Fishery Management Report No. 16-25

Annual Management Report Yukon and Northern Areas 2008

by

Daniel J. Bergstrom

Steve Hayes

Bonnie M. Borba

and

Eric Newland

August 2016

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics (F, t, χ^2, etc.)	
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

FISHERY MANAGEMENT REPORT NO. 16-25

ANNUAL MANAGEMENT REPORT YUKON AND NORTHERN AREAS 2008

by
Daniel J. Bergstrom, Steve J. Hayes, and Eric Newland
Alaska Department of Fish and Game, Division of Commercial Fisheries, Anchorage
and
Bonnie M. Borba
Alaska Department of Fish and Game, Division of Commercial Fisheries, Fairbanks

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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Daniel J. Bergstrom, Steve J. Hayes, and Eric Newland,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
333 Raspberry Road, Anchorage AK, 99518 USA

and

Bonnie M. Borba
Alaska Department of Fish and Game, Division of Commercial Fisheries,
1300 College Road, Fairbanks AK, 99701 USA

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PREFACE

This report summarizes the 2008 season and historical information concerning management of subsistence, commercial, and personal use fisheries of the Yukon and Northern Areas of the Arctic-Yukon-Kuskokwim (AYK) Region. Data from selected management and research projects are included in this report. A more complete documentation of project results is presented in separate reports.

Data in this report supersedes information found in previous management reports. An attempt has been made to update information and correct errors from earlier reports.

This report is organized into 4 major sections:

1. Salmon Fishery
2. Cape Romanzof District Herring Fishery
3. Other Marine and Freshwater Finfish Fisheries
4. Northern Area

ABSTRACT

The 2008 Yukon and Northern Area management report summarizes management activities of the Alaska Department of Fish and Game, Division of Commercial Fisheries in the Yukon and Northern Areas of Alaska. The report provides the status of Yukon Area salmon stocks (Chinook *Oncorhynchus tshawytscha*, coho *O. kisutch*, summer chum and fall chum *O. keta*) in 2008; provides data on the utilization of salmon species by commercial, subsistence, personal use, and sport fisheries; and presents an outlook for the 2009 fishing season. Alaska and Canada fisheries are summarized because the Yukon River is a transboundary river. Fisheries data in this report supersedes information in previous annual management reports. Some data are preliminary and may be presented with minor differences in future reports. The Yukon Area report is organized into 4 sections: 1) *Salmon Fishery*: a description of the Yukon Area, fishery resources and fisheries management practices, including a comprehensive report of the 2008 Yukon Area salmon fisheries, by summer and fall season, which makes comparisons to previous years, 2) *Cape Romanzof District Herring Fishery*: a description of the area, fisheries, management practices, and summary of the 2008 herring fishery, 3) *Other Marine and Freshwater Finfish Fisheries*: a description of the fishery resources and freshwater finfish fisheries other than salmon and herring, and 4) *Northern Area*: a description of the area and documentation of the Colville River commercial freshwater finfish fishery.

Keywords: Chinook salmon, *Oncorhynchus tshawytscha*, chum salmon, *O. keta*, coho salmon, *O. kisutch*, Pacific herring, *Clupea pallasii*, Yukon River Salmon Agreement, fisheries management, escapement, commercial harvest, subsistence harvest, season outlook, Yukon River, Yukon Area.

INTRODUCTION

The Division of Commercial Fisheries of the Alaska Department of Fish and Game (ADF&G) is responsible for the management of state subsistence, personal use, and commercial fisheries in the Yukon Area of the Arctic-Yukon-Kuskokwim (AYK) Region. This annual management report details the activities of ADF&G in the Yukon Area during 2008. The Yukon River is a transboundary river and as such, information is provided on fishery management, harvests, and projects in the Canadian portion of the drainage. Much of the information related to salmon in this report is taken directly from the annual Joint Technical Committee of the U.S./Canada Panel report, *Yukon River salmon 2008 season summary and 2009 season outlook*, which also provides historical salmon harvest and escapement data (JTC 2009). For a more historical perspective pertaining to the Yukon Area fisheries, see the *Annual Management Report for the Yukon and Northern Areas 2002–2004* (Hayes et al. 2008).

The Yukon Area includes all waters of the Yukon River drainage in Alaska and all coastal waters of Alaska from Point Romanof southward to the Naskonat Peninsula (Figure 1). Important commercial and subsistence fisheries include salmon and herring. Other marine and freshwater finfish are harvested primarily for subsistence use. A list of indigenous fishes found in the Yukon Area is provided in Appendix A1.

SALMON FISHERY

DESCRIPTION OF AREA AND DISTRICT BOUNDARIES

The Yukon River is the largest river in Alaska and the fifth largest drainage in North America. The river originates in British Columbia, Canada, within 30 miles of the Gulf of Alaska, and flows over 2,300 miles to its terminus at the Bering Sea. It drains an area of approximately 330,000 square miles, two-thirds of which (approximately 222,000 square miles) are within Alaska. With the possible exception of fish taken near the mouth or in the adjacent coastal waters, only salmon of Yukon River origin are harvested in the Yukon Area.

The Yukon Area is divided into 7 districts and 10 subdistricts for management and regulatory purposes (Figure 2). The district boundaries were originally established in 1961 and redefined in 1962, 1974, 1978, 1994, and 1996. The Lower Yukon Area (Districts 1, 2, and 3) includes the Yukon River drainage from the mouth to Old Paradise Village, river mile 301. The Upper Yukon Area (Districts 4, 5, and 6) is that portion of the Yukon River drainage upstream of Old Paradise Village to the border with Canada. The Coastal District was established in 1994, redefined in 1996, and is open only to subsistence fishing. The districts and subdistricts are further divided into 28 statistical areas for management and reporting purposes (Figures 3–9). Yukon River mileages at specific locations are listed in Appendix A2.

Excluding the greater Fairbanks area (approximately 84,000 residents), there are approximately 21,000 rural residents in the Alaska portion of the drainage (U.S. Census 2000), the majority of whom reside in 43 small communities scattered along the coast and major river systems. Most of these people are dependent to varying degrees on fish and game resources for their livelihood.

Subsistence fishing occurs throughout the mainstem and tributaries of the Yukon River. Commercial salmon fishing may be allowed along the entire 1,200 mile length of the mainstem Yukon River in Alaska, the lower 225 miles of the Tanana River, and the lower 12 miles of the Anvik River. In addition to the U.S. fisheries, Aboriginal, commercial, sport, and domestic salmon fisheries also occur in the Canadian portion of the Yukon River drainage. Department of Fisheries and Oceans, Canada (DFO) conducts the corresponding fishery management activities in Canada.

FISHERY RESOURCES

Five species of Pacific salmon are found in the Yukon River drainage: Chinook salmon *Oncorhynchus tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and sockeye salmon *O. nerka*. Chinook salmon are the largest salmon found in the Yukon River, weighing up to 90 pounds. Spawning populations of Chinook salmon have been documented throughout the Yukon River drainage from the Archuelinguk River, located approximately 80 miles from the mouth, to as far upstream as the headwaters of the drainage in Canada, nearly 2,000 miles from the mouth. Chinook salmon begin entering the mouth of the Yukon River soon after ice breakup, during late May or early June, and continue through mid-July.

The chum salmon return is made up of a genetically distinct early- and late- chum salmon runs. Summer chum salmon are characterized by earlier run timing (early June to mid-July at the mouth), rapid maturation in fresh water, and smaller size (average 6 to 7 pounds). Summer chum salmon spawn primarily in run-off streams in the lower 700 miles of the drainage and in the

Tanana River drainage. Fall chum salmon are distinguished by later run timing (mid-July to early September at the mouth), robust body shape, and larger size (average 7 to 8 pounds). Fall chum salmon primarily spawn in the upper portion of the drainage in streams that are spring fed. Major fall chum salmon spawning areas include the Tanana, Porcupine, and Chandalar river drainages, as well as various streams in Yukon Territory, Canada, including the mainstem Yukon River. The fall chum salmon run size is typically much smaller than that of summer chum salmon.

Coho salmon enter the Yukon River from late July through September and average approximately 7 pounds in weight. Coho salmon spawn discontinuously throughout the Alaska portion of the drainage, primarily in tributaries in the lower 700 miles of the drainage and in the Tanana River drainage. Major spawning populations of coho salmon have been documented in tributaries of the Tanana River and in the Andreafsky River.

Pink salmon enter the lower river from late June to late July and average approximately 2 to 3 pounds in weight. Pink salmon primarily spawn in the lower portion of the drainage, downstream of the community of Grayling (river mile 336). However, pink salmon have been caught in the mainstem Yukon River upstream as far as Fort Yukon, which is located at river mile 1,002 (Busher et al. 2009). Pink salmon typically exhibit a 2-year cycle with high abundance during even numbered years and low abundance during odd-numbered years.

Sockeye salmon are uncommon in the Yukon River drainage, and only a few fish are caught each year. Observations of sockeye salmon have occurred in the Innoko (ADF&G 1986), Kantishna (Louis Barton, Commercial Fisheries Biologist, ADF&G, Fairbanks, personal communication 1988), Tanana (B. Borba, Commercial Fisheries Biologist, ADF&G, Fairbanks, personal communication 2004), Anvik (Mike Erickson, Commercial Fisheries Biologist, ADF&G, Anchorage, personal communication 1989), and Gisasa (Melegari 2009) river drainages. Sockeye salmon have been reported in the mainstem Yukon River upstream of Rampart (river mile 763). A small number of sockeye salmon are annually counted at the East Fork Andreafsky River weir (Maschmann 2009).

MANAGEMENT

The policy of ADF&G is to manage the salmon runs to the extent possible for maximum sustained yield, unless otherwise directed by state regulation (5 AAC 39.222. *Policy for the Management of Sustainable Salmon Fisheries*). ADF&G has managed the salmon fisheries in the Yukon Area over the past few decades with the dual goal of maintaining important fisheries and achieving desired escapements consistent with the *Sustainable Salmon Fisheries Policy*. Management of the Yukon River salmon fishery is complex due to the inability to determine stock specific abundance and timing, overlapping multispecies salmon runs, the increasing efficiency of the fishing fleet, allocation issues, and the immense size of the Yukon River drainage. The Alaska State Legislature and the Alaska Board of Fisheries (BOF) have designated subsistence use as the highest priority among beneficial uses of the resource. To maintain the subsistence priority and provide spawning escapements that ensure sustainable yields, Yukon River salmon fisheries must be managed conservatively.

For management purposes, the summer season refers to the fishing associated with the Chinook and summer chum salmon migrations and fall season refers to the fishing associated with the fall chum and coho salmon migrations. Salmon fisheries within the Yukon River drainage may harvest stocks that are up to several weeks and over a thousand miles from their spawning grounds. Because the Yukon River commercial fishery is a mixed stock fishery, some tributary

populations may be under- or overexploited in relation to their actual abundance. Based on current knowledge, it is not possible to manage for individual stocks in most areas where commercial fishing occurs. Within the Yukon River drainage only stocks within the Tanana and Anvik rivers can be managed as terminal harvest areas.

ADF&G uses an adaptive management strategy that evaluates run strength inseason to determine if a harvestable surplus above escapement requirements and subsistence uses exists. Primary tools used to manage the commercial salmon fisheries are management plans, guideline harvest ranges established by the BOF, and emergency order (EO) authority, which is used to implement time and area openings or closures and mesh size restrictions. Guideline harvest ranges have been established for Chinook, summer chum, and fall chum salmon commercial fisheries throughout the Alaska portion of the drainage. ADF&G attempts to manage the commercial salmon fisheries so the harvest in each district is within their respective guideline harvest ranges. The prosecution of a coho salmon directed commercial fishery conditionally based on the abundance of fall chum salmon; typically the harvest of coho salmon is incidental to the fall chum salmon fishery. In 1983, a Set Gillnet Only Area (Figure 10) along the coastal area of District 1 was established where only set gillnets are allowed during commercial fishing periods. In general, more commercial fishing time has been allowed in the coastal Set Gillnet Only Area due to the influence of tides on gear efficiency.

During the fishing season, management is based on preseason projections and inseason run assessment. Inseason run assessment includes abundance indices from test fisheries; passage estimates from various sonar and mark–recapture projects; spawning escapement; and harvest data. Since 1995, the main river sonar project at Pilot Station has provided inseason estimates of salmon passage for fisheries management. The level of commercial, subsistence, and personal use harvests can be adjusted through the use of EOs to control fishing time and area openings and closures. News releases announcing emergency orders are broadcast on local radio stations; transmitted by fax; posted on the state web site; and distributed by email to communities, processors, buyers, fishermen, and members of the public that register online to receive such announcements. Additionally, select processors, buyers, and fishermen are notified of the emergency order by telephone and VHF radio where available.

In response to the guidelines established in the *Sustainable Salmon Fisheries Policy*, the BOF classified the Yukon River Chinook and fall chum salmon stocks as yield concerns during the September 2000 work session. The BOF's determination was based on the inability of the stock, despite the use of specific management measures, to maintain expected yields or harvestable surpluses above escapement needs since 1998 along with the anticipated low harvest level in 2001 (Vania 2000). In addition, the BOF classified Yukon River summer chum salmon and Toklat and Fishing Branch rivers fall chum salmon stocks as management concerns due to their chronic inability to meet escapement goals since 1998 and 1997, for summer and fall chum salmon stocks, respectively (ADF&G 2000a and 2000b).

During the January 2001 BOF meeting, action plans were developed through public process to guide ADF&G in managing each stock of concern. The action plans contained measurable and implementable objectives needed to achieve rebuilding goals in proportion to each stock's utilization and vulnerability (Vania 2000).

Regulatory actions adopted by the BOF to protect the Yukon River stocks of concern included the adoption of the *Yukon River King Salmon Management Plan*, changes to the Yukon River

summer chum and fall chum salmon management plans, and adoption of a subsistence salmon fishing schedule for the Yukon River. The BOF determined that the subsistence fishing schedule should provide reasonable opportunity for subsistence fishermen during years of normal to below average salmon run strength. The schedule was enacted to reduce the impact on a particular stock and spread subsistence harvest opportunity among users along the river, and to provide windows of time during which salmon migrate upriver unexploited.

The subsistence salmon schedule is implemented chronologically as the salmon run progresses upstream. The commissioner may alter this schedule by EO if preseason or inseason run indicators show conservation measures are necessary. The schedule for subsistence salmon fishing was adopted as follows:

(1) Coastal District, Koyukuk River, and Subdistrict 5-D: 7 days per week;

(2) Districts 1–3: 36-hour periods twice a week;

(3) District 4 and Subdistricts 5-A, 5-B, and 5-C: 48-hour periods twice a week;

(4) District 6: 42-hour periods twice a week; and

(5) District 6 Old Minto Area: 5 days per week.

If inseason run strength assessment projects indicate that there is sufficient surplus above escapement and subsistence uses to allow a commercial fishery, the subsistence fishing schedule reverts to the pre-2001 subsistence fishing schedule.

During the January 2004 BOF meeting, the status of Yukon River stocks of concern was re-evaluated. The Chinook salmon stock was continued as a yield concern, the summer chum salmon stock was continued as management concern, and the fall chum salmon stock was continued as a yield concern (Lingnau and Bergstrom 2003; Salomone and Bergstrom 2004; Bue et al. 2004). The Toklat River and Fishing Branch River fall chum salmon stocks were removed as stocks of management concern.

During the February 2007 BOF meeting, Yukon River summer chum and fall chum salmon were discontinued as stocks of concern based upon the guidelines established in the *Sustainable Salmon Fisheries Policy* (Clark et al. 2006; Bue et al. 2006). The Yukon River summer chum and fall chum salmon runs began to show a marked improvement in abundance beginning in 2002 and 2003, respectively. Furthermore, the largest fall chum salmon run and the second largest summer chum salmon run on record occurred in 2005 and 2006, respectively. The improved abundance led to discontinuing summer and fall chum salmon as stocks of concern. However, the BOF recommended that Chinook salmon remain a stock of yield concern. The most recent 5-year average (2002–2006) harvest of Chinook salmon remained approximately 40% below the historic long-term average (1989–1998) despite use of specific management measures. The inability, despite the use of specific management measures, to maintain expected yields or harvestable surpluses above the stock's escapement needs since 1998 provides the rationale for continuing this designation for Chinook salmon (Hayes et al. 2006).

Various government and nongovernment agencies from the U.S. and Canada operate projects in the Yukon River drainage to obtain the biological information necessary for management of the salmon runs in 2008 (Appendix A3 and A4). Fourteen permanent full-time staff from ADF&G's Division of Commercial Fisheries are assigned to the Yukon Area: 2 area management biologists (1 summer, 1 fall), 3 assistant area management biologists, 9 research biologists, and 1 field

office assistant. In addition, approximately 30 seasonal employees annually assist in conducting various management and research projects. ADF&G staff assists with enforcement of regulations in cooperation with the Department of Public Safety, Division of Alaska Wildlife Troopers.

State of Alaska funding for the Yukon Area salmon management and research program from July 1, 2008, through June 30, 2009, was approximately $2.0 million annually. Approximately $1.0 million received annually by ADF&G through a federal U.S./Canada grant for Yukon River salmon research was terminated in 2008. Most of this funding was covered by an increase in general funds from the State of Alaska. Additional projects were operated through federal funding for Yukon River Salmon Treaty implementation.

Federal Subsistence Management

Title VIII of the Alaska National Interest Lands Conservation Act (ANILCA) of 1980 mandated that rural subsistence users have a priority over other users to take wildlife on federal public lands where recognized customary and traditional use patterns exist. Additionally, Title VIII required the creation of Regional Advisory Councils (RAC) to enable rural residents to have a meaningful role in federal subsistence management. The RACs provide recommendations and information to the Federal Subsistence Board (FSB), review policies and management plans, and provide a public forum to discuss other matters relating to subsistence uses. There are 3 RACs that cover separate portions of the Yukon River drainage. On October 1, 1999, the Secretaries of Interior and Agriculture published regulations to expand the federal management program to Alaska rivers, lakes, and limited marine waters within, and adjacent to, federal public lands where a federal reserved water right exists. In the Yukon River drainage this resulted in a patchwork of federal public lands and waters in which there is a federal reserved water right. The Secretary of Interior and the Secretary of Agriculture delegated their authority in Alaska to the Federal Subsistence Board (FSB) to adopt subsistence harvest regulations on federal public land, including waters running through, or next to, these lands. The FSB or U.S. Fish and Wildlife Service (USFWS) may close fishing for other uses in these waters and implement a priority for federally qualified rural subsistence users if it is deemed necessary to provide for the subsistence priority or due to conservation concerns.

Given the complexity of land status and fisheries in the Yukon Area, ADF&G and the Federal Office of Subsistence Management developed the *Yukon River Drainage Subsistence Salmon Fishery Management Protocol* in 2002 to coordinate subsistence fisheries management. This protocol falls under the umbrella of the Memorandum of Agreement between the state and federal agencies and formalizes the working relationships between state and federal agencies. State managers are responsible for management of state subsistence, commercial, recreational, and personal use fisheries in all waters. The federal subsistence program is responsible for providing a priority for subsistence harvest by qualified rural residents in waters where federal rules are applicable. The protocol also directs state and federal agencies to work with the Yukon River Drainage Fisheries Association (YRDFA); the Yukon River Coordinating Fisheries Committee (YRCFC), which is made up of selected members from the 3 RACs covering the Yukon drainage; and other members of the public to solicit input to the decision-making process.

Federal subsistence fishing schedules, openings, closures, and fishing methods are established in federal regulations (U. S. Department of Interior 2008–2009). In general, the regulations are the same as those adopted for the subsistence taking of fish under Alaska Statutes (AS 16.05.060). However, differences in regulations do exist in some cases. For example, federal rules allow

customary trade and the sale of subsistence caught fish by federally qualified rural subsistence users. A federal subsistence drift gillnet fishery is allowed in Subdistricts 4-B and 4-C, whereas state regulations do not allow the use of drift gillnet gear in these subdistricts. In 2005, the FSB adopted new regulations allowing a drift gillnet fishery between June 10 and July 14 during the last 18 hours of each subsistence salmon fishing opening in waters where federal rules apply in Subdistricts 4-B and 4-C. Participation in this new fishery was open to qualified rural residents under a federal subsistence permit using gillnets limited to less than 150 feet in length, 35 meshes in depth, and unrestricted mesh size to target Chinook salmon. In 2008, regulations were changed to allow drift gillnet fishing during entire subsistence salmon fishing periods. Additionally, state regulations may be superseded inseason by a Federal Special Action.

U.S./Canada Yukon River Salmon Agreement and Panel

Negotiations were initiated in 1985 between the U.S. and Canada regarding a Yukon River salmon treaty that would enhance the management coordination of salmon stocks spawning in the Canadian portion of the Yukon River drainage. Reaching a comprehensive long-term agreement posed a formidable challenge through the mid-1990s. In February 1995, an agreement was formalized resulting in an interim Yukon River Salmon Agreement (YRSA). A U.S./Canada Yukon River Panel (Panel) was formed to implement the YRSA. The focus of the Panel was on the salmon stocks that spawn in the Canadian portion of the Yukon River drainage.

In December 2002, the United States and Canada signed a formal YRSA that set salmon harvest share target ranges based on a postseason assessment of run strength for Chinook and fall chum salmon into the Canadian mainstem of the Yukon River. Under the YRSA, the Alaska and Canadian fisheries are managed consistent with conservation objectives that were jointly developed. The Yukon River Panel meets semi-annually to resume management recommendations. The Panel advises the United States and Canadian Governments on conservation and management of the salmon originating in the Canadian portion of the Yukon River. In recognition of the changing dynamics of the fishery and the spirit of the agreement, interim management objectives are reviewed and agreed upon jointly each spring prior to the salmon returns.

AREA SALMON REPORT 2008

TOTAL YUKON RIVER DRAINAGE SALMON HARVEST 2008

The total 2008 harvest for the Yukon River drainage, including Canada, was 52,583 Chinook salmon, 220,169 summer chum salmon, 217,983 fall chum salmon, and 53,021 coho salmon (Appendix A5). The 2008 total Yukon River drainage harvests compared to the recent 5-year averages (2003–2007) were as follows: Chinook salmon, 51% below average; summer chum salmon, 42% above average; fall chum salmon, 19% above average; and coho salmon, 20% below average.

COMMERCIAL FISHERY–ALASKA

TOTAL COMMERCIAL SALMON HARVEST 2008

A total of 310,783 salmon were harvested in Alaska: 4,641 Chinook salmon, 151,186 summer chum salmon, 119,265 fall chum salmon, and 35,691 coho salmon were taken by 496 permit holders in the Yukon Area (Appendix A6). The 2008 Yukon Area commercial harvests compared

to the recent 5-year averages (2003–2007) were as follows: Chinook salmon, 89% below average; summer chum salmon, 105% above average; fall chum salmon, 29% above average; and coho salmon, 16% below average (JTC 2009). Harvests by statistical area in the Yukon Area and by gear type in the Upper Yukon Area are shown in Appendices A7–A10. Total exvessel value was approximately $1.4 million for summer and fall seasons combined, which is 49% below the recent 5-year average (Appendix A11). Salmon buyers, processors, and catcher–sellers operating in the Yukon Area in 2008 are listed in Appendix A12. The salmon harvest was processed as a fresh or frozen product.

CHINOOK AND SUMMER CHUM SALMON

ADF&G uses an adaptive management strategy that evaluates run strength inseason to determine a harvestable surplus above escapement requirements and subsistence uses. A preseason management strategy was developed in cooperation with federal subsistence managers that outlined run and harvest outlooks along with the regulatory subsistence salmon fishing schedule. The 2008 strategy was to implement the subsistence salmon fishing schedule as salmon arrive in each district or subdistrict in a stepwise manner based upon migration timing (Table 1). The Innoko River drainage was opened 7 days per week by emergency order because of the difficult fishing conditions, low effort, and low efficiency fishing in this area.

Table 1.–Yukon Area regulatory subsistence salmon fishing schedule, 2008.

Area	Regulatory subsistence salmon fishing periods	Schedule to begin	Days of the week
Coastal District	7 days/week	By regulation	M/T/W/TH/F/SA/SU – 24 hours
District 1	36-hour periods twice a week	May 26, 2008	Mon. 8 pm to Wed. 8 am /Thu. 8 pm to Sat. 8 am
District 2	36-hour periods twice a week	May 28, 2008	Wed. 8 pm to Fri. 8 am / Sun. 8 pm to Tue. 8 am
District 3	36-hour periods twice a week	May 30, 2008	Tue. 8 am to Wed. 8 pm / Fri. 8 am to Sat. 8 pm
District 4	48-hour periods twice a week	June 8, 2008	Sun. 6 pm to Tue. 6 pm / Wed. 6 pm to Fri. 6 pm
Koyukuk, Innoko, and Kantishna, Rivers	7 days/week	By regulation	M/T/W/TH/F/SA/SU – 24 hours
Subdistricts 5-A, B, C	48-hour periods twice a week	June 17, 2008	Tue. 6 pm to Thu. 6 pm /Fri. 6 pm to Sun. 6 pm
Subdistrict 5-D	7 days/week	By regulation	M/T/W/TH/F/SA/SU – 24 hours
District 6	42-hour periods twice a week	By regulation	Mon. 6 pm to Wed. Noon /Fri. 6 pm to Sun. Noon
Old Minto Area	5 days/week	By regulation	Friday 6 pm to Wednesday 6 pm

The schedule was subject to change depending on salmon run strength. Before implementing this schedule, subsistence fishing would be allowed 7 days per week to provide opportunity to harvest non-salmon species, such as whitefish (*Coregonus* sp.), sheefish (*Stenodus leucichthys*), northern pike (*Esox lucius*), and suckers (*Catostomus catostomus*). An informational sheet was used to prepare fishermen for possible reductions to the subsistence salmon fishing schedule or to allow for a small commercial fishery contingent on inseason run assessment. The information sheet was mailed in May to Yukon River commercial permit holders and approximately 2,900 families identified from ADF&G's survey and permit databases. State and federal staff presented

the management strategy to the YRDFA, State of Alaska Fish and Game Advisory Committees, Federal RACs, and other interested and affected parties.

Chinook Salmon

The 2008 run was expected to be below average and similar to the 2007 run. It was anticipated that the 2008 run would provide for escapements and support a normal subsistence harvest but would only provide surplus for a below average commercial harvest. The 2007 Chinook salmon run was well below average despite good escapements in parent years of 2001 and 2002, and yielded approximately 60,000 less fish than expected. The management strategy for 2008 was to have districts placed on their regulatory subsistence salmon fishing schedule until run assessment indicated that a harvestable surplus was available for additional subsistence opportunity and other uses. Due to the unexpected weak run in 2007, any decisions regarding a Chinook salmon directed commercial fishery in 2008 were to be delayed until the projected midpoint of the run. If inseason indicators of run strength suggested sufficient abundance to have a commercial Chinook salmon fishery, the commercial harvest could range from 5,000 to 30,000 Chinook salmon, including the incidental harvest taken during anticipated summer chum salmon directed periods.

All available run assessment information was evaluated on a daily basis to assess run timing and abundance, including data from the Lower Yukon test fishery (LYTF), Pilot Station sonar, Marshall Test Fishery, subsistence harvest reports, age composition data, and genetic stock identification.

Ice breakup in the lower river occurred with near average timing around May 24. Higher than normal water levels were present in the lower river at the start of the season. The subsistence salmon fishing schedule was scheduled to begin on May 26 in District 1 and would be implemented in upriver districts consistent with the upstream migration of Chinook salmon. The first reported subsistence caught Chinook salmon was reported near Alakanuk on June 2 and the first subsistence caught summer chum salmon was reported near Emmonak on June 6. The LYTF recorded the first Chinook salmon catch on June 3 (Appendix 13)

The LYTF detected the first pulse of Chinook salmon entering the Yukon River from the evening of June 14 through June 17, followed by 5 days of low catch rates (Figure 11). On June 20, the cumulative catch per unit effort (CPUE) was almost half the historic average for that date (Appendix 13). The first pulse of Chinook salmon yielded a lower than expected estimate of approximately 10,000 fish at Pilot Station sonar. The estimated run size projection based on the numbers past the Pilot Station sonar project was 80,000 fish. The lower than expected abundance counted at the sonar project raised concerns about the magnitude of the run. The projected Chinook salmon run abundance would not support average subsistence harvests in Alaska (approximately 50,000 Chinook salmon), meet escapement goals in Alaska, and meet the interim management escapement goal (IMEG) of >45,000 fish in Canada agreed to by the Yukon River Panel.

In an effort to conserve Chinook salmon, management actions were implemented that reduced subsistence salmon fishing time after the first pulse of Chinook salmon had passed each district. These reductions, beginning June 23 in District 1 and continuing upstream with the migration of Chinook salmon, were needed to reduce harvest and ensure increased numbers of Chinook salmon to the spawning grounds.

The inseason management strategy was adapted to protect the second and third pulses throughout the Yukon River mainstem by attempting to implement subsistence fishing period reductions

equally among each of the districts and subdistricts to conserve Chinook salmon. As a result, the regulatory fishing periods were reduced by half for 3 consecutive periods in Districts 1–4 and Subdistricts 5-A, 5-B, and 5-C. Because Subdistrict 5-D has a regulatory schedule of 7 days per week, the schedule was reduced by half for 2 weeks. Additionally, gillnet mesh size was restricted to 6-inch or smaller in Districts 1–3 to target summer chum salmon. This management action was taken to account for the opportunity lower river fishermen had to harvest Chinook salmon during the first pulse and was implemented when good quality chum salmon were available for harvest. This strategy may have impacted District 3 fishermen more, because historically fewer chum salmon are harvested for subsistence than in Districts 1 and 2.

During YRDFA weekly teleconferences, ADF&G and USFWS staff provided run assessment and potential management strategies. Subsistence fishermen provided reports on fishing efforts and were encouraged to provide input on management strategies. During an YRDFA teleconference, there were discussions about applying 6 inch mesh size restrictions in upriver districts consistent with the lower river and requiring the live-release of Chinook salmon from fish wheels. However, it was determined that few upriver fishermen had access to smaller mesh size gillnets and that poor quality chum salmon would not be utilized for subsistence. Therefore, subsistence fishing periods were reduced in Districts 4 and 5, but no gear restrictions were established. Subsistence fishing restrictions were not implemented in the Koyukuk River drainage, because of low fishing effort. The Tanana River was managed separately because assessment projects are available to manage this river and no subsistence fishing restrictions were implemented in the Tanana River drainage.

According to the LYTF CPUE data, approximately 50% (the midpoint) of the Chinook salmon run had entered the lower river by June 26, 5 days later than the average date for the midpoint (Appendix A13). The first quarter point, midpoint, and third quarter point were on June 18, June 26, and June 29, respectively. Therefore, run timing was late, but a weak early portion of the run could have been a contributing factor. The cumulative LYTF CPUE in 2008 was 22.27, which was roughly equal to the 1989–2007 average of 22.79.

The Pilot Station sonar project utilized split-beam sonar on both banks from June 1 through September 7. Test fishing began on June 1, 6 days before the first Chinook was caught at the Pilot Station camp. Use of dual frequency identification sonar (DIDSON) accounted for 36% of the Chinook salmon, 30% of the summer chum salmon, and 18% of the fall chum salmon total passage. The left bank substrate continued to be unstable this season, and problems with a reverberation band were encountered. For brief periods, bank erosion upstream caused large plumes of silt to pass through the sonar sampling area, undermining optimal detection of targets. However, project leaders were able to adjust aims and settings to minimize its effects, and estimates were comparable with CPUE from the test fishery, thus indicating that interpolation was unnecessary. This was further verified by dragging known targets at various ranges through the sonar. As in previous years, the right bank substrate was consistently stable and problems of this nature were not encountered on that bank (JTC 2009). The Pilot Station sonar passage estimate was 130,643 Chinook salmon (Appendix A14). The first quarter point, midpoint, and third quarter point were on June 23, June 29, and July 3, respectively.

The second of a 3-year Chinook salmon comparative mesh size study was conducted in District 1 near Emmonak in 2008. The project operated from June 15 to June 21, but was halted early to conserve Chinook salmon because of the poor run. Preliminary results are shown in JTC (2009).

Summer Chum Salmon

The Yukon River summer chum salmon run was managed according to the guidelines described in the *Yukon River Summer Chum Salmon Management Plan* (Table 2).

Table 2.–Summary of the summer chum salmon management plan.

Summer chum salmon management plan overview					
	Recommended management action				
Projected run size [a]	Commercial	Personal use	Sport	Subsistence	Targeted drainagewide escapement
600,000 or less	Closure	Closure	Closure	Closure[b]	≥600,000
600,001 to 700,000	Closure	Closure	Closure	Possible restrictions[b]	
700,001 to 1,000,000	Restrictions[b]	Restrictions[b]	Restrictions[b]	Normal fishing schedules	
Greater than 1,000,000	Open[c]	Open	Open	Normal fishing schedules	>800,000

[a] Projected run size: mainstem river sonar passage estimate plus the estimated harvests below the sonar site and the Andreafsky River escapement.

[b] The fishery may be opened or less restrictive in areas that indicator(s) suggest the escapement goal(s) in that area will be achieved.

[c] Drainagewide commercial fisheries: harvestable surplus will be distributed by district or subdistrict in proportion to the guidelines harvest levels established in 5 AAC 05.362 (f) and (g) and 5 AAC 05.365 if buying capacity allows.

The summer chum salmon management plan provides for escapement needs and subsistence use priority before other consumptive uses such as commercial, sport, and personal use fishing. The plan allows for varying levels of harvest opportunity depending on the run size projection. ADF&G uses the best available data to assess the run: 1) preseason run outlooks, 2) Pilot Station sonar passage estimates, 3) test fishery indices, 4) age and sex composition, 5) subsistence and commercial harvest reports, and 6) escapement monitoring projects.

The 2008 run outlook was for an average run which would provide for escapement, normal subsistence harvest, and a commercial harvest. The commercial harvest surplus was expected to range from 500,000 to 900,000 summer chum salmon. The actual commercial harvest of summer chum salmon in 2008 would be dependent on market conditions and affected by the poor Chinook salmon run, because Chinook salmon are incidentally harvested in fisheries directed at chum salmon.

Based on the daily passage of summer chum salmon by the sonar project near Pilot Station, the total summer chum salmon run was projected to be between 1.2 million and 1.6 million fish, a run size that would allow a directed summer chum salmon fishery. Summer chum salmon entry into the river was average in run timing. The summer chum salmon run passage at the Pilot Station sonar project was 1,665,667 fish (Appendix A14). The first quarter point, midpoint, and third quarter point at Pilot Station sonar were on June 26, June 30, and July 8, respectively.

Based on the projected run size of summer chum salmon, 11 short commercial fishing periods with 6 inch or smaller mesh size gillnets were established in Districts 1 and 2 (Appendix A15). Additionally, 7 commercial periods were established in Subdistrict 4-A. Six summer chum salmon

directed commercial periods were established in District 6 but, due to high water events, fishing effort was limited.

Harvest and Value

No directed Chinook salmon commercial fishery occurred in 2008. However, based on the projected average run estimate for summer chum salmon, ADF&G initiated short commercial periods restricted to 6 inch maximum mesh size in the lower river districts directed at summer chum salmon beginning in District 1 on July 2. Additionally, the department attempted to schedule these summer chum salmon directed commercial periods when Chinook salmon abundance was low.

In 2008, a total of 4,641 Chinook salmon, 151,186 summer chum salmon, and 14,100 pink salmon were commercially harvested (Appendix A15) in the Alaska portion of the Yukon River drainage. The commercial Chinook salmon harvest included 293 Chinook salmon sold in the fall season. For historical comparisons, the commercial harvest in JTC (2009) includes the number of salmon sold in the round and the estimated number of salmon harvested to produce roe sold. The Chinook salmon commercial harvest was well below the 1998–2007 average harvest of 39,291 fish (JTC 2009). The summer chum salmon harvest was 3 times the 1998–2007 average harvest of 49,651 fish. This was the first year since 1996 that pink salmon have been sold.

