason Forecasts*

#### **Chinook Salmon**

The principal brood years contributing to the 2006 Chinook run are 2000, 2001 and 2002. The escapements in these years all fell within the goal range of 30,000-55,000 large (mostly 3-ocean age and older) fish. The preseason forecast for large Chinook salmon in 2006 is based on sibling returns and is 64,150 fish; this is close to the average run size of 54,700 large Chinook. This forecast differs from those produced prior to 2005 as it is for terminal run rather than spawning escapement. Spawning escapement forecasts have assumed relatively consistent exploitation rates; the exploitation rate increased significantly in 2005 with the implementation of new directed fisheries. The 2006 inseason spawning escapement goal is the mid-point of the target range, 42,500 fish; the target for preseason is 55,000, the upper end of the escapement goal range. If the run returns as expected, the allowable harvest could be up to 15,250 fish; this does not include the base level catch 6,400 (US, Canadian and inriver test fisheries).

#### **Sockeye Salmon**

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

The DFO preseason forecast for the 2006 Taku sockeye salmon total run is approximately 204,070 fish and constitutes an average run size. In comparison, the recent 10-year average (1996-2005) estimated run size is 254,000 sockeye salmon. The 2006 forecast is based on a stock-recruitment model; 2005 run size and age composition data is not yet available and hence precludes the development of a sibling forecast. If the run comes in as expected, the 2006 TAC will be approximately 128,000 sockeye salmon.

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

$$\ln (R/S) = 2.5 - 0.000016 \bullet S \quad [4]$$

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

Equation [4] above is based on the estimated return of spawners from the 1984 to 1999 brood years and the subsequent age-specific returns from these escapements.<sup>5</sup> The relationship is significant at a level of  $\alpha=0.05$ . The estimated numbers of spawners from the principal brood years were 142,647 in 2001 and 102,232 in 2002. The calculated returns per spawner for these years based on equation [4] are 1.3 and 2.4, respectively. Assuming that the fish from these brood years mature as per the average age-at-maturity (61% age-5, 29% age-4, 5% age-6, and 5% age-3), the forecast total run size for 2006 is 204,070 sockeye based on stock-recruitment data.

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<sup>5</sup> Escapement estimates for 1981 and for all years after 1984 were based on the Canyon Island mark-recapture program. Annual age-specific returns were estimated assuming the inriver age composition, as determined from sampling in the Canadian commercial fishery, was representative of the entire run.

A declining trend in returns per spawner was noted over the brood years 1988 to 1994 (4.1, 2.8, 2.2, 2.5, 2.0, 1.7, 1.3, respectively), with a slight improvement for the 1995 brood year (1.8). Significantly higher returns/spawner were observed for the 1996, 1997, and 1998 brood years (4.7, 3.8, and a record 5.4 returns/spawner, respectively). However, the return per spawner for the 1999 brood year was only 1.6 and it appears that return from the 2000 brood year was also weak.

Table 4. Taku River sockeye salmon preseason run forecasts vs. post season run size estimates, 1994 to 2005.

Year	Pre-season Forecast (a)	Post Season Run Size	Forecast Performance (b)
1994	237,500	242,800	-2.17%
1995	211,300	252,100	-16.19%
1996	219,000	341,900	-35.95%
1997	285,200	185,100	54.06%
1998	238,100	153,200	55.40%
1999	202,900	193,800	4.71%
2000	273,200	242,200	12.81%
2001	250,500	404,700	-38.12%
2002	293,100	271,200	8.08%
2003	303,800	357,300	-14.97%
2004	231,200	210,400	9.87%
2005	272,100	180,800	50.47%
1994-2005			+/-25.23%

a) pre season forecast based on a average of sibling and stock-recruitment forecasts except for 1995 which was based solely on stock-recruitment.

b) the forecast expressed as % deviation from post season estimate. Negative numbers indicates the projection was lower than the actual return.

*Tatsamenie sockeye salmon:* Escapement of sockeye salmon to Tatsamenie Lake has occasionally limited the magnitude of the joint U.S./Canada egg take program. Based on the average fecundity of approximately 4,000 eggs per female, equal sex ratios and the Canadian guideline that no more than 30% of the escapement can be utilized for enhancement purposes, an escapement of at least 8,300 sockeye salmon will be needed to reach the egg take target of 5 million in 2006. Tatsamenie Lake escapements (including broodstock) have averaged 7,400 fish during the last 10 years, and have ranged from a high of 22,575 (2001) to a low of 1,951 (2004) fish. A below-average run of Tatsamenie sockeye is expected in 2006 based estimated on Tatsamenie Lake wild and enhanced smolt out-migrations of 539,500 and 298,200 in 2003 and 2004, respectively, and the return observed in 2005. When weighted by average age composition, these outmigration estimates were approximately 35% greater than the outmigrations which contributed to the 2005 Tatsamenie sockeye run, of which 3,372 reached the lake. Assuming similar ocean survival and fishing regimes, the smolt counts in 2003 and 2004 predict an escapement of 4,542 fish in 2006. However, it should be noted that the low 2005 return was due in part to poor brood year

survivals (based on enhanced returns<sup>6</sup>, approximately 0.5% and 1.1% for age-1.4 and age-1.5 fish respectively, compared to averages of 0.9% and 3.9%).

### **Coho Salmon**

Based on catch rates in the Taku River CWT program, an estimated 1.6 million coho smolt emigrated during the spring of 2005; these fish will be returning as adults in 2006. If the marine survival rate for these fish is similar to the recent 5-year average (9%), a total run of 151,000 is expected in 2006; if U.S. exploitation rates are also average (36%), the border escapement should be approximately 92,000 fish.

The estimated spawning escapements in the two primary brood years that will contribute to the 2006 coho run were 183,000 fish in 2003 and 219,400 in 2002. These both greatly 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 101,700 over the 1996 to 2005 period.

### **Pink Salmon**

Pink salmon returning in 2006 will be the product of the 2004 escapement. Based on the 2004 Canyon Island fish wheel catch of 8,464 pink salmon, the escapement is believed to have been below average in 2004 (1995 to 2004 fish wheel catches averaged 13,453 pink salmon). However, the fishwheel catch in 2001, which was similar to 2004, was followed by a count of approximately 15,000 fish in 2003. Therefore, the return in 2006 could be below average to average in magnitude.

### **Chum Salmon**

Canyon Island fish wheel chum salmon catch in 2001 and 2002 (250 and 205, respectively) suggest that the 2006 parent year spawning escapements were below average. The 1996-2005 average Canyon Island fish wheel chum salmon catch is 303 fish the run appears to have been depressed for some time. Consequently, a below-average to poor fall chum run is expected in 2006.

### ***Escapement Goals***

Annex IV, Chapter 1 of the PST required the Parties to review an appropriate escapement goal for Taku Chinook salmon by May 1999 and thereafter establish a new goal as soon as practicable. Detailed analyses of harvest and spawning abundance by age class and smolt production were used to generate a recommendation for a 30,000 to 55,000 adult fish (3-5 ocean and mid-eye to fork length of >660 mm) escapement goal range with a point goal of 36,000 large Chinook (McPherson et al 2000). This analysis and recommendation has been reviewed and approved by the previously referenced CTC report (TCCHINOOK (99)-3), internal review committees of ADF&G and DFO and by the TCTR.

Escapement goals for other Taku River salmon species are based on limited analyses of historic 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. The PST also calls 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. It was recommended that a

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<sup>6</sup> Estimated survival of wild fish is based on SPA and is likely less accurate than estimated survival of enhanced fish.

modified escapement goal not be adopted until production from the very high escapements in 2002 and 2003 could be included in the analysis. This recommendation was accepted by the TCTR.

Current escapement goals accepted by the TCTR for salmon spawning in Canadian portions of the Taku River are as follows:

Species	Year established or status	Interim escapement goal ranges	
		from	to
Sockeye	1985	71,000	80,000
Coho	Review by May 1, 2004	27,500	35,000
Chinook	1999	30,000	55,000
Pink	1985	150,000	250,000
Chum	1985	50,000	80,000

### *Harvest Sharing Objectives*

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 concluded by the Pacific Salmon Commission in June 1999. Those harvest sharing arrangements are in effect for 1999 through 2008. The Transboundary Panel 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. This arrangement now forms 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 2006 include:

#### 1. 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 US. 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:

$$AC = \text{Terminal run} - \text{Base terminal run (BTR)}; \text{ where}$$

$$BTR = \text{escapement target} + \text{test fishery BLC} + \text{U.S. BLC} + \text{Cdn BLC}$$

BLCs are as follows:

- U.S. Taku BLC: 3,500 large Chinook <sup>7</sup>
- Canadian Taku BLC: 1,500 large Chinook <sup>8</sup>
- Test fishery: 1,400 large Chinook;

<sup>7</sup> Includes average combined US gillnet and sport catches of Taku Chinook salmon in District 111.

<sup>8</sup> Includes average combined Canadian Aboriginal, commercial and estimated sport catch of Taku Chinook salmon.

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

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.

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:

- (i) non-Taku Treaty Chinook salmon harvested in District 111 will continue to count toward the SEAK AABM harvest limit;
- (ii) the U.S. BLC of Taku Chinook salmon in District 111 will count toward the SEAK AABM harvest limit;
- (iii) 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.

