YUKON RIVER CHINOOK SALMON STOCK STATUS AND ACTION PLAN

A Report to the Alaska Board of Fisheries

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Synopsis

In response to the guidelines established in the Sustainable Salmon Fisheries Policy (SSFP) 5 AAC 39.222, the Alaska Board of Fisheries (Board) classified the Yukon River chinook salmon stock as a stock of concern, specifically a yield concern, at the September 2000 work session. An action plan was subsequently developed by the department and acted upon by the Board in January 2001. The SSFP directs Alaska Department of Fish and Game (ADF&G) to assess salmon stocks in areas addressed during the 2003-2004 regulatory cycle to identify stocks of concern and in the case of Yukon River chinook salmon, reassess the stock of concern status.

Based on definitions provided in SSFP (5 AAC 39.222(f)(42)), the department recommended to continue classification of the Yukon River chinook salmon stock as a stock of concern, specifically, a yield concern, at the September 2003 Board work session. The Yukon River chinook salmon stock continues to meet the definition of a yield concern based on low harvest levels for the years of 1998 through 2002. Combined commercial and subsistence harvests show a substantial decrease in chinook salmon yield from the 10-year period of 1989 to 1998 to the recent 5-year (1999-2003) average. Although the subsistence harvest continues to remain relatively stable, conservative management actions have considerably reduced commercial harvests to meet escapement and subsistence needs. Therefore, managers have not been able to maintain near average yields despite specific management actions taken annually since 1998. Spawning escapement assessments tend to vary each year depending on location, but it appears only 1998 and 2000 escapement goals were generally not met. Since 2000, escapement goals have consistently been met throughout most of the Yukon River drainage. The Yukon River is a transboundary river with Canada (Figure 1) and salmon stocks originating in the Canadian portion of the drainage are managed under the Yukon River Salmon Agreement (Agreement), as part of the Pacific Salmon Treaty.

Stock Assessment Background

The trend of declining runs of Yukon River chinook salmon began in 1998, with the 2000 run the worst on record (Figure 2). However, increased run strength for chinook salmon during the period 2001- 2003 indicates production may be improving.

Chinook salmon escapement goals have generally been met throughout the Alaska portion of the Yukon River drainage since 2000 (Table 1). Biological escapement goals (BEGs) in the Chena and Salcha rivers were met or exceeded the past six years, except for Salcha River in 2000, which was short by only 200 fish. Assessment of aerial survey sustainable escapement goals (SEGs) is more difficult because of missing years or years of poor surveys. The Anvik River goal was met 10 out of the 16 years, and every year since 1998. Unacceptable survey conditions existed in 2003 throughout the drainage making escapements difficult to assess. However, because of increased abundance, the department believes escapements were met throughout the drainage in 2003.

Although escapement objectives for the Canadian Yukon River mainstem agreed to by the Yukon River Panel were not met during 1998-2000, the goals were met during the most recent

three years (Table 3, Figure 3). In the last three years, the panel has established an escapement objective of 25,000 chinook salmon if commercial fishing did not occur and 28,000 chinook salmon if commercial fishing did occur in Alaska. In the past, Canada has allowed aboriginal harvests well below the escapement objective in years with low runs.

The U.S./Canada border passage estimate generated from the radio telemetry project and aerial survey assessments on spawning streams within the Canadian portion of the drainage conflict with the escapement estimate based on the DFO border passage assessment in recent years. Since 1982, the escapement for the Canadian Yukon River mainstem is based on a mark-recapture project. The mark recapture project utilizes fish wheels to capture salmon, and aboriginal and commercial fisheries for the recapture portion of the project. In 2001, the escapement estimate into Canada of 43,933 fish was a record escapement (Table 3, Figure 3). However, when escapements were assessed by aerial survey, no survey was near record level. In 2002, the preliminary escapement estimate into Canada was 25,000 fish. It was stated in several meetings that this estimate was conservative. The radio telemetry information suggested the spawning escapement estimate was between 36,000 and 46,000 fish and the mark-recapture estimate was low. Further review of the Canadian mark-recapture information indicates that the border passage in 2002 was 43,359 fish. With a harvest of 9,113, the escapement for 2002 is 34,246, closer to the radio telemetry estimates than the original DFO mark-recapture estimate. Preliminary information indicates the border passage estimate of 2003 is a record (58,000) and a preliminary harvest of 8,219. The 2003 estimated escapement is 49,781 fish, 21,000 fish above the escapement objective.

Some suspect that over harvest caused the poor runs in recent years. However, parent years escapements during 1992-1994 that produced the very poor runs in 1998-2000 were not over harvested. Escapement goals were achieved in most spawning tributaries during those years and inadequate number of spawners was not a factor contributing to the poor runs. Recent years of poor runs were from parent year escapements that were near record levels. Most attribute the recent poor runs to poor ocean environments. Poor wildstock runs have occurred through out Western Alaska and also in Pacific Rim countries as well. Note, in the past there have been as bad or worse escapements as occurred in 1998-2000 and those parent years produced good runs.

Quality of escapement (percent of females) has become an issue in recent years because of the poor chinook salmon runs in 1998-2000. Unlike other species, such as chum salmon, the percent of chinook salmon females in a run is rarely greater 50%. This is because of the age structure of chinook salmon with nearly all jacks (4-year-olds) and on average, 70% of 5-year-olds being male. These two male dominant age groups combined compose 25%-35% of the run. The percent of females on the spawning grounds are not a constant, nor is sex composition consistent from one tributary to the next. Because the Chena and Salcha Rivers are most likely the two largest producers of chinook salmon, escapements into these two rivers are good indicators concerning the number of females on the spawning grounds. Samples are either from carcasses or from electro-shocked fish when completing mark-recapture estimates. For the Chena and Salcha Rivers combined, the percent females have ranged from 24% (1993) to 64% (1989). The percent of females in the last three years for the Chena and Salcha Rivers has been consistent with 40%-44%. Figure 4 compares the number of females and males in the escapement compared to the current combined escapement goal. This figure clearly shows that the low end of

the current escapement goal has been met in females alone in more than half of years information is available.

Combined commercial and subsistence harvests show a substantial decrease in chinook salmon yield from the 10-year period of 1989 to 1998 to the recent 5-year (1999-2003) average (Table 2, Figure 2). The 1989 to 1998 average harvest of approximately 156,000 fish is twice the recent 5-year average harvest of approximately 77,000 fish. Although the subsistence harvest continues to remain relatively stable, commercial harvests were reduced considerably to meet escapement and subsistence needs. The 2000 chinook salmon run, the poorest on record, had a subsistence harvest of about 36,000 fish and a commercial harvest of approximately 9,000 fish. Because of an expected poor run in 2001, no commercial or sport fish fishing occurred. The Fish and Wildlife Service invoked a preseason Special Action to close uses other than subsistence fishing in applicable waters in 2001. However, a surplus of approximately 20,000 chinook salmon beyond escapement and subsistence needs was determined postseason. The 2002 chinook salmon run was similar in run strength to the 2001 run and 24,000 fish were commercially harvested, escapements were generally met throughout the drainage.

The 2003 chinook salmon run was much stronger than anticipated, the commercial harvest was 41,000 fish. Because of conservative management, a substantial commercial harvest was foregone. Foregone harvest is difficult to determine, but considering the possible record escapements into Tanana River and Canada, commercial fishers may have foregone up to 40,000 chinook salmon in 2003. Although the subsistence harvest is expected to be greater than average because of the expected poor fall chum salmon run, the average subsistence harvest was used to estimate the 2003 subsistence catch (Table 2 and Figure 2).

In summary, the available harvest in the years 1999 through 2002 was substantially less than the average yield from 1989 through 1998. However, potential yield in 2003 may have been near the previous 10-year average.

STOCK OF CONCERN RECOMMENDATION

Based on the definitions provided in the Sustainable Salmon Fisheries Policy of 5 AAC 39.222(f)(42), the department recommends continuation of the Yukon River chinook salmon stock of concern classification as a yield concern. The Yukon River chinook salmon stock continues to meet the definition of a yield concern because of low commercial harvest levels for the years of 1998 through 2002. The 1989 to 1998 combined subsistence and commercial average harvest of approximately 156,000 fish is twice the recent 5-year average harvest of approximately 77,000 fish. Yukon River chinook salmon escapements have generally been met since 2000. Although a small unharvested surplus existed in 2001 and a larger unharvested surplus of up to 40,000 fish existed in 2003 because of conservative management actions, the yield from this stock during at least four of the last five years was well below the long-term average.

