

Fishery Data Series No. 11-16

**Salmon Age and Sex Composition and Mean Lengths
for the Yukon River Area, 2009**

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient (multiple)	R
milliliter	mL	west	W	correlation coefficient (simple)	r
millimeter	mm	copyright	©	covariance	cov
		corporate suffixes:		degree (angular)	$^\circ$
Weights and measures (English)		Company	Co.	degrees of freedom	df
cubic feet per second	ft ³ /s	Corporation	Corp.	expected value	E
foot	ft	Incorporated	Inc.	greater than	>
gallon	gal	Limited	Ltd.	greater than or equal to	\geq
inch	in	District of Columbia	D.C.	harvest per unit effort	HPUE
mile	mi	et alii (and others)	et al.	less than	<
nautical mile	nmi	et cetera (and so forth)	etc.	less than or equal to	\leq
ounce	oz	exempli gratia (for example)	e.g.	logarithm (natural)	ln
pound	lb	Federal Information Code	FIC	logarithm (base 10)	log
quart	qt	id est (that is)	i.e.	logarithm (specify base)	log ₂ , etc.
yard	yd	latitude or longitude	lat. or long.	minute (angular)	'
		monetary symbols (U.S.)	\$, ¢	not significant	NS
Time and temperature		months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
day	d	registered trademark	®	percent	%
degrees Celsius	°C	trademark	™	probability	P
degrees Fahrenheit	°F	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
degrees kelvin	K	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
hour	h	U.S.C.	United States Code	second (angular)	"
minute	min	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
second	s			standard error	SE
Physics and chemistry				variance	
all atomic symbols				population	Var
alternating current	AC			sample	var
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				

FISHERY DATA SERIES NO. 11-16

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by
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ABSTRACT

Biological data were collected from Chinook *Oncorhynchus tshawytscha*, summer chum *O. keta*, fall chum *O. keta*, and coho salmon *O. kisutch* at 34 locations along the U.S. portion of the Yukon River drainage in 2009. Age, sex, and length (ASL) data were obtained from 9,155 Chinook, 6,482 summer chum, 2,877 fall chum, and 627 coho salmon from commercial and subsistence harvests, as well as test fisheries and escapement projects. Samples were collected using gillnets, fish wheels, beach seines, weir traps, rod and reel, and from carcass surveys. Where available, escapement estimates from sonar and weir projects were separated into temporal segments (strata) and commercial harvests were separated into fishery periods, and characterized by the ASL data collected during the corresponding stratum or period. At most test fishery projects data were stratified by quartiles based on sample sizes.

In 2009, age-1.4 Chinook salmon predominated most of the subsistence, test fishery, and escapement samples. Age-1.4 Chinook salmon percentages were above average at most projects. Summer and fall chum salmon commercial, subsistence, test fishery, and escapement samples were primarily composed of age-0.3 and age-0.4 fish. Age-2.1 coho salmon predominated in the commercial and test fishery samples.

Key Words: Yukon River, Chinook *Oncorhynchus tshawytscha*, summer and fall chum, *O. keta*, coho *O. kisutch* salmon, age, sex, length (ASL), escapement, weir, test fish, subsistence, commercial.

INTRODUCTION

The Yukon River drainage encompasses coastal waters from Canal Point light, near Cape Stephens, southward to the Naskonat Peninsula (Hayes et al. 2008), and upstream to the headwaters near Whitehorse, Canada (Figure 1). The drainage supports major runs of Chinook *Oncorhynchus tshawytscha*, summer chum *O. keta*, fall chum *O. keta*, and coho salmon *O. kisutch*. All three of these salmon species are harvested in commercial, subsistence, personal use, test, and sport fisheries in Alaska. Harvests also occur in the Canadian portion of the drainage by commercial, subsistence, aboriginal, sport, and domestic fishermen (JTC 2009). Pink *O. gorbuscha* and sockeye salmon *O. nerka* are also indigenous to the drainage; however, neither species are harvested by fishermen to any significant extent.

Adult Chinook and summer chum salmon runs typically enter the mouth of the Yukon River during late May to begin their upstream migration. These runs are followed by fall chum salmon, which enter the Yukon River from mid-July through early September. Summer chum are genetically distinct from fall chum salmon (Crane et al. 2001). In addition, summer chum can be distinguished from their fall counterparts by their smaller size, lower oil content, and spawning locations. Summer chum spawn in the lower and middle portion of the drainage, whereas fall chum salmon spawn in the upper portion of the drainage (Hayes et al. 2008). Coho salmon enter the Yukon River from late July through September.

For management purposes, the Alaskan portion of the drainage is divided into 7 districts and 10 subdistricts (Figure 2). The Lower Yukon Area consists of the Coastal District and Districts 1, 2, and 3. The Upper Yukon Area consists of Districts 4, 5, and 6.

Yukon River drainage salmon age, sex, and length (ASL) data have been collected since 1960. Data were historically recorded using handwritten forms, computerized mark-sense forms, and most recently, electronic data loggers. Annual ASL data summaries have been reported in various formats. From 1962 through 1968 these data were reported in Annual Management Reports or Arctic Anadromous Fishery Investigation Reports. From 1969 through 1981 data were reported in Salmon Age, Sex, and Size Composition, an Alaska Department of Fish and Game (ADF&G) special report series. From 1982 through 1988 data were published in the

Technical Fisheries Report series (e.g., Buklis 1987). For the years 1989, 1992, and 1994 data were published in the Regional Information Report series (e.g., Menard 1996). For the years 1990, 1991, 1993, and 1995 through 2003, Yukon ASL data were reported as an unpublished memorandum. In 2004, ADF&G Division of Commercial Fisheries (DCF) began using the Fishery Data Series to report annual Yukon ASL data (e.g., Horne-Brine et al. 2009). Individual salmon ASL data collected in the Yukon River area have been incorporated into the AYK Salmon Database Management System and are available from the ADF&G website <http://sf.adfg.state.ak.us/CommFishR3/Website/AYKDBMSWebsite/DataTypes/ASL.aspx>

The purpose of this report is to provide the 2009 Yukon River drainage salmon ASL summary data collected from various commercial and subsistence harvests, test fisheries, and escapement projects (Table 1). ASL data and summaries provide the basis for a variety of analyses including pre-season run outlooks, assessment of females and older-aged fish in escapements, and spawner-recruit models.

OBJECTIVE

To summarize age, sex, and size data from Chinook, summer chum, fall chum, and coho salmon collected throughout the Alaska portion of the Yukon River drainage.

COMMERCIAL FISHERIES

Commercial fishing occurs throughout the mainstem Yukon River and in the lower 224 river miles (rm) of the Tanana River. Historically, the majority of commercially caught Chinook and summer chum salmon are harvested from Districts 1 and 2, with smaller harvests occurring in the other districts. Fall chum and coho salmon are typically harvested in Districts 1, 2, 5, and 6.

Set and drift gillnets are the only legal gear in the Lower Yukon Area (Districts 1, 2, and 3; Figure 2; ADF&G 2007). During the summer season (ending July 15 in District 1), when Chinook salmon are usually targeted, commercial fishing is typically restricted to 8" and larger mesh sizes or the mesh size is unrestricted. In 2009, thirteen commercial fishing periods occurred from June 29 to July 16 in Districts 1 and 2 targeting summer chum salmon and the gillnet mesh size was restricted to 6" or less (Hayes and Newland 2009). Chinook salmon were not targeted because the preseason outlook for the Chinook salmon run was expected to be below average to poor and inseason the run was assessed to be weak. Delaying the first commercial period until June 29 allowed the majority of the Chinook salmon run to pass upriver. Processors and catcher-processors did not purchase or sell Chinook salmon that were incidentally harvested during the Districts 1 and 2 summer chum-directed commercial fisheries.

Historically, set gillnets and fish wheels were the only legal gear in the Upper Yukon Area (Districts 4, 5, and 6; Figure 2), except for Subdistrict 4-A where drift gillnets are allowed. In 2005, regulations changed to allow drift gillnets in Subdistricts 4-B and 4-C (ADF&G 2007). In 2009, all summer season commercial fishing periods targeted summer chum salmon in the Upper Yukon Area. Four periods occurred from July 7 to July 16 in the Subdistrict Y4-A roe-directed fishery where fish wheels were used to harvest female summer chum salmon; sex was visually estimated and males were live released or retained for subsistence use (Hayes and Newland 2009). Six periods occurred from July 25 to August 10 to harvest summer chum salmon in District 6 using fish wheels or gillnets.

During the fall season (starting July 16 in District 1), all Lower Yukon Area commercial fishing periods allowed unrestricted mesh size gillnets; however, commercial fishermen typically use gillnets with 6" or less mesh sizes to target fall chum and coho salmon. Seven commercial periods opened in Districts 1 and 2 from July 17 to August 5 to target late summer chum and early fall chum salmon (Bue and Borba 2009). Inseason assessment of the fall chum salmon run indicated the return was low and further commercial fishing was delayed until the majority of the fall chum salmon run had passed the Lower Yukon Area. Three additional commercial periods occurred in District 1 from September 6 to 10 to target later run timing coho salmon. Four commercial periods were scheduled in District 6 from September 18 to 30 in a female-only roe directed fishery.

SUBSISTENCE FISHERIES

Subsistence fishing occurs throughout the Yukon River drainage, with most of the effort concentrated in the mainstem. Alaska state law mandates that subsistence use of fish has priority over other uses (AS 16.05.258, ADF&G 2007). Chinook, summer chum, fall chum, and coho salmon are the principal species utilized by subsistence fishermen. The primary gear used to harvest subsistence salmon in Districts 1, 2, and 3 are set and drift gillnets; a mixture of gillnets and fish wheels are used in Districts 4, 5, and 6 (Busher et al. 2009). Many fishermen use 8" or larger mesh sizes, known as 'king nets', early in the season to target larger Chinook salmon; then change to 6" or smaller mesh sizes, known as 'chum nets', later in the season to target summer chum, fall chum, and coho salmon.

Chinook salmon returns for 2009 were projected to be below average to poor (JTC 2009). Since 2001, the summer season subsistence salmon fishery has been put on a schedule consistent with Chinook salmon migratory timing as the run progresses upstream. To conserve Canada-bound Chinook salmon, the subsistence fishing schedule was reduced by one-half, effective June 8 in District 1 and implemented geographically upriver by district (Hayes and Newland 2009). In the Lower Yukon Area this was a reduction from two 36-hour periods weekly to two 18-hour periods weekly.

When inseason assessment indicated that the Chinook salmon return was below preseason estimates, additional subsistence restrictions were put in place. To conserve the first pulse of Chinook salmon, two subsistence fishing periods were closed and mesh size was restricted to 6" or less after the closure, for 1 or 2 periods. These restrictions began June 15 in District 1 and were implemented chronologically upriver as the first pulse traveled upstream. These additional restrictions combined with the reduced schedule effectively closed portions of the river to subsistence fishing for a 10-day period as the first pulse of Chinook salmon traveled upriver. Beginning July 15, the subsistence fishing restrictions were lifted in District 1 and subsistence salmon fishing was open 7 days per week except for 12 hours before, during, and 12 hours after commercial fishing periods with unrestricted mesh size gillnets (Bue and Borba 2009). When inseason assessment of the fall chum salmon run indicated the return was low a subsistence fishing schedule was implemented that allowed reduced fishing time. After the majority of the fall chum salmon run had passed the reduced subsistence fishing schedule was lifted.

TEST FISHERIES

Test fishery projects provide assessments of run strength, timing, and ASL composition. Test fishery projects in 2009 operated in marine waters and in the mainstem Yukon River.

OFFSHORE TEST FISHERY

In 2009, in cooperation with the Yukon Delta Fisheries Development Association (YDFDA), a drift gillnet test fishery operated offshore of Dall Point, in the vicinity of Hooper Bay. This fishery was relocated to Cape Romanzof, and eventually to Scammon Bay due to logistics. The purpose of this project was to evaluate the feasibility of estimating run timing and relative abundance of salmon before they enter the Yukon River.

Test fishing was conducted twice daily according to tides and weather conditions at two sites with drift gillnets 100 fathoms in length. Nets with 8.25" mesh (28 and 35 meshes deep) were used for Chinook salmon, 5.5" mesh (35 and 45 meshes deep) were used for summer chum salmon, and 6.0" mesh (35 and 45 meshes deep) were used for fall chum and coho salmon. ASL data and genetic samples were collected all test fishery catches by DCF crew (Steve Hayes, Commercial Fisheries Biologist, ADF&G, Anchorage, personal communication about Operational Plan—*Hooper Bay/Dall Point Offshore Salmon Test Fish Feasibility Study*).

LOWER YUKON TEST FISHERY

The Big Eddy and Middle Mouth test fisheries, located in District 1 near river mile 24, are referred to as the Lower Yukon test fishery (LYTF). Since 1979, the LYTF has utilized set and drift gillnets to estimate run timing and relative abundance of Chinook, summer chum, fall chum, and coho salmon returning to the Yukon River. The Big Eddy test fishery is located on Kwikluak Pass (South Mouth) near the village of Emmonak (Figure 1). The Middle Mouth test fishery is located on Kwipak Pass, upstream of Kawanak Pass (Middle Mouth) and Apoon Pass (North Mouth, Figure 1; Horne-Brine and Bue 2008).

Typically, each of the Big Eddy and Middle Mouth test fisheries have two fishing stations that target Chinook salmon using 8.5" set gillnets, 2 stations that target summer chum salmon using 5.5" drift gillnets, and 2 stations that target fall chum and coho salmon using 6.0" drift gillnets. During the summer season (June 1–July 15), the 8.5" set gillnets are fished 24 hours a day and checked every 12 hours. The 5.5" drift gillnets are fished for 20 minutes at each station twice a day (Newland and Hayes 2008). During the fall season (July 16–August 31), 6.0" drift gillnets are fished for 20 minutes at each station twice a day (Horne-Brine and Bue 2008). Beginning August 9, 2009 a third drift station, near Big Eddy, was added to LYTF because of low catches in the usual locations. Operating under the same guidelines as the 2 historical stations the third “experimental” drift site continued through the end of the fall season.

LYTF is the longest-standing test fishery project in the Yukon River drainage. Biological samples have been collected at one or both of the LYTF locations from Chinook (most years since 1974, chum (since 1979), and coho salmon (most years since 1981).

COMPARATIVE MESH SIZE STUDY

The comparative mesh size study is a three-year project (2007–2009) to gain information about the catch composition of Chinook and summer chum salmon harvested using 7.0", 7.5" and 8.0" mesh drift gillnets. Specifically, the goals are to: determine the proportion of Chinook and summer chum salmon by mesh size; determine age, sex, length, weight, and girth of Chinook salmon by mesh size; and evaluate marketability of the catch by mesh size (JTC 2009).

The comparative mesh size study operated from mid to late June at two stations along the north and south banks of Kwikluak Pass (South Mouth) near the Big Eddy test fishing site. Each

station was fished twice a day for about 30 minutes per drift. One drift was conducted for each mesh size at each station, totaling up to 12 drifts per day (2 banks x 3 mesh sizes x 2 times daily).

Mountain Village Test Fishery

The Mountain Village drift gillnet test fishery has operated in District 2 since 1995. The objectives are to estimate the relative abundance and migratory timing of fall chum and coho salmon in the Yukon River near Mountain Village (rm 87, Figure 1). The Mountain Village test fishery typically operates from mid-July to mid-September. Test fishermen conduct one drift at each of three stations using a 25 fathom 5⁷/₈" mesh gillnet. The stations are fished once a day for about 20 minutes per drift. Fall chum and coho salmon harvested from the Mountain Village test fishery have been sampled for biological data since 2001.

Pilot Station Sonar

Located in District 2 (rm 123, Figure 1), Pilot Station sonar uses hydroacoustic equipment to generate daily Chinook, summer chum, fall chum, and coho salmon abundance estimates. Pilot Station sonar has been in operation since 1986, and multiple styles of equipment have been used. From 1986 to 1992, the project utilized dual-beam sonar equipment at a frequency of 420 kHz. In 1993, existing equipment was modified to operate at a frequency of 120 kHz to allow greater ensonification range and to minimize signal loss (JTC 2009). In 2001, equipment changed from dual-beam to a split-beam sonar system. In response to high water and erosion along the left bank bottom profile, in 2005 a Dual Frequency Identification Sonar (DIDSON)¹ was added to the existing sampling routine to detect fish traveling within 20 meters of the left bank (Carroll and McIntosh 2008).

The Pilot Station project currently uses a combination of fixed-location split-beam sonar and DIDSON. To apportion the passage estimates by species, a series of gillnets with varying mesh sizes are drifted through the acoustic sampling area (Carroll and McIntosh 2008). Sonar equipment and fishing gear are operated at regular intervals within a 24-hour period. Typically, Chinook and summer chum salmon are sampled from early June to mid-July; fall chum and coho salmon are sampled from mid-July to the end of August or early September. Chinook salmon biological data has been collected annually since 1998. Chum salmon biological data were collected for four years from 1986 to 1994, and coho salmon biological data were collected in 1994.

Marshall Test Fishery

Located in District 2 (rm 171, Figure 1), the Marshall drift gillnet test fishery was operated from 1999 to 2000 and 2005 to 2008. In 2009 the Marshall test fishery did not operate. The project's objectives were to estimate the relative abundance and migratory timing of Chinook salmon near the community of Marshall, and to compare catches and timing with other projects (Waltemyer 2007).

The Marshall test fishery typically operated from mid-June to mid-July. Test fishermen conducted four 20-minute drifts each day, two in the morning and two in the evening, using a 50 fathom 8.25" mesh drift gillnet. There were two fishing stations, one located along the north bank

¹ Product names used in this report are included for scientific completeness, but do not constitute a product endorsement.

and one along the south bank; both stations had been used since the inception of the project (Waltemyer 2007). Chinook salmon biological data were collected each year the project operated.

KALTAG TEST FISHERY

The Kaltag drift gillnet test fishery has been in operation since 1999, and provides estimates of fall chum and coho salmon relative abundance and migration timing near the District 4 community of Kaltag (rm 450, Figure 1). The Kaltag test fishery typically operates from late July to mid-September. Test fishermen conduct one drift at each of the stations using a 25 fathom, 57/8" mesh gillnet. Two of the drifts are conducted from a boat, and one drift is conducted by walking along the shore. The stations are fished once a day for about 20 minutes per drift. Fall chum biological data has been collected for most years since 2001, and coho biological data has been collected since 2003.

EAGLE SONAR

Located in District 5, the Eagle Sonar project (rm 1,206, Figure 1) estimates run timing and passage estimates for Chinook and fall chum salmon. The site selection began in 2003, and in 2004 a 2-week study evaluated the performance of the sonar equipment. The Eagle sonar project began operating full-time in 2005, using DIDSON on the right bank and split-beam sonar on the left bank (Crane and Dunbar 2009). Chinook salmon passage estimates have been generated since 2005, and in 2006 Eagle sonar began producing fall chum salmon passage estimates. To apportion the passage estimates by species, a test fishery is conducted where gillnets of varying mesh sizes are drifted through the sonar site. Chinook salmon are sampled from the test fishery catches from early July to mid-August and fall chum are sampled from mid-August to early October. Chinook salmon biological data have been collected since 2005 and fall chum salmon biological data have been collected since 2006.

ESCAPEMENT MONITORING

Annual assessments of spawning escapements are monitored in Yukon River tributaries by means of weirs, counting towers, sonar projects, and carcass and aerial surveys (Hayes et al. 2008). The ground based weir, tower, and sonar projects typically include a sampling program, whereby salmon are captured with a trap built into a weir, fishing a beach seine, or carcass sampling.

EAST FORK ANDREAFSKY RIVER

The Andreafsky River joins the Yukon River near the village of Saint Mary's (rm 104, Figure 1). The mainstem Andreafsky River and the East Fork parallel each other for more than 124 rm before joining 4.5 rm upriver from the confluence with the Yukon River (Maschmann 2009). Escapement monitoring using aerial surveys began on the East Fork Andreafsky River in 1954, sonar and counting tower projects operated from 1981 through 1988, and salmon enumeration using weirs began in 1994.

A modified resistance board weir, as described by Tobin (1994), is currently used to estimate salmon escapements in the East Fork Andreafsky River, 27 rm from the confluence of the Andreafsky and Yukon rivers. The weir typically operates from mid-June to late July to estimate escapement and run timing of Chinook and summer chum salmon. From 1995 through 2005, the season was extended into September to monitor coho salmon escapement (Maschmann 2009).

East Fork Andreafsky River monitoring is 1 of 4 long-standing escapement projects in the drainage. Biological data have been collected from Chinook salmon since 1980, summer chum salmon since 1981, and coho salmon from 1995 to 2005. Collection methods have been from hand-picked carcasses, beach seine, and a weir trap.

ANVIK RIVER

The Anvik River flows for 124 river miles before joining the Yukon River near the community of Anvik (rm 318 Figure 1). Summer chum salmon escapements to the Anvik River were estimated using side-scanning sonar from 1979 to 2006. In 2007, the project began monitoring chum salmon using DIDSON (McEwen 2010). The sonar project typically operates 30 minutes of each hour, 24-hours a day, 7 days a week throughout the season, usually late June to late July. Summer chum salmon predominate during most years; therefore, a test fishery is usually not operated for species apportionment. However, during years of high pink salmon abundance, tower counts may also be conducted to assess species composition. Chinook salmon returning to the Anvik River are monitored by aerial surveys.

Anvik River monitoring is 1 of 4 long-standing escapement projects in the drainage. Biological data have been collected from Chinook salmon for most years since 1967 from hand-picked carcasses. Biological data have been collected from summer chum salmon from 1972 to 1982 from hand-picked carcasses and from 1984 to 2009 by beach seine.

GISASA RIVER

The Gisasa River flows into the Koyukuk River 56 rm upstream of the confluence of the Koyukuk and Yukon rivers (rm 508, Figure 1). A resistance board weir has operated on the Gisasa River since 1994 to estimate Chinook and summer chum salmon escapements and run timing. The weir typically operates from late June through late July and is located 2.5 rm upriver from the confluence with Koyukuk River (Melegari 2009).

A limited number of Chinook and summer chum salmon were sampled from 1982 to 1988 from hand-picked carcasses. Since 1995, both species have been captured for sampling using a weir trap.

HENSHAW CREEK

Henshaw Creek is located in the upper Koyukuk River drainage 468 rm from the confluence of the Koyukuk and Yukon rivers (Figure 1). A resistance board weir, located about 1 mile up from the confluence with the Koyukuk River, has operated on Henshaw Creek since 2000. The weir typically operates from late June to early August and provides escapement and run timing estimates for Chinook and summer chum salmon. Biological data have been collected since 2000 from both salmon species using a weir trap. In 2009, data from Henshaw Creek was not received in time to be processed and therefore is not included in this report.

TOZITNA RIVER

The Tozitna River originates in the Ray Mountains and flows 129 rm to the confluence with the Yukon River (rm 681, Figure 1; Post et al. 2009). A resistance board weir was installed at rm 50 of the Tozitna River to monitor Chinook and summer chum salmon escapement and run timing. The project began in 2002 and typically operates from late June to early August. The weir is downriver of most salmon spawning activity. In some years aerial surveys were conducted to

document any spawning activity below the weir. Biological data have been collected from Chinook and summer chum from hand-picked carcasses in 2001 and by weir trap since 2002.

SHEENJEK RIVER

The Sheenjek River sonar project is located 6 rm upstream from the confluence with the Porcupine River (Figure 1). The Porcupine River flows another 52 rm before its confluence with the mainstem Yukon River (rm 1,002). Fall chum salmon escapement in the Sheenjek River has been monitored using sonar technology since 1981. Single-beam side-scanning sonar was used from 1981 to 1999. Split-beam sonar was incorporated along with single-beam sonar during 2000 and 2002, and in 2003 split-beam sonar was used exclusively (Dunbar 2009). DIDSON was operated in conjunction with split-beam sonar during 2004 and 2005. The Sheenjek River sonar project has operated with DIDSON exclusively since 2006 to estimate fall chum escapement. Project operation dates have varied, but since 1991 were generally early August to late September (Dunbar 2009). Sheenjek River fall chum salmon biological data were collected from hand-picked carcasses from 1975 to 1978. From 1981 to 2008 collection methods have been drift gillnet, beach seine, or from hand-picked carcasses. In 2009, the sonar project did not operate for the full season and ASL data were not collected from Sheenjek River salmon.

OTTER CREEK

Otter Creek flows into Seventeen Mile Slough, a tributary of the Nenana River, which flows into the Tanana River at rm 860. ASL data has been collected from spawning coho salmon in Otter Creek since 2001 by Bering Sea Fisherman's Association (BSFA) as part of the Nenana River stock monitoring project (Chris Stark, BSFA, personal communication). Collection methods have been primarily by rod and reel.

CHENA RIVER

The Chena River (rm 920) is a tributary of the Tanana River, located 225 rm upriver from the confluence of the Tanana and Yukon rivers (Figure 1). A counting tower has operated to estimate Chinook and summer chum salmon escapements in the Chena River since 1993. Daily escapements are visually estimated as fish pass through the Moose Creek Dam and swim over white panels placed across the river bottom. Suspended lights illuminate the panels to allow enumeration 24-hours a day, from late June through the end of July (Brase and Doxey 2006). Aerial surveys may also be conducted.

Chena River monitoring is 1 of 4 long-standing escapement projects in the Yukon drainage. Biological data from Chinook salmon has been collected since 1980 from hand-picked carcasses or by electrofishing, which was used for a mark-recapture population estimate. A limited number of summer chum salmon were sampled for 8 years from 1974 to 2009, primarily from hand-picked carcasses.

SALCHA RIVER

The Salcha River (rm 965) is a tributary of the Tanana River, located 270 rm upriver from the confluence of the Tanana and Yukon rivers (Figure 1). Salcha River Chinook and summer chum salmon escapements have been monitored by a counting tower located near the Richardson Highway Bridge since 1993 (Brase and Doxey 2006). The tower counting methods are similar to those used on the Chena River, where salmon are counted 24-hours a day as they migrate upriver

over illuminated white panels. Counting is conducted from about late June to early September. Aerial surveys may also be conducted.

Salcha River monitoring is 1 of 4 long-standing escapement projects in the drainage. Biological data from Chinook salmon has been collected for most years since 1966 from hand-picked carcasses and, during 6 years, by electrofishing. A limited number of summer chum salmon were sampled from 10 years from 1972 to 2009, primarily from hand-picked carcasses.

DELTA RIVER

The Delta River is a tributary of the Tanana drainage, located 336 km upriver from the confluence of the Tanana and Yukon rivers (Figure 1).

Carcass surveys have been used to monitor Delta River fall chum salmon escapements since 1972 (JTC 2009). These surveys are typically conducted from late October to late November, contingent on run timing. Scales collected from carcasses were used for age determination from 1973 to 1985, and this age structure was subsequently replaced by vertebrae.

METHODS

Chinook, summer chum, fall chum, and coho salmon were sampled for ASL data from commercial and subsistence harvests, as well as test fishery and escapement projects throughout the Yukon River drainage. Various state, federal, and tribal agencies collected these data. Methods described are those procedures recommended by ADF&G; other organizations may have collected and recorded data using slightly different procedures.

SAMPLE DESIGN

A stratified random sampling design was used to obtain samples for estimating age, sex, and length compositions from most projects. Strata were assigned as individual fishing periods for commercial harvest samples, time strata of variable length for escapement estimates (weir and sonar projects), weekly strata for subsistence samples, run strength indices (such as quartiles for test fishery projects), and number of fish sampled for carcass samples. Strata were adjusted depending on the number and distribution of samples collected and an attempt was made to include sufficient sample sizes within each stratum to estimate the proportion of each major age class with $\alpha=0.05$ and $d=0.1$ (Bromaghin 1993). The escapement/harvest for each stratum was provided by project leaders and ADF&G fish ticket harvest reports.

Proportion of j -th age-sex class at s -th strata (\hat{P}_{sj}) was estimated as:

$$\hat{P}_{sj} = \left(\frac{n_{sj}}{n_s} \right)$$

Where:

n_{sj} = number of samples for age-sex class j in stratum s ,

n_s = number of samples in stratum s ,

The number of j -th age-sex class at s -th strata (\hat{N}_{sj}) was estimated as:

$$\hat{N}_{sj} = N_s \cdot \hat{P}_{sj}$$

Where:

N_s = escapement/harvest of age-sex class j in stratum s ,

When data for all strata were available, season-wide proportion and number of j -th age-sex class was estimated as:

$$\hat{P}_j = \frac{1}{N} \sum^s N_s \hat{P}_{sj}$$

$$\hat{N}_j = \sum^s N_s \hat{P}_{sj}$$

Where:

N = total season escapement/harvest.

As observed from a given location, the ASL composition of a returning salmon population often changes over the course of the season (Molyneaux et al. 2006); therefore, sample proportions were applied to harvest or escapement estimates only when adequate sample size, strata distribution, and numbers of fish by stratum were available. Commercial harvest samples and tributary escapement monitoring projects utilizing weir or sonar typically met the criteria for stratification. Subsistence, test fishery, and carcass sampling projects frequently failed to meet one or more of these criteria and were summarized by number of samples. Samples were stratified by mesh size from the Comparative Mesh Size study, Pilot Station sonar test fishery, and Eagle sonar test fishery. If the sample size by strata within a data set was inadequate or nonexistent, age and sex data were not applied to the commercial harvest number for that stratum. Age and sex percentages and mean lengths for escapement samples were weighted by the respective escapement for Chinook and summer chum salmon at the East Fork Andreafsky, Gisasa, and Tozitna rivers, and for summer chum salmon at the Anvik River. These estimates are preliminary and individual project reports by the participating agencies should be referenced for final escapement, age, and sex estimates.

GENERAL SAMPLING PROCEDURES

Scales were removed from the preferred area of the fish and mounted on gum cards for future age determination by ADF&G (INPFC 1963). The preferred area is located on the left side of the fish, two rows above the lateral line along a line from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin. One scale was removed from each chum salmon and three scales were removed from each Chinook and coho salmon. Scale regeneration, or scale loss and

rapid replacement, contributes to aging uncertainties primarily in the freshwater growth area. Chinook and coho salmon usually rear in freshwater for one year or longer, hence three scales were removed from these fish to increase the chance of selecting a scale that could be aged. In some tributaries, vertebrae were used to age summer chum and fall chum salmon when scale reabsorption makes aging scales difficult. Vertebrae were removed from fish collected during selected carcass sampling and beach seining projects.