A total of 457 permit holders participated in the Chinook and summer chum salmon fishery (Appendix A15), which was 24% below the 1998–2007 (not including 2001 when no fishery occurred) average of 599 permit holders. The Lower Yukon Area (Districts 1–3) and Upper Yukon Area (Districts 4–6) in Alaska are separate Commercial Fisheries Entry Commission (CFEC) permit areas. A total of 444 permit holders fished in the Lower Yukon Area in 2008, which was 23% below the 1998–2007 (not including 2001) average of 577 permit holders. In the Upper Yukon Area, 13 permit holders fished, which was 48% below the 1998–2007 (not including 2001) average of 25 permit holders.

Yukon River fishermen in Alaska received an estimated $718,000 for their Chinook and summer chum salmon harvest in 2008, approximately 71% below the 2003–2007 average exvessel value of $2.5 million (Appendix A11). Two buyer–processors and 9 catcher–sellers operated in the Lower Yukon Area (Districts 1–3; Appendix 12). Lower Yukon River fishermen received an estimated average price per pound of $4.64 for incidentally harvested Chinook and $0.40 per pound for summer chum salmon. The average price paid for Chinook salmon in the Lower Yukon Area was approximately 35% above the 1998–2007 average of $3.44 per pound. The average income for Lower Yukon Area fishermen in 2008 was $1,469.

Four buyer–processors and 3 catcher–sellers operated in the Upper Yukon Area (Districts 4–6; Appendix 12). Upper Yukon Area fishermen received an estimated average price per pound of $0.25 for summer chum sold in the round and $3.00 for summer chum salmon roe. The average price paid for summer chum sold in the round in the Upper Yukon Area was approximately 7% above the 1998–2007 average of $0.23 per pound. No Chinook salmon were sold in the Upper Yukon Area. The average income for Upper Yukon Area fishermen that participated in the 2008 fishery was $5,064. The majority of the income earned in the upper river was from the Subdistrict 4-A commercial fishery.

Results by District

Districts 1–3

Similar to the management strategies utilized in 2002–2005, preseason management strategies were developed to delay commercial fishing until near the midpoint of the Chinook salmon run. This interim strategy was designed to allow fish to pass unexploited for escapement and subsistence use in the event of a poor run similar to the 2007 Chinook salmon run.

No directed Chinook salmon commercial fishing occurred in 2008. However, based on the projected run size for summer chum salmon, ADF&G initiated short summer chum salmon directed commercial periods restricted to 6 inch maximum mesh size in the lower river districts beginning in District 1 on July 2.

The combined commercial summer chum salmon harvest in Districts 1 and 2 was 125,598 fish in 11 restricted mesh periods with an average weight of 6.6 pounds (Appendix A15). A total of 4,348 Chinook salmon were incidentally harvested and sold during summer chum salmon directed openings in Districts 1 and 2 (Appendix A16). The combined total Chinook salmon harvest from all openings in Districts 1 and 2 was 4,641 fish (including 293 Chinook salmon harvested in the fall season). The average weight of Chinook salmon in restricted mesh openings in Districts 1 and 2 was 14.1 pounds. A total of 14,100 pink salmon were sold in Districts 1 and 2 with an average weight of 3.3 pounds. No commercial fishing periods were opened in District 3 because there were no buyers interested.

The Chinook salmon age composition in the District 1 commercial harvest was estimated from 524 samples collected from 5 of the 6 periods. The harvest age composition was 0.4% age-3, 11.9% age-4, and 58.1% age-5, 27.4% age-6, and 2.2% age-7 fish. The percentage of females was 38.0% (JTC 2009).

Only the first commercial period was sampled in District 2. The Chinook salmon age composition from this period was 11.4% age-4, 58.1% age-5, 29.6% age-6, and 1.0% age-7 fish. The percentage of females was 39.0%. The summer chum salmon age composition from this period was 30.0% age-4, 63.8% age-5, 5.6% age-6, and 0.6% age-7 fish. The percentage of females was 49.4% (JTC 2009).

The summer chum salmon age composition from all 6 periods in District 1 restricted mesh commercial harvest was estimated from 950 samples. The harvest age composition was 0.1% age-3, 37.5% age-4, and 55.8% age-5, 6.5% age-6, and 0.1% age-7 fish. The percentage of females was 52.2% (JTC 2009).

Districts 4–6

Historically, the Subdistrict 4-A fishery targets summer chum salmon. The dominant gear type (fish wheels) and the location of the fishery result in a very high chum-to-Chinook salmon ratio. This was the second year in a row of renewed summer chum salmon commercial activity in Subdistrict 4-A. However, limited salmon markets resulted in lower effort and harvest rates. Commercial fishing only occurred near the village of Kaltag. There were 7 fishing periods for a total of 312 hours in 2008 (Appendix A15). A total of 8 permit holders harvested 23,746 summer chum salmon which produced a total of 21,624 pounds of salmon roe. Fishermen were paid per pound of roe and were required to report the number of female summer chum salmon harvested on fish tickets. In an effort to reduce harvest of Chinook and male summer chum salmon,

commercial fishermen volunteered to tend fish wheels in an effort to release those fish immediately to the water alive. Commercial set gillnet gear was restricted to 6 inch or smaller mesh size. No commercial deliveries were reported in Subdistricts 4-B and 4-C because of a lack of a market.

No commercial fishing periods were announced for District 5 in an effort to get more Chinook salmon to their spawning grounds in Canada.

In 2008, summer chum salmon directed commercial fishing in District 6 consisted of 6 periods for a total of 216 hours. Due to extreme high water events, fishing effort was limited. A total of 5 fishermen harvested 1,842 summer chum salmon in District 6 (Appendix A15). No Chinook salmon were sold. Incidentally caught Chinook salmon were reported as subsistence harvest. A summary of emergency orders issued during the Chinook and summer chum salmon fishing season is provided in Appendix A17 and Appendix A18.

Fall Chum and Coho Salmon

The *Yukon River Drainage Fall Chum Salmon Management Plan* (Table 3) incorporates the U.S./Canada treaty obligations for border passage of fall chum salmon and provides guidelines necessary for escapement and prioritized uses.

Table 3.–Summary of the fall chum salmon management plan.

Fall chum salmon management plan overview					
	Recommended management action				
Projected run size [a]	Commercial	Personal use	Sport	Subsistence	Targeted drainagewide escapement
300,000 or less	Closure	Closure	Closure	Closure[b]	300,000 to 600,000
300,000 to 500,000	Closure	Closure[b]	Closure[b]	Possible restrictions[b,c]	
500,000 to 600,000	Restrictions[b]	Open	Open	Pre-2001 fishing schedules	
Greater than 600,000	Open[d]	Open	Open	Pre-2001 fishing schedules	

[a] For projected run size, use the best available data (including preseason projections, mainstem river sonar passage estimates, test fisheries indices, subsistence and commercial fishing reports, and passage estimates from escapement monitoring projects).

[b] The fishery may be opened or less restrictive in areas that indicator(s) suggest the escapement goal(s) in that area will be achieved.

[c] Subsistence fishing will be managed to achieve a minimum drainagewide escapement goal of 300,000.

[d] Drainagewide commercial fisheries may be open and the harvestable surplus above 600,000 will be distributed by district or subdistrict (in proportion to the guidelines harvest levels established in 5 AAC 05.365 and 5 AAC 05.367.

There are incremental provisions in this plan to allow varying levels of subsistence salmon fishing balanced with requirements to attain escapement objectives. The plan aligns management objectives with established escapement goals, provides flexibility in managing subsistence harvest when stocks are low, and bolsters salmon escapement as run abundance increases. The extremely pulsed entry pattern of fall chum salmon and the run size disparity between fall chum salmon with overlapping coho salmon adds to the complexity of Yukon River fall season management.

Fall Chum Salmon Management Overview

Similar to 2007, the 2008 preseason run size projection ranged between 900,000 and 1.2 million fall chum salmon. The projection range was based on the upper and lower values of the 80% confidence bounds for the point projection. The point estimate of 1.0 million was derived by utilizing the 1984 to 2001 even/odd maturity schedules to represent the expected lower trend in production. However, the production models used to determine the 2008 preseason point estimate was suspect because of evidence of the drastic drop in high seas chum salmon catches as well as the low odds of that run size materializing in an even-numbered year. At a run size of 1 million, the outlook was for a run that would provide for escapement requirements and for subsistence and personal use fisheries with a surplus of 50,000–400,000 fall chum salmon available for commercial harvest. The projection was refined as the fall season approached based on the summer chum to fall chum salmon relationship which reduced the commercially harvestable surpluses to less than 300,000 fish.

Inseason run abundance projections based on passage estimates provided by Pilot Station sonar trigger management actions as dictated by the fall chum salmon management plan. Projections from the cumulative passage initially fluctuate drastically due to the irregular pulsing entry pattern of fall chum salmon, but become more stable between the first quarter and midpoints. Additional lower river index projects including the drift gillnet test fisheries located at Emmonak (operated by ADF&G), Mountain Village (operated by Asacarsarmiut Traditional Council) and in the middle Yukon River at Kaltag (operated by the City of Kaltag) provide run timing information. Relationships in run timing and run strength from the various index projects, genetic stock identification, and subsistence fishing reports were compared for consistency with the Pilot Station sonar estimates as a method to check that projects appeared to be operating correctly. Individual pulses were tracked as they moved upriver and the Pilot Station sonar was used to estimate the abundance of each pulse. In 2008, each pulse of fall chum salmon appeared to correlate well between the Pilot Station sonar daily passage estimates and the other assessment projects for run timing and relative magnitude.

The Pilot Station sonar cumulative total estimate of fall chum salmon for the 2008 season was 615,127 fish through September 7, the last day of operation (Appendix A14). The delayed arrival of the first pulse (Figure 12), which occurred near the average first quarter point in run timing resulted in the run shifting 3 days late at that point and 5 days late at the midpoint, and it continued to be 4 days late at the average three-quarter point.

With an expectation of a surplus of fall chum salmon, the 2008 preseason management strategy was to begin the fall season using the pre-2001 subsistence fishing regulations in accordance with the management plan. On July 16, the fall chum salmon management plan went into effect and subsistence fishing management actions, initiated during the summer season, were continued into the fall season. Subsistence fishing in the Coastal District, and Districts 1, 2, and 3, was open 24 hours a day, 7 days per week except for closures of 12 hours before, during, and 12 hours after each commercial salmon fishing period. The Innoko River was open 7 days per week and the pre-2001 subsistence salmon fishing regulations were applied in the Upper Yukon Area.

The 2008 fall season began with commercial fishing periods immediately following the summer season. This took advantage of harvesting unusually good quality late summer chum salmon when they were mixed with overlapping early fall chum salmon. The relationship between the summer and fall chum salmon runs suggested the fall run would perform similarly and thereby

increased confidence that there would be surplus fall chum salmon available for commercial harvest.

Districts 1 and 2, Subdistricts 5-B and 5-C, and District 6 had commercial buyer commitments prior to the season with an additional buyer expressing interest in purchasing salmon in Subdistrict 4-A. The first fall season commercial fishing periods began on July 17 in District 1 and July 20 in District 2 (Appendix A19). Commercial fishing periods continued to be scheduled in both District 1 and District 2 until August 1 and July 30, respectively. Fall chum salmon were harvested commercially prior to and during the first pulse of fish. Nine commercial fishing periods were opened, 5 in District 1 and 4 in District 2 through August 1. The Pilot Station sonar cumulative estimate through August 1 of 162,000 was below the historical average of 188,000 for that date. At the time, the total season run size was projected to be near 530,000 fish based on average run timing. According to the management plan, additional fish were needed to catch-up with the run passage necessary for escapement and to provide for subsistence uses before additional commercial harvest could take place. Consequently, commercial fishing activity was suspended.

The second pulse of fall chum salmon entered the river on August 12–14 and was allowed to pass through the Lower Yukon Area with little exploitation, which was intended to contribute to escapement and provide for upriver subsistence harvests. The sonar estimated the second pulse to be approximately 100,000 fall chum salmon, bringing the cumulative passage estimate through August 17 to 412,000 fish, which was below the historical average of 505,000 for that date. Unfortunately, the addition of the second pulse was late and not large enough to warrant additional commercial fishing at that time.

On August 22–24, a small bump of fall chum salmon was detected entering the river. Pilot Station sonar estimated this group to number about 25,000 fish. As of August 24, the overall fall chum salmon projected run size had continued to decline to between 520,000 and 579,000 fish. With the outlook for only an additional 10% fall chum salmon still to enter the river, management turned to the possibilities of coho salmon directed fishing. With the expectation that the fall chum salmon run would total around 550,000 to 600,000 fish, the coho salmon management plan would allow a limited directed commercial harvest for coho salmon without substantially impacting the fall chum salmon. Commercial fishing periods were scheduled for August 25 and August 26 for District 2 and District 1, respectively, to provide opportunity to target coho salmon.

A late and moderate-sized third pulse of fall chum salmon began entering the river on August 25 and continued through August 27. The Pilot Station sonar project estimated about 90,000 fall chum salmon in the third pulse and the cumulative total passage estimate increased to 597,000 fish. With the unexpected late timing of the third pulse, management shifted back to the fall chum management plan. Additional commercial periods were scheduled and the commercial fishing season was extended until September 10. A total of 12 additional periods were opened in the Lower Yukon Area, 6 in both District 1 and District 2 between August 25 and September 10.

In an effort to maximize fishing efficiency, fishing times in District 1 were scheduled to coincide with daily high tides, which typically carry new fish into the river. Daylight fishing times were scheduled in the late part of the season to maintain fishermen safety. No commercial fishing periods were opened in District 3 due to lack of market, but some District 3 residents traveled to fish in Districts 1 and 2.

The commercial salmon fishing season was initially opened in District 4 during the summer season with the only fall season fishing period occurring in Subdistrict 4-A. The buyer showed interest to continue into the fall season, but delayed the commitment in hopes of having a large volume of fish to process. At the buyer's request, ADF&G scheduled one 120-hour commercial period to begin on September 9 in Subdistrict 4-A. However, interest in commercial fishing had either diminished or fishermen were unavailable to fish late in the season. Consequently, no fish were harvested during the 1 fall season commercial fishing period. Subsistence fishing was on a schedule of 5 days per week in District 4 and concurrent with the commercial period. Later, subsistence period length was extended to 7 days a week beginning October 3 to provide increased opportunity for subsistence fishermen to harvest late running fish because high water hampered their efforts earlier in the season.

A total of 11 fall season commercial periods were opened in Subdistricts 5-B and 5-C with the first commercial fishing period beginning on August 8 (Appendix A19). A total of 561 fall chum salmon were harvested, which mostly made up the early portion of the fall chum salmon run moving upriver but also included some late local summer chum salmon stocks. Two additional early periods were scheduled on August 12 and August 15 and yielded 653 and 677 fall chum salmon, respectively. The 3 early commercial periods provided for a small flesh market. Beginning September 5, the first of 8 additional 48-hour periods in Subdistrict 5-B were scheduled primarily to target female fall chum salmon for roe product. A total of 2,665 female fall chum salmon were reported harvested for commercial purposes. Poor weather and low catches attributed to no commercial harvest during the final 2 scheduled 48 hour periods, the last ending on October 2. Subsistence fishing was on a schedule of 5 days per week in Subdistricts 5-A, 5-B, and 5-C during most of the fall season and was then liberalized to 7 days per week beginning October 3 to provide additional opportunity for subsistence fishermen to harvest late running fish. Subdistrict 5-D was returned to the normal 7 days per week subsistence fishing schedule on July 31 and remained on that schedule throughout the fall fishing season.

The Tanana River is managed under the *Tanana River Salmon Management Plan*, which provides guidelines to manage District 6 as a terminal fishery based on the assessed strength of the stocks in the Tanana River drainage. The commercial harvest in District 6 was comprised of predominantly female salmon with the primary product bound for roe markets. A total of 9 commercial periods were scheduled in District 6, the first beginning on August 15 (Appendix A19). The initial commercial period of 42 hours was scheduled; however, due to flooding events and continued high water, much of the commercial fishing gear was lost or destroyed and consequently no fishing activity took place. After water levels subsided and some fishermen were able to resurrect or build new fish wheels, additional periods were scheduled in early September, corresponding with the peak run timing of fall chum and coho salmon. On September 6, two 24-hour periods were announced followed by six 42-hour periods. The commercial harvest for all 9 fall season periods was 5,735 fall chum and 2,408 coho salmon. The commercial fishing season in the Tanana River ended on October 1, due to freezing temperatures that decreased product value. Subsistence and personal use fishing was open concurrent with commercial fishing periods. Personal use periods in Subdistrict 6-C remained on the two 42-hour fishing periods per week and subsistence fishing in Subdistricts 6-A and 6-B was relaxed to 7 days per week effective October 2 in accordance with the management plan at the close of the commercial fishing season. The Tanana River commercial harvest of 5,735 fall chum salmon was within the guideline harvest range (GHR) of 2,750 to 20,500 fish. A majority of the male portion of the harvest was reported as caught but not sold and subsequently used for subsistence

and was not counted towards the commercial harvest. Additionally, an undetermined amount of female carcasses from the roe fishery was also utilized in the subsistence fisheries. Postseason assessment indicated that escapement goals were exceeded in the Tanana River.

The nature of the fall chum salmon pulses spread out over the length of the season separated with long durations of low passage rates of fish entering the river made inseason run size projection difficult. The late arrival of the third moderate sized fall chum salmon pulse at the end of August shifted the run timing 5 days later than average and provide enough surplus of fish to schedule additional commercial fishing opportunities into September. The overall harvest resulted in an exploitation rate of approximately 32%, nearly doubling the recent 10-year average from 1998 to 2007 and nearly equaling the previous 10-year average from 1988 to 1997. The drainagewide fall chum salmon escapement was within the targeted range, most of the tributary escapement goals were met, and border passage commitments were achieved.

Coho Salmon Management Overview

The 2008 coho salmon run was managed to provide for escapement, subsistence, personal use, and commercial harvests. However, the commercial harvest was dependent to a large extent upon the abundance of fall chum salmon and the accompanying management strategies. The 2008 coho salmon outlook was for a continuation in the trend of average to above-average runs and below-average subsistence harvests because of low effort, with a potential commercial harvest of 50,000 to 70,000 fish.

The coho salmon run exhibited normal run timing and slightly below average run size based on Pilot Station sonar. Test fishery projects in Emmonak, Mountain Village, Kaltag, and the Tanana River provided similar run assessment of magnitude and run timing. The coho salmon run size estimate at Pilot Station sonar through September 7 was 135,570 fish (Appendix A14), which was below the historical average (1998–2007) passage estimate of 148,000 coho salmon.

Fish buyers only operated near the transportation hubs in the lower river Districts 1 and 2 and upriver in Subdistricts 5-B and 5-C, and in District 6 near Manley, Nenana, and Fairbanks. The liberalized subsistence fishing time for fall chum salmon increased fishing opportunity for coho salmon throughout the drainage.

Harvest and Value

The 2008 total commercial harvest for the Yukon River fall season included 119,265 fall chum and 35,691 coho salmon for the Alaska portion of the drainage (Appendix A21). The fall chum and coho salmon harvests were the third and fifth highest, respectively, since 1995. A total of 108,974 fall chum and 33,192 coho salmon were harvested in the Lower Yukon Area and 10,291 fall chum and 2,499 coho salmon were harvested in the Upper Yukon Area. All salmon were sold in the round and no salmon roe was sold separately. However, in Subdistrict 5-B and District 6, female salmon were selectively purchased for roe extraction during the fall season. The 2008 Yukon Area fall chum salmon commercial harvest was about 148% above the previous 10-year average (1998–2007) of 48,086 fish and 66% above the 10-year average of 21,490 coho salmon.

The overall average weight of fall chum salmon was 7.2 pounds and the average weight of coho salmon was 6.8 pounds. In the lower river, Districts 1 and 2, the average weight was 7.3 and 6.8 pounds for fall chum and coho salmon, respectively.

There was a total of 21 fall commercial fishing periods in Districts 1 and 2 combined (11 periods in District 1; 10 periods in District 2). Period length varied from 4 to 12 hours in District 1 and from 4 to 9 hours in District 2. The commercial fishing season was open in District 4 with only one 120-hour period opened in Subdistrict 4-A, which had no harvest due to lack of fishermen. Subdistricts 5-B and 5-C had eleven 48-hour commercial periods in the fall season with fishermen landing 4,556 fall chum salmon and 91 coho salmon. No fishing took place during the last 2 commercial periods in Subdistricts 5-B and 5-C because of lack of effort, mainly due to cold weather conditions and reduced number of fish. In the Tanana River, District 6, there were 9 commercial salmon fishing periods (two 24-hour and seven 42-hour periods) from August 15 through October 1 until the weather became too cold to hold fish outdoors without freezing and damaging the catch.

The 2008 commercial fall chum and coho salmon season exvessel value for the Yukon Area was approximately $671,600 ($645,800 for the Lower Yukon Area, $25,800 for the Upper Yukon Area) (Appendix A11). The previous 10-year average value for the Yukon Area was $114,000 ($99,300 for the Lower Yukon Area, $14,700 for the Upper Yukon Area). Yukon River fishermen received an average price of $0.55 per pound for fall chum salmon in the Lower Yukon Area and $0.27 per pound in the Upper Yukon Area in 2008. This compares to the 1998–2007 average of $0.24 per pound and $0.14 per pound, respectively. For coho salmon, fishermen in the Lower and Upper Yukon Areas received an average price of $0.97 per pound and $0.20 per pound compared to the recent 10-year average price of $0.29 and $0.10 per pound, respectively.

Fishing effort has increased in recent years. A total of 441 permit holders participated in the 2008 fall chum and coho salmon fishery (428 for the Lower Yukon Area, 13 for the Upper Yukon Area) (Appendix A19) compared to the recent 10-year average of 117 permit holders (112 for the Lower Yukon Area, 5 for the Upper Yukon Area).

A summary of emergency orders issued during the fall chum and coho salmon fishing season is provided in Appendix 20.

ENFORCEMENT

The primary enforcement authority for violations of Fish and Game regulations is the Department of Public Safety, Alaska Wildlife Troopers (AWT). State AWT monitored subsistence, personal use, and commercial fisheries within the Yukon Area.

Patrols were conducted in Districts 1, 2, and 3 of the Yukon Area with 3 float planes and several skiffs during salmon fisheries during June 2008. Boating safety patrols were conducted in conjunction with commercial fisheries enforcement and citations/warnings were issued for lack of personal floatation devices and vessel registrations. In general, compliance was good.

COMMERCIAL FISHERY–CANADA

CHINOOK SALMON

Low run strength resulted in the closure of the commercial Chinook salmon fishery in 2008. One Chinook salmon and 4,062 fall chum salmon were harvested in the fall chum salmon commercial fishery (Appendix A21). The average Chinook salmon commercial catch for the years 1998–2007 was 2,308 (JTC 2009). The average does not include years 2000 and 2007, when the fishery was closed; however, it includes very low catches in 1998 and 2002 when the commercial fishery

was severely restricted. Since 1997, there has been a marked decrease in commercial catches of upper Yukon River Chinook and fall chum salmon that has resulted from a limited market and reduced fishing opportunities due to below average run sizes (JTC 2009).

Historical Canadian Yukon River commercial, non-commercial, and Porcupine River Chinook salmon harvests for the years 1961–2008 are presented in JTC (2009). In 2008, 18 of 21 eligible commercial fishing licenses were issued.

The Yukon River Panel adopted the JTC recommendation for a minimum IMEG of 45,000 Canadian-origin Chinook salmon in 2008. The IMEG was implemented as a 1-year goal that was to be re-assessed by the JTC in following years. The success of achieving this goal was to be assessed using the Eagle sonar estimate minus harvest data from fisheries occurring upstream of the sonar (i.e., subsistence catch near the community of Eagle, Alaska, and harvest data from Canadian fisheries; JTC 2009).

In recent years, the opening of the commercial fishery has frequently been delayed in response to conservation concerns and/or uncertainties concerning the status of the run. Although assessment of the 2008 Chinook salmon run was based on information from the Eagle sonar program, there was a desire by DFO to continue the mark–recapture program for comparative information. When tag recoveries for the mark–recapture program are unavailable due to the absence of a commercial fishery, a test fishery must be implemented to provide catch and tag-recovery information needed to calculate the mark–recapture estimate (JTC 2009).

Early in the 2008 season, information from the U.S. test fishery at Emmonak (LTYF) and the Pilot Station sonar program on the lower Yukon River suggested that the 2008 run was lower than the preseason outlook range. Further upriver, as the run was migrating into Canada, inseason border escapement run projections were usually produced twice weekly based on data from the Eagle sonar estimate. The early season run size projections can be sensitive to the run timing information used because the early timing information represents a small proportion of the total run. Border escapement run projections are expanded based on what is considered to be the most probable timing scenario (i.e., early, average, or late timing) given the information at hand. The intent of applying different expansions is to ensure that the projections cover the range of the potential run timing scenarios (JTC 2009).

In 2008, the inseason Chinook salmon run projections were consistently well below the decision threshold that would have triggered a commercial fishery. Consequently, the Chinook salmon commercial fishery was closed throughout the 2008 season.

FALL CHUM AND COHO SALMON

Average to above average run strength resulted in a number of commercial fishery openings during the fall chum salmon season. In 2008, the fall chum salmon commercial fishery was opened earlier than usual based on stock assessment information, primarily the Eagle sonar estimate (JTC 2009). A total of 4,062 fall chum salmon was harvested in the commercial fishery (Appendix A21). Despite liberal fishing opportunities, the number of fishermen participating in the 2008 commercial fishery was low. Since 1997, there has been a marked decrease in commercial catches of upper Yukon River fall chum salmon that has resulted from a limited market as well as reduced fishing opportunities in some years due to below-average run sizes.

The commercial fall chum salmon catch was 35% lower than the 1998 to 2007 average of 6,279 (JTC 2009). Within the years 1998–2007, the commercial fall chum salmon catch ranged from 0

in 1998, when the fishery was closed due to conservation concerns, to 11,931 fall chum salmon in 2005. The fall chum salmon commercial fishery is somewhat of a misnomer as virtually all of the catch is used for what could be termed personal needs. License holders use most of the catch to feed their personal sled dog teams. This situation could change with the development of local value-added products such as smoked fall chum salmon and salmon caviar.

The Yukon River Panel recommended an escapement goal of >80,000 fall chum salmon for 2008. This was the same goal as was used in 2006 and 2007 and escapement was to be measured using Eagle sonar estimates minus catch data from fisheries occurring upstream of the sonar. This was the first year that projections from the Eagle sonar program were used for inseason management. In previous years, the Canadian inseason management regime was based primarily on the DFO tagging program. Inseason projections based on the Eagle sonar program were available earlier in the 2008 season than previous years when the mark–recapture program was used for assessment.

No coho salmon were recorded in the commercial catch in 2008. Commercial harvest of coho salmon within the upper Yukon River drainage is usually negligible; this is thought to be related to a combination of low abundance and limited availability of this species based on late migration timing.

SUBSISTENCE, PERSONAL USE, ABORIGINAL, DOMESTIC, AND SPORT FISHERIES

ALASKA

Subsistence Salmon Fishery

Subsistence salmon fishing activities in the Yukon Area typically begin in late May and continue through early October. Salmon fishing in May and October is highly dependent upon river ice conditions. Fishing activities are usually based from a fish camp or a home village. Extended family groups, representing 2 or more households, often work together to harvest, cut, and preserve salmon for subsistence use. Some households from communities not located along the mainstem Yukon River operate fish camps along the mainstem Yukon River.

Throughout the drainage most Chinook salmon harvested for subsistence use are dried, smoked, or frozen for later human consumption. Summer chum salmon, fall chum salmon, and coho salmon harvested in the Lower Yukon Area are primarily utilized for human consumption and are also dried, smoked, or frozen for later use. In the Upper Yukon Area, small Chinook (jacks), summer chum salmon, fall chum salmon, and coho salmon are all important sources of food for humans, but a larger portion of the harvested salmon are fed to dogs used and for recreation, transportation, and drafting activities (Andersen 1992). Most subsistence salmon used for dog food is dried (summer chum salmon) or frozen in the open air (“cribbed”; fall chum and coho salmon).

In 2001, ADF&G recommended the BOF 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 (Vania 2000), the BOF made a finding of ANS for the Yukon Area (including Coastal District communities of Hooper Bay and Scammon Bay) by species as follows: 45,500–66,704 Chinook salmon, 83,500–142,192 summer chum salmon, 89,500–167,900 fall chum salmon, and 20,500–51,980 coho salmon.

In 2008, summer chum salmon, fall chum salmon, and coho salmon runs were judged sufficient to provide for escapement and subsistence needs within Alaska, as well as meeting border passage commitments for fall chum salmon to Canada. However, the Chinook salmon run was poor, resulting in the implementation of restrictions on subsistence fishing in Alaska.

Fishermen reports inseason suggested that most Yukon Area subsistence fishing households did not meet all their subsistence needs for salmon. The poor 2008 Chinook salmon run resulted in management actions that reduced subsistence salmon fishing opportunity during the summer season. Reduced fishing opportunity contributed to lower numbers of Chinook salmon being harvested and influenced the summer chum salmon harvest as well. In spite of the poor Chinook salmon run, the flesh quality was reported as being generally better than in recent years, and fish size ranged from small to medium. Some upper mainstem Yukon River fishermen reported harvesting smaller Chinook salmon than in recent years.

Generally, surveyed households in lower Yukon River communities and some middle Yukon River communities fared better in harvesting Chinook and summer chum salmon than the upper mainstem Yukon River and tributary communities. In addition to the poor Chinook salmon run, high fuel prices limited river travel and some fishermen were unable to go to traditional fishing locations. To reduce costs, subsistence fishermen indicated they fished near their home community or waited until the salmon pulses migrated in close proximity to their area before they attempted to fish. In the upper Yukon River and Tanana River communities, untimely poor river conditions (extremely high water and debris) disrupted fishing efforts.

Documentation of the subsistence salmon harvest is necessary to determine whether subsistence needs are being met. Most subsistence users in the Alaska portion of the Yukon River drainage are not required to report their salmon harvest. The primary method of estimating subsistence salmon harvest is voluntary participation in the annual household survey conducted by ADF&G (Busher et al. 2009). Typically 33 communities are surveyed following the salmon fishing season beginning in early September and continuing through early November. Community household lists are maintained and updated annually during the surveys to make available the most current information. All households in each community are assigned to 1 of 5 harvest use groups based on their recent historical harvest pattern. Households are preselected for survey, although the heads of household are the primary target for interviews, another knowledgeable household member may also be interviewed. Survey data are expanded to estimate total subsistence harvest in surveyed communities.

In portions of the upper Yukon River and Tanana River drainages that are road accessible, fishermen are required to obtain a household subsistence fishing permit. Data obtained from subsistence permits are added to the total estimate of the subsistence salmon harvest provided by the survey. Subsistence totals also include salmon that are harvested from test fishery projects and distributed to residents of communities near the projects. Subsistence surveys and fishing permits also include other information such as non-salmon harvest and demographic information. In addition to postseason surveys and permits, subsistence “catch calendars” are mailed to approximately 1,600 households annually in the non-permit portions of the Yukon River drainage. Calendars supplement the survey information and provide harvest records for households to assist in recounting their catches when surveyed. Calendar data also provides timing of harvests (catch by day) information by salmon species.

An estimated 1,421 households in the Alaska portion of the Yukon River drainage (excluding Coastal District) harvested a total of 43,820 Chinook salmon, 68,532 summer chum salmon, 89,152 fall chum salmon, and 16,789 coho salmon for subsistence use (Appendix A22). The recent 5 year average (2003–2007) of subsistence salmon harvest in the Yukon River drainage is estimated to be 53,966 Chinook salmon, 92,290 summer chum salmon, 78,785 fall chum salmon, and 22,700 coho salmon. In addition, an estimated 165 fishing households harvested 1,492 Chinook salmon, 18,120 summer chum salmon, 386 fall chum salmon, and 116 coho salmon in the Coastal District (Appendix A22). A chum salmon tagging study conducted in June and July 1986 indicated that residents of Hooper Bay harvest chum salmon bound primarily for the Yukon River, but some Norton Sound and Kotzebue chum salmon were also harvested (Kerkvliet[1]). Busher et al. (2009) provides a discussion about 2008 subsistence harvests in regard to ANS determinations.

A total of 503 subsistence permits were issued and 262 subsistence permit holders reported to have fished for salmon and other non-salmon fish species in portions of the Yukon Area drainage requiring a permit (Appendix A23).

Personal Use Fishery

Fairbanks Nonsubsistence Area, located in the middle portion Tanana River, contains the only personal use fishery within the Yukon River drainage (Busher et al. 2009). Subsistence or personal use permits have been required in this portion of the drainage since 1973. Personal use fishing regulations were in effect from 1988 until July 1990 and from 1992 until April 1994. In 1995, the Joint Board of Fisheries and Game reestablished the Fairbanks Nonsubsistence Area, and it has been managed consistently under personal use regulations since then. Subsistence fishing is not allowed within nonsubsistence areas.

Subdistrict 6-C is completely within the Fairbanks Nonsubsistence Area and therefore falls under personal use fishing regulations. Personal use salmon and whitefish/sucker permits and a valid resident sport fish license are required to fish within the Fairbanks Nonsubsistence Area. The harvest limit for a personal use salmon household permit is 10 Chinook salmon, 75 summer chum salmon, and 75 fall chum and coho salmon combined. The personal use salmon fishery in Subdistrict 6-C has a harvest limit of 750 Chinook salmon, 5,000 summer chum salmon, and 5,200 fall chum and coho salmon combined.

In 2008, the personal use salmon fishery followed the regulatory fishing schedule of two 42-hour periods per week. A total of 51 personal use salmon household permits were issued (Appendix A23). The 2008 harvest results based on 50 of 51 personal use household permits returned in Subdistrict 6-C included 126 Chinook salmon, 138 summer chum salmon, 181 fall chum salmon, and 50 coho salmon. The recent 5-year (2003–2007) average personal use harvests in the Yukon River drainage was 154 Chinook salmon, 195 summer chum salmon, 253 fall chum salmon, and 261 coho salmon (Busher et al. 2009).

Sport Fishery

Sport fishing effort for anadromous salmon in the Yukon River drainage is directed primarily at Chinook and coho salmon, with little effort directed at chum salmon. In this report all of the

[1] Kerkvliet, C. M. *Unpublished*. Hooper Bay salmon tagging study, 1986. Bering Sea Fishermen's Association. Located at: Alaska Department of Fish and Game, Division of Commercial Fisheries, 333 Raspberry Road, Anchorage, Alaska.

chum salmon harvested in the sport fishery are categorized as summer chum salmon. Although a portion of the genetically distinct fall chum salmon stock may be taken by sport fishermen, most of the sport chum salmon harvest is thought to be made up of summer chum salmon because: 1) that run is much more abundant in tributaries where most sport fishing occurs, and 2) the chum salmon harvest is typically incidental to effort directed at Chinook salmon, which overlap in run timing with summer chum salmon.

Most of the drainage's sport fishing effort occurs in the Tanana River drainage along the road system. From 2003 to 2007 the Tanana River on average made up 80% of the total Yukon River drainage Chinook salmon harvest, 21% of the summer chum salmon harvest, and 61% of the coho salmon harvest. In the Tanana River, most Chinook and chum salmon are harvested from the Chena, Salcha, and Chatanika rivers, whereas most coho salmon are harvested from the Delta Clearwater and Nenana river systems. In the Yukon River most sport fishing effort takes place on the Anvik and Andreafsky rivers.

In 2008, an emergency order was issued on July 3 which reduced the sport fish daily bag and possession limit from 3 to 1 Chinook salmon on the Alaska portion of the Yukon River and its tributaries (excluding the Tanana River). Alaska sport fishing effort and harvests are monitored annually through a statewide sport fishery postal survey. Harvest estimates are typically not available until approximately 1 calendar year after the fishing season. The total sport harvest of salmon in the Alaska portion of the Yukon River drainage in 2008 was estimated at 409 Chinook salmon, 371 summer chum salmon, and 341 coho salmon (Appendix A5).