Outlook

The preliminary outlook for 2004 is for similar abundance as observed in 2003. The 6-year-old component is expected to be average, the 5-year-old component may be below average because

of the lower number of 4-year-old chinook salmon observed in 2003. However, information from Bering Sea studies (BASIS) and trawl bycatch records indicates a higher abundance of all salmon species than last year. Depending on the origination of these salmon, the 2004 run may be near average and similar to the 2003 run. The anticipated yield in 2004 may be near the long-term average.

Alaska Board of Fisheries Action

In response to the guidelines established in the Sustainable Salmon Fisheries Policy, the Alaska Board of Fisheries, during the January 12-19, 2004 regulatory meeting, is anticipated to continue the current classification of Yukon River chinook salmon being a yield concern.

ESCAPEMENT GOAL EVALUATION

The department has undertaken a review of escapement goals for several Yukon River chinook salmon stocks where long-term escapement, catch, and age composition data exist to enable the development of biological escapement goals calculated from analysis of production consistent with the escapement goal policy. Escapement goals developed in 2000 were reviewed for this Board cycle with additional data. These chinook salmon escapement goals include the Salcha and Chena River BEGs, and the East and West Fork Andreafsky, Anvik, North and South Fork Nulato, and Gisasa River SEGs. A separate report details the escapement goal review for the AYK Region (ADF&G, 2004).

New data used in calculations for the Chena and Salcha rivers BEGs for chinook salmon resulted in no changes. The SEGs established from aerial surveys for the remaining rivers were reviewed using the Cook Inlet Algorithm methodology (Bue and Hasbrook, 2001). This analysis resulted in recommending new escapement goal ranges for those rivers with SEGs. The previous minimum aerial survey goals were based on calculation of the median escapement over time.

The Yukon River Salmon Agreement between the U.S. and Canadian governments was initialed in March 2001 and signed in December 2002. As per this Agreement, the escapement goal for Canada is 33,000 to 44,000 chinook salmon. However, per the Agreement, the U.S./Canada Yukon River Panel (Panel) may recommend annual spawning escapement objectives for implementation by the Parties through their management entities; the Panel may also revise the spawning escapement objectives for rebuilt stocks. In April of 1996, the Panel agreed to a six-year rebuilding plan for Canadian mainstem Yukon River chinook salmon stocks. The Panel agreed to an interim minimum spawning escapement objective for Canadian mainstem Yukon River chinook salmon of 28,000 salmon for the six years beginning in 1996. However, beginning in 2001, because of the very poor runs in 1998 – 2000, the interim escapement objective recommended by the Panel was 25,000 chinook salmon if no commercial fishing occurred and 28,000 chinook salmon if commercial fishing was allowed in Alaska. The Panel reviews the Canadian Yukon River mainstem escapement goal annually.

List Of Current And Proposed BEG and SEGs for Yukon River Chinook Salmon.

Stream	Current Goal	Recommended Range	Type of Goal
East Fork Andreafsky River Aerial	> 1,500	960-1,900	SEG
West Fork Andreafsky River Aerial	> 1,400	640-1,600	SEG
Anvik River Index Aerial	> 1,300	1,100-1,700	SEG
Nulato River Aerial (Forks Combined)	> 1,300	940-1,900	SEG
Gisasa River Aerial	> 600	420-1,100	SEG
Chena River Tower	2,800-5,700	No Change	BEG
Salcha River Tower	3,300-6,500	No Change	BEG

MANAGEMENT ACTION PLAN OPTIONS FOR ADDRESSING STOCK OF CONCERN AS OUTLINED IN THE SUSTAINABLE SALMON FISHERIES POLICY

Yukon River Chinook Salmon Management Plan Review/Development

Current Stock Status

In response to the guidelines established in the Sustainable Salmon Fisheries Policy (5 AAC 39.222), the department, during the September 2003 Board work session, recommended the continued stock of concern classification for Yukon River chinook salmon stock as a yield concern. The Board of Fisheries, after reviewing stock status information and public input during the January 2004 regulatory meeting, is anticipated to continue the stock of concern classification for Yukon River chinook salmon as a stock of yield concern. This determination was based on the inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock's escapement needs for four of the last five years.

C&T Use Finding and the Amount Necessary

In 1993, the Board of Fisheries made a positive finding for Customary and Traditional Use for all salmon in the Yukon-Northern Area. In 2001, the department recommended the Board amend 5 AAC 01.236 to include a revised finding of the amount necessary for subsistence (ANS) for the Yukon Area using updated subsistence harvest data. After a thorough review of various options, the Board made a finding of ANS for the Yukon Area by species.

ANS range for the Yukon River drainage by species

Chinook salmon	45,500 – 66,704
Summer chum salmon	83,500 – 142,192
Fall chum salmon	89,500 – 167,100
Coho salmon	20,500 – 51,980

The ANS range finding by species for the entire Yukon River uses the low subsistence harvest rounded to the nearest 500 fish and the actual high subsistence harvest estimate during the ten-

year period of 1990 to 1999 using the table below. The department recommends no change to current ANS finding for chinook salmon.

Yukon River Subsistence Salmon Harvests, Coastal District and Districts 1-6, 1990-99

Year	Chinook	Summer Chum	Fall Chum	Coho	Total salmon
1990	48,587	115,609	167,900	43,460	375,556
1991	46,773	118,540	145,524	37,388	348,225
1992	47,077	142,192	107,808	51,980	349,057
1993	66,704	125,574	76,882	15,812	284,972
1994	55,388	124,807	123,565	41,775	345,535
1995	50,620	136,083	130,860	28,377	345,940
1996	45,669	124,735	129,258	30,404	330,066
1997	57,117	112,820	95,141	23,945	289,023
1998	54,124	87,366	62,901	18,121	222,512
1999	53,132	83,784	89,938	20,885	247,739
Max 1990-99	66,704	142,192	167,900*	51,980*	375,556*
Min 1990-99	45,669	83,784	89,938*	20,885*	247,739*
Mean 1990-99	52,519	117,151	123,749*	34,777*	313,863*

**Excluding harvests in 1993 and 1998 because regulations restricted subsistence harvests*

Habitat Factors Adversely Affecting The Stock

Yukon River salmon stocks have generally remained healthy primarily because of undisturbed spawning, rearing, and migration habitat although some habitat issues adversely impact the salmon production in the Yukon River drainage. A detailed discussion of these issues is found in the Yukon River Comprehensive Salmon Plan for Alaska. This plan discusses mining, logging, and flood control (these topics are briefly discussed below) and potential pollution and habitat changes related to urban development, rural sanitation, increased traffic along tributaries, and agriculture.

Mining

The first habitat threats to salmon caused by human presence in the Yukon River drainage began in the early 1900s with mine exploration and development. Mining activity was, and continues to be, an important economic industry within the drainage. Fortunately, most historical mining activity occurred on localized, discrete, headwater streams using manual labor, minimizing impacts on spawning habitat. However, in the 1920s mining practices expanded to hydraulic mining and large scale dredges. Both of these mining practices disturbed extensive acreage, much of which remains un-reclaimed today. Hydraulic mining washed large quantities of overburden and fine sediment into downstream spawning and rearing habitats. A thorough discussion of mining activity and salmon presence in the Yukon River Area can be found in the report entitled "A History of Mining in the Yukon River Basin of Alaska" (Higgs, 1995). Noted in the report, major mining activity occurred on the tributaries: the Iditarod, and Innoko River drainages in the Lower Yukon; American Creek, Eureka Creek, Minook Creek, and upper Sulatna River in the Middle Yukon; Birch Creek, Woodchopper Creek, Coal Creek, Nome Creek, Beaver Creek, and the Fortymile River in the Upper Yukon; Middle and South Forks of

the Koyukuk River and Hogatza River in the Koyukuk River drainage; and Goldstream Creek, Chatanika River, Chena River, Livengood Creek, Salcha River, Goodpasture River, in the Tanana River drainage. Northern mining operations coped with short operating seasons, difficult transportation conditions, and high freight and labor costs. Both small and large mining operations exist today. However, more rigid enforcement of environmental regulations since the mid-1980s has resulted in mining operations far less detrimental to fisheries habitat than in the past. Today, all mining operations must obtain numerous environmental permits before initiating or continuing mining activity. Wastewater discharge must comply with Alaska's Water Quality Standards and all mines permitted since October 14, 1991 must comply with Alaska's Mining Reclamation Regulations. Currently, two large hard rock mines permitted; Fort Knox mine near Fairbanks (in operation) and the Pogo Creek mine near the Goodpasture River (in development stage), near Delta. Some of these mines are located in potential acid-generating deposits for which strict wastewater controls will be necessary.