Sex was determined by examining internal reproductive organs or external characteristics such as kype development and presence of reproductive organs at the vent. The Offshore Test Fishery, LYTF, Comparative Mesh Size study, and carcass sampling surveys were the only projects where internal organs were examined; hence, these projects have accurate sex composition. Other test fishery projects conducted by non-ADF&G staff were instructed to examine internal organs; however, this protocol may not have been adhered to in all projects. Internal organs were not examined from commercial and subsistence harvests and some non-ADF&G staffed test fisheries, because cutting fish would decrease fish value to commercial buyers and subsistence fishermen prefer to cut their fish immediately before processing.

Lengths were determined by measuring each fish from mideye to fork of tail and were recorded to the nearest 5 mm increment. Field data were recorded in Rite-in-the-Rain books and transferred to mark-sense forms (ADF&G Adult Salmon Age-Length Form, Version 2.1) or entered into MS Excel files. During the lower river commercial harvest sampling, sex and length data were entered directly into Juniper data loggers and loaded into an inseason database.

Weight (lb) and girth (mm) measurements were collected from Chinook salmon in the Big Eddy test fishery, Comparative Mesh Size study, and subsistence harvests at Kaltag and Rampart Rapids. Weight was taken using a hanging warehouse scale suspended from a tripod. Girth was measured while the fish was hanging from the scale, with a “QM2000 Measure Mate – Girth and Linear Measure Tape,” perpendicular to the longitudinal axis of the fish at the anterior insertion of the dorsal fin and recorded to the nearest 5 mm increment.

SAMPLE COLLECTION

COMMERCIAL HARVEST SAMPLING

DCF crews conducted commercial harvest sampling for summer and fall chum, and coho salmon in Districts 1, 2, 6, and Subdistrict 4-A (Table 1). Sample goals were up to 160 summer and fall chum, and 120 coho salmon by period and district. District 1 samples were collected from a fish processor in Emmonak, and District 2 samples were from tenders that purchased fish in District 2 then delivered these fish to the processing facility in District 1. Harvests of summer and fall chum salmon in District 6 were sampled at a processing plant in North Pole near Fairbanks. In the Subdistrict 4-A roe-directed fishery, female summer chum salmon were presorted by fishermen and delivered to a processing facility in Anvik, where a DCF crew conducted sampling.

Off-loading crews placed each salmon in a species-specific tote or bin. When excess fish were not available, crews sampled all available fish until the sample goal was attained. When excess fish were available, sampling crews selected a tote of fish and sampled every fish in the tote. Sampling crews worked quickly to attain sampling goals in the short time between fish delivery and processing.

SUBSISTENCE HARVEST SAMPLING

Collecting subsistence harvest samples is opportunistic and depends on timing, availability, logistics, and willingness of fishermen to participate. Crews typically sample every fish available because finding fish to sample, specifically when boat travel among fishing camps is required, is time consumptive. Subsistence harvest sampling design is therefore what Geiger et al. (1990) termed a “grab or haphazard sample”, where the population is assumed to be nearly in random order and all available fish are sampled. Assuming consistent effort by samplers, more fish are sampled when more fish are available which tends to self-weight the samples by gear, area, and time period collected.

Subsistence harvests of Chinook, summer chum, and fall chum salmon were sampled during subsistence fishing openings or shortly after the closure. Sex, length, gear type, and mesh size were typically collected. Weight and girth data were also collected from Chinook salmon at some subsistence sampling sites. If fish were processed before the sampling crew arrived, only scales may have been collected.

Numerous agencies employed technicians to sample Chinook salmon from local subsistence harvests: Tanana Chiefs Conference (TCC) conducted sampling in Holy Cross, Nulato, Bishop Rock, Galena, Hess Creek, and Fort Yukon; the Ruby Tribal Council sampled in Ruby; and the City of Kaltag sampled harvests near Kaltag; and the University of Alaska, Fairbanks sampled at Eagle (Table 1). DCF crews collected subsistence harvest samples in District Y-1 (Emmonak vicinity), Tanana, and Nenana.

TEST FISHERY SAMPLING

The DCF test fishery crew sampled all of the Chinook salmon caught during the Comparative Mesh Size study from 7.0", 7.5" and 8.0" drift gillnets (Table 1). For all other test fishery projects, sampling goals were up to 30 Chinook, summer chum, and fall chum salmon daily; and up to 20 coho salmon daily. The DCF crew sampled Chinook salmon at Big Eddy and Middle Mouth from 8.5" mesh set gillnets, summer chum salmon from 5.5" drift gillnets, and fall chum and coho salmon from 6.0" mesh drift gillnets; fish sampled from the LYTF projects were cut for accurate sex determination. Test fishery crews in Mountain Village (Asacarsarmiut Traditional Council) sampled fall chum and coho salmon from 5⁷/₈" drift gillnets. The Pilot Station sonar crew (DCF) sampled Chinook salmon caught in drift gillnets of varying mesh sizes (2.75", 4.0", 5.25", 6.5", 7.5", and 8.5"). The Eagle sonar crew (DCF) also used variable-mesh drift gillnets of to sample Chinook (5.25", 6.5", 7.5", and 8.5") and fall chum salmon (5.25" and 7.5"). Test fishery crews sampled every fish harvested until their daily sample goal was reached.

ESCAPEMENT SAMPLING

Several organizations that operated weirs, sonar projects, counting towers, and other ground-based surveys conducted escapement sampling (Table 1). Sampling goals varied among projects, but generally were 160 Chinook, 160 summer or fall chum, and 120 coho salmon per event. An event may be weekly sampling goals, quartile-based goals, or a single goal for the season. Depending on the strength of the run, sample goals may only be achieved during periods of peak run passage at weir projects. Suggested sample goals, specific project objectives, fish abundance, historical fish passage, run timing, water levels, personnel, and budget are some of the issues considered by project leaders when assessing sample goals.

Chinook and summer chum salmon were live-sampled using a trap built into the weir at the East Fork Andreafsky, Gisasa, and Tozitna rivers. Beaudreault et al. (2008) provides an example of weir sampling and operation methods. Summer chum salmon were live-sampled using a beach seine in the Anvik River. Ground based surveys were used to sample Chinook and summer chum salmon carcasses at the Salcha River and Chinook carcasses at the Anvik, East Fork Andreafsky, and Chena Rivers. Doxey et al. (2005) describes carcass sampling methods used in the Chena and Salcha rivers. Chinook salmon at the East Fork Andreafsky River were sampled from a weir trap and by carcass survey as part of a study to estimate ASL sampling biases between these two methods.

Three fall chum salmon escapement projects, operating on the Chandalar, Delta, and Toklat Rivers used vertebrae to determine ages. The fish sampled from these locations were hand-picked carcasses at or near the spawning grounds. Because fish near the spawning grounds have started to reabsorb their scales, vertebrae are a more accurate aging structure than fish scales.

Sample age and sex percentages were applied to escapement estimates from the East Fork Andreafsky River weir, Anvik River sonar, Gisasa River weir, and Tozitna River weir. Escapement estimates may be preliminary and reports by the participating agencies should be referenced for final estimates.

The United States Fish and Wildlife Service (USFWS) collected samples at the East Fork Andreafsky, Gisasa, and Chandalar rivers. Samples from the Tozitna River were collected by the United States Bureau of Land Management (BLM). Samples collected from the Anvik, Chena, and Delta Rivers were collected by the DCF. Samples from the Chena River were collected by the Division of Sport Fish. Samples from the Salcha River were collected by the Bering Sea Fisherman's Association.

AGE DETERMINATION

Scales or vertebrae were used to determine age. The scales, which are mounted on gum cards, were impressed in cellulose acetate using methods described by Clutter and Whitesel (1956). Scale impressions were magnified and examined using a Microfiche reader. Age was determined by counting the number of freshwater and marine annuli, the regions of the scale where the circuli, or rings, are tightly spaced representing slower growth rates associated with winter conditions (Mosher 1969). Vertebrae samples were frozen, cleaned, and dried; ages were also determined by visually counting annuli. Ages were entered into MS Access™, onto mark-sense forms, or into a MS Excel™ file depending upon which format the sex and length data were originally recorded in. Ages were recorded using European notation, the number of freshwater annuli separated by a decimal from the number of marine annuli. Total age from the brood year is the sum of freshwater and marine annuli plus one to account for time spent in the gravel before hatching.

RESULTS

CHINOOK SALMON

In 2009, a total of 9,155 Chinook salmon were sampled for ASL data from the U.S. portion of the Yukon River drainage (Table 2). Chinook salmon ASL summary tables for commercial and subsistence harvests, test fisheries, and escapement projects are presented in Tables 2–5 and Appendices A1–A26.

Chinook Salmon Commercial Harvest Age and Sex Composition

In 2009, all summer season commercial fishing periods were directed at harvesting summer chum salmon and the gillnet mesh size was restricted to 6" or less. Chinook salmon incidentally harvested during these summer chum-directed commercial fisheries were not purchased by commercial processors, therefore ASL data were not collected from commercially harvested Chinook salmon (Hayes and Newland 2009).

Chinook Salmon Subsistence Harvest Age and Sex Composition

Samples were collected from 1,684 subsistence harvested Chinook salmon. In addition to ASL data, weight and girth data were collected in Kaltag, and weight data in Rampart Rapids. Age-1.4 fish predominated at all of the subsistence locations, with the exception of the 5.5" mesh gillnet (chum gear) in District 1, where age-1.2 fish predominated (55.1%). Females in the subsistence harvest ranged from 14.3% in the 5.5" mesh gillnet to 62.6% in the Kaltag 8.5" mesh gillnet (Table 2, Appendices A1–A12).

Chinook Salmon Test Fishery Age and Sex Composition

Samples were collected from a total of 2,915 Chinook salmon at 5 test fishery locations. Age-1.4 fish predominated from all locations. The Big Eddy and Middle Mouth test fisheries had the highest percentages of age-1.4 Chinook salmon (85.6% and 85.2%, respectively). In the test fishery samples, females ranged from 39.6% at Eagle sonar to 61.9% at the Middle Mouth project (Table 2, Appendices A13–A19).

There was a significant difference in the sex composition for age-1.3 and age-1.4 Chinook salmon from the LYTF projects ($\chi^2=85.61$, $df=1$, $p<0.0001$). The age-1.3 male to female ratio was 4.5 while the age-1.4 male to female ratio was 0.5 (Appendix A15).

Comparing the 2009 LYTF age percentages with the historical average (1994, 1998–2008), the percentage of 5-year old fish was about one-third of average, 6-year old fish were above average, and 7-year old fish were below average. Females made up 60.3% of the 2009 samples, which was above average (Table 3).

Chinook Salmon Escapement Age and Sex Composition

Samples were collected from a total of 4,556 Chinook salmon at 7 escapement projects. Age-1.4 Chinook salmon predominated from most escapement projects, except for with the Tozitna and Gisasa river weirs where age-1.2 Chinook salmon were most prevalent. Females ranged from 17.9% at the Tozitna River weir to 55.1% in the Chena River carcass samples (Table 2, Appendices A21–A27).

Comparing the 2009 percentages with the historical averages (1985–2008) from four long-standing escapement projects, 6-year old fish were above average and 5-year old fish were below average from the East Fork Andreafsky River weir, the Anvik River carcass samples, and the Chena River carcass samples. The 2009 Salcha River carcass samples had higher percentages of age-4 and age-5 fish, and age-6 fish were average. The percentage of females from the East Fork Andreafsky River weir, Anvik River carcass samples, and Chena River carcass samples were all above the historical averages; the Salcha River carcass samples were below average (Table 4).

Chinook Salmon Mean Length

The male mean length by age from all projects was: 381 mm for age-1.1, 586 mm for age-1.2, 710 mm for age-1.3, 549 mm for age-2.2, 828 mm for age-1.4, 699 mm for age-2.3, 912 mm for age-1.5, and 816 mm for age-2.4 fish. The female mean length by age from all projects was: 626 mm for age-1.2, 775 mm for age-1.3, 847 mm for age-1.4, 802 mm for age-2.3, 893 mm for age-1.5, and 850 mm for age-2.4 fish (Table 5).

There were significant differences in mean length by sex for age-1.3 and age-1.4 Chinook salmon from the lower river test fishery projects (LYTF and Comparative Mesh Size). Only these projects were compared because these fish were cut for accurate sex identification. Age-1.3 males were smaller than females (t-test; $p < 0.001$, $df = 41$) and age-1.4 males were smaller than females (t-test; $p < 0.001$, $df = 648$).

CHINOOK SALMON MEAN WEIGHT AND MEAN GIRTH

In the lower river, weight and girth measurements were taken from 148 fish caught in the Big Eddy test fishery and from 449 fish in the Comparative Mesh Size study (Appendices A13 and A17). Overall, for age-1.3 and age-1.4 fish, females were heavier and had larger girth than males. For example, in the Comparative Mesh Size study, all mesh sizes combined, the age-1.3 female mean weight was 21.4 lb and the male mean weight was 20.3 lb (Appendix A17). Weights and girths were also collected from the subsistence samples in Kaltag, and weights from the Rampart Rapids subsistence samples (Appendices A4 and A9).

SUMMER CHUM SALMON

A total of 6,482 summer chum salmon were sampled for ASL data from the Alaska portion of Yukon River drainage in 2009 (Table 6). Summer chum salmon ASL summary tables for commercial and subsistence harvests, test fisheries, and escapement projects are presented in Tables 6–9 and Appendices B1–B14.

Summer Chum Salmon Commercial Harvest Age and Sex Composition

Samples were collected from 2,963 commercially harvested summer chum salmon; most of these ($n = 1,903$) were from Districts 1 and 2. Age-0.3 and 0.4 fish represented the majority of age classes in the commercial harvests and have roughly equal percentages in Districts 1 and 2. Age-0.3 fish predominated in the Subdistrict 4-A and District 6 samples. Females represented 49.6% of the District 1 and 48.3% of the District 2 commercial harvest (Tables 6 and 7, and Appendices B1–B4).

Summer Chum Salmon Subsistence Harvest Age and Sex Composition

Samples were collected from 82 summer chum salmon in the District 1 subsistence harvest in 5.5" mesh gillnets. Age-0.4 fish made up 51.2% of the samples and females were 32.9% (Table 6, Appendix B5).

Summer Chum Salmon Test Fishery Age and Sex Composition

Samples from 1,166 summer chum salmon were collected from the Offshore Test Fishery and the LYTF projects combined. Similar to the commercial harvest in the lower river, age-0.3 and age-0.4 fish from LYTF had near equal percentages. Females made up 54.0% and 54.7% from Big Eddy and Middle Mouth, respectively (Table 6, Appendices B6–B8).

Compared with the LYTF historical average (1987–1988, 1990–2008), the 2009 LYTF summer chum salmon age-0.3 percentage was slightly above average and age-0.4 percentage was slightly below average. Females in 2009 were 4.5 percentage points below average (Table 8).

Summer Chum Salmon Escapement Age and Sex Composition

Samples from 2,395 summer chum salmon were collected from five escapement projects in tributaries of the Yukon River. Age-0.3 and age-0.4 fish were the most common age classes overall. Age-0.3 fish predominated at the Anvik River, Gisasa and Tozitna river weirs, and the Salcha River carcass survey. Andreafsky River weir had the most atypical age composition, age-0.4 fish predominated and the percentages of age-0.2 and age-0.5 fish were higher than any other summer chum sampling project. The average percentage of females from the escapement projects was 54.4% (Table 6 and Appendices B10–B14).

Summer Chum Salmon Mean Length

The mean length for male summer chum by age was: 551 mm for age-0.2, 573 mm for age-0.3, 587 mm for age-0.4, 591 mm for age-0.5, and 588 mm for age-0.6 fish. The female mean length by age was: 526 mm for age-0.2, 551 mm for age-0.3, 565 mm for age-0.4, 563 mm for age-0.5, and 581 mm for age-0.6 fish (Table 9).

FALL CHUM SALMON

A total of 2,877 fall chum salmon were sampled for ASL data from the Alaskan portion of the Yukon River drainage in 2009. Fall chum salmon ASL summary tables for commercial and subsistence harvests, test fisheries, and escapement projects are presented in Tables 6, 7, 9 and Appendices C1–C14.

Fall Chum Salmon Commercial Harvest Age and Sex Composition

Samples were collected from 1,324 commercially harvested fall chum salmon. The age composition for the fall chum salmon combined commercial harvest from Districts 1 and 2 were 59.9% age-0.3 fish and 35.3% age-0.4 fish. Females were 49.9% in these harvests. The District 6 harvest was a roe-directed fishery and composed of all females; samples ($n=35$) were inadequate to estimate the age composition from this harvest (Tables 6 and 7 and Appendices C1–C3).

Fall Chum Salmon Subsistence Harvest Age and Sex Composition

Samples were collected from 186 fall chum salmon in the subsistence harvest. In Subdistrict 5-B from Tanana, age-0.3 fish made up 79.6% and age-0.4 fish were 15.8% of the harvest samples. In Subdistrict 6-C from Nenana, age-0.3 fish made up 67.6% and age-0.2 fish were 29.4% of the harvest samples. Females made up 52.0% and 47.1% of the harvest samples from Tanana and Nenana, respectively (Table 6, Appendices C4 and C5).

Fall Chum Salmon Test Fishery Age and Sex Composition

Samples were collected from 857 fall chum salmon, including the experimental drifts conducted at Big Eddy. Overall, the test fishery samples were predominated by age-0.3 fish (70.3%) and females were 50.9% (Table 6 and Appendices C6–C11).

Fall Chum Salmon Escapement Age and Sex Composition

Vertebrae samples from 510 fall chum salmon were collected at three escapement sites in Yukon River tributaries, the Chandalar, Delta, and Toklat Rivers. Overall, the samples were

predominated by age-0.3 fish (57.9%), which was slightly less than the age-0.3 percentage from most other fall chum salmon projects. Overall, the fish sampled from the escapement projects were composed of 54.4% females (Table 6 and Appendices C12–C14).

Fall Chum Salmon Mean Length

The mean length for male fall chum by age was: 562 mm for age-0.2, 587 mm for age-0.3, 601 mm for age-0.4, 593 mm for age-0.5, and 611 for age-0.6 fish. The female mean length by age was: 554 mm for age-0.2, 571 mm for age-0.3, 579 mm for age-0.4, 578 mm for age-0.5 and 568 mm for age-0.6 fish (Table 9).

COHO SALMON

A total of 627 coho salmon were sampled for ASL data from the Yukon River drainage in 2009. Coho salmon ASL summary tables for commercial, test, and escapement projects are in Tables 10–11 and Appendices D1–D8.

Coho Salmon Commercial Harvest Age and Sex Composition

Samples were collected from 233 commercially harvested coho salmon from the Districts 1 and 2 commercial harvests. In District 1 the majority of the samples were from Period 4 and in District 2 from Period 3. In each district, all samples were combined and the age and sex composition was applied to the total harvest. Age-2.1 fish predominated in both districts; females were 40.9% in District 1 and 50.0% in District 2 (Appendices D1 and D2).

Coho Salmon Test Fishery Age and Sex Composition

Samples were collected from 352 coho salmon at four test fishery projects, including the experimental test fishery that operated at Big Eddy. Overall, the test fishery samples were predominated by age-2.1 fish (81.1%) followed by age-1.1 fish (12.6%). Females were 48.4% of the test fishery samples (Table 10 and Appendices D3–D7).

Coho salmon Escapement age and Sex composition

Samples collected from fish spawning in Otter Creek, a tributary of the Nenana River, were 76.2% age-2.1 and 21.4% age-1.1 fish; females were 23.8% (Appendix D8). These samples had the highest percentage of age-1.1 fish and the lowest percentage of females from any coho project (Table 10).

Coho Salmon Mean Length

The male mean length by age was: 576 mm for age-1.1, 570 mm for age-2.1, and 588 mm for age-3.1 fish. The female mean length by age was: 571 mm for age-1.1, 574 mm for age-2.1, and 580 mm for age-3.1 fish (Table 11).

DISCUSSION

Age, sex, and length data have been collected from Yukon River salmon species since the 1960s. This information aids in fishery management decisions and allows researchers to evaluate annual and historical changes in the ASL composition of salmon throughout the Yukon River drainage. Yukon River ASL sampling projects were designed to account for temporal and spatial variability that exists within a salmon population, but there is potential for some biases caused by

small sample sizes, scale absorption, and collection methods. Age, sex, and length data users are cautioned to be aware of these inherent biases when interpreting data.

Biases from a small sample size, stratum, or commercial fishing period are sometimes unavoidable. During the summer chum salmon commercial fishery all districts had adequate sampling to estimate the age and sex of the harvest and sampling bias is considered negligible. Likewise, during the fall chum salmon commercial fishery, the Districts 1 and 2 samples were judged sufficient to estimate the commercial harvests. Samples from the District 6 commercial fishery ($n=35$) were not adequate to estimate the total harvest. Staff was not available to sample during some of these late-season harvest dates (18–28 September).

Often, a lack of harvest or prohibitive travel costs, preclude sampling events. Subsistence projects with small sample sizes include District 1 and Subdistrict 5-B. The reduced subsistence fishing schedule, closures, mesh size restriction, and reluctance by fishermen to participate in District 1 all contributed to decreased sampling. The subsistence Chinook salmon sampling from Districts 3 through 5 was more comprehensive than usual because Tanana Chiefs Conference had dedicated staff in villages or contracted with fishermen from various locations (Table 1). Even though an additional test fishery was operated in the lower Yukon River during the fall, catches and sample size remained low for fall chum and coho salmon.

Bias may also occur when commercial fishing periods are directed at harvesting roe, or if the harvest has been sorted by the commercial fishermen or processor. Insufficient sample sizes also exist for individual stratum for some of the projects. When sample sizes are below the targeted number, care should be used when interpreting the data.

Another possible bias, due to scale absorption, exists in samples collected from carcasses as well as those taken on or near the spawning grounds. This potential bias is caused by the margin of the scale being absorbed as an energy reserve in the last few weeks of a salmon's life (Clutter and Whitesel 1956). Scale absorption normally becomes more pronounced the farther upriver the samples are collected and can lead to under aging when little evidence of the outermost annulus remains. For these reasons, vertebrae were collected for aging Salcha River summer chum carcasses, and all fall chum salmon carcasses.

A bias often results from inherent size selectivity in sample collection methods. This bias is most apparent with Chinook salmon, because of the large size range, where males and younger aged fish predominate in the smaller size fish. Gillnets are size selective based on mesh size; fish wheels tend to be biased towards smaller sized fish that migrate near shore in lower water velocities (Meehan 1961). In spawning ground carcass recoveries, Kissner and Hubartt (1986) indicated that Chinook salmon males tend to drift downstream while females tend to remain near their redds; during periods of increased water velocities, smaller fish have a greater potential to be carried downstream and out of the study area. Zhou (2002) indicated that fish size and stream flow affect carcass recovery rates. This nonrandom dispersal of carcasses could bias ASL data towards females and larger older-aged fish, although proper sampling designs have been shown to reduce this (Evenson 1991; Skaugstad 1990). Many scientists believe a bias may exist in weir sampling towards smaller fish when larger fish are more reluctant, or "trap shy", to enter a confined weir trap structure and be available for live sampling. Though trap shyness has yet to be scientifically evaluated, users of these data should be aware that this potential bias exists. Sampling biases are described in greater detail by Molyneaux et al. (2006).

CHINOOK SALMON

Chinook Salmon Age Composition

In 2009, age-1.4 Chinook salmon predominated from most of the subsistence and test fishery harvests and escapement projects. This trend occurred in projects using various capture gear, such as small and large mesh gillnets, fish wheels, weir traps, and carcass recoveries. Overall the percentage of age-1.3 fish was below average and age-1.4 fish was above average. The above average percentage of age-1.4 Chinook salmon observed from the LYTF and East Fork Andreafsky River is attributed to the 2003 brood year. Above average percentages from this brood year were also observed in previous years with above average percentage of age-1.3 fish in 2008 and age-1.2 fish in 2007 (Tables 2–4).

The 2009 percentage of age-1.2 Chinook salmon from LYTF, East Fork Andreafsky River, Anvik River, and Chena River were near, or slightly above, the historical average. In contrast, age-1.2 fish from the Salcha River were more than double the historical average. Other escapement projects with high percentages of age-1.2 fish were the Gisasa and Tozitna rivers. This suggests Chinook salmon from the 2005 brood year in the Salcha, Gisasa, and Tozitna rivers may be returning at a higher rate than those from other Yukon River tributaries (Tables 2–4).

At the LYTF projects, age distribution was different by sex, where the majority of the younger fish (age-1.2 and age-1.3) were male and more of the older fish (age-1.4 and age-1.5) were female. This relationship between Chinook salmon age and sex is typical and has been reported previously from the Yukon and Kuskokwim rivers (Horne-Brine et al. 2009; Molyneaux et al. 2006).

Chinook Salmon Sex Composition

Historically, LYTF Chinook salmon, caught with 8.5" mesh, have been close to 50% female (Table 3). The above average percentage of age-1.4 fish, which are typically more female, contributed to a higher percentage of females in 2009. Samples collected from individual projects and locations can vary in sex composition, which is often related to the gear used to capture the fish and the relative percentage of smaller age-1.2 fish which are usually male (Tables 2 and 5). A relatively low percentage of females can be attributable to the selectivity of small mesh gillnets or fish wheels, where smaller and typically male fish are caught (Meehan 1961; Molyneaux et al. 2005). In 2009, lower percentages of females were found from small mesh gear and fish wheels in the District 1 subsistence 5.5" mesh, subsistence samples in Subdistricts 5-B and 5-D, and smaller mesh gear from the Pilot Station and Eagle sonar test fisheries.

Chinook Salmon Length Composition

Many upriver subsistence fishermen reported larger Chinook salmon were caught in 2009 compared with previous years. Additional restrictions in the subsistence fishery, the lack of a directed Chinook salmon commercial fishery, and delaying the start of the chum commercial fishery until the majority of the Chinook salmon run had passed upriver undoubtedly contributed to more and larger Chinook salmon available for harvest by upriver fishermen.

At the LYTF projects where fish were cut to verify sex, Chinook salmon males were smaller on average than females, which is consistent with recent analyses. Karpovich and DuBois (2007)

found that males were smaller than females with the exception of the age-1.5 fish. Molyneaux et al. (2006) also reported male Chinook salmon had a smaller mean length than females on the Kuskokwim River.

The size of Chinook salmon returning to the Yukon River has been a concern. Many fishermen and researchers suggest fewer “large” fish and females are returning than in the past. The Salmon Size Subcommittee of the US/Canada Yukon River Joint Technical Committee reviewed existing literature with respect to changes in Chinook salmon age, sex, and size composition (JTC 2006). Existing analyses documented a decrease in the weight of commercial harvests (Bigler et al. 1996), a reduction in the prevalence of larger fish (Hyer and Schleusner 2005), and the apparent near disappearance of age-8 fish (JTC 1998).

To address size concerns, the Comparative Mesh Size Study was conducted from 2007 through 2009 in the lower river to collect age, sex, length, weight, and girth data from Chinook salmon harvested from 7”, 7.5” and 8” mesh drift gillnets. The study found differences in species (Chinook versus chum salmon), age, length, weight, and girth by mesh size (Howard and Evenson 2010).

SUMMER CHUM SALMON

SUMMER CHUM SALMON AGE COMPOSITION

Age-0.3 and age-0.4 summer chum salmon commercial harvest and test fishery percentages from lower river projects were near equal in 2009. At most escapement projects, age-0.3 fish predominated. The East Fork Andreafsky River weir is an exception, where age-0.4 fish were most frequent. Age-0.5 fish returning to the Andreafsky River were also well above average and can be traced back to returns from the 2003 brood year, where age-0.4 fish were 82.1% in 2008 (Horne Brine and DuBois 2010) and age-0.3 fish were 71.5% in 2007 (Horne Brine et al. 2009).

Summer Chum Salmon Sex Composition

Samples from most summer chum salmon projects had female percentages near 50% which is within the typical range.

Summer Chum Salmon Length Composition

Length comparisons between male and female summer chum salmon showed a trend opposite that of Chinook salmon. At the LYTF projects, male fish were found to be larger on average than females, which is consistent with findings by Karpovich and DuBois (2007). Molyneaux et al. (2006) also reported the female mean lengths were generally less than males by age in summer chum salmon on the Kuskokwim River.

FALL CHUM SALMON

Fall Chum Salmon Age Composition

Age-0.3 fall chum salmon predominated in the commercial, subsistence, and test fisheries, which is typical. At the escapement projects, age-0.3 fish predominated and higher percentages of age-0.2 fish were observed when compared to other fall chum projects. The Delta and Toklat rivers also had above average percentages of age-0.5 fish.

Fall Chum Salmon Sex Composition

Samples from most fall chum salmon projects had female percentages near 50%. At the escapement projects, the Chandalar River and Toklat River carcass samples had slightly higher percentage of females.

Fall Chum Salmon Length Composition

Similar to summer chum salmon, length comparisons between males and females for fall chum salmon showed that males are larger than females, which is consistent with findings by Karpovich and DuBois (2007).

COHO SALMON

Coho Age Composition

In 2009, age-2.1 coho salmon predominated; these are typically the most common age of coho salmon that return to the drainage.

Coho Sex Composition

The percentage of female coho salmon was near 50% at the LYTF projects (Table 11). The District 1 commercial harvest had the lowest percentage of female fish; the sex of these fish was estimated from external characteristics (40.9%, Table 11).

Coho Length Composition

In 2009, there was no significant difference in mean length by sex or age for coho salmon.

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TABLES AND FIGURES

Table 1.–Yukon River project type, location, and salmon species where age, sex, and length data were collected, 2009.