CANADA

Aboriginal Fishery

Based on a preseason outlook for a below-average run of 80,000 to 111,000 Canadian-origin Chinook salmon in 2008, the Yukon River Panel was advised that conservation measures would probably be required in Canadian fisheries (i.e. commercial, domestic, and recreational fisheries). As inseason information became available it was apparent that the 2008 run strength was well below average and conservation measures would be required in the Aboriginal fisheries as well. DFO hosted teleconferences with the First Nations throughout the Chinook salmon run to provide updated information on run timing and abundance, as well as to announce potential changes to fishing plans. DFO recommended that Yukon First Nations reduce their harvest by approximately 50% of recent levels by developing individual community harvesting plans. In response to this, management strategies were developed by individual communities to meet the recommended harvest guideline. Approaches to reductions in harvest varied, but generally the First Nations accepted the harvest guidelines provided by DFO and implemented harvest monitoring measures in order to stay within or below recommended guidelines. Overall, the combined total season harvest by the Aboriginal fishery in the Canadian Yukon River mainstem area was 2,885 Chinook salmon (Appendices A5 and A21).

The 2008 Aboriginal Chinook salmon harvest in the Canadian Yukon River mainstem area was 53% below the recent 10-year average of 6,103 fish and 31% below the 2007 total of 4,175 fish. In addition to 2,885 Chinook salmon caught in the Aboriginal fishery, 513 Chinook salmon caught in the test fishery were distributed to Yukon River First Nations by the Tr'ondëk Hwëch'in First Nation (JTC 2009).

The Aboriginal fishery harvest on the Porcupine River by the community of Old Crow was 314 Chinook salmon (Appendices A5 and A21).

For fall chum salmon, inseason run assessment information indicated that there were no apparent conservation concerns and First Nations were notified that a normal harvest level would be permitted. The 2008 Canadian Yukon River mainstem area fall chum salmon harvest in the Aboriginal fishery, all reported by Tr'ondëk Hwëch'in fishing in the Dawson area, was 2,068 (Appendix A21); this is 16% lower than the previous 10-year average of 2,473 fall chum salmon (JTC 2009).

A total of 3,436 fall chum salmon were harvested in the 2008 Old Crow Aboriginal fishery (Appendix A21), 11% below the 1998–2007 average harvest of 3,847 chum salmon (JTC 2009). The average harvest includes below-average catches within the 2002 to 2004 period when voluntary restrictions were used to conserve the Fishing Branch River fall chum salmon run. The harvest of coho salmon on the Porcupine River was 200 fish in 2008 compared to the 1998–2007 average of 249 fish (JTC 2009).

At the April 2008 meeting, the Yukon River Panel accepted the JTC recommendation to adopt an IMEG range of 22,000–49,000 Fishing Branch fall chum salmon for the years 2008 through 2010. This goal is considerably lower than the long standing goal range of 50,000 to 120,000 fall chum salmon which was in place from 1987 to 2007; preliminary analyses suggested the previous range was too high (JTC 2009).

The analyses used to determine the IMEG uses escapement contrast (i.e., maximum/minimum escapement) and harvest rate information to determine what percentile range of the actual historic escapements is appropriate for the escapement goal range. In the analysis, escapements from 1985 to 2007 (excluding 1990) were incorporated along with the contrast ratio of 24:1. The IMEG reflects the approximated 25th and 75th percentiles of the 22 years of weir counts (JTC 2009).

Domestic Fishery

There was no catch recorded in the domestic fishery in 2008. This fishery was closed during the Chinook salmon season and open for 40 days concurrently with the fall chum salmon commercial fishery. In recent years domestic fish harvesters have targeted Chinook salmon, although historically chum salmon have been targeted in some years (JTC 2009).

Recreational Fishery

In 2008, due to conservation concerns, the daily catch and possession limits of Chinook salmon in the recreational fishery were reduced to 0 effective 12:00 midnight on July 11. Chinook salmon had not yet reached the areas where most recreational fishing occurs by this date. In addition, all angling was prohibited in the Yukon River near the confluence of Tatchun Creek, within an area marked by boundary signs located approximately 30 meters upstream from the Yukon River/Tatchun Creek confluence and 800 meters downstream of the confluence. This is the principal area where Chinook salmon recreational fishing occurs within the Yukon River drainage in Canada. All angling was also prohibited within Tatchun Creek. In 2008, no Chinook salmon were caught (i.e., no Chinook salmon were caught and released or caught and retained). The average retained Chinook salmon catch within the years 1998–2007 is 274 fish (JTC 2009).

2008 SPAWNING ESCAPEMENT GOALS

The next triennial review of salmon escapement goals in the Alaska portion of the drainage by ADF&G will be in preparation for its BOF cycle meeting in 2010. This review is governed by the state's *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223) adopted in 2001. Under these policies ADF&G sets either a biological escapement goal (BEG) or a sustainable escapement goal (SEG) (Brannian et al. 2006). A BEG refers to a level of escapement that provides the highest potential to produce maximum sustainable yield. A SEG identifies a level of escapement known to provide for sustainable yield over a 5 to 10 year period.

Current escapement goals in the Alaska portion of the Yukon River drainage were formally adopted by ADF&G in 2007 (Hayes et al. 2012). In preparation for the February 2007 Alaska BOF cycle meeting, ADF&G reviewed escapement goals. No changes were recommended or adopted for Yukon River escapement goals in 2007. Canadian Chinook and fall chum salmon escapement goals are based on limited scientific information and are not classified as a BEG or SEG. These goals are agreed to by the Yukon River Panel annually as stipulated in the treaty agreement. Chinook, summer chum, and fall chum salmon escapement goals in the Yukon River drainage in 2008 are shown in Tables 4–6.

Table 4.–Escapement goals for Chinook salmon, Yukon Area.

Stream	Goal	Type of goal
East Fork Andreafsky River aerial survey	960–1,900	SEG
West Fork Andreafsky River aerial survey	640–1,600	SEG
Anvik River aerial survey	1,100–1,700	SEG
Nulato River aerial survey	940–1,900	SEG
Gisasa River aerial survey	420–1,100	SEG
Chena River tower	2,800–5,700	BEG
Salcha River tower	3,300–6,500	BEG
Canada Yukon River mainstem	>45,000	IMEG[a]

[a] The Yukon River Panel agreed to a 1-year interim management escapement goal of greater than 45,000 based on sonar assessment near Eagle, Alaska, for 2008.

Table 5.–Escapement goals for summer chum salmon, Yukon Area.

Stream	Goal	Type of goal
East Fork Andreafsky River weir	65,000–130,000	BEG
Anvik River sonar	350,000–700,000	BEG
Drainagewide escapement (above Pilot Station)	>600,000	OEG

Table 6.–Escapement goals for fall chum salmon, Yukon Area.

Stream	Goal	Type of goal
Drainagewide escapement	300,000–600,000	BEG
Tanana River drainage	61,000–136,000	BEG
Delta River	6,000–13,000	BEG
Toklat River	15,000–33,000	BEG
Upper Yukon tributaries	152,000–312,000	BEG
Chandalar River	74,000–152,000	BEG
Sheenjek River	50,000–104,000	BEG
Fishing Branch	22,000-49,000	IMEG[a]
Canada Yukon River mainstem	>80,000	Treaty goal[b]

[a] Canadian interim management escapement goal agreed to by the Yukon River Panel for 2008 through 2010.

[b] The Yukon River Panel agreed to a rebuilt spawning escapement goal of greater than 80,000 based on sonar assessment near Eagle, Alaska for 2008.

There is only 1 escapement goal for coho salmon established in the entire Yukon River drainage. The Delta Clearwater River boat survey goal for coho salmon is a SEG range of 5,200–17,000 fish.

STATUS OF SPAWNING STOCKS IN 2008

Alaskan and Canadian researchers have developed projects to monitor escapement and determine genetic composition, relative abundances, run characteristics, and other information pertinent to the annual salmon migration. Main river sonar, tributary sonar, weir, counting tower projects, and aerial surveys are used to monitor escapement. Other information collected at ground-based projects may include, but is not limited to, salmon sex and length composition, scales for age determination, samples for genetic stock identification, data on resident species, and information from the recovery of tagged fish from various projects. Various government agencies, non-government organizations, and private contractors operate projects throughout the drainage (Appendix A3 and A4).

CHINOOK SALMON

Alaska

The 2008 Chinook salmon run was judged to be weak and well below the recent 10-year average of 210,000 Chinook salmon based upon preliminary run reconstruction estimates. High water hampered efforts to accurately quantify escapement in 2008 via tower counts and aerial surveys; thus, most escapement goals could not be assessed. Based on available data, it appears that the lower end of the BEGs in the Chena and Salcha rivers, the largest producing tributaries of Chinook salmon in the Alaska portion of the drainage, were met. A summary of escapements in 2008 can be found in Appendix A24 and historical information in JTC (2009). Age and sex information collected from Chinook salmon at escapement projects in 2008 are presented in Appendix A25.

Ichthyophonus hoferi is a marine-derived protozoan parasite infecting a variety of marine and anadromous fish species including salmonids (McVicar 1999; Kocan et al. 2004; Tierney and Farrell 2004). The low returns of Yukon River Chinook salmon observed in recent year's raises

the question of the potential contribution of *Ichthyophonus* to these declines due to pathogen-induced mortality, reduced fecundity, and the inability of fish to successfully migrate to and spawn in tributaries. Research conducted on the Yukon River from 1999 to 2003 suggests that *Ichthyophonus* may be an emerging disease of Chinook salmon within the AYK region (Kocan et al. 2004). Studies of *Ichthyophonus* conducted in 2008 are presented in JTC (2009).

Canada

The Yukon River Panel adopted an IMEG of 45,000 Chinook salmon for 2008, which was assessed using information from the Eagle sonar passage estimate. The border passage estimate from the Eagle sonar project was 38,097 Chinook salmon. Subtracting harvests upriver of the sonar in Eagle (815) and in Canada (3,399) resulted in a spawning escapement of 33,883 (Appendix A24), which was 25% lower than the IMEG. The escapement target had been achieved consistently from 2001 to 2005, and nearly met in 2006. The 2007 and 2008 Chinook salmon runs were weaker than the run in 2006 and well below the recent 10-year average.

Aerial surveys of the Little Salmon, Big Salmon, and Wolf rivers index areas were conducted by DFO (Appendix A24). All aerial survey counts were well below the recent 10-year average (JTC 2009).

In 2008, a total of 276 Chinook salmon were counted through the Blind Creek weir (Appendix A24); the 1998–2007 average count is 668. A total of 191 Chinook salmon (69% of the run) were sampled, of which 88 (46%) were female and 103 (54%) were male. Jacks accounted for 10% of the males sampled (JTC 2009).

A total of 1,329 Chinook salmon were counted at the Big Salmon sonar station between July 16 and August 25, 2008. The counts for the years 2005–2007 were 5,584, 7,308, and 4,450, respectively (JTC 2009).

The Whitehorse Rapids Fishway Chinook salmon count of 399 (Appendix A24) was 32% of the 1998–2007 average count of 1,238 fish. The overall sex composition observed at the fishway was 37% female (n = 148). Hatchery-produced fish accounted for 54% of the run through the fishway and included 144 males and 73 females. The non-hatchery count accounted for 46% of the run and consisted of 107 wild males and 75 wild females. Historical fishway counts are presented in JTC (2009).

SUMMER CHUM SALMON ALASKA

Summer chum salmon runs have exhibited steady improvement since 2001 with harvestable surpluses in each of the past 7 years (2002–2008). Weak summer chum salmon runs from 1998 through 2001 are attributed to reduced productivity and not the result of low levels of parent year escapements because spawning escapements were well above average from 1994 to 1996.

In 2008 there was an exceptionally large run of pink salmon and, for the period of approximately June 30 through July 3, a significant number of pink salmon may have been incorrectly apportioned by Pilot Station sonar as summer chum salmon. These estimates were corrected after the summer season, reducing the final estimate for summer chum salmon from 1,858,000 to 1,665,667 (Appendix A14), still well above the drainagewide OEG of 600,000 fish for the Yukon River.

Postseason analysis indicates summer chum escapements were generally good in many lower river tributaries and the Koyukuk River drainage (Appendix A24). Escapement goals have been

established for the Andreafsky and Anvik rivers. The estimated escapement of 57,259 summer chum salmon for the East Fork Andreafsky River was below the BEG range of 65,000–135,000 fish. The Anvik River sonar-based escapement count of 374,929 summer chum salmon was within the BEG range of 350,000 to 700,000. The relative contribution of these 2 tributaries to the total run has decreased from over 50% to approximately 25% in the past 5 years indicating a production shift to spawning tributaries higher in the drainage. Once again, the large number of pink salmon in the Anvik River precluded accurate inseason estimates, and a postseason adjustment was necessary.

Age and sex composition data collected from summer chum salmon escapement projects in 2008 are presented in Appendix A26. Given that summer chum salmon tributary escapements have been in flux in recent years, ADF&G and USFWS are collecting genetic samples at the Pilot Station sonar project to provide inseason mixed stock analysis.

FALL CHUM SALMON

Major fall chum salmon spawning areas are located in the Chandalar, Tanana, and Porcupine rivers drainages and within the Canadian mainstem Yukon River drainage (Figure 13). Fall chum salmon runs were poor from 1998 through 2002. However, there has been a near historical average harvestable surplus of fall chum salmon above escapement needs since 2003, a record run in 2005, and above-average runs in 2006 and 2007.

Alaska

The Yukon River drainagewide total run size preliminary estimate of 760,000 fall chum salmon is based on the postseason expanded escapement and estimated harvests. This run size is below the preseason projection of 899,000 to 1.2 million salmon but within the range provided by the summer to fall chum salmon relationship (591,000 to 885,000 fall chum salmon). Assessment of run size can be made using 2 methods. The first method to determine total run size is based on the Pilot Station sonar abundance estimate of 615,127 fish (Appendix A14) with the addition of estimated commercial and subsistence harvests downstream of the sonar site including test fisheries (approximately 115,000 fish). Therefore, the total run size for the Yukon River drainage, primarily calculated from the main river sonar at Pilot Station, is estimated to be approximately 730,000 fall chum salmon. Based on the location of the project, in this case, Pilot Station (river mile 123), the abundance estimate includes Koyukuk River drainage stocks. This is the method used inseason to project run size before all the escapements are enumerated.

The second method to calculate run size uses escapement estimates to Chandalar, Sheenjek, Fishing Branch, Canadian Mainstem, and Tanana rivers, including estimated U.S. and Canadian harvests where appropriate. In 2008 the border sonar passage estimate was used instead of the border mark–recapture project and requires changing the amount of harvest included based on the locations of the individual projects. Also in 2008, due to the loss of mark–recapture projects on the Tanana and Kantishna rivers, estimates of abundance for the Tanana River drainage were based on genetic apportionment of the samples collected in the test fishery operated near Pilot Station as part of the mainstem sonar project. The tributary escapement method resulted in a preliminary estimate of 760,000 fall chum salmon. However, this method does not include an escapement estimate of possibly 25,000 fall chum salmon for stocks located in tributaries downstream of the confluence of the Tanana River (e.g., the Koyukuk River). The estimate of run size based on individual projects is typically higher than that based on Pilot Station sonar. In

this case, the estimate based on projects is only 4% greater than the estimate based on Pilot Station sonar without consideration for stocks below the Tanana River confluence.

In 2008, the proportion of age-4 (42%) fish was well below average (68%), age-5 (56%) fish were well above average (27%), and age-6 (2%) fish were also higher than average (1%) based on the LYTF project weighted averages for the years 1977 to 2007. Age and sex composition data collected from escapement projects in 2008 are presented in JTC (2009). The estimated total return of fall chum salmon in 2008 was slightly above average for even-numbered year runs. The summer and fall chum salmon runs are split by a calendar date (July 15, at the mouth of the Yukon River), where overlap is known to occur. In 2008, the upper Yukon River components appeared to have normal timing whereas the Tanana River component appeared to be up to 8 days. Pilot Station sonar passed 3 substantial groups of fish. The last group entered after August 19 and resulted in run timing being 5 days later than average. Based upon genetic analysis of Pilot Station sonar samples, this last pulse of fall chum salmon was composed of 54% Tanana River stocks.

Estimates of drainagewide escapement are based on U.S. and Canada commercial (123,000 fish) as well as subsistence and Aboriginal (89,000 fish) harvests of fall chum salmon. Based on these levels of harvest, the preliminary drainagewide escapement is estimated to be approximately 550,000 fall chum salmon. The near average sized run for an even-numbered year combined with a conservative harvest provided sufficient strength to meet or exceed the majority of the fall chum salmon BEGs. However, weakness is still evident in the Porcupine River system where escapement goals were not achieved in the Sheenjek and Fishing Branch rivers.

Sheenjek River escapement was monitored by a sonar project operated from August 9 through September 24, 2008. The project was upgraded in 2005 to DIDSON gear on both right and left banks. Most of the historical Sheenjek River escapement estimates were only derived from right bank operations with old sonar technology. The right bank estimated escapement of 42,206 fish in 2008 was 16% below the lower end of the BEG range of 50,000 to 104,000 fall chum salmon which was based on the historical right bank data (Dunbar 2009). During the 47 day period of operation, the combined cumulative count for both banks at project termination was approximately 42,842 chum salmon. The cumulative estimate at the project termination was then further expanded to compensate for late run timing and resulted in a postseason estimate of 50,353 chum salmon for both banks combined (Dunbar 2009; Appendix A24).

The Chandalar River sonar project operated from August 8 through September 26, 2008. The escapement estimate was approximately 162,000 fall chum salmon. However, the project was still estimating passages of over 4,000 fish a day at the time of termination and therefore expansion for late run timing was warranted. The expanded passage estimate for Chandalar River resulted in a postseason estimate of 178,278 fall chum salmon (Appendix A24). The expanded estimate of escapement in the Chandalar River was approximately 17% above the upper end of the BEG range of 74,000 to 152,000 fall chum salmon.

Due to lack of funding in 2008, the Tanana/Kantishna River mark–recapture project was not conducted to assess fall chum salmon run abundance. Inseason monitoring of the Tanana River drainage consisted of monitoring fall chum salmon run timing at the various test fish wheel locations near Tanana Village, Kantishna River mouth, and Nenana, as well as monitoring subsistence and commercial harvests. To determine run size in the Tanana River, the genetic apportionment at Pilot Station sonar was used, which resulted in an estimate of 162,000 fish.

With the removal of the estimated harvests from Subdistrict 5-A and District 6 (23,000 fish) and some undetermined amount of mixed harvest in downstream fisheries, the level of the Tanana River escapement was believed to be sufficient to fall within the Tanana River BEG range of 61,000 to 136,000 fall chum salmon. The relative contribution of Tanana River stocks to the total Yukon River fall chum salmon run is approximately 29%.

The Delta River, a tributary in the upper Tanana River drainage, has a BEG range of 6,000 to 13,000 fall chum salmon. Escapement in the Delta River in 2008 was based on 8 replicate foot surveys conducted between October 6 and November 26 and was estimated to be 23,055 fall chum salmon (Appendix A24). This level of escapement was 77% above the upper end of the BEG range.

Canada

The Eagle sonar project was operated into the fall season for the third year in 2008 to enumerate fall chum salmon. In 2008, the Eagle sonar passage estimate through October 6 was 171,347 fall chum salmon, but 4,000 fall chum salmon a day were still passing at the end of the project (Crane and Dunbar 2009). Due to the late timing, an expansion to typical cessation of the run was conducted to estimate passage through October 18. The resulting estimate of passage based on late timing was 185,409 fall chum salmon, and with the removal of 11,381 fish estimated for Eagle subsistence harvest above the sonar site, the border passage estimate was 174,028 fall chum salmon (Appendix A24). The removal of Canadian commercial and Aboriginal harvests of 6,130 fall chum salmon from the border passage estimate results in an escapement estimate of 167,898 fall chum salmon. The estimated escapement was approximately double the Canadian Yukon River mainstem IMEG of greater than 80,000 fall chum salmon. Overall the relative contribution of Canadian origin stock represented approximately 31% to the total run in 2008.

In the Porcupine River drainage, the Fishing Branch River weir was operated from September 9 to October 11. An attempt to install the weir earlier in the season was unsuccessful due to high water conditions. A total of 18,551 fall chum salmon were counted. The observed count was expanded to 20,055 fall chum salmon to account for fish which were believed to have migrated after the program ended. The expanded 2008 count (20,055 fish) is approximately 34% lower than the recent average of 30,256 fish; however, the recent average is influenced by the exceptional count of 121,413 fall chum salmon observed in 2005. The 2008 count was 9% below the lower end of the Fishing Branch River escapement goal range of 22,000 to 49,000, which was established for the years 2008 through 2010 (JTC 2009).

COHO SALMON ALASKA

There are few assessment projects for coho salmon spawning escapements in the Yukon River drainage due to funding limitations. The sonar at Pilot Station was operated a week longer than usual, through September 7, with an estimated passage of 135,570 coho salmon (Appendix A14), which is slightly less than average passage of 147,700 fish. The Delta Clearwater River has the only established escapement goal for coho salmon, a SEG of 5,200–17,000 fish. The 2008 boat count survey estimated an escapement of 7,450 coho salmon (Appendix A24), which is within the escapement goal range. Compared to the recent high escapements (5-year average of 41,900 fish), coho salmon escapement appeared to be well below average and the lowest escapement since 1992 when less than 4,000 coho salmon were counted (JTC 2009).

YUKON RIVER SALMON RUN OUTLOOKS 2009

CHINOOK SALMON

The Canadian spawning escapements in 2003 and 2004, the brood years producing age-6 and age-5 fish returning in 2009, were well above average and near the 1999–2008 average. However, the run of Canadian-origin Chinook salmon in 2009 is expected to be below average to poor, with a run outlook of 60,700–71,600 fish based on low production observed in 2007 and 2008. For comparison, the average run size from 2000 to 2008 is 97,000 Chinook salmon.

The total Yukon River Chinook salmon run can be estimated by applying historical average proportions of Canadian-origin fish in the total run to the outlook estimated for the Canadian component of the run. The 2007 and 2008 proportions of Canadian origin fish in the total run were below average (approximately 50%) at 37% and 36%, respectively. Because recent run sizes are considered the best indicators of upcoming run size, the 2009 run outlook estimate is based on the 2007 and 2008 proportions. Using this method, the expected total Yukon River run size is 166,000 Chinook salmon based on sibling and the Ricker models, but could be as low as 149,000 fish. Note that there is a lot of uncertainty associated with this methodology.

Thus, the 2009 Yukon River Chinook salmon run will probably be below average to poor with the primary concern being for a poor run of Canadian-origin Chinook salmon. Therefore it is prudent to enter the 2009 season with the expectation that subsistence restrictions, beyond those used in 2008, will be required in an effort to share the available subsistence harvest amount and meet escapement goals. It is unlikely that there will be a directed Chinook salmon commercial fishery in 2009 on the mainstem Yukon River, but there may be opportunity to commercially harvest less than 1,000 Chinook salmon on the Tanana River, as the Tanana River is managed independently as a terminal fishery.

SUMMER CHUM SALMON

The strength of the summer chum salmon runs in 2009 will be dependent on production from the 2005 (age-4 fish) and 2004 (age-5 fish) escapements as these age classes dominate the run. The total run during 2004 and 2005 was approximately 1.5 and 2.5 million summer chum salmon respectively, though tributary escapements were highly variable. It appears that production has shifted from major spawning tributaries in the lower portion of the drainage, such as the Andreafsky and Anvik rivers over the last 8 years, to higher production in spawning tributaries upstream such as the Koyukuk River.

Because summer chum salmon exhibit an alternating annual dominance of age-4 fish and age-5 fish, an above-average percentage of age-4 fish is expected in 2009. The 2009 run is estimated using the Anvik River brood table, sibling relationships between age-4 and age-5 fish, and the 5-year average ratio between the Anvik River and Pilot Station sonar. It is expected that the total run in the Yukon River could be approximately 1.5–2.0 million summer chum salmon in 2009 which constitutes an average run. However, the marine Bering Arctic Subarctic Integrated Surveys (BASIS) study in Norton Sound in fall 2006 indicated that juvenile chum salmon were less abundant and did not appear to be as healthy as previous years. This may indicate the 2009 return of age-4 fish may be less than anticipated.

The 2009 summer chum salmon run is anticipated to provide for escapements, support a normal subsistence harvest, and a surplus for commercial harvest. Summer chum salmon runs have

exhibited steady improvements since 2001 with a harvestable surplus in each of the last 6 years (2003–2008). If inseason indicators of run strength develop as anticipated, the commercially harvestable surplus in Alaska could range from 500,000 to 900,000 summer chum salmon. However, the actual commercial harvest of summer chum salmon in 2009 will probably be affected by a potentially poor Chinook salmon run, because Chinook salmon are incidentally harvested in chum salmon-directed fisheries.

FALL CHUM SALMON

A considerable amount of uncertainty has been associated with fall chum salmon run size projections because of unexpected run failures from 1998 to 2002 which were followed by a strong improvement in productivity from 2003 through 2007. Weakness in salmon runs prior to 2003 has generally been attributed to reduced productivity in the marine environment and not as a result of low levels of parental escapement. Similarly, the recent improvements in productivity may be attributed to the marine environment. Projections have been adjusted based on recent trends in production.

Yukon River fall chum salmon return primarily as age-4 and age-5 fish, although age-3 and age-6 fish also contribute to the run. Escapements for the 2004 and 2005 parent years will be the major contributors to the age-4 and age-5 classes of fall chum salmon returning in 2009. Both parent year escapements were above the upper end of the drainagewide escapement goal of 300,000 to 600,000 fall chum salmon. The 2005 escapement was particularly strong, exceeding the upper end of the drainagewide escapement goal range by more than 3 times and is anticipated to be the largest contributor to the 2009 fall chum salmon run. Estimates of returns per spawner (R/S) based on brood year return were used to estimate production for 2003 and 2004. An auto-regressive Ricker spawner–recruit model was used to predict returns from 2005 and 2006. The point projections for 2009 used the 1984 to 2002 brood year returns applied to the odd/even maturity schedule, because current production is reduced from the pre-1984 level.

The estimated 2003 brood year returns appear to be slightly above average for an odd-numbered year return and the 2004 brood year return is estimated to be below average for an even-numbered year return. There is greater uncertainty as to how well the 2005 fall chum salmon brood year will be represented in the coming generation. As examples, the returns from the record escapements achieved in 1975 and 1995 resulted in very different production levels. Good survival was realized for the 1975 brood year with an estimated return per spawner of 1.0, and lower survival was evident in 1995 brood year which resulted in a record low return per spawner of 0.34 fish. Recent production levels at 2.0 returns per spawner (average R/S 1998 to 2002 excluding 2001) are well above the poor returns observed in 1994–1997 (0.49 average R/S); however, they appear to be declining.

Given the uncertainty surrounding the returns from the 2005 brood year, a range was developed for the 2009 return in the following manner. The lower bound of the range was based on expected return from the spawner–recruit model, which was 0.29 return per spawner, and the upper bound was based on the point of equilibrium of the spawner–recruit model, which was estimated to be 0.56 return per spawner. These 2 return per spawner rates were applied to the 1984–2002 odd/even maturity schedule. This resulted in a range of projected run size between 600,000 and 980,000 fall chum salmon. The midpoint of these 2 estimates is 790,000 fall chum salmon with contributions from the 2005 brood year ranging from 66% to 79% age-4 fish. These

estimates of age-4 returns represent 400,000 to 800,000 fall chum salmon contributing to the 2009 run.

The run projection will be refined as the fall season approaches based on the summer chum to fall chum salmon relationship. Additionally, inseason monitoring projects will be used to determine appropriate management actions and levels of harvest based on stipulations in the Alaska *Yukon River Drainage Fall Chum Salmon Management Plan*. With a range in run size from 600,000 to 980,000 fall chum salmon, it is anticipated that escapement goals should be met and support normal subsistence fishing activities. However, commercial harvestable surpluses will have to be determined inseason.

COHO SALMON

Although there is little comprehensive escapement information for Yukon River drainage coho salmon, it is known that coho salmon primarily return as age-4 fish and overlap in run timing with fall chum salmon. The major contributor to the 2009 coho salmon run will be the age-4 fish returning from the 2005 parent year. Based on Pilot Station sonar operations from 1995, and 1997 through 2008, the 2005 passage estimate of 184,000 coho salmon was above average (Appendix A14). The Delta Clearwater River is a major producer of coho salmon in the upper Tanana River drainage, which has comparative escapement monitoring data since 1972. The parent year escapement of 34,000 fish in 2005 was the sixth highest on record and twice the upper end of the SEG range of 5,200 to 17,000 coho salmon. Evaluations of coho salmon escapements in the Nenana and Richardson Clearwater rivers also were average to above average. Assuming average survival, the 2009 coho salmon run is anticipated to be average to above average based on good escapements in 2005.

The Alaska *Yukon River Coho Salmon Management Plan* allows a directed commercial coho salmon fishery, but only under unique conditions. Directed coho salmon fishing is dependent on the assessed levels in the return of both coho and fall chum salmon because they migrate together.

CANADIAN ORIGIN CHINOOK AND FALL CHUM SALMON SPAWNING ESCAPEMENT TARGETS

For the 2009 season, the Yukon River Panel agreed to a 1-year Canadian Yukon River mainstem IMEG of >45,000 Chinook salmon based on the Eagle sonar program. The IMEG for the Fishing Branch River of 22,000 to 49,000 fall chum salmon based on the Fishing Branch River weir count will continue through 2010. The Yukon River Panel also agreed to a Canadian Yukon River fall chum salmon mainstem escapement objective of >80,000 fish based on the Eagle sonar program rather than based on the mark–recapture project near the mainstem border. In addition to the escapement obligations, the U.S. has agreed to a sharing of the harvestable surplus of the Canadian run component. Canada is to receive 20% to 26% of the available TAC for Canadian bound Chinook salmon and 29% to 35% of the available TAC for Canadian bound fall chum salmon.

CAPE ROMANZOF DISTRICT HERRING FISHERY

The Cape Romanzof Herring District consists of all state waters from Dall Point to 62 degrees north latitude (Bue et al. 2011). Pacific herring (*Clupea pallasii*) are present in coastal waters of the Yukon Area during May and June. Spawning populations occur primarily in the Cape

Romanzof areas of Kokechik Bay and Scammon Bay where spawning habitat consists of rocky beaches and rockweed (*Fucus* sp.). The arrival of herring on the spawning grounds is influenced by ocean water temperature and ice conditions. Typically, herring appear immediately after ice breakup. Spawning usually occurs between mid-May and mid-June.

Local residents utilize herring harvested in Hooper Bay, Kokechik Bay, and Scammon Bay for subsistence purposes. Additionally, a few fishermen in the Yukon Delta report harvesting herring along the coast near Black River and Kwiguk Pass for subsistence use. It is speculated that these herring are migrating toward southern Norton Sound. Additionally, some Yukon Delta residents harvest herring spawn-on-kelp (*Fucus* sp.) north of Stebbins in southern Norton Sound.

A commercial herring sac-roe fishery began in the Cape Romanzof District in 1980. Commercial harvests increased steadily after inception of the fishery, reaching a peak harvest of 1,865 short tons in 1986 (Bue et al. 2011). In 1982, the BOF reduced the area open to commercial fishing by closing the waters outside of Kokechik Bay because of increasing fishing effort and difficulty monitoring the fishery. Since 2000, the harvest has greatly decreased because of declining markets resulting in lower prices paid and lower fishing effort. In 2004, the BOF opened the Cape Romanzof District for commercial herring fishing to the pre-1982 boundaries in an effort to allow more fishing opportunity. Gillnets are the only legal commercial gear type; gillnet mesh size may not be less than 2.5 inches and may not exceed 3.5 inches. The use of mechanical shakers has been prohibited since 1988. Limited entry to the fishery began with a moratorium on new entrants in 1988. The fishery is now limited to 101 permits.

COMMERCIAL FISHERY

Since the fishery was initiated in 1980, commercial harvests have ranged from 25 short tons in 2005 to 1,865 short tons in 1986 (Bue et al. 2011). The exvessel value of the fishery has ranged from $1,000 from 2001 to 2004 to $1.1 million in 1986. The number of permit holders participating has ranged from 8 in 2006 to 157 in 1987. The commercial fishery saw an increasing trend in effort, harvest, and value from the inception of the fishery in 1980 until its peak in 1986. Declining markets after 2000 resulted in reduced effort, harvest, and exvessel values, eventually leading to no commercial fishery in 2007 (Hayes et al. 2012).

No commercial fishing occurred in the Cape Romanzof District in 2008 because of a lack of buyers. Buyers indicated preseason that they would be able to meet their market needs from fisheries operating in areas south of the AYK Region. It is unknown how long the poor market conditions will continue.

For each year in which commercial fishing has occurred, the overall herring exploitation rate has been estimated postseason as the proportion of the available biomass harvested (Hayes et al. 2012). Historical age composition of the commercial harvest estimated using scale analysis from a subsample of commercially caught herring is presented in Bue et al. (2011). Due to the lack of commercial fishing, no samples were collected in 2007 and 2008.

SUBSISTENCE FISHERY

A total of 187 mail-out questionnaires were sent to households in the communities of Hooper Bay, Chevak, and Scammon Bay in 2008. A total of 20 (11%) households responded. The subsistence harvest and effort figures only show the reported harvest and therefore are considered minimum estimates. During 2008, an estimated subsistence harvest of 2.3 short tons

of herring was taken by 12 fishing families from Hooper Bay, Chevak, and Scammon Bay (data on file with Yukon Area management staff, ADF&G Division of Commercial Fisheries, Anchorage). In addition, 4 households harvested 30 pounds of herring spawn-on-kelp for subsistence purposes.

STOCK STATUS

Due to excessive water turbidity in the Cape Romanzof area, it is usually not possible to estimate herring biomass using aerial survey techniques. Herring biomass in previous years has been estimated using a combination of information from aerial surveys, test and commercial catches, spawn deposition, and age composition. No aerial surveys were conducted in the Cape Romanzof District in 2008. The 2008 biomass was estimated to be 5,000 short tons, which was higher than the projected preseason biomass (data on file with Yukon Area management staff, ADF&G Division of Commercial Fisheries, Anchorage). The biomass estimate was based upon Bayesian techniques used when no aerial survey estimates are available. It should be noted the 2008 herring biomass estimate for Norton Sound District continues to be large compared to historical estimates.

ADF&G did not conduct test fishing operations in Cape Romanzof during the 2007 and 2008 seasons. However, test fishing with variable mesh gillnets has been conducted in every other year since 1978 to determine distribution, timing, and relative abundance of spawning herring and to collect samples for age, sex, size, and relative maturity information. Prior year age composition information is shown in Bue et al. (2011).

HERRING OUTLOOK FOR 2009

The projected biomass of herring to return to Cape Romanzof District in 2009 is expected to be 4,852 short tons. At a 20% exploitation rate, the allowable harvest is expected to be 970 short tons and will be based on inseason indicators of abundance. Because water turbidity in the Cape Romanzof area generally prevents aerial observations of herring, spawn deposition and test and commercial catch rates will be used to determine the timing and duration of commercial fishing periods. Ages 5, 6, and 7 are expected to make up 77% of the returning biomass (16%, 14%, and 47%, respectively). Age 9 and older herring are expected to compose 20% of the biomass.

Variability in the quality of aerial survey assessments of biomass and deviations from the assumed survival or recruitment rates may result in the observed biomass being either above or below preseason projections. Therefore, guideline harvest levels may be adjusted during the season according to observed herring spawning biomass. If determining herring abundance using aerial survey methods is not possible, stock abundance will be assessed using information from the projected biomass, test and commercial catches, and spawn deposition observations. In accordance with the AYK region harvest strategy, the commercial fishery will not target newly recruited age classes (age 2 through age 5 herring). If market conditions improve to allow for a commercial herring fishery, ADF&G will work cooperatively with fishermen and buyers to optimize roe recovery. The occurrence and length of fishing periods and harvests depend on inseason biomass estimates, roe quality, spawning activity, weather conditions, fishing effort, and processor input.