2. Sockeye salmon:

- (i) Except as noted below, Canada shall harvest no more than 18% of the TAC of the wild sockeye salmon originating in the Canadian portion of the Taku River each year;
- (ii) If the projected inriver escapement is greater than 100,000 sockeye salmon, Canada may, in addition harvest 20% of the projected inriver escapement above 100,000 sockeye salmon;
- (iii) The Parties agree to manage the runs of Taku River sockeye salmon to ensure that each country obtains catches in their existing fisheries equivalent to each country’s share of wild sockeye salmon and a 50% share of fish originating from Taku fry plants;
- (iv) The Parties agree to continue the existing joint Taku enhancement program designed to produce annually 100,000 returning sockeye salmon.

### 3. Coho salmon:

- (i) The Parties agree to develop and implement an abundance-based approach to managing coho salmon on the Taku River no later than May 1, 2004. The Parties commit to developing a revised MSY escapement goal to be implemented no later than May 1, 2004.
- (ii) Until a new abundance-based approach is developed, the management intent of the United States is to ensure a minimum above-border inriver run of 38,000 coho salmon, and the following arrangements will apply:
  - a. no numerical limit on the Taku coho catch will apply in Canada during the directed sockeye salmon fishery (through statistical week 33);
  - b. if in-season projections of above-border run size are less than 50,000 coho salmon, a directed Canadian harvest of up to 3,000 coho salmon is allowed for assessment purposes as part of the joint Canada/U.S. Taku River mark-recapture program;
  - c. if in-season projections of above-border run size exceed 50,000 coho salmon, a directed Canadian harvest of 5,000 coho salmon is allowed;
  - d. if in-season projections of above-border run size exceed 60,000 coho salmon, a directed Canadian harvest of 7,500 coho salmon is allowed;
  - e. if in-season projections of above-border run size exceed 75,000 coho salmon, a directed Canadian harvest of 10,000 coho salmon is allowed.

#### *Management Procedures*

The management co-ordination between U.S. and Canadian fishery managers will involve weekly communication between designated members or alternates. Canada and the U.S. will conduct data exchanges by telephone on Wednesday afternoon or Thursday morning of each week during the fishing season. At that time, current catch statistics and stock assessment data 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 2005 Chinook agreement (see Paragraph 3(a) (3) of Annex IV, Chapter 1 of the PST) included the following management details for directed Taku Chinook salmon fisheries (for Chinook greater than 659 mm mid-eye to fork length):

- 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 will be developed by the Parties by apportioning their allowable harvest over the total Chinook season based on historical weekly run timing.
- By 2008, the Parties agree to develop and implement through the Committee an agreed Chinook stock identification program to assist the management of Taku Chinook salmon.
- A preseason forecast of the Taku River Chinook salmon terminal run<sup>9</sup> size will be made by the Committee by February 1 of each year.
- In 2005 and 2006, directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the upper end 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 in 2005 and 2006, such fisheries will not be implemented unless the projected terminal run size exceeds the mid-point of the escapement goal range plus the combined Canada, U.S. and test fishery BLCs of Taku 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 escapements in 2005 and 2006 are less than the escapement goal point estimate ( $N_{MSY}$ ), the Parties agree to review the 2005 and 2006 directed fisheries and implement additional precautionary management measures intended to achieve the escapement goal point estimate ( $N_{MSY}$ ) in 2007 and 2008.
- In 2007 and 2008, directed fisheries may be implemented based on preseason forecasts only if the preseason forecast terminal run size equals or exceeds the escapement goal point estimate ( $N_{MSY}$ ) 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 in 2007 and 2008, 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 Taku River Chinook salmon. The Committee shall determine when inseason

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<sup>1</sup> 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.

- If 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, weekly projections of the terminal run will be made using the following calculations:

$$TR = [(P_t + Cus_{(t-1)})/p_t] \quad [5]$$

Where: TR = the projected terminal run of large Chinook for the season;  
P<sub>t</sub> = the inriver population estimate from the mark-recapture program through week “t”;  
Cus<sub>t-1</sub> = the cumulative US Chinook catch to week “t-1”, i.e. US catch lagged one week to account for migration timing;  
p<sub>t</sub> = 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.

### 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 independent approaches for projecting run sizes from the mark recapture estimates, the respective projections will be available throughout the season.

A coordinated management focus will occur on Tatsamenie sockeye in Taku Inlet in the U.S. drift gillnet fishery during SW 30-32 (July 16-August 05) and during SW 31-33 (July 23- August 12) in the Canadian fishery. Management measures during these periods will attempt to ensure adequate numbers of sockeye salmon escape to Tatsamenie Lake (at least 6,000 sockeye to the weir). 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. 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.

If the run of enhanced Tatsamenie sockeye appears to be significant, attempts will be made to manage it in addition to the wild and total sockeye runs, as follows:

1. For purposes of calculating the TAC of the enhanced fish, because Tatsamenie stocks overlap wild stocks, the appropriate wild stock exploitation rate will be applied to the total enhanced run forecasts. The Taku sockeye exploitation rate has averaged 56% from 1996-2005.

2. The stock composition in D-11 (inseason otolith analysis combined with historical, i.e. previous 10-year average, contributions of wild Snettisham and wild Taku sockeye) will be used to initially estimate the proportion of run projections produced from the joint Canada/US mark-recapture program attributed to the enhanced fish. When available, inriver stock ID data (otolith data) will be used to update the estimates.
3. Average run timing of the Tatsamenie stock, from historical tagging and/or stock ID data, will be used in the Tatsamenie projections.

## **United States**

The 2006 bilaterally agreed on preseason forecast of 64,150 large Chinook salmon is insufficient to open the District 11 directed Chinook salmon fishery at the beginning of May. Later in May however, inseasonterminal run projections will be available and will be used to determine if a directed fishery is warranted. The earliest this could conceivably occur would be in statistical week 20, but more realistically, the earliest possible inseasonterminal run projection will be generated in statistical week 21. If the opportunity does arise to prosecute a directed Chinook fishery in District 11, the earliest possible starting date will likely be Monday, May 22. Updates on progress towards the first Taku Chinook inseasonterminal run projection will be included in department drift gillnet news releases in May.

If directed Chinook salmon fishing in District 11 is to occur, drift gillnet openings in Section 11-B will begin on a Monday at 12:01 p.m., and close at 12:00 noon on the day specified. There will be no openings on weekends or holidays. The length of subsequent openings will 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 minimum mesh size, with no maximum mesh restriction through the third Sunday in June for the District 11 gillnet fishery. The standard 200-fathom length and 60-mesh deep net restrictions will be used in this fishery.

Chinook salmon less than 28" that are harvested in the commercial drift gillnet fisheries may be retained and sold as usual. Chinook salmon less than 28" in length and those of Alaska hatchery origin will not be counted against the Alaskan share of the allowable harvest. Only fish 28 inches in length or greater may be retained in the troll fishery.

The waters open to drift gillnet fishing prior to the third Sunday in June 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 east and south 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.

Sport fishing regulations in District 11 will be liberalized when there is any allowable harvest. The liberalizations include:

1. Taku Inlet north of Cooper Point is open;
2. Resident daily bag limit is 3, possession limit is 3 fish;
3. Non-resident daily bag limit is 2, possession limit is 2 fish;
4. Non-resident annual limit is 5;
5. Number of rods an angler can fish for both resident and non-resident is 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 20% of the harvest. In addition, tissue samples will be taken from any Chinook salmon harvests in directed fisheries in District 111 and processed postseason in the Alaska Department of Fish and Game Gene Conservation Laboratory in Anchorage. The Northern Fund provided funding for this project.

For the sockeye season, Section 11-B (Figure 2) will open for a 72-hour fishing period beginning at noon on the third Sunday in June (June 18, statistical week 25). The fishery will be managed through mid-August primarily on the basis of sockeye abundance. Run strength will be evaluated using fishery 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 total season projections of total Taku sockeye run size, U.S. Taku TAC and U.S. harvest. The age and stock compositions of the harvest of wild sockeye stocks will be revised after the fishing season by analysis of scale pattern and brain parasite incidence data from samples from the commercial harvest and escapements.

Returns from domestic hatchery programs are expected to contribute significantly to the District 11 fishery in 2006. The return of Snettisham hatchery sockeye salmon is expected to be about 265,000 sockeye and the DIPAC summer chum return to Gastineau Channel and Limestone Inlet is expected to be nearly 1,500,000 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. Extended fishing time is expected 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 above the long-term average; some surplus to escapement needs may occur in 2006.

In 1989 the Alaska Board of Fisheries reopened the purse seine fishery in a small area in northern Chatham Strait (a portion of subdistrict 112-16) during the month of July in order to harvest pink stocks

migrating northward to Taku River, Lynn Canal and upper Stephens Passage. The area encompasses waters along the western shore of Admiralty Island north of Point Marsden (Figure 3). If a harvestable surplus of pink salmon returning to this area occurs in 2006, a July seine fishery may occur in 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 Annex IV, Chapter 1 of the PST, the U.S. will manage its fishery to achieve a minimum above-border run of 38,000 Taku coho salmon.

To increase numbers of fall chum salmon returning to the Taku River, management will focus on statistical weeks 35-36 (August 20– September 9). 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.

The Chinook sport fishing season will be open in marine waters near Juneau throughout the year. If the inseason terminal run projection supports a directed commercial Chinook fishery, the sport fishing methods and bag limits will be liberalized.

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 2006. 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**

The Taku River commercial fishery will open 12:00 noon Sunday, April 30 for an initial 48-hour period to target Chinook salmon. Mesh sizes will be restricted to between 100 mm (four inches) and 204 mm (8 inches). Maximum mesh size maybe reduced if there is a need to conserve Chinook salmon during the early season sockeye fishery.