Project Type	Location	Salmon Species (ASL Summaries Present = X)			
		Chinook	Summer Chum	Fall Chum	Coho
Commercial					
	District 1		X	X	X
	District 2		X	X	X
	Subdistrict 4-A		X		
	District 6		X	X	
Subsistence					
	District 1	X	X		
	District 3, Holy Cross ^a	X			
	Subdistrict 4-A, Kaltag ^b	X			
	Subdistrict 4-A, Nulato ^a	X			
	Subdistricts 4-A, 4-B, 4-C Galena ^a	X			
	Subdistricts 4-B, 4-C Bishop Rock ^a	X			
	Subdistricts 4-B, 4-C Ruby ^c	X			
	Subdistrict 5-B, Tanana			X	
	Subdistrict 5-B, Rampart Rapids	X		X	
	Subdistrict 5-C, Hess Creek ^a	X			
	Subdistrict 5-D, Fort Yukon ^a	X			
	Subdistrict 5-D, Eagle ^d	X			
	Subdistrict 6-B, Nenana	X			
Test Fishery					
	Off-Shore	X	X		
	Big Eddy	X	X	X	X
	Middle Mouth	X	X	X	X
	Comparative Mesh Size	X			
	Mountain Village ^e			X	X
	Pilot Station Sonar	X			
	Eagle Sonar	X		X	
Escapement					
	Andreafsky River, East Fork ^f	X	X		
	Anvik River	X	X		
	Chandalar River ^f			X	
	Chena River ^g	X			
	Delta River			X	
	Gisasa River ^f	X	X		
	Henshaw Creek ^h	X	X		
	Salcha River ⁱ	X	X		
	Toklat River ^a			X	
	Tozitna River ^j	X	X		
	Otter Creek, Nenana River ^h				X

^a Project was operated by the Tanana Chiefs Conference.

^b Project was operated by the City of Kaltag.

^c Project was operated by the Yukon River Drainage Fisheries Association.

^d Project was operated by the Ruby Tribal Council.

^e Project was operated by the Asacarsarmiut Traditional Council.

^f Project was operated by the United States Fish and Wildlife Service.

^g Project was operated by the Alaska Department of Fish and Game, Division of Sport Fish.

^h Project was operated by the Bering Sea Fisherman's Association.

ⁱ Project was operated by the United States Bureau of Land Management.

Table 2.–Yukon River Chinook salmon age and female percentages from commercial, subsistence, test fishery, and escapement projects, 2009.

Project Type Location and (gear)	Sample Size	Percent (%)										Female
		Brood Year (Age)										
		2006 (1.1)	2005 (1.2)	2004 (1.3)	2003 (2.2)	2003 (1.4)	2003 (2.3)	2002 (1.5)	2002 (2.4)	2001 (1.6)	2001 (2.5)	
Subsistence												
District 1 (5.5" mesh gillnet)	49	0.0	55.1	18.4	0.0	26.5	0.0	0.0	0.0	0.0	0.0	14.3
District 1 (8.5" mesh gillnet)	39	0.0	0.0	15.4	0.0	82.1	0.0	2.6	0.0	0.0	0.0	51.3
District 3, Holy Cross (gillnet)	120	0.0	8.1	10.4	0.0	80.5	0.0	0.9	0.0	0.0	0.0	54.3
Subdistrict 4-A, Kaltag (8.5" mesh gillnet)	171	0.0	6.4	12.9	0.0	76.0	0.0	1.8	2.9	0.0	0.0	62.6
Subdistrict 4-A, Nulato (gillnet)	330	0.0	9.4	15.2	0.0	73.6	0.0	1.8	0.0	0.0	0.0	45.5
Subdistrict 4-A, Galena (gillnet)	182	0.0	13.2	16.5	0.0	70.3	0.0	0.0	0.0	0.0	0.0	44.0
Subdistricts 4-B, 4-C Galena (gillnet, fish wheel)	126	0.0	31.0	13.5	0.0	55.6	0.0	0.0	0.0	0.0	0.0	40.5
Subdistricts 4-B, 4-C Bishop Rock (gillnet)	176	0.0	10.2	8.0	0.0	81.3	0.0	0.6	0.0	0.0	0.0	52.8
Subdistrict 5-B, Rampart Rapids (fish wheel)	47	0.0	14.9	19.1	0.0	66.0	0.0	0.0	0.0	0.0	0.0	29.8
Subdistrict 5-C, Hess Creek (6" mesh gillnet)	154	0.0	10.4	16.9	0.0	72.1	0.0	0.6	0.0	0.0	0.0	37.0
Subdistrict 5-D, Fort Yukon (6" and 8" mesh GN, fish wheel)	99	0.0	31.3	33.3	0.0	34.3	0.0	1.0	0.0	0.0	0.0	25.3
Subdistrict 5-D, Eagle (fish wheel)	191	0.5	26.7	30.9	0.0	39.8	0.5	1.0	0.5	0.0	0.0	21.5
Test Fishery												
Big Eddy (8.5" mesh set gillnet)	500	0.0	3.0	9.4	0.0	85.6	0.2	1.2	0.6	0.0	0.0	58.6
Middle Mouth (8.5" mesh set gillnet)	535	0.0	3.7	8.8	0.0	85.2	0.0	1.9	0.4	0.0	0.0	61.9
Comparative Mesh Size (7.0" to 8.0" mesh gillnet)	449	0.0	4.9	17.8	0.0	75.5	0.4	0.4	0.9	0.0	0.0	50.1
Pilot Station Sonar (2.75" to 8.5" mesh drift gillnet)	784	0.3	15.7	25.0	0.1	57.5	0.3	0.9	0.3	0.0	0.0	41.7
Eagle Sonar (5.25" to 8.5" mesh drift gillnet)	647	0.0	7.7	33.2	0.0	59.0	0.0	0.0	0.0	0.0	0.0	39.6
Escapement												
Andreafsky River, East Fork (weir trap)	2,312	0.1	25.0	15.5	0.0	58.7	0.1	0.5	0.0	0.0	0.0	46.0
Andreafsky River, East Fork (carcass)	376	0.3	17.0	14.1	0.0	67.3	0.0	1.3	0.0	0.0	0.0	54.0
Anvik River (carcass)	220	0.0	17.3	16.4	0.0	65.0	0.0	0.9	0.5	0.0	0.0	52.3
Chena River (carcass)	442	0.0	14.5	17.0	0.0	67.8	0.0	0.7	0.0	0.0	0.0	55.1
Gisasa River (weir trap)	521	0.0	42.6	24.1	0.0	33.1	0.0	0.2	0.0	0.0	0.0	29.3
Salcha River (carcass)	458	0.0	31.7	21.4	0.0	46.7	0.0	0.2	0.0	0.0	0.0	39.1
Tozitna River (weir trap)	227	0.0	56.6	19.4	0.1	23.7	0.1	0.0	0.0	0.0	0.0	17.9
Total Chinook	9,155											
Season Total all sites:		0.0	19.0	18.0	0.01	61.8	0.07	0.78	0.25	0	0	42.676
Season Total (Test & Subs):		0.0	14.8	17.9	0.0	65.9	0.1	0.9	0.3	0.0	0.0	43.0

Table 3.–Yukon River Chinook salmon age and female percentages from the combined Big Eddy and Middle Mouth test fisheries with 8.5" set gillnets, 1985–2009.

Year	Sample Size	Number of Days	Percent (%)						Female
			Age						
			3 yrs. (1.1)	4 yrs. (1.2)	5 yrs. (1.3, 2.2)	6 yrs. (1.4, 2.3)	7 yrs. (1.5, 2.4)	8 yrs. (1.6, 2.5)	
1985	309	18	0.0	3.9	8.4	79.3	8.1	0.3	53.7
1986	533	25	0.3	0.9	22.7	52.9	23.1	0.2	46.3
1987	465	20	0.3	0.9	3.0	78.5	17.0	0.4	62.8
1988	262	30	0.0	2.3	15.3	43.9	37.8	0.8	56.1
1989	381	29	0.0	0.8	17.8	67.2	13.9	0.5	53.0
1990	227	23	0.0	3.5	11.0	76.7	8.8	0.0	56.4
1991	356	27	0.0	1.4	42.1	48.9	7.0	0.6	49.2
1992	359	19	0.0	1.1	10.6	82.7	5.0	0.6	56.5
1993	472	25	0.0	0.8	25.8	63.8	9.3	0.2	50.8
1994	653	41	0.2	1.4	41.3	51.8	5.5	0.0	47.3
1995	445	19	0.0	0.9	11.2	81.6	6.3	0.0	50.8
1996	355	13	0.0	1.1	61.4	21.4	16.3	0.0	53.0
1997	302	12	0.0	1.7	9.6	86.4	2.6	0.0	51.3
1998	928	39	0.0	1.3	43.4	45.3	9.9	0.1	50.2
1999	942	35	0.0	0.7	9.1	87.0	3.1	0.0	61.4
2000	950	42	0.2	0.7	19.2	71.1	9.1	0.0	53.4
2001	1,020	37	0.0	0.5	11.0	80.6	8.0	0.0	56.9
2002	1,050	43	0.0	2.5	20.5	64.9	12.1	0.0	52.2
2003	1,400	50	0.0	0.6	24.1	68.0	7.3	0.1	52.5
2004	865	48	0.1	4.3	18.5	74.5	2.7	0.0	58.2
2005	994	43	0.0	1.5	40.9	55.0	2.5	0.0	48.9
2006	987	38	0.0	2.2	50.6	45.0	2.2	0.0	48.5
2007	1,030	42	0.0	4.7	14.4	80.2	0.8	0.0	52.5
2008	1,271	43	0.0	1.2	44.4	51.0	3.5	0.0	46.3
2009	1,035	42	0.0	3.4	9.1	85.5	2.0	0.0	60.3
Average ^a (1994, 1998-2008)	1,008	42	0.0	1.8	28.1	64.5	5.6	0.0	52.4
5-yr average ^a (2004-2008)	1,029	43	0.0	2.8	33.7	61.1	2.3	0.0	50.9

Note: The Big Eddy and Middle Mouth 8.5" set gillnet test fisheries were conducted from the end of May through July 15. Before 1998, these test fisheries were often discontinuous or were not conducted throughout the season. The "Number of Days" refers only to those days that scale samples were collected from Chinook salmon and aged.

^a The averages only include years when samples were collected throughout the season with a 35-day season minimum. Averages were not weighted by number of fish sampled each year.

Table 4.—Yukon River Chinook salmon age and female percentages from selected escapement projects, 1985–2009.

Project	Year	Percent (%)						Female
		Age						
		3 yrs. (1.1)	4 yrs. (1.2)	5 yrs. (1.3, 2.2)	6 yrs. (1.4, 2.3)	7 yrs. (1.5, 2.4)	8 yrs. (1.6, 2.5)	
Andreafsky River, East Fork	1985 ^a	0.0	39.6	12.8	43.6	4.0	0.0	33.2
	1986 ^b	0.0	2.2	69.8	21.8	6.2	0.0	23.3
	1987 ^b	0.3	4.7	8.9	83.7	2.4	0.0	56.1
	1988 ^b	0.2	27.8	29.5	26.8	15.6	0.0	38.7
	1989	0.0	5.3	71.8	21.2	1.7	0.0	13.6
	1990	0.6	31.8	28.7	37.9	0.9	0.0	41.6
	1991	0.0	10.3	56.9	30.5	2.3	0.0	33.9
	1992	0.0	23.1	48.1	25.0	3.8	0.0	21.2
	1993	0.4	16.9	38.7	41.8	2.3	0.0	29.9
	1994 ^c	0.0	8.0	53.0	34.5	4.3	0.2	35.5
	1995 ^c	0.0	35.0	15.7	47.5	1.7	0.0	43.7
	1996 ^c	1.2	6.6	74.1	13.9	4.2	0.0	41.9
	1997 ^c	0.0	52.7	15.6	31.7	0.0	0.0	36.8
	1998 ^c	0.0	16.8	71.4	11.1	0.8	0.0	29.0
	1999 ^c	0.3	34.5	32.2	32.5	0.6	0.0	28.6
	2000 ^c	0.0	12.6	49.1	38.3	0.0	0.0	54.3
	2001 ^c	0.0	14.5	18.5	64.5	2.4	0.0	63.7
	2002 ^c	0.0	30.5	48.2	20.0	1.4	0.0	21.1
	2003 ^c	0.5	16.0	51.9	30.7	0.8	0.0	46.2
	2004 ^c	0.0	39.9	42.6	17.1	0.4	0.0	37.3
2005 ^c	0.0	15.0	64.3	20.2	0.5	0.0	50.2	
2006 ^c	0.0	17.0	54.9	28.1	0.0	0.0	42.6	
2007 ^{c, d}	0.0	41.7	25.7	32.0	0.6	0.0	-	
2008 ^c	0.0	3.8	74.5	20.1	1.5	0.0	34.8	
2009 ^c	0.1	25.0	15.5	58.7	0.5	0.0	46.0	
Average ^e (1985-2008)		0.1	21.1	44.0	32.3	2.4	0.0	37.3
5-yr Average ^e (2004-2008)		0.0	23.5	52.4	23.5	0.6	0.0	41.2
Anvik River	1985 ^a	0.0	30.3	39.4	30.3	0.0	0.0	24.2
	1986 ^a	0.0	0.7	50.0	38.0	11.3	0.0	67.2
	1987 ^a	0.0	9.5	13.1	73.9	3.7	0.0	58.7
	1988 ^a	0.0	30.5	38.2	27.2	4.1	0.0	29.7
	1989 ^a	0.3	4.2	49.1	43.5	2.9	0.0	40.7
	1990 ^a	0.3	26.3	26.0	43.8	3.8	0.0	37.0
	1991 ^a	0.0	10.3	55.0	31.7	2.9	0.0	41.0
	1992 ^a	0.0	9.5	38.1	50.8	1.6	0.0	41.3
	1993 ^a	0.0	13.8	38.5	45.6	2.1	0.0	42.1
	1994 ^a	0.0	3.0	51.9	39.8	5.4	0.0	42.0
	1995 ^a	0.0	9.5	38.1	50.8	1.6	0.0	41.3
	1996 ^a	0.0	9.9	55.4	24.4	9.9	0.4	35.1
	1997 ^a	0.0	25.0	30.6	44.1	0.3	0.0	36.8
	1998 ^a	0.3	14.7	59.9	23.9	1.2	0.0	32.7
	1999 ^a	0.0	9.3	42.5	48.1	0.0	0.0	37.9
	2000 ^a	0.0	4.9	41.9	52.7	0.5	0.0	40.9
	2001 ^a	0.0	11.1	30.1	53.0	5.7	0.0	38.3
	2002 ^a	0.0	19.5	43.1	34.2	3.2	0.0	28.8
	2003 ^a	0.2	8.9	54.7	33.2	3.0	0.0	37.6
	2004 ^a	0.6	32.2	40.7	25.6	0.9	0.0	27.6
2005 ^a	0.0	8.8	61.2	27.7	2.2	0.0	51.1	
2006 ^a	0.0	10.7	47.9	41.4	0.0	0.0	43.2	
2007 ^f	-	-	-	-	-	-	-	
2008 ^a	0.0	7.6	69.5	22.0	0.9	0.0	18.8	
2009 ^a	0.0	17.3	16.4	65.0	1.4	0.0	52.3	
Average ^e (1985-2008)		0.1	13.5	44.1	39.4	2.9	0.0	38.9
5-yr avg. ^e (2004-2008)		0.2	14.8	54.8	29.2	1.0	0.0	35.2

-continued-

Table 4.–Page 2 of 3.

Project	Year	Percent (%)						Female
		Age						
		3 yrs. (1.1)	4 yrs. (1.2)	5 yrs. (1.3, 2.2)	6 yrs. (1.4, 2.3)	7 yrs. (1.5, 2.4)	8 yrs. (1.6, 2.5)	
Chena River	1985 ^g	0.0	12.1	21.7	59.2	7.0	0.0	52.5
	1986 ^g	0.1	9.3	51.2	29.9	9.3	0.1	25.4
	1987 ^g	0.0	2.9	13.1	75.6	8.4	0.0	58.0
	1988 ^g	0.6	10.5	17.5	46.4	24.6	0.4	60.9
	1989 ^g	0.3	4.2	30.2	54.9	10.4	0.0	64.9
	1990 ^g	0.0	23.8	25.7	46.7	3.8	0.0	46.2
	1991 ^g	0.0	8.3	55.8	28.5	7.4	0.0	31.5
	1992 ^g	1.9	40.7	16.4	40.5	0.4	0.0	37.7
	1993 ^b	0.5	29.4	41.2	27.8	1.1	0.0	16.6
	1994 ^b	0.0	2.9	43.6	51.2	2.3	0.0	45.1
	1995 ^b	0.0	4.4	20.9	70.9	3.8	0.0	66.0
	1996 ^b	2.1	6.2	44.2	23.5	23.9	0.0	44.0
	1997 ^b	0.3	37.2	13.4	48.0	1.1	0.0	39.6
	1998 ^b	0.0	4.4	72.4	18.4	4.8	0.0	41.2
	1999 ^b	0.9	7.9	25.2	65.4	0.6	0.0	58.8
	2000 ^b	0.0	20.1	35.6	35.6	8.7	0.0	34.9
	2001 ^b	0.6	9.6	33.6	51.2	5.0	0.0	44.0
	2002 ^b	0.1	29.0	29.8	38.5	2.7	0.0	31.7
	2003 ^b	0.0	5.1	46.5	41.6	6.8	0.0	44.9
	2004 ^b	0.0	8.9	17.7	71.5	1.9	0.0	66.5
2005 ^b	0.0	6.5	49.9	39.5	4.1	0.0	42.4	
2006 ^b	0.0	12.7	45.6	40.6	1.1	0.0	45.9	
2007 ^{b, h}	13.2	22.6	32.1	32.1	0.0	0.0	43.4	
2008 ^b	0.0	27.8	61.1	11.1	0.0	0.0	44.4	
2009 ^b	0.0	14.5	17.0	67.8	0.7	0.0	55.1	
	Average ^e (1985-2006, 2008)	0.3	14.1	35.3	44.2	6.1	0.0	45.4
	5-year Avg. ^e (2004-2006, 2008)	0.0	14.0	43.6	40.7	1.8	0.0	49.8
Salcha River	1985 ^g	0.0	12.3	17.6	64.8	5.3	0.0	48.5
	1986 ^g	0.2	11.8	43.7	29.5	14.8	0.0	35.8
	1987 ^g	0.2	6.0	12.6	73.5	7.8	0.0	62.8
	1988 ^g	0.4	20.3	22.5	42.1	14.7	0.0	39.6
	1989 ^g	0.5	4.1	28.9	57.8	8.8	0.0	62.2
	1990 ^g	0.2	17.6	24.9	48.9	8.3	0.0	48.9
	1991 ^g	0.2	8.2	44.3	41.4	5.8	0.2	47.2
	1992 ^g	1.2	30.8	28.6	38.2	1.1	0.0	34.4
	1993 ^b	0.9	28.0	39.1	31.1	0.9	0.0	27.6
	1994 ^b	0.6	2.7	39.1	52.9	4.8	0.0	44.5
	1995 ^b	0.0	13.6	20.6	62.8	3.1	0.0	56.0
	1996 ^b	2.7	6.2	38.4	28.6	24.1	0.0	50.8
	1997 ^b	0.0	14.4	14.4	69.4	1.7	0.0	50.0
	1998 ^b	2.4	4.9	72.4	17.9	2.4	0.0	30.0
	1999 ^b	0.0	9.1	24.1	66.4	0.3	0.0	54.7
	2000 ^b	0.0	22.0	48.8	24.4	4.9	0.0	43.9
2001 ^b	0.5	10.4	33.9	52.1	3.1	0.0	37.5	
2002 ^b	0.0	36.2	13.8	38.7	11.3	0.0	34.8	
2003 ^b	0.7	7.3	42.4	42.4	7.3	0.0	42.4	
2004 ^b	0.0	9.2	8.3	81.7	0.9	0.0	62.9	
2005 ^b	0.0	9.3	41.5	46.2	3.0	0.0	54.3	
2006 ^b	0.0	5.7	49.3	43.0	2.0	0.0	43.4	
2007 ^b	0.0	22.4	26.9	50.3	0.3	0.0	35.7	
2008 ^b	0.7	9.9	51.8	36.0	1.7	0.0	39.3	
2009 ^b	0.0	31.7	21.4	46.7	0.2	0.0	39.1	
	Average ^e (1985-2008)	0.5	13.4	32.8	47.5	5.8	0.0	45.3
	5-yr Average ^e (2004-2008)	0.1	11.3	35.6	51.4	1.6	0.0	47.1

-continued-

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- ^a Project was operated as sonar.
- ^b Project was operated as a counting tower.
- ^c Project was operated as weir.
- ^d Percent female data not available.
- ^e Averages were not weighted by number of fish sampled each year.
- ^f Project did not operate.
- ^g Estimates were from mark–recapture project.
- ^h Ages were determined by project staff. Data suggests there may be errors in aging or in the matching of ages with lengths.

Table 5.–Yukon River Chinook salmon mean length (mm) by project, gear, sex, and age, 2009.

Sex	Project Location	Project Type and (Gear)	Brood Year (Age)									
			2006 (1.1)	2005 (1.2)	2004 (1.3)	2004 (2.2)	2003 (1.4)	2003 (2.3)	2002 (1.5)	2002 (2.4)	2001 (1.6)	2001 (2.5)
Male	District 1	Sub (8.5" GN)	-	-	719	-	851	-	955	-	-	-
	District 1	Sub (5.5" GN)	-	582	691	-	781	-	-	-	-	-
	District 3, Holy Cross	Sub (GN)	-	613	720	-	844	-	940	-	-	-
	Subdistrict 4-A, Kaltag	Sub (8.5" GN)	-	619	713	-	847	-	910	-	-	-
	Subdistrict 4-A, Nulato	Sub (GN)	-	585	717	-	847	-	925	-	-	-
	Subdistricts 4-B, 4-C Galena	Sub (FW, GN)	-	629	737	-	846	-	-	-	-	-
	Subdistricts 4-B, 4-C Bishop Rock	Sub (GN)	-	628	738	-	875	-	-	-	-	-
	Subdistrict 5-B, Rampart Rapids	Sub (FW)	-	598	695	-	795	-	-	-	-	-
	Subdistrict 5-C, Hess Creek	Sub (6" GN)	-	611	716	-	869	-	860	-	-	-
	Subdistrict 5-D, Fort Yukon	Sub (FW, GN)	-	593	702	-	808	-	-	-	-	-
	Subdistrict 5-D, Eagle	Sub (FW, GN)	361	592	693	-	826	655	-	-	-	-
	Big Eddy	TF (8.5" SGN)	-	615	752	-	855	720	875	790	-	-
	Middle Mouth	TF (8.5" SGN)	-	583	741	-	839	-	993	870	-	-
	Comparative Mesh Size	TF (7.0"- 8.0" DGN)	-	616	704	-	827	-	803	-	-	-
	Pilot Station	TF (DGN)	389	591	699	556	821	705	870	789	-	-
	Eagle Sonar	TF (DGN)	-	615	734	-	835	-	-	-	-	-
	Andreafsky, E.F.	Esc (WR)	390	578	707	500	796	655	878	-	-	-
	Anvik	Esc (CR)	-	581	677	-	807	-	815	880	-	-
	Chena	Esc (CR)	-	598	710	-	850	-	-	-	-	-
	Gisasa	Esc (WR)	-	573	697	-	786	-	-	-	-	-
Salcha	Esc (CR)	-	583	696	-	859	-	-	-	-	-	
Tozitna	Esc (WR)	-	582	682	590	765	665	-	-	-	-	
Average Male Mean Length ^a			381	586	710	549	828	699	912	816	-	-
SE			22	1	2	26	1	15	17	18	-	-

-continued-

Table 5.–Page 2 of 2.

Sex	Project Location	Project Type and (Gear)	Brood Year (Age)									
			2005 (1.1)	2004 (1.2)	2003 (1.3)	2002 (2.2)	2002 (1.4)	2001 (2.3)	2001 (1.5)	2001 (2.4)	2000 (1.6)	2000 (2.5)
Female	District 1	Sub (8.5" GN)	-	-	805	-	861	-	-	-	-	-
	District 1	Sub (5.5" GN)	-	-	-	-	844	-	-	-	-	-
	District 3, Holy Cross	Sub (GN)	-	640	785	-	852	-	930	-	-	-
	Subdistrict 4-A, Kaltag	Sub (8.5" GN)	-	-	781	-	865	-	935	849	-	-
	Subdistrict 4-A, Nulato	Sub (GN)	-	623	789	-	858	-	905	-	-	-
	Subdistricts 4-B, 4-C Galena	Sub (FW, GN)	-	660	737	-	865	-	-	-	-	-
	Subdistricts 4-B, 4-C Bishop Rock	Sub (GN)	-	636	831	-	882	-	955	-	-	-
	Subdistrict 5-B, Rampart Rapids	Sub (FW)	-	-	-	-	848	-	-	-	-	-
	Subdistrict 5-C, Hess Creek	Sub (6" GN)	-	-	770	-	869	-	-	-	-	-
	Subdistrict 5-D, Fort Yukon	Sub (FW, GN)	-	643	746	-	832	-	960	-	-	-
	Subdistrict 5-D, Eagle	Sub (FW, GN)	-	-	729	-	858	-	857	789	-	-
	Big Eddy	TF (8.5" SGN)	-	-	788	-	864	-	938	923	-	-
	Middle Mouth	TF (8.5" SGN)	-	-	797	-	858	-	909	825	-	-
	Comparative Mesh Size	TF (7.0"- 8.0" DGN)	-	-	774	-	848	-	868	795	-	-
	Pilot Station	TF (DGN)	-	610	737	-	835	802	926	-	-	-
	Eagle Sonar	TF (DGN)	-	-	823	-	846	-	-	-	-	-
	Andreafsky, E.F.	Esc (WR)	-	594	772	-	833	-	867	-	-	-
	Anvik	Esc (CR)	-	-	788	-	826	-	805	-	-	-
	Chena	Esc (CR)	-	593	783	-	839	-	875	-	-	-
	Gisasa	Esc (WR)	-	684	771	-	839	-	875	-	-	-
Salcha	Esc (CR)	-	-	775	-	866	-	890	-	-	-	
Tozitna	Esc (WR)	-	575	719	-	838	-	-	-	-	-	
	Average Female Mean Length ^a		-	626	775	-	847	802	893	850	-	-
	SE		-	11	4	-	1	-	8	19	-	-

Note: Com is commercial, Sub is subsistence, TF is test fishery, Esc is escapement, GN is gillnet preceded by mesh size, SGN is set gillnet, DGN is drift gillnet, FW is fish wheel, WR is weir, SN is seine net, and CR is carcass. Dashes indicate no data.

^a Mean length and SE were calculated from the actual number of fish sampled at all projects combined.

Table 6.–Yukon River chum salmon age and female percentages from commercial, subsistence, test fishery, and escapement projects, 2009.

Project Type Location and (gear)	Sample Size	Percent (%)					Female
		Age					
		0.2	0.3	0.4	0.5	0.6	
Commercial - Summer Chum							
District 1 (≤6" gillnet)	957	1.5	47.1	48.8	2.5	0.1	49.6
District 2 (≤6" gillnet)	946	0.9	48.1	48.8	2.0	0.2	48.3
Subdistrict 4-A, (fish wheel, gillnet) ^a	381	2.6	56.1	39.2	2.1	0.0	100.0
District 6 (fish wheel)	679	3.9	71.1	23.6	1.3	0.1	55.9
Commercial - Fall Chum							
District 1 (gillnet)	813	3.8	56.0	37.8	2.4	0.0	46.8
District 2 (gillnet)	476	0.4	63.8	32.9	2.9	0.0	53.0
District 6 (fish wheel)	0	31.4	62.9	2.9	2.9	0.0	100.0
Subsistence - Summer Chum							
District 1 (5.5" gillnet)	82	2.4	45.1	51.2	1.2	0.0	32.9
Subsistence - Fall Chum							
Subdistrict 5-B, Tanana (fish wheel)	152	2.6	79.6	15.8	2.0	0.0	52.0
Subdistrict 6-B, Nenana (fish wheel)	34	29.4	67.6	2.9	0.0	0.0	47.1
Test Fishery - Summer Chum							
Off-Shore	124	2.4	43.5	51.6	2.4	0.0	40.3
Big Eddy (5.5" drift gillnet)	581	1.4	48.7	47.7	2.1	0.2	54.0
Middle Mouth (5.5" drift gillnet)	461	1.1	49.0	48.2	1.5	0.2	54.7
Test Fishery - Fall Chum							
Big Eddy (6.0" drift gillnet)	82	3.7	61.0	30.5	4.9	0.0	54.9
Middle Mouth (6.0" drift gillnet)	70	4.3	67.1	25.7	2.9	0.0	57.1
Big Eddy Exp. (6.0" drift gillnet)	99	6.1	79.8	13.1	1.0	0.0	49.5
Mountain Village (5 7/8" drift gillnet)	273	4.0	65.9	26.4	3.3	0.4	49.8
Eagle Sonar (5.25" and 7.5" mesh drift gillnet)	334	9.0	77.5	13.5	0.0	0.0	43.4
Test Fishery Fall Chum Average ^b		5.4	70.3	21.8	2.4	0.1	50.9
Escapement - Summer Chum							
Andreafsky River, East Fork (weir trap)	716	9.0	36.1	40.2	14.2	0.5	57.5
Anvik River (beach seine)	338	2.4	57.5	36.1	4.0	0.0	54.7
Gisasa River (weir trap)	619	3.1	61.4	33.1	2.4	0.0	53.7
Salcha River (carcass) ^c	180	3.9	53.9	32.8	8.9	0.6	62.8
Tozitna River (weir trap)	542	3.4	67.2	29.2	0.2	0.0	43.2
Escapement Summer Chum Average ^b		4.4	55.2	34.3	5.9	0.2	54.4
Escapement - Fall Chum							
Chandalar River (carcass) ^c	180	8.9	62.8	25.6	2.2	0.6	57.8
Delta River (carcass) ^c	180	11.1	48.3	33.3	6.7	0.6	45.6
Toklat River (carcass) ^c	150	14.0	62.7	16.0	6.0	1.3	60.0
Escapement Fall Chum Average ^b		11.3	57.9	25.0	5.0	0.8	54.4
Total Summer Chum	6,482						
Total Fall Chum	2,843						

^a The Subdistrict 4-A summer chum and the District 6 fall chum salmon fisheries were roe-directed.

^b Averages were not weighted by sample sizes.

^c Vertebrae were used for age determination.

Table 7.—Yukon River Districts 1, 2, 6 and Subdistrict 4-A summer chum salmon; and Districts 1, 2, and 6 fall chum salmon commercial harvest age and sex composition, 2009.