Potential natural gas development in the Minto Flats area of the Tanana River drainage may impact habitat in this area.

Logging

Logging has become a potential impact to fisheries habitat in the Tanana River drainage. Coincidental with the transfer of large tracts of federal land into private native corporation and state ownership, logging activity increased to meet both local and export timber demands. Current concerns relate to sufficient buffer or setback zones to protect tributaries from increased runoff, increased temperature fluctuations, loss of spawning and rearing habitat, increased siltation and turbidity, and other effects, all which can be stabilized or moderated with sufficient streamside vegetation.

Flood Control and Other Dams

Chena River Lakes Flood Control Project: ADF&G, YRDFA, and local sport and subsistence fishermen raised concerns about the dam's effects on springtime emigration of salmon fry and immigration of adults. In flood years such as 1985, 1991, and 1992, the dam's gates were closed to slow the Chena River's flow to manageable levels. This closure caused the river to back up and spread throughout the willow and spruce brush in the Chena River valley floodway. In some of these flood event years, seagulls and other birds were seen feeding off salmon fry at several locations. Three locations noted were; above the dam in the backed up waters, below the dam's chutes where smolt were dumped via small waterfalls, and in pools of water above the dam when the flood waters receded. The exact effects of these events upon salmon returns are unknown.

Chatanika River (Davidson Ditch) Dam: The dam was severely damaged by the 1967 flood, the top half was destroyed and washed downstream. The remainder of the dam was removed utilizing funding from YRDFA and BLM (Bureau of Land Management) in 2001. Before the removal, only two species of fish (Arctic grayling and sculpin) were documented above the dam (Al Townsend, ADF&G, Fairbanks, personal communication). Three species of salmon (chinook, chum, and coho salmon), three species of whitefish, sheefish, Arctic grayling, northern pike, burbot, suckers, and sculpin are documented in the Chatanika River downstream of the dam. Although no adult spawners have been observed utilizing the area above the dam, minnow trapping in the summer of 2002 found salmon fry above the dam site, indicating this area is now used as rearing habitat.

Habitat Projects Needed:

1. Continued monitoring of Illinois Creek Mine in the Innoko River drainage.
2. Continued restoration of Birch Creek and enhancements to allow fish passage in historical mining areas. Restoration of Birch Creek tributaries whose fish habitat still remains highly impaired because of mining, much of which predated the 1991 Mining Reclamation Regulations.
3. Continued restoration of Nome Creek damaged from historic mining.
4. Continued evaluation, and possibly implementation, of modifications to the Chena River Lakes Flood Control Project to reduce salmon mortality.
5. Continued monitoring of the bank stabilization project near Reka Roadhouse, a known fall chum salmon spawning area.
6. Survey and assessment of critical salmon spawning and rearing habitats in the Tanana River drainage. Continued restoration of Tanana River tributaries from historic mining damage.
7. Advanced identification of previously undocumented anadromous fish streams in the Yukon Watershed. An estimated 50% of all water bodies in the Yukon watershed have not been evaluated for distribution of anadromous species. An estimated 70% of the first and second order tributaries similarly have not been surveyed. Consequently these streams are not afforded legal protection under DNR's AS 16.05.870 permitting program.

Do New Or Expanding Fisheries On This Stock Exist?

Federal regulations regarding customary trade to allow sales of subsistence fish caught in applicable waters may result in the expansion of subsistence take on this stock. Otherwise, no new or expanding fisheries occur on this stock. However, several proposals before the Board of Fisheries may allow the use of new subsistence fishing gear types (Proposals 161, 162 and 163) potentially effecting historic harvest levels. Additionally, Yukon River bound chinook salmon are caught as bycatch in the Bering Sea groundfish fishery.

Existing Management Plan

5 AAC 05.360 YUKON RIVER KING SALMON MANAGEMENT PLAN.
5 AAC 01.210 FISHING SEASONS AND PERIODS.

ACTION PLAN DEVELOPMENT

Yukon River Chinook Salmon Action Plan Goal

Reduce fishing mortality to meet spawning escapement goals, to provide opportunity for subsistence users to harvest levels within the ANS range, and to reestablish historic range of harvest levels by other users.

Review of Management Action Plan

Management of the Yukon River salmon fishery is complex because of overlapping multispecies salmon runs, generally high efficiency of existing fisheries, allocation issues, the immense size of the Yukon River drainage, and treaty obligations with Canada. Salmon fisheries within the

Yukon River drainage may harvest stocks more than a month and over two thousand miles from their spawning grounds.

Regulation Changes Adopted in January 2001

In January 2001, after review of the management action plan options addressing this stock of concern, the Board modified the YUKON RIVER KING SALMON MANAGEMENT PLAN 5 AAC 05.360.

The Board added wording to the plan under section (a) regarding management objectives and data used to manage king salmon fisheries. Additionally, when the projected commercial harvest is 0-67,350 king salmon the Board provided the percentage of harvest allocated by district or subdistrict determined from the low end of the established guideline harvest ranges:

Districts 1 and 2: 89.1%
District 3: 2.7%
District 4: 3.3%
Subdistricts 5-B and 5-C:..... 3.6%
Subdistricts 5-D: 0.4%
District 6: 0.9%

The board adopted a fishing schedule for the subsistence salmon fisheries. The schedule will be implemented chronologically, consistent with migratory timing as the run progresses upstream. This schedule may be altered by emergency order if preseason or inseason indicators suggest this change is necessary.

YUKON AREA SUBSISTENCE FISHING SCHEDULE:
Coastal District; Koyukuk River drainage; Subdistrict 5-D: 7 days/week
Districts 1 -3: two 36-hour periods/week
District 4; Subdistricts 5-B and C: two 48-hour periods/week
Subdistrict 5-A; District 6: two 42-hour periods/week
Old Minto Area: 5 days/week

The Board provided the department emergency order authority to restrict subsistence gillnets to no greater than six inches mesh size for the conservation of chinook salmon.

Management Review

Conservative management strategies based on the management action plan adopted by the Board contributed to the successful achievement of escapement goals. Beginning in 2001, the subsistence salmon fishing schedule adopted by the Board was implemented progressively upriver consistent with migratory timing. Chinook salmon were typically already present in relatively small numbers prior to establishing the schedule. Overall, it appeared that the subsistence fishing schedule assisted in spreading subsistence opportunity among users particularly early in the run. Based on an outlook for a very poor run in 2001, no commercial or sport fish fishing occurred. Inseason management actions were taken near the middle of the run to reduce subsistence fishing time less than the regulatory schedule. Subsequently, the run was judged to be large enough to provide for escapement and subsistence needs and to conserve summer chum salmon, subsistence gillnets were restricted to 8 inch or larger mesh size.

Postseason, managers determined approximately 20,000 chinook salmon were surplus beyond escapement and subsistence needs in 2001.

In 2002 and 2003, a preseason management strategy was developed to not allow commercial fishing until near the midpoint of the chinook salmon run. The 2002 chinook salmon run was similar in run strength to the 2001 run and 24,000 fish were commercially harvested. Additionally, escapement goals were generally achieved throughout the drainage. The 2003 chinook salmon run was much stronger than anticipated. The preseason outlook was for a small commercial harvest of 0-20,000 chinook salmon. Because of the surprising strength of the run, the commercial harvest reached 41,000 fish, the largest commercial harvest since 1999. Possible foregone harvest is difficult to determine, but considering the possible record escapements into the Tanana River and Canada, commercial fishers may have foregone up to 40,000 chinook salmon. Escapements goals were generally achieved in other portions of the drainage. In 2002 and 2003, some limitations in processing capacity occurred in the Upper Yukon Area.

After commercial fishing was allowed in 2002, an issue arose whether the subsistence fishing schedule remains in effect or to implement previous subsistence fishing regulations if a surplus above escapement and subsistence needs was identified. Maintaining the subsistence fishing schedule in Districts 1, 2, and 3 and Subdistrict 4-A is problematic and inflexible for managers when subsistence and commercial fishing time is separated under other regulations. In March 2003, the Board of Fisheries addressed two Agenda Change Requests regarding the subsistence fishing schedule, specifically whether the schedule can be terminated in season determined from run abundance and, if so, how that would be done based on the current regulations. The Board adopted a change to terminate the subsistence fishing schedule and revert to the pre-2001 subsistence fishing regulations when sufficient abundance exists:

5 AAC 05.360 (e) If inseason run strength indicates a sufficient abundance of king salmon to allow a commercial fishery, subsistence fishing shall revert to the fishing periods specified in 5 AAC 01.210. (c)-(h).