OTHER MARINE AND FRESHWATER FINFISH FISHERIES

SUBSISTENCE FISHERY 2008

Non-salmon species (e.g., northern pike, sheefish, whitefish, Alaska blackfish (*Dallia pectoralis*)) are an important subsistence resource for people in most areas throughout the Yukon drainage (Brown et al. 2005; Andersen et al. 2004). Many subsistence users harvest marine and freshwater finfish other than salmon and herring either as incidental bycatch while fishing for salmon or by directly targeting those species. Subsistence users particularly rely on non-salmon species when other sources of fish or wildlife are unavailable.

Non-salmon harvest information is documented yearly during the ADF&G postseason subsistence salmon harvest surveys, but secondarily to information regarding household use of salmon. Therefore, less emphasis is placed on determining harvest estimates of non-salmon species. Comprehensive harvest assessment projects are still needed for many areas to identify the overall non-salmon harvest and utilization on a drainagewide basis. In an effort to gain more information about these subsistence fisheries, communities along the Koyukuk River drainage and communities of Grayling, Anvik, Shageluk, and Holy Cross of the lower-middle Yukon River drainage were extensively surveyed in 2 studies by ADF&G (Division of Subsistence and Sport Fish) and Tanana Chiefs Conference (TCC). The studies documented traditional ecological knowledge (TEK) of the behavior, harvest, and use of non-salmon fish in these areas of Alaska and found that non-salmon species are harvested by a high percentage of households in these areas (Brown et al. 2005; Andersen et al. 2004).

Since 1988, subsistence salmon surveys have included the collection of freshwater finfish harvest data. Alaska blackfish, large and small whitefish, and northern pike accounted for the highest proportion of the total estimated and reported subsistence harvest. In 2008, a total of 503 subsistence household permits were issued in the Upper Yukon Area, 466 permits were returned, and of those returned 262 permits fished. The preliminary reported harvest was 3,361 whitefish, 109 sheefish, 89 burbot (*Lota lota*), 1,676 northern pike, 141 longnose suckers, and 488 Arctic grayling (*Thymallus arcticus*) (Busher et al. 2009; Appendix A23).

A variety of fishing methods are used in the main rivers and coastal marine waters to harvest non-salmon finfish. Beach seines are occasionally used near spawning grounds, primarily capturing schooling species of fish. Small traps and fish weirs of various designs are used, mainly in the fall and winter months, to capture whitefish, Alaska blackfish, and burbot. Sheefish, northern pike, Arctic char (*Salvelinus alpinus*), and saffron cod (*Eleginus gracilis*; also known as saffron cod) are frequently taken through the ice using hand lines. Dip nets are used in late May to early June to harvest smelt (*Osmeridae* spp.) in the delta area. Dip nets and "eel sticks" are used in late October to early December to harvest Arctic lamprey (*Lampetra camtschatica*) in the mainstem Yukon River from the mouth upstream to the village of Grayling.

The spring sheefish migration occurs just prior to, and during, the beginning of the upstream migration of Chinook salmon. During late May and early June, sheefish are harvested in the lower Yukon River as they migrate upriver. Harvest of whitefish and sheefish in the upper Yukon and Tanana rivers from fish wheels may be large in certain areas, but it is usually a relatively small incidental harvest from the subsistence and commercial salmon fishery.

From 1997 through 1999, a sheefish tagging and radiotelemetry study was conducted by USFWS near Rampart in cooperation with the National Marine Fisheries Survey (NMFS) and ADF&G. The study found that sheefish captured at the study site were mature fish engaged in a spawning migration that originated in the lower Yukon River, or associated estuary regions, and continued towards a common spawning destination in the Yukon River, approximately 1,700 km from the sea (Brown 2000).

Since 1995, ADF&G, Division of Sport Fish, has conducted several stock assessment projects on northern pike using radiotelemetry in large tributaries of the Yukon River including the Dall, Innoko, and Nowitna rivers, as well as in the Kaiyuh Flats and the Old Lost Creek drainage (Taube and Lubinski 1996; Chythlook and Burr 2002; Joy and Burr 2004). Based upon the results of these experiments, coupled with small sport and subsistence annual harvests, there appears to be no conservation concern for these northern pike populations and harvests appear sustainable at this time.

PERSONAL USE FISHERY 2008

In 2008, the personal use salmon fishery followed the regulatory fishing time of two 42-hour periods per week. Of the 57 personal use permits issued, 56 were returned and 29 were fished (Appendix A23). Along with the reported salmon harvests, a total of 41 whitefish, 2 sheefish, 2 northern pike, and 157 suckers were harvested in the personal use fishery in 2008.

COMMERCIAL FISHERY

Regulations adopted by the BOF allow ADF&G to issue permits for the commercial harvest of non-salmon freshwater fish, including whitefish, sheefish, burbot, northern pike, Alaska blackfish, and Arctic lamprey, throughout the Yukon and Tanana river drainages. Most of these fisheries are issued limited or experimental permits, and operate in discrete time periods throughout the year. Following the decline in salmon runs a marked increase in non-salmon fisheries emerged on the Yukon River. Despite the strengthening chum salmon returns in recent years the interest in freshwater fisheries has remained, particularly for Bering cisco (*Coregonus laurettae*) and Arctic lamprey. The reported historical harvests for all Lower Yukon Area commercial freshwater fisheries for whitefish are presented in Hayes et al. (2012).

YUKON RIVER WHITEFISH FISHERY SUMMARY 2008

Since 2005, ADF&G has issued commissioner's permits for the commercial harvest of whitefish in the lower Yukon River. Commissioner's permits are issued for the experimental commercial harvest of species not managed under existing State of Alaska commercial fishing regulations. The purpose of the experimental commercial fishery was to collect information regarding species composition and abundance, to evaluate operational and catch characteristics of gear, and to test market conditions. Species harvested include broad whitefish *Coregonus nasus*, sheefish, Bering cisco, humpback whitefish *C. pidschian*, and least cisco *C. sardinella*.

The permits allowed a combined total annual harvest of up to 10,000 pounds of miscellaneous whitefish. The 10,000-pound harvest cap for whitefish was based on the historical commercial harvest information from 1980 to 1990 of sheefish and other whitefish species in the Lower Yukon Area. The timing of the whitefish commercial fishery has varied over the years but has typically occurred from mid-September through late October. Data forms and species

identification keys are supplied by ADF&G to the processing facility in Emmonak to assess species distribution, relative abundance, and run timing for the species being harvested.

In 2008, 2 whitefish commercial fishery freshwater permits were issued. The permits were valid September 22 through December 31, 2008, or until the 10,000-pound harvest limit was reached. One permit holder was based in District 1 near Emmonak, and the other was based in District 2 near Saint Mary's. The permits specified limits for broad whitefish, sheefish, and miscellaneous whitefish. The permits were issued to allow a combined total harvest of up to 10,000 pounds of miscellaneous whitefish comprised of no more than 250 broad whitefish and 100 sheefish. The buyer in District 1 targeted Bering cisco for marketing purposes. In District 1, fishing gear was restricted to 1 set or drift gillnet up to 150 feet in length with a maximum stretch-mesh size of 4 inches, or 1 hand hook and line. In District 2, fishing gear was restricted to 1 set or drift gillnet up to 150 feet in length with a maximum stretch-mesh size of 6 inches, or 1 hand hook and line in order to target broad whitefish and sheefish.

Commercial fishing began in District 1 on September 22 and ended on October 2. A total of 16 fishermen made 70 deliveries to the commercial processor in Emmonak, and 10,072 total pounds of fish were harvested (data on file with Yukon Area management staff, ADF&G Division of Commercial Fisheries, Anchorage). The price per pound was $1.00 and the estimated exvessel value was $10,072. The commercial fishing effort consisted of local residents from the lower Yukon River communities of Nunam Iqua, Emmonak, Alakanuk, and Kotlik.

In District 2, the direct market permit holder began fishing in late October. Whitefish were harvested intermittently near the community of Saint Mary's through the end of December; however, the permit holder elected to retain his catch for subsistence use.

Beginning September 19, fishermen in District 1 reported river conditions to be suitable for gillnet fishing. Weather conditions and tidal stage made commercial and test fishing difficult for fishermen in the villages of Nunam Iqua, Alukanuk, and Emmonak. Fishing conducted near Kotlik and in middle mouth of the Yukon River maintained a relatively steady harvest of whitefish and a larger harvest of Bering and least cisco throughout the fishery. Bering cisco dominated the catch followed by humpback whitefish. From the data collected, it appeared the catch of Bering cisco increased near Nunam Iqua and decreased near Kotlik after the commercial fishery ended. Most fishermen reported a fishing time of 12–24 hours between net checks, and most utilized a stretch-mesh size of 3, 3.25, and 3.5 inches.

In the Upper Yukon Area, commercial freshwater fisheries targeting primarily whitefish have been permitted in prior years, although in recent years few permit applications have been received or utilized (Hayes et al. 2012). Permit authorization is not required for the sale of these species when taken incidentally during the commercial salmon fishing season. In 2008, a total of 276 whitefish and 38 sheefish were sold in District 5 and 165 whitefish were sold in District 6 (data on file in Statewide fish ticket system, ADF&G Division of Commercial Fisheries, Juneau).

In 2008, a test fishery project was conducted in conjunction with the commercial fishery by ADF&G in cooperation with YDFDA to increase the amount of baseline information collected in the commercial fishery. Local commercial fishermen from the villages of Nunam Iqua, Alukanuk, Emmonak, and Kotlik participated in this fishery. These fishermen chose their net placement locations based on their experience and recorded these sites using GPS devices. Additionally, ADF&G department staff provided fishermen training and support, species identification keys, and catch forms to record the following information: site location, gear type,

hours fished, species caught, and weather observations. Much of the Bering and least cisco harvested were sold as part of the commercial fishery and other species caught were used for subsistence purposes. Test fishing continued for a few days after commercial fishing ended on October 2. Samples were collected for biological information.

Harvest Sampling

In 2008, a total of 511 commercially harvested whitefish were sampled for biological information. Fish were identified to species at the processing facility in Emmonak. Biological information was collected by ADF&G staff in Anchorage before the fish were processed. Age-sex-length (ASL) data was collected from Bering cisco (n = 500), least cisco (n = 5), and humpback whitefish (n = 6). A small incision on the ventral side of each specimen was made to identify reproductive organs. Fork length (tip-of-snout to fork-of-tail) was measured to the nearest millimeter. The average length was 348 mm for Bering cisco, 323 mm for least cisco, and 338 mm for humpback whitefish. Females made up 55% of the 500 Bering cisco sampled.

In 2008, a total of 191 whitefish were sampled from the test fishery catch for biological information. ASL data was collected from Bering cisco (n = 170), least cisco (n = 19), and humpback whitefish (n = 2).

Otoliths were collected from Bering cisco (n = 362, commercial and test fishing combined), least cisco (n = 24), and humpback whitefish (n = 8), and age was determined by counting annual rings under a compound microscope (A. Padilla, Commercial Fisheries Biologist, ADF&G, Fairbanks, personal communication, 2008). Bering cisco ages ranged from 3 to 14 years. Fish aged 4, 5, and 6 dominated the samples at 34%, 35%, and 14% respectively, and only 4% were age-8 and older.

ASSESSMENT

There is a paucity of information relating to whitefish biology and demography within the Yukon River Delta. As such, the Yukon River whitefish commercial fishery has been authorized since 2005 as experimental. No intensive assessment project has been initiated in the Yukon River to gauge the drainagewide abundance of whitefish. This fishery may be used in the future to determine species distribution, relative abundance, and run timing for these species. Whitefish subsistence and commercial harvests are documented for the lower, middle, and upper Yukon River areas. TEK has been useful in providing run timing information. Although the fishery provides some commercial opportunity for fishermen in the lower Yukon River, abundance information is still insufficient to fulfill a larger harvest allocation.

ARCTIC LAMPREY FISHERY SUMMARY

There is limited knowledge concerning the biology and life history patterns of Arctic lamprey. Arctic lamprey have historically contributed a great deal to the subsistence way of life, but few attempts have been made to monitor this fishery. ADF&G has limited subsistence harvest information collected during infrequent village survey projects and the annual subsistence salmon surveys. Beginning in 2003 an experimental commercial Arctic lamprey fishery emerged on the Yukon River. A Commissioner's permit has been issued annually allowing for harvests from 5,000 to 44,080 pounds of Arctic lamprey in District 2 and Subdistrict 4-A. The purpose of this fishery was to determine distribution and abundance, to evaluate operational and catch characteristics of gear, and to test market conditions. The reported historical lamprey commercial

harvests for the Yukon Area are presented in Hayes et al. (2012). The catch is sold in markets in Asia and pharmaceutical companies. The exact dates of the fishery have varied each year in response to the seasonal movements of lamprey; however, the commercial harvest has generally occurred in the mid- to late-November. Gear restrictions have remained consistent over the years; allowing 1 hand dip net per freshwater commercial permit holder. An individual possessing a valid crewmember's license or a current year limited entry commercial fishing permit may assist the freshwater commercial permit holder with fishing activities. In order to obtain additional harvest and effort information, ADF&G has provided the permit holder with data recording forms (referred to as a catch log) to be completed during commercial fishing.

Commercial Fishery

In 2008, 1 freshwater commercial fishery permit was issued for Arctic lamprey. The permit was valid October 25 through December 31, 2008, or until the 40,000-pound harvest limit was reached. The permit holder had representatives to buy Arctic lamprey in Mountain Village (District 2) and Grayling (Subdistrict 4-A).

The lamprey run was not detected as it passed Mountain Village around October 25. Therefore, no commercial harvest occurred in District 2. The commercial harvest began in Grayling on November 17 and ended on November 18. In Grayling, a total of 10 fishermen made 10 deliveries to the commercial processor, and 11,137 pounds of Arctic lamprey were harvested (data on file with Yukon Area management staff, ADF&G Division of Commercial Fisheries, Anchorage). The estimated number of lamprey harvested in the commercial fishery, based on average weight from harvest sampling, was approximately 41,700 fish. The price per pound was $1.00 and the estimated exvessel value was $11,137. The average harvest value for each fisherman was $1,114. The commercial fishing effort consisted of local residents from the middle Yukon River communities of Anvik and Grayling.

In 2008, a total of 250 commercially harvested Arctic lamprey were sampled for length, weight, and sex information. Data were collected by ADF&G staff in Anchorage. A small incision on the ventral side of each specimen was made to identify reproductive organs. Total length (tip-of-snout to tip-of-tail) was measured to the nearest millimeter. The mean length was 430 mm, mean weight was 121 g, and 42% of the sample was female.

Subsistence Fishery

ADF&G began monitoring the 2008 Arctic lamprey run in the lower Yukon River on October 21. A department representative maintained communication with the processor and its representatives in Mountain Village, Grayling, and Anchorage. Community contacts were also established with local subsistence fishermen in the villages of Alakanuk, Emmonak, Mountain Village, Marshall, Saint Mary's, Russian Mission, Anvik, and Grayling. Information was collected regarding commercial and subsistence harvest, effort, river and weather conditions, and run timing.

Subsistence fishermen in Marshall reported harvesting a small quantity of Arctic lamprey on October 30. Based on this information, subsistence fishermen 52 miles upriver near Russian Mission began fishing for lamprey on November 3. The Arctic lamprey run passed Russian Mission around 12:30 p.m. on November 2. The run was considered small, with only 300 pounds of lamprey harvested in about an hour. A local elder estimated this to be the only "pulse" of Arctic lamprey that would be migrating upstream this year due to weather conditions.

Arctic lamprey were estimated to be traveling approximately 7 miles per day and were expected to pass the village of Holy Cross around November 13. However, due to a death in the village of Anvik, fishermen in Holy Cross and Anvik did not have the opportunity to fish for lamprey when the large pulse was predicted to be passing through this area. Fishermen from both villages continued to closely monitor the fishing sites but there were no large numbers of Arctic lamprey harvested after November 13.

Fishermen in Grayling began setting up lamprey fishing sites on November 10. Fishermen used chainsaws and/or manual ice breakers to cut large rectangular holes through nearshore ice at traditional fishing sites. Fishermen visually checked the velocity of the water; if the water in the hole was slow moving they disregarded the site, cut a new hole, and continued on with the process until they identified a hole with fast-moving water. The fast water is believed to be caused by a channel in the river bottom, which acts as a natural corral to funnel migrating lamprey thus making them easier to catch. The fishing holes were monitored (rotating shifts, 24 hours per day) by shining a flashlight through the water to the substrate a few feet below. Fishermen also checked for lamprey by occasionally flicking a stick through the water in the fishing holes. Using these 2 methods, they avoided icing up their dip nets, which were reserved for when the Arctic lamprey began actively passing on November 17.

Subsistence and commercial fishermen from Mountain Village, Saint Mary's, Marshall, Holy Cross, Anvik, and Grayling were in very close communication regarding Arctic lamprey run timing, fishing methods, and effort. This information allowed Grayling fishermen to estimate when the commercial Arctic lamprey harvest would most probably occur. The initial estimate was that the harvest would take place around November 18, which was within 24 hours of the actual commercial harvest on November 17.

In addition to the catch log provided to commercial fishermen, ADF&G mailed subsistence harvest surveys to households in Yukon River communities from Mountain Village to Grayling. Only a small subsistence harvest was reported in 2008 (Busher et al. 2009).

Assessment

TEK provides valuable information regarding run timing and favorable harvest sites for lamprey fishing in the lower Yukon River. The Arctic lamprey run is closely monitored by both subsistence and commercial fishermen, and information is readily shared between user groups and among local communities. Based on the October 31 report from subsistence fishermen in Marshall and the commercial fishery that occurred in Grayling on November 17, the estimated mean lamprey travel speed between the 2 communities was 10 miles per day. The quantity of Arctic lamprey harvested in Grayling for commercial and subsistence purposes was consistent with the subsistence harvests reported by downriver community members.

In 2008, there was an increased effort to collect harvest and effort data from commercial fishermen. A department representative worked with the permit holder, community members, and fishermen to document fishery information. All commercial fishermen returned catch logs to ADF&G.

The Yukon River Arctic lamprey commercial fishery is experimental and exploratory in nature, and specific questions regarding the life history and abundance of Arctic lamprey persist. Should a dedicated Arctic lamprey assessment project be developed in the future, data collected during

the Yukon River Arctic lamprey commercial fishery may contribute valuable baseline information.

NORTHERN AREA

DESCRIPTION OF AREA

The Northern Area includes all waters of Alaska north of the latitude of the western most tip of Point Hope and west of 141 west longitude, including those waters draining into the Arctic Ocean and the Chukchi Sea (Hayes et al. 2012).

SUBSISTENCE FISHERIES

Many subsistence fishermen operate gillnets in the rivers and coastal marine waters of the Northern Area to harvest marine and freshwater finfish. Small numbers of chum, pink, and Chinook salmon have been reported by subsistence fishermen along the Arctic coast. Traps and fish weirs of various designs are also used, mainly in the fall and winter months, to capture whitefish, Alaska blackfish, and burbot. Northern pike, Arctic char, and tomcod are frequently taken through the ice by hand lines. The extent of the harvest of non-salmon finfish in the Northern Area is inadequately documented. However, recent fishery harvest studies were undertaken for 2 small Inupiat communities in the Northern Area by ADF&G's Division of Subsistence. It was found that annual community fish harvest for Kaktovik consisted of Dolly Varden *Salvelinus malma*, Arctic cisco *Coregonus autumnalis*, Arctic grayling, Lake trout *Salvelinus namaycush*, Pacific salmon, and Arctic cod (*Arctogadus glacialis*; Pedersen and Hugo 2005). Similarly, community fishermen in Anaktuvuk Pass produced annual catches of "char" (a mix of Arctic char and Dolly Varden), lake trout, Arctic grayling, Arctic cisco, and few burbot (Pedersen and Linn 2005).

In 2008, a cooperative project was initiated (ADF&G, Divisions of Commercial Fisheries, Habitat, and Subsistence; and North Slope Borough Department of Wildlife Management and Planning) to assess Pacific salmon resources in the Northern Area. Components of the project include: 1) documenting subsistence salmon fishing patterns such as species targeted, fishing gear and methods, harvest timing, local salmon abundance, run timing, historical knowledge, and observations of spawning locations; 2) conducting aerial surveys to document adult salmon distribution in river systems and determining which rivers could be used as index areas for future monitoring; and 3) acquiring age, sex, length, and genetic samples for salmon.

COMMERCIAL FISHERIES

Regulations adopted by BOF allow ADF&G to issue permits for the commercial harvest of freshwater species of fish such as whitefish, sheefish, Arctic char, northern pike, Alaska blackfish, and Arctic lamprey in the Northern Area. However, there are no commercial fisheries for salmon species in the Northern Area. A commercial fishery for freshwater finfish has existed in the Colville River delta (located approximately 60 miles west of Prudhoe Bay) since 1964 (Hayes et al. 2012). Historically, commercial fishing generally took place during late June and July for broad and humpback whitefish, and October through early December for Arctic and least cisco. However, since 1990 commercial fishing effort has predominately occurred in October and November for Arctic and least cisco. Set gillnets are used as capture gear and fishing during fall months occurs under the ice. All fish are harvested to sell commercially and are reported daily on a catch form. However, not all fish reported on permits for this area are

sold. Those fish not commercially sold are retained and used for subsistence purposes. In the 2008 season, no harvest was reported.

ACKNOWLEDGEMENTS

Employees of the Alaska Department of Fish and Game, U.S. Fish and Wildlife Service including the Office of Subsistence Management, Bering Sea Fishermen Association, Tanana Chiefs Conference, Association of Village Council Presidents, Yukon River Drainage Fisheries Association, Yukon Delta Fisheries Development Association, and other agencies and organizations worked long and irregular hours at various locations throughout the Yukon Area collecting data presented in this report; we gratefully acknowledge their hard work and funding support.

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FIGURES

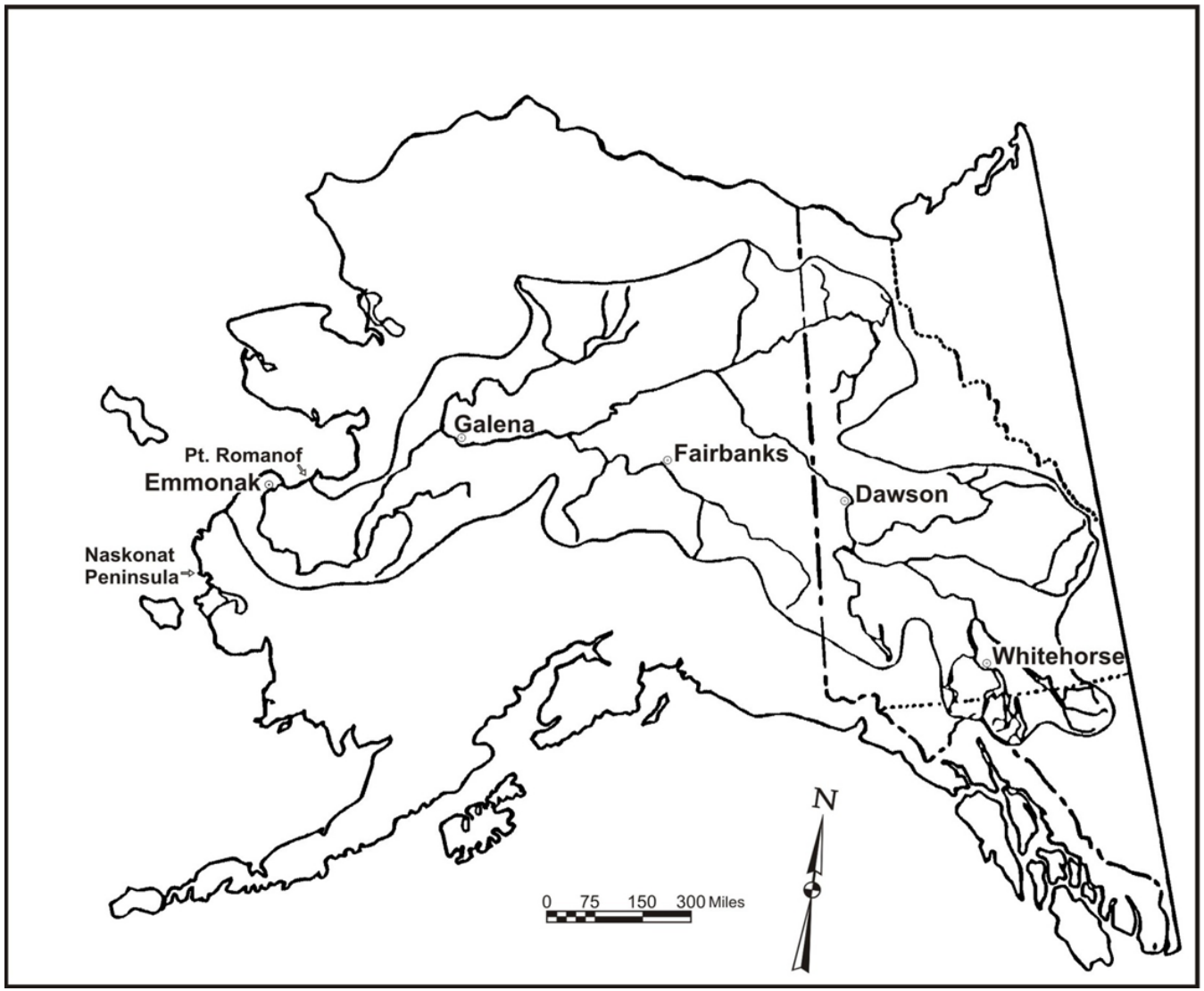


Figure 1.–Map of the Yukon River drainage.

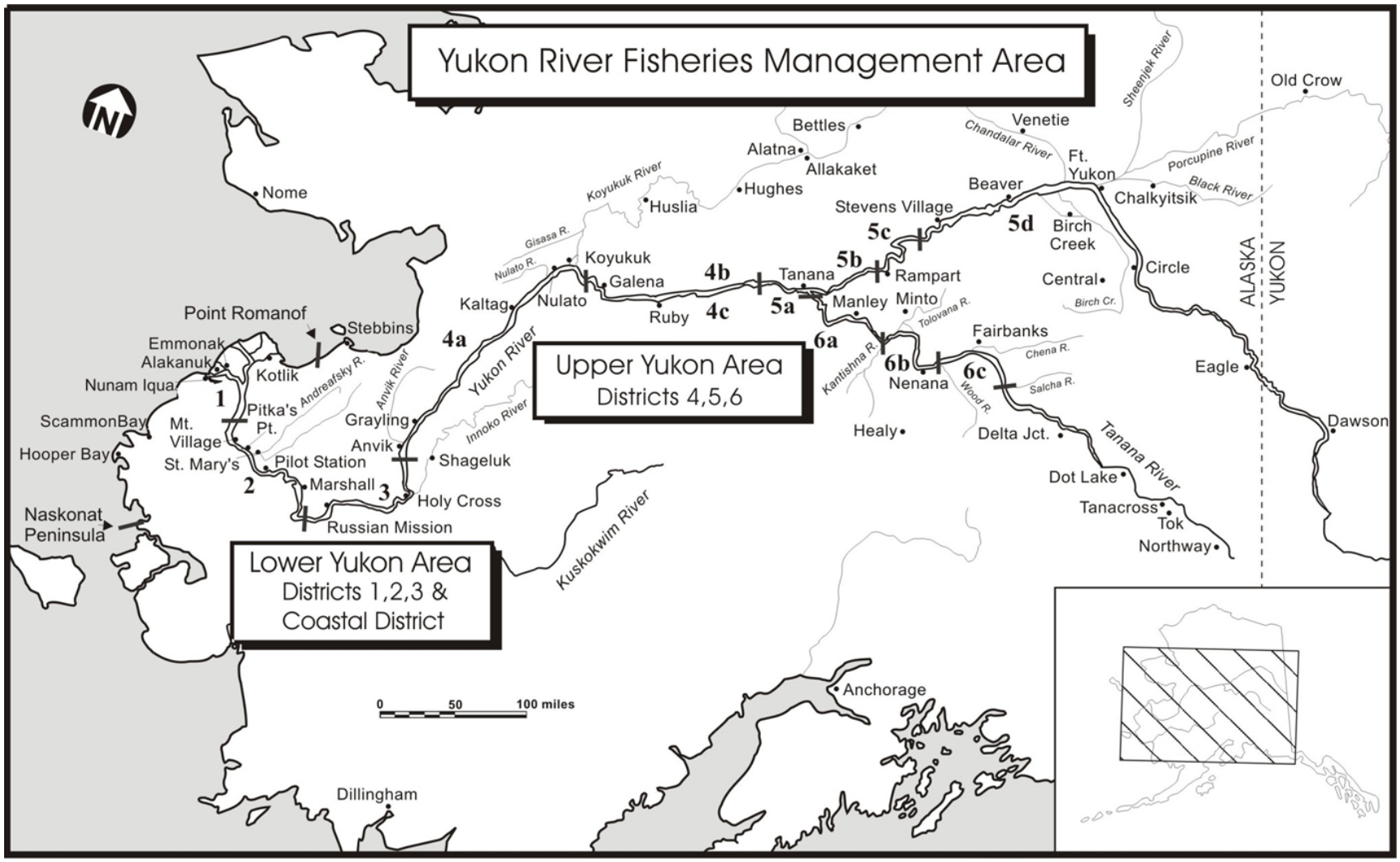


Figure 2.–Alaska portion of the Yukon River drainage showing communities and fishing districts.

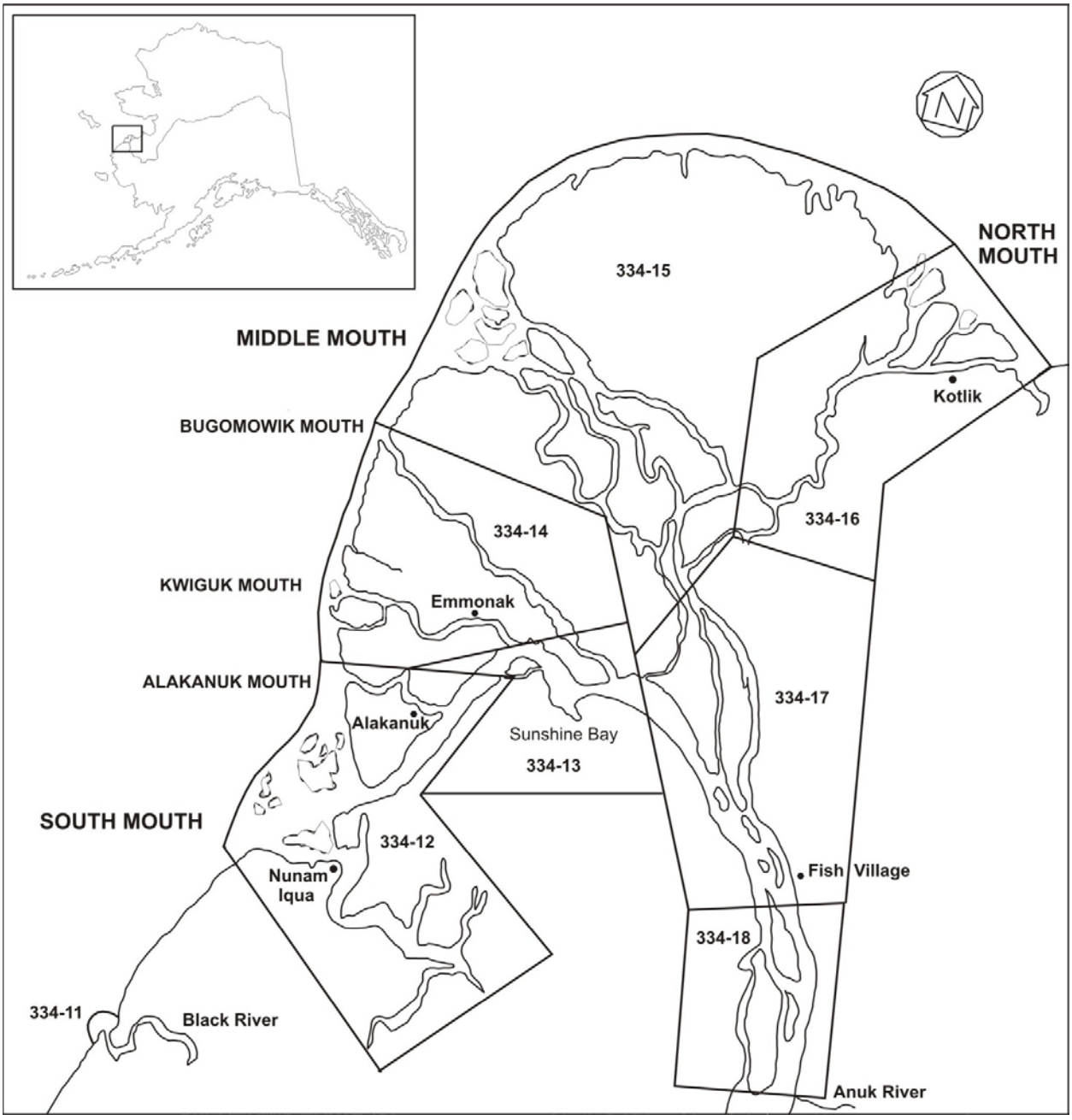


Figure 3.–District 1 showing statistical areas, Yukon area.

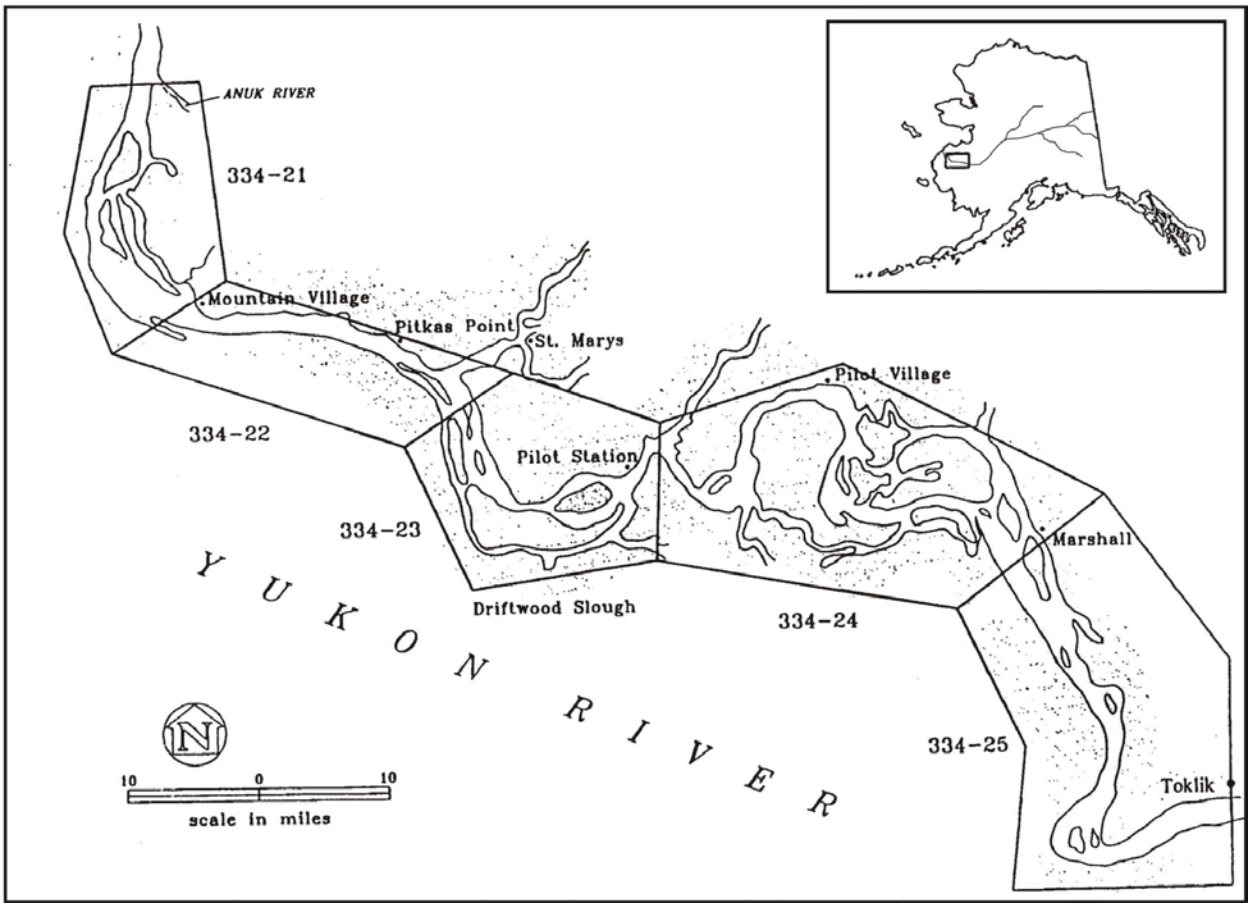


Figure 4.–District 2 showing statistical areas, Yukon area.