Canadian Chinook management decisions for the Taku River fishery (Figure 3) will be based on weekly projections of terminal run size and weekly guideline harvests. The Canadian catch will be adjusted with the objective of meeting escapement and agreed Canada/US harvest sharing objectives.

For the sockeye season, the Taku River commercial fishery will open 12:00 noon Sunday, June 18 for an initial 72-hour period to target early sockeye runs unless otherwise modified based on Chinook considerations. If the directed Chinook fishery is closed for conservation concerns, a maximum mesh size restriction of 150 mm (approximately 6 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 will be based on weekly projections of terminal run size, TAC and escapement for wild stocks. The weekly projections (wild stocks) will be made using the following calculations:

$$TAC_{(w)} = [(E_{w(t)} + C_{w(t)} + A_{w(t-1)}) / \rho_{w(t)}] - E_w \quad [6]$$

Where:  $TAC_{(w)}$  = the projected total allowable catch of wild  $w$  sockeye for the season;  
 $E_{w(t)}$  = the cumulative wild escapement to week  $t$  based on mark-recapture data;  
 $C_{w(t)}$  = the cumulative Canadian wild catch to week  $t$ ;  
 $A_{w(t-1)}$  = the estimated cumulative U.S. catch of wild Taku sockeye salmon to the preceding week  $t-1$  (preceding week used to allow for migration time). Catches in Districts 111 and 112 will be considered for inclusion in this estimate;  
 $\rho_{w(t)}$  = the estimated proportion of run through to week  $t$  determined from the average inriver run timing based on historical CPUE data from the Canadian fishery. (Run timing estimates will be adjusted 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 reflecting 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.

During statistical weeks 31-33 (July 25-August 14), management attention will focus on Tatsamenie sockeye. Management decisions during these weeks will take into account the objectives of providing sufficient fish to meet broodstock targets for the joint enhancement project, and increasing escapement into Tatsamenie Lake.

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

$$R_{(ACI)} = 3.0079C_T + 34,936 \quad [7]$$

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

The coefficient of determination for this relationship is  $r=0.952$ . The projected troll catch will be estimated by expanding the catch-to-date by historical timing. The troll-based in-season run forecasts will be used for consideration in management decisions until reliable in-river abundance estimates are available, usually by early September.

The in-river coho projections will be based on the following simplified formula:

$$R_{IR(ACI)} = R_{(ACI)}t/T \quad [8]$$

Where:  $R_{IR(ACI)}$  = projected total inriver run above Canyon Island;  
 $R_{(ACI)}t$  = 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.

To address chum salmon conservation concerns, the retention of chum salmon will be prohibited throughout the season. In addition, fishers must release any pink salmon and steelhead caught.

Modifications to the fishing area implemented in 1998 to include a 50 meter closed section just upstream of the Canada/US border will continue to be in effect in 2006. 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.

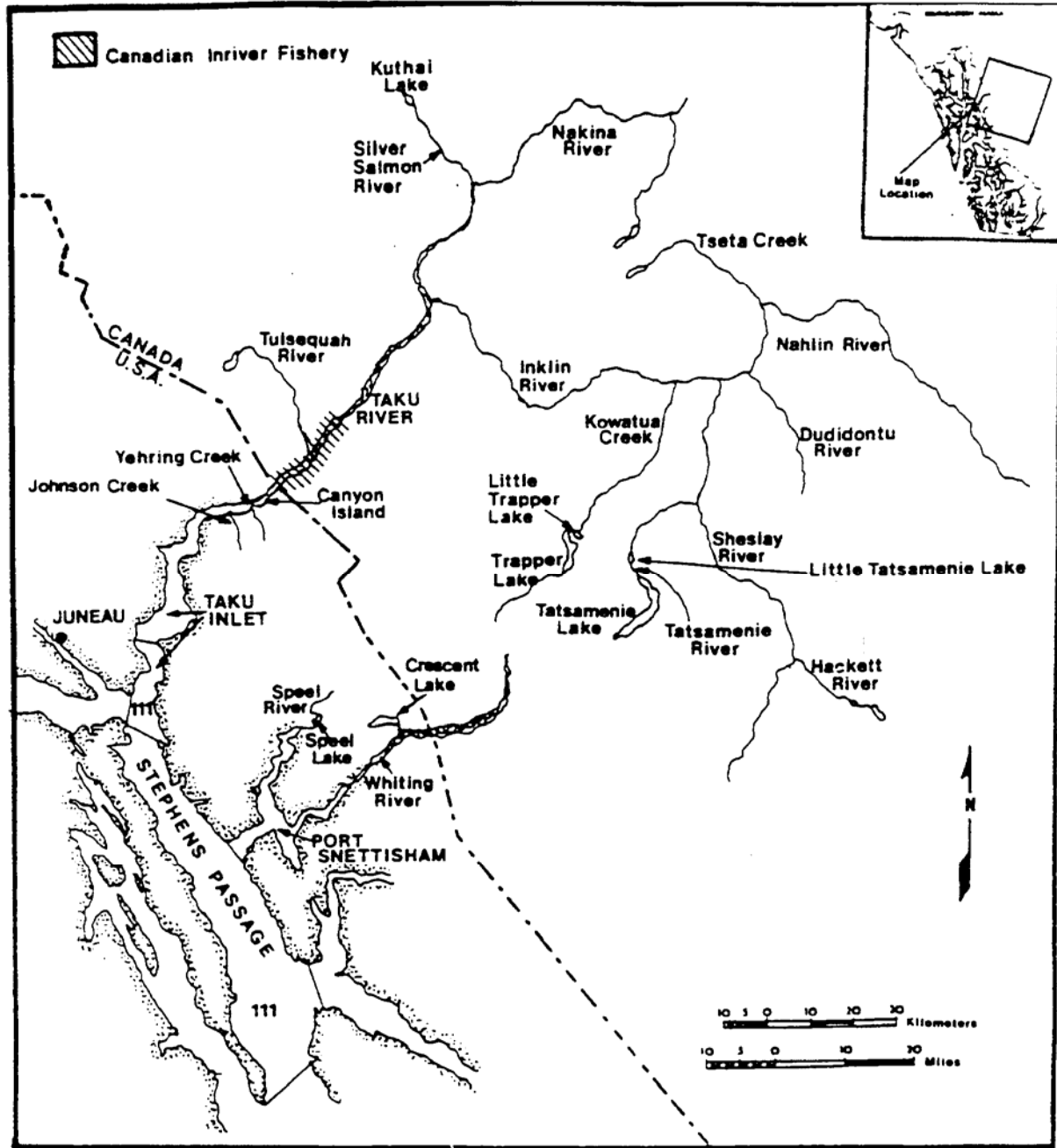


Figure 3. The Taku River and principal U.S. and Canadian fishing areas.



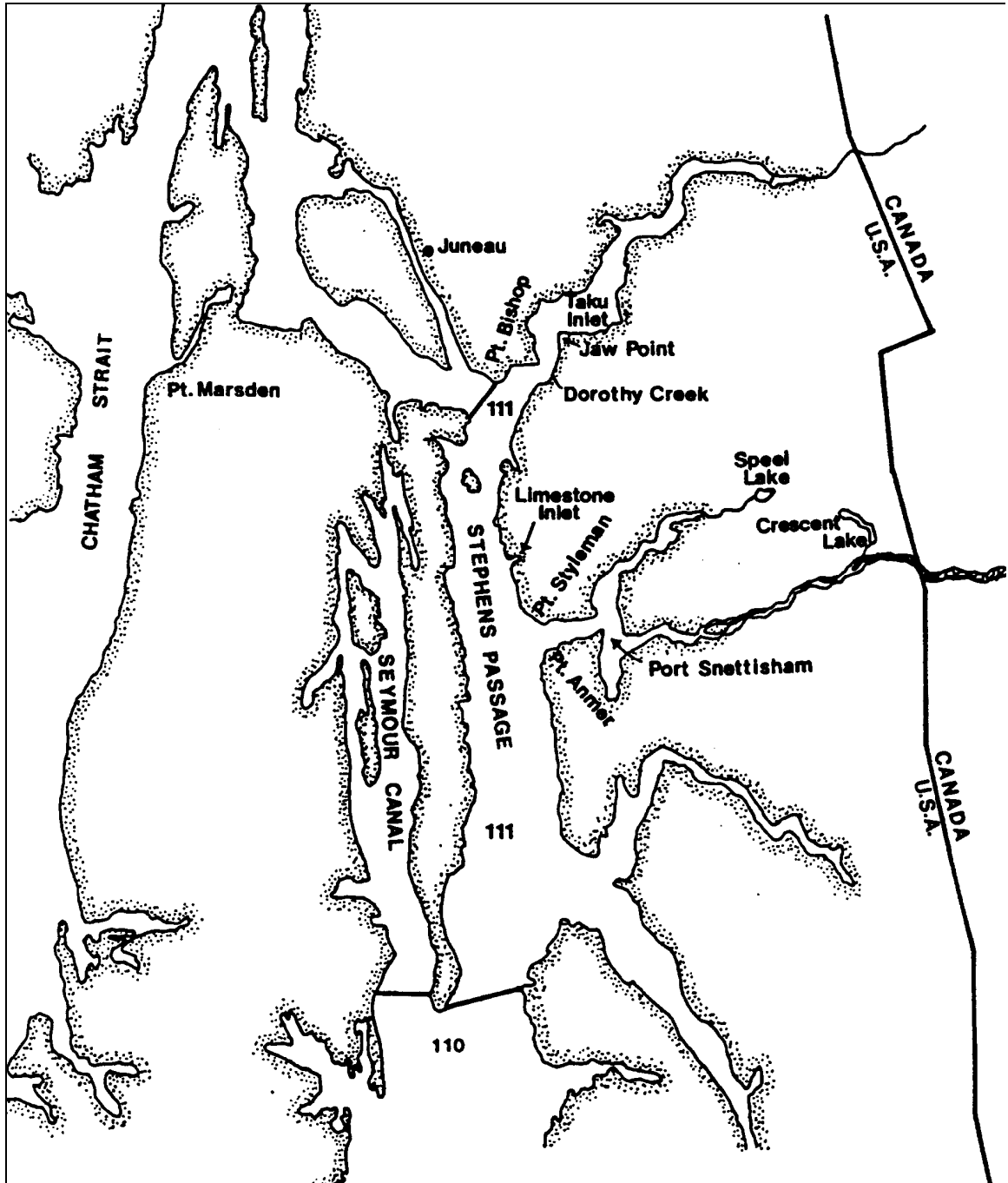


Figure 4. U.S. fishing areas adjacent to the Taku River.