In general, sport fish salmon harvests in the Yukon Area are relatively minor compared to commercial and subsistence harvests. The Tanana River drainage is the exception because it supports a popular salmon sport fishery. Based upon the stock of concern status, the Yukon River drainage sport fishing bag limit was reduced preseason by emergency order to one chinook or one chum salmon in 2001 through 2003.

In summary, chinook salmon fisheries management has been cautious and conservative the last three years, and left surplus of chinook salmon unharvested in 2001 and 2003.

ACTION PLAN ALTERNATIVES

ACTION 1.

Require subsistence salmon fishing permits in all of Subdistrict 5-C (Figure 4).

Objective

Currently, subsistence permits are required in areas with road access of which Rampart is soon to be included and since the school has closed in this community, many of the residents have

become increasingly transient. The purpose for requiring permits is to collect accurate subsistence harvest information particularly in an area where potential fishers are difficult to find and survey post season.

Specific Action Recommended to Implement the Objective

Require subsistence users to obtain a subsistence permit before harvesting salmon in all Subdistrict 5-C by extending the existing permit area from Hess Creek down to the lower boundary of Subdistrict 5-C (westernmost tip of Garnet Island). These permits can be requested and processed via mail, fax, and more recently, via email. Subsistence users in this area will not need to request an amount to harvest. The permit will be used to determine more accurately the subsistence harvests, and participation in this area. The permits provide documentation of fish harvested by species by day.

Cost/Benefit Analysis

A more accurate assessment of subsistence harvests in an area of high exploitation will be available. Concern is expressed about diseased chinook salmon, and the additional harvest to compensate for these fish. Requiring permits will allow the department to better assess the needs of subsistence users in this area. This harvest information is necessary for fisheries management on both sides of the border and for salmon run reconstruction.

This requirement would create additional time necessary for subsistence users in Subdistrict 5-C to record their harvests on the permit, and take additional steps to obtain permits and to return their permits to ADF&G.

Subsistence Issues/Considerations:

Subsistence fishers may be reluctant to describe their specific harvests. Previously, personal interviews were conducted to assess the subsistence harvest take and did not require maintaining records of their harvests. If permits were issued for this community the annual subsistence survey could be eliminated.

Performance Measures

A measure of performance would be the reporting success of subsistence users in Subdistrict 5-C. A secondary performance measure would be the accuracy of the subsistence harvest in that area.

ACTION 2.

When the subsistence salmon fishing schedule is in effect, require gillnets with greater than 4 inches mesh size must be removed from the water and fish wheels not be operated during subsistence salmon fishing closures.

Objective

The purpose of this action is to reduce the harvest of salmon to provide for adequate spawning escapement while allowing the harvest of other species for subsistence needs. This action will improve enforceability of regulations.

Specific Action Recommended to Implement the Objective

During subsistence salmon fishing schedule closures, require all salmon nets with a mesh size larger than four inches must be removed from the water and fish wheels may not be operated.
5 AAC 01.220. LAWFUL GEAR AND GEAR SPECIFICATIONS. (4)

(4) **during subsistence salmon fishing closures as provided under 5 AAC 01.210 (b), all salmon nets with a mesh size larger than four inches must be removed from the water and fish wheels may not be operated.**

Cost/Benefit Analysis

Current subsistence regulations allow subsistence gear to be used to harvest non-salmon species during subsistence salmon fishing closures. During subsistence salmon fishing closures, emergency authority is necessary to implement mesh size and net length restrictions. This authority has been used previously, restricting mesh size to be no more than four-inches or less mesh size, and the length of the net to be no more than 60 feet. However, there is no regulation requiring removal of gillnets greater than 4 inch mesh size completely from the water nor to stop operating fish wheels for other species during such closures.

The proposed language change should not change the current subsistence harvest patterns, or be an additional expense for fishers wishing to harvest non-salmon species during closed subsistence salmon fishing periods.

Subsistence Issues/Considerations:

Subsistence fishermen must remove larger mesh gillnets from the water during closures. A few fishers have attempted to leave the net in the water but tie the web to the float line.

Performance Measures

A measure of performance would be meeting establishing chinook salmon escapement goals and better enforceability of regulations. Harvest levels would be determined through postseason subsistence surveys. The department encourages fishermen to keep track of their subsistence salmon harvest on household subsistence catch calendars or subsistence fishing permits. A postseason analysis of subsistence salmon harvests and escapement monitoring projects will be conducted to determine if the objective was achieved.

Board of Fisheries Regulatory Proposals Addressing Yukon River Chinook Salmon Stock of Concern

- Subsistence fishing schedule and fishing periods - proposal numbers: 132, 152, 153, 154, 155, 156, and 158.
- Subsistence fishing gillnet gear – proposal numbers 159, 160, 161, 162, and 163.
- Open subsistence fishing waters – proposal number 164.
- Close spawning streams to all fishing – proposal number 165.
- Commercial fishing allocations – proposal numbers 166, 167, 168, and 170.
- Commercial gear specifications – proposal numbers 169, 171, and 172.
- Sport fish management – proposal numbers 173 and 174.

RESEARCH PLAN

US-Canada Joint Technical Committee Plan

The US/Canada Yukon River Joint Technical Committee is currently developing a salmon research plan (JTC 2003); a draft of this plan is provided in Appendix 1. This planning process was initiated in 2002. The goals, issues, and needs contained in this plan will provide a clear framework for salmon research within the entire Yukon River drainage. A comprehensive plan will assist managers on both sides of the U.S./Canada border to meet escapement goals while maximizing harvests. Additionally, this plan will provide a focus and direction for research time and monies. Projects can be prioritized, and personnel and equipment allocated to those agreed most important. This plan will guide the JTC on key research and conservation needs for the entire Yukon River drainage. The plan will also be used by each agency to internally set priorities and communicate with an international public. The plan's comprehensive listing of all research needs for the entire basin provides a framework for other plans in the region.

Radio Telemetry

A large-scale radio telemetry project to estimate abundance and distribution of chinook salmon was initiated in the lower river near Russian Mission and Marshall in 2001 (Spencer et al, 2002). The project is primarily federal funded through USFWS, OSM, and US/Canada Treaty Implementation, with additional funding from YRDFA and BSFA, through U.S./Canada Restoration and Enhancement (R&E) funding. The goal of this multi-year cooperative study is to determine the migratory characteristics, abundance, and escapement distribution of Yukon River chinook salmon. This project has identified new spawning areas, identified relative importance of known spawning areas, provided preliminary population estimates, and has allowed genetic sampling from known individual spawning tributaries without the additional cost of actually going to the tributary.

Ichthyophonus

In 2001, ADF&G received a $500,000 grant through the Southeast Sustainable Salmon Initiative, earmarked for *Ichthyophonus* research within the Yukon River chinook salmon throughout the drainage. A sub-committee of the U.S./Canada JTC was formed with the expressed goal of maximizing research benefits from this grant. State, federal, non-governmental, and Canadian DFO JTC members formed the sub-committee on *Ichthyophonous* research. The primary goal of this directed research was to determine management and conservation implications of *Ichthyophonus* in Yukon River chinook salmon. The sub-committee is currently working with a contractor to determine if a non-lethal test is available. A method of testing, called a Polymerase Chain Reaction (PCR) show promise that non-lethal sampling is possible. This test is very sensitive and it is hoped it can be used to detect infectious bodies in the blood. The committee is making PCR investigation a priority. Results for the PCR test are expected by the end of the 2003 with a report available in the spring of 2004.

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Spencer, T. R., et al. 2002. Yukon River radio telemetry study, 2000-2001. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A02-37, Anchorage, Alaska.

Table 1. Yukon River chinook salmon historical escapements from selected tributaries, 1980-2003.

	Ground based projects			Aerial Surveys [a]				
Year	Chena R.	Salcha R.		E. F. Andreafsky R.	W.F. Andreafsky	Anvik R.	Nulato R.	Gisasa R.
1980					1,500	1,330		951
1981								
1982				1,274	851			421
1983							1,006	572
1984				1,573	1,993			
1985				1,617	2,248	1,051	2,780	735
1986	9,065			1,954	3,158	1,118	2,974	1,346
1987	6,404	4,771		1,608	3,281	1,174	1,638	731
1988	3,346	4,562		1,020	1,448	1,805	1,775	797
1989	2,666	3,294		1,399	1,089			
1990	5,603	10,728		2,503	1,545	2,347		
1991	3,025	5,608		1,938	2,544	875	2,020	1,690
1992	5,230	7,862		1,030	2,002	1,536	579	910
1993	12,241	10,007		5,855	2,765	1,720	3,025	1,573
1994	11,877	18,399					1,795	2,775
1995	9,680	13,643		1,635	1,108	1,996	1,649	410
1996	6,833	7,958			624	839		
1997	13,390	18,396		1,140	1,510	3,979		
1998	4,745	5,027		1,027	1,249	709	1,053	889
1999	6,485	9,198						
2000	4,707	3,108		1,018	427	1,721		
2001	9,244	13,328		1,065	570	1,420	1,884	1,298
2002	6,967	8,850		1,447	977	1,713	1,584	506
2003	14,149 [b]	20,148 [b]			1,578			
10 Yr. Avg. (1993-2002)	8,617	10,791		1,884	1,154	1,762	1,832	1,242
BEGs	2,800 - 5,700	3,300- 6,500	SEGs	>1,500	>1,400	>1,300	>1,300	>600

[a] Only acceptable surveys are included .