Season District	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Summer Chum Salmon														
District 1 ^a	957	Male	741	1.0	17,373	24.4	17,129	24.0	676	0.9	0	0.0	35,918	50.4
		Female	324	0.5	16,229	22.8	17,701	24.8	1,081	1.5	83	0.1	35,417	49.6
		Total	1,064	1.5	33,601	47.1	34,830	48.8	1,757	2.5	83	0.1	71,335	100.0
District 2 ^a	946	Male	532	0.6	21,524	24.9	21,670	25.0	828	1.0	210	0.2	44,763	51.7
		Female	205	0.2	20,126	23.2	20,606	23.8	870	1.0	0	0.0	41,808	48.3
		Total	737	0.9	41,650	48.1	42,276	48.8	1,698	2.0	210	0.2	86,571	100.0
Subdistrict 4-A ^b	381	Male										0	0.0	
		Female	120	2.6	2574	56.1	1798	39.2	97	2.1	0	0.0	4589	100.0
		Total	120	2.6	2574	56.1	1798	39.2	97	2.1	0	0.0	4589	100.0
District 6 ^c	679	Male	108	1.4	2,298	29.5	953	12.3	68	0.9	0	0.0	3,428	44.1
		Female	197	2.5	3,231	41.5	882	11.3	33	0.4	6	0.1	4,349	55.9
		Total	306	3.9	5,529	71.1	1,835	23.6	101	1.3	6	0.1	7,777	100.0
Fall Chum Salmon														
District 1	813	Male	283	2.4	3,595	30.2	2,263	19.0	200	1.7	0	0.0	6,341	53.2
		Female	168	1.4	3,075	25.8	2,240	18.8	90	0.8	0	0.0	5,573	46.8
		Total	451	3.8	6,670	56.0	4,502	37.8	290	2.4	0	0.0	11,911	100.0
District 2	476	Male	49	0.4	3,778	31.3	1,722	14.3	126	1.0	4	0.0	5,679	47.0
		Female	0	0.0	3,928	32.5	2,244	18.6	221	1.8	0	0.0	6,393	53.0
		Total	49	0.4	7,706	63.8	3,966	32.9	347	2.9	4	0.0	12,072	100.0
District 6 ^{c,d}	35	Male										0		
		Female	11	31.4	22	62.9	1	2.9	1	2.9	0	0.0	35	100.0
		Total	11	31.4	22	62.9	1	2.9	1	2.9	0	0.0	35	100.0
Districts 1, 2, 6 Combined	1,324	Male	333	1.4	7,373	30.7	3,985	16.6	326	1.4	4	0.0	12,020	50.0
		Female	179	0.7	7,025	29.2	4,484	18.7	312	1.3	0	0.0	12,000	50.0
		Total	512	2.1	14,398	59.9	8,469	35.3	637	2.7	4	0.0	24,021	100.0

^a Commercial fishing periods were restricted to 6.0" or smaller gillnets.

^b The Subdistrict 4-A summer chum salmon and the District 6 fall chum fisheries were roe-directed.

^c Commercial fishing gear was fish wheels.

^d Female fall chum salmon were pre-sorted. Sample size was insufficient to apply ages to the commercial harvest. The total District 6 fall chum salmon commercial harvest was 1,286 fish.

Table 8.—Yukon River summer chum salmon age and female percentages from the combined Big Eddy and Middle Mouth test fisheries with 5.5" mesh gillnets, 1985–2009.

Year	Sample Size	Number of Days ^a	Percent (%)					Female
			Age					
			0.2	0.3	0.4	0.5	0.6	
1985	954	19	0.0	62.4	37.1	0.5	0.0	51.6
1986	1,125	27	0.1	26.2	73.2	0.4	0.0	55.1
1987	1,169	34	0.6	48.8	43.7	6.8	0.0	56.8
1988	804	30	0.1	50.5	48.4	1.0	0.0	59.5
1989	1,074	29	0.0	39.9	59.5	0.6	0.0	62.2
1990	1,328	42	0.8	46.1	50.1	3.1	0.0	66.0
1991	1,495	41	0.0	45.4	53.6	0.9	0.0	55.2
1992	1,089	32	0.0	22.0	71.8	6.2	0.0	61.4
1993	1,757	46	0.1	38.2	57.4	4.4	0.0	50.4
1994	2,385	49	0.0	35.6	61.9	2.6	0.0	62.5
1995	1,839	38	0.5	40.2	53.2	6.1	0.0	56.2
1996	1,936	47	0.1	42.3	52.4	5.2	0.0	63.7
1997	1,947	46	0.0	24.1	71.5	4.4	0.0	61.0
1998	1,649	47	0.0	62.5	33.5	4.0	0.0	52.5
1999	1,227	33	1.1	48.1	47.4	3.4	0.0	50.0
2000	950	38	0.2	52.5	45.8	1.5	0.0	63.8
2001	724	33	0.0	25.0	73.8	1.2	0.0	64.6
2002	792	45	0.5	57.3	40.4	1.8	0.0	63.3
2003	822	42	0.4	78.7	18.7	2.2	0.0	54.4
2004	521	45	3.1	40.1	56.8	0.0	0.0	66.0
2005	754	32	0.1	89.8	9.9	0.1	0.0	54.5
2006	860	30	0.3	27.3	72.2	0.1	0.0	59.0
2007 ^b	91	16	0.0	42.9	47.3	9.9	0.0	65.9
2008 ^c	784	24	0.0	41.2	53.7	5.1	0.0	55.4
2009	1,042	33	1.2	48.8	47.9	1.8	0.2	54.3
Average ^d (1987-1988, 1990-2006)	1,266	39	0.4	46.0	50.7	2.9	0.0	59.0
5-yr average ^d (2004-2006)	712	36	1.2	52.4	46.3	0.1	0.0	59.8

^a Big Eddy and Middle Mouth 5.5" gillnet test fishery projects were conducted from the end of May through July 15, prior to 1990 these projects were often discontinuous within the season or were not conducted throughout the season. The "Number of Days" refers only to those days that scale samples were collected from Chinook salmon and aged.

^b One set gillnet was operated at Big Eddy.

^c Two drift gillnets were operated at Big Eddy and one drift gillnet was operated at Middle Mouth.

^d Years used for average only include years when samples were collected throughout the season and with a 30-day season minimum. Average was not weighted by number of fish sampled each year.

Table 9.–Yukon River summer and fall chum salmon mean length (mm) by project, gear, sex and age, 2009.

Sex and Season	Project Location	Project Type and (Gear)	Brood Year (Age)				
			2006 (0.2)	2005 (0.3)	2004 (0.4)	2003 (0.5)	2002 (0.6)
Male Summer Chum							
	District 1	Com (GN)	556	572	582	594	-
	District 2	Com (GN)	559	573	587	594	613
	Subdistrict 4-A	Com (FW)	-	-	-	-	-
	District 6	Com (FW)	561	579	592	614	-
	District 1	Sub (5.5" GN)	570	587	597	610	-
	Big Eddy	TF (5.5" SGN)	562	574	592	572	570
	Middle Mouth	TF (5.5" SGN)	544	573	592	577	-
	Andreafsky, E.F.	Esc (WR)	537	561	577	586	577
	Anvik	Esc (SN)	550	579	591	613	-
	Gisasa	Esc (WR)	551	574	588	600	-
	Salcha ^a	Esc (CR)	560	562	579	584	-
	Tozitna	Esc (WR)	548	573	600	650	-
Male Summer Chum Average ^b			554	573	589	599	587
Female Summer Chum							
	District 1	Com (GN)	544	559	572	564	570
	District 2	Com (GN)	544	558	570	579	-
	Subdistrict 4-A	Com (FW)	518	544	559	556	-
	District 6	Com (FW)	538	554	565	583	590
	District 1	Sub (5.5" GN)	590	565	584	-	-
	Big Eddy	TF (5.5" SGN)	548	559	574	579	-
	Middle Mouth	TF (5.5" SGN)	-	558	570	574	610
	Andreafsky, E.F.	Esc (WR)	511	533	541	548	-
	Anvik	Esc (SN)	517	551	556	560	-
	Gisasa	Esc (WR)	548	545	558	572	-
	Salcha ^a	Esc (CR)	543	537	549	550	555
	Tozitna	Esc (WR)	510	554	573	585	-
Female Summer Chum Average ^b			537	551	564	568	581

-continued-

Table 9.–Page 2 of 2.

Sex and Season	Project Location	Project Type and (Gear)	Brood Year (Age)				
			2005 (0.2)	2004 (0.3)	2003 (0.4)	2002 (0.5)	2001 (0.6)
Male Fall Chum							
	District 1	Com (GN)	549	574	590	589	-
	District 2	Com (FW)	548	581	593	565	605
	District 6	Com (FW)	-	-	-	-	-
	Subdistrict 5-B (Tanana)	Sub (FW)	645	617	626	615	-
	Big Eddy	TF (6.0" DGN)	555	585	607	608	-
	Middle Mouth	TF (6.0" DGN)	-	587	595	610	-
	Mt. Village	TF (5 7/8" DGN)	572	585	609	601	-
	Eagle Sonar	TF (DGN)	575	607	622	-	-
	Chandalar ^a	Esc (CR)	575	584	615	607	660
	Delta ^a	Esc (CR)	558	602	614	633	-
	Toklat ^a	Esc (SN)	538	572	603	572	570
	Male Fall Chum Average ^b		568	589	607	600	612
Female Fall Chum							
	District 1	Com (GN)	555	564	575	559	-
	District 2	Com (FW)	-	568	585	591	-
	District 6	Com (FW)	550	576	580	590	-
	Subdistrict 5-B (Tanana)	Sub (FW)	588	593	600	590	-
	Big Eddy	TF (6.0" DGN)	563	585	594	570	-
	Middle Mouth	TF (6.0" DGN)	558	576	595	-	-
	Mt. Village	TF (5 7/8" DGN)	560	577	591	582	560
	Eagle Sonar	TF (DGN)	565	582	583	-	-
	Chandalar ^a	Esc (CR)	553	557	565	590	-
	Delta ^a	Esc (CR)	548	563	578	588	584
	Toklat ^a	Esc (SN)	533	554	567	544	560
	Female Fall Chum Average ^b		557	572	583	578	568

Note: Com is commercial, Sub is subsistence, TF is test fishery, Esc is escapement, GN is gillnet, DGN is drift gillnet, FW is fish wheel, WR is weir, SN is seine net, and CR is carcass. Dashes indicate no data.

^a Ages were obtained from vertebrae.

^b Mean length and SE were calculated from the actual number of fish sampled at all projects combined.

Table 10.—Yukon River coho salmon age and female percentages from commercial and test fisheries and escapement, 2009.

Project Type Location (gear)	Sample Size	Percent (%)			Female
		Age			
		(1.1)	(2.1)	(3.1)	
Commercial					
District 1 (gillnet)	127	8.7	81.9	9.4	40.9
District 2 (gillnet)	106	11.3	84.0	4.7	50.0
Test Fishery					
Big Eddy (6.0" drift gillnet)	75	14.7	78.7	6.7	53.3
Big Eddy Exp. (6.0" drift gillnet)	49	12.2	83.7	4.1	42.9
Middle Mouth (6.0" drift gillnet)	74	14.9	77.0	8.1	48.6
Mountain Village (5 7/8" drift gillnet)	154	8.4	85.1	6.5	48.7
Test Fishery Average ^a		12.6	81.1	6.3	48.4
Escapement					
Otter Creek, Nenana River (rod & reel)	42	21.4	76.2	2.4	23.8
Total		627			

^a Averages were not weighted by sample size.

Table 11.—Yukon River coho salmon mean length (mm) by project, sex, gear, and age, 2009.

Sex	Project Location	Project Type and (Gear)	Brood Year (Age)		
			2005 (1.1)	2004 (2.1)	2003 (3.1)
Male	District 1	Com (GN)	580	566	587
	District 2	Com (GN)	580	562	610
	Big Eddy	TF (6.0" DGN)	588	572	583
	Big Eddy Exp.	TF (6.0" DGN)	563	580	-
	Middle Mouth	TF (6.0" DGN)	594	589	588
	Mt. Village	TF (5 7/8" DGN)	569	574	585
	Otter Creek (Nenana River)	Esc (Rod and Reel)	560	556	-
	Male Mean Length ^a			576	570
SE			4	2	7
Female	District 1	Com (GN)	574	566	563
	District 2	Com (GN)	556	562	558
	Big Eddy	TF (6.0" DGN)	583	581	580
	Big Eddy Exp.	TF (6.0" DGN)	-	577	590
	Middle Mouth	TF (6.0" DGN)	570	578	600
	Mt. Village	TF (5 7/8" DGN)	571	584	576
	Otter Creek (Nenana River)	Esc (Rod and Reel)	580	574	610
	Female Mean Length ^a			571	574
SE			4	2	6

Note: Com is commercial, TF is test fishery, GN is gillnet, and DGN is drift gillnet. Dashes indicate no data.

^a Mean length and SE were calculated from the actual number of fish sampled at all projects combined.

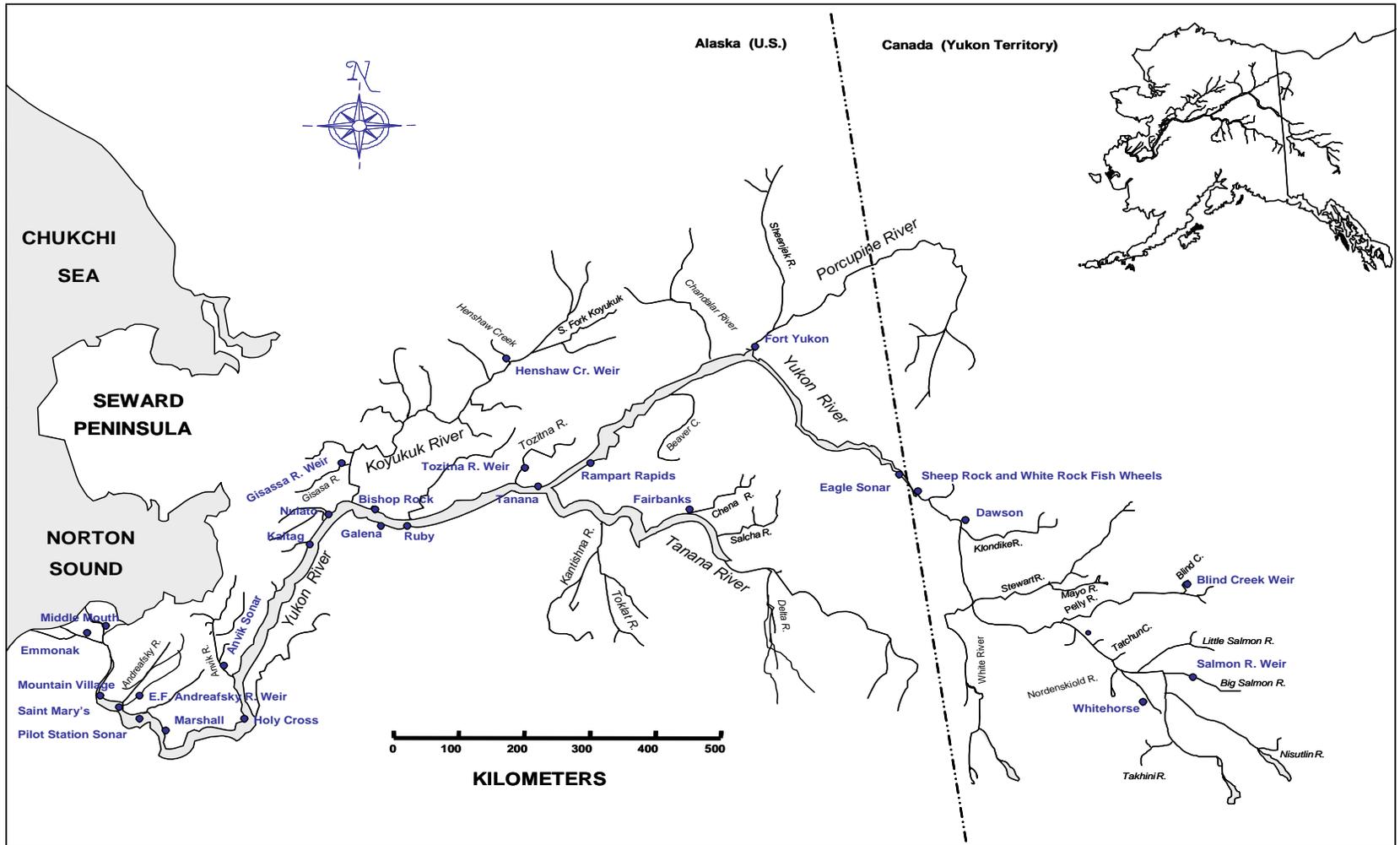


Figure 1.—Yukon River drainage in Alaska and Canada.

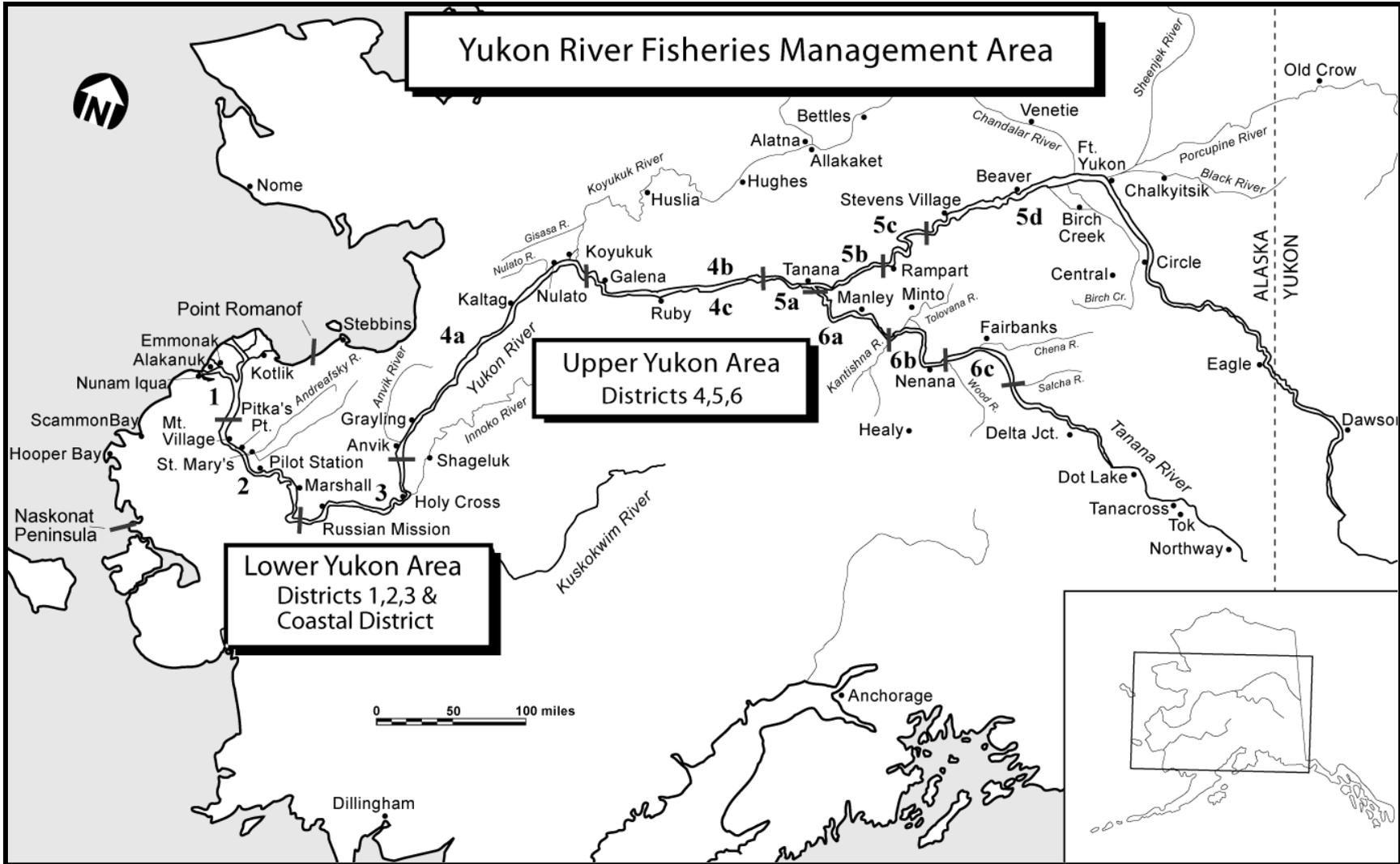


Figure 2.—Yukon River district and subdistrict map.

**APPENDIX A:
CHINOOK SALMON TABLES**

Appendix A1–Yukon River, District 1, Chinook salmon subsistence 5.5" mesh gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)																Total							
			2006		2005		2004		2003		2002		2001													
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
6/7, 12	7	Male	0	0.0	6	85.7	0	0.0	0	0.0	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	100.0		
		Female	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0		
		Subtotal	0	0.0	6	85.7	0	0.0	0	0.0	1	14.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	100.0		
6/23, 26	36	Male	0	0.0	17	47.2	9	25.0	0	0.0	4	11.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	30	83.3
		Female	0	0.0	0	0.0	0	0.0	0	0.0	6	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	16.7
		Subtotal	0	0.0	17	47.2	9	25.0	0	0.0	10	27.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	36	100.0
6/30	6	Male	0	0.0	4	66.7	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	5	83.3
		Female	0	0.0	0	0.0	0	0.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	16.7
		Subtotal	0	0.0	4	66.7	0	0.0	0	0.0	2	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	100.0
Season	49	Male	0	0.0	27	55.1	9	18.4	0	0.0	6	12.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	42	85.7
		Female	0	0.0	0	0.0	0	0.0	0	0.0	7	14.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	7	14.3
		Total	0	0.0	27	55.1	9	18.4	0	0.0	13	26.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	49	100.0
		Male Mean Length	-	582	691	-	781	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		SE	-	5	24	-	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		Female Mean Length	-	-	-	-	844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
		SE	-	-	-	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			

Note: Dashes indicate no data.

^a Sample dates were stratified by week.

Appendix A2.–Yukon River, District 1, Chinook salmon subsistence 8.5" mesh gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total											
			2006		2005		2004		2003		2002				2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/7-9, 12	39	Male	0	0.0	0	0.0	5	12.8	0	0.0	13	33.3	0	0.0	1	2.6	0	0.0	0	0.0	0	0.0	19	48.7
		Female	0	0.0	0	0.0	1	2.6	0	0.0	19	48.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	20	51.3
		Total	0	0.0	0	0.0	6	15.4	0	0.0	32	82.1	0	0.0	1	2.6	0	0.0	0	0.0	0	0.0	39	100.0
		Male Mean Length	-	-	719	-	851	-	955	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SE	-	-	23	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-	-	805	-	861	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SE	-	-	-	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A3.—Yukon River, District 3, Holy Cross, Chinook salmon subsistence gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a Gear	Sample Size		Brood Year (Age)																Total					
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/29 6" SGN	18	Male	0	0.0	8	44.4	2	11.1	0	0.0	6	33.3	0	0.0	0	0.0	0	0.0	0	0.0	16	88.9		
		Female	0	0.0	0	0.0	0	0.0	0	0.0	2	11.1	0	0.0	0	0.0	0	0.0	0	0.0	2	11.1		
		Subtotal	0	0.0	8	44.4	2	11.1	0	0.0	8	44.4	0	0.0	0	0.0	0	0.0	0	0.0	18	100.0		
		Male Mean Length	-		618		698		-		848		-		-		-		-					
		SE	-		16		13		-		20		-		-		-		-					
		Female Mean Length	-		-		-		-		825		-		-		-		-					
		SE	-		-		-		-		15		-		-		-		-					
7/9, 14 8.25" SGN	33	Male	0	0.0	1	3.0	5	15.2	0	0.0	9	27.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	15	45.5
		Female	0	0.0	0	0.0	0	0.0	0	0.0	18	54.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18	54.5
		Subtotal	0	0.0	1	3.0	5	15.2	0	0.0	27	81.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	33	100.0
7/13-15, 17 8.25" DGN	22	Male	0	0.0	1	4.5	2	9.1	0	0.0	5	22.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	8	36.4
		Female	0	0.0	0	0.0	3	13.6	0	0.0	11	50.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14	63.6
		Subtotal	0	0.0	1	4.5	5	22.7	0	0.0	16	72.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	22	100.0
7/9, 13-15, 17 All 8.25" Mesh	55	Male	0	0.0	2	3.6	7	12.7	0	0.0	14	25.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	23	41.8
		Female	0	0.0	0	0.0	3	5.5	0	0.0	29	52.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	32	58.2
		Subtotal	0	0.0	2	3.6	10	18.2	0	0.0	43	78.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	55	100.0
		Male Mean Length	-		605		702		-		838		-		-		-		-					
		SE	-		5		18		-		12		-		-		-		-					
		Female Mean Length	-		-		835		-		859		-		-		-		-					
		SE	-		-		38		-		7		-		-		-		-					
7/1-2, 6, 9, 13- 15 8.5" SGN	129	Male	0	0.0	4	3.1	4	3.1	0	0.0	47	36.4	0	0.0	1	0.8	0	0.0	0	0.0	0	0.0	56	43.4
		Female	0	0.0	2	1.6	3	2.3	0	0.0	68	52.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	73	56.6
		Subtotal	0	0.0	6	4.7	7	5.4	0	0.0	115	89.1	0	0.0	1	0.8	0	0.0	0	0.0	0	0.0	129	100.0
14-Jul 8.5" DGN	19	Male	0	0.0	2	10.5	3	15.8	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	31.6
		Female	0	0.0	0	0.0	1	5.3	0	0.0	11	57.9	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	13	68.4
		Subtotal	0	0.0	2	10.5	4	21.1	0	0.0	12	63.2	0	0.0	1	5.3	0	0.0	0	0.0	0	0.0	19	100.0
7/1-2, 6, 9, 13- 15 All 8.5" Mesh	148	Male	0	0.0	6	4.1	7	4.7	0	0.0	48	32.4	0	0.0	1	0.7	0	0.0	0	0.0	0	0.0	62	41.9
		Female	0	0.0	2	1.4	4	2.7	0	0.0	79	53.4	0	0.0	1	0.7	0	0.0	0	0.0	0	0.0	86	58.1
		Subtotal	0	0.0	8	5.4	11	7.4	0	0.0	127	85.8	0	0.0	2	1.4	0	0.0	0	0.0	0	0.0	148	100.0
		Male Mean Length	-		609		745		-		846		-		940		-		-					
		SE	-		7		19		-		8		-		-		-		-					
		Female Mean Length	-		640		748		-		851		-		930		-		-					
		SE	-		40		53		-		5		-		-		-		-					

-continued-

Appendix A3.–Page 2 of 2.

Sample Dates ^a	Sample Gear	Sample Size	Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
		Male	0	0.0	16	7.2	16	7.2	0	0.0	68	30.8	0	0.0	1	0.5	0	0.0	0	0.0	0	0.0	101	45.7
		Female	0	0.0	2	0.9	7	3.2	0	0.0	110	49.8	0	0.0	1	0.5	0	0.0	0	0.0	0	0.0	120	54.3
		Total	0	0.0	18	8.1	23	10.4	0	0.0	178	80.5	0	0.0	2	0.9	0	0.0	0	0.0	0	0.0	221	100.0
		Male Mean Length	-		613		720		-		844		-		940		-		-		-		-	
		SE	-		8		12		-		6		-		-		-		-		-		-	
		Female Mean Length	-		640		785		-		852		-		930		-		-		-		-	
		SE	-		40		36		-		4		-		-		-		-		-		-	

^a Sample dates were stratified by mesh size. Dashes indicate no data.

Appendix A4.–Yukon River, Subdistrict 4-A, Kaltag, Chinook salmon subsistence 8.5" mesh gillnet harvest age and sex composition, mean length (mm), mean weight (lb), and mean girth (mm) 2009.

Sample Dates ^a Gear	Sample Size		Brood Year (Age)										Total											
			2006		2005		2004		2003		2002				2001									
			(1.1) No.	(1.1) %	(1.2) No.	(1.2) %	(1.3) No.	(1.3) %	(2.2) No.	(2.2) %	(1.4) No.	(1.4) %	(2.3) No.	(2.3) %	(1.5) No.	(1.5) %	(2.4) No.	(2.4) %	(1.6) No.	(1.6) %	(2.5) No.	(2.5) %	No.	%
7/1-5 8.5" DGN	69	Male	0	0.0	7	10.1	8	11.6	0	0.0	13	18.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	28	40.6
		Female	0	0.0	0	0.0	1	1.4	0	0.0	36	52.2	0	0.0	0	0.0	4	5.8	0	0.0	0	0.0	41	59.4
		Subtotal	0	0.0	7	10.1	9	13.0	0	0.0	49	71.0	0	0.0	0	0.0	4	5.8	0	0.0	0	0.0	69	100.0
7/6-9, 12, 13 8.5" DGN	102	Male	0	0.0	4	3.9	9	8.8	0	0.0	22	21.6	0	0.0	1	1.0	0	0.0	0	0.0	0	0.0	36	35.3
		Female	0	0.0	0	0.0	4	3.9	0	0.0	59	57.8	0	0.0	2	2.0	1	1.0	0	0.0	0	0.0	66	64.7
		Subtotal	0	0.0	4	3.9	13	12.7	0	0.0	81	79.4	0	0.0	3	2.9	1	1.0	0	0.0	0	0.0	102	100.0
Season	171	Male	0	0.0	11	6.4	17	9.9	0	0.0	35	20.5	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0	64	37.4
		Female	0	0.0	0	0.0	5	2.9	0	0.0	95	55.6	0	0.0	2	1.2	5	2.9	0	0.0	0	0.0	107	62.6
		Total	0	0.0	11	6.4	22	12.9	0	0.0	130	76.0	0	0.0	3	1.8	5	2.9	0	0.0	0	0.0	171	100.0
		Male Mean Length	-		619		713	-		847	-	910	-		-	-	-	-	-	-	-	-	-	-
		SE	-		12		14	-		28	-	-	-		-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		781	-		865	-	935		849	-	-	-	-	-	-	-	-	-	-
		SE	-		-		21	-		4	-	15		28	-	-	-	-	-	-	-	-	-	-
		Male Mean Weight	-		8.5		13.4	-		21.7	-	25.0		-	-	-	-	-	-	-	-	-	-	-
		SE	-		0.8		1.1	-		1.1	-	-		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Weight	-		-		15.0	-		20.9	-	26.0		19.2	-	-	-	-	-	-	-	-	-	-
		SE	-		-		1.4	-		0.4	-	3.0		1.6	-	-	-	-	-	-	-	-	-	-
		Male Mean Girth	-		357		410	-		508	-	515		-	-	-	-	-	-	-	-	-	-	-
		SE	-		8		11	-		10	-	-		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Girth	-		-		448	-		503	-	550		490	-	-	-	-	-	-	-	-	-	-
		SE	-		-		23	-		4	-	20		19	-	-	-	-	-	-	-	-	-	-

Note: Samples were collected by the City of Kaltag. Dashes indicate no data.