## ALSEK RIVER

### *Fisheries*

Salmon stocks returning to the Alsek River drainage (Figure 5) 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 fishery takes place in the upper Tatshenshini drainage. At present, between 100-150 members of CAFN harvest salmon via fish traps and gaffs, primarily in the Klukshu River, and to a lesser extent in Village, Blanchard and Goat creeks. Recreational fisheries take place primarily on the Tatshenshini River in the Dalton Post area and on the Takhanne and Blanchard rivers. For 2006, the following closed/open times will be in effect: the Dalton Post area of the Tatshenshini River will be open seven days per week; the closed times for Klukshu River, Nesketahen Lake and Village Creek are to June 15 to November 30; the salmon non-retention periods on the Takhanne and Blanchard rivers are July 24 to August 31; and salmon non-retention in Klukshu Lake is year round.

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

### *Preseason Run Outlooks*

The 2006 overall Alsek drainage sockeye run is expected to be approximately 66,700 sockeye; this is below the recent 10-year average run size estimate of approximately 77,200 sockeye (based on the Klukshu weir count expanded by 1/0.27 to account for other in-river escapement and an assumed U.S. harvest rate of 0.20). The outlook for 2006 is based on a predicted run of 18,000 Klukshu sockeye derived from historical Klukshu stock-recruitment data and an assumed Klukshu contribution to the total run of 27%, based on preliminary radio telemetry (2001-03) and mark-recapture (2000-04) results. Principal contributing brood years will be 2001 (Klukshu escapement of 9,329 sockeye salmon) and 2002 (Klukshu escapement of 23,587 sockeye salmon); the 1996-2005 average Klukshu sockeye escapement is approximately 12,500 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.

The Klukshu early sockeye run escapement of 908 sockeye in 2001 was below average; whereas, the 2002 early run escapement was well above average, 11,904 fish. The principal brood year, 2001, was well below the optimum level of 2,500 sockeye spawners as determined through separate stock-recruitment analyses of the early run conducted by DFO. The weir count in 2002, a contributor of age-4 sockeye to the 2006 return, was well above the optimum escapement goal, as determined from the analysis. The early run return to the weir is expected to be 2,600 fish in 2006, which falls just above the optimum escapement goal of 2,500 and slightly below the recent ten year average of 3,000 sockeye salmon.

The Klukshu Chinook escapements in 2000 and 2001, 1,321 and 1,738 Chinook salmon, respectively, were well below average. However, the escapements were within the optimum escapement range of 1,100 to 2,300 Chinook salmon as determined from current stock-recruitment analysis. Based on these primary brood year escapements, the outlook for 2006 is 3,100 Klukshu Chinook, slightly above the recent ten year average (2,836) and above the optimum escapement range.

The coho escapements at the Klukshu River weir in 2002 (9,921) and 2003 (3,689) suggest the run in 2006 will be above 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 2,900 coho salmon.

### ***Management Approach for the 2006 Season***

The principal escapement monitoring tool for Chinook stocks on the Alsek River is the Klukshu River weir. A joint report for an escapement goal for the Klukshu stock has been reviewed and accepted by both DFO and ADF&G, which recommends an escapement goal range of 1,100 to 2,300 Chinook spawners in the Klukshu drainage (McPherson, Etherton and Clark 1998). Canadian and U.S. managers have agreed to a minimum escapement goal of 1,100 spawners in the Klukshu drainage in 2006.

The principal escapement monitoring tool for sockeye stocks on the Alsek River is also the Klukshu River weir, operated by DFO and the CAFN. 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 2006.

### **United States**

U.S. fisheries will operate similar to regimes in 2001-2005, with the fishery opening on June 4 for one day. The remainder of this fishery will be managed based on sockeye run strength which is expected to be below average. 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 2006 harvests most likely will not be greater than this amount. Gill nets will be restricted to a maximum mesh size of 6 inches (152 mm) through July 1 to minimize Chinook harvests.

The U.S. will conduct an Alsek River Chinook salmon test fishery as agreed to bilaterally in the Transboundary Panel in February 2005. The test fishery shall commence in statistical week 20 (week beginning May 14) and continue through statistical week 25 (week ending June 24). The maximum harvest limit for the duration of this test fishery is 500 Chinook salmon. The harvest shall be distributed as closely as possible to the following schedule to approximate historical run timing.

<b>Week</b>	<b>Start Date</b>	<b>End Date</b>	<b>Maximum Weekly Harvest</b>
20	May 14	May 20	50 Chinook
21	May 21	May 27	120 Chinook
22	May 28	June 03	130 Chinook
23	June 04	June 10	120 Chinook
24	June 12	June 17	50 Chinook
25	June 18	June 24	Up to 30 Chinook

Coho salmon will be managed by monitoring fishery performance data and comparing it to historical fishery performance data. The 2006 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, as documented in the CAFN final land claim agreement. Similar to 2005, some First Nation's sockeye harvest will be allowed to occur at the weir which will also provide biological samples.

In the sport fishery, 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 above the minimum targets, Canadian managers may liberalize harvest opportunities. If run forecasts are below minimum weir targets, fishery restrictions will be considered beginning in the recreational fishery. 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, Canadian managers may allow sockeye retention in the sport fishery prior to August 15. For coho salmon, additional harvesting opportunities through increased catch limits in the recreational 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 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 A3.

In addition to the projects listed in Appendix Table A.3 the consulting firm LGL will conduct a detailed analysis of Alsek River sockeye stock assessment and research data. This project was accepted for funding by the Northern Fund Committee. A final report summarizing the results of this analysis will be available later in 2006.

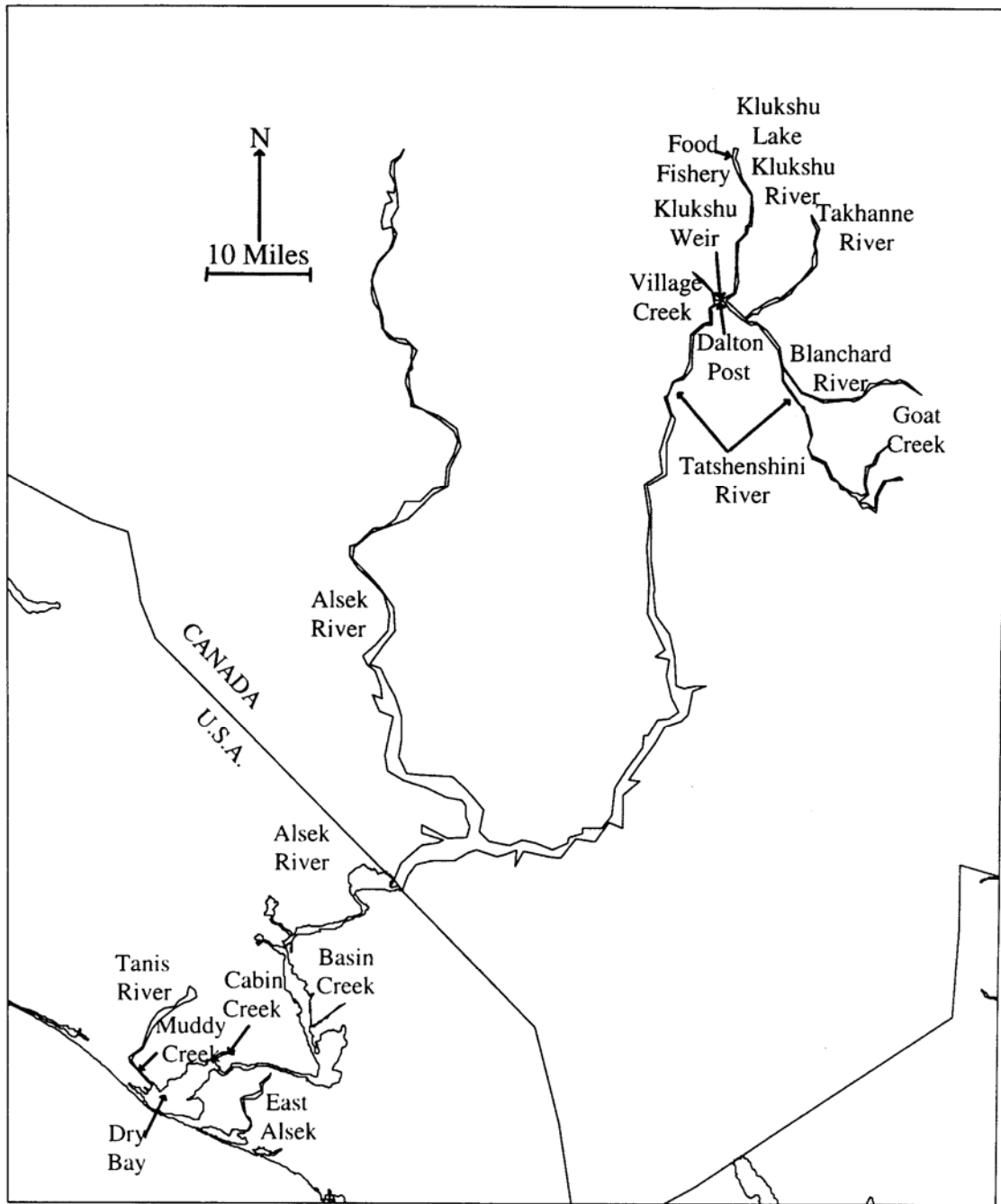


Figure 5. The Alsek River and principal U.S. and Canadian fishing areas.