[b] Escapement estimates were the projected escapements at the time the project ended because of high water.

Table 2. Yukon River chinook salmon harvests in Alaska, 1961-2002 and the estimated harvest for 2003.

Year	Comm	Comm-Related [d]	Total Commercial	Subsistence	Personal Use	ADF&G Test Fish	Sport Fish [f]	Total
1961	119,664	0	119,664	21,488				141,152
1962	94,734	0	94,734	11,110				105,844
1963	117,048	0	117,048	24,862				141,910
1964	93,587	0	93,587	16,231				109,818
1965	118,098	0	118,098	16,608				134,706
1966	93,315	0	93,315	11,572				104,887
1967	129,656	0	129,656	16,448				146,104
1968	106,526	0	106,526	12,106				118,632
1969	91,027	0	91,027	14,000				105,027
1970	79,145	0	79,145	13,874				93,019
1971	110,507	0	110,507	25,684				136,191
1972	92,840	0	92,840	20,258				113,098
1973	75,353	0	75,353	24,317				99,670
1974	98,089	0	98,089	19,964				118,053
1975	63,838	0	63,838	13,045				76,883
1976	87,776	0	87,776	17,806				105,582
1977	96,757	0	96,757	17,581			156	114,494
1978	99,168	0	99,168	30,297			523	129,988
1979	127,673	0	127,673	31,005			554	159,232
1980	153,985	0	153,985	42,724			956	197,665
1981	158,018	0	158,018	29,690			769	188,477
1982	123,644	0	123,644	28,158			1,006	152,808
1983	147,910	0	147,910	49,478			1,048	198,436
1984	119,904	0	119,904	42,428			351	162,683
1985	146,188	0	146,188	39,771			1,368	187,327
1986	99,970	0	99,970	45,238			796	146,004
1987	134,760	0	134,760	51,418	1,706		502	188,386
1988	100,364	0	100,364	43,907	2,125	1,081	944	148,421
1989	104,198	0	104,198	48,446	2,616	1,293	1,053	157,606
1990	95,247	413	95,660	48,587	2,594	2,048	544	149,433
1991	104,878	1,538	106,416	46,773	0	689	773	154,651
1992	120,245	927	121,172	45,626	0	962	431	168,191
1993	93,550	560	94,110	65,275	426	1,572	1,695	163,078
1994	113,137	703	113,840	54,563	0	1,631	2,281	172,315
1995	122,728	1,324	124,052	48,535	399	2,152	2,525	177,663
1996	89,671	521	90,192	43,306	215	1,698	3,151	138,562
1997	112,841	769	113,610	55,978	313	2,811	1,913	174,625
1998	43,618	81	43,699	53,733	357	926	654	99,369
1999	69,275	288	69,563	52,194	331	1,205	1,023	124,316
2000	8,518	0	8,518	35,841	75	597	277	45,308
2001				53,059	122	0	571	53,752
2002	24,200	230	24,430	43,900	62	450		68,842
2003	40,692	0	40,692	52,000	189			92,881
1989-1998 Average	100,011	684	100,695	51,082	692	1,578	1,502	155,549
1999-2003 Average	35,671	130	35,801	47,399	156	563	624	77,020

Table 3. Yukon River Canadian chinook salmon total utilization in numbers of fish, 1961-2003. [a]

	Mainstem Yukon							
	Non-Commercial					Old Crow	Total Canadian	
Year	Domestic	Aboriginal [a]	Sport [b]	Comm	Total	Aboriginal	Harvest	Escapement
1961		9,300		3,446	12,746	500	13,246	
1962		9,300		4,037	13,337	600	13,937	
1963		7,750		2,283	10,033	44	10,077	
1964		4,124		3,208	7,332	76	7,408	
1965		3,021		2,265	5,286	94	5,380	
1966		2,445		1,942	4,387	65	4,452	
1967		2,920		2,187	5,107	43	5,150	
1968		2,800		2,212	5,012	30	5,042	
1969		957		1,640	2,597	27	2,624	
1970		2,044		2,611	4,655	8	4,663	
1971		3,260		3,178	6,438	9	6,447	
1972		3,960		1,769	5,729		5,729	
1973		2,319		2,199	4,518	4	4,522	
1974	406	3,342		1,808	5,556	75	5,631	
1975	400	2,500		3,000	5,900	100	6,000	
1976	500	1,000		3,500	5,000	25	5,025	
1977	531	2,247		4,720	7,498	29	7,527	
1978	421	2,485		2,975	5,881		5,881	
1979	1,200	3,000		6,175	10,375		10,375	
1980	3,500	7,546	300	9,500	20,846	2,000	22,846	
1981	237	8,879	300	8,593	18,009	100	18,109	
1982	435	7,433	300	8,640	16,808	400	17,208	19,790
1983	400	5,025	300	13,027	18,752	200	18,952	28,989
1984	260	5,850	300	9,885	16,295	500	16,795	27,616
1985	478	5,800	300	12,573	19,151	150	19,301	10,730
1986	342	8,625	300	10,797	20,064	300	20,364	16,415
1987	330	6,069	300	10,864	17,563	51	17,614	13,260
1988	282	7,178	650	13,217	21,327	100	21,427	23,118
1989	400	6,930	300	9,789	17,419	525	17,944	25,201
1990	247	7,109	300	11,324	18,980	247	19,227	37,699
1991	227	9,011	300	10,906	20,444	163	20,607	20,743
1992	277	6,349	300	10,877	17,803	100	17,903	25,382
1993	243	5,576	300	10,350	16,469	142	16,611	28,558
1994	373	8,089	300	12,028	20,790	428	21,218	25,890
1995	300	7,945	700	11,146	20,091	796	20,887	32,262
1996	141	8,451	790	10,164	19,546	66	19,612	28,409
1997	288	8,888	1,230	5,311	15,717	811	16,528	37,683
1998	24	5,424		390	5,838	99	5,937	16,750
1999	213	8,804	278	3,160	12,455	114	12,569	11,153
2000		4,829			4,829	50	4,879	12,166
2001	89	8,188	98	1,351	9,726	370	10,096	43,933
2002	26	8,179	200	708	9,113		9,113	34,246
[c] 2003	111	5,151	300	2,657	8,219		8,219	49,781
1993-2002 Avg.	201	7,670	543	6,657	15,002	351	15,309	27,105
2003 vs. Avg.	-44.8%	-32.8%	-44.7%	-60.1%	-45.2%	-100.0%	-46.3%	83.7%

[a] Includes fish from DFO test fish operations. Escapement objectives set by the US-Canadian Panel. For 2003, the objective was 28,000 if commercial fishing occurred and 25,000 if no commercial fishing.

[b] Canadian sport fish harvest unknown prior to 1980.