^a Sample dates were stratified by week.

Appendix A5.—Yukon River, Subdistrict 4-A, Nulato, Chinook salmon subsistence gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Gear ^a	Sample Size		Brood Year (Age)												Total							
				2006		2005		2004		2003		2002		2001									
				(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
6/22- 7/1, 6-9, 13	7.5" DGN	86	Male	0	0.0	4	4.7	12	14.0	0	0.0	31	36.0	0	0.0	2	2.3	0	0.0	0	0.0	49	57.0
			Female	0	0.0	2	2.3	6	7.0	0	0.0	29	33.7	0	0.0	0	0.0	0	0.0	0	0.0	37	43.0
			Subtotal	0	0.0	6	7.0	18	20.9	0	0.0	60	69.8	0	0.0	2	2.3	0	0.0	0	0.0	86	100.0
7/2, 6	7.5" SGN	26	Male	0	0.0	1	3.8	1	3.8	0	0.0	15	57.7	0	0.0	0	0.0	0	0.0	0	0.0	17	65.4
			Female	0	0.0	1	3.8	2	7.7	0	0.0	6	23.1	0	0.0	0	0.0	0	0.0	0	0.0	9	34.6
			Subtotal	0	0.0	2	7.7	3	11.5	0	0.0	21	80.8	0	0.0	0	0.0	0	0.0	0	0.0	26	100.0
7/2, 5-9	8" DGN	141	Male	0	0.0	15	10.6	17	12.1	0	0.0	41	29.1	0	0.0	0	0.0	0	0.0	0	0.0	73	51.8
			Female	0	0.0	1	0.7	7	5.0	0	0.0	59	41.8	0	0.0	1	0.7	0	0.0	0	0.0	68	48.2
			Subtotal	0	0.0	16	11.3	24	17.0	0	0.0	100	70.9	0	0.0	1	0.7	0	0.0	0	0.0	141	100.0
7/2, 6	8.25" DGN	77	Male	0	0.0	4	5.2	4	5.2	0	0.0	31	40.3	0	0.0	2	2.6	0	0.0	0	0.0	41	53.2
			Female	0	0.0	3	3.9	1	1.3	0	0.0	31	40.3	0	0.0	1	1.3	0	0.0	0	0.0	36	46.8
			Subtotal	0	0.0	7	9.1	5	6.5	0	0.0	62	80.5	0	0.0	3	3.9	0	0.0	0	0.0	77	100.0
All Mesh Combined		330	Male	0	0.0	24	7.3	34	10.3	0	0.0	118	35.8	0	0.0	4	1.2	0	0.0	0	0.0	180	54.5
			Female	0	0.0	7	2.1	16	4.8	0	0.0	125	37.9	0	0.0	2	0.6	0	0.0	0	0.0	150	45.5
			Total	0	0.0	31	9.4	50	15.2	0	0.0	243	73.6	0	0.0	6	1.8	0	0.0	0	0.0	330	100.0
			Male Mean Length	-	585	717	-	847	-	925	-	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	9	10	-	5	-	34	-	-	-	-	-	-	-	-	-	-	-		
			Female Mean Length	-	623	789	-	858	-	905	-	-	-	-	-	-	-	-	-	-	-	-	
			SE	-	10	21	-	4	-	25	-	-	-	-	-	-	-	-	-	-	-		

^a Samples were stratified by mesh size and gear type. Dashes indicate no data.

Appendix A6.–Yukon River, Subdistrict 4-A, Galena, Chinook salmon subsistence gillnet and fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
7/6-14 6" DGN	70	Male	0	0.0	4	5.7	7	10.0	0	0.0	16	22.9	0	0.0	0	0.0	0	0.0	27	38.6		
		Female	0	0.0	6	8.6	6	8.6	0	0.0	31	44.3	0	0.0	0	0.0	0	0.0	43	61.4		
		Subtotal	0	0.0	10	14.3	13	18.6	0	0.0	47	67.1	0	0.0	0	0.0	0	0.0	70	100.0		
7/6 8" DGN	22	Male	0	0.0	3	13.6	0	0.0	0	0.0	10	45.5	0	0.0	0	0.0	0	0.0	0	0.0	13	59.1
		Female	0	0.0	0	0.0	0	0.0	0	0.0	9	40.9	0	0.0	0	0.0	0	0.0	0	0.0	9	40.9
		Subtotal	0	0.0	3	13.6	0	0.0	0	0.0	19	86.4	0	0.0	0	0.0	0	0.0	0	0.0	22	100.0
7/2, 9 8.5" DGN	90	Male	0	0.0	11	12.2	15	16.7	0	0.0	36	40.0	0	0.0	0	0.0	0	0.0	0	0.0	62	68.9
		Female	0	0.0	0	0.0	2	2.2	0	0.0	26	28.9	0	0.0	0	0.0	0	0.0	0	0.0	28	31.1
		Subtotal	0	0.0	11	12.2	17	18.9	0	0.0	62	68.9	0	0.0	0	0.0	0	0.0	0	0.0	90	100.0
7/2-14 All Mesh Combined	182	Male	0	0.0	18	9.9	22	12.1	0	0.0	62	34.1	0	0.0	0	0.0	0	0.0	0	0.0	102	56.0
		Female	0	0.0	6	3.3	8	4.4	0	0.0	66	36.3	0	0.0	0	0.0	0	0.0	0	0.0	80	44.0
		Total	0	0.0	24	13.2	30	16.5	0	0.0	128	70.3	0	0.0	0	0.0	0	0.0	0	0.0	182	100.0
		Male Mean Length	-		629		715		-		846		-		-		-		-			
		SE	-		10		15		-		8		-		-		-		-			
		Female Mean Length	-		660		737		-		865		-		-		-		-			
		SE	-		32		27		-		5		-		-		-		-			

Note: Samples were collected by Tanana Chiefs Conference (TCC) from Galena residents that fished in Subdistrict 4-A. Dashes indicate no data.

Appendix A7.—Yukon River, Subdistricts 4-B and 4-C, Galena, Chinook salmon subsistence gillnet and fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1) No.	(1.1) %	(1.2) No.	(1.2) %	(1.3) No.	(1.3) %	(2.2) No.	(2.2) %	(1.4) No.	(1.4) %	(2.3) No.	(2.3) %	(1.5) No.	(1.5) %	(2.4) No.	(2.4) %	(1.6) No.	(1.6) %	(2.5) No.	(2.5) %		
6/29- 7/18, 25 6" SGN, 6" DGN	6	Male	0	0.0	0	0.0	3	50.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	66.7
		Female	0	0.0	2	33.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	33.3
		Subtotal	0	0.0	2	33.3	3	50.0	0	0.0	1	16.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	6	100.0
6/2- 7/20 8.5" SGN	45	Male	0	0.0	11	24.4	4	8.9	0	0.0	12	26.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	27	60.0
		Female	0	0.0	2	4.4	2	4.4	0	0.0	14	31.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	18	40.0
		Subtotal	0	0.0	13	28.9	6	13.3	0	0.0	26	57.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	45	100.0
6/29- 7/22 Fish wheel	75	Male	0	0.0	24	32.0	6	8.0	0	0.0	14	18.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	44	58.7
		Female	0	0.0	0	0.0	2	2.7	0	0.0	29	38.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	31	41.3
		Subtotal	0	0.0	24	32.0	8	10.7	0	0.0	43	57.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	75	100.0
All Mesh Combined	126	Male	0	0.0	35	27.8	13	10.3	0	0.0	27	21.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	75	59.5
		Female	0	0.0	4	3.2	4	3.2	0	0.0	43	34.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	51	40.5
		Total	0	0.0	39	31.0	17	13.5	0	0.0	70	55.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	126	100.0
		Male Mean Length	-		589		703	-		856	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SE	-		9		19	-		13	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		596		788	-		863	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		SE	-		34		28	-		7	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Samples were collected by Tanana Chiefs Conference (TCC) from Galena residents that fished in Subdistricts 4-B and 4-C. Dashes indicate no data.

Appendix A8.—Yukon River, Subdistricts 4-B and 4-C, Bishop Rock, Chinook salmon subsistence 8.25" set gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%	No.	%								
6/23-25	55	Male	0	0.0	3	5.5	2	3.6	0	0.0	27	49.1	0	0.0	0	0.0	0	0.0	0	0.0	32	58.2		
		Female	0	0.0	1	1.8	1	1.8	0	0.0	21	38.2	0	0.0	0	0.0	0	0.0	0	0.0	23	41.8		
		Subtotal	0	0.0	4	7.3	3	5.5	0	0.0	48	87.3	0	0.0	0	0.0	0	0.0	0	0.0	55	100.0		
7/8-9, 12	75	Male	0	0.0	9	12.0	3	4.0	0	0.0	20	26.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	32	42.7
		Female	0	0.0	2	2.7	2	2.7	0	0.0	38	50.7	0	0.0	1	1.3	0	0.0	0	0.0	0	0.0	43	57.3
		Subtotal	0	0.0	11	14.7	5	6.7	0	0.0	58	77.3	0	0.0	1	1.3	0	0.0	0	0.0	0	0.0	75	100.0
7/13, 16, 20	46	Male	0	0.0	2	4.3	5	10.9	0	0.0	12	26.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	19	41.3
		Female	0	0.0	1	2.2	1	2.2	0	0.0	25	54.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	27	58.7
		Subtotal	0	0.0	3	6.5	6	13.0	0	0.0	37	80.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	46	100.0
Season	176	Male	0	0.0	14	8.0	10	5.7	0	0.0	59	33.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	83	47.2
		Female	0	0.0	4	2.3	4	2.3	0	0.0	84	47.7	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0	93	52.8
		Total	0	0.0	18	10.2	14	8.0	0	0.0	143	81.3	0	0.0	1	0.6	0	0.0	0	0.0	0	0.0	176	100.0
		Male Mean Length	-	627	738	-	875	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		SE	-	14	16	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
		Female Mean Length	-	636	831	-	882	-	955	-	-	-	-	-	-	-	-	-	-	-	-	-		
		SE	-	28	50	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Note: Samples were collected by the Tanana Chiefs Conference (TCC). Dashes indicate no data.

^a Sample dates were stratified by week.

Appendix A9.—Yukon River, Subdistrict 5-B, Rampart Rapids, Chinook salmon subsistence fish wheel harvest age and sex composition and mean length (mm) and mean weight (lb), 2009.

Sample Dates	Sample Size		Brood Year (Age)												Total									
			2006 (1.1)		2005 (1.2)		2004 (1.3)		(2.2)		2003 (1.4)		(2.3)				2002 (1.5)		(2.4)		2001 (1.6)		(2.5)	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
7/4	47	Male	0	0.0	7	14.9	9	19.1	0	0.0	17	36.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	33	70.2
		Female	0	0.0	0	0.0	0	0.0	0	0.0	14	29.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	14	29.8
		Total	0	0.0	7	14.9	9	19.1	0	0.0	31	66.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	47	100.0
		Male Mean Length	-		598		695		-		795		-		-		-		-		-		-	
		SE	-		31		11		-		13		-		-		-		-		-		-	
		Female Mean Length	-		-		-		-		848		-		-		-		-		-		-	
		SE	-		-		-		-		13		-		-		-		-		-		-	
		Male Mean Weight	-		7.5		10.7		-		16.6		-		-		-		-		-		-	
		SE	-		1.0		0.5		-		1.2		-		-		-		-		-		-	
		Female Mean Weight	-		-		-		-		21.0		-		-		-		-		-		-	
		SE	-		-		-		-		1.1		-		-		-		-		-		-	

Note: Dashes indicate no data.

Appendix A10.–Yukon River, Subdistrict 5-C, Hess Creek, Chinook salmon subsistence 6” set gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)												Total							
			2006 (1.1)		2005 (1.2)		2004 (1.3)		2003 (2.2)		2002 (1.4)		2001 (2.3)				2001 (1.5)		2001 (2.4)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%				
6/29- 7/1	42	Male	0	0.0	1	2.4	7	16.7	0	0.0	10	23.8	0	0.0	1	2.4	0	0.0	0	0.0	19	45.2
		Female	0	0.0	0	0.0	0	0.0	0	0.0	23	54.8	0	0.0	0	0.0	0	0.0	0	0.0	23	54.8
		Subtotal	0	0.0	1	2.4	7	16.7	0	0.0	33	78.6	0	0.0	1	2.4	0	0.0	0	0.0	42	100.0
7/14-15	112	Male	0	0.0	15	13.4	18	16.1	0	0.0	45	40.2	0	0.0	0	0.0	0	0.0	0	0.0	78	69.6
		Female	0	0.0	0	0.0	1	0.9	0	0.0	33	29.5	0	0.0	0	0.0	0	0.0	0	0.0	34	30.4
		Subtotal	0	0.0	15	13.4	19	17.0	0	0.0	78	69.6	0	0.0	0	0.0	0	0.0	0	0.0	112	100.0
Season	154	Male	0	0.0	16	10.4	25	16.2	0	0.0	55	35.7	0	0.0	1	0.6	0	0.0	0	0.0	97	63.0
		Female	0	0.0	0	0.0	1	0.6	0	0.0	56	36.4	0	0.0	0	0.0	0	0.0	0	0.0	57	37.0
		Total	0	0.0	16	10.4	26	16.9	0	0.0	111	72.1	0	0.0	1	0.6	0	0.0	0	0.0	154	100.0
		Male Mean Length	-		611		716		-	869		-	860		-	-	-	-	-			
		SE	-		14		11		-	7		-	-		-	-	-	-				
		Female Mean Length	-		-		770		-	869		-	-		-	-	-	-				
		SE	-		-		-		-	8		-	-		-	-	-	-				

Note: Samples were collected by the Tanana Chiefs Conference (TCC) from the subsistence harvest in the mainstem Yukon River near its confluence with Hess Creek. Dashes indicate no data.

^a Sample dates were stratified by week.

Appendix A11.–Yukon River, Subdistrict 5-D, Fort Yukon, Chinook salmon subsistence harvest age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)										Total									
			2006		2005		2004		2003		2002				2001							
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
7/21 - 22 6" SGN	17	Male	0	0.0	3	17.6	8	47.1	0	0.0	3	17.6	0	0.0	0	0.0	0	0.0	14	82.4		
		Female	0	0.0	0	0.0	0	0.0	0	0.0	3	17.6	0	0.0	0	0.0	0	0.0	3	17.6		
		Subtotal	0	0.0	3	17.6	8	47.1	0	0.0	6	35.3	0	0.0	0	0.0	0	0.0	17	100.0		
7/5-6, 21-24 8" SGN	13	Male	0	0.0	0	0.0	1	7.7	0	0.0	5	38.5	0	0.0	0	0.0	0	0.0	0	0.0	6	46.2
		Female	0	0.0	1	7.7	1	7.7	0	0.0	5	38.5	0	0.0	0	0.0	0	0.0	0	0.0	7	53.8
		Subtotal	0	0.0	1	7.7	2	15.4	0	0.0	10	76.9	0	0.0	0	0.0	0	0.0	13	100.0		
7/3, 21-23, 27 Fish wheel	69	Male	0	0.0	24	34.8	19	27.5	0	0.0	11	15.9	0	0.0	0	0.0	0	0.0	0	0.0	54	78.3
		Female	0	0.0	3	4.3	4	5.8	0	0.0	7	10.1	0	0.0	1	1.4	0	0.0	0	0.0	15	21.7
		Subtotal	0	0.0	27	39.1	23	33.3	0	0.0	18	26.1	0	0.0	1	1.4	0	0.0	0	0.0	69	100.0
All Gear Combined	99	Male	0	0.0	27	27.3	28	28.3	0	0.0	19	19.2	0	0.0	0	0.0	0	0.0	0	0.0	74	74.7
		Female	0	0.0	4	4.0	5	5.1	0	0.0	15	15.2	0	0.0	1	1.0	0	0.0	0	0.0	25	25.3
		Total	0	0.0	31	31.3	33	33.3	0	0.0	34	34.3	0	0.0	1	1.0	0	0.0	0	0.0	99	100.0
		Male Mean Length	-	593	702	-	808	-	-	-	-	-	-	-	-	-	-	-	-	-		
		SE	-	11	17	-	24	-	-	-	-	-	-	-	-	-	-	-	-	-		
		Female Mean Length	-	643	746	-	832	-	960	-	-	-	-	-	-	-	-	-	-	-		
		SE	-	73	52	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-		

Note: Samples were collected by Tanana Chiefs Conference (TCC). Dashes indicate no data.

Appendix A12.–Yukon River, Subdistrict 5-D, Eagle, Chinook salmon subsistence gillnet and fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%	No.	%						
7/11, 12	24	Male	0	0.0	4	16.7	11	45.8	0	0.0	6	25.0	0	0.0	0	0.0	0	0.0	21	87.5		
		Female	0	0.0	0	0.0	0	0.0	0	0.0	3	12.5	0	0.0	0	0.0	0	0.0	3	12.5		
		Subtotal	0	0.0	4	16.7	11	45.8	0	0.0	9	37.5	0	0.0	0	0.0	0	0.0	24	100.0		
7/13, 14	71	Male	0	0.0	9	12.7	22	31.0	0	0.0	22	31.0	0	0.0	0	0.0	0	0.0	0	0.0	53	74.6
		Female	0	0.0	0	0.0	1	1.4	0	0.0	17	23.9	0	0.0	0	0.0	0	0.0	0	0.0	18	25.4
		Subtotal	0	0.0	9	12.7	23	32.4	0	0.0	39	54.9	0	0.0	0	0.0	0	0.0	0	0.0	71	100.0
7/27-31, 8/1-2	96	Male	1	1.0	38	39.6	25	26.0	0	0.0	11	11.5	1	1.0	0	0.0	0	0.0	0	0.0	76	79.2
		Female	0	0.0	0	0.0	0	0.0	0	0.0	17	17.7	0	0.0	2	2.1	1	1.0	0	0.0	20	20.8
		Subtotal	1	1.0	38	39.6	25	26.0	0	0.0	28	29.2	1	1.0	2	2.1	1	1.0	0	0.0	96	100.0
Season	191	Male	1	0.5	51	26.7	58	30.4	0	0.0	39	20.4	1	0.5	0	0.0	0	0.0	0	0.0	150	78.5
		Female	0	0.0	0	0.0	1	0.5	0	0.0	37	19.4	0	0.0	2	1.0	1	0.5	0	0.0	41	21.5
		Total	1	0.5	51	26.7	59	30.9	0	0.0	76	39.8	1	0.5	2	1.0	1	0.5	0	0.0	191	100.0
		Male Mean Length	361		592		693	-		826		655	-	-	-	-	-	-	-	-	-	
		SE	-		5		6	-		11		-	-	-	-	-	-	-	-	-	-	
		Female Mean Length	-		-		729	-		858		-	857	789	-	-	-	-	-	-	-	
		SE	-		-		-	-		9		-	53	-	-	-	-	-	-	-	-	

Note: Samples were collected by the University of Alaska, Fairbanks in conjunction with an *Ichthyophonus* study. Dashes indicate no data.

^a Sample dates were stratified by week.

Appendix A13.–Yukon River, Big Eddy test fishery, Chinook salmon 8.5" mesh set gillnet age and sex composition, mean length (mm), mean weight (lb), and mean girth (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)														Total							
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/4-16 Quartile 1	187	Male	0	0.0	2	1.1	12	6.4	0	0.0	77	41.2	1	0.5	1	0.5	1	0.5	0	0.0	0	0.0	94	50.3
		Female	0	0.0	0	0.0	1	0.5	0	0.0	88	47.1	0	0.0	3	1.6	1	0.5	0	0.0	0	0.0	93	49.7
		Subtotal	0	0.0	2	1.1	13	7.0	0	0.0	165	88.2	1	0.5	4	2.1	2	1.1	0	0.0	0	0.0	187	100.0
6/17-22 Quartile 2	124	Male	0	0.0	5	4.0	3	2.4	0	0.0	31	25.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	39	31.5
		Female	0	0.0	0	0.0	3	2.4	0	0.0	82	66.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	85	68.5
		Subtotal	0	0.0	5	4.0	6	4.8	0	0.0	113	91.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	124	100.0
6/23-28 Quartile 3	76	Male	0	0.0	2	2.6	10	13.2	0	0.0	25	32.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	37	48.7
		Female	0	0.0	0	0.0	2	2.6	0	0.0	36	47.4	0	0.0	0	0.0	1	1.3	0	0.0	0	0.0	39	51.3
		Subtotal	0	0.0	2	2.6	12	15.8	0	0.0	61	80.3	0	0.0	0	0.0	1	1.3	0	0.0	0	0.0	76	100.0
6/29-7/10, 12-15 Quartile 4	113	Male	0	0.0	6	5.3	11	9.7	0	0.0	20	17.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	37	32.7
		Female	0	0.0	0	0.0	5	4.4	0	0.0	69	61.1	0	0.0	2	1.8	0	0.0	0	0.0	0	0.0	76	67.3
		Subtotal	0	0.0	6	5.3	16	14.2	0	0.0	89	78.8	0	0.0	2	1.8	0	0.0	0	0.0	0	0.0	113	100.0
Season	500	Male	0	0.0	15	3.0	36	7.2	0	0.0	153	30.6	1	0.2	1	0.2	1	0.2	0	0.0	0	0.0	207	41.4
		Female	0	0.0	0	0.0	11	2.2	0	0.0	275	55.0	0	0.0	5	1.0	2	0.4	0	0.0	0	0.0	293	58.6
		Total	0	0.0	15	3.0	47	9.4	0	0.0	428	85.6	1	0.2	6	1.2	3	0.6	0	0.0	0	0.0	500	100.0
Male Mean Length			-	615	752	-	855	720	875	790	-	-												
SE			-	10	10	-	4	-	-	-	-	-												
Female Mean Length			-	-	788	-	864	-	938	923	-	-												
SE			-	-	11	-	2	-	17	3	-	-												
Male Mean Weight ^b			-	6.9	14.6	-	21.7	-	-	-	-	-												
SE			-	0.9	0.7	-	0.6	-	-	-	-	-												
Female Mean Weight ^b			-	-	15.8	-	22.8	-	31.0	-	-	-												
SE			-	-	1.3	-	0.4	-	2.1	-	-	-												
Male Mean Girth ^b			-	360	445	-	518	-	-	-	-	-												
SE			-	7	8	-	6	-	-	-	-	-												
Female Mean Girth ^b			-	-	465	-	528	-	576	-	-	-												
SE			-	-	24	-	3	-	11	-	-	-												

Note: Dashes indicate no data.

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 8.5" mesh set gillnet total catch.

^b Weight and girth data were collected from 148 fish at Big Eddy in conjunction with an *Ichthyophonus* study.

Appendix A14.–Yukon River, Middle Mouth test fishery, Chinook salmon 8.5" mesh set gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
6/4-16 Quartile 1	88	Male	0	0.0	3	3.4	9	10.2	0	0.0	30	34.1	0	0.0	0	0.0	0	0.0	42	47.7		
		Female	0	0.0	0	0.0	0	0.0	44	50.0	0	0.0	1	1.1	1	1.1	0	0.0	46	52.3		
		Subtotal	0	0.0	3	3.4	9	10.2	0	0.0	74	84.1	0	0.0	1	1.1	1	1.1	0	0.0	88	100.0
6/17-22 Quartile 2	139	Male	0	0.0	4	2.9	11	7.9	0	0.0	43	30.9	0	0.0	1	0.7	1	0.7	0	0.0	60	43.2
		Female	0	0.0	0	0.0	2	1.4	0	0.0	75	54.0	0	0.0	2	1.4	0	0.0	0	0.0	79	56.8
		Subtotal	0	0.0	4	2.9	13	9.4	0	0.0	118	84.9	0	0.0	3	2.2	1	0.7	0	0.0	139	100.0
6/23-28 Quartile 3	130	Male	0	0.0	5	3.8	11	8.5	0	0.0	29	22.3	0	0.0	0	0.0	0	0.0	0	0.0	45	34.6
		Female	0	0.0	0	0.0	3	2.3	0	0.0	81	62.3	0	0.0	1	0.8	0	0.0	0	0.0	85	65.4
		Subtotal	0	0.0	5	3.8	14	10.8	0	0.0	110	84.6	0	0.0	1	0.8	0	0.0	0	0.0	130	100.0
6/29- 7/10, 12-15 Quartile 4	178	Male	0	0.0	8	4.5	10	5.6	0	0.0	38	21.3	0	0.0	1	0.6	0	0.0	0	0.0	57	32.0
		Female	0	0.0	0	0.0	1	0.6	0	0.0	116	65.2	0	0.0	4	2.2	0	0.0	0	0.0	121	68.0
		Subtotal	0	0.0	8	4.5	11	6.2	0	0.0	154	86.5	0	0.0	5	2.8	0	0.0	0	0.0	178	100.0
Season	535	Male	0	0.0	20	3.7	41	7.7	0	0.0	140	26.2	0	0.0	2	0.4	1	0.2	0	0.0	204	38.1
		Female	0	0.0	0	0.0	6	1.1	0	0.0	316	59.1	0	0.0	8	1.5	1	0.2	0	0.0	331	61.9
		Total	0	0.0	20	3.7	47	8.8	0	0.0	456	85.2	0	0.0	10	1.9	2	0.4	0	0.0	535	100.0
		Male Mean Length	-	583	741	-	839	-	993	870	-	-	-	-	-	-	-	-	-	-	-	
		SE	-	6	11	-	4	-	53	-	-	-	-	-	-	-	-	-	-	-	-	
		Female Mean Length	-	-	797	-	858	-	909	825	-	-	-	-	-	-	-	-	-	-	-	
		SE	-	-	26	-	2	-	18	-	-	-	-	-	-	-	-	-	-	-	-	

Note: Dashes indicate no data.

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 8.5" mesh set gillnet total catch.

Appendix A15.—Yukon River, combined Big Eddy and Middle Mouth test fisheries, Chinook salmon 8.5" mesh set gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/4-16 Quartile 1	275	Male	0	0.0	5	1.8	21	7.6	0	0.0	107	38.9	1	0.4	1	0.4	0	0.0	0	0.0	136	49.5		
		Female	0	0.0	0	0.0	1	0.4	0	0.0	132	48.0	0	0.0	4	1.5	2	0.7	0	0.0	0	0.0	139	50.5
		Subtotal	0	0.0	5	1.8	22	8.0	0	0.0	239	86.9	1	0.4	5	1.8	3	1.1	0	0.0	0	0.0	275	100.0
6/17-22 Quartile 2	263	Male	0	0.0	9	3.4	14	5.3	0	0.0	74	28.1	0	0.0	1	0.4	1	0.4	0	0.0	0	0.0	99	37.6
		Female	0	0.0	0	0.0	5	1.9	0	0.0	157	59.7	0	0.0	2	0.8	0	0.0	0	0.0	0	0.0	164	62.4
		Subtotal	0	0.0	9	3.4	19	7.2	0	0.0	231	87.8	0	0.0	3	1.1	1	0.4	0	0.0	0	0.0	263	100.0
6/23-28 Quartile 3	206	Male	0	0.0	7	3.4	21	10.2	0	0.0	54	26.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	82	39.8
		Female	0	0.0	0	0.0	5	2.4	0	0.0	117	56.8	0	0.0	1	0.5	1	0.5	0	0.0	0	0.0	124	60.2
		Subtotal	0	0.0	7	3.4	26	12.6	0	0.0	171	83.0	0	0.0	1	0.5	1	0.5	0	0.0	0	0.0	206	100.0
6/29- 7/10, 12-15 Quartile 4	291	Male	0	0.0	14	4.8	21	7.2	0	0.0	58	19.9	0	0.0	1	0.3	0	0.0	0	0.0	0	0.0	94	32.3
		Female	0	0.0	0	0.0	6	2.1	0	0.0	185	63.6	0	0.0	6	2.1	0	0.0	0	0.0	0	0.0	197	67.7
		Subtotal	0	0.0	14	4.8	27	9.3	0	0.0	243	83.5	0	0.0	7	2.4	0	0.0	0	0.0	0	0.0	291	100.0
Season	1,035	Male	0	0.0	35	3.4	77	7.4	0	0.0	293	28.3	1	0.1	3	0.3	2	0.2	0	0.0	0	0.0	411	39.7
		Female	0	0.0	0	0.0	17	1.6	0	0.0	591	57.1	0	0.0	13	1.3	3	0.3	0	0.0	0	0.0	624	60.3
		Total	0	0.0	35	3.4	94	9.1	0	0.0	884	85.4	1	0.1	16	1.5	5	0.5	0	0.0	0	0.0	1,035	100.0
Male Mean Length			-	597	746	-	847	720	953	830	-	-												
SE			-	6	7	-	3	-	50	40	-	-												
Female Mean Length			-	-	791	-	861	-	920	890	-	-												
SE			-	-	11	-	2	-	13	33	-	-												
Male Mean Weight ^b			-	6.9	14.6	-	21.7	-	-	-	-	-												
SE			-	0.9	0.7	-	0.6	-	-	-	-	-												
Female Mean Weight ^b			-	-	15.8	-	22.8	-	31.0	-	-	-												
SE			-	-	1.3	-	0.4	-	2.1	-	-	-												
Male Mean Girth ^b			-	360	445	-	518	-	-	-	-	-												
SE			-	7	8	-	6	-	-	-	-	-												
Female Mean Girth ^b			-	-	465	-	528	-	576	-	-	-												
SE			-	-	24	-	3	-	11	-	-	-												

Note: Dashes indicate no data.

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 8.5" mesh set gillnet total catch.

Appendix A16.–Yukon River, comparative mesh size study, Chinook salmon 7.0", 7.5", and 8.0" mesh drift gillnet age and sex composition, 2009.