## 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. 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 A4.

### *Fry Plants*

Fry plants from the transboundary sockeye egg-takes in 2005 are scheduled to occur in May and June 2006. It is expected the following number of sockeye fry will be out-planted:

Stikine drainage:	Tahltan Lake: 1.3 million Tuya Lake : 2.3 million
Taku drainage:	Tatsamenie Lake: 1.6 million

At Tahltan Lake we plan to transport fry on three flights during the period from May 15 to May 30. Fry will be held for approximately 24 hours in net pens for observation. Fry destined for Tuya Lake are expected to be transported in five flights the first 15 days in June.

At Tatsamenie Lake, the plan is to transport fry on four flights during the period from May 20 to May 30. There will be two groups of fry, a north shore release and a south shore release. Fry will be held for approximately 24 hours in net pens for observations.

### *Egg-Take Goals*

Target sockeye eggtakes for the fall of 2006 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 30.

Tatsamenie Lake: 5.0 million.

- The recommended egg-take goal is 5.0 million (or a maximum of 30% of the escapement);
- A minimum of 0.5 million and up to 0.8 million of the eggs may be incubated in a passive flow incubator in Tatsamenie Lake; the remainder will be incubated at Snettisham Hatchery;
- The sockeye run outlook for Tatsamenie is below average and the enhancement committee has developed a sliding plan for incubation locations. No eggs will be put in the passive flow incubator in Tatsamenie Lake unless there are at least 2.5 million eggs available. If 2.5 million eggs are available, 500,000 eggs may be placed in a passive flow incubator in Tatsamenie Lake; the remainder will be incubated at Snettisham Hatchery. The box will not

be filled to capacity (0.8 million) until there are at least 3.3 million eggs available; the remainder will be incubated at Snettisham Hatchery.

### *Special Studies*

Canada with Alaska Fish and Game participation intends to continue to examine the improvement of terminal harvest capability in the Tuya River.

A small study at Shakes Creek is planned to examine if the spawning sockeye observed in 2001, originating from Tuya Lake, result in adult sockeye production in 2006.

One or more Alaskan Scientists plan to visit egg take operations at Tahltan and Tatsamenie Lakes.

### **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.

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**APPENDIX: 2006 ANTICIPATED TRANSBOUNDARY FIELD PROJECTS**

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

**Appendix Table A1. Proposed Stikine River field projects,**

Project/Dates	Function	Agency	Involvement
<b>Stikine Chinook Mark-Recapture</b>			
5/8 - 7/15	<ul style="list-style-type: none"> <li>Tag a target of 940 large Stikine River Chinook salmon captured from Kakwan Point drift net site.</li> </ul>	ADF&G/ DFO/TIFN	All aspects except tag recovery.
	<ul style="list-style-type: none"> <li>Tag a target of 300 large Chinook salmon at Rock Island set net site.</li> </ul>	ADF&G	All aspects except tag recovery.
	<ul style="list-style-type: none"> <li>Recover spaghetti tags and CWT's from: Canadian fisheries; Little Tahltan weir; Shakes Cr. and from Iskut tributaries (Verrett, Craig). Tags may also be recovered from other spawning sites.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Recover CWT's from the fish caught at the tagging site.</li> </ul>	ADF&G/ DFO/TIFN	All aspects
<b>Tahltan Lake Smolt Estimation</b>			
5/6 - 6/27	<ul style="list-style-type: none"> <li>Enumerate Tahltan Lake sockeye smolts.</li> <li>Sample up to 800 smolts for age, size, and otoliths.</li> </ul>	DFO/TIFN	All aspects
<b>Upper Stikine Sampling</b>			
6/30 - 8/25	<ul style="list-style-type: none"> <li>Sample up to 600 sockeye for age, sex, size, egg diameters and otoliths proportionally from the TIFN and commercial fishery at Telegraph Cr.; collect spaghetti tags.</li> </ul>	TIFN/  DFO	Collect samples and data.  Data analysis
	<ul style="list-style-type: none"> <li>Sample up to 500 Chinook for age, sex, size, and tags.</li> </ul>	TIFN  DFO	Sampling  Data analysis
<b>Stikine Sockeye Mark-recapture</b>			
6/10- 9/5	<ul style="list-style-type: none"> <li>Tag a minimum of 1,200 Stikine River sockeye, as well as incidental Chinook and coho captured at the Rock Island set net site; collect weekly DNA (pooled) samples.</li> </ul>	DFO/ ADF&G/ TIFN	All aspects except tag recovery
	<ul style="list-style-type: none"> <li>Recover tags from the Canadian fisheries and from the Tahltan weir and at Tuya. Tags may also be recovered from other spawning sites.</li> </ul>	DFO/TIFN	All aspects



Appendix Table A1. (cont'd)

Project/Dates	Function	Agency	Involvement
	<ul style="list-style-type: none"> <li>Tag up to 500 sockeye with radio and spaghetti tags at Rock Island in proportion to run timing. Collect DNA matched with radio tags from all.</li> </ul>	DFO/ ADF&G/ TIFN	All aspects
<b>Little Tahltan Chinook Enumeration</b>			
6/13 - 8/15	<ul style="list-style-type: none"> <li>Enumerate Little Tahltan Chinook salmon from a weir located at the mouth of the river.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Sample 1,300 fish for tags, 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.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Enumerate and record tags observed.</li> </ul>	DFO/TIFN	All aspects
<b>Stikine Coho Mark-Recapture</b>			
9/6 - 10/17	<ul style="list-style-type: none"> <li>Tag a minimum of 1,500 Stikine River coho salmon captured from the Rock Island set net site; collect weekly DNA samples.</li> </ul>	DFO/ ADF&G/ TIFN	All aspects except tag recovery
	<ul style="list-style-type: none"> <li>Recover tags from the Canadian fisheries. Tags may also be recovered from other spawning sites.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Recover CWT's from the fish caught at the tagging site. CWT samples to go to ADF&amp;G lab.</li> </ul>	ADF&G/ DFO/TIFN	All aspects
<b>Test Fishery in Lower Stikine</b>			
5/8 - 10/17	<ul style="list-style-type: none"> <li>Conduct a test fisheries for Chinook, sockeye and coho as required (to fill in when no commercial fishing) to assess run size and run timing. Collect age-sex-size information and recover CWT's from all salmon. Recover spaghetti and/or radio tags.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Sample all Chinook for tags/ tag loss, CWT's and for age-sex- size. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made. Target for large Chinook retention is 1,400 fish.</li> </ul>	DFO	All aspects
	<ul style="list-style-type: none"> <li>Sample up to 400 sockeye per week for otoliths matched with scales and, for females, with egg diameters. Transfer otolith samples to ADF&amp;G weekly for in-season processing.</li> </ul>	DFO/TIFN	All aspects
	<ul style="list-style-type: none"> <li>Sample all coho for spaghetti tags, tag loss and CWT's; 500 for age-sex-size. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	DFO/TIFN	All aspects

Appendix Table A1. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Commercial Inriver Fishery Stock ID Sampling</b>			
6/22 - 9/4	<ul style="list-style-type: none"> <li>Commercial catch sampling for sockeye to include 350/week for age-sex-size, plus up to 150 matched egg-diameter/otolith samples. Otoliths to be picked up by ADF&amp;G.</li> <li>Recover spaghetti and radio tags, CWT's. CWT samples to go to DFO, unless other arrangements are made</li> </ul>	DFO/TIFN	All aspects
<b>Commercial Inriver Fishery Stock ID Sampling (Cont'd)</b>			
	<ul style="list-style-type: none"> <li>Analyse 60 to 200 otolith samples per week.</li> </ul>	ADF&G	In-season processing of otoliths
<b>District 106 &amp; 108 Stock ID Sampling</b>			
6/15 - 10/7	<ul style="list-style-type: none"> <li>Sample 20% of Chinook and coho catches per district for CWT's; sample Chinook, sockeye and coho for scales (for aging), sex, and size (scale sampling goals are 600 sockeye per D108, D106-41, D106-30 per week and 600 coho and Chinook from D108 and D106 during the season).</li> <li>Collect 400 sockeye otoliths/week in District 108 (if open), 300 in Subdistrict 106-41 (100 matched with scale samples), 300 in Subdistrict 106-30.</li> </ul>	ADF&G	All aspects
<b>Andrew Creek Salmon Enumeration</b>			
7/25 - 9/13	<ul style="list-style-type: none"> <li>Survey Andrew Creek, count all species and recover tags opportunistically.</li> <li>Sample minimum 250 Chinook for age-sex-size, spaghetti- and coded-wire tags.</li> </ul>	ADF&G	All aspects
<b>Tahltan Lake Salmon Enumeration</b>			
7/7 - 9/12	<ul style="list-style-type: none"> <li>Enumerate Tahltan Lake sockeye entering the lake at weir.</li> <li>Live-sample a minimum of 600 fish for age, sex and size and 125 fish per day for tags and sex.</li> <li>If escapement goal is achieved, sample up to 400 sockeye for both otoliths and egg diameters (400 additional fish will be sampled from the brood stock take). If the return is weak, fish will not be sacrificed for otoliths. Attempts will be made to obtain samples from broodstock or carcass samples.</li> <li>Sample 150 post-spawn Chinook in Johnny Tashoots Creek for age, size, sex and tags.</li> <li>Conduct ESSR fishery at Tahltan Lake if escapement targets likely to be exceeded (schedule as per ESSR license).</li> </ul>	DFO/TIFN	All aspects