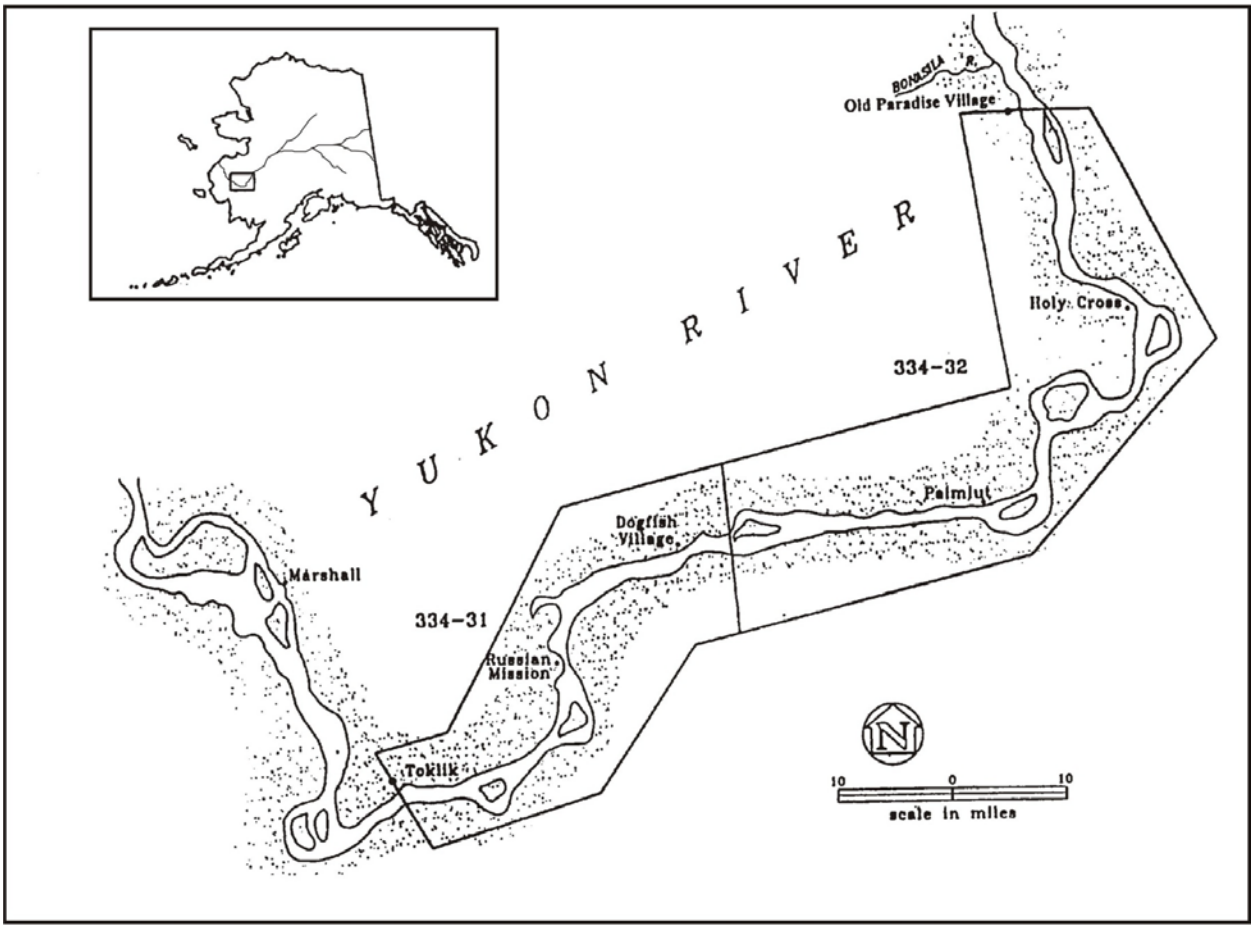


Figure 5.–District 3 showing statistical areas, Yukon area.

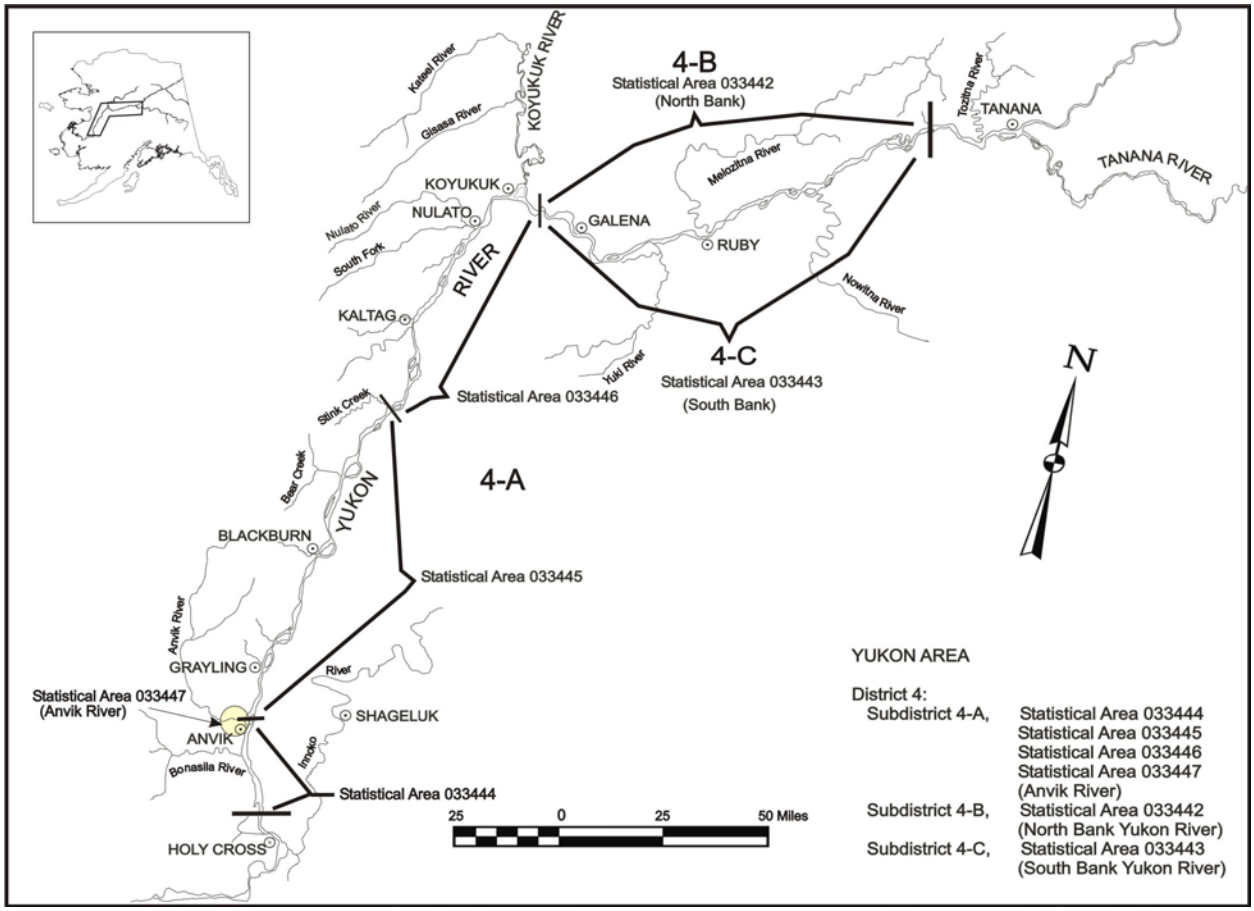


Figure 6.–District 4 showing statistical areas, Yukon area.

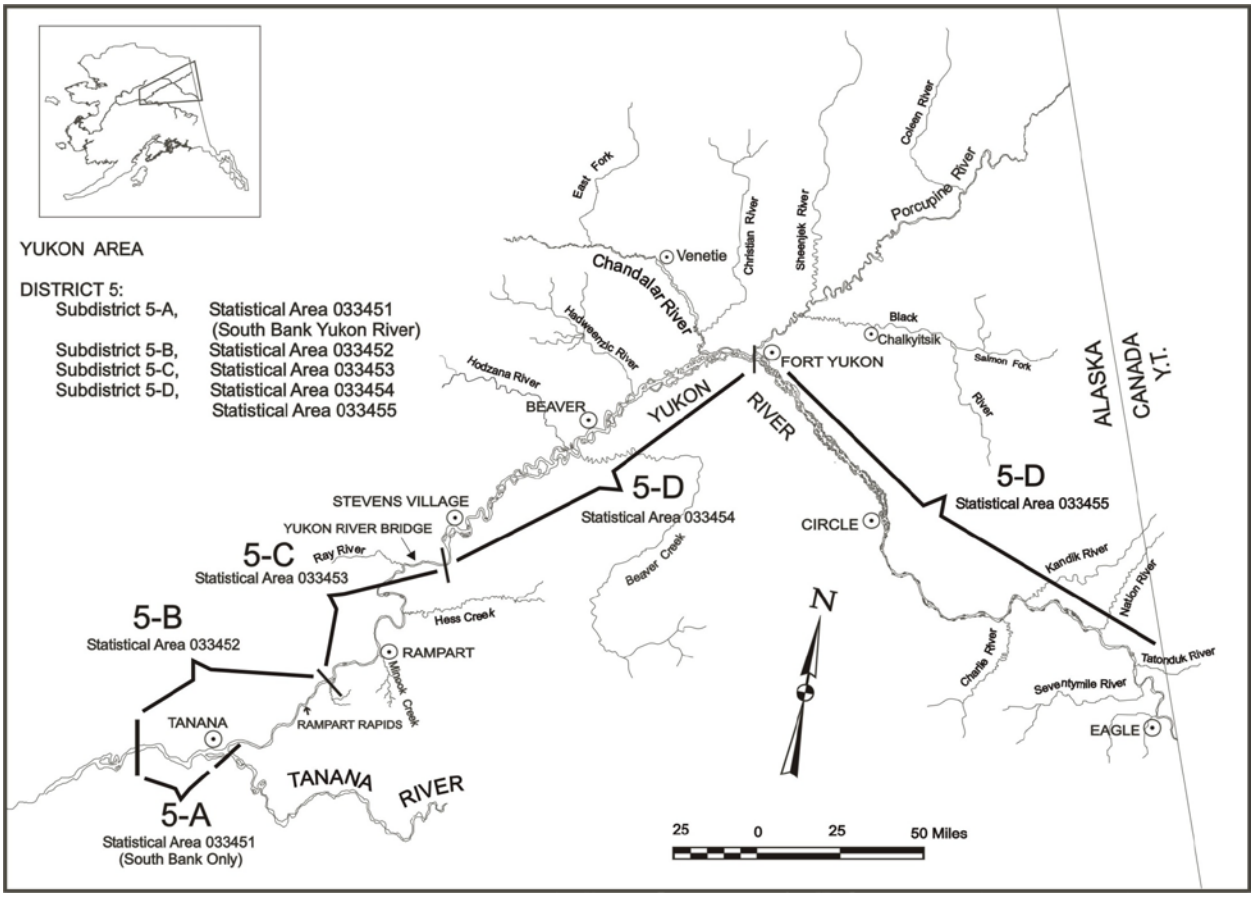


Figure 7.–District 5 showing statistical areas, Yukon area.

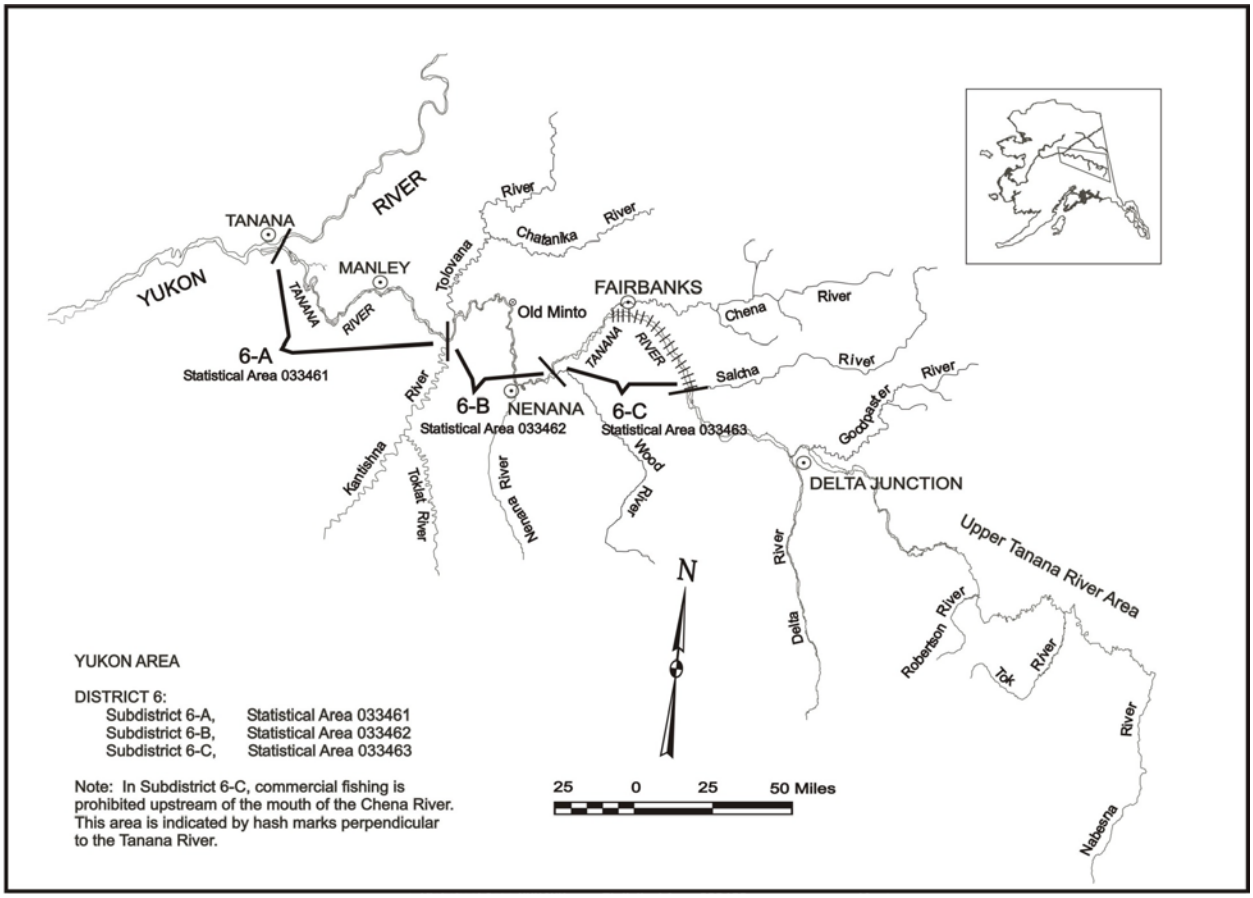


Figure 8.–District 6 showing statistical areas, Yukon area.

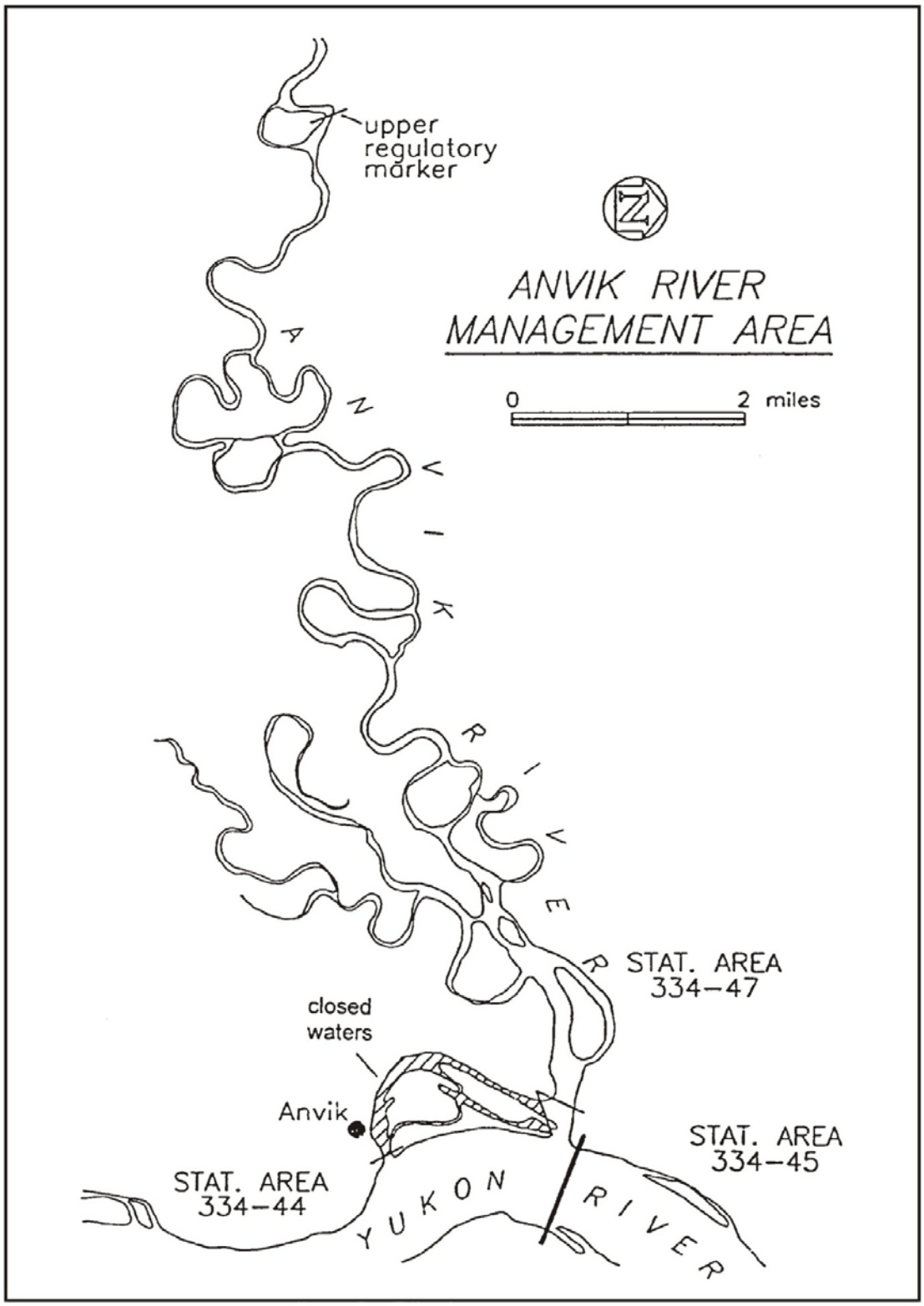


Figure 9.–Anvik River management areas, Yukon area.

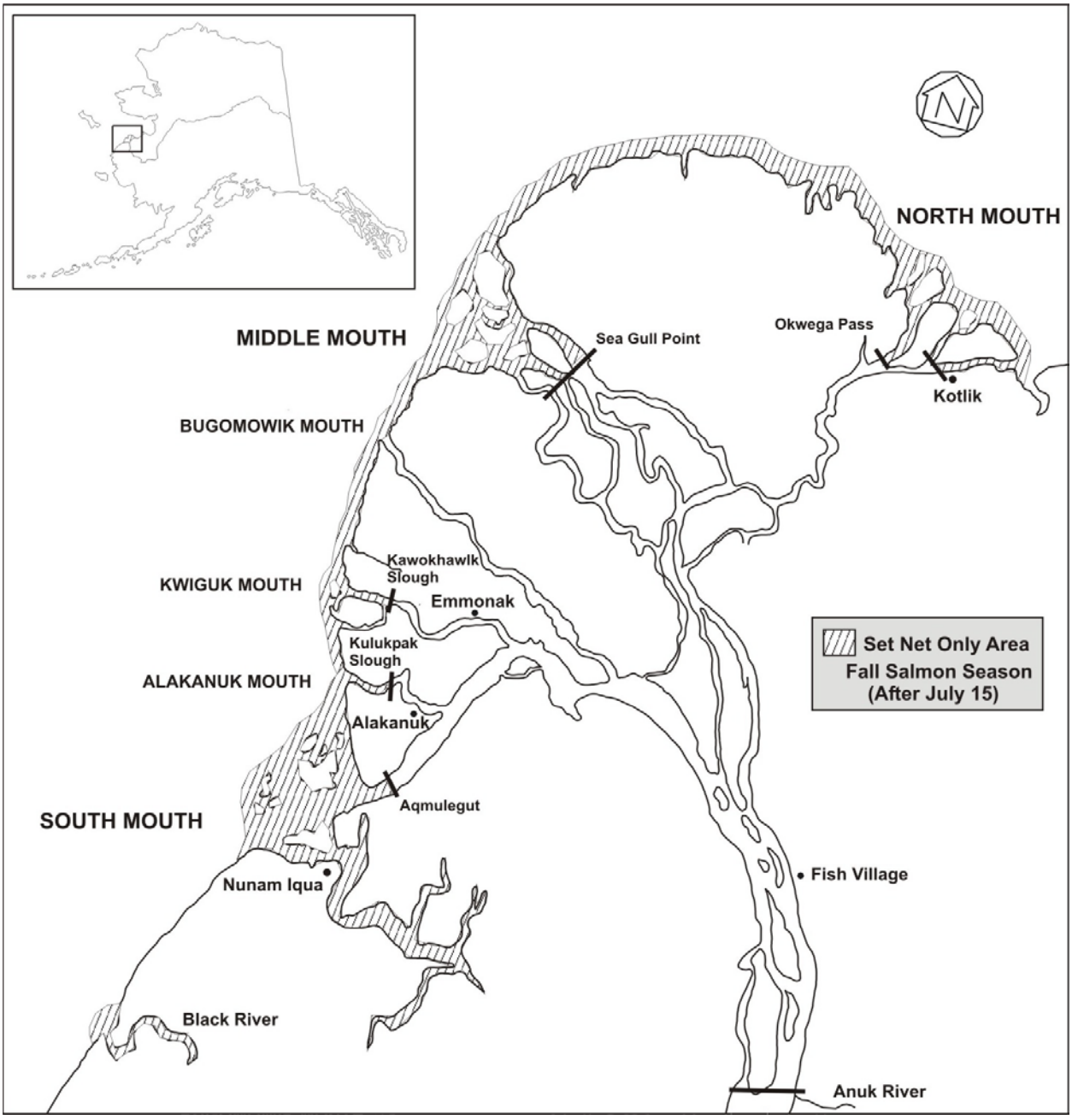
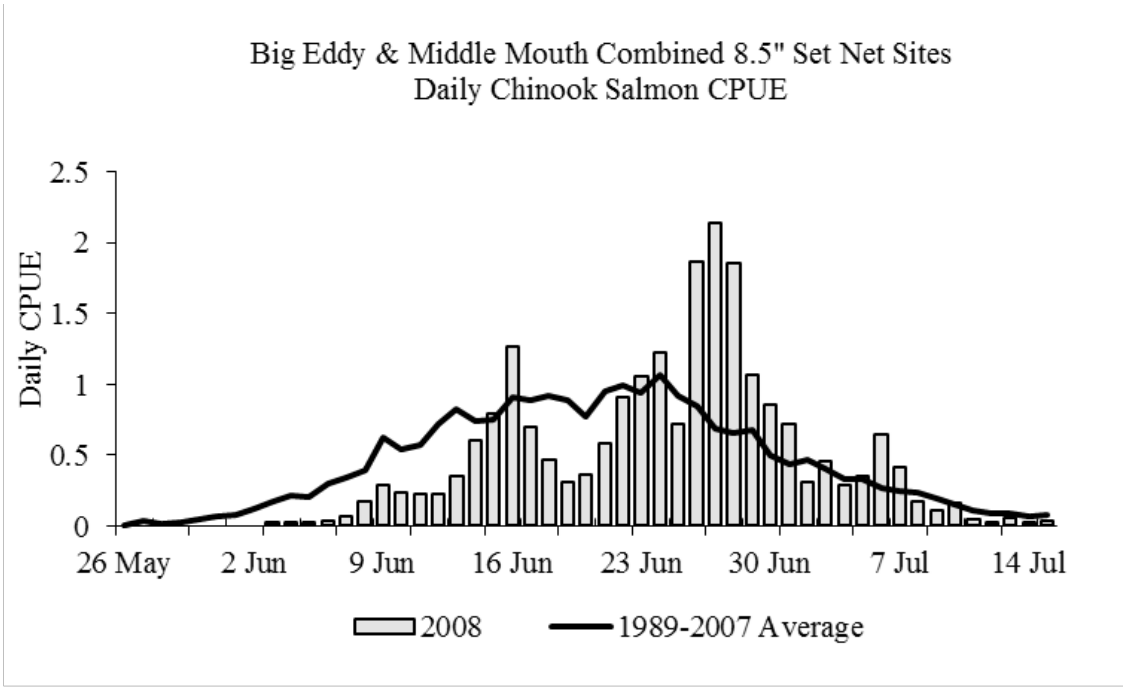


Figure 10.–Set Gillnet Only area of District 1, Lower Yukon area.



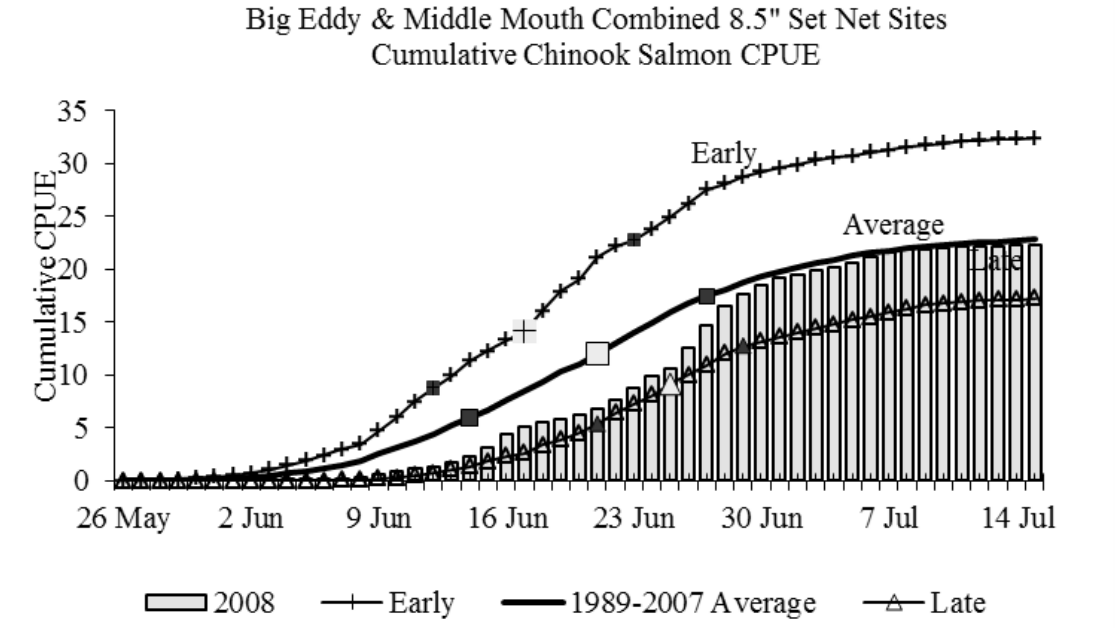


Figure 11.–Daily LYTF CPUE for Chinook salmon 2008 compared to the 1989-2007 average (above) and 2008 cumulative LYTF CPUE for Chinook salmon compared to the 1989-2007 average (below).

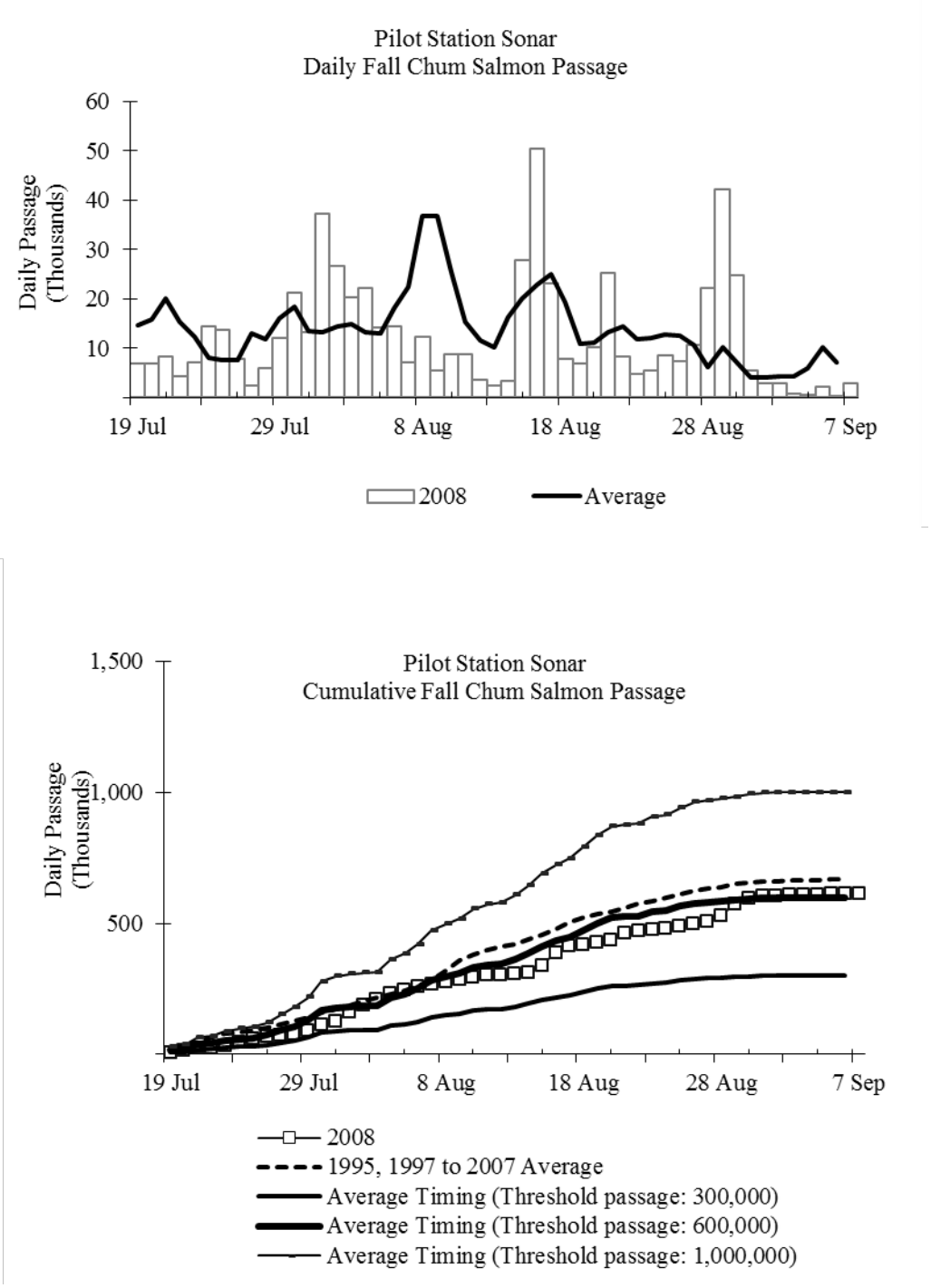


Figure 12.–Daily sonar passage counts attributed to fall chum salmon, located near the community of Pilot Station, Yukon River, 1995, and 1997 through 2007 average compared to 2008 (above); and cumulative sonar passage counts, 1993, 1995, and 1997 through 2007 average timing to obtain threshold passage, compared to 2008 (below).

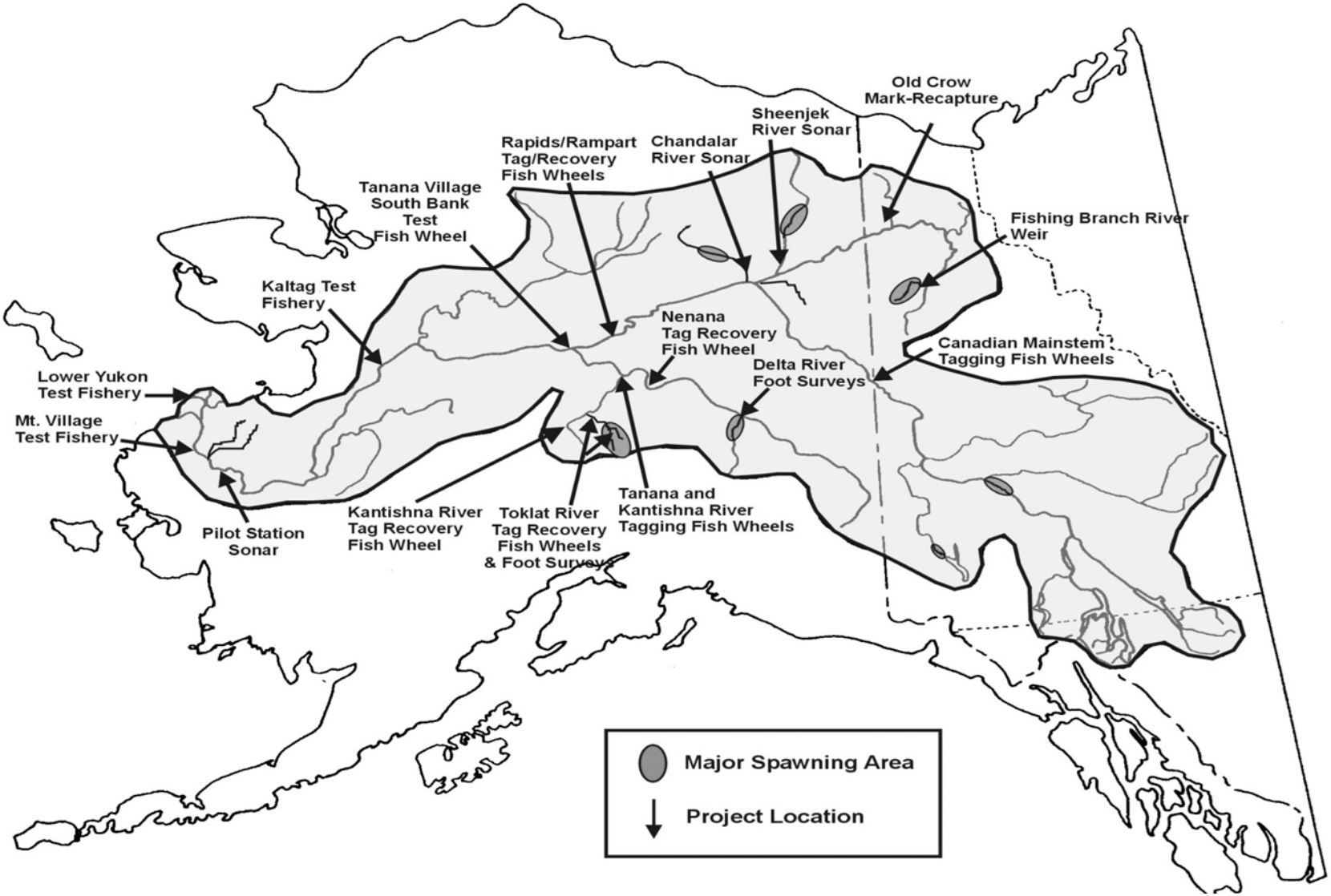


Figure 13.–Select fall chum salmon monitoring projects, Yukon River drainage.