Mesh Size	Sample Size		Brood Year (Age)														Total					
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
7.0"	173	Male	0	0.0	16	9.2	30	17.3	0	0.0	42	24.3	1	0.6	0	0.0	0	0.0	0	0.0	89	51.4
		Female	0	0.0	0	0.0	5	2.9	0	0.0	78	45.1	0	0.0	1	0.6	0	0.0	0	0.0	84	48.6
		Subtotal	0	0.0	16	9.2	35	20.2	0	0.0	120	69.4	1	0.6	1	0.6	0	0.0	0	0.0	173	100.0
7.5"	128	Male	0	0.0	3	2.3	26	20.3	0	0.0	37	28.9	1	0.8	0	0.0	1	0.8	0	0.0	68	53.1
		Female	0	0.0	0	0.0	1	0.8	0	0.0	59	46.1	0	0.0	0	0.0	0	0.0	0	0.0	60	46.9
		Subtotal	0	0.0	3	2.3	27	21.1	0	0.0	96	75.0	1	0.8	0	0.0	1	0.8	0	0.0	128	100.0
8.0"	148	Male	0	0.0	3	2.0	16	10.8	0	0.0	46	31.1	0	0.0	0	0.0	2	1.4	0	0.0	67	45.3
		Female	0	0.0	0	0.0	2	1.4	0	0.0	77	52.0	0	0.0	1	0.7	1	0.7	0	0.0	81	54.7
		Subtotal	0	0.0	3	2.0	18	12.2	0	0.0	123	83.1	0	0.0	1	0.7	3	2.0	0	0.0	148	100.0
All Mesh Combined	449	Male	0	0.0	22	4.9	72	16.0	0	0.0	125	27.8	2	0.4	0	0.0	3	0.7	0	0.0	224	49.9
		Female	0	0.0	0	0.0	8	1.8	0	0.0	214	47.7	0	0.0	2	0.4	1	0.2	0	0.0	225	50.1
		Total	0	0.0	22	4.9	80	17.8	0	0.0	339	75.5	2	0.4	2	0.4	4	0.9	0	0.0	449	100.0

Appendix A17.—Yukon River, Comparative Mesh Size study, Chinook salmon 7.0", 7.5", and 8.0" mesh drift gillnet mean length (mm), mean girth (mm), and mean weight (lb), 2009.

	Sample Size		Brood Year (Age)									
			2006 (1.1)	2005 (1.2)	2004 (1.3)	2003 (2.2)	2003 (1.4)	2003 (2.3)	2002 (1.5)	2002 (2.4)	2001 (1.6)	2001 (2.5)
Mean Length 7.0"	173	Male	-	622	697	-	824	735	-	-	-	-
		Female	-	-	782	-	840	-	880	-	-	-
Mean Length 7.5"	128	Male	-	597	703	-	816	755	-	760	-	-
		Female	-	-	750	-	849	-	-	-	-	-
Mean Length 8.0"	148	Male	-	605	720	-	839	-	-	825	-	-
		Female	-	-	768	-	854	-	855	795	-	-
All Mesh Combined Mean Length		Male	-	616	704	-	827	745	-	803	-	-
		SE	-	7	5	-	6	10	-	28	-	-
		Female	-	-	774	-	848	-	868	795	-	-
		SE	-	-	8	-	3	-	13	-	-	-
Mean Girth 7.0"	173	Male	-	398	423	-	500	455	-	-	-	-
		Female	-	-	470	-	510	-	404	-	-	-
Mean Girth 7.5"	128	Male	-	379	435	-	498	450	-	482	-	-
		Female	-	-	456	-	515	-	-	-	-	-
Mean Girth 8.0"	148	Male	-	374	456	-	514	-	-	525	-	-
		Female	-	-	498	-	524	-	547	482	-	-
All Mesh Combined Mean Girth		Male	-	392	435	-	504	453	-	511	-	-
		SE	-	7	4	-	4	3	-	16	-	-
		Female	-	-	475	-	517	-	476	482	-	-
		SE	-	-	9	-	3	-	72	-	-	-
Mean Weight 7.0"	173	Male	-	8.6	11.3	-	19.8	14.0	-	-	-	-
		Female	-	-	16.4	-	20.6	-	24.0	-	-	-
Mean Weight 7.5"	128	Male	-	7.7	12.0	-	19.5	14.5	-	15.7	-	-
		Female	-	-	14.5	-	21.6	-	-	-	-	-
Mean Weight 8.0"	148	Male	-	7.6	13.5	-	21.3	-	-	20.7	-	-
		Female	-	-	17.2	-	22.1	-	23.1	16.8	-	-
All Mesh Combined Mean Weight		Male	-	8.4	12.0	-	20.3	14.3	-	19.0	-	-
		SE	-	0.3	0.3	-	0.5	0.3	-	1.9	-	-
		Female	-	-	16.3	-	21.4	-	23.5	16.8	-	-
		SE	-	-	0.4	-	0.3	-	0.5	-	-	-

Note: Dashes indicate no data.

Appendix A18.—Yukon River, Pilot Station sonar test fishery, Chinook salmon variable mesh drift gillnet age and sex composition and mean length, 2009.

Sample Dates Mesh Size	Sample Size		Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/17-7/6 2.75" Mesh	8	Male	0	0.0	4	50.0	2	25.0	0	0.0	1	12.5	0	0.0	0	0.0	0	0.0	7	87.5				
		Female	0	0.0	0	0.0	0	0.0	0	0.0	1	12.5	0	0.0	0	0.0	0	0.0	0	0.0	1	12.5		
		Subtotal	0	0.0	4	50.0	2	25.0	0	0.0	2	25.0	0	0.0	0	0.0	0	0.0	0	0.0	8	100.0		
		Male Mean Length	-		611		661		-		772		-		-		-		-		-			
		SE	-		14		-		-		-		-		-		-		-		-			
		Female Mean Length	-		-		-		-		857		-		-		-		-		-			
		SE	-		-		-		-		-		-		-		-		-		-			
6/11 - 7/11 4.0" Mesh	40	Male	0	0.0	11	27.5	9	22.5	0	0.0	8	20.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	28	70.0
		Female	0	0.0	0	0.0	1	2.5	0	0.0	11	27.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	12	30.0
		Subtotal	0	0.0	11	27.5	10	25.0	0	0.0	19	47.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	40	100.0
		Male Mean Length	-		572		693		-		832		-		-		-		-		-		-	
		SE	-		14		13		-		21		-		-		-		-		-		-	
		Female Mean Length	-		-		741		-		848		-		-		-		-		-		-	
		SE	-		-		-		-		15		-		-		-		-		-		-	
6/12-7/9 5.25" Mesh	41	Male	1	2.4	18	43.9	9	22.0	0	0.0	3	7.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	31	75.6
		Female	0	0.0	0	0.0	2	4.9	0	0.0	8	19.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10	24.4
		Subtotal	1	2.4	18	43.9	11	26.8	0	0.0	11	26.8	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	41	100.0
		Male Mean Length	352		594		696		-		792		-		-		-		-		-		-	
		SE	-		8		21		-		43		-		-		-		-		-		-	
		Female Mean Length	-		-		740		-		871		-		-		-		-		-		-	
		SE	-		-		50		-		23		-		-		-		-		-		-	
6/9- 7/15 6.5" Mesh	170	Male	0	0.0	54	31.8	47	27.6	1	0.6	16	9.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	118	69.4
		Female	0	0.0	6	3.5	8	4.7	0	0.0	36	21.2	0	0.0	2	1.2	0	0.0	0	0.0	0	0.0	52	30.6
		Subtotal	0	0.0	60	35.3	55	32.4	1	0.6	52	30.6	0	0.0	2	1.2	0	0.0	0	0.0	0	0.0	170	100.0
		Male Mean Length	-		590		683		556		832		-		-		-		-		-		-	
		SE	-		5		6		-		16		-		-		-		-		-		-	
		Female Mean Length	-		616		720		-		831		911		-		-		-		-		-	
		SE	-		10		22		-		7		39		-		-		-		-		-	

-continued-

Sample Dates	Sample Size		Brood Year (Age)												Total									
			2006		2005		2004		2003		2002		2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%										
6/10- 7/15	332	Male	1	0.3	20	6.0	70	21.1	0	0.0	72	21.7	1	0.3	1	0.3	2	0.6	0	0.0	0	0.0	167	50.3
7.50" Mesh		Female	0	0.0	2	0.6	21	6.3	0	0.0	140	42.2	1	0.3	1	0.3	0	0.0	0	0.0	0	0.0	165	49.7
		Subtotal	1	0.3	22	6.6	91	27.4	0	0.0	212	63.9	2	0.6	2	0.6	2	0.6	0	0.0	0	0.0	332	100.0
		Male Mean Length	425		591		704		-		817		705		892		789		-		-			
		SE	-		9		5		-		8		-		-		49		-		-			
		Female Mean Length	-		590		741		-		823		802		981		-		-		-			
		SE	-		9		8		-		7		-		-		-		-		-			
6/9- 8/15	193	Male	0	0.0	8	4.1	24	12.4	0	0.0	72	37.3	0	0.0	2	1.0	0	0.0	0	0.0	0	0.0	106	54.9
8.50" Mesh		Female	0	0.0	0	0.0	3	1.6	0	0.0	83	43.0	0	0.0	1	0.5	0	0.0	0	0.0	0	0.0	87	45.1
		Subtotal	0	0.0	8	4.1	27	14.0	0	0.0	155	80.3	0	0.0	3	1.6	0	0.0	0	0.0	0	0.0	193	100.0
		Male Mean Length	-		602		720		-		823		-		859		-		-		-			
		SE	-		9		9		-		7		-		92		-		-		-			
		Female Mean Length	-		-		745		-		852		-		900		-		-		-			
		SE	-		-		33		-		5		-		-		-		-		-			
All Mesh Combined	784	Male	2	0.3	115	14.7	161	20.5	1	0.1	172	21.9	1	0.1	3	0.4	2	0.3	0	0.0	0	0.0	457	58.3
		Female	0	0.0	8	1.0	35	4.5	0	0.0	279	35.6	1	0.1	4	0.5	0	0.0	0	0.0	0	0.0	327	41.7
		Total ^a	2	0.3	123	15.7	196	25.0	1	0.1	451	57.5	2	0.3	7	0.9	2	0.3	0	0.0	0	0.0	784	100.0
		Male Mean Length	389		591		699		556		821		705		870		789		-		-			
		SE	37		3		4		-		5		-		54		49		-		-			
		Female Mean Length	-		610		737		-		835		802		926		-		-		-			
		SE	-		9		8		-		4		-		24		-		-		-			

^a The total percentages by age and sex were based on sample size and may not be representative of the run passage by Pilot Station sonar.

Appendix A19.–Yukon River, Eagle sonar test fishery, Chinook salmon variable mesh drift gillnet age and sex composition and mean length, 2009.

Sample Dates Mesh Size	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1) No.	(1.1) %	(1.2) No.	(1.2) %	(1.3) No.	(1.3) %	(2.2) No.	(2.2) %	(1.4) No.	(1.4) %	(2.3) No.	(2.3) %	(1.5) No.	(1.5) %	(2.4) No.	(2.4) %	(1.6) No.	(1.6) %	(2.5) No.	(2.5) %
7/11- 8/26 5.25" Mesh	161	Male	0	0.0	21	13.0	64	39.8	0	0.0	29	18.0	0	0.0	0	0.0	0	0.0	0	0.0	114	70.8
		Female	0	0.0	0	0.0	5	3.1	0	0.0	42	26.1	0	0.0	0	0.0	0	0.0	0	0.0	47	29.2
		Subtotal	0	0.0	21	13.0	69	42.9	0	0.0	71	44.1	0	0.0	0	0.0	0	0.0	0	0.0	161	100.0
		Male Mean Length	-		605		718		-	835		-	-	-	-	-	-	-	-	-	-	-
		SE	-		8		8		-	12		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		820		-	852		-	-	-	-	-	-	-	-	-	-	-
		SE	-		-		18		-	8		-	-	-	-	-	-	-	-	-	-	-
7/11- 8/12 6.5" Mesh	160	Male	0	0.0	12	7.5	49	30.6	0	0.0	35	21.9	0	0.0	0	0.0	0	0.0	0	0.0	96	60.0
		Female	0	0.0	0	0.0	5	3.1	0	0.0	59	36.9	0	0.0	0	0.0	0	0.0	0	0.0	64	40.0
		Subtotal	0	0.0	12	7.5	54	33.8	0	0.0	94	58.8	0	0.0	0	0.0	0	0.0	0	0.0	160	100.0
		Male Mean Length	-		616		728		-	825		-	-	-	-	-	-	-	-	-	-	-
		SE	-		22		9		-	11		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		841		-	844		-	-	-	-	-	-	-	-	-	-	-
		SE	-		-		24		-	6		-	-	-	-	-	-	-	-	-	-	-
7/14- 8/6 7.5" Mesh	172	Male	0	0.0	7	4.1	41	23.8	0	0.0	44	25.6	0	0.0	0	0.0	0	0.0	0	0.0	92	53.5
		Female	0	0.0	0	0.0	7	4.1	0	0.0	73	42.4	0	0.0	0	0.0	0	0.0	0	0.0	80	46.5
		Subtotal	0	0.0	7	4.1	48	27.9	0	0.0	117	68.0	0	0.0	0	0.0	0	0.0	0	0.0	172	100.0
		Male Mean Length	-		636		747		-	838		-	-	-	-	-	-	-	-	-	-	-
		SE	-		22		11		-	12		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		816		-	837		-	-	-	-	-	-	-	-	-	-	-
		SE	-		-		31		-	5		-	-	-	-	-	-	-	-	-	-	-
7/12- 8/10 8.50" Mesh	154	Male	0	0.0	10	6.5	38	24.7	0	0.0	41	26.6	0	0.0	0	0.0	0	0.0	0	0.0	89	57.8
		Female	0	0.0	0	0.0	6	3.9	0	0.0	59	38.3	0	0.0	0	0.0	0	0.0	0	0.0	65	42.2
		Subtotal	0	0.0	10	6.5	44	28.6	0	0.0	100	64.9	0	0.0	0	0.0	0	0.0	0	0.0	154	100.0
		Male Mean Length	-		619		754		-	839		-	-	-	-	-	-	-	-	-	-	-
		SE	-		16		13		-	13		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		818		-	855		-	-	-	-	-	-	-	-	-	-	-
		SE	-		-		19		-	7		-	-	-	-	-	-	-	-	-	-	-
All Mesh Combined	647	Male	0	0.0	50	7.7	192	29.7	0	0.0	149	23.0	0	0.0	0	0.0	0	0.0	0	0.0	391	60.4
		Female	0	0.0	0	0.0	23	3.6	0	0.0	233	36.0	0	0.0	0	0.0	0	0.0	0	0.0	256	39.6
		Total ^a	0	0.0	50	7.7	215	33.2	0	0.0	382	59.0	0	0.0	0	0.0	0	0.0	0	0.0	647	100.0
		Male Mean Length	-		615		734		-	835		-	-	-	-	-	-	-	-	-	-	-
		SE	-		8		5		-	6		-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		-		823		-	846		-	-	-	-	-	-	-	-	-	-	-
		SE	-		-		12		-	3		-	-	-	-	-	-	-	-	-	-	-

Note: Dashes indicate no data.

^a The total percentages by age and sex were based on sample size and may not be representative of the run passage by Eagle sonar.

Appendix A20.—Andreafsky River (East Fork) weir, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
7/1-4, 6-8 (6/22- 7/8)	29	Male	0	0.0	4	13.8	3	10.3	0	0.0	7	24.1	0	0.0	0	0.0	0	0.0	14	48.3		
		Female	0	0.0	0	0.0	0	0.0	0	0.0	15	51.7	0	0.0	0	0.0	0	0.0	15	51.7		
		Subtotal	0	0.0	4	13.8	3	10.3	0	0.0	22	75.9	0	0.0	0	0.0	0	0.0	29	100.0		
7/10-13 (7/9-13)	268	Male	3	0.7	109	28.0	38	9.7	0	0.0	60	15.3	0	0.0	1	0.4	0	0.0	0	0.0	210	54.1
		Female	0	0.0	15	3.7	7	1.9	0	0.0	155	39.9	0	0.0	1	0.4	0	0.0	0	0.0	179	45.9
		Subtotal	3	0.7	123	31.7	45	11.6	0	0.0	215	55.2	0	0.0	3	0.7	0	0.0	0	0.0	389	100.0
7/14-16 (7/14-16)	106	Male	0	0.0	73	43.4	22	13.2	0	0.0	29	17.0	0	0.0	0	0.0	0	0.0	0	0.0	124	73.6
		Female	0	0.0	0	0.0	2	0.9	0	0.0	43	25.5	0	0.0	0	0.0	0	0.0	0	0.0	44	26.4
		Subtotal	0	0.0	73	43.4	24	14.2	0	0.0	71	42.5	0	0.0	0	0.0	0	0.0	0	0.0	168	100.0
7/17-18 (7/17-18)	177	Male	0	0.0	63	22.0	26	9.0	0	0.0	46	15.8	2	0.6	0	0.0	0	0.0	0	0.0	137	47.5
		Female	0	0.0	3	1.1	5	1.7	0	0.0	140	48.6	0	0.0	3	1.1	0	0.0	0	0.0	151	52.5
		Subtotal	0	0.0	67	23.2	31	10.7	0	0.0	185	64.4	2	0.6	3	1.1	0	0.0	0	0.0	288	100.0
7/19-21 (7/19-21)	214	Male	0	0.0	113	46.7	41	16.8	0	0.0	36	15.0	0	0.0	0	0.0	0	0.0	0	0.0	189	78.5
		Female	0	0.0	0	0.0	2	0.9	0	0.0	50	20.6	0	0.0	0	0.0	0	0.0	0	0.0	52	21.5
		Subtotal	0	0.0	113	46.7	43	17.8	0	0.0	86	35.5	0	0.0	0	0.0	0	0.0	0	0.0	241	100.0
7/22-23 (7/22-23)	380	Male	0	0.0	72	17.1	62	14.7	1	0.3	80	18.9	0	0.0	0	0.0	0	0.0	0	0.0	216	51.1
		Female	0	0.0	2	0.5	10	2.4	0	0.0	193	45.5	0	0.0	2	0.5	0	0.0	0	0.0	207	48.9
		Subtotal	0	0.0	75	17.6	72	17.1	1	0.3	273	64.5	0	0.0	2	0.5	0	0.0	0	0.0	423	100.0
7/24-26 (7/24-26)	227	Male	0	0.0	76	28.2	19	7.0	0	0.0	34	12.8	0	0.0	0	0.0	0	0.0	0	0.0	129	48.0
		Female	0	0.0	0	0.0	1	0.4	0	0.0	137	51.1	0	0.0	1	0.4	0	0.0	0	0.0	140	52.0
		Subtotal	0	0.0	76	28.2	20	7.5	0	0.0	172	63.9	0	0.0	1	0.4	0	0.0	0	0.0	269	100.0
7/27-28 (7/27-28)	187	Male	0	0.0	93	31.0	46	15.5	0	0.0	50	16.6	0	0.0	2	0.5	0	0.0	0	0.0	190	63.6
		Female	0	0.0	2	0.5	6	2.1	0	0.0	99	33.2	0	0.0	2	0.5	0	0.0	0	0.0	109	36.4
		Subtotal	0	0.0	94	31.6	53	17.6	0	0.0	149	49.7	0	0.0	3	1.1	0	0.0	0	0.0	299	100.0

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Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)												Total					
			2006		2005		2004		2003		2002		2001							
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
7/29-30 (7/29-30)	344	Male	1	0.3	70	17.7	61	15.4	0	0.0	73	18.6	0	0.0	0	0.0	0	0.0	204	52.0
		Female	0	0.0	0	0.0	15	3.8	0	0.0	171	43.6	0	0.0	2	0.6	0	0.0	189	48.0
		Subtotal	1	0.3	70	17.7	75	19.2	0	0.0	244	62.2	0	0.0	2	0.6	0	0.0	393	100.0
7/31- 8/1 (7/31- 8/1)	257	Male	0	0.0	38	10.9	53	15.2	0	0.0	52	14.8	0	0.0	0	0.0	0	0.0	143	40.9
		Female	0	0.0	0	0.0	14	3.9	0	0.0	193	55.3	0	0.0	0	0.0	0	0.0	206	59.1
		Subtotal	0	0.0	38	10.9	67	19.1	0	0.0	244	70.0	0	0.0	0	0.0	0	0.0	349	100.0
8/2-3 (8/2-3)	123	Male	0	0.0	19	12.2	22	13.8	0	0.0	25	16.3	0	0.0	0	0.0	0	0.0	66	42.3
		Female	0	0.0	1	0.8	11	7.3	0	0.0	76	48.8	0	0.0	1	0.8	0	0.0	90	57.7
		Subtotal	0	0.0	20	13.0	33	21.1	0	0.0	101	65.0	0	0.0	1	0.8	0	0.0	156	100.0
Season	2,312	Male	4	0.1	730	24.3	392	13.1	1	0.0	491	16.3	2	0.1	3	0.1	0	0.0	1,622	54.0
		Female	0	0.0	23	0.8	73	2.4	0	0.0	1,272	42.3	0	0.0	13	0.4	0	0.0	1,382	46.0
		Total	4	0.1	752	25.0	466	15.5	1	0.0	1,763	58.7	2	0.1	16	0.5	0	0.0	3,004	100.0
		Male Mean Length	390		578		707		500		796		655		878		-	-	-	
		SE	20		3		3		-		3		-		-		-	-	-	
		Female Mean Length	-		594		772		-		833		-		867		-	-	-	
		SE	-		18		8		-		1		-		6		-	-	-	

Note: Samples were collected by the United States Fish and Wildlife Service (USFWS) from fish sampled in a weir trap. Dashes indicate no data.

Appendix A21.–Andreafsky River (East Fork) carcass survey, Chinook salmon escapement age and sex composition and mean length, 2009.

Sample Dates	Sample Size		Brood Year (Age)												Total					
			2006		2005		2004		2003		2002		2001							
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%						
8/15-16	110	Male	0	0.0	12	10.9	13	11.8	0	0.0	28	25.5	0	0.0	0	0.0	0	0.0	53	48.2
		Female	0	0.0	0	0.0	5	4.5	0	0.0	50	45.5	0	0.0	2	1.8	0	0.0	57	51.8
		Subtotal	0	0.0	12	10.9	18	16.4	0	0.0	78	70.9	0	0.0	2	1.8	0	0.0	110	100.0
8/17-18	134	Male	1	0.7	22	16.4	13	9.7	0	0.0	15	11.2	0	0.0	0	0.0	0	0.0	51	38.1
		Female	0	0.0	0	0.0	2	1.5	0	0.0	80	59.7	0	0.0	1	0.7	0	0.0	83	61.9
		Subtotal	1	0.7	22	16.4	15	11.2	0	0.0	95	70.9	0	0.0	1	0.7	0	0.0	134	100.0
8/20-21	132	Male	0	0.0	30	22.7	18	13.6	0	0.0	21	15.9	0	0.0	0	0.0	0	0.0	69	52.3
		Female	0	0.0	0	0.0	2	1.5	0	0.0	59	44.7	0	0.0	2	1.5	0	0.0	63	47.7
		Subtotal	0	0.0	30	22.7	20	15.2	0	0.0	80	60.6	0	0.0	2	1.5	0	0.0	132	100.0
Season	376	Male	1	0.3	64	17.0	44	11.7	0	0.0	64	17.0	0	0.0	0	0.0	0	0.0	173	46.0
		Female	0	0.0	0	0.0	9	2.4	0	0.0	189	50.3	0	0.0	5	1.3	0	0.0	203	54.0
		Total	1	0.3	64	17.0	53	14.1	0	0.0	253	67.3	0	0.0	5	1.3	0	0.0	376	100.0
		Male Mean Length	340		595		724	-		807		-	-	-	-	-	-			
		SE	-		6		10	-		7		-	-	-	-	-	-			
		Female Mean Length	-		-		783	-		829		-	837	-	-	-	-			
		SE	-		-		14	-		3		-	25	-	-	-	-			

Note: Samples were collected by the United States Fish and Wildlife Service (USFWS) from hand-picked carcasses upriver from the weir site. Dashes indicate no data.

Appendix A22.—Anvik River carcass survey, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
8/2-7, 9	95 ^a	Male	0	0.0	5	5.3	12	12.6	0	0.0	25	26.3	0	0.0	0	0.0	0	0.0	42	44.2		
		Female	0	0.0	0	0.0	3	3.2	0	0.0	50	52.6	0	0.0	0	0.0	0	0.0	53	55.8		
		Subtotal	0	0.0	5	5.3	15	15.8	0	0.0	75	78.9	0	0.0	0	0.0	0	0.0	95	100.0		
8/10-12	125	Male	0	0.0	33	26.4	18	14.4	0	0.0	10	8.0	0	0.0	1	0.8	1	0.8	0	0.0	63	50.4
		Female	0	0.0	0	0.0	3	2.4	0	0.0	58	46.4	0	0.0	1	0.8	0	0.0	0	0.0	62	49.6
		Subtotal	0	0.0	33	26.4	21	16.8	0	0.0	68	54.4	0	0.0	2	1.6	1	0.8	0	0.0	125	100.0
Season ^b	220	Male	0	0.0	38	17.3	30	13.6	0	0.0	35	15.9	0	0.0	1	0.5	1	0.5	0	0.0	105	47.7
		Female	0	0.0	0	0.0	6	2.7	0	0.0	108	49.1	0	0.0	1	0.5	0	0.0	0	0.0	115	52.3
		Total	0	0.0	38	17.3	36	16.4	0	0.0	143	65.0	0	0.0	2	0.9	1	0.5	0	0.0	220	100.0
		Male Mean Length	-	581	677	-	807	-	815	880	-	-	-	-	-	-	-	-	-	-		
		SE	-	6	9	-	9	-	-	-	-	-	-	-	-	-	-	-	-			
		Female Mean Length	-	-	788	-	826	-	805	-	-	-	-	-	-	-	-	-	-			
		SE	-	-	15	-	4	-	-	-	-	-	-	-	-	-	-	-				

Note: Samples were from hand-picked carcasses. Dashes indicate no data.

^a 8 male fish in stratum 1 were sampled from the Anvik River sport harvest. Sport fishermen typically release females; therefore, only males were available for sampling.

^b The percentages by age and sex were based on sample size and may not be representative of the Anvik River escapement.

Appendix A23.–Chena River carcass survey, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)												Total							
			2006		2005		2004		2003		2002		2001									
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%	No.	%						
8/3-6	158	Male	0	0.0	22	13.9	21	13.3	0	0.0	28	17.7	0	0.0	0	0.0	0	0.0	0	0.0	71	44.9
		Female	0	0.0	0	0.0	5	3.2	0	0.0	80	50.6	0	0.0	2	1.3	0	0.0	0	0.0	87	55.1
		Subtotal	0	0.0	22	13.9	26	16.5	0	0.0	108	68.4	0	0.0	2	1.3	0	0.0	0	0.0	158	100.0
8/10-13	284	Male	0	0.0	40	14.1	37	13.1	0	0.0	50	17.7	0	0.0	0	0.0	0	0.0	0	0.0	127	44.9
		Female	0	0.0	2	0.7	12	4.2	0	0.0	141	49.8	0	0.0	1	0.4	0	0.0	0	0.0	157	55.1
		Subtotal	0	0.0	42	14.8	49	17.3	0	0.0	192	67.5	0	0.0	1	0.4	0	0.0	0	0.0	284	100.0
Season ^a	442	Male	0	0.0	62	14.1	58	13.2	0	0.0	78	17.7	0	0.0	0	0.0	0	0.0	0	0.0	198	44.9
		Female	0	0.0	2	0.5	17	3.9	0	0.0	222	50.1	0	0.0	3	0.7	0	0.0	0	0.0	244	55.1
		Total	0	0.0	64	14.5	75	17.0	0	0.0	300	67.8	0	0.0	3	0.7	0	0.0	0	0.0	442	100.0
		Male Mean Length	-		598		710	-		850	-	-	-	-	-	-	-	-	-	-	-	-
		SE	-		7		8	-		9	-	-	-	-	-	-	-	-	-	-	-	-
		Female Mean Length	-		593		783	-		841	-	890	-	-	-	-	-	-	-	-	-	-
		SE	-		23		14	-		5	-	36	-	-	-	-	-	-	-	-	-	-

Note: Samples were from hand-picked carcasses. Dashes indicate no data.

^a The percentages by age and sex were based on sample size and may not be representative of the Chena River escapement.

Appendix A24.–Gisasa River weir, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)												Total					
			2006		2005		2004		2003		2002		2001							
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)								
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
7/1-9 (7/1-9)	113	Male	0	0.0	44	35.4	39	31.9	0	0.0	13	10.6	0	0.0	0	0.0	0	0.0	96	77.9
		Female	0	0.0	1	0.9	5	4.4	0	0.0	21	16.8	0	0.0	0	0.0	0	0.0	27	22.1
		Subtotal	0	0.0	45	36.3	45	36.3	0	0.0	34	27.4	0	0.0	0	0.0	0	0.0	123	100.0
7/10-12 (7/10-12)	70	Male	0	0.0	158	50.0	81	25.7	0	0.0	27	8.6	0	0.0	0	0.0	0	0.0	266	84.3
		Female	0	0.0	0	0.0	9	2.9	0	0.0	41	12.9	0	0.0	0	0.0	0	0.0	50	15.7
		Subtotal	0	0.0	158	50.0	90	28.6	0	0.0	68	21.4	0	0.0	0	0.0	0	0.0	316	100.0
7/13-17 (7/13-17)	118	Male	0	0.0	323	39.8	158	19.5	0	0.0	62	7.6	0	0.0	0	0.0	0	0.0	543	66.9
		Female	0	0.0	7	0.8	21	2.5	0	0.0	241	29.7	0	0.0	0	0.0	0	0.0	268	33.1
		Subtotal	0	0.0	330	40.7	179	22.0	0	0.0	302	37.3	0	0.0	0	0.0	0	0.0	811	100.0
7/18-22 (7/18-22)	109	Male	0	0.0	177	40.4	92	21.1	0	0.0	24	5.5	0	0.0	0	0.0	0	0.0	293	67.0
		Female	0	0.0	0	0.0	8	1.8	0	0.0	133	30.3	0	0.0	4	0.9	0	0.0	145	33.0
		Subtotal	0	0.0	177	40.4	100	22.9	0	0.0	157	35.8	0	0.0	4	0.9	0	0.0	438	100.0
7/23-31 (7/23-31)	111	Male	0	0.0	123	45.9	46	17.1	0	0.0	14	5.4	0	0.0	0	0.0	0	0.0	183	68.5
		Female	0	0.0	0	0.0	12	4.5	0	0.0	72	27.0	0	0.0	0	0.0	0	0.0	84	31.5
		Subtotal	0	0.0	123	45.9	58	21.6	0	0.0	87	32.4	0	0.0	0	0.0	0	0.0	267	100.0
Season	521	Male	0	0.0	824	42.2	417	21.3	0	0.0	141	7.2	0	0.0	0	0.0	0	0.0	1,381	70.7
		Female	0	0.0	8	0.4	55	2.8	0	0.0	507	25.9	0	0.0	4	0.2	0	0.0	574	29.3
		Total	0	0.0	832	42.6	472	24.1	0	0.0	647	33.1	0	0.0	4	0.2	0	0.0	1,955	100.0
		Male Mean Length	-		573		697		-		786		-		-		-			
		SE	-		4		7		-		7		-		-		-			
		Female Mean Length	-		684		771		-		839		-		875		-			
		SE	-		-		16		-		4		-		-		-			

Note: Samples were collected by the United States Fish and Wildlife Service (USFWS) from fish sampled in a weir trap. Dashes indicate no data.