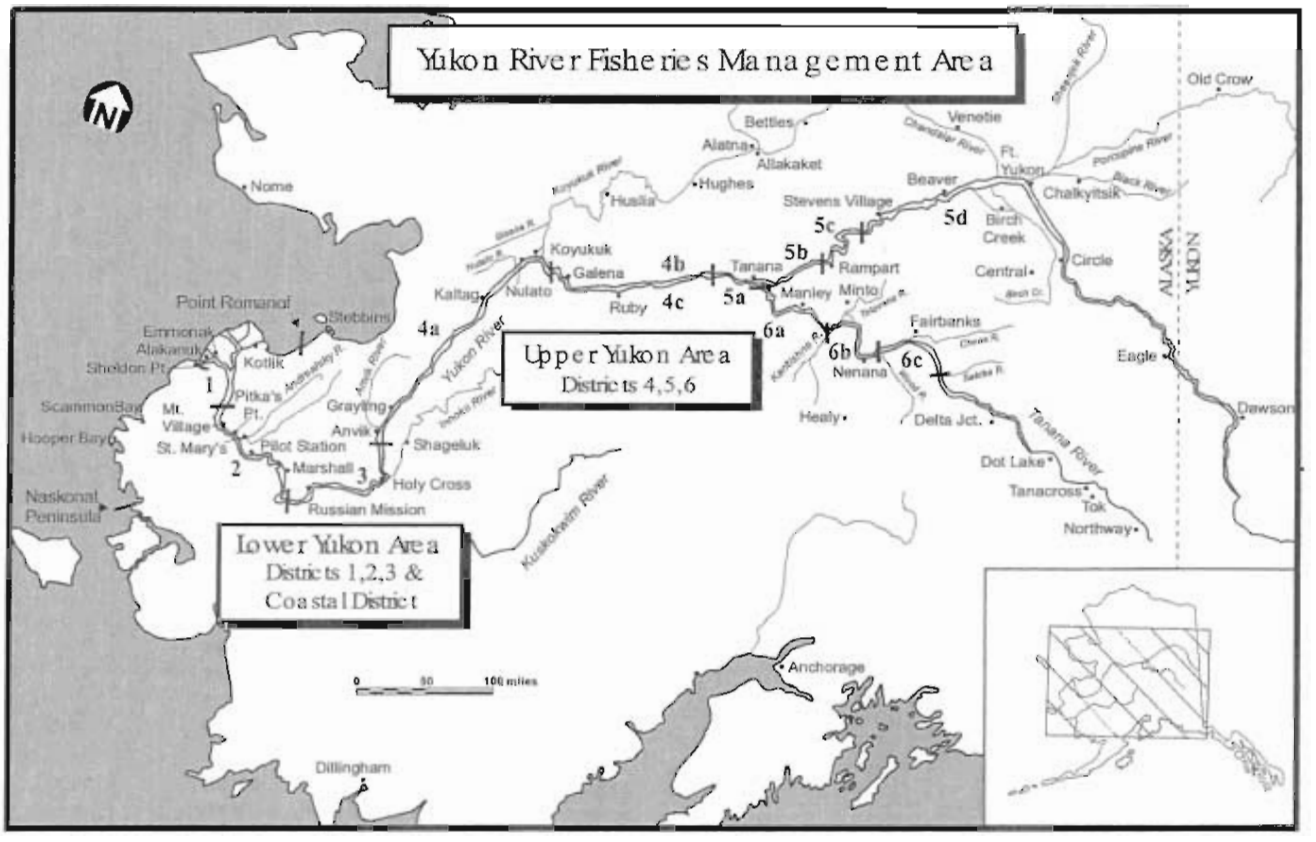

Figure 1. Yukon Area showing communities and fishing districts.

Figure 1. The Yukon Area showing communities and

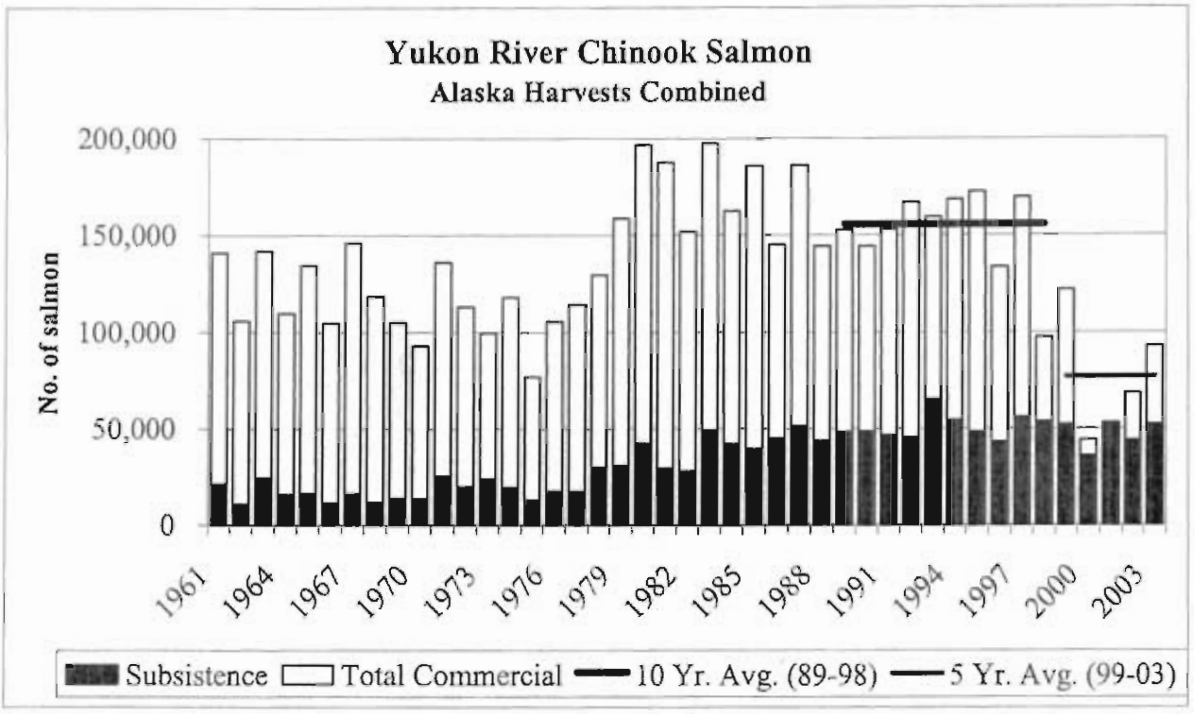

Figure 2. Yukon River chinook salmon subsistence and commercial harvests compared to the 1989-1998 average (155,549) and the 1999-2003 average (77,020).

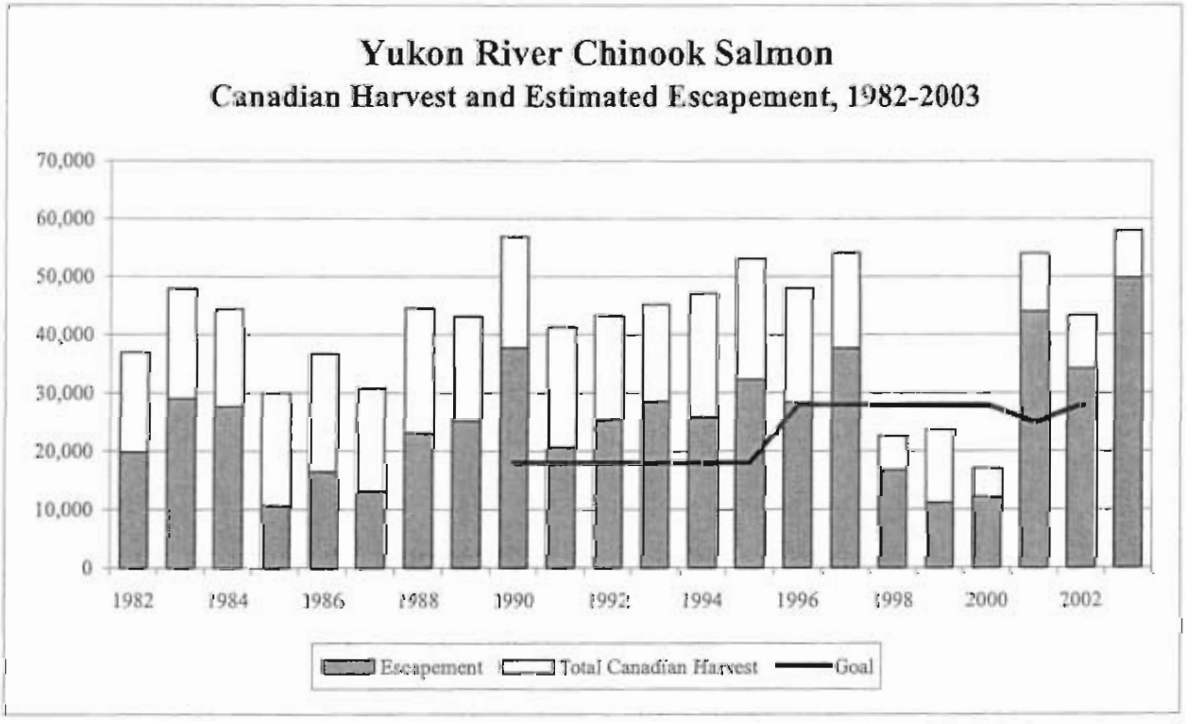

Figure 3. Canadian harvests of Yukon River chinook salmon and the estimated escapement, 1982-2003.