Appendix Table A1. (cont'd)

Project/Dates	Function	Agency	Involvement
7/12 - 8/27	<ul style="list-style-type: none"> <li>Harvest as many sockeye as possible in Tuya River.</li> <li>Examine all fish caught for tags (spaghetti radio) and tag loss.</li> <li>Sample up to 600 sockeye for otoliths, age-sex-size, and egg diameters.</li> </ul>	DFO/TIFN	All aspects
3/15 – 5/31	<ul style="list-style-type: none"> <li>Install flow diversion structure at capture site.</li> </ul>	DFO/ ADF&G	All aspects Funding support
3/1 -	<ul style="list-style-type: none"> <li>Develop proposal to be submitted to Northern Fund for design, construction and testing of new capture structure. Start work immediately if proposal approved.</li> </ul>	DFO with support from ADF&G	
<b>Chinook and Coho CWT</b>			
4/15 - 6/09	<ul style="list-style-type: none"> <li>Targets are 22k Chinook smolts and 20k coho smolts.</li> <li>Sample minimum 300 coho and Chinook for age-length-weight.</li> </ul>	ADFG/ DFO/TIFN ADFG/ DFO/TIFN	All aspects All aspects
<b>Chinook and Sockeye DNA Stock ID Baseline</b>			
8/1 - 9/30	<ul style="list-style-type: none"> <li>Target is 150 samples/stock</li> <li>Up to four separate stocks to be sampled/spp.</li> </ul>	DFO	All aspects
<b>Chinook Creel Census</b>			
6/5 - 8/6	<ul style="list-style-type: none"> <li>Survey anglers in the Tahltan River</li> <li>Sample for spaghetti- and coded-wire tags, age, size, sex.</li> </ul>	TIFN/DFO	All aspects
<b>Shakes Creek Chinook &amp; Sockeye sampling</b>			
8/11 - 8/20	<ul style="list-style-type: none"> <li>Collect spaghetti and coded-wire tags, age-sex-size data from spawned out Chinook</li> <li>Enumerate spawning escapement of Chinook and sockeye</li> <li>Sample all incidental sockeye for age-sex-size and tags and up to 100 for otoliths.</li> </ul>	TIFN TIFN TIFN	All aspects All aspects All aspects
<b>Chinook Aerial Surveys</b>			
7/30 - 8/15	<ul style="list-style-type: none"> <li>Enumerate Chinook salmon spawning in Little Tahltan and Andrew Cr tributaries.</li> </ul>	ADF&G	All aspects
<b>Coho and Sockeye Aerial Surveys (funding permitting).</b>			
9/4 - 11/01	<ul style="list-style-type: none"> <li>Enumerate Stikine River coho and sockeye salmon spawning in select index areas within the Canadian portion of the Stikine River.</li> </ul>	TIFN/DFO	All aspects

Appendix Table A1. (cont'd)

Project/Dates	Function	Agency	Involvement
10/5 - 10/31	<ul style="list-style-type: none"> <li>Enumerate coho salmon spawning in the US section of the Stikine River.</li> </ul>	ADF&G	All aspects

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**Contacts: Stikine Projects**

Pete Etherton/ Bill Waugh	(DFO)	All DFO projects.
Sandy Johnston	(DFO)	All DFO projects.
Cheri Frocklage or Marilyn Norby	(TIFN)	Inriver sampling projects.
Keith Pahlke, John Der Hovanisian	(ADF&G)	Chinook tagging and surveys; Andrew Creek sampling.
Kathleen Jensen/ Jim Anandel	(ADF&G)	106&108 samples, stock assessment, sockeye and coho tagging.
Scott Forbes	(ADF&G)	Coho aerial surveys.

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

Peter Etherton, Cheri Frocklage, Alex Joseph, Gerald Quash, Ivan Quock, Andy Carlick, Bill Waugh, Daniel McPherson, Faron Quock, Frances Naylen, others

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

Tom Rockne, Kathleen Jensen, Keith Pahlke, Jim Anandel, William Bergman, Troy Thynes, Scott Forbes, John Der Hovanisian, Peter Bransen, Greg Vaughn, Stephen Todd, Roger Wagner, Alex Blaine, Ed Jones, others

**Appendix Table A2. Proposed Taku River field projects.**

Project/Dates	Function	Agency	Involvement
<b>Canyon Island Marking Program</b>			
mid April	<ul style="list-style-type: none"> <li>Set up camp, build and place fishwheels.</li> </ul>	ADF&G/ DFO/ TRTIFN	All aspects
4/21 - 10/5	<ul style="list-style-type: none"> <li>Fishwheel/ gillnet operation.</li> <li>Mark all Chinook, sockeye, coho and chum salmon with spaghetti tags. Tagging goals for each species are:                             <ul style="list-style-type: none"> <li>at least 1000 large, 500 medium and 250 small Chinook</li> <li>25-30% precision goal;</li> <li>4000-5000 sockeye – precision goals 50% for weekly estimates, 10% for post season;</li> <li>2,500 coho – try for 25% precision, (95% rp)</li> <li>all chum</li> </ul> </li> </ul>	ADF&G	3 staff
		DFO	2 staff
		TRTFN	1 staff
		<ul style="list-style-type: none"> <li>Sample for age-sex-length information:                             <ul style="list-style-type: none"> <li>260 sockeye/week throughout sockeye run,</li> <li>634 coho for the entire season,</li> <li>all Chinook.</li> </ul> </li> </ul>	ADF&G/ DFO
	<ul style="list-style-type: none"> <li>Scan all adipose-clipped Chinook and coho caught for CWT's and sample all Chinook and subset of coho (30-50). CWT samples to go to ADF&amp;G lab.</li> </ul>	ADF&G/ DFO/TRT	
8/1 – 10/31	<ul style="list-style-type: none"> <li>Radio-tag up to 200 chum; spaghetti tag as well.</li> <li>Conduct tracking flights</li> </ul>	ADF&G ADFG/DFO	All aspects
<b>Chinook Stock ID sampling</b>			
	<ul style="list-style-type: none"> <li>Collect DNA samples from fishery and escapement samples                             <ul style="list-style-type: none"> <li>fishery samples: Juneau area sport (350 samples), D-11 gn (400 samples);</li> <li>escapement samples: up to 200/stock. Target stocks subject to examination of baseline database.</li> <li>samples to be shared between DFO &amp; ADF&amp;G labs.</li> </ul> </li> </ul>	ADF&G/ DFO	
<b>Smolt Tagging – CWT lower Taku</b>			
4/12 - 6/15	<ul style="list-style-type: none"> <li>CWT-ing goals are 40,000 Chinook and 25,000 coho smolt.</li> <li>Sample every 100<sup>th</sup> CN and CO smolt for length (FL)</li> <li>Measure length of every 8<sup>th</sup> CO smolt (FL)</li> </ul>	ADF&G	All aspects 5 staff
	<ul style="list-style-type: none"> <li>Sample 300 CO smolt for age (12-15 scales)</li> </ul>	DFO	2 staff
<b>Canadian Aboriginal Fishery Sampling</b>			
5/1 - 10/15	<ul style="list-style-type: none"> <li>Collect and record FN catch information.</li> </ul>	TRTFN	All aspects
5/1 - 6/15	<ul style="list-style-type: none"> <li>Capture 500 Chinook and sample for spaghetti- and coded-wire tags as well as age-sex-size. CWT samples to go to DFO, unless other arrangements are made</li> </ul>	TRTFN/ DFO	Fishing Sampling
	<ul style="list-style-type: none"> <li>Recover spaghetti and CWT's from any coho harvested.</li> </ul>		