APPENDIX A: DRAINAGE OVERVIEW AND SALMON HARVEST AND ESCAPEMENT

Appendix A1.–List of indigenous fishes found in the Yukon Area.

Species Code [a]	Scientific Name	Common Name
601	*Lampetra camtschatic*	Arctic Lamprey
570	*Stenodus leucichthys*	Inconnu (Sheefish)
588	*Coregonus nasus*	Broad Whitefish
589	*Coregonus pidschian*	Humpback Whitefish
583	*Coregonus sardinella*	Least Cisco
585	*Coregonus laurettae*	Bering Cisco
586	*Prosopium cylindraceum*	Round Whitefish
587	*Prosopium coulteri*	Pygmy Whitefish
610	*Thymallus arcticus*	Arctic Grayling
550	*Salvelinus namaycush*	Lake Trout
520	*Salvelinus alpinus*	Arctic Char
530	*Salvelinus malma*	Dolly Varden
410	*Oncorhynchus tshawytscha*	Chinook Salmon
420	*Oncorhynchus nerka*	Sockeye Salmon
430	*Oncorhynchus kisutch*	Coho Salmon
440	*Oncorhynchus gorbuscha*	Pink Salmon
450	*Oncorhynchus keta*	Chum Salmon
513	*Osmerus mordax*	Rainbow Smelt
514	*Hypomesus olidus*	Pond Smelt
500	*Esox lucius*	Northern Pike
630	*Dallia pectoralis*	Alaska Blackfish
650	*Couesius plumbeus*	Lake Chub
640	*Catostomus catostomus*	Longnose Sucker
670	*Percopsis omiscomaycus*	Trout Perch
590	*Lota lota*	Burbot (lush)
661	*Pungitius pungitius*	Ninespine Stickleback
162	*Cottus cognatus*	Slimy Sculpin
ESTUARINE		
113	*Eleginus gracilis*	Saffron Cod
122	*Liopsetta glacialis*	Arctic Flounder
127	*Limanda aspera*	Yellowfin Sole
129	*Platichthys stellatus*	Starry Flounder
192	*Hexagrammos stelleri*	Whitespotted Greenling
230	*Clupea harengus pallas*	Pacific Herring
516	*Mallotus villosus*	Capelin
NA	*Megalocottus platycephalus*	Belligerent Sculpin

Note: Includes fishes found in the Yukon River drainage in Canada.

[a] The species code is a 3-digit number that identifies the type of fish caught on harvest fish tickets.

Appendix A2.–Yukon River drainage mileages.

Location	Mileage from Mouth
NORTH MOUTH (APOON PASS)	
Kotlik	6
Hamilton	26
MIDDLE MOUTH (KWIKPAK, KAWANAK PASS)	
Choolunawick	16
Akers Camp	26
New Hamilton	34
SOUTH MOUTH (KWIKLUAK PASS)	
Mouth, Black River	-18
Flat Island	0
Sheldon Point	5
Tin Can Point	8
Alakanuk	17
Emmonak-Kwiguk (Kwiguk Pass)	24
Sunshine Bay	24
Aproka Pass (upstream mouth)	35
Kwikpak Pass (upstream mouth)	44
Head of Passes	48
Fish Village	52
Mouth, Anuk River	63
(District 1/2 Boundary)	
Patsys Cabin	71
Mountain Village	87
Old Andreafsky	97
Pitkas Point	103
Mouth, Andreafsky River	104
St. Marys	107
Pilot Station	122
Mouth, Atcheulinguk (Chulinak) River	126
Pilot Village	138
Marshall (Fortuna Ledge)	161
Upstream Mouth Owl Slough	163
Ingrihak	170
Ohogamuit	185
Toklik	191
(District 2/3 Boundary)	
Kakamut	193
Russian Mission	213
Dogfish Village	227
Paimuit	251
Mouth, Innoko River (South Slough)	274
Shageluk	328
Holikachuk	383
Holy Cross	279
Mouth, Koserefski River	286
Old Paradise Village	301
(District 3/4 Boundary)	
Mouth, Bonasila River	306
Anvik	317
Mouth, Anvik River	318
Grayling	336
Mouth, Thompson Creek	349
Blackburn	370
Eagle Slide	402
Mouth, Rodo River	447
Kaltag	450
Mouth, Nulato River	483
Nulato	484
Koyukuk	502
Mouth, Koyukuk River	508
Mouth, Gisasa River	564
Huslia	711
Mouth, Dakli River	755
Mouth, Hogatza River	780
Hughes	881
Mouth, Kanuti River	935
Alatna (Mouth, Alatna R.)	956
Allakaket	956
Mouth, South Fork	986
Mouth, John River	1,117
Bettles	1,121
Middle Fork	1,141
Cold Foot	1,174
Wiseman	1,186
Bishop Rock	514
Prospect Point	519
Galena	530
Whiskey Creek	555
Mouth, Yuki River	562
Ruby	581
Mouth, Melozitna River	583
Horner Hot Springs	605
Kokrines	608
Mouth, Nowitna River	612
Birches	647
Kallands-Mouth of Illinois Creek	664

-continued-

Location	Mileage from Mouth
(District 4/5 Boundary)	
Mouth, Tozitna River	681
Tanana Village	695
Mouth, Tanana River	695
(District 5/6 Boundary)	
Manley Hot Springs	765
Mouth, Kantishna River	793
Mouth, Toklat River	838
Mouth, Sushana R.	850
Mouth, Bearpaw River	887
Outlet, L. Minchumina	959
Minto	835
Nenana	860
Mouth, Nenana River	860
Mouth, Wood River	894
Rosie Creek Bluffs	912
Mouth, Chena R. (Fairbanks)	920
Mouth, Salcha River	965
Benchmark #735 Slough	991
Mouth, Little Delta R.	1,000
Mouth, Delta Creek	1,014
Mouth, Clear Creek	1,015
(Richardson-Clearwater)	
Mouth, Shaw Creek	1,021
Mouth, Delta River	1,031
(Big Delta)	
Delta Junction	1,041
Mouth, Goodpaster River	1,049
Bluff Cabin Slough	1,050
Outlet, Clearwater Lake	1,052
Outlet, Clearwater Crk	1,053
(Delta Clearwater)	
Mouth, Gerstle River	1,059
Outlet, Healy Lake	1,071
Outlet, Lake George	1,086
Tanacross	1,128
Outlet, Tetlin Lake	1,188
Mouth, Nabesna River	1,210
Northway Junction	1,214
Mouth, Chisana River	1,215
Mouth, Sheep Creek	1,297
Rampart Rapids	731
Rampart	763
Mouth, Hess Creek	789
Mouth, Ray River	817
Highway Bridge -	820
Pipeline Crossing	
Mouth, Dall River	841
Stevens Village	847
Mouth, Hodzana River	897
Beaver	932
Mouth Hadweenzic River	952
Mouth, Chandalar River	
(Venetie Landing)	982
Venetie	1,025

Location	Mileage from Mouth
Fort Yukon	1,002
Mouth, Porcupine River	1,002
Mouth, Black River	1,026
Chalkyitsik	1,084
Mouth, Salmon Fork R.	1,142
Mouth, Sheenjek River	1,054
Mouth, Coleen River	1,157
Mouth, Salmon Trout R.	1,193
U.S. - Canadian Border	1,219
Old Crow	1,259
Fishing Branch R.	1,600
spawning area	
Circle	1,061
Woodchopper	1,110
Mouth, Charley River	1,124
Mouth, Kandik River	1,135
Mouth, Nation River	1,166
Mouth, Tatonduk River	1,186
Mouth, Seventymile River	1,194
Eagle	1,213
U.S.-Canadian border	1,224
Mouth, Fortymile River	1,269
Dawson	1,319
Mouth, Klondike River	1,320
Mouth, Sixty Mile River	1,369
Mouth, Stewart River	1,375
McQuesten	1,455
Stewart Crossing	1,491
Mayo	1,520
Mouth, Hess River	1,594
Mouth, White River	1,386
Mouth, Donjek River	1,455
Mouth Kluane River	1,541
Outlet Kluane L.	1,587
Burwash Landing	1,595
Kluane	1,625
Fort Selkirk	1,477
Mouth, Pelly River	1,478
Pelly Crossing	1,510
Mouth, MacMillan River	1,542
Ross River	1,602
Minto	1,499
Mouth Tatchun Creek	1,530
Carmacks	1,547
Mouth, Little Salmon River	1,583
Mouth, Big Salmon River	1,621
Mouth, N. Big Salmon R.	1,641
Mouth, S. Big Salmon R.	1,657
Outlet, Big Salmon Lake	1,714
Mouth, Teslin River	1,654
Roaring Bull Rapids	1,707
Johnson's Crossing	
(Outlet, Teslin L.)	1,756
Teslin	1,780

-continued-

Location	Mileage from Mouth
Mouth Nisutlin River	1,788
Mouth, Sidney Creek	1,837
Mouth, Hundred Mi. Creek	1,851
Mouth, NcNeil River	1,887
Outlet, Nisutlin Lake	1,892
Outlet, Lake Laberge	1,679
Inlet, Lake Laberge	1,712
Mouth, Takhini River	1,718
Whitehorse	1,745
Outlet, Marsh Lake	1,764
Mouth, M'Clintock River	1,769
Outlet, Little Atlin L.	1,788
Outlet, Atlin Lake	1,812
Atlin	1,844
Tagish	1,786
Outlet, Tagish Lake	1,788
Carcross	1,810
(Outlet L.Bennett)	
Bennett	1,835

Appendix A3.–Salmon fishery projects conducted in the Alaska portion of the Yukon River drainage in 2008.

Project Name: Commercial Catch and Effort Assessment

Location: Alaska portion of the Yukon River drainage

Primary Objectives: document and estimate the catch and associated effort of the Alaska Yukon River and commercial salmon fishery via receipts (fish tickets) of commercial sales of salmon

Duration: June to October

Agency(s): ADF&G (All aspects), ADPS (enforcement)

Project Name: Commercial Catch Sampling and Monitoring

Location: Alaska portion of the Yukon River drainage

Primary Objectives: determine age, sex, and size of Chinook, chum and coho salmon harvested in Alaska Yukon River commercial fisheries; monitor Alaska commercial fishery openings and closures.

Duration: June to October

Agency(s): ADF&G (All aspects)

Project Name: Subsistence and Personal Use Catch and Effort Assessment

Location: Alaska portion of the Yukon River drainage

Primary Objectives: document and estimate the catch and associated effort of the Alaska Yukon River subsistence salmon fishery via interviews, catch calendars, mail-out questionnaires, telephone interviews, and subsistence fishing permits, and of the personal use fishery based on fishery permits.

Duration: ongoing

Agency(s): ADF&G (All aspects)

Project Name: Sport Catch, Harvest and Effort Assessment

Location: Alaska portion of the Yukon River drainage

Primary Objectives: document and estimate the catch, harvest, and associated effort of the Alaska Yukon River sport fishery via postseason mail-out questionnaires.

Duration: postseason

Agency(s): ADF&G (All aspects)

Project Name: Yukon River Chinook Microsatellite Baseline

Location: Yukon River drainage

Primary Objectives: Survey standardized microsatellites and Yukon River Chinook salmon populations.

Duration: ongoing

Agency(s): ADF&G (US populations) USFWS (Canada populations) DFO (R&E Funding and R&M funding)

-continued-

Project Name: Yukon River Salmon Stock Identification

Location: Yukon River drainage

Primary Objectives: estimate Chinook salmon stock composition of the various Yukon River drainage harvests through genetic stock identification, age compositions, and geographical distribution of catches and escapements.

Duration: ongoing

Agency(s): ADF&G (All aspects, R&M Funding)

Project Name: Yukon River Chum and Chinook Mixed-Stock Analysis

Location: Pilot Station, RM 123

Primary Objectives: estimate the stock compositions of Chinook and chum salmon using samples collected from Pilot Station sonar test fisheries

Duration: May to August

Agency(s): USFWS (all aspects) OSM (R&M Funding – summer, OSM Funding – fall)

Project Name: YRDFA Weekly Teleconference

Location: Yukon River drainage

Primary Objectives: acts as a forum for fishers along the Yukon River to interact with state and federal managers for the collection and dissemination of fisheries information.

Duration: May to September

Agency(s): YRDFA (All aspects, R&M funding)

Project Name: Lower Yukon River Set Gillnet Test Fishing

Location: South, Middle, and North mouths of the Yukon River delta, RM 20

Primary Objectives: index Chinook salmon run timing and abundance using set gillnets. Sample captured salmon for age, sex, size composition information.

Duration: June to August

Agency(s): ADF&G (All aspects)

Project Name: Lower Yukon River Drift Test Fishing

Location: South, Middle, and North mouths of the Yukon River delta, RM 20

Primary Objectives: index Chinook, summer and fall chum, and coho salmon run timing and abundance using drift gillnets. Sample captured salmon for age, sex, size composition information.

Duration: June to August

Agency(s): ADF&G (All aspects)

-continued-

Project Name: Mountain Village Drift Gillnet Test Fishing

Location: Mainstem Yukon River, RM 87

Primary Objectives: index fall chum and coho salmon run timing and relative abundance using drift gillnets. Sample captured salmon for age, sex, size composition information.

Duration: July to September

Agency(s): Asa'carsarmiut Trad. Council All aspects (R&M funding)

Project Name: East Fork Weir, Andreafsky River

Location: mile 20 East Fork RM 124

Primary Objectives: estimate daily escapement, with age, sex and size composition, of Chinook and summer chum salmon into the East Fork of the Andreafsky River.

Duration: June to August

Agency(s): USFWS (All aspects)

Project Name: Yukon River Sonar

Location: Pilot Station, RM 123

Primary Objectives: Estimate Chinook and summer and fall chum salmon passage in the mainstem Yukon River. Apportionment of species including coho salmon and other finfish.

Duration: June to August

Agency(s): ADF&G (All aspects) AVCP TI Funding (R&M Funding - extended operation)

Project Name: Anvik River Sonar

Location: Mile 40 Anvik River, RM 358

Primary Objectives: estimate daily escapement of summer chum salmon to the Anvik River; estimate age, sex, and size composition of the summer chum salmon escapement.

Duration: June to July

Agency(s): ADF&G (All aspects)

Project Name: Chandalar River Sonar

Location: mile 14 Chandalar River, RM 996

Primary Objectives: estimate fall chum salmon passage using DIDSON sonar in the Chandalar River. Estimate sex and size composition of fall chum salmon escapement. Collected ASL data including vertebrae.

Duration: August to September

Agency(s): USFWS (All aspects TI Funding, R&M Funding – ASL)

-continued-

Project Name: Gisasa River Weir

Location: Mile 3 Gisasa River, Koyukuk River drainage, RM 567

Primary Objectives: estimate daily escapement of Chinook and summer chum salmon into the Gisasa River; estimate age, sex, and size composition of the Chinook and summer chum salmon escapements.

Duration: June to August

Agency(s): USFWS (All aspects)

Project Name: Henshaw Creek Weir

Location: mile 1 Henshaw Creek, RM 976

Primary Objectives: estimate daily escapement of Chinook and summer chum salmon into Henshaw Creek; estimate age, sex, and size composition of the Chinook and summer chum salmon escapements (OSM 2005-2007)

Duration: June to August

Agency(s): TCC (All aspects) USFWS-OSM (oversight & funding, report write-up)

Project Name: Y5A Test Fish Wheel

Location: Mainstem Yukon River RM 695

Primary Objectives: index the timing of Chinook, summer and fall chum, and coho salmon on the south bank of the Yukon River bound for the Tanana River drainage, using test fish wheel equipped with video monitoring system.

Duration: August to October

Agency(s): ADF&G(All aspects) USFWS (R&M Funding)

Project Name: Sheenjek River Sonar

Location: mile 6 Sheenjek River, Porcupine River drainage, RM 1,060

Primary Objectives: estimate daily escapement of fall chum salmon into the Sheenjek River using DIDSON sonar and counted both left and right banks. Estimate age, sex, and size composition of the fall chum salmon escapement.

Duration: August to September

Agency(s): ADF&G(All aspects)

Project Name: Eagle Sonar

Location: Mainstem Yukon River Eagle, RM 1,213

Primary Objectives: estimate daily passage of Chinook and chum salmon in the mainstem Yukon River using both split-beam and DIDSON. Estimate age, sex, and size composition of salmon captured in the test nets.

Duration: July to October

Agency(s): ADF&G(All aspects) DFO (technical support, TI Funding, R&E Funding)

-continued-

Project Name: Kaltag Village Drift Gillnet Test Fishing

Location: Mainstem Yukon River Kaltag, RM 451

Primary Objectives: index fall chum and coho salmon run timing and relative abundance using drift gillnets. Sample captured salmon for age, sex, size composition information.

Duration: July to September

Agency(s): City of Kaltag (All aspects, R&E funding)

Project Name: Middle Yukon River Chinook Sampling Project

Location: Mainstem Yukon River Kaltag, RM 451

Primary Objectives: estimate age, sex, and size composition of Chinook salmon harvested in middle Yukon River subsistence fisheries

Duration: June to July

Agency(s): City of Kaltag USFWS-OSM (All aspects)

Project Name: Nenana River Escapement Surveys

Location: Nenana River drainage, above RM 860

Primary Objectives: aerial and ground surveys for numbers and distribution of coho and chum salmon in ten tributaries of the Nenana below Healy Creek.

Duration: September to October

Agency(s): BSFA, ADF&G (All aspects)

Project Name: Rapids Fish Wheel Test Fishing

Location: Mainstem Yukon River RM 730

Primary Objectives: index run timing of Chinook and fall chum salmon runs as well as non-salmon species using video monitoring techniques.

Duration: June to September

Agency(s): Zuray (All aspects) USFWS (R&E funding)

Project Name: Nenana Test Fish Wheel Test Fishing

Location: mainstem Tanana River Nenana, RM 860

Primary Objectives: index the timing of Chinook, summer chum, fall chum, and coho salmon runs using test fish wheels. Tag recovery fish wheel for fall chum salmon for Tanana Tagging mark–recapture project.

Duration: June to September

Agency(s): ADF&G (All aspects) and USFWS (R&M, Funded, fall season contract, tech support R&M funding)

-continued-

Project Name: Tanana Radio Tagging

Location: mainstem Tanana River between RM 793 and 1,059.

Primary Objectives: determine relative contributions of mainstem spawners to overall Upper Tanana fall chum salmon population. Identify and characterize mainstem spawning habitats used by fall chum salmon. Construct a mainstem spawning habitat prediction model for upper Tanana fall chum salmon populations. Salmon populations. Estimate the stock specific run timing, migration rates, and movement patterns.

Duration: August to December

Agency(s): ADF&G (All aspects) TCC, UAF, USGS (AYKSSI funding)

Project Name: Tozitna River Weir

Location: Mile 50 Tozitna River Yukon River, RM 681

Primary Objectives: estimate daily escapement of Chinook and summer chum salmon into the Tozitna River, estimate age, sex and size comp of the Chinook and summer chum escapement

Duration: June to August

Agency(s): BLM, TTC (All aspects)

Project Name: Delta River Ground Surveys

Location: Tanana River drainage, RM 1,031

Primary Objectives: estimate fall chum spawning escapement in Delta River. Recover tags from the Tanana fall chum salmon radiotelemetry project. Sample fall chum salmon carcasses for age, sex and size composition.

Duration: October to December

Agency(s): ADF&G (All aspects)

Project Name: Chena River Tower

Location: Chena River, Tanana River drainage, RM 921

Primary Objectives: estimate daily escapement of Chinook and summer chum salmon into the Chena River.

Duration: July to August

Agency(s): ADF&G (All aspects)

Project Name: Salcha River Tower

Location: Salcha River, Tanana River drainage, RM 967

Primary Objectives: Estimate daily escapement of Chinook and summer chum salmon into the Salcha River.

Duration: July to August

Agency(s): BSFA (All aspects, R&M funding)

-continued-

Project Name: Goodpaster River Tower

Location: Goodpaster River, Tanana River drainage, RM 1,049

Primary Objectives: Estimate daily escapement of Chinook and summer chum salmon into the Goodpaster River.

Duration: July

Agency(s): TCC (All aspects, Pogo mine funding)

Project Name: Upper Yukon River Chum Salmon Genetic Stock Identification

Location: Yukon River drainage

Primary Objectives: Establish the feasibility of using DNA marks for genetic stock identification of chum salmon in the Yukon River. OSM 2006-2008

Duration: June to October

Agency(s): USFWS (All aspects)

Project Name: Ichthyophonus Sampling

Location: Emmonak, RM 20 Eagle RM 1,213

Primary Objectives: Determine prevalence of Ichthyophonus in lower Yukon at Emmonak and in upper Yukon at Eagle.

Duration: May to July

Agency(s): ADF&G (All aspects)

Project Name: Marshall Test Fish

Location: Mainstem Yukon River RM 161

Primary Objectives: Index Chinook, summer and fall chum, and coho salmon run timing and abundance using drift gillnets. Sample captured salmon for age, sex, size composition information.

Duration: June to July

Agency(s): AVCO (All aspects, R&E funding)

Project Name: Yukon River Inseason Salmon Harvest Interviews

Location: Emmonak, Holy Cross, Nulato, Huslia, Galena, and Beaver Primary

Primary Objectives: Collect qualitative inseason subsistence salmon harvest information through weekly interviews.

Duration: June to September

Agency(s): USFWS, YRDFA (All aspects)

-continued-

Project Name: Migratory Timing and Harvest Information of Chinook Salmon Stocks

Location: Yukon River drainage

Primary Objectives: Enlarge existing allozyme and develop a DNA database to characterize the genetic diversity of Chinook salmon in the Yukon River within the U.S. and Canada. U.S. collections, microsatellites, allozyme. Can. Collections, microsatellites.

Duration: June to August

Agency(s): USFWS, ADF&G, DFO, OSM (All aspects)

Project Name: Juvenile Chinook Rearing in non-natal streams

Location: Yukon River downstream of the Canadian border

Primary Objectives: Capture juvenile Chinook salmon in non-natal Yukon River tributary streams. Determine whether Canadian-origin juvenile Chinook salmon rear in Yukon River tributary streams of the United States using genetic techniques Describe non-natal stream rearing habitat characteristics for habitat characteristics for Yukon River Chinook salmon.

Duration: July to August

Agency(s): USFWS (All aspects, AYSSF)

Project Name: Comparative Mesh Size Study

Location: Y-1 near Emmonak

Primary Objectives: determine if the proportion of Chinook and chum salmon caught varies by mesh size. Determine if age, sex, length, weight, and girth of individual Chinook salmon caught varies by mesh size. Evaluate the marketability of the catch from the various mesh sizes.

Duration: June to July; 3 years

Agency(s): ADF&G, YDFDA (All aspects)

Project Name: Gillnet catch composition in lower and middle Yukon River fisheries

Location: Yukon District Y-1

Primary Objectives: Determine the weight and girth of individual Chinook salmon caught in the Lower Yukon River Test Fishery at Big Eddy and Middle Mouth and Rampart Rapids fish wheels. Characterize the weight and girth composition of Chinook salmon caught in the Lower Yukon Test Fishery and Rampart Rapids fish wheels by run timing.

Duration: 3 years

Agency(s): YRDFA, ADF&G (All aspects, R&E funding)

-continued-

Note:

Agency Acronyms:

ADF&G	= Alaska Department of Fish and Game
ADPS	= Alaska Department of Public Safety
AVCP	= Association of Village Council Presidents, Inc.
BSFA	= Bering Sea Fishermen's Association
BLM	= Bureau of Land Management
DFO	= Department of Fisheries and Oceans (Canada)
NPS	= National Park Service
TCC	= Tanana Chiefs Conference, Inc.
TTC	= Tanana Tribal Council
UAF	= University of Alaska Fairbanks
USFWS	= United States Fish and Wildlife Service
USFWS-OSM	= United States Fish and Wildlife Service, Office of Subsistence Management
USGS	= United States Geological Survey
YRDFA	= Yukon River Drainage Fisheries Association

Appendix A4.–List of harvest/escapement monitoring and incubation/rearing projects involving salmon in the Canadian portion of the Yukon River drainage, 2008.

Project Name: Upper Yukon Tagging Program (mark-recapture)

Location: Yukon River downstream of Dawson City

Primary Objectives: To obtain population, and escapement estimates of Chinook and chum salmon in the Canadian section of the mainstem Yukon River to collect stock ID, age, size, sex composition data to participate in Eagle Sonar Program

Duration: June to October

Agency(s): DFO

Responsibility: All aspects

Project Name: Chinook and Chum Test Fisheries

Location: Yukon River near Dawson City

Primary Objectives: To provide catch and tag recovery information for the mark–recapture program as required (Chinook required in 2008) to provide ASL samples the Chinook test fishery uses nets, while the chum test fishery uses live release fish wheels.

Duration: July to October

Agency(s): YRCFA, THFN

Responsibility: All aspects

Project Name: Commercial Catch Monitoring

Location: Near Dawson City

Primary Objectives: To determine weekly catches and effort in the Canadian commercial fishery (CM and CK); recovery of tags to provide ASL information and DNA samples

Duration: July to October

Agency(s): DFO

Responsibility: All aspects

Project Name: Aboriginal Catch Monitoring

Location: Yukon communities

Primary Objectives: To determine weekly catches and effort in the aboriginal fishery and recover tags; to implement components of the UFA and AFS

Duration: July to October

Agency(s): YFN, DFO

Responsibility: All aspects

-continued-

Project Name: Recreational Catch Monitoring

Location: Yukon River mainstem

Primary Objectives: to determine the recreation harvest, landed and retained, of and tributaries salmon caught in the Yukon through a catch card program

Duration: July to October

Agency(s): DFO

Responsibility: All aspects

Project Name: DFO Escapement Index Surveys

Location: Chinook and chum aerial index streams

Primary Objectives: to obtain counts in index areas including: Big Salmon, L. Salmon Wolf, Nisutlin, Mainstem Yukon, Kluane & Teslin rivers

Duration: August to November

Agency(s): DFO

Responsibility: All aspects

Project Name: Escapement Surveys and DNA Collection

Location: Throughout upper Yukon River drainage

Primary Objectives: To conduct surveys of spawning fish by foot, boat and air etc. To enumerate and recover tags in terminal areas. To collect DNA samples from spawning population and aggregate samples from fisheries and large migration corridors

Duration: July to October

Agency(s): R&E Projects, DFO, YFN, AFS

Responsibility: All aspects

Project Name: Fishing Branch Chum Salmon Weir

Location: Fishing Branch River

Primary Objectives: To enumerate chum salmon returning to the Fishing Branch River and obtain age, size, tag and sex composition data

Duration: August to October

Agency(s): DFO, VGG

Responsibility: Joint project

-continued-

Project Name: Whitehorse Rapids Fishway

Location: Whitehorse

Primary Objectives: to enumerate wild and hatchery reared Chinook returns to the Whitehorse fishway area and obtain age, size, sex and tag composition data.

Duration: July to August

Agency(s): YF&GA

Responsibility: All aspects

Project Name: Blind Creek Weir

Location: Pelly River

Primary Objectives: To enumerate Chinook escapement and recover tags and to collect ASL data and DNA samples.

Duration: July to August

Agency(s): JWX&A

Responsibility: All aspects

Project Name: Big Salmon Sonar

Location: Big Salmon River

Primary Objectives: Installation and operation of a DIDSON sonar program for Chinookcarcass survey for tags, ASL, and DNA

Duration: July to August

Agency(s): JW&A

Responsibility: All aspects

Project Name: Klondike River Sonar Feasibility

Location: Klondike River

Primary Objectives: Examine lower river for suitable sonar sites

Duration: July to October

Agency(s): BM&A

Responsibility: All aspects

-continued-

Project Name: Escapement Sampling

Location: Various tributaries

Primary Objectives: to collect ASL data and DNA samples

Duration: August to October

Agency(s): DFO

Responsibility: All aspects

Project Name: Porcupine Mark-Recapture Program

Location: Porcupine River

Primary Objectives: To conduct chum marking and test fishery program. To establish method of conducting inseason local management

Duration: August to October

Agency(s): VGG & EDI

Responsibility: All aspects

Project Name: Whitehorse Rapids Fish Hatchery and Coded-Wire Tagging Project

Location: Whitehorse

Primary Objectives: To rear and release ~150K Chinook fry from broodstock, collected at the Whitehorse Rapids Fishway. To mark fry with CWT, adipose clip, and release upstream of Whitehorse hydroelectric facility.

Duration: Ongoing

Agency(s): RR, YEC, YF&GA

Responsibility: RR, YEC all aspects and YF&GA coded-wire tagging

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Project Name: MacIntyre Incubation Box and Coded-Wire Tagging Project

Location: Whitehorse

Primary Objectives: To rear up to 120K Chinook fry from broodstock collected from the Takhini River and/or Tatchun Creek. To mark fry with CWT, adipose clip, and release at natal sites.

Duration: Ongoing

Agency(s): DFO (technical support) YC (field work), NRI (project monitoring)

Project Name: Fox Creek Restoration Program

Location: Whitehorse Area

Primary Objectives: Incubate CK eggs, mark fry with a CWT, and release into Fox CK

Duration: Ongoing

Agency(s): TKC

Responsibility: All aspects

-continued-

Note:

Acronyms:

AFS	= Aboriginal Fisheries Strategy
BM&A	= B. Mercer & Associates
DFO	= Department of Fisheries and Oceans Canada
EDI	= Environmental Dynamics Incorporated
JW&A	= Jane Wilson & Associates
NRI	= Northern Research Institute
R&E	= Yukon Panel Restoration and Enhancement Program
RR	= Government of Yukon–Renewable Resources
THFN	= Tr'ondek Hwech'in First Nation
TKC	= Ta'an Kwach'an Council
VGG	= Vuntut Gwitchin Government
YC	= Yukon College
YEC	= Yukon Energy Corporation
YFN	= Yukon First Nations
YF&GA	= Yukon Fish and Game Association
YRCFA	= Yukon River Commercial Fishers Association
YSC	= Yukon Salmon Committee

Appendix A5.–Total utilization in numbers of salmon by district and country, Yukon River drainage, 2008.

District	Fishery	Chinook	Summer Chum	Fall Chum	Coho
1	Subsistence	6,163	22,767	2,823	1,211
	Commercial [a]	2,530	67,459	67,704	13,946
	Test Fish Sales	0	80	0	0
	Total	8,693	90,306	70,527	15,157
2	Subsistence	8,826	24,291	3,522	1,997
	Commercial [a]	2,111	58,139	41,270	19,246
	Test Fish Sales	0	0	0	0
	Total	10,937	82,430	44,792	21,243
3	Subsistence	5,855	2,971	1,821	410
	Commercial	0	0	0	0
	Total	5,855	2,971	1,821	410
Total	Subsistence	20,844	50,029	8,166	3,618
Lower	Commercial [a]	4,641	125,598	108,974	33,192
Yukon	Test Fish Sales	0	80	0	0
Area	Total	25,485	175,707	117,140	36,810
4	Subsistence	10,619	13,517	7,412	1,490
	Commercial	0	23,746	0	0
	Total	10,619	37,263	7,412	1,490
5	Subsistence	11,626	3,537	57,258	3,203
	Commercial	0	0	4,556	91
	Total	11,626	3,537	61,814	3,294
6	Subsistence	605	1,311	16,135	8,428
	Commercial	0	1,842	5,735	2,408
	Personal use	126	138	181	50
	Total	731	3,291	22,051	10,886
Total	Subsistence	22,850	18,365	80,805	13,121
Upper	Commercial	0	25,588	10,291	2,499
Yukon	Personal use	126	138	181	50
Area	Total	22,976	44,091	91,277	15,670
Total	Subsistence	43,694	68,394	88,971	16,739
Yukon	Commercial [a]	4,641	151,186	119,265	35,691
Area	Personal use	126	138	181	50
(Alaska)	Test Fish sales	0	80	0	0
	Sport Fish [b]	409	371	0	341
	Total	48,870	220,169	208,417	52,821
	Domestic	0	0	0	0
Total	Aboriginal (mainstem)	2,885	0	2,068	0
Canada	Sport Fish	0	0	0	0
	Test Fish harvest	513	0	0	0
	Commercial	1	0	4,062	0
	Subtotal	3,399	0	6,130	0
	Porcupine Aboriginal	314	0	3,436	200
	Total	3,713	0	9,566	200
	Grand Total	52,583	220,169	217,983	53,021

Note: The Alaska commercial harvest includes only fish sold in the round. The subsistence harvest estimates for the Alaska portion of the Yukon River drainage does not include the communities of Hooper Bay and Scammon Bay.

[a] A total of 14,100 pink salmon were sold in the Lower Yukon during the summer season (District 1; 13,391 pink salmon and District 2; 709 pink salmon).

[b] The estimated sport fish harvest for the Alaska portion of the Yukon River drainage. A majority of the sport fish harvest occurs in the Tanana River drainage (District 6). The chum salmon harvested in the sport fishery are assumed to be summer chum because the majority of the harvest occurs during the summer season.

Appendix A6.–Alaska commercial sales in numbers of salmon by district, Yukon Area, 2008.

District/ Subdistrict	Number of Fishermen [a]	Chinook	Summer Chum	Fall Chum	Coho
1	297	2,530	67,459	67,704	13,946
2	208	2,111	58,139	41,270	19,246
Subtotal	474	4,641	125,598	108,974	33,192
3	0	0	0	0	0
Total Lower Yukon [b]	474	4,641	125,598	108,974	33,192
Anvik River	–	–	–	–	–
4-A	8	0	23,746	0	0
4-BC	–	–	–	–	–
Subtotal District 4	8	0	23,746	0	0
5-ABC	3	0	0	4,556	91
5-D	0	0	0	0	0
Subtotal District 5	3	0	0	4,556	91
6	11	0	1,842	5,735	2,408
Total Upper Yukon	22	0	25,588	10,291	2,499
Total Alaska	496	4,641	151,186	119,265	35,691

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred. Does not include ADF&G test fishery sales.

[a] Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

[b] A total of 14,100 pink salmon were sold in the Lower Yukon during the summer season (13,391 pink salmon in District 1 and 709 pink salmon in District 2).

Appendix A7.–Commercial sales in numbers of salmon by statistical area, Yukon Area, 2008.

Statistical Area	Chinook	Summer Chum	Fall Chum	Coho	Total Salmon
334-11	50	1,200	22	35	1,307
12	440	9,216	16,471	3,122	29,249
13	209	5,521	6,018	1,024	12,772
14	263	9,224	9,138	1,274	19,899
15	372	6,219	5,152	838	12,581
16	226	5,937	7,090	2,456	15,709
17	628	17,423	16,072	3,712	37,835
18	342	12,719	7,741	1,485	22,287
Subtotal District 1	2,530	67,459	67,704	13,946	151,639
334-21	420	15,326	10,027	3,275	29,048
22	654	14,017	11,630	6,076	32,377
23	670	16,781	11,507	4,594	33,552
24	252	10,145	7,424	4,680	22,501
25	115	1,870	682	621	3,288
Subtotal District 2	2,111	58,139	41,270	19,246	120,766
334-31	–	–	–	–	–
32	–	–	–	–	–
Subtotal District 3	–	–	–	–	–
Total Lower Yukon [a]	4,641	125,598	108,974	33,192	272,405
Statistical Area	Chinook	Summer Chum	Fall Chum	Coho	Total Salmon
334-42	–	–	–	–	0
43	–	–	–	–	0
44	0	0	–	–	0
45	0	0	–	–	0
46	0	23,746	–	–	23,746
47	–	–	–	–	0
Subtotal District 4	0	23,746	0	0	23,746
334-51	–	–	–	–	–
52	–	–	4,556	91	4,647
53	–	–	0	0	0
54	–	–	–	–	–
55	–	–	–	–	–
Subtotal District 5	0	0	4,556	91	4,647
334-61	0	0	4,029	2,160	6,189
62	0	1,194	1,706	248	3,148
63	0	648	0	0	648
Subtotal District 6	0	1,842	5,735	2,408	9,985
Total Upper Yukon	0	25,588	10,291	2,499	38,378
Grand Total Yukon Area	4,641	151,186	119,265	35,691	310,783

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred. Does not include ADF&G test fishery sales.