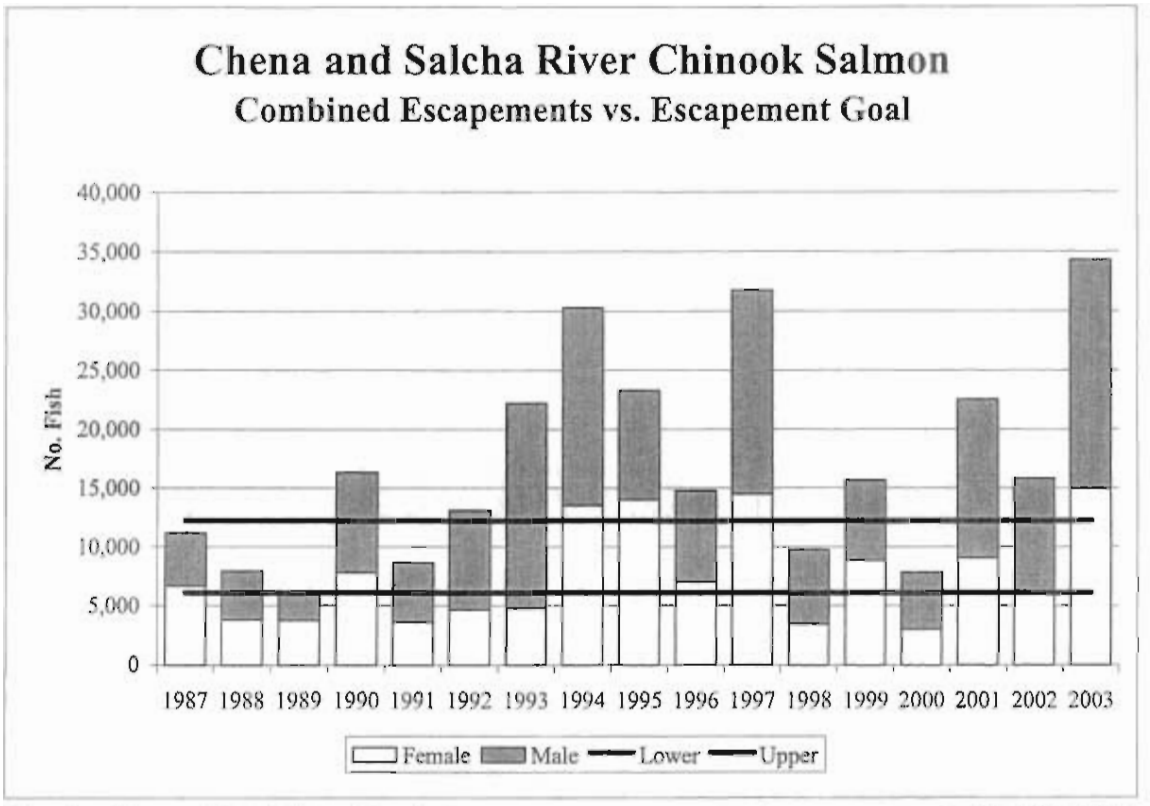

Figure 4. Chena and Salcha River chinook salmon escapements compared to the escapement goal, 1987-2003 (2003 is preliminary). The BEG was established in 2001 and the goal has been extended back to show trend.

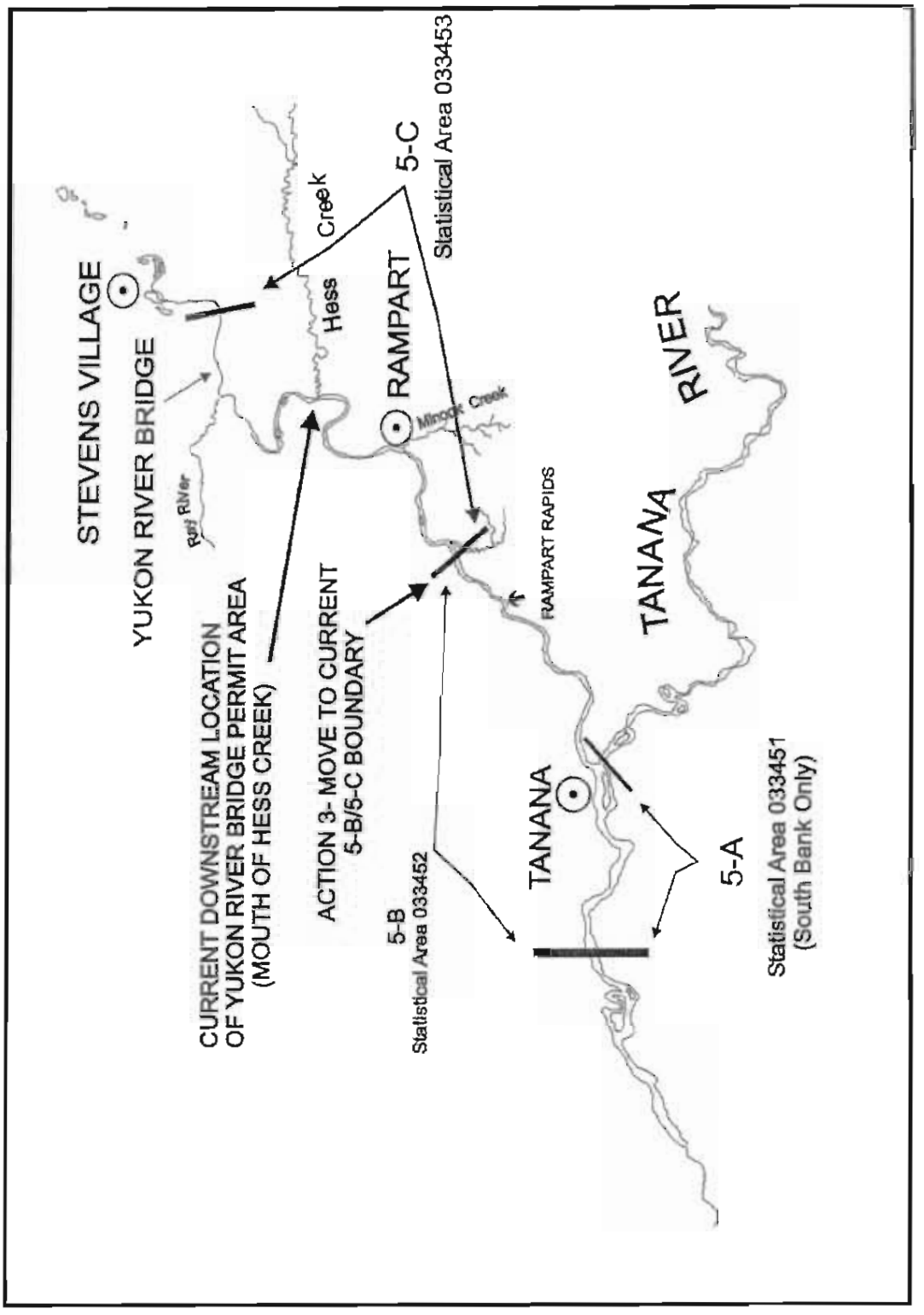

Figure 5. District 5 with the proposed extended permit requirement area.

Appendix 1. US-Canada Yukon River Joint Technical Committee Research Plan.

US and Canada Yukon River

Joint Technical Committee

Plan

Contents

Message From The Co-Chairs

The Yukon River wild salmon runs are marvelous phenomena of nature. The Yukon River supports five species of salmon: chinook, chum, pink, sockeye, and coho salmon, along with two races of chum salmon, summer and fall chum salmon. Three species are subject to intensive commercial and subsistence fisheries (chinook, summer and fall chum, and coho). Migrating salmon can travel from approximately a hundred miles to over 2,000 miles from the mouth at the Bering Sea to their spawning tributaries in Alaska, Yukon or British Columbia. Summer chum salmon spawn in the lower and middle Yukon in Alaska; coho salmon spawn primarily in Alaska, but small numbers do migrate to Canada. Chinook and fall chum salmon spawn extensively in both the Alaskan and Canadian portions of the drainage. Increased demand on this resource challenges us to encourage conservation, promote restoration and protect opportunities to participate in this unique fishery.

The planning process was initiated in 2002. The goals, issues and needs contained in this plan provide a clear framework for research in the entire Yukon River basin. We believe this framework will help guide our efforts in research and management of our shared resource into the future.

We want to thank the staff of all representative agencies and members of the public who worked to develop this plan. As with any dynamic plan, it will change according to circumstances.

These fisheries are a wonder of nature, if we responsibly conserve, restore and enhance them now, we can hand them as gifts to future generations.