Appendix Table A2. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Nahlin Sampling</b>			
7/20 - 8/15	<ul style="list-style-type: none"> <li>sample 200 sockeye and up to 600 Chinook in Nahlin River for age-sex-length, spaghetti- and coded-wire tags. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	TRTFN/ DFO/ ADF&G	All aspects
<b>Dudidontu Sampling</b>			
8/10 - 8/30	<ul style="list-style-type: none"> <li>Sample up to 400 Chinook in Dudidontu River for age-sex-length, spaghetti- and coded-wire tags. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	DFO/ TRTFN/ ADF&G	All aspects
<b>Tseta and Hackett Chinook sampling (tentative)</b>			
	<ul style="list-style-type: none"> <li>Sample up to 400 Chinook in each river for age-sex-length, spaghetti- and coded-wire tags. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	ADF&G/ TRTFN/ DFO	
<b>Canadian Commercial Fishery Sampling</b>			
6/15 - 10/16	<ul style="list-style-type: none"> <li>Collect and record commercial catch information. Catch information shall be sent to DFO Whitehorse; whose staff will provide/relay catch information to management staff, ADF&amp;G (Juneau).</li> <li>Sample commercial Chinook, sockeye and coho salmon for age-sex-length and tag loss; 200 samples per week for sockeye; 520 per season for coho; 300 scale samples per season for Chinook. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> <li>Collect 96 sockeye otolith samples per week to estimate contribution of enhanced fish; send otolith samples to ADF&amp;G for processing.</li> <li>In-season otolith analysis</li> <li>Collect and record all spaghetti tags caught in commercial fisheries, pay fishers for tag recoveries.</li> </ul>	DFO  DFO  ADF&G	All aspects  All aspects  All aspects  All aspects
<b>Canadian Chinook Test Fishery</b>			
5/2 - 6/14	<ul style="list-style-type: none"> <li>Capture and examine a total of 1400 large (&gt;660mm MEF) Chinook for spaghetti tags and adipose-clips. Use same weekly goals as 2003. CWT samples to go to ADF&amp;G lab</li> <li>Sample all fish for age-sex-size, spaghetti- and coded-wire tags as well as spaghetti-tag loss.</li> <li>Collect 600 lbs (275kg) Chinook roe for CWT program.</li> </ul>	DFO  DFO  DFO	All aspects  All aspects  All aspects

Appendix Table A2. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Canadian Coho Test Fishery</b>			
End commercial fishery to 10/7	<ul style="list-style-type: none"> <li>Capture and sample approximately 400 coho per week for spaghetti- and coded-wire tags. Sample 50 coho per week for age-sex-size. CWT samples to go to ADF&amp;G lab.</li> </ul>	DFO	All aspects
<b>District 111 Fishery Sampling</b>			
6/15 - 9/30	<ul style="list-style-type: none"> <li>Sample a minimum of 20% of Chinook and coho catches for CWT's; all species except pinks for age-sex-length, as well as Chinook for maturity (goals are 800 per week for sockeye and 600 per season for Chinook, chum, and coho).</li> </ul>	ADF&G	All aspects
	<ul style="list-style-type: none"> <li>Collect 400-800 matched brain-parasite/scale/otolith samples per week from sockeye with sub-district specific goals (includes 11-31 samples).</li> </ul>	ADF&G	All aspects
<b>Kuthai Sockeye Sampling</b>			
7/2 - 8/30	<ul style="list-style-type: none"> <li>Maintain adult sockeye salmon weir at Kuthai Lake; enumerate and sample for age-sex-length (750 samples) and recover spaghetti tags.</li> </ul>	TRTFN	All aspects
	<ul style="list-style-type: none"> <li>Sample up to 50 sockeye (food fish perhaps) for brain parasites.</li> </ul>	TRTFN	All aspects
mid-Sept.	<ul style="list-style-type: none"> <li>Conduct an aerial survey in Kuthai Lake to enumerate sockeye and compare with weir count.</li> </ul>	TRTFN	All aspects
<b>Little Trapper Weir</b>			
7/20 - 9/12	<ul style="list-style-type: none"> <li>Maintain adult sockeye salmon weir at Little Trapper Lake; enumerate and sample for age-sex-length (750 samples) and recover spaghetti tags.</li> </ul>	DFO	All aspects
	<ul style="list-style-type: none"> <li>Sample Chinook salmon for age-length-sex, tags, secondary marks and adipose-clips, collect CWT heads. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	DFO	All aspects
<b>Aerial Chinook surveys</b>			
7/21 - 8/25	<ul style="list-style-type: none"> <li>Aerial surveys of spawning Chinook salmon in the Nakina, Nahlin, Dudidontu, Tatsatua, Kowatua, and Tseta rivers.</li> </ul>	ADF&G	All aspects
<b>Sport Fishery Sampling</b>			
	<ul style="list-style-type: none"> <li>Conduct creel censuses and sample Juneau, Ketchikan, Sitka sport fisheries and sample for CWT's, age, sex, length and maturity.</li> </ul>		
	<ul style="list-style-type: none"> <li>Sample Petersburg and Wrangell sport fisheries for hatchery contribution (CWT's) and conduct post season surveys (State-wide survey) to obtain harvest data. Target is to sample 20% of catch for CWT's. Includes derby sampling.</li> </ul>		

Appendix Table A2. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Troll sampling</b>			
	<ul style="list-style-type: none"> <li>Sample 20% of troll catch for CWT's</li> </ul>	ADF&G	
<b>Nakina Chinook Escapement Sampling</b>			
8/1 - 8/28	<ul style="list-style-type: none"> <li>Maintain Chinook carcass weir.</li> </ul>	TRTFN	All aspects
	<ul style="list-style-type: none"> <li>Sample every fourth (minimum 600; ideally 1,000) Chinook for age-sex-length and all other Chinook for sex-length and tags.</li> </ul>	TRTFN	All aspects
	<ul style="list-style-type: none"> <li>Examine all Chinook salmon for tags, secondary marks and adipose clips; collect heads from all clipped fish. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made.</li> </ul>	TRTFN	All aspects
<b>Tatsamenie Smolt and Adult SO Enumeration &amp; Sampling</b>			
5/15 - 6/24	<ul style="list-style-type: none"> <li>Conduct sockeye smolt mark-recapture study to estimate abundance of wild and enhanced smolt.</li> <li>sample for age, size and stock (wild vs enh'd).</li> </ul>	DFO	All aspects
8/5 - 9/30	<ul style="list-style-type: none"> <li>enumerate adult sockeye salmon through weir</li> <li>sample for age-sex-length (750 samples) and recover spaghetti tags.</li> <li>collect otoliths from all sockeye broodstock taken at weir.</li> <li>collect 50 heads and send on egg-take flight for brain parasite analysis.</li> </ul>	DFO ADF&G	All aspects Parasite analysis
<b>Tatsamenie Area Chinook sampling</b>			
9/1 - 10/1	<ul style="list-style-type: none"> <li>at upper Tatsamenie, sample 100-200 Chinook salmon for CWT's, size, tags and tag loss. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made.</li> </ul>	DFO	All aspects
8/23 - 9/15	<ul style="list-style-type: none"> <li>Chinook salmon carcass weir at Lower Tatsamenie: sample for age-sex-size and examine for CWT's, tags and secondary marks on all Chinook salmon recovered. Target sample size is 600-900 all sizes. CWT samples to go to DFO lab in Vancouver, unless otherwise arranged.</li> </ul>	DFO/ ADF&G	All aspects
<b>Kowatua Sampling</b>			
9/1 - 10/1	<ul style="list-style-type: none"> <li>sample a minimum of 200 Chinook for CWT's, size, tags and tag loss. CWT samples to go to DFO lab in Vancouver, unless other arrangements are made</li> </ul>	DFO	All aspects
<b>Mainstem Escapement Sampling</b>			
9/5 - 10/15	<ul style="list-style-type: none"> <li>Sample sockeye escapement in mainstem areas for age-sex-length (600 samples) and recovery of spaghetti tags.</li> <li>Obtain brain samples from any spawned out sockeye encountered.</li> </ul>	DFO/ ADF&G	All aspects



Appendix Table A2. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Mainstem Escapement Sampling (Cont'd)</b>			
	<ul style="list-style-type: none"> <li>Examine all chum encountered for tags and tag loss subject to marking.</li> </ul>	DFO/ ADF&G	All aspects
<b>Contacts:</b>			
	Ed Jones	(ADF&G)	Smolt tagging, adult Chinook escapement sampling.
	Jim Andel	(ADF&G)	Canyon Island adult tagging, chum telemetry.
	Kathleen Jensen	(ADF&G)	All ADF&G Com Fish Research Programs.
	Keith Pahlke	(ADF&G)	Chinook surveys.
	Ian Boyce/	(DFO)	All DFO Taku programs
	Rick Ferguson		
	Sandy Johnston	(DFO)	All DFO Taku programs.
	Jason Williams or	(TRTFN)	All TRTFN programs.
	Richard Erhardt		

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

Ian Boyce, Rick Ferguson, Matthew Waugh, Jason Williams, Sean Stark, Zack Dixon, Mike Smarch, Mark McFarland, others

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

Jim Andel, Kathleen Jensen, Ed Jones, Keith Pahlke, Clyde Andrews, Jarbo Crete, Al Demartini, Krista Kissner, Jamie Kissner, Dale Brandenburger, Shane Rear, Jerry Owens, Mark Olsen, Kent Crabtree, Scott Duffy, Dave Magnus, Scott McPherson, Jodi White, Tony Florendo, Kevin Monagle, Dave Harris, Scott Kelley, Doug Mecum, others

Appendix Table A3. Proposed Alsek River field projects, .