[a] A total of 14,100 pink salmon were sold in the Lower Yukon during the summer season. In District 1, 13,391 pink salmon were sold, and in District 2, 709 pink salmon were sold.

Appendix A8.–Commercial sales in numbers of salmon by statistical area, set gillnet and fish wheel harvest combined, Upper Yukon Area, 2008.

Statistical Area	Number of Fishermen [a]	Chinook	Summer Chum	Fall Chum	Coho
334-42	–	–	–	–	–
334-43	–	–	–	–	–
334-44	0	0	0	0	0
334-45	0	0	0	0	0
334-46	8	0	23,746	0	0
334-47	– [b]	–	–	–	–
Subtotal District 4	8	0	23,746	0	0
334-51	–	–	–	–	–
334-52	3	–	–	4,556	91
334-53	0	–	–	0	0
334-54	–	–	–	–	–
334-55	–	–	–	–	–
Subtotal District 5	3	0	0	4,556	91
334-61	6	0	0	4,029	2,160
334-62	6	0	1,194	1,706	248
334-63	2	0	648	0	0
Subtotal District 6	11	0	1,842	5,735	2,408
Total Upper Yukon Area	22	0	25,588	10,291	2,499

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred.

[a] Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

[b] The Anvik River, statistical area 334-47, was not opened for commercial fishing in 2008. Purse and beach seine gear, which are legal gear types in this statistical area were not used for commercial purposes.

Appendix A9.–Commercial set gillnet sales in number of salmon by statistical area, Upper Yukon Area, 2008.

Statistical Area	Number of Fishermen [a]	Chinook	Summer Chum	Fall Chum	Coho
334-42	–	–	–	–	–
334-43	–	–	–	–	–
334-44	0	0	0	0	0
334-45	0	0	0	0	0
334-46	1	0	154	0	0
334-47	–	–	–	–	–
Subtotal District 4	1	0	154	0	0
334-51	–	–	–	–	–
334-52	0	–	–	0	0
334-53	0	–	–	0	0
334-54	–	–	–	–	–
334-55	–	–	–	–	–
Subtotal District 5	0	0	0	0	0
334-61	0	0	0	0	0
334-62	0	0	0	0	0
334-63	1	0	458	0	0
Subtotal District 6	1	0	458	0	0
Total Upper Yukon Area	2	0	612	0	0

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred.

[a] Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

Appendix A10.–Commercial fish wheel sales in number of salmon by statistical area, Upper Yukon Area, 2008.

Statistical Area	Number of Fishermen [a]	Chinook	Summer Chum	Fall Chum	Coho
334-42	–	–	–	–	–
334-43	–	–	–	–	–
334-44	0	0	0	0	0
334-45	0	0	0	0	0
334-46	7	0	23,592	0	0
334-47	–	–	–	–	–
Subtotal District 4	7	0	23,592	0	
334-51	–	–	–	–	–
334-52	3	0	0	4,556	91
334-53	0	–	–	0	0
334-54	–	–	–	–	–
334-55	–	–	–	–	–
Subtotal District 5	3	0	0	4,556	91
334-61	6	0	0	4,029	2,160
334-62	6	0	1,194	1,706	248
334-63	1	0	190	0	0
Subtotal District 6	10	0	1,384	5,735	2,408
Total Upper Yukon Area	20	0	24,976	10,291	2,499

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred.

[a] Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

Appendix A11.–Value of commercial salmon fishery to Yukon Area fishermen, 1990–2008.

	Summer Season						
	Chinook			Summer Chum			
Year	Lower Yukon Value	Upper Yukon Value	Subtotal	Lower Yukon Value	Upper Yukon Value	Subtotal	Total Season
1990	4,820,859	105,295	4,926,154	497,571	506,611	1,004,182	5,930,336
1991	7,128,300	97,140	7,225,440	782,300	627,177	1,409,477	8,634,917
1992	9,957,002	168,999	10,126,001	606,976	525,204	1,132,180	11,258,181
1993	4,884,044	113,217	4,997,261	226,772	203,762	430,534	5,427,795
1994	4,169,270	124,270	4,293,540	79,206	396,685	475,891	4,769,431
1995	5,317,508	87,059	5,404,567	241,598	1,060,322	1,301,920	6,706,487
1996	3,491,582	47,282	3,538,864	89,020	966,277	1,055,297	4,594,161
1997	5,450,433	110,713	5,561,146	56,535	96,806	153,341	5,714,487
1998	1,911,370	17,285	1,928,655	26,415	821	27,236	1,955,891
1999	4,950,522	74,475	5,024,997	19,687	1,720	21,407	5,046,404
2000	725,606	–	725,606	8,633	–	8,633	734,239
2001	–	–	–	–	–	–	–
2002	1,691,105	20,744	1,711,849	4,342	6,176	10,518	1,722,367
2003	1,871,202	40,957	1,912,159	1,585	6,879	8,464	1,920,623
2004	3,063,667	38,290	3,101,957	8,884	9,645	18,529	3,120,486
2005	1,952,109	24,415	1,976,524	11,004	13,479	24,483	2,001,007
2006	3,290,367	32,631	3,322,998	23,862	42,988	66,850	3,389,848
2007	1,939,114	27,190	1,966,304	220,715	34,421	255,136	2,221,440
2008 [a]	325,470	–	325,470	326,930	65,840	392,770	718,240
2003–2007 Average	2,423,292	32,697	2,455,988	53,210	21,482	74,692	2,530,681

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	Fall Season							
	Fall Chum			Coho				
	Lower Yukon	Upper Yukon		Lower Yukon	Upper Yukon		Total	Total
Year	Value	Value	Subtotal	Value	Value	Subtotal	Season	Value
1990	238,165	174,965	413,130	137,302	37,026	174,328	587,458	6,517,794
1991	438,310	157,831	596,141	300,182	21,556	321,738	917,879	9,552,796
1992	0	54,161	54,161	0	19,529	19,529	73,690	11,331,871
1993	0	0	0	0	0	0	0	5,427,795
1994	0	8,517	8,517	0	8,739	8,739	17,256	4,786,687
1995	185,036	167,571	352,607	80,019	11,292	91,311	443,918	7,150,405
1996	48,579	45,438	94,017	96,795	13,020	109,815	203,832	4,797,993
1997	86,526	7,252	93,778	79,973	1,062	81,035	174,813	5,889,300
1998	–	–	–	–	–	–	–	1,955,891
1999	35,639	876	36,515	3,620	0	3,620	40,135	5,086,539
2000	–	–	–	–	–	–	–	734,239
2001	–	–	–	–	–	–	–	–
2002	–	–	–	–	–	–	–	1,722,367
2003	5,993	3,398	9,391	18,168	5,095	23,263	32,654	1,953,277
2004	1,126	848	1,974	2,774	6,372	9,146	11,120	3,131,606
2005	316,698	48,159	364,857	83,793	19,182	102,975	467,832	2,468,839
2006	202,637	33,806	236,443	50,299	11,137	61,436	297,879	3,687,727
2007	144,256	16,907	161,163	127,869	1,368	129,237	290,400	2,511,840
2008	428,969	22,089	451,058	216,777	3,717	220,494	671,552	1,389,792
2003–2007 Average	134,142	20,624	154,766	56,581	8,631	65,211	219,977	2,750,658

Note: Unless otherwise noted, blank cells indicate years in which no information was collected or harvest numbers were insufficient to generate summary information. En dash indicates no commercial fishing activity occurred.

[a] Does not include $4,656 in sales of pink salmon in Districts 1 and 2 during the summer season.

Appendix A12.–Salmon processors, buyers, sellers, and associated data, 2008.

Kwik'pak Fisheries, LLC 2200 6th Avenue Suite 707 Seattle, WA 98121 (Emmonak, Mt. Village)	Frozen Salmon Fresh Salmon Chinook Chum, Coho Salmon Roe	1 and 2
Boreal Fisheries P.O. Box 561 Graham, WA 98338 (St. Mary's)	Frozen Salmon Fresh Salmon Chinook Chum, Coho Salmon Roe	1 and 2
BB's Kings HC 60 Box 227 I Copper Center, AK 99573	Fresh Salmon Chinook	2
Clarence Johnson PO Box 367 St. Mary's, AK 99658	Fresh Salmon Chinook	2
Erik Weingarth PO Box 74 St. Mary's, AK 99658	Fresh Salmon Chinook	2
Francis Beans PO Box 325 St. Mary's, AK 99658	Fresh Salmon Chinook	2
Christopher D. Beans PO Box 313 St. Mary's, AK 99658	Fresh Salmon Chinook	2
Pamela Tweto PO Box 225 St. Mary's, AK 99658	Fresh Salmon Chinook	2

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David Herbert PO Box 9 St. Mary's, AK 99658	Fresh Salmon Chinook	2
JustWildFish LLC Mike Irving PO Box 335 St. Mary's, AK 99658	Fresh Salmon Chinook	2
Maserculiq Fish Processors Paul Coffee PO Box 90 Marshall, AK 99585	Fresh Salmon Chinook	2
Yutana Fisheries 1477 Chena Point Fairbanks, AK 99709 (Manley Hot Springs)	Fresh Salmon Salmon Roe	6
Kaltag Fisheries LLC. PO Box 4397 Bellingham, WA 98227 (Kaltag)	Salmon Roe	4
Interior Alaska Fish Processors 2400 Davis Rd. Fairbanks, AK 99701	Fresh/Frozen Salmon Salmon Roe Smoked Salmon	5 and 6
David Dausel PO Box 80291 Fairbanks, AK 99708	Fresh Salmon	6
Great Pacific Seafoods Inc. 4201 W. Old International Airport Rd. Anchorage, AK 99502 (Nenana)	Fresh/Frozen Salmon Salmon Roe	6
Mary A. Kleinschmidt PO Box 318 Nenana, AK 99760	Fresh Salmon	6
Linda J. Johnson PO Box 57 Manley Hot Springs, AK 99756 (Rapids)	Fresh Salmon	5

Appendix A13.–Historical daily and cumulative CPUE for Chinook salmon, Lower Yukon River set net test fishery, 1989–2007 average and 2007 compared to 2008.

	2008				2007		Average 1989-2007	
Date	Daily Catch	Daily CPUE	Cum. CPUE	District 1 Commercial Hrs Fished	Daily CPUE	Cumulative CPUE	Daily CPUE	Cumulative CPUE
26 May							0.00	0.00
27 May							0.04	0.03
28 May					0.00	0	0.02	0.04
29 May					0.00	0.00	0.03	0.07
30 May					0.00	0.00	0.05	0.12
31 May					0.00	0.00	0.07	0.18
1 Jun	0	0.00	0.00		0.00	0.00	0.07	0.25
2 Jun	0	0.00	0.00		0.00	0.00	0.12	0.36
3 Jun	1	0.02	0.02		0.03	0.03	0.17	0.52
4 Jun	1	0.02	0.04		0.07	0.10	0.21	0.72
5 Jun	3	0.03	0.07		0.04	0.14	0.20	0.91
6 Jun	4	0.04	0.11		0.07	0.21	0.30	1.19
7 Jun	7	0.07	0.18		0.11	0.32	0.34	1.51
8 Jun	16	0.17	0.35		0.02	0.34	0.39	1.90
9 Jun	28	0.29	0.64		0.07	0.41	0.62	2.53
10 Jun	23	0.24	0.88		0.04	0.45	0.54	3.07
11 Jun	21	0.22	1.10		0.09	0.54	0.57	3.64
12 Jun	22	0.23	1.33		0.22	0.76	0.72	4.36
13 Jun	34	0.35	1.68		0.42	1.18	0.82	5.18
14 Jun	58	0.60	2.28		1.17	2.35	0.74	5.92
15 Jun	76	0.79	3.07		1.16	3.51	0.75	6.68
16 Jun	122	1.27	4.34		1.23	4.74	0.91	7.59
17 Jun	67	0.70	5.04		1.32	6.06	0.89	8.48
18 Jun	45	0.47	5.51		0.74	6.80	0.92	9.40
19 Jun	30	0.31	5.82		0.40	7.20	0.89	10.29
20 Jun	35	0.36	6.18		0.81	8.01	0.77	11.06
21 Jun	56	0.58	6.76		1.09	9.10	0.95	12.01
22 Jun	87	0.91	7.67		0.81	9.91	0.99	13.00
23 Jun	102	1.06	8.73		1.09	11.00	0.93	13.94
24 Jun	117	1.22	9.95		1.00	12.00	1.07	15.01
25 Jun	69	0.72	10.67		0.46	12.46	0.92	15.93
26 Jun	179	1.86	12.53		0.63	13.09	0.85	16.77
27 Jun	205	2.14	14.67		0.73	13.82	0.69	17.46
28 Jun	178	1.85	16.52		0.81	14.63	0.66	18.12

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Appendix A13.–Page 2 of 2.

Date	2008 Daily Catch	2008 Daily CPUE	2008 Cum. CPUE	District 1 Commercial Hrs Fished	2007 Daily CPUE	2007 Cumulative CPUE	Average 1989-2007 Daily CPUE	Average 1989-2007 Cumulative CPUE
29 Jun	103	1.07	17.59		0.61	15.24	0.68	18.80
30 Jun	83	0.86	18.45		0.41	15.65	0.50	19.30
1 Jul	69	0.72	19.17		0.19	15.84	0.43	19.73
2 Jul	30	0.31	19.48	4	0.71	16.55	0.47	20.19
3 Jul	44	0.46	19.94		0.51	17.06	0.40	20.59
4 Jul	28	0.29	20.23		0.46	17.52	0.33	20.92
5 Jul	34	0.35	20.58	6	0.30	17.82	0.33	21.25
6 Jul	61	0.64	21.22		0.19	18.01	0.27	21.52
7 Jul	39	0.41	21.63	6	0.28	18.29	0.25	21.77
8 Jul	16	0.17	21.80		0.38	18.67	0.23	22.00
9 Jul	11	0.11	21.91		0.22	18.89	0.19	22.19
10 Jul	15	0.16	22.07	6	0.09	18.98	0.15	22.34
11 Jul	5	0.05	22.12		0.10	19.08	0.11	22.46
12 Jul	2	0.02	22.14	9	0.10	19.18	0.09	22.55
13 Jul	6	0.06	22.20		0.01	19.19	0.09	22.64
14 Jul	3	0.03	22.23	9	0.00	19.19	0.07	22.71
15 Jul	4	0.04	22.27		0.02	19.21	0.08	22.79
	2,139		22.27			19.21		22.79

Note: The box within the column indicates the first to the third quartile of the cumulative index. The median date is also highlighted.

[a] Includes unrestricted mesh commercial periods only.

[b] Average CPUE is without 1998 and 2000. Data are smoothed and adjusted for late run timing.

Appendix A14.–Pilot station sonar project estimates, Yukon River drainage, 1995, and 1997–2008.

	Estimated Passage												
Species	1995	1997 [a]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Large Chinook [b]	130,271	118,121	71,177	127,809	39,233	85,511	92,584	245,037	110,236	142,007	145,553	90,184	106,708
Small Chinook	32,674	77,526	16,675	16,914	5,195	13,892	30,629	23,500	46,370	17,434	23,850	35,369	23,935
Total Chinook	162,945	195,647	87,852	144,723	44,428	99,403	123,213	268,537	156,606	159,441	169,403	125,553	130,643
Summer Chum	3,556,445	1,415,641	826,385	973,708	456,271	441,450	1,088,463	1,168,518	1,357,826	2,439,616	3,767,044	1,726,885	1,665,667
Fall Chum	1,053,245	506,621	372,927	379,493	247,935	376,182	326,858	889,778	594,060	1,813,589	790,563	684,011	615,127
Total Chum	4,609,690	1,922,262	1,199,312	1,353,201	704,206	817,632	1,415,321	2,058,296	1,951,886	4,253,205	4,557,607	2,410,896	2,280,794
Coho [c]	101,806	104,343	136,906	62,521	175,421	137,769	122,566	269,081	188,350	184,718	131,919	173,289	135,570
Other Species [d]	1,036,459	624,236	344,317	467,316	396,723	354,096	622,670	507,534	880,632	631,180	991,523	1,157,015	1,143,353
Total	5,910,900	2,846,488	1,768,387	2,027,761	1,320,778	1,408,900	2,283,770	3,103,448	3,177,474	5,228,544	5,850,452	3,866,753	3,690,360

[a] The Yukon River sonar project operated in training mode in 1996 and there are no passage estimates for that year.

[b] Chinook salmon >655 mm for 1999–2005, >700 mm for 1995–1998.

[c] This estimate may not include the entire run.

[d] Includes pink salmon, cisco, whitefish, sheefish, burbot, suckers, Dolly Varden, sockeye salmon, and northern pike.

Appendix A15.–Summer season commercial harvest summary, Yukon area, 2008.

District 1									Chinook Salmon			Summer Chum Salmon			Pink Salmon		
Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Mesh Size	Number of Fishermen		Number	Pounds	Average Weight	Number	Pounds	Average Weight	Number	Pounds	Average Weight
1	6:00 PM	2 Jul	10:00 PM	2 Jul	4	R	193		472	7,061	15.0	5,536	36,773	6.6	1,765	6,175	3.5
2	6:00 PM	5 Jul	12:00 AM	5 Jul	6	R	209		819	11,224	13.7	20,518	137,067	6.7	5,489	17,589	3.2
3	12:00 AM	7 Jul	6:00 AM	8 Jul	6	R	208		474	6,445	13.6	13,533	88,384	6.5	6,060	20,031	3.3
4	6:00 AM	10 Jul	12:00 PM	10 Jul	6	R	157		343	4,528	13.2	15,520	106,608	6.9	76	244	3.2
5	3:00 PM	12 Jul	12:00 AM	12 Jul	9	R	176		183	2,935	16.0	8,067	53,798	6.7	1	3	3.0
6	3:00 PM	14 Jul	12:00 AM	14 Jul	9	R	113		90	1,297	14.4	4,285	27,615	6.4	0	0	-
							Sold in fall	[a]	149	2,316	15.5						
District 1 Subtotals:					40		266		2,530	35,806	14.2	67,459	450,245	6.7	13,391	44,042	3.3
District 2																	
1	6:00 PM	4 Jul	10:00 PM	4 Jul	4	R	114		519	7,022	13.5	6,163	39,151	6.4	471	1,641	3.5
2	6:00 PM	6 Jul	12:00 AM	6 Jul	6	R	153		610	8,455	13.9	15,530	100,203	6.5	238	881	3.7
3	6:00 PM	10 Jul	12:00 AM	10 Jul	6	R	139		447	6,556	14.7	18,104	116,533	6.4	0	0	
4	9:00 PM	13 Jul	6:00 AM	14 Jul	9	R	143		316	4,613	14.6	15,324	100,128	6.5	0	0	
5	6:00 PM	16 Jul	12:00 AM	16 Jul	6	R	61		75	1,147	15.3	3,018	19,832	6.6	0	0	
							Sold in fall	[a]	144	1,959	13.6						
District 2 Subtotals:					31		181		2,111	29,752	14.1	58,139	375,847	6.5	709	2,522	3.6
Lower Yukon Area, Summer Season, Districts 1, 2, and 3 Subtotal:					71		444	[b]	4,641	65,558	14.1	125,598	826,092	6.6	14,100	46,564	3.3

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Appendix A15.–Page 2 of 2.

Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished	Mesh Size	Number of Fishermen	Chinook Salmon Number	Chinook Salmon Pounds	Chinook Salmon Average Weight	Summer Chum Salmon Number	Summer Chum Salmon Pounds	Summer Chum Salmon Average Weight	Pink Salmon Number	Pink Salmon Pounds	Pink Salmon Average Weight
Subdistrict 4-A																
1	6:00 PM	9 Jul	6:00 PM	10 Jul	24		6	0	0		3,575	3,427	6.5	0	0	
2	6:00 PM	13 Jul	6:00 PM	15 Jul	48		8	0	0		5,647	5,124	6.5	0	0	
3	6:00 PM	16 Jul	6:00 PM	18 Jul	48		8	0	0		5,631	5,067	6.5	0	0	
4	6:00 PM	20 Jul	6:00 PM	22 Jul	48		7	0	0		5,203	4,683	6.5	0	0	
5	6:00 PM	23 Jul	6:00 PM	25 Jul	48		7	0	0		3,212	2,893	6.5	0	0	
6	6:00 PM	27 Jul	6:00 PM	29 Jul	48		4	0	0		478	430	6.5	0	0	
7	6:00 PM	30 Jul	6:00 PM	1 Aug	48		0	0	0		0	0	-	0	0	
District 4 Subtotal:					312		8	0	0		23,746	21,624	6.5	0	0	
Subdistricts 6-A, 6-B, and 6-C																
1	12:00 Noon	26 Jul	12:00 Noon	27 Jul	24	24	4	0	0		1,062	6,376	6.0	0	0	
2	12:00 Noon	29 Jul	12:00 Noon	30 Jul	24	24	1	0	0		332	2,324	7.0	0	0	
3	6:00 PM	1 Aug	12:00 Noon	3 Aug	42	42	0	0	0		0	0	-	0	0	
4	6:00 PM	4 Aug	12:00 Noon	6 Aug	42	42	1	0	0		82	492	6.0	0	0	
5	6:00 PM	8 Aug	12:00 Noon	10 Aug	42	42	1	0	0		134	804	6.0	0	0	
6	6:00 PM	11 Aug	12:00 Noon	13 Aug	42	42	1	0	0		232	1,392	6.0	0	0	
District 6 Subtotal:					216	216	5	0	0		1,842	11,388	6.2	0	0	
Districts 4, 5, and 6 Subtotals:					528		13	0	0		25,588			0	0	
Yukon Area, Summer Season, Districts 1 Through 6 Total:					599		457	4,641	65,558	14.1	151,186			14,100	46,564	3.3

Note: No commercial fishing occurred in District 3, Subdistricts 4-B, 4-C, and District 5. Mesh size R = 6″ maximum mesh size.

[a] Fall Chinook salmon sales were added to the restricted mesh size subtotals in Districts 1 and 2.

[b] Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

[c] Number of females sold in the round to produce roe sold in Subdistrict 4-A. Average weight of females bought for roe was 6.5 pounds.

Appendix A16.–Commercial catches of Chinook and summer chum salmon by mesh size, Districts 1 and 2, Lower Yukon Area, 1961–2008.

		Unrestricted mesh Size [a]				6 inch maximum mesh size [b]	
		Chinook			Summer Chum	Chinook	Summer Chum
Year		District 1	District 2	Total	Districts 1 and 2	Districts 1 and 2	Districts 1 and 2
1973	[c]	52,790	12,479	65,269	89,841	5,168	196,540
1974		69,457	17,464	86,921	349,758	1,631	227,507
1975		41,550	9,064	50,614	148,919	4,162	345,472
1976		56,392	15,296	71,688	267,075	7,631	128,431
1977		65,745	15,328	81,073	157,909	4,720	205,634
1978		53,198	28,872	82,070	275,512	7,737	354,603
1979		61,790	33,347	95,137	136,973	22,136	434,188
1980		78,157	42,755	120,912	95,876	19,474	605,679
1981		88,038	37,660	125,698	163,979	18,648	758,767
1982		70,743	35,656	106,399	225,106	6,887	217,563
1983		76,280	30,798	107,078	121,927	31,002	590,329
1984		65,101	29,355	94,456	242,076	16,394	287,531
1985	[d]	76,106	38,194	114,300	170,345	22,445	265,240
1986		42,922	36,603	79,525	231,372	15,307	438,182
1987		62,147	40,127	102,274	128,017	21,827	269,757
1988		32,792	20,009	52,801	225,049	39,469	848,321
1989	[e]	32,180	21,494	53,674	126,360	38,548	765,233
1990	[e]	42,092	24,000	66,092	99,588	18,147	281,418
1991	[e]	52,074	36,290	88,364	108,986	4,145	205,610
1992	[e]	54,569	28,679	83,248	81,458	27,678	242,878
1993		47,084	37,293	84,377	47,488	2,202	45,503
1994	[f]	61,633	41,692	103,325	39,832	608	15,369
1995		74,827	39,607	114,434	113,860	3,098	112,223
1996		56,642	30,209	86,851	123,233	0	0
1997		63,062	39,052	102,114	49,953	3,611	28,204
1998		24,202	16,806	41,008	20,314	1,211	7,804
1999		37,145	27,119	64,264	27,883	0	0
2000		4,735	3,783	8,518	6,624	0	0
2001	[g]	0	0	0	0	0	0
2002		11,087	11,434	22,521	10,354	0	0
2003		22,709	14,220	36,929	6,162	0	0
2004		28,403	24,145	52,548	20,652	0	0
2005		16,619	13,413	30,032	32,278	0	0
2006		23,728	19,356	43,084	35,574	478	11,785
2007		13,558	9,238	22,796	11,311	9,121	164,911
2008	[h]	0	0	0	0	4,348	125,598
1988-1997		51,696	31,833	83,528	101,581	13,751	254,476
1998-2007		18,219	13,951	32,170	17,115	1,081	18,450

Note: ADF&G test fishery sales included, 1961–1990. ADF&G test fishery sales not included, 1991–2008.

[a] Primarily 8 to 8.5 inch mesh size used during early June to early July.

[b] Catch through July 15–20; relatively few Chinook and summer chum salmon taken after these dates.

[c] 6 inch maximum mesh size regulation beginning late June to early July became effective in 1973.

[d] 6 inch maximum mesh size regulation by emergency order during commercial fishing season became effective in 1985.

[e] Only includes information from fish ticket database; does not include salmon purchased illegally.

[f] 8 inch or greater mesh size restriction was in effect until June 27 and fishermen were requested to take chum salmon home for subsistence use until June 22 in order to reduce the harvest of chum salmon.

[g] No commercial fishery in 2001.

[h] No commercial fishing periods were established in 2008 allowing the use of unrestricted mesh size gillnets.

Appendix A17.–List of emergency orders pertaining to Districts 1–3 Chinook and summer chum salmon fishery, Yukon Area, 2008.

EO Number: 3-S-LY-01-08	Effective Date: May 26, 2008

Implements the regulatory subsistence salmon fishing schedule in District 1.

EO Number: 3-S-LY-02-08	Effective Date: May 28, 2008

Implements the regulatory subsistence salmon fishing schedule in District 2.

EO Number: 3-S-LY-03-08	Effective Date: May 30, 2008

Implements the regulatory subsistence salmon fishing schedule in District 3.

EO Number: 3-S-LY-04-08	Effective Date: May 30, 2008

Allows 7 days per week subsistence salmon fishing in the Innoko River.

EO Number: 3-S-LY-05-08	Effective Date: June 23, 2008

Reduces subsistence salmon fishing time to two 18-hours periods per week from 8:00 p.m. Mondays until 2:00 p.m. Tuesdays and 8:00 p.m. Thursdays until 2:00 p.m. Fridays with gillnets restricted to 6-inch maximum mesh size in the Coastal District north of 62 degrees north latitude and south of marker at Chris Point.

EO Number: 3-S-LY-06-08	Effective Date: June 23, 2008

Reduces subsistence salmon fishing time to two 18-hours periods per week from 8:00 p.m. Mondays until 2:00 p.m. Tuesdays and 8:00 p.m. Thursdays until 2:00 p.m. Fridays with 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-07-08	Effective Date: June 25, 2008

Reduces subsistence salmon fishing time to two 18-hours periods per week from 8:00 p.m. Wednesdays until 2:00 p.m. Thursdays and from 8:00 p.m. Sundays until 2:00 p.m. Mondays with gillnets restricted to 6-inch maximum mesh size in District 2.

EO Number: 3-S-LY-08-08	Effective Date: June 27, 2008

Reduces subsistence salmon fishing time to two 18-hours periods per week from 8:00 a.m. Fridays until 2:00 a.m. Saturdays and from 8:00 a.m. Tuesdays until 2:00 a.m. Wednesdays with gillnets restricted to 6-inch maximum mesh size in District 3.

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EO Number: 3-S-LY-09-08 Effective Date: July 3, 2008

Returns the Coastal District north of 62 degrees north latitude and south marker at Chris Point of the to the regulatory subsistence salmon fishing schedule of seven days per week and allows the use of unrestricted mesh size gillnets. Emergency order number 3-S-LY-05-08 is rescinded.

EO Number: 3-S-LY-10-08 Effective Date: July 3, 2008

Returns District 1 to the regulatory subsistence salmon fishing schedule of two 36-hour periods per week from 8:00 p.m. Mondays until 8:00 a.m. Wednesdays and from 8:00 p.m. Thursdays until 8:00 a.m. Saturdays and allows use of unrestricted gillnet mesh size.

EO Number: 3-S-LY-11-08 Effective Date: July 6, 2008

Returns District 2 to the regulatory subsistence salmon fishing schedule of two 36-hour periods per week from 8:00 p.m. Wednesdays until 8:00 a.m. Fridays and from 8:00 p.m. Sundays until 8:00 a.m. Tuesdays and allows the use of unrestricted gillnet mesh size.

EO Number: 3-S-LY-12-08 Effective Date: July 8, 2008

Returns District 3 to the regulatory subsistence salmon fishing schedule of two 36-hour periods per week from 8:00 a.m. Tuesdays until 8:00 p.m. Wednesdays and from 8:00 a.m. Fridays until 8:00 p.m. Saturdays and allows the use of unrestricted gillnet mesh size.

EO Number: 3-S-LY-13-08 Effective Date: July 2, 2008

Rescinds emergency order 3-S-LY-04-08 and continues subsistence salmon fishing seven days per week. Gillnets are restricted to 6-inch maximum mesh size in the Innoko River.

EO Number: 3-S-LY-14-08 Effective Date: July 2, 2008

Opens the commercial salmon fishing season in District 1. Rescinds emergency order number 3-S-LY-10-08.

EO Number: 3-S-LY-15-08 Effective Date: July 2, 2008

Establishes a 4-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-16-08 Effective Date: July 4, 2008

Opens the commercial salmon fishing season in District 2. Rescinds emergency order number 3-S-LY-11-08.

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EO Number: 3-S-LY-17-08 Effective Date: July 4, 2008

Establishes a 4-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 2.

EO Number: 3-S-LY-18-08 Effective Date: July 6, 2008

Opens the commercial salmon fishing season in District 3. Rescinds emergency order number 3-S-LY-11-08.

EO Number: 3-S-LY-19-08 Effective Date: July 6, 2008

Continues subsistence salmon fishing seven days per week and allows use of unrestricted gillnet mesh size in the Innoko River. Rescinds emergency order number 3-S-LY-13-08.

EO Number: 3-S-LY-20-08 Effective Date: July 5, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-21-08 Effective Date: July 6, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 2.

EO Number: 3-S-LY-22-08 Effective Date: July 7, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-23-08 Effective Date: July 10, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-24-08 Effective Date: July 9, 2008

Reduces subsistence closure in District 1 from 18 hours immediately before, during, and 12 hours after a commercial fishing period to12 hours immediately before, during, and 12 hours after a period.

EO Number: 3-S-LY-25-08 Effective Date: July 10, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 2.

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EO Number: 3-S-LY-26-08 Effective Date: July 12, 2008

Establishes a 9-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-27-08 Effective Date: July 13, 2008

Establishes a 9-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 2.

EO Number: 3-S-LY-28-08 Effective Date: July 14, 2008

Establishes a 9-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 1.

EO Number: 3-S-LY-29-08 Effective Date: July 16, 2008

Establishes a 6-hour commercial salmon fishing period with gillnets restricted to 6-inch maximum mesh size in District 2.

Appendix A18.–List of emergency orders pertaining to Districts 4–6 Chinook and summer chum salmon fishery, Yukon Area, 2008.

EO Number: 3-S-UY-01-08	Effective Date: June 8, 2008

Implements the regulatory subsistence salmon fishing schedule in District 4.

EO Number: 3-S-UY-02-08	Effective Date: June 17, 2008

Implements the regulatory subsistence salmon fishing schedule in Subdistricts 5-A, 5-B, and 5-C.

EO Number: 3-S-UY-03-08	Effective Date: July 2, 2008

Rescinds emergency order 3-S-UY-01-08 and reduces subsistence salmon fishing time in District 4 from two 48-hour periods per week to two 24-hour periods per week.

EO Number: 3-S-UY-04-08	Effective Date: July 8, 2008

Rescinds emergency order 3-S-UY-02-08 and reduces subsistence salmon fishing time in Subdistricts 5-A, 5-B, and 5-C from two 48-hour periods per week to two 24-hour periods per week.

EO Number: 3-S-UY-05-08	Effective Date: July 9, 2008

Opens the commercial salmon fishing season in Subdistrict 4-A. Schedules one 24-hour fishing period from 6:00 p.m. Wednesday, July 9, until 6:00 p.m. Thursday, July 10, and two 48-hour fishing periods each week effective 6:00 p.m. Sunday, July 13 from 6:00 p.m. Sundays until 6:00 p.m. Tuesdays and from 6:00 p.m. Wednesdays until 6:00 p.m. Fridays. Subsistence and commercial fishing periods will coincide. Emergency order 3-S-UY-01-08 is rescinded.

EO Number: 3-S-UY-06-08	Effective Date: July 9, 2008

Opens the commercial salmon fishing season in Subdistricts 4-B and 4-C. Emergency order 3-S-UY-01-08 is rescinded by this emergency order.

EO Number: 3-S-UY-07-08	Effective Date: July 15, 2008

Extends subsistence fishing for Chinook salmon with drift gillnets for an additional 18-hours in Subdistrict 4-A.

EO Number: 3-S-UY-08-08	Effective Date: July 15, 2008

Reduces subsistence salmon fishing time in Subdistrict 5-D. Subsistence salmon fishing will close for 48-hours and then reopen for two reduced fishing periods of three and half days (two 84-hours periods).

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EO Number: 3-S-UY-09-08 Effective Date: July 15, 2008

Rescinds Emergency Order 3-S-UY-04-08 and schedules one additional 24-hour subsistence salmon fishing period and then returns the schedule to two 48-hour fishing periods each week. In Subdistricts 5-A, 5-B, and 5-C effective 6:00 p.m. Tuesday, July 15, subsistence salmon fishing will be open for one 24-hour period. Effective 6:00 p.m. Friday, July 18, two 48-hour weekly subsistence salmon fishing periods will be from 6:00 p.m. Fridays until 6:00 p.m. Sundays and from 6:00 p.m. Tuesdays until 6:00 p.m. Thursdays.

EO Number: 3-S-UY-10-08 Effective Date: July 22, 2008

Rescinds emergency order 3-S-UY-09-08 and alters the subsistence salmon fishing schedule in Subdistricts 5-A, 5-B, and 5-C from two 48-hour periods each week to one five day period each week from 6:00 p.m. Tuesdays, until 6:00 p.m. Sundays.

EO Number: 3-S-UY-11-08 Effective Date: July 24, 2008

Opens the commercial salmon fishing season in District 6.

EO Number: 3-S-UY-12-08 Effective Date: July 26, 2008

Establishes a 24-hour commercial salmon fishing period in District 6 from 12:00 noon Saturday, July 26 until 12:00 noon Sunday, July 27.

EO Number: 3-S-UY-13-08 Effective Date: July 16, 200800

Amends 3-S-UY-06-08 and corrects the subsistence salmon fishing schedule to open from 6:00 p.m. Sundays until 6:00 p.m. Fridays for Subdistricts 4-B and 4-C.

EO Number: 3-S-UY-14-08 Effective Date: July 28, 2008

Rescinds emergency order 3-S-UY-08-08 and announces one additional reduced subsistence salmon fishing period of 48-hours in Subdistrict 5-D. Effective 6:00 a.m. Monday, July 28, the subsistence salmon fishing schedule will close for 84-hours from 6:00 a.m. Monday, July 28 until 6:00 p.m. Thursday, July 31, then beginning 6:00 p.m. Thursday, July 31, subsistence salmon fishing reopens for one 48-hour subsistence salmon fishing period from 6:00 p.m. Thursday, July 31 until 6:00 p.m. Saturday, August 2.