Good Fishing

John Hilsinger and Sandy Johnston
Joint Technical Committee Co-Chairs

The Joint Technical Committee

Established as a scientific advisory body to the Advisors of both countries who were involved in the Yukon River Treaty negotiations (1985), and now advise the Yukon River Panel, the Joint Technical Committee (JTC) applies scientific expertise to complex problems. Comprised of representatives from U.S. and Canadian government agencies and non-governmental organizations, the committee meets semiannually to discuss harvest and escapement goals, management and trends, and preseason outlooks and postseason results. Research projects are cooperatively completed and communications encouraged between managers and with the public. Expertise is contracted when necessary from outside the membership to conduct studies important to the fishery, for example, the identification of individual stocks of these mixed stock groupings, and on the presence of disease.

Motive for planning

The Yukon River Salmon Agreement, from the Pacific Salmon Treaty, provides for salmon management, conservation and harvest allocation programs and projects. Twenty-one other documents were identified as relevant to JTC research and restoration in the Yukon River. The direction of theses many mandates to the JTC can be summarized: Protect wild salmon stocks and habitats. Sustain optimum salmon production. Collect information on salmon behavior and health, recommend escapement objectives and management regimes, investigate new ways to evaluate rebuilding and determine total return and escapement. Assess habitat and measures to protect and enhance salmon habitat. Collect data on major tributaries for the exploitation of Yukon origin salmon.

A comprehensive plan for the JTC will help management meet and protect escapements, and maximize harvest. Vulnerable habitat can be identified.

This plan will provide a focus and direction for research time and monies. Projects can be prioritized, and personnel and equipment allocated to those agreed most important.

Cooperative research is made more constructive. Communication is encouraged during the planning process, misunderstandings can be rectified and discussion can be educating. The plan's comprehensive listing of all research needs for the entire basin provides a framework for other plans in the region.

This plan will guide the JTC on key research and conservation needs for the entire Yukon River basin. We will use the plan in each agency internally and to communicate with an international public.

JTC PLAN MISSION STATEMENT

Consistent with the Yukon River Salmon Agreement and relevant policies, this plan will provide guidance for the management, protection, restoration and sustainable use of Yukon River drainage salmon stocks and their habitats in a healthy ecosystem context through cooperative and collaborative application of traditional and local knowledge and scientific research.

Goals

GOAL ONE ASSESS AND ACHIEVE FISHERY MANAGEMENT OBJECTIVES.

OBJECTIVES:

1. *Monitor or project escapements by Conservation Management Unit*
2. *Assess abundance inseason*
3. *Establish management objectives*
4. *Improve management and research capability*
5. *Monitor harvest by Conservation Management Unit*
6. *Maintain and improve harvest management consultation*
7. *Investigate and implement precautionary management*

Objective One: Monitor or project escapements by CMU Conservation Management Unit

Key Issues:

1.1.1 Estimate or index escapements

1.1.2 Estimate the stock biological or other composition escapements

Objective Two: Assess abundance inseason

Key Issues:

1.2.1 Estimate or index abundance

1.2.2 Estimate CMU composition of abundance

1.2.3 Estimate characteristics of run timing

Objective Three: Establish management objectives

Key Issues:

1.3.1 Establish escapement goals and/or reference points by Conservation Management Unit Define CMU

1.3.2 Identify CMUs {conditioned on definition}

1.3.3 Establish or improve harvest strategies (mesh size, schedules)

1.3.4 Establish rebuilding plans as necessary

Objective Four: Improve management and research capability

Key Issues:

1.4.1 Improve run assessment capability

1.4.2 Improve escapement assessment capability

1.4.3 Investigate new technology, methods and models

1.4.4 Investigate harvesting methods

1.4.5 Improve forecasting ability

Objective Five: Monitor harvest by CMU

Key Issues:

1.5.1 Estimate harvest by fishery inseason

1.5.2 Estimate the stock biological or composition of harvest

Objective Six: Maintain and improve harvest management consultation

Key Issues:

1.6.1 Improve drainagewide consultation

1.6.2 Coordinate management plans

Objective Seven: Investigate and implement precautionary management

Key Issues:

1.7.1 Assess limitations of management tools

1.7.2 Incorporate uncertainty into decision making

1.7.3 Define precautionary approach

GOAL TWO: ASSESS, CONSERVE AND RESTORE SALMON HABITATS

OBJECTIVES:

1. *Identify, characterize and catalog salmon habitats*
2. *Minimize future impacts to habitat*
3. *Identify and implement restoration opportunities*

Objective One: Identify, characterize and catalog salmon habitats

Key Issues:

2.1.1 Identify important features of habitat

2.1.2 Develop habitat assessment protocols

2.1.3 Define boundaries of use over time

2.1.4 Develop models of habitat suitability and use

Objective Two: Minimize future impacts to habitat

Key Issues:

2.2.1 Identify activities with potential to impact habitat
2.2.2 Identify and promote opportunities to develop more effective regulations
2.2.3 Identify and participate in available planning processes
2.2.4 Assess regulations with the potential to affect habitat

Objective Three: Identify and implement restoration opportunities

Key Issues:

2.3.1 Identify negatively affected habitats
2.3.2 Develop, implement and evaluate restoration plans
2.3.3 Develop and evaluate restoration techniques

GOAL THREE: BUILD AND MAINTAIN PUBLIC SUPPORT OF, AND MEANINGFUL PARTICIPATION IN, SALMON RESOURCE MANAGEMENT

OBJECTIVES:

1. Develop mutual understandings between agencies and the public
2. Build and maintain community capacity
3. Encourage stewardship of the resource
4.Promote public values of the salmon resource

Objective One: Develop mutual understandings between agencies and the public

Key Issues:

3.1.1 Promote understanding and participation in the development of management plans, methods and strategies
3.1.2 Develop inclusive communication strategy
3.1.3 Document and utilize traditional and local knowledge following protocols
3.1.4 Educate the public on agency missions and mandates

Objective Two: Build and maintain community capacity

Key Issues:

3.2.1 Utilize capabilities of communities
3.2.2 Identify capabilities and needs of communities
3.2.3 Increase capabilities of communities

Objective Three: Encourage stewardship of the resource

Key Issues:

3.3.1 Educate industries with impact potential
3.3.2 Participate in planning initiatives
3.3.3 Recognize and promote responsible use of the resource

Objective Four: Promote public values of the salmon resource

Key Issues:

3.4.1 Educate public on the values of salmon and salmon habitat
3.4.2 Document cultural values of salmon resources by community
3.4.3 Identify opportunities to increase the values of salmon

GOAL FOUR: IMPROVE UNDERSTANDING OF SALMON BIOLOGY AND ECOLOGY

OBJECTIVES:

1. Investigate relationships between salmon and their physical environment
2. Investigate relationships between salmon and other organisms

Objective One: Investigate relationships between salmon and their physical environment

Key Issues:

4.1.1 Assess the influence of environment on productivity
4.1.2 Assess the influence of salmon on environment
4.1.3 Describe contaminant dynamics

Objective Two: Investigate relationships between salmon and other organisms

Key Issues:

4.2.1 Evaluate impacts of disease and parasites
4.2.2 Assess and monitor ecosystem structure and health
4.2.3 Investigate effects of competition
4.2.4 Determine predator-prey relationships

DEVELOPING THE PLAN

Initially, Dr. Margaret Merritt was contracted to facilitate the planning process and write the JTC plan. The first planning meeting was the week of May 14, 2002 in Whitehorse, Yukon. With Dr. Merritt's direction, the JTC used the Analytical Hierarchy Process and related Expert Choice software to develop the research plan. Goals, objectives and issues were ranked according to importance. The committee broke into groups based on interest (escapement, harvest, stewardship, habitat and ecosystem) to prioritize current issues and possible future projects. A glossary was written to define terms used within the plan. Dr. Merritt wrote a draft plan, not for general distribution, describing the planning process and the results of the initial planning exercise for the JTC in September 2002.

The JTC discussed the draft plan at our meeting in Whitehorse during the week of 28 October 2002. Work session discussions identified numerous research themes and needs, and were educational for JTC members with different backgrounds and interests, but the JTC thought the draft plan would benefit from additional work before proceeding to the next step. The JTC formed an ad hoc subcommittee tasked with trying to improve the organization of the plan, while maintaining its original content. The subcommittee combined two of the original goals, leaving four goals: fisheries management, public support and participation, habitat, and salmon biology. Within each goal, objectives and issues were generalized and referenced from the original plan. The subcommittee completed its work and a new draft plan structure was distributed to all JTC members for review February 2003.

Sub-committee members prioritized the goals, objectives and issues of the newly reworked plan in May 2003 and list the projects under relevant issues. Each project's objectives were used to guide project placement within the plan. By agreement, any project could not appear more than three times within the plan.