Appendix A25.–Salcha River carcass survey, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total									
			2006		2005		2004		2003		2002				2001							
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%								
7/24, 29- 8/4	275	Male	0	0.0	76	27.6	54	19.6	0	0.0	30	10.9	0	0.0	0	0.0	0	0.0	160	58.2		
		Female	0	0.0	0	0.0	7	2.5	0	0.0	107	38.9	0	0.0	1	0.4	0	0.0	0	0.0	115	41.8
		Subtotal	0	0.0	76	27.6	61	22.2	0	0.0	137	49.8	0	0.0	1	0.4	0	0.0	0	0.0	275	100.0
8/7, 11, 19	183	Male	0	0.0	69	37.7	34	18.6	0	0.0	16	8.7	0	0.0	0	0.0	0	0.0	0	0.0	119	65.0
		Female	0	0.0	0	0.0	3	1.6	0	0.0	61	33.3	0	0.0	0	0.0	0	0.0	0	0.0	64	35.0
		Subtotal	0	0.0	69	37.7	37	20.2	0	0.0	77	42.1	0	0.0	0	0.0	0	0.0	0	0.0	183	100.0
Season ^a	458	Male	0	0.0	145	31.7	88	19.2	0	0.0	46	10.0	0	0.0	0	0.0	0	0.0	0	0.0	279	60.9
		Female	0	0.0	0	0.0	10	2.2	0	0.0	168	36.7	0	0.0	1	0.2	0	0.0	0	0.0	179	39.1
		Total	0	0.0	145	31.7	98	21.4	0	0.0	214	46.7	0	0.0	1	0.2	0	0.0	0	0.0	458	100.0
		Male Mean Length	-	583	696	-	859	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		SE	-	3	5	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		Female Mean Length	-	-	775	-	866	-	890	-	-	-	-	-	-	-	-	-	-	-	-	
		SE	-	-	17	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note: Samples were collected by Bering Sea Fisherman's Association (BSFA) from hand-picked carcasses. Dashes indicate no data.

^a The percentages by age and sex were based on sample size and may not be representative of the Salcha River escapement.

Appendix A26.–Tozitna River weir, Chinook salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)										Total													
			2006		2005		2004		2003		2002				2001											
			(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(2.3)	(1.5)	(2.4)	(1.6)	(2.5)	No.	%												
7/8-12 (6/30-7/13)	82	Male	0	0.0	37	29.3	31	24.4	2	1.2	32	25.6	2	1.2	0	0.0	0	0.0	0	0.0	0	0.0	104	81.7		
		Female	0	0.0	2	1.2	3	2.4	0	0.0	19	14.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	23	18.3		
		Subtotal	0	0.0	39	30.5	34	26.8	2	1.2	51	40.2	2	1.2	0	0.0	0	0.0	0	0.0	0	0.0	127	100.0		
7/14-18 (7/14-18)	62	Male	0	0.0	192	50.0	81	21.0	0	0.0	37	9.7	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	310	80.6
		Female	0	0.0	0	0.0	0	0.0	0	0.0	74	19.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	74	19.4
		Subtotal	0	0.0	192	50.0	81	21.0	0	0.0	111	29.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	384	100.0
7/19-22, 24, 26-28, 30 (7/19-8/11)	83	Male	0	0.0	385	63.9	95	15.7	0	0.0	22	3.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	501	83.1
		Female	0	0.0	15	2.4	7	1.2	0	0.0	80	13.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	102	16.9
		Subtotal	0	0.0	400	66.3	102	16.9	0	0.0	102	16.9	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	603	100.0
Season	227	Male	0	0.0	614	55.1	206	18.5	2	0.1	91	8.2	2	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	915	82.1
		Female	0	0.0	16	1.5	10	0.9	0	0.0	173	15.5	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	199	17.9
		Total	0	0.0	630	56.6	216	19.4	2	0.1	264	23.7	2	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1,114	100.0
		Male Mean Length	-		582		682		590		765		665	-	-	-	-	-	-	-	-	-	-	-		
		SE	-		4		8		-		9		-	-	-	-	-	-	-	-	-	-	-	-		
		Female Mean Length	-		575		719		-		838		-	-	-	-	-	-	-	-	-	-	-	-		
		SE	-		5		28		-		6		-	-	-	-	-	-	-	-	-	-	-	-		

Note: Samples were collected by the Bureau of Land Management (BLM) from fish sampled in a weir trap. Dashes indicate no data.

**APPENDIX B:
SUMMER CHUM SALMON TABLES**

Appendix B1.–Yukon River, District 1, summer chum salmon commercial gillnet harvest age and sex composition and mean length, 2009.

Sample Dates	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6/29 Period 1	159	Male	92	0.6	3,792	25.8	3,052	20.8	92	0.6	0	0.0	7,029	47.8
		Female	92	0.6	2,775	18.9	4,624	31.4	185	1.3	0	0.0	7,676	52.2
		Subtotal	185	1.3	6,566	44.7	7,676	52.2	277	1.9	0	0.0	14,705	100.0
7/2 Period 2	159	Male	166	1.3	2,731	20.8	3,476	26.4	0	0.0	0	0.0	6,372	48.4
		Female	0	0.0	3,393	25.8	3,310	25.2	0	0.0	83	0.6	6,786	51.6
		Subtotal	166	1.3	6,124	46.5	6,786	51.6	0	0.0	83	0.6	13,158	100.0
7/4 Period 3	160	Male	241	1.3	3,982	20.6	5,068	26.3	362	1.9	0	0.0	9,653	50.0
		Female	121	0.6	3,740	19.4	5,068	26.3	724	3.8	0	0.0	9,653	50.0
		Subtotal	362	1.9	7,722	40.0	10,135	52.5	1,086	5.6	0	0.0	19,305	100.0
7/7-8 Period 4	160	Male	0	0.0	2,002	30.6	1,267	19.4	41	0.6	0	0.0	3,310	50.6
		Female	0	0.0	2,002	30.6	1,185	18.1	41	0.6	0	0.0	3,228	49.4
		Subtotal	0	0.0	4,005	61.3	2,452	37.5	82	1.3	0	0.0	6,538	100.0
7/10-11 Period 5	160	Male	45	0.6	1,989	27.5	2,305	31.9	181	2.5	0	0.0	4,520	62.5
		Female	45	0.6	1,311	18.1	1,356	18.8	0	0.0	0	0.0	2,712	37.5
		Subtotal	90	1.3	3,300	45.6	3,661	50.6	181	2.5	0	0.0	7,232	100.0
7/14-15 Period 6	159	Male	196	1.9	2,877	27.7	1,962	18.9	0	0.0	0	0.0	5,035	48.4
		Female	65	0.6	3,008	28.9	2,158	20.8	131	1.3	0	0.0	5,362	51.6
		Subtotal	262	2.5	5,885	56.6	4,120	39.6	131	1.3	0	0.0	10,397	100.0
All Periods	957	Male	741	1.0	17,373	24.4	17,129	24.0	676	0.9	0	0.0	35,918	50.4
		Female	324	0.5	16,229	22.8	17,701	24.8	1,081	1.5	83	0.1	35,417	49.6
		Total	1,064	1.5	33,601	47.1	34,830	48.8	1,757	2.5	83	0.1	71,335	100.0
		Male Mean Length	556		572		582		594		-			
		SE	9		2		2		6		-			
		Female Mean Length	544		559		572		564		570			
		SE	13		1		1		8		-			

Note: All commercial fishing periods were restricted to 6.0" or smaller mesh gillnets.

Appendix B2.–Yukon River, District 2, summer chum salmon commercial gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7/29 Period 1	147	Male	0	0.0	2,656	25.9	1,818	17.7	140	1.4	0	0.0	4,614	44.9
		Female	0	0.0	2,517	24.5	2,936	28.6	210	2.0	0	0.0	5,662	55.1
		Subtotal	0	0.0	5,173	50.3	4,754	46.3	350	3.4	0	0.0	10,276	100.0
7/1 Period 2	160	Male	132	0.6	3,834	18.1	5,288	25.0	132	0.6	0	0.0	9,387	44.4
		Female	0	0.0	5,420	25.6	5,949	28.1	397	1.9	0	0.0	11,766	55.6
		Subtotal	132	0.6	9,254	43.8	11,238	53.1	529	2.5	0	0.0	21,153	100.0
7/3 Period 3	160	Male	0	0.0	2,448	21.9	3,008	26.9	140	1.3	70	0.6	5,666	50.6
		Female	70	0.6	2,798	25.0	2,658	23.8	0	0.0	0	0.0	5,527	49.4
		Subtotal	70	0.6	5,247	46.9	5,666	50.6	140	1.3	70	0.6	11,193	100.0
7/6 Period 4	159	Male	0	0.0	7,004	31.4	5,743	25.8	280	1.3	140	0.6	13,167	59.1
		Female	0	0.0	3,782	17.0	5,323	23.9	0	0.0	0	0.0	9,105	40.9
		Subtotal	0	0.0	10,786	48.4	11,066	49.7	280	1.3	140	0.6	22,272	100.0
7/9 Period 5	160	Male	47	0.6	1,708	22.5	2,467	32.5	47	0.6	0	0.0	4,271	56.3
		Female	47	0.6	1,471	19.4	1,803	23.8	0	0.0	0	0.0	3,322	43.8
		Subtotal	95	1.3	3,179	41.9	4,271	56.3	47	0.6	0	0.0	7,592	100.0
7/13 Period 6	160	Male	162	2.5	1,786	27.5	1,543	23.8	41	0.6	0	0.0	3,532	54.4
		Female	41	0.6	1,908	29.4	893	13.8	122	1.9	0	0.0	2,964	45.6
		Subtotal	203	3.1	3,695	56.9	2,436	37.5	162	2.5	0	0.0	6,496	100.0
7/16 Period 7 ^a	0	Male	190	2.5	2,087	27.5	1,802	23.8	47	0.6	0	0.0	4,127	54.4
		Female	47	0.6	2,229	29.4	1,043	13.8	142	1.9	0	0.0	3,462	45.6
		Subtotal	237	3.1	4,316	56.9	2,846	37.5	190	2.5	0	0.0	7,589	100.0
All Periods	946	Male	532	0.6	21,524	24.9	21,670	25.0	828	1.0	210	0.2	44,763	51.7
		Female	205	0.2	20,126	23.2	20,606	23.8	870	1.0	0	0.0	41,808	48.3
		Total	737	0.9	41,650	48.1	42,276	48.8	1,698	2.0	210	0.2	86,571	100.0
		Male Mean Length	559		573		587		594		613			
		SE	6		2		2		11		3			
		Female Mean Length	544		558		570		579		-			
		SE	4		1		1		6		-			

Note: All commercial fishing periods were restricted to 6.0" or smaller mesh gillnets.

^a Period 6 age and sex estimates were used to estimate period 7.

Appendix B3.–Yukon River, Subdistrict 4-A, summer chum salmon commercial harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total		
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)		No.	%	
7/6-7															
Period 1	115	Female	12	0.9	569	40.9	775	55.7	36	2.6	0	0.0	1,392	100.0	
7/9															
Period 2	78	Female	39	3.8	596	59.0	350	34.6	26	2.6	0	0.0	1,011	100.0	
7/13															
Period 3	114	Female	69	5.3	771	58.8	449	34.2	23	1.8	0	0.0	1,312	100.0	
7/16															
Period 4	74	Female	0	0.0	638	73.0	224	25.7	12	1.4	0	0.0	874	100.0	
All Periods	381	Female	120	2.6	2,574	56.1	1,798	39.2	97	2.1	0	0.0	4,589	100.0	
		Total	120	2.6	2,574	56.1	1,798	39.2	97	2.1	0	0.0	4,589	100.0	
Female Mean Length			518		544		559		556		-				
SE			6		2		2		7		-				

Note: Commercial fishing gear was primarily fish wheels. Roe-directed fishery.

Appendix B4.–Yukon River, District 6, summer chum salmon commercial fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	No.
7/26 Period 1	67	Male	0	0.0	228	34.3	69	10.4	10	1.5	0	0.0	307	46.3
		Female	0	0.0	198	29.9	159	23.9	0	0.0	0	0.0	357	53.7
		Subtotal	0	0.0	426	64.2	228	34.3	10	1.5	0	0.0	664	100.0
7/29 Period 2	149	Male	15	0.7	707	32.2	383	17.4	15	0.7	0	0.0	1,120	51.0
		Female	44	2.0	855	38.9	177	8.1	0	0.0	0	0.0	1,076	49.0
		Subtotal	59	2.7	1,562	71.1	560	25.5	15	0.7	0	0.0	2,196	100.0
8/2 Period 3	147	Male	56	3.4	522	32.0	211	12.9	11	0.7	0	0.0	799	49.0
		Female	11	0.7	588	36.1	222	13.6	11	0.7	0	0.0	833	51.0
		Subtotal	67	4.1	1,110	68.0	433	26.5	22	1.4	0	0.0	1,632	100.0
8/5 Period 4	142	Male	20	1.4	455	31.7	152	10.6	20	1.4	0	0.0	647	45.1
		Female	71	4.9	627	43.7	81	5.6	10	0.7	0	0.0	789	54.9
		Subtotal	91	6.3	1,082	75.4	233	16.2	30	2.1	0	0.0	1,436	100.0
Period 5 ^a	0	Male	12	1.4	280	31.7	93	10.6	12	1.4	0	0.0	398	45.1
		Female	44	4.9	386	43.7	50	5.6	6	0.7	0	0.0	486	54.9
		Subtotal	56	6.3	666	75.4	143	16.2	19	2.1	0	0.0	884	100.0
8/12 Period 6	174	Male	6	0.6	105	10.9	44	4.6	0	0.0	0	0.0	155	16.1
		Female	28	2.9	577	59.8	194	20.1	6	0.6	6	0.6	810	83.9
		Subtotal	33	3.4	682	70.7	238	24.7	6	0.6	6	0.6	965	100.0
All Periods	679	Male	108	1.4	2,298	29.5	953	12.3	68	0.9	0	0.0	3,428	44.1
		Female	197	2.5	3,231	41.5	882	11.3	33	0.4	6	0.1	4,349	55.9
		Total	306	3.9	5,529	71.1	1,835	23.6	101	1.3	6	0.1	7,777	100.0
		Male Mean Length	561		579		592		614		-			
		SE	5		2		4		10		-			
		Female Mean Length	538		554		565		583		590			
		SE	6		2		2		6		-			

Note: Samples were collected from Fairbanks (IAFP North Pole) and Nenana.

^a Age and sex composition was estimated from period 4.

Appendix B5.–Yukon River, District 1, summer chum salmon subsistence 5.5" mesh gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6/12	18	Male	0	0.0	7	38.9	3	16.7	0	0.0	0	0.0	10	55.6
		Female	0	0.0	2	11.1	6	33.3	0	0.0	0	0.0	8	44.4
		Subtotal	0	0.0	9	50.0	9	50.0	0	0.0	0	0.0	18	100.0
6/23, 26	64	Male	1	1.6	18	28.1	25	39.1	1	1.6	0	0.0	45	70.3
		Female	1	1.6	10	15.6	8	12.5	0	0.0	0	0.0	19	29.7
		Subtotal	2	3.1	28	43.8	33	51.6	1	1.6	0	0.0	64	100.0
Season	82	Male	1	1.2	25	30.5	28	34.1	1	1.2	0	0.0	55	67.1
		Female	1	1.2	12	14.6	14	17.1	0	0.0	0	0.0	27	32.9
		Total	2	2.4	37	45.1	42	51.2	1	1.2	0	0.0	82	100.0
		Male Mean Length	570		587		597		610		-			
		SE	-		4		6		-		-			
		Female Mean Length	590		565		584		-		-			
		SE	-		6		5		-		-			

^a Sample dates are stratified by week.

Appendix B6.—Offshore test fishery, summer chum salmon 5.5" drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	
6/18-22, 24-25; 7/5, 8-9, 12, 14 (6/18-7/14)	124	Male	3	2.4	34	27.4	35	28.2	2	1.6	0	0.0	74	59.7
		Female	0	0.0	20	16.1	29	23.4	1	0.8	0	0.0	50	40.3
		Total	3	2.4	54	43.5	64	51.6	3	2.4	0	0.0	124	100.0
		Male Mean Length	555		581		595		613		-			
		SE	10		4		5		33		-			
		Female Mean Length	-		573		577		570		-			
		SE	-		4		3		-		-			

Note: Test fishery was operated from three locations: Dall Point, Cape Romanzof, and Scammon Bay.

Appendix B7.—Yukon River, Big Eddy test fishery, summer chum salmon 5.5" mesh set gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	
6/10-23 Quartile 1	278	Male	2	0.7	54	19.4	64	23.0	2	0.7	1	0.4	123	44.2
		Female	0	0.0	61	21.9	90	32.4	4	1.4	0	0.0	155	55.8
		Subtotal	2	0.7	115	41.4	154	55.4	6	2.2	1	0.4	278	100.0
6/24-25 Quartile 2	60	Male	2	3.3	16	26.7	14	23.3	0	0.0	0	0.0	32	53.3
		Female	1	1.7	14	23.3	11	18.3	2	3.3	0	0.0	28	46.7
		Subtotal	3	5.0	30	50.0	25	41.7	2	3.3	0	0.0	60	100.0
6/26-29 Quartile 3	106	Male	1	0.9	31	29.2	11	10.4	1	0.9	0	0.0	44	41.5
		Female	1	0.9	31	29.2	29	27.4	1	0.9	0	0.0	62	58.5
		Subtotal	2	1.9	62	58.5	40	37.7	2	1.9	0	0.0	106	100.0
6/30- 7/1-14 Quartile 4	137	Male	1	0.7	37	27.0	30	21.9	0	0.0	0	0.0	68	49.6
		Female	0	0.0	39	28.5	28	20.4	2	1.5	0	0.0	69	50.4
		Subtotal	1	0.7	76	55.5	58	42.3	2	1.5	0	0.0	137	100.0
Season	581	Male	6	1.0	138	23.8	119	20.5	3	0.5	1	0.2	267	46.0
		Female	2	0.3	145	25.0	158	27.2	9	1.5	0	0.0	314	54.0
		Total	8	1.4	283	48.7	277	47.7	12	2.1	1	0.2	581	100.0
		Male Mean Length	562		574		592		572		570			
		SE	5		2		2		14		-			
		Female Mean Length	548		559		574		579		-			
		SE	13		2		2		6		-			

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 5.5" mesh set gillnet total catch.

Appendix B8.–Yukon River, Middle Mouth test fishery, summer chum salmon 5.5" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002		No.	%
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)							
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
6/10-23 Quartile 1	157	Male	2	1.3	30	19.1	42	26.8	0	0.0	0	0.0	74	47.1
		Female	0	0.0	33	21.0	49	31.2	1	0.6	0	0.0	83	52.9
		Subtotal	2	1.3	63	40.1	91	58.0	1	0.6	0	0.0	157	100.0
6/24-25 Quartile 2	60	Male	1	1.7	16	26.7	12	20.0	0	0.0	0	0.0	29	48.3
		Female	0	0.0	19	31.7	12	20.0	0	0.0	0	0.0	31	51.7
		Subtotal	1	1.7	35	58.3	24	40.0	0	0.0	0	0.0	60	100.0
6/26-29 Quartile 3	108	Male	1	0.9	23	21.3	24	22.2	2	1.9	0	0.0	50	46.3
		Female	0	0.0	27	25.0	27	25.0	3	2.8	1	0.9	58	53.7
		Subtotal	1	0.9	50	46.3	51	47.2	5	4.6	1	0.9	108	100.0
6/30- 7/1-14 Quartile 4	136	Male	1	0.7	33	24.3	21	15.4	1	0.7	0	0.0	56	41.2
		Female	0	0.0	45	33.1	35	25.7	0	0.0	0	0.0	80	58.8
		Subtotal	1	0.7	78	57.4	56	41.2	1	0.7	0	0.0	136	100.0
Season	461	Male	5	1.1	102	22.1	99	21.5	3	0.7	0	0.0	209	45.3
		Female	0	0.0	124	26.9	123	26.7	4	0.9	1	0.2	252	54.7
		Total	5	1.1	226	49.0	222	48.2	7	1.5	1	0.2	461	100.0
		Male Mean Length	544		573		592		577		-			
		SE	15		2		3		21		-			
		Female Mean Length	-		558		570		574		610			
		SE	-		2		2		11		-			

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 5.5" mesh set gillnet total catch.

Appendix B9.–Yukon River, combined Big Eddy and Middle Mouth test fisheries, summer chum salmon 5.5" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6/10-23 Quartile 1	435	Male	4	0.9	84	19.3	106	24.4	2	0.5	1	0.2	197	45.3
		Female	0	0.0	94	21.6	139	32.0	5	1.1	0	0.0	238	54.7
		Subtotal	4	0.9	178	40.9	245	56.3	7	1.6	1	0.2	435	100.0
6/24-25 Quartile 2	120	Male	3	2.5	32	26.7	26	21.7	0	0.0	0	0.0	61	50.8
		Female	1	0.8	33	27.5	23	19.2	2	1.7	0	0.0	59	49.2
		Subtotal	4	3.3	65	54.2	49	40.8	2	1.7	0	0.0	120	100.0
6/26-29 Quartile 3	214	Male	2	0.9	54	25.2	35	16.4	3	1.4	0	0.0	94	43.9
		Female	1	0.5	58	27.1	56	26.2	4	1.9	1	0.5	120	56.1
		Subtotal	3	1.4	112	52.3	91	42.5	7	3.3	1	0.5	214	100.0
6/30- 7/1-14 Quartile 4	273	Male	2	0.7	70	25.6	51	18.7	1	0.4	0	0.0	124	45.4
		Female	0	0.0	84	30.8	63	23.1	2	0.7	0	0.0	149	54.6
		Subtotal	2	0.7	154	56.4	114	41.8	3	1.1	0	0.0	273	100.0
Season	1,042	Male	11	1.1	240	23.0	218	20.9	6	0.6	1	0.1	476	45.7
		Female	2	0.2	269	25.8	281	27.0	13	1.2	1	0.1	566	54.3
		Total	13	1.2	509	48.8	499	47.9	19	1.8	2	0.2	1,042	100.0
Male Mean Length			554		573		592		574		570			
SE			8		1		2		12		-			
Female Mean Length			548		559		572		578		610			
SE			13		1		1		5		-			

^a Sample dates were stratified by quartiles based on the combined Big Eddy and Middle Mouth 5.5" mesh set gillnet total catch.

Appendix B10.–Andreafsky River (East Fork) weir, summer chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6/24-25, 27-29 (6/24-29)	75	Male	9	2.7	13	4.0	97	29.3	110	33.3	0	0.0	228	69.3
		Female	0	0.0	13	4.0	53	16.0	35	10.7	0	0.0	101	30.7
		Subtotal	9	2.7	26	8.0	149	45.3	145	44.0	0	0.0	329	100.0
6/30- 7/2 (6/30- 7/3)	85	Male	0	0.0	79	9.4	266	31.8	167	20.0	0	0.0	512	61.2
		Female	0	0.0	69	8.2	197	23.5	59	7.1	0	0.0	325	38.8
		Subtotal	0	0.0	148	17.6	463	55.3	226	27.1	0	0.0	837	100.0
7/5-8 (7/4-8)	103	Male	69	3.9	382	21.4	556	31.1	174	9.7	17	1.0	1,198	67.0
		Female	0	0.0	261	14.6	226	12.6	104	5.8	0	0.0	591	33.0
		Subtotal	69	3.9	643	35.9	782	43.7	278	15.5	17	1.0	1,789	100.0
7/9-13 (7/9-13)	107	Male	107	6.5	383	23.4	460	28.0	199	12.1	15	0.9	1,164	71.0
		Female	77	4.7	245	15.0	107	6.5	46	2.8	0	0.0	475	29.0
		Subtotal	184	11.2	628	38.3	567	34.6	245	15.0	15	0.9	1,639	100.0
7/14-16 (7/14-17)	105	Male	148	7.6	351	18.1	536	27.6	166	8.6	0	0.0	1,200	61.9
		Female	129	6.7	295	15.2	277	14.3	37	1.9	0	0.0	739	38.1
		Subtotal	277	14.3	646	33.3	813	41.9	203	10.5	0	0.0	1,939	100.0
7/19-21, 23 (7/18-24)	153	Male	78	5.2	205	13.7	263	17.6	78	5.2	10	0.7	634	42.5
		Female	98	6.5	419	28.1	302	20.3	39	2.6	0	0.0	858	57.5
		Subtotal	176	11.8	624	41.8	566	37.9	117	7.8	10	0.7	1,492	100.0
7/26-28 (7/25-8/3)	88	Male	25	3.4	220	29.5	68	9.1	25	3.4	0	0.0	339	45.5
		Female	51	6.8	229	30.7	119	15.9	8	1.1	0	0.0	406	54.5
		Subtotal	76	10.2	449	60.2	186	25.0	34	4.5	0	0.0	745	100.0
Season	716	Male	437	5.0	1,633	18.6	2,244	25.6	919	10.5	42	0.5	5,276	60.2
		Female	354	4.0	1,531	17.5	1,280	14.6	329	3.7	0	0.0	3,494	39.8
		Total	791	9.0	3,164	36.1	3,525	40.2	1,248	14.2	42	0.5	8,770	100.0
		Male Mean Length	537		561		577		586		577			
		SE	7		3		3		5		-			
		Female Mean Length	511		533		541		548		-			
		SE	5		3		3		6		-			

Note: Samples were collected by US Fish and Wildlife Service (USFWS).

Appendix B11.—Anvik River sonar, summer chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7/2-4, 6 (6/18-7/7)	87	Male	0	0.0	20,696	25.3	18,814	23.0	1,881	2.3	0	0.0	41,391	50.6
		Female	941	1.1	18,814	23.0	19,755	24.1	941	1.1	0	0.0	40,451	49.4
		Subtotal	941	1.1	39,510	48.3	38,569	47.1	2,822	3.4	0	0.0	81,842	100.0
7/9, 11-12, 14, 15 (7/8-16)	144	Male	955	1.4	16,713	24.3	11,938	17.4	1,910	2.8	0	0.0	31,515	45.8
		Female	1,910	2.8	25,308	36.8	9,073	13.2	955	1.4	0	0.0	37,245	54.2
		Subtotal	2,865	4.2	42,020	61.1	21,010	30.6	2,865	4.2	0	0.0	68,760	100.0
7/18-21 (7/17-29)	107	Male	0	0.0	8,805	21.5	4,211	10.3	766	1.9	0	0.0	13,782	33.6
		Female	766	1.9	19,908	48.6	5,360	13.1	1,149	2.8	0	0.0	27,182	66.4
		Subtotal	766	1.9	28,713	70.1	9,571	23.4	1,914	4.7	0	0.0	40,964	100.0
Season	338	Male	955	0.5	46,214	24.1	34,963	18.3	4,557	2.4	0	0.0	86,689	45.3
		Female	3,616	1.9	64,029	33.4	34,187	17.8	3,044	1.6	0	0.0	104,877	54.7
		Total	4,571	2.4	110,243	57.5	69,150	36.1	7,601	4.0	0	0.0	191,566	100.0
		Male Mean Length	550		579		591		613		-			
		SE	-		3		4		7		-			
		Female Mean Length	517		551		556		560		-			
		SE	9		2		4		6		-			

Note: Samples were collected with a beach seine.

Appendix B12.–Gisasa River weir, summer chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)											
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
6/24-25, 27-29 (6/24-29)	92	Male	0	0.0	1,027	28.3	1,264	34.8	158	4.3	0	0.0	2,448	67.4
		Female	39	1.1	829	22.8	316	8.7	0	0.0	0	0.0	1,185	32.6
		Subtotal	39	1.1	1,856	51.1	1,580	43.5	158	4.3	0	0.0	3,633	100.0
6/30- 7/2 (6/30- 7/3)	154	Male	0	0.0	2,236	34.4	1,350	20.8	127	1.9	0	0.0	3,713	57.1
		Female	42	0.6	1,561	24.0	1,139	17.5	42	0.6	0	0.0	2,784	42.9
		Subtotal	42	0.6	3,797	58.4	2,489	38.3	169	2.6	0	0.0	6,497	100.0
7/5-8 (7/4-8)	141	Male	143	1.4	2,503	24.8	1,287	12.8	143	1.4	0	0.0	4,076	40.4
		Female	286	2.8	3,862	38.3	1,716	17.0	143	1.4	0	0.0	6,007	59.6
		Subtotal	429	4.3	6,364	63.1	3,003	29.8	286	2.8	0	0.0	10,083	100.0
7/9-13 (7/9-13)	153	Male	58	1.3	902	20.3	320	7.2	0	0.0	0	0.0	1,280	28.8
		Female	204	4.6	2,123	47.7	843	19.0	0	0.0	0	0.0	3,170	71.2
		Subtotal	262	5.9	3,025	68.0	1,163	26.1	0	0.0	0	0.0	4,450	100.0
7/14-16 (7/14-17)	79	Male	16	1.3	327	26.6	125	10.1	0	0.0	0	0.0	467	38.0
		Female	16	1.3	529	43.0	218	17.7	0	0.0	0	0.0	763	62.0
		Subtotal	31	2.5	856	69.6	343	27.8	0	0.0	0	0.0	1,230	100.0
Season	619	Male	217	0.8	6,994	27.0	4,345	16.8	428	1.7	0	0.0	11,984	46.3
		Female	587	2.3	8,904	34.4	4,233	16.3	185	0.7	0	0.0	13,909	53.7
		Total	804	3.1	15,899	61.4	8,578	33.1	613	2.4	0	0.0	25,893	100.0
		Male Mean Length	551		574		588		600		-			
		SE	13		2		4		8		-			
		Female Mean Length	548		545		558		572		-			
		SE	10		2		3		13		-			

Note: Samples were collected by US Fish and Wildlife Service (USFWS).