Project/Dates	Function	Agency	Involvement
<b>Sockeye Mark-Recapture</b>			
5/14 - 8/22	<ul style="list-style-type: none"> <li>Spaghetti tag all fish captured; target is 1,500; 600 age-sex-size. Collect DNA from all fish tagged, pool by week.</li> </ul>	DFO/ADF&G	All aspects
	<ul style="list-style-type: none"> <li>Recover tags at Klukshu weir and other headwater tributaries Nesketahen Lake, upper/lower Tatshenshini, Alsek/ Turnback Canyon, Blanchard Lake, Basin Creek, and fisheries ; minimum sampling goal is 2,400 fish.</li> </ul>	DFO/CAFN	All aspects
<b>Chinook Mark-Recapture</b>			
5/10 - 9/30	<ul style="list-style-type: none"> <li>Spaghetti tag Chinook salmon.</li> <li>Collect DNA from all fish tagged, pool by week (opercular punch). Sample 500 large fish for age, size, sex.</li> <li>Tag recovery (minimum 1,100) at various locations (Klukshu, Blanchard, Takhanne, Lo Fog, lower Tatshenshini)</li> </ul>	ADF&G	All aspects
		DFO/ADF&G	Tag recovery
<b>Klukshu River Sampling</b>			
6/6 - 10/15	<ul style="list-style-type: none"> <li>Enumerate Chinook, sockeye and coho salmon at adult weir.</li> <li>Estimate sport and aboriginal fishery catches.</li> <li>Collect age-sex-length information from sockeye caught by First Nations (600 scale samples per species) except Chinook, see below.</li> <li>Sample 200 Chinook in each of sport and aboriginal harvest for scales, sex, length (MEF), CWTs and spaghetti tags.</li> <li>Sample 1,100 Chinook (minimum) and 1,600 sockeye (minimum) at weir for sex, length (MEF), CWTs (Chinook only), spaghetti tags and DNA.</li> <li>Continue to examine the feasibility of using video to enumerate passage through the weir; test technology also on Village Cr. and Blanchard R.</li> <li>Sample 600 coho at weir for age, sex, length (MEF).</li> </ul>	DFO/CAFN	All aspects
		DFO/CAFN	All aspects
		CAFN	All aspects
		DFO/CAFN	All aspects
		DFO/CAFN	All aspects
		CAFN	All aspects
		DFO/CAFN	All aspects
<b>Village Creek sockeye enumeration</b>			
6/10 - 9/30	<ul style="list-style-type: none"> <li>Enumerate sockeye salmon using an electric counter at Village Creek.</li> </ul>	DFO/CAFN	All aspects
<b>Chinook and Sockeye DNA Stock ID Baseline</b>			
8/1 - 9/30	<ul style="list-style-type: none"> <li>Target is 150 samples/stock</li> </ul>	DFO	All aspects

- Up to four separate stocks to be sampled/spp

Appendix Table A3. (cont'd)

Project/Dates	Function	Agency	Involvement
<b>Lower Alsek Sampling</b>			
6/14 - 9/15	<ul style="list-style-type: none"> <li>• Sample commercial catches of all salmon at lower Alsek and East River.</li> <li>• Collect age-sex-length (MEF) data (sockeye-600, Chinook-600, coho-500); recover tags from Chinook and sockeye.</li> </ul>	ADF&G	All aspects
<b>Escapement Surveys</b>			
8/1 - 8/15	<ul style="list-style-type: none"> <li>• Aerial surveys of spawning sockeye salmon in index areas of Cabin, Tanis, Muddy and Basin creeks (in Alaska)</li> </ul>	ADF&G	All aspects
8/1 - 8/10	<ul style="list-style-type: none"> <li>• Aerial surveys of spawning Chinook salmon in index areas of Blanchard, Takhanne, Klukshu rivers and Goat Creek (in Canada)</li> </ul>	ADF&G	All aspects
10/1 - 10/15	<ul style="list-style-type: none"> <li>• Aerial surveys of spawning coho salmon in index areas of Cabin, Tanis, Muddy and Basin creeks (in Canada) – subject to aircraft availability.</li> </ul>	ADF&G	All aspects

**Contact:**

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

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

Mark McFarland, Frances Naylen, Bill Waugh, Peter Etherton, Robert Jackson, Linaya Workman, others

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

Gordie Woods, Robert Johnson, Keith Pahlke, Kathleen Jensen, Jim Andel, Randy Ericksen, Chris Chapell, others

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

Project	Function	Agency	Involvement
<b>Tahltan/Tuya Enhancement Project</b>			
5/8 - 6/30	<ul style="list-style-type: none"> <li>Enumeration and sampling of smolts from Tahltan Lake (Stikine River, in Canada) and collection of otolith samples to determine planted contribution.</li> </ul>	DFO	All aspects
5/15 - 6/30	<ul style="list-style-type: none"> <li>Backplant sockeye fry from Snettisham Hatchery into Tahltan and Tuya lakes.</li> </ul>	DIPAC/ ADF&G	All aspects
	<ul style="list-style-type: none"> <li>Smolt sampling</li> </ul>	DFO	All Aspects
6/1 - 8/30	<ul style="list-style-type: none"> <li>Limnological samples from Tahltan Lake monthly.</li> </ul>	DFO	All Aspects
6/1 - 9/30	<ul style="list-style-type: none"> <li>Hydroacoustic/limnological surveys of Tuya Lake to evaluate success of fry outplant.</li> </ul>	DFO	All aspects
	<ul style="list-style-type: none"> <li>Beach seining and gillnetting at Tuya Lake</li> </ul>	DFO	All aspects
9/1 - 9/25	<ul style="list-style-type: none"> <li>Collect up to 6.0 million sockeye eggs from Tahltan Lake and transport to Snettisham Hatchery in Alaska.</li> </ul>	DFO	Egg-take and transport
9/6 - 10/8	<ul style="list-style-type: none"> <li>Sample 200 male and 200 female adult sockeye from Tahltan Lake broodstock for otolith samples.</li> </ul>	DFO	All aspects
<b>Tuya Straying Assessment</b>			
3/1	<ul style="list-style-type: none"> <li>Develop proposal to be submitted to Northern Fund to examine straying of Tuya sockeye and potential impacts on wild spawning stocks. Conduct study if funding approved including sampling of spawning populations (Porcupine, Scud, Chutine, mainstem) for Tuya thermal marks. Proposed Stikine sockeye radio telemetry project may provide additional information.</li> </ul>	DFO with support from ADF&G	
5/1 – 5/30	<ul style="list-style-type: none"> <li>Survey Shakes Creek spawning area for incidence and success of sockeye spawning by redd sampling and fry collection.</li> </ul>	DFO	All aspects
8/15 - 8/30	<ul style="list-style-type: none"> <li>Conduct adult sockeye deadpitch and biosample at Shakes Creek.</li> </ul>	DFO	All aspects
<b>Risk Analysis – Stikine Sockeye Enhancement</b>			
	<ul style="list-style-type: none"> <li>conduct a risk analysis by the TCTR with respect to potential long-term impacts of the enhancement program on wild stocks.</li> </ul>		
<b>Trapper Lake</b>			
5/15 - 6/15	<ul style="list-style-type: none"> <li>Conduct index gillnet survey at Trapper Lake.</li> </ul>	TRTFN	All aspects

Appendix Table A4 (cont'd)

Project	Function	Agency	Involvement
<b>Tatsamenie Lake Enhancement Project</b>			
5/10 - 6/30	<ul style="list-style-type: none"> <li>Sample smolt out-migration from Tatsamenie Lk; conduct smolt mark-recapture program.</li> </ul>	DFO	All aspects
5/22 - 7/15	<ul style="list-style-type: none"> <li>Conduct feeding experiments with a proportion of planted fry.</li> </ul>	DFO	All aspects
5/15 - 5/30	<ul style="list-style-type: none"> <li>Back-plant sockeye fry from Snettisham Hatchery into Tatsamenie Lake.</li> </ul>	DIPAC/ ADF&G	All aspects
6/1 - 9/30	<ul style="list-style-type: none"> <li>Collect plankton samples from Tatsamenie Lake; conduct hydroacoustic and limnological surveys at Tatsamenie L. to evaluate the success of outplants.</li> </ul>	DFO	All aspects
8/15 - 10/30	<ul style="list-style-type: none"> <li>Collect up to 5.0 million sockeye eggs from Tatsamenie Lake and transport to Snettisham Hatchery in Alaska.</li> </ul>	DFO	Egg-take and transport
Fall-winter	<ul style="list-style-type: none"> <li>Subject to egg availability, load passive flow incubator in Tatsamenie Lake with fertilised sockeye eggs. Incubate eggs over winter.</li> </ul>	DFO	All aspects
9/6 - 10/8	<ul style="list-style-type: none"> <li>Sample 400 adult sockeye from Tatsamenie Lake egg-take for otolith samples.</li> </ul>	DFO	All aspects
<b>King Salmon Sockeye Restoration</b>			
	<ul style="list-style-type: none"> <li>Enumerate sockeye entering King Salmon Lake;</li> <li>Sample for age-size-sex and spaghetti tags;</li> <li>if possible, obtain 50 heads for brain parasite analysis – fresh samples only;</li> <li>obtain up to 200 DNA samples.</li> </ul>	TRTFN  ADF&G	All sampling  Parasite analysis
8/1 - 9/30	<ul style="list-style-type: none"> <li>Install water gauge and collect sockeye smolt biosample from King Salmon Lake.</li> </ul>	TRTFN	All aspects
<b>Salmon Egg Incubation</b>			
9/3 - 6/4	<ul style="list-style-type: none"> <li>Incubation and thermal marking of juvenile sockeye (eggs &amp; alevins) collected from Tahltan (Stikine River) and Tatsamenie (Taku River) lakes at the Snettisham Incubation Facility in Alaska.</li> </ul>	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:

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