EO Number: 3-S-UY-15-08 Effective Date: July 29, 2008

Establishes a 24-hour fishing period and allows the taking of salmon for commercial purposes from 12:00 noon Tuesday, July 29 in District 6. Commercial fishing and subsistence fishing periods will coincide.

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EO Number: 3-S-UY-16-08 Effective Date: August 1, 2008

Establishes two 42-hour commercial salmon fishing periods District 6 from 6:00 p.m. Friday, August 1 until 12:00 noon Sunday, August 3 and from 6:00 p.m. Monday, August 4 until 12:00 noon Wednesday, August 6. Commercial fishing and subsistence fishing periods will coincide.

EO Number: 3-S-UY-17-08 Effective Date: August 2, 2008

Rescinds emergency order 3-S-UY-05-08 and alters the subsistence salmon fishing schedule from two 48-hour periods each week to one five day period each week. In Subdistrict 4-A effective 6:00 p.m. Saturday, August 2, subsistence fishing for salmon will be open for one 5 day period each week (120 hours) from 6:00 p.m. Tuesdays, until 6:00 p.m. Sundays.

EO Number: 3-S-UY-18-08 Effective Date: August 4,

Rescinds emergency order 3-S-UY-14-08 and returns the subsistence salmon fishing schedule to 7 days per week in Subdistrict 5-D.

EO Number: 3-S-UY-19-08 Effective Date: August 8, 2008

Establishes two 42-hour commercial salmon fishing periods in District 6 from 6:00 p.m. Friday, August 8 until 12:00 noon Sunday, August 10 and from 6:00 p.m. Monday, August 11 until 12:00 noon Wednesday, August 13.

Appendix A19.–Fall season commercial harvest summary, Yukon Area, 2008.

Period Number	Starting Time	Start Date	Ending Time	End Date	Hours Fished Drift	Hours Fished Set	Number of Fishermen	Fall Chum Salmon Number	Fall Chum Salmon Pounds	Fall Chum Salmon Average Weight	Coho Salmon Number	Coho Salmon Pounds	Coho Salmon Average Weight	Percent Coho
District 1														
1	3:00 PM	17 Jul	12:00 AM	17 Jul	9	9	77	2,131	14,602	6.9	7	47	6.7	0.3%
2	3:00 PM	22 Jul	12:00 AM	22 Jul	9	9	102	6,030	42,375	7.0	83	561	6.8	1.4%
3	3:00 PM	25 Jul	12:00 AM	25 Jul	9	9	125	4,905	34,552	7.0	205	1,321	6.4	4.0%
4	11:00 AM	29 Jul	8:00 PM	29 Jul	9	9	181	19,344	144,275	7.5	1,292	8,524	6.6	6.3%
5	11:00 AM	1 Aug	8:00 PM	1 Aug	9	9	189	18,303	133,705	7.3	2,458	15,823	6.4	11.8%
6	5:00 PM	26 Aug	9:00 PM	26 Aug	4	4	142	9,821	71,799	7.3	2,812	19,605	7.0	22.3%
7	3:00 PM	30 Aug	9:00 PM	30 Aug	6	6	65	851	6,249	7.3	1,379	9,518	6.9	61.8%
8	10:00 AM	2 Sep	7:00 PM	2 Sep	9	9	119	1,637	11,424	7.0	2,220	15,184	6.8	57.6%
9	7:00 AM	5 Sep	7:00 PM	5 Sep	9	12	103	2,051	14,390	7.0	1,696	11,831	7.0	45.3%
10	7:00 AM	8 Sep	7:00 PM	8 Sep	9	12	78	1,992	14,044	7.1	1,135	7,752	6.8	36.3%
11	7:00 AM	10 Sep	7:00 PM	10 Sep	9	12	73	639	4,403	6.9	659	4,566	6.9	50.8%
District 1 Subtotal:					91	100	251	67,704	491,818	7.3	13,946	94,732	6.8	17.1%
District 2														
1	3:00 PM	20 Jul	9:00 PM	20 Jul	6		35	710	4,684	6.6	1	5	5.0	0.1%
2	3:00 PM	23 Jul	9:00 PM	23 Jul	6		51	4,053	28,095	6.9	16	110	6.9	0.4%
3	12:00 PM	27 Jul	6:00 PM	27 Jul	6		60	2,262	15,568	6.9	53	329	6.2	2.3%
4	2:00 PM	30 Jul	8:00 PM	30 Jul	6		111	10,882	76,732	7.1	427	2,557	6.0	3.8%
5	8:00 AM	25 Aug	12:00 PM	25 Aug	4		80	3,382	24,729	7.3	2,966	20,038	6.8	46.7%
6	8:00 AM	28 Aug	2:00 PM	28 Aug	6		108	11,505	83,624	7.3	5,751	38,491	6.7	33.3%
7	8:00 AM	1 Sep	2:00 PM	1 Sep	6		123	3,718	25,027	6.7	4,670	31,268	6.7	55.7%
8	10:00 AM	4 Sep	6:00 PM	4 Sep	8		91	1,279	8,689	6.8	2,541	17,433	6.9	66.5%
9	10:00 AM	7 Sep	7:00 PM	7 Sep	9		63	1,421	9,955	7.0	1,563	10,629	6.8	52.4%
10	10:00 AM	10 Sep	7:00 PM	10 Sep	9		70	2,058	14,243	6.9	1,258	8,505	6.8	37.9%
District 2 Subtotal:					66		177	41,270	291,346	7.1	19,246	129,365	6.7	31.8%
Lower Yukon Area, Fall Season, Districts 1, 2, and 3 Subtotal:					166 [a]		428 [b]	108,974	783,164	7.2	33,192	224,097	6.8	23.3%

-continued-

							District 4							
1	6:00 PM	9 Sep	6:00 PM	14 Sep	120	0	0	0	0	-	0	0	-	-
District 4 Subtotal:					120	0	0	0	0	-	0	0	-	-
							Subdistricts 5-B and 5-C							
1	6:00 PM	8 Aug	6:00 PM	10 Aug	48	2	561	3,927	7.0	0	0	-	0.0%	
2	6:00 PM	12 Aug	6:00 PM	14 Aug	48	2	653	4,991	7.6	0	0	-	0.0%	
3	6:00 PM	15 Aug	6:00 PM	17 Aug	48	2	677	5,416	8.0	0	0	-	0.0%	
4	6:00 PM	5 Sep	6:00 PM	7 Sep	48	1	92	644	7.0	0	0	-	0.0%	
5	6:00 PM	9 Sep	6:00 PM	11 Sep	48	1	421	2,947	7.0	0	0	-	0.0%	
6	6:00 PM	12 Sep	6:00 PM	14 Sep	48	1	501	3,507	7.0	31	217	7.0	5.8%	
7	6:00 PM	16 Sep	6:00 PM	18 Sep	48	1	576	4,544	7.9	0	0	-	0.0%	
8	6:00 PM	19 Sep	6:00 PM	21 Sep	48	1	750	6,390	8.5	52	355	6.8	6.5%	
9	6:00 PM	23 Sep	6:00 PM	25 Sep	48	1	325	2,774	8.5	8	56	7.0	2.4%	
10	6:00 PM	26 Sep	6:00 PM	28 Sep	48	0	0	0	-	0	0	-		
11	6:00 PM	30 Sep	6:00 PM	2 Oct	48	0	0	0	-	0	0	-	-	
Subdistricts 5-B and 5-C Subtotal:					528	3	4,556	35,140	7.6	91	628	6.9	2.0%	
							Subdistricts 6-A, 6-B, and 6-C							
1	6:00 PM	15 Aug	12:00 PM	17 Aug	42	0	0	0	-	0	0	-	-	
2	12:00 PM	6 Sep	12:00 PM	7 Sep	24	6	694	4,858	7.0	350	2,408	6.9	33.5%	
3	12:00 PM	9 Sep	12:00 PM	10 Sep	24	3	480	3,528	7.4	133	798	6.0	21.7%	
4	6:00 PM	12 Sep	12:00 PM	14 Sep	42	5	1,182	9,432	8.0	86	714	8.3	6.8%	
5	6:00 PM	15 Sep	12:00 PM	17 Sep	42	4	904	7,405	8.2	208	1,740	8.4	18.7%	
6	6:00 PM	19 Sep	12:00 PM	21 Sep	42	4	1,444	11,701	8.1	638	4,671	7.3	30.6%	
7	6:00 PM	22 Sep	12:00 PM	24 Sep	42	4	554	4,421	8.0	374	3,053	8.2	40.3%	
8	6:00 PM	26 Sep	12:00 PM	28 Sep	42	4	398	3,303	8.3	508	4,052	8.0	56.1%	
9	6:00 PM	29 Sep	12:00 PM	1 Oct	42	1	79	621	7.9	111	869	7.8	58.4%	
District 6 Subtotal:					342	10	5,735	45,269	7.8	2,408	18,305	6.0	42.0%	
Upper Yukon Area, Fall Season, Districts 4, 5, and 6 Subtotals:					990	13	10,291	80,409	7.7	2,499	18,933	6.5	24.3%	
Yukon Area, Fall Season, Districts 1 Through 6 Total:					1,156	441	119,265	863,573	7.2	35,691	243,030	6.8	23.0%	

Note: The Lower Yukon Area total hours fished represents the total hours fished in the Set portion of District 1 in addition to the District 2 total. Number of unique permits fished by district, subdistrict, or area. Totals by area may not add up due to transfers between districts or subdistricts.

Appendix A20.–List of emergency orders pertaining to Districts 1–6 fall chum and coho salmon fishery, Yukon Area, 2008.

EO Number: 3-S-FY-01-08 Effective Date: July 17, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on July 17.

EO Number: 3-S-FY-02-08 Effective Date: July 20, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on July 22 and in District 2 on July 20.

EO Number: 3-S-FY-03-08 Effective Date: July 22, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on July 25 and in District 2 on July 23.

EO Number: 3-S-FY-04-08 Effective Date: July 27, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on July 29 and in District 2 on July 27.

EO Number: 3-S-FY-05-08 Effective Date: July 30, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on August 1 and in District 2 on July 30.

EO Number: 3-S-FY-06-08 Effective Date: August 8, 2008

Opens the commercial salmon fishing season in District 5 and schedules one 48-hour commercial salmon fishing period in Subdistricts 5-B and 5-C. Subsistence fishing in Subdistricts 5-B and 5-C remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-07-08 Effective Date: August 8, 2008

Waives the regulatory 24-hour subsistence fishing closure immediately before the start of the commercial fishing season in District 5.

EO Number: 3-S-FY-08-08 Effective Date: August 12, 2008

Establishes one 48-hour commercial salmon fishing period in Subdistricts 5-B and 5-C Subsistence fishing in Subdistricts 5-B and 5-C remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-09-08 Effective Date: August 15, 2008

Establishes one 42-hour commercial salmon fishing period in District 6. Subsistence fishing in District 6 will remain unchanged and will be open concurrently with the commercial salmon fishing period.

-continued-

EO Number: 3-S-FY-10-08 Effective Date: August 15, 2008

Establishes one 48-hour commercial salmon fishing period in Subdistricts 5-B and 5-C. Subsistence fishing in Subdistricts 5-B and 5-C remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-11-08 Effective Date: August 25, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on August 26 and in District 2 on August 25.

EO Number: 3-S-FY-12-08 Effective Date: August 28, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on August 30 and in District 2 on August 28.

EO Number: 3-S-FY-13-08 Effective Date: September 1, 2008

Establishes a commercial fishing period in District 2 on September 1.

EO Number: 3-S-FY-14-08 Effective Date: September 2, 2008

Establishes a commercial fishing period in District 1 including the Coastal Set Net Only Area on September 2.

EO Number: 3-S-FY-15-08 Effective Date: September 4, 2008

Establishes a commercial fishing period in the Coastal Set Net Only Area and one for the remainder of District 1 on September 5. Also establishes a commercial fishing period in District 2 on September 4.

EO Number: 3-S-FY-16-08 Effective Date: September 5, 2008

Establishes a commercial fishing schedule of two 48-hour periods per week in Subdistricts 5-B and 5-C. Subsistence fishing in Subdistricts 5-B and 5-C remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-17-08 Effective Date: September 6, 2008

Establishes two 24-hour commercial fishing periods in District 6 on September 6 and September 9. Subsistence fishing in Subdistricts 6-A and 6-B and personal use fishing in Subdistrict 6-C remains unaltered and is open concurrently with the commercial salmon fishing.

-continued-

EO Number: 3-S-FY-18-08 Effective Date: September 7, 2008

Establishes a commercial fishing period in the Coastal Set Net Only Area and one for the remainder of District 1 on September 8. Also establishes a commercial fishing period in District 2 on September 7.

EO Number: 3-S-FY-19-08 Effective Date: September 9, 2008

Establishes one 120-hour commercial fishing period in Subdistrict 4-A on September 9. Subsistence fishing in Subdistrict 4-A remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-20-08 Effective Date: September 10, 2008

Establishes a commercial fishing period in the Coastal Set Net Only Area, the remainder of District 1, and District 2 on September 10.

EO Number: 3-S-FY-21-08 Effective Date: September 12, 2008

Establishes a commercial fishing schedule of two 48-hour periods per week in District 6. Subsistence fishing in Subdistricts 6-A and 6-B and personal use fishing in Subdistrict 6-C remains unaltered and is open concurrently with the commercial salmon fishing.

EO Number: 3-S-FY-22-08 Effective Date: October 1, 2008

Closes the commercial salmon fishing season at 12:00 noon, October 1 which coincided with the end of the scheduled commercial fishing period in the same location. Subsistence salmon fishing also closed in Subdistricts 6-A and 6-B at the same time except for the Old Minto Area which closed at 6:00 p.m. Wednesday, October 1. Beginning at 12:00 noon, Thursday, October 2, subsistence salmon fishing reopen and remained open 7-days a week in Subdistricts 6-A and 6-B, including the Old Minto Area for the rest of the season. Personal use fishing in Subdistrict 6-C remains unchanged.

EO Number: 3-S-FY-23-08 Effective Date: October 3, 2008

Opens subsistence fishing in Subdistricts 4-A, 4-B, and 4-C 7-days per week, 24 hours per day.

EO Number: 3-S-FY-24-08 Effective Date: October 2, 2008

Closes the commercial salmon fishing season in District 5. Subsistence fishing in Subdistricts 5-A, 5-B, and 5-C is unchanged and will remain on the five days per week schedule. Subsistence fishing in Subdistrict 5-D is unchanged and remains open 7-days per week, 24 hours per day.

Appendix A21.–Canadian weekly commercial catches of Chinook, fall chum and coho salmon in the river in 2008.

Statistical Week	Week Ending	Start Date	Finish Date	Days Fished	Number Fishing	Boat Days	Chinook Salmon	Chum Salmon	Coho Salmon
27	5 Jul			closed					
28	12 Jul			closed					
29	19 Jul			closed					
30	26 Jul			closed					
31	2 Aug			closed					
32	9 Aug			closed					
33	16 Aug			closed					
34	23 Aug			closed					
35	30 Aug			closed					
36	6 Sep	31 Aug	4 Sep	4	1	4	1	4	0
37	13 Sep	5 Sep	9 Sep	4	3	12	0	448	0
38	20 Sep	12 Sep	16 Sep	4	3	12	0	1,031	0
39	27 Sep	19 Sep	3 Oct	14	4	56	0	2,134	0
40	4 Oct								
41	11 Oct								
42	18 Oct	3 Oct	17 Oct	14	3	42	0	445	0
Dawson Area Subtotal				40	11	126	1	4,062	0
Upriver Commercial Subtotal				40	0	0	0	0	0
Total Commercial Harvest							1	4,062	0
Chinook & Chum Test Fisheries (Chum is live release)							513		
Domestic Harvest							0	0	0
Estimated Recreational Harvest								0	0
Aboriginal Fishery Catch							2,885	2,068	0
Total Upper Yukon Harvest							3,399	6,130	0
Old Crow Aboriginal Fishery							314	3,436	200
Old Crow Test Fishery								(1,269)[a]	

[a] These fish were released.

Appendix A22.–Subsistence and personal use salmon harvest estimates which include commercially related and test fish harvests provided for subsistence use, and related information, Yukon Area, 2008.

Community	Survey Date, Permit Area [a]	Number of Fishing Households [b]	Number of Dogs [c]	Estimated Harvest				Primary Gear Used [d]		
				Chinook	Summer Chum	Fall Chum	Coho	Set Gillnet	Drift Gillnet	Fish Wheels
Hooper Bay	9/11-14	111	226	388	12,007	329	66	52	2	0
Scammon Bay	9/10-11	54	99	1,104	6,113	57	50	24	0	0
Coastal District Total		165	325	1,492	18,120	386	116	76	2	0
Nunam Iqua [e]	9/10	18	64	163	1,949	59	24	13	3	0
Alakanuk [f]	9/8-9	81	203	1,238	6,881	423	157	16	19	0
Emmonak [f]	9/5-7	84	210	2,696	9,646	1,670	717	10	37	0
Kotlik [f]	9/7-9	67	118	2,066	4,291	671	313	17	11	0
District 1 Subtotal		250	595	6,163	22,767	2,823	1,211	56	70	0
Mountain Village [f]	9/18-21	90	148	1,645	7,559	926	518	7	41	0
Pitkas Point	9/17	17	37	544	1,246	101	130	1	13	0
St. Mary's [f]	9/15-17	97	87	1,756	6,451	830	591	0	52	0
Pilot Station [f]	9/21-23	55	114	1,597	6,012	917	268	0	29	0
Marshall [f]	9/24	52	160	3,284	3,023	748	490	0	20	0
District 2 Subtotal		311	546	8,826	24,291	3,522	1,997	8	155	0
Russian Mission	9/25-26	57	200	2,949	2,400	578	372	11	8	0
Holy Cross	9/22-23	35	67	2,509	441	920	38	7	17	0
Shageluk	9/24	18	47	397	130	323	0	4	7	0
District 3 Subtotal		110	314	5,855	2,971	1,821	410	22	32	0
Lower Yukon River Total		671	1,455	20,844	50,029	8,166	3,618	86	257	0
Anvik	9/25	16	71	1,433	340	317	40	6	7	0
Grayling	9/26	34	68	1,761	660	1,012	25	1	9	0
Kaltag [f]	10/6	40	63	2,403	916	620	45	0	14	0
Nulato	10/7	37	109	1,250	468	729	195	2	12	0
Koyukuk	10/8-10	19	79	513	1,104	1,177	84	2	14	1
Galena	10/3-6	75	339	2,232	758	1,364	558	10	16	0
Ruby	10/2-3	15	88	637	655	657	291	5	0	5
District 4 Yukon River Subtotal		236	817	10,229	4,901	5,876	1,238	26	72	6
Huslia	10/6-7	22	179	255	4,377	64	100	8	0	0
Hughes	10/7-8	7	39	61	944	127	0	5	0	0
Allakaket	10/27	14	116	58	3,229	1,345	152	9	0	0
Alatna	10/27	4	4	16	66	0	0	2	0	0
Bettles	10/28-29	0	23	0	0	0	0	0	0	0
Koyukuk River Subtotal		47	361	390	8,616	1,536	252	24	0	0
District 4 Subtotal		283	1,178	10,619	13,517	7,412	1,490	50	72	6

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Community	Survey Date, Permit Area [a]	Number of Fishing Households [b]	Number of Dogs [c]	Estimated Harvest				Primary Gear Used [d]		
				Chinook	Summer Chum	Fall Chum	Coho	Set Gillnet	Drift Gillnet	Fish Wheels
Tanana	10/13-14	41	352	3,981	2,877	17,478	1,511	13	0	7
Rampart	permits	2	2	136	27	1,000	0	1	0	1
Fairbanks NSB [g]	permits	52	172	1,898	119	659	7	45	0	2
Stevens Village [h]	10/13-14, permits	15	76	753	163	643	0	11	0	0
Birch Creek	10/23-24	6	9	32	0	30	0	2	0	0
Beaver	10/20-21	16	25	546	27	13	6	12	0	0
Fort Yukon	10/16-19	61	299	1,991	230	14,252	1,618	13	2	14
Circle	permits	11	66	519	5	3,198	0	6	0	7
Central	permits	5	9	48	0	0	0	4	0	1
Eagle [f]	permits	29	236	1,068	14	15,269	0	18	0	8
Other District 5 [i]	permits	6	85	362	25	3,153	61	5	0	1
District 5 Yukon River Subtotal		244	1,331	11,334	3,487	55,695	3,203	130	2	41
Venetie	10/19-20	17	91	292	50	1,563	0	7	0	0
Chalkyitsik	10/20	0	35	0	0	0	0	0	0	0
Chandalar and Black Rivers Subtotal		17	126	292	50	1,563	0	7	0	0
District 5 Subtotal		261	1,457	11,626	3,537	57,258	3,203	137	2	41
Manley	permits	12	138	106	144	7,058	4,243	11	0	2
Minto	permits	9	158	12	9	28	0	7	0	0
Nenana [f]	permits	20	199	327	950	7,512	2,775	9	0	10
Healy	permits	3	37	13	0	1,030	1,105	3	0	0
Fairbanks NSB [j]	permits	109	172	229	346	651	349	35	0	2
Other District 6 [k]	permits	26	178	44	0	37	6	19	0	1
District 6 Tanana River Subtotal [l]		179	882	731	1,449	16,316	8,478	84	0	15
Upper Yukon River Total		723	3,517	22,976	18,503	80,986	13,171	271	74	62
Survey Village Subtotal		1,275	3,845	37,279	80,737	47,354	7,754	270	333	27
Subsistence Permit Subtotal [m]		146	1,403	4,626	1,190	33,786	6,085	136	0	35
Subsistence Test Fish Subtotal [n]		-	-	3,277	4,276	2,592	605	-	-	-
District 6 Commercial Related [o]				4	311	5,625	2,411	-	-	-
Subsistence Harvests Subtotal		1,421	5,248	45,186	86,514	89,357	16,855	406	333	62
Personal Use Permit Subtotals		29	-	126	138	181	50	27	0	0
Alaska, Yukon River Total [p]		1,394	4,972	43,820	68,532	89,152	16,789	357	331	62
Alaska, Yukon Area Total		1,559	5,297	45,312	86,652	89,538	16,905	433	333	62
AK, Yukon Area Percentages of the Total		-	-	19%	36%	38%	7%	48%	37%	7%

-continued-

[a] Data collected by Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries. Survey data is expanded for number of fishing households, number of dogs, and harvest. Permit data is unexpanded, and is from all permits received as of April 15, 2009.

[b] Estimated number of households that fished in surveyed communities or number of permit households who reported fishing in permit required areas.

[c] The number of dogs is based on survey information or from subsistence permits issued.

[d] Primary fishing gear used is based on survey information or from subsistence permits issued. Primary gear information for surveyed communities is not expanded for households that were not surveyed.

[e] Formerly known as Sheldon or Sheldon's Point.

[f] Test fish have been added to the total fish harvested in a surveyed and permit required communities.

[g] Fairbanks North Star Borough (FNSB) households that obtained a permit and indicated they fished in the Yukon River permit required area.

[h] Permit harvest information from Stevens Village residents was used to complement the information obtained by the survey.

[i] "Other District 5" includes residents of Anchorage, Anderson, Big Lake, Healy, Manley, Minto, Nenana, Northway, Tok, and Wiseman who obtained a household permit and fished in a Yukon River permit required area.

[j] Fairbanks North Star Borough (FNSB) households that obtained a subsistence and/or personal use permit and indicated they fished in the Tanana River permit required area.

[k] "Other District 6" includes residents of the Upper Tanana River drainage communities of Delta Junction, Northway, Tanacross, and Tok, and the communities of Circle and Chugiak who obtained a permit and fished in the Tanana River.

[l] Does not include harvest of female chum and coho salmon sold commercially for roe and carcasses returned to fishermen for dog food in Subdistrict 6-B.

[m] Subsistence permit subtotal does not include Stevens Village permit information.

[n] Test fish given away for subsistence use.

[o] District 6 Commercial Related included fish caught during commercial fishing and not sold but retained for subsistence use.

[p] Does not include Coastal District.

Appendix A23.–Reported subsistence and personal use fish harvested under the authority of a permit, listed by permit area, Yukon Area, 2008.

Permit Fishing Area	Permits Issued [b]	Permits Returned	Percent Returned	Number of Permits Returned that Fished [c]	Reported Harvest: Chinook [d]	Summer Chum [d]	Fall Chum [d]	Coho [d]	Whitefish	Sheefish	Burbot	Pike	Suckers	Grayling
Subsistence Permit														
Koyukuk Middle and South Fork Rivers	1	1	100%	1	0	0	0	0	10	0	0	0	15	27
Yukon River Rampart Area	18	18	100%	15	1,049	43	1,000	0	20	0	0	0	0	0
Yukon River near Haul Road Bridge	73	68	93%	44	1,434	130	705	7	192	71	61	57	0	0
Yukon River near Circle and Eagle [e]	96	87	91%	50	1,808	19	18,496	0	197	34	10	16	78	368
Tanana River Subdistrict 6A	34	32	94%	17	115	146	2,583	1,987	96	1	1	71	0	0
Tanana River Subdistrict 6B [f]	73	71	97%	35	486	854	7,815	4,009	403	0	4	121	21	11
Tanana River Upstream of Subdistrict 6C	58	50	86%	19	0	0	17	6	2,185	0	10	62	27	35
Kantishna River Subdistrict 6A	4	3	75%	2	0	0	95	15	0	0	0	10	0	0
Tolovana River Pike Subdistrict 6B	146	136	93%	79	0	0	0	0	258	3	3	1,339	0	47
Subsistence Permit Subtotals	503	466	93%	262	4,892	1,192	30,711	6,024	3,361	109	89	1,676	141	488
Personal Use Permit														
Tanana River Salmon Subdistrict 6C	51	50	98%	25	126	138	181	50	13	2	0	2	0	0
Tanana River Whitefish Upstream of Subdistrict 6C	6	6	100%	4	0	0	0	0	28	0	0	0	157	0
Personal Use Permit Subtotals	57	56	98%	29	126	138	181	50	41	2	0	2	157	0
Permit Totals	560	522	93%	291	5,018	1,330	30,892	6,074	3,402	111	89	1,678	298	488

[a] Permits returned as of April 9, 2009.

[b] Includes 53 households that were "issued" permits for more than one area, one household that was issued duplicate permits for same area, and three permit holders issued an additional SE or SEU permit to track harvest above and below Eagle sonar.

[c] Includes 10 households that "fished" in two different permit areas.

[d] Does not include District 6 commercial related harvest of 6 Chinook, 301 summer chum, 5,625 fall chum, and 2,411 coho salmon caught but "not sold" during commercial fishing and retained for subsistence use in 2008

[e] Does not include fish distributed to community households from ADF&G Eagle Sonar test fish project (6 Chinook and 3 fall chum salmon).

[f] Includes some fish distributed to community households from ADF&G Nenana test fish wheel project that were documented on contractor's subsistence permit.

Appendix A24.–Detailed salmon spawning escapement estimates for the Yukon River drainage, 2008.

Stream (drainage)	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho	Agency
Andreafsky River							
East Fork (weir)	6/21-7/30	–	4,242	57,259	–	–	USFWS
East Fork	7/24	Poor	(278)	(9,300)	–	–	ADF&G
West Fork	7/24	Poor	262	25,850	–	–	ADF&G
	Andreafsky Subtotal		4,504	83,109	–	–	
Pilot Station (sonar estimate)	6/7-9/7	–	(130,643)	(1,665,667)	(615,127)	(135,570)[a]	ADF&G
Anvik River (sonar estimate)	6/18-7/26	–	–	374,929	–	–	ADF&G
Goblet Creek to Yellow R.	7/23	Too Early	41	(7,200)	–	–	ADF&G
Yellow R. to McDonald Cr. (Chinook index area)[b]	7/23	Too Early	827	(11,795)	–	–	ADF&G
Swift River	7/23	Too Early	11	(680)	–	–	ADF&G
Beaver Creek	7/23	Too Early	81	(1,150)	–	–	ADF&G
Otter Creek	7/23	Too Early	32	(280)	–	–	ADF&G
	Anvik Subtotal		992	374,929	–	–	
Nulato River							
North Fork [c]	7/24	Fair	415	12,070	–	–	ADF&G
South Fork	7/24	Fair	507	10,715	–	–	ADF&G
Total Lower Yukon River (downstream of Koyukuk River)			6,418	480,823	–	–	
Koyukuk River Drainage							
Gisasa River (weir)	6/24-7/30	–	1,738	36,938	–	–	USFWS
Gisasa River (aerial)	7/24	Fair	(487)	(20,470)	–	–	ADF&G
Henshaw Creek (weir)	7/2-8/8	–	766	96,731	–	–	TCC
Total Koyukuk River			2,504	133,669	–	–	
Tozitna River (weir)[d]	6/27-8/7	–	681	8,470	–	–	BLM
Tozitna River (helicopter)	9/29	Fair	–	–	50	200	BLM
	Tozitna Subtotal		681	8,470	50	200	

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Stream (drainage)	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho	Agency
Total Yukon River (downstream of Tanana River)			9,603	622,962	50	200	
Tanana River Drainage							
Kantishna River Drainage							
Toklat Springs (foot survey)							
Main Channel and Sloughs	10/22-10/23	Fair	–	–	1,206	6	TCC
Geiger Creek	10/22-10/23	Fair	–	–	473	195	TCC
	Kantishna/Toklat Subtotal		–	–	1,679	201	
Chatanika River	7/22	Fair	14	0	–	–	ADF&G
Nenana River Drainage							
Teklanika River	10/8	Good	–	–	–	1,539	BSFA
Seventeen Mile Slough	10/8	Good	–	–	–	1,652	BSFA
Julius Creek	10/8	Good	–	–	–	0	BSFA
Wood Creek	10/8	Good	–	–	–	578	BSFA
Clear Creek	10/8	Good	–	–	–	292	BSFA
Glacier Creek [e]	10/8	Good	–	–	–	0	BSFA
Lost Slough (western floodplain)	10/8	Good	–	–	–	1,342	BSFA
Lignite Springs (foot survey)	10/16	Good	–	–	–	343	BSFA
June Creek (foot survey) [f]	10/16	Good	–	–	–	42	BSFA
	Nenana Subtotal		–	–	–	5,788	
Chena River							
Moose Creek Dam to West Fork	7/24	Fair	(490)	(37)	–	–	ADF&G
Chena River (counting tower estimate) [a]	6/28-8/4	–	3,208	1,300	–	–	ADF&G

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Stream (drainage)	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho	Agency
Salcha River							
Salcha River (aerial index area)	7/17	Poor	(435)	–	–	–	ADF&G
Salcha River (outside aerial index area)	7/17	Poor	(93)	–	–	–	ADF&G
Salcha River (counting tower estimate) [a, g]	6/25-8/4	Poor	5,415	2,212	–	–	BSFA
Richardson Clearwater River	11/12	Good	–	–	132	265	ADF&G
Mainstem Tanana Sloughs (helicopter survey)							
Benchmark 735 Slough	11/12	Fair	–	–	87	40	ADF&G
Little Delta River mouth vicinity	11/12	Fair	–	–	168	231	ADF&G
Whitestone Slough	11/12	Fair	–	–	1	2	ADF&G
Rika's Roadhouse vicinity	11/12	Fair	–	–	400	0	ADF&G
Bluff Cabin Island Slough	11/12	Fair	–	–	77	0	ADF&G
Clearwater Lake Outlet Slough	10/30	Good	–	–	177	1,275	ADF&G
Pearse Slough and vicinity	11/12	Fair	–	–	0	0	ADF&G
Goodpaster River (counting tower estimate)	7/7-7/28	–	505	–	–	–	TCC/BSFA
Delta River							
Foot Survey (peak count)	10/29, 11/26	–	–	–	(16,352)	47	ADF&G
Population Estimate [h]		–	–	–	23,055	–	ADF&G
Blue Creek (foot survey)	11/4	Good	–	–	347	31	ADF&G
Bluff Cabin Slough (foot survey)	11/6	Fair	–	–	1,198	8	ADF&G
Bluff Cabin Creek	11/12	Fair	–	–	90	2	ADF&G
Delta Clearwater River Index Area (boat survey)	10/30	Good	–	–	50	7,450	ADF&G
Delta Clearwater River Tributaries	10/30	Good	–	–	0	1,917	ADF&G
Tok Overflow #1 (foot survey)	10/29	Good	–	–	–	50	AP&T
Total Tanana River			9,142	3,512	27,461	17,307	
Chandalar River (sonar estimate) [i]	8/8-9/26	–	–	–	178,278	–	USFWS

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Stream (drainage)	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho	Agency
Porcupine River Drainage							
Sheenjek River (sonar estimate) [i]	8/9-9/24	–	–	–	50,353	–	ADF&G
Black River (mainstem, helicopter)	9/24	Poor	–	–	0	0	BLM
Salmon Fork (helicopter)	9/23	Fair	–	–	3,098	0	BLM
Kevinjik Creek (helicopter)	9/23	Poor	–	–	54	0	BLM
Grayling Fork (helicopter)	9/24	Poor	–	–	0	0	BLM
	Black River Subtotal		–	–	3,152	0	
Fishing Branch River (weir) [i]	9/8-10/24	–	–	–	19,086	–	DFO
Total Porcupine River			–	–	72,591	0	
Eagle (sonar estimate) [i]	7/6-10/6	–	(38,097)	–	(193,397) [i]	–	ADF&G/DFO
Total Alaska Portion of Drainage Observed Escapements [j]			18,745	626,474	262,446	17,507	
Yukon Territory Streams							
Blind Creek (weir)	7/25-8/19	–	276	–	–	–	DFO [k]
Little Salmon River (index area)	8/21	–	93	–	–	–	DFO
Big Salmon River (index area)	8/18	Fair/Good	(303)	–	–	–	DFO
Big Salmon River (sonar estimate)	7/16-8/25	–	1,329				DFO [k]
Teslin River Drainage							
Wolf River	8/18	Fair/Good	22	–	–	–	DFO
Whitehorse Fishway	8/7-9/4	–	399	–	–	–	DFO [k]
Subtotal Individual Mainstem Sites			2,119	–	–	–	

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Stream (drainage)	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho	Agency
Canadian Mainstem Yukon River							
Border Passage Estimate (Eagle sonar minus U.S. harvest) [l]			(37,282)	–	(174,028)	–	ADF&G/DFO
Canadian Escapement Estimate (Border passage minus Canada harvest)			33,883	–	167,898	–	ADF&G/DFO
Total Yukon Territory [m]			33,883	–	186,984	–	
Yukon River Drainage Totals Observed Escapements			52,628	626,474	449,430	17,507	

Note: Data in parentheses are not included in subtotals or totals. Aerial unless otherwise noted.

[a] Considered to be a conservative estimate due to the project ending before the completion of the salmon run (coho salmon for Pilot and summer chum salmon for Chena and Salcha tower projects).

[b] Anvik River chum salmon index area includes mainstem counts between Goblet Creek and McDonald Creek.

[c] Nulato River mainstem aerial survey counts below the forks are included with the North Fork.

[d] Aerial surveys were also flown above and below the weir counting redds (total 175 Chinook and 693 chum salmon redds occupied in total).

[e] Beaver dam blocking stream mouth.

[f] Incomplete survey (access to private property issue).

[g] Chum salmon is considered a minimum estimate because of many missed days.

[h] Population estimate based upon replicate foot surveys and salmon stream-life data.

[i] End of the season was expanded for fish that may have passed after operations ceased.

[j] Total for Alaska portion of drainage does not include Fishing Branch River. Total for Yukon Territory includes Fishing Branch River.

[k] Yukon Territory Counts provided by DFO but are operated by various contractors mostly funded by Restoration and Enhancement Funds.

[l] Canadian "border passage" estimate for Yukon Territory streams (excluding the Fishing Branch River). Canadian harvest has not been removed.

[m] Yukon Territory counts include Canadian mainstem Yukon River escapement estimate plus Fishing Branch River.