Appendix B13.–Salcha River carcass survey, summer chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
9/7	80	Male	2	2.5	14	17.5	13	16.3	6	7.5	0	0.0	35	43.8
		Female	1	1.3	23	28.8	15	18.8	5	6.3	1	1.3	45	56.3
		Subtotal	3	3.8	37	46.3	28	35.0	11	13.8	1	1.3	80	100.0
9/8	100	Male	1	1.0	20	20.0	11	11.0	0	0.0	0	0.0	32	32.0
		Female	3	3.0	40	40.0	20	20.0	5	5.0	0	0.0	68	68.0
		Subtotal	4	4.0	60	60.0	31	31.0	5	5.0	0	0.0	100	100.0
Season	180	Male	3	1.7	34	18.9	24	13.3	6	3.3	0	0.0	67	37.2
		Female	4	2.2	63	35.0	35	19.4	10	5.6	1	0.6	113	62.8
		Total	7	3.9	97	53.9	59	32.8	16	8.9	1	0.6	180	100.0
		Male Mean Length	560		562		579		584		-			
		SE	10		4		5		15		-			
		Female Mean Length	543		537		549		550		555			
		SE	14		3		5		6		-			

Note: Samples were collected by Tanana Chiefs Conference (TCC).

Appendix B14.–Tozitna River weir, summer chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates (Strata Dates)	Sample Size		Brood Year (Age)											
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7/3-7/12 (6/30-7/13)	94	Male	3	1.1	113	43.6	66	25.5	0	0.0	0	0.0	182	70.2
		Female	0	0.0	58	22.4	17	6.4	3	1.1	0	0.0	77	29.8
		Subtotal	3	1.1	171	66.0	83	31.9	3	1.1	0	0.0	259	100.0
7/14, 16-25 (7/14-7/25)	72	Male	17	1.4	567	47.2	233	19.4	0	0.0	0	0.0	817	68.1
		Female	16	1.4	300	25.0	67	5.6	0	0.0	0	0.0	383	31.9
		Subtotal	33	2.8	867	72.2	300	25.0	0	0.0	0	0.0	1,200	100.0
7/26- 8/1 (7/26-8/1)	127	Male	96	2.4	1,543	37.8	707	17.3	0	0.0	0	0.0	2,347	57.5
		Female	129	3.1	1,029	25.2	579	14.2	0	0.0	0	0.0	1,736	42.5
		Subtotal	225	5.5	2,572	63.0	1,286	31.5	0	0.0	0	0.0	4,083	100.0
8/2-4 (8/2-4)	138	Male	0	0.0	576	34.8	263	15.9	12	0.7	0	0.0	851	51.4
		Female	0	0.0	623	37.7	180	10.9	0	0.0	0	0.0	803	48.6
		Subtotal	0	0.0	1,199	72.5	443	26.8	12	0.7	0	0.0	1,654	100.0
8/5-8 (8/5-11)	111	Male	52	2.7	520	27.0	416	21.6	0	0.0	0	0.0	987	51.4
		Female	0	0.0	797	41.5	138	7.2	0	0.0	0	0.0	936	48.6
		Subtotal	52	2.7	1,317	68.5	554	28.8	0	0.0	0	0.0	1,923	100.0
Season	542	Male	168	1.8	3,318	36.4	1,686	18.5	12	0.2	0	0.0	5,184	56.8
		Female	145	1.6	2,807	30.8	980	10.7	3	0.0	0	0.0	3,935	43.2
		Total	313	3.4	6,125	67.2	2,666	29.2	15	0.2	0	0.0	9,119	100.0
		Male Mean Length	548		573		600		650		-			
		SE	15		2		4		-		-			
		Female Mean Length	510		554		573		585		-			
		SE	4		2		4		-		-			

Note: Samples were collected by Bureau of Land Management (BLM).

**APPENDIX C:
FALL CHUM SALMON TABLES**

Appendix C1.–Yukon River, District 1, fall chum salmon commercial gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	No.
7/17 Period 1	159	Male	76	1.9	1,261	31.4	656	16.4	50	1.3	0	0.0	2,043	50.9
		Female	50	1.3	984	24.5	883	22.0	50	1.3	0	0.0	1,968	49.1
		Subtotal	126	3.1	2,245	56.0	1,539	38.4	101	2.5	0	0.0	4,011	100.0
7/22 Period 2	159	Male	35	1.3	775	27.7	722	25.8	88	3.1	0	0.0	1,620	57.9
		Female	0	0.0	739	26.4	422	15.1	18	0.6	0	0.0	1,179	42.1
		Subtotal	35	1.3	1,514	54.1	1,144	40.9	106	3.8	0	0.0	2,799	100.0
7/29 Period 3	159	Male	20	1.3	449	27.7	327	20.1	10	0.6	0	0.0	806	49.7
		Female	20	1.3	419	25.8	357	22.0	20	1.3	0	0.0	817	50.3
		Subtotal	41	2.5	868	53.5	684	42.1	31	1.9	0	0.0	1,623	100.0
8/5 Period 4	159	Male	48	1.9	788	30.8	499	19.5	48	1.9	0	0.0	1,384	54.1
		Female	0	0.0	708	27.7	467	18.2	0	0.0	0	0.0	1,174	45.9
		Subtotal	48	1.9	1,496	58.5	965	37.7	48	1.9	0	0.0	2,558	100.0
9/6 Period 5	57	Male	11	14.0	25	31.6	7	8.8	3	3.5	0	0.0	46	57.9
		Female	7	8.8	18	22.8	10	12.3	1	1.8	0	0.0	36	45.6
		Subtotal	18	22.8	44	54.4	17	21.1	4	5.3	0	0.0	80	103.5
9/8 Period 6	60	Male	79	11.7	238	35.0	34	5.0	0	0.0	0	0.0	351	51.7
		Female	79	11.7	170	25.0	79	11.7	0	0.0	0	0.0	329	48.3
		Subtotal	159	23.3	408	60.0	113	16.7	0	0.0	0	0.0	680	100.0
9/10 Period 7	60	Male	13	8.3	59	36.7	19	11.7	0	0.0	0	0.0	91	56.7
		Female	11	6.7	37	23.3	21	13.3	0	0.0	0	0.0	69	43.3
		Subtotal	24	15.0	96	60.0	40	25.0	0	0.0	0	0.0	160	100.0
All Periods	813	Male	283	2.4	3,595	30.2	2,263	19.0	200	1.7	0	0.0	6,341	53.2
		Female	168	1.4	3,075	25.8	2,240	18.8	90	0.8	0	0.0	5,573	46.8
		Total	451	3.8	6,670	56.0	4,502	37.8	290	2.4	0	0.0	11,911	100.0
		Male Mean Length	549		574		590		589		-			
		SE	5		2		3		16		-			
		Female Mean Length	555		564		575		559		-			
		SE	5		2		2		6		-			

Appendix C2.–Yukon River, District 2, fall chum salmon commercial gillnet harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	No.
7/20 Period 1	160	Male	45	1.3	1,066	29.4	408	11.3	68	1.9	0	0.0	1,588	43.8
		Female	0	0.0	998	27.5	930	25.6	113	3.1	0	0.0	2,041	56.3
		Subtotal	45	1.3	2,064	56.9	1,338	36.9	181	5.0	0	0.0	3,629	100.0
7/27 Period 2	159	Male	4	0.6	131	20.1	123	18.9	8	1.3	4	0.6	271	41.5
		Female	0	0.0	201	30.8	172	26.4	8	1.3	0	0.0	382	58.5
		Subtotal	4	0.6	333	50.9	296	45.3	16	2.5	4	0.6	653	100.0
8/3 Period 3	157	Male	0	0.0	2,580	33.1	1,191	15.3	50	0.6	0	0.0	3,821	49.0
		Female	0	0.0	2,729	35.0	1,141	14.6	99	1.3	0	0.0	3,969	51.0
		Subtotal	0	0.0	5,309	68.2	2,332	29.9	149	1.9	0	0.0	7,790	100.0
All Periods	476	Male	49	0.4	3,778	31.3	1,722	14.3	126	1.0	4	0.0	5,679	47.0
		Female	0	0.0	3,928	32.5	2,244	18.6	221	1.8	0	0.0	6,393	53.0
		Total	49	0.4	7,706	63.8	3,966	32.9	347	2.9	4	0.0	12,072	100.0
		Male Mean Length	548		581		593		565		605			
		SE	20		3		4		4		-			
		Female Mean Length	-		568		585		591		-			
		SE	-		2		3		12		-			

Appendix C3.–Yukon River, Subdistrict 6-A, Manley Hot Springs fall chum salmon commercial fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002			
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	No.
9/19 ^a	35	Male												0
		Female	11	31.4	22	62.9	1	2.9	1	2.9	0	0.0	35	100.0
		Total	11	31.4	22	62.9	1	2.9	1	2.9	0	0.0	35	100.0
		Female Mean Length	550		576		580		590		-			
		SE	7		4		-		-		-			

^a Fish were pre-sorted by gender; females only roe-directed fishery.

Appendix C4.–Yukon River, District 5, Tanana, fall chum salmon subsistence fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
8/29	152	Male	2	1.3	51	33.6	18	11.8	2	1.3	0	0.0	73	48.0
		Female	2	1.3	70	46.1	6	3.9	1	0.7	0	0.0	79	52.0
		Total	4	2.6	121	79.6	24	15.8	3	2.0	0	0.0	152	100.0
		Male Mean Length	645		617		626		615		-			
		SE	5		4		6		10		-			
		Female Mean Length	588		593		600		590		-			
		SE	18		3		9		-		-			

Appendix C5.–Yukon River, Subdistrict 6-B, Nenana, fall chum salmon subsistence fish wheel harvest age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
9/26	34	Male	4	11.8	14	41.2	0	0.0	0	0.0	0	0.0	18	52.9
		Female	6	17.6	9	26.5	1	2.9	0	0.0	0	0.0	16	47.1
		Total	10	29.4	23	67.6	1	2.9	0	0.0	0	0.0	34	100.0
		Male Mean Length	546		583		-		-		-			
		SE	9		8		-		-		-			
		Female Mean Length	546		568		560		-		-			
		SE	17		13		-		-		-			

Appendix C6.–Yukon River, Big Eddy test fishery, fall chum salmon 6.0" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002		No.	%
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)							
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
7/16-17, 23, 27 7/30-31; 8/1-3 Quartile 1	40	Male	0	0.0	11	27.5	8	20.0	0	0.0	0	0.0	19	47.5
		Female	0	0.0	14	35.0	6	15.0	1	2.5	0	0.0	21	52.5
		Subtotal	0	0.0	25	62.5	14	35.0	1	2.5	0	0.0	40	100.0
8/7-9 Quartile 2	22	Male	0	0.0	8	36.4	2	9.1	1	4.5	0	0.0	11	50.0
		Female	0	0.0	7	31.8	4	18.2	0	0.0	0	0.0	11	50.0
		Subtotal	0	0.0	15	68.2	6	27.3	1	4.5	0	0.0	22	100.0
8/10, 15, 17-19 Quartile 3	9	Male	0	0.0	1	11.1	2	22.2	1	11.1	0	0.0	4	44.4
		Female	0	0.0	3	33.3	1	11.1	1	11.1	0	0.0	5	55.6
		Subtotal	0	0.0	4	44.4	3	33.3	2	22.2	0	0.0	9	100.0
8/22-24, 27-28 Quartile 4	11	Male	1	9.1	2	18.2	0	0.0	0	0.0	0	0.0	3	27.3
		Female	2	18.2	4	36.4	2	18.2	0	0.0	0	0.0	8	72.7
		Subtotal	3	27.3	6	54.5	2	18.2	0	0.0	0	0.0	11	100.0
Season	82	Male	1	1.2	22	26.8	12	14.6	2	2.4	0	0.0	37	45.1
		Female	2	2.4	28	34.1	13	15.9	2	2.4	0	0.0	45	54.9
		Total	3	3.7	50	61.0	25	30.5	4	4.9	0	0.0	82	100.0
		Male Mean Length	555		585		607		608		-			
		SE	-		5		8		13		-			
		Female Mean Length	563		585		594		570		-			
		SE	8		4		7		15		-			

^a Sample dates were stratified by quartiles based on combined Big Eddy and Middle Mouth 6.0" mesh drift gillnet catch totals.

Appendix C7.–Yukon River, Big Eddy experimental test fishery, fall chum salmon 6" drift gillnet age and sex composition and mean length, 2009.

Sample Dates	Sample Size		Brood Year (Age)										Total	
			2006		2005		2004		2003		2002		No.	%
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)							
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%			
8/9, 10, 15- 20, 23	99	Male	4	4.0	40	40.4	6	6.1	0	0.0	0	0.0	50	50.5
		Female	2	2.0	39	39.4	7	7.1	1	1.0	0	0.0	49	49.5
		Total	6	6.1	79	79.8	13	13.1	1	1.0	0	0.0	99	100.0
		Male Mean Length	498		585		598		-		-			
		SE	70		4		6		-		-			
		Female Mean Length	595		581		593		615		-			
		SE	10		3		10		-		-			

Note: This additional test fishery was implemented in the Big Eddy area because of low catch rates in the historical sites.

Appendix C8.–Yukon River, Middle Mouth test fishery, fall chum salmon 6.0" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	No.	%	No.	%	No.	%	
7/17, 23, 31; 8/2, 5, 6 Quartile 1	22	Male	0	0.0	5	22.7	5	22.7	0	0.0	0	0.0	10	45.5
		Female	0	0.0	7	31.8	5	22.7	0	0.0	0	0.0	12	54.5
		Subtotal	0	0.0	12	54.5	10	45.5	0	0.0	0	0.0	22	100.0
8/7-9 Quartile 2	28	Male	0	0.0	12	42.9	0	0.0	1	3.6	0	0.0	13	46.4
		Female	0	0.0	12	42.9	3	10.7	0	0.0	0	0.0	15	53.6
		Subtotal	0	0.0	24	85.7	3	10.7	1	3.6	0	0.0	28	100.0
8/10, 19 Quartile 3	9	Male	0	0.0	1	11.1	2	22.2	1	11.1	0	0.0	4	44.4
		Female	0	0.0	3	33.3	2	22.2	0	0.0	0	0.0	5	55.6
		Subtotal	0	0.0	4	44.4	4	44.4	1	11.1	0	0.0	9	100.0
8/20, 22, 25, 27, 28 Quartile 4	11	Male	0	0.0	3	27.3	0	0.0	0	0.0	0	0.0	3	27.3
		Female	3	27.3	4	36.4	1	9.1	0	0.0	0	0.0	8	72.7
		Subtotal	3	27.3	7	63.6	1	9.1	0	0.0	0	0.0	11	100.0
Season	70	Male	0	0.0	21	30.0	7	10.0	2	2.9	0	0.0	30	42.9
		Female	3	4.3	26	37.1	11	15.7	0	0.0	0	0.0	40	57.1
		Total	3	4.3	47	67.1	18	25.7	2	2.9	0	0.0	70	100.0
		Male Mean Length	-		587		595		610		-			
		SE	-		4		14		30		-			
		Female Mean Length	558		576		595		-		-			
		SE	9		5		4		-		-			

^a Sample dates were stratified by quartiles based on combined Big Eddy and Middle Mouth 6.0" mesh drift gillnet catch totals.

Appendix C9.–Yukon River, combined Big Eddy and Middle Mouth test fisheries, fall chum salmon 6.0" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a Gear	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7/16, 17, 23, 25 7/27, 30, 31; 8/1-3, 5-6 Quartile 1	62	Male	0	0.0	16	25.8	13	21.0	0	0.0	0	0.0	29	46.8
		Female	0	0.0	21	33.9	11	17.7	1	1.6	0	0.0	33	53.2
		Subtotal	0	0.0	37	59.7	24	38.7	1	1.6	0	0.0	62	100.0
8/7-9 Quartile 2	72	Male	1	1.4	33	45.8	2	2.8	2	2.8	0	0.0	38	52.8
		Female	0	0.0	27	37.5	7	9.7	0	0.0	0	0.0	34	47.2
		Subtotal	1	1.4	60	83.3	9	12.5	2	2.8	0	0.0	72	100.0
8/10, 15, 17, 19 Quartile 3	95	Male	3	3.2	29	30.5	10	10.5	2	2.1	0	0.0	44	46.3
		Female	2	2.1	37	38.9	10	10.5	2	2.1	0	0.0	51	53.7
		Subtotal	5	5.3	66	69.5	20	21.1	4	4.2	0	0.0	95	100.0
8/20, 22-25, 27, 28 Quartile 4	22	Male	1	4.5	5	22.7	0	0.0	0	0.0	0	0.0	6	27.3
		Female	5	22.7	8	36.4	3	13.6	0	0.0	0	0.0	16	72.7
		Subtotal	6	27.3	13	59.1	3	13.6	0	0.0	0	0.0	22	100.0
7/6 - 14 Season	248	Male	5	2.0	82	33.1	25	10.0	4	1.6	0	0.0	116	46.6
		Female	7	2.8	92	37.1	31	12.4	3	1.2	0	0.0	132	53.4
		Total	12	4.8	174	70.1	55	22.3	7	2.8	0	0.0	248	100.0
		Male Mean Length	509		586		601		609		-			
		SE	55		2		6		13		-			
		Female Mean Length	570		581		594		585		-			
		SE	8		2		4		17		-			

^a Sample dates were stratified by quartiles based on combined Big Eddy and Middle Mouth 6.0" mesh drift gillnet total catch.

Appendix C10.–Yukon River, Mountain Village test fishery, fall chum salmon 5 7/8" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)											
			2006		2005		2004		2003		2002		Total	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
7/17-25, 7/28; 8/2, 4-6 Quartile 1	76	Male	0	0.0	27	35.5	11	14.5	1	1.3	0	0.0	39	51.3
		Female	1	1.3	21	27.7	13	17.1	1	1.3	1	1.3	37	48.7
		Subtotal	1	1.3	48	63.2	24	31.6	2	2.6	1	1.3	76	100.0
8/7-10 Quartile 2	75	Male	3	4.0	29	38.7	11	14.7	3	4.0	0	0.0	46	61.3
		Female	1	1.3	21	28.0	6	8.0	1	1.3	0	0.0	29	38.7
		Subtotal	4	5.3	50	66.7	17	22.7	4	5.3	0	0.0	75	100.0
08/11-13 Quartile 3	36	Male	1	2.8	9	25.0	3	8.3	0	0.0	0	0.0	13	36.1
		Female	0	0.0	14	38.9	9	25.0	0	0.0	0	0.0	23	63.9
		Subtotal	1	2.8	23	63.9	12	33.3	0	0.0	0	0.0	36	100.0
8/14-26, 28, 30 9/1, 2, 5, 6, 9, 10 Quartile 4	86	Male	3	3.5	29	33.7	7	8.1	0	0.0	0	0.0	39	45.3
		Female	2	2.3	30	34.9	12	14.0	3	3.5	0	0.0	47	54.7
		Total	5	5.8	59	68.6	19	22.1	3	3.5	0	0.0	86	100.0
Season	273	Male	7	2.5	94	34.4	32	11.7	4	1.5	0	0.0	137	50.2
		Female	4	1.5	86	31.5	40	14.7	5	1.8	1	0.4	136	49.8
		Total	11	4.0	180	65.9	72	26.4	9	3.3	1	0.4	273	100.0
		Male Mean Length	572		585		609		601		-			
		SE	10		3		4		31		-			
		Female Mean Length	560		577		591		582		560			
		SE	3		2		3		11		-			

Note: Samples were collected by Asacarsarmiut Traditional Council technicians.

^a Sample dates were stratified by quartiles based on the project's drift gillnet total catch.

Appendix C11.–Yukon River, Eagle sonar test fishery, fall chum salmon age and sex composition and mean length, 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
8/19, 23, 31; 9/4-5, 7-18 5.25" DGN	85	Male	3	3.5	36	42.4	3	3.5	0	0.0	0	0.0	42	49.4
		Female	5	5.9	32	37.6	6	7.1	0	0.0	0	0.0	43	50.6
		Subtotal	8	9.4	68	80.0	9	10.6	0	0.0	0	0.0	85	100.0
9/20-30; 10/1-4 5.25" DGN	185	Male	10	5.4	68	36.8	14	7.6	0	0.0	0	0.0	92	49.7
		Female	10	5.4	77	41.6	6	3.2	0	0.0	0	0.0	93	50.3
		Subtotal	20	10.8	145	78.4	20	10.8	0	0.0	0	0.0	185	100.0
8/30; 9/9, 12- 18, 20-30; 10/1-4 7.5" DGN	64	Male	2	3.1	37	57.8	16	25.0	0	0.0	0	0.0	55	85.9
		Female	0	0.0	9	14.1	0	0.0	0	0.0	0	0.0	9	14.1
		Subtotal	2	3.1	46	71.9	16	25.0	0	0.0	0	0.0	64	100.0
Season All Gear	334	Male	15	4.5	141	42.2	33	9.9	0	0.0	0	0.0	189	56.6
		Female	15	4.5	118	35.3	12	3.6	0	0.0	0	0.0	145	43.4
		Total ^a	30	9.0	259	77.5	45	13.5	0	0.0	0	0.0	334	100.0
		Male Mean Length	575		607		622		-		-			
		SE	7		3		5		-		-			
		Female Mean Length	565		582		583		-		-			
		SE	6		2		9		-		-			

^a The season total percentages by age were based on sample and mesh sizes and may not indicate the age composition of the run passage estimate at Eagle sonar.

Appendix C12.–Chandalar River carcass survey, fall chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
10/5	90	Male	5	5.6	29	32.2	12	13.3	1	1.1	0	0.0	47	52.2
		Female	6	6.7	28	31.1	8	8.9	1	1.1	0	0.0	43	47.8
		Subtotal	11	12.2	57	63.3	20	22.2	2	2.2	0	0.0	90	100.0
10/5	90	Male	1	1.1	14	15.6	11	12.2	2	2.2	1	1.1	29	32.2
		Female	4	4.4	42	46.7	15	16.7	0	0.0	0	0.0	61	67.8
		Subtotal	5	5.6	56	62.2	26	28.9	2	2.2	1	1.1	90	100.0
Season	180	Male	6	3.3	43	23.9	23	12.8	3	1.7	1	0.6	76	42.2
		Female	10	5.6	70	38.9	23	12.8	1	0.6	0	0.0	104	57.8
		Total	16	8.9	113	62.8	46	25.6	4	2.2	1	0.6	180	100.0
		Male Mean Length	575		584		615		607		660			
		SE	14		4		5		17		-			
		Female Mean Length	553		557		565		590		-			
		SE	9		3		7		-		-			

Note: Samples were collected by the U.S. Fish and Wildlife Service (USFWS) from hand-picked carcasses. Ages were determined from vertebrae.

Appendix C13.–Delta River carcass survey, fall chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)										Total	
			2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)			
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
10/21, 30	60	Male	8	13.3	7	11.7	11	18.3	3	5.0	0	0.0	29	48.3
		Female	5	8.3	12	20.0	10	16.7	3	5.0	1	1.7	31	51.7
		Subtotal	13	21.7	19	31.7	21	35.0	6	10.0	1	1.7	60	100.0
11/16, 25	120	Male	4	3.3	39	32.5	25	20.8	1	0.8	0	0.0	69	57.5
		Female	3	2.5	29	24.2	14	11.7	5	4.2	0	0.0	51	42.5
		Subtotal	7	5.8	68	56.7	39	32.5	6	5.0	0	0.0	120	100.0
Season	180	Male	12	6.7	46	25.6	36	20.0	4	2.2	0	0.0	98	54.4
		Female	8	4.4	41	22.8	24	13.3	8	4.4	1	0.6	82	45.6
		Total	20	11.1	87	48.3	60	33.3	12	6.7	1	0.6	180	100.0
		Male Mean Length	558		602		614		633		-			
		SE	7		4		3		15		-			
		Female Mean Length	548		563		578		588		585			
		SE	14		5		5		11		-			

Note: Samples were collected from hand-picked carcasses. Ages were determined from vertebrae.

Appendix C14.–Toklat River carcass survey, fall chum salmon escapement age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size	Brood Year (Age)										Total		
		2006 (0.2)		2005 (0.3)		2004 (0.4)		2003 (0.5)		2002 (0.6)				
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
11/7-8	150	Male	9	6.0	33	22.0	12	8.0	5	3.3	1	0.7	60	40.0
		Female	12	8.0	61	40.7	12	8.0	4	2.7	1	0.7	90	60.0
		Total	21	14.0	94	62.7	24	16.0	9	6.0	2	1.3	150	100.0
		Male Mean Length	538		572		603		572		570			
		SE	8		5		9		15		-			
		Female Mean Length	533		554		567		544		560			
		SE	7		4		6		9		-			

Note: Samples were collected by Tanana Chiefs Conference (TCC) from hand-picked carcasses. Ages were determined from vertebrae.

**APPENDIX D:
COHO SALMON TABLES**

Appendix D1.—Yukon River, District 1 commercial coho salmon harvest samples, age and sex composition and mean length, 2009.

Sample Dates ^a	Sample Size		Brood Year (Age)							
			2006 (1.1)		2005 (1.2)		2004 (1.3)		Total	
			No.	%	No.	%	No.	%	No.	%
7/17-29; 8/5 Periods 1-4 6" DGN	127	Male	283	4.7	2,831	47.2	425	7.1	3,539	59.1
		Female	236	3.9	2,076	34.6	142	2.4	2,453	40.9
		Total	519	8.7	4,907	81.9	566	9.4	5,992	100.0
		Male Mean Length	580		566		587			
		SE	16		4		9			
		Female Mean Length	574		566		563			
		SE	10		4		10			

^a Samples from periods 1 to 4 were combined and applied the total harvest from periods 1 to 7.

Appendix D2.–Yukon River, Big Eddy 6" drift gillnet test fishery coho salmon harvest samples, age and sex composition and mean length, 2009.

Sample Dates ^a	Sample Size	Brood Year (Age)								
		2006 (1.1)		2005 (1.2)		2004 (1.3)				
		No.	%	No.	%	No.	%	No.	%	
All Periods	106	Male	74	4.7	684	43.4	30	1.9	789	50.0
		Female	104	6.6	640	40.6	45	2.8	789	50.0
		Total	179	11.3	1,324	84.0	74	4.7	1,577	100.0
	Male Mean Length	580		562		610				
	SE	15		5		20				
	Female Mean Length	556		562		558				
	SE	8		5		20				

^a Samples from periods 2 to 3 were combined and applied the total harvest from periods 1 to 3.

Appendix D3.–Yukon River, Big Eddy test fishery, coho salmon 6.0" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size	Brood Year (Age)								
		2006 (1.1)		2005 (2.1)		2004 (3.1)		Total		
		No.	%	No.	%	No.	%	No.	%	
7/30; 8/8-12, 14-22, 25	75	Male	3	4.0	30	40.0	2	2.7	35	46.7
		Female	8	10.7	29	38.7	3	4.0	40	53.3
		Total	11	14.7	59	78.7	5	6.7	75	100.0
	Male Mean Length	588		572		583				
	SE	6		6		23				
	Female Mean Length	583		581		580				
	SE	6		4		12				

Appendix D4.–Yukon River, Middle Mouth 6" drift gillnet coho salmon test fishery samples, age and sex composition and mean length, 2009.

Sample Dates	Sample Size		Brood Year (Age)						Total	
			2006 (1.1)		2005 (2.1)		2004 (3.1)		No.	%
			No.	%	No.	%	No.	%		
8/9-10, 14, 16-20, 22-23	49	Male	6	12.2	22	44.9	0	0.0	28	57.1
		Female	0	0.0	19	38.8	2	4.1	21	42.9
		Total	6	12.2	41	83.7	2	4.1	49	100.0
		Male Mean Length	563		580		-			
		SE	13		6		-			
		Female Mean Length	-		577		590			
		SE	-		5		15			

Note: This additional test fishery was implemented in the Big Eddy area because of low catch rates in the historical sites.

Appendix D5.–Yukon River, Mountain Village, coho salmon 5 7/8" mesh drift gillnet test fishery project age and sex composition and mean length (mm), 2009.

Sample Dates Gear	Sample Size		Brood Year (Age)						Total	
			2006 (1.1)		2005 (2.1)		2004 (3.1)		No.	%
			No.	%	No.	%	No.	%		
8/2, 5, 8-11, 19-20, 22, 25, 27-28	74	Male	10	13.5	26	35.1	2	2.7	38	51.4
		Female	1	1.4	31	41.9	4	5.4	36	48.6
		Total	11	14.9	57	77.0	6	8.1	74	100.0
		Male Mean Length	594		589		588			
		SE	7		6		38			
		Female Mean Length	570		578		600			
		SE	-		4		7			

Appendix D6.–Yukon River, combined Big Eddy and Middle Mouth test fisheries, coho salmon 6.0" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)						Total	
			2006		2005		2004			
			(1.1)	(2.1)	(3.1)	No.	%	No.	%	No.
7/30- 8/28	198	Males	19	9.6	78	39.4	4	2.0	101	51.0
		Females	9	4.5	79	39.9	9	4.5	97	49.0
		Total	28	14.1	157	79.3	13	6.6	198	100.0
		Male Mean Length	583		580		585			
		SE	6		4		18			
		Female Mean Length	581		579		591			
		SE	6		2		6			

Appendix D7.–Yukon River, Mountain Village test fishery, coho salmon 5 7/8" mesh drift gillnet age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size		Brood Year (Age)						Total	
			2006		2005		2004			
			(1.1)	(2.1)	(3.1)	No.	%	No.	%	No.
7/17- 8/1, 8/4-19	75	Male	6	8.0	29	38.7	4	5.3	39	52.0
		Female	5	6.7	28	37.3	3	4.0	36	48.0
		Subtotal	11	14.7	57	76.0	7	9.3	75	100.0
8/20-27, 29; 9/4, 7-9	79	Male	0	0.0	38	48.1	2	2.5	40	50.6
		Female	2	2.5	36	45.6	1	1.3	39	49.4
		Subtotal	2	2.5	74	93.7	3	3.8	79	100.0
Season	154	Male	6	3.9	67	43.5	6	3.9	79	51.3
		Female	7	4.5	64	41.6	4	2.6	75	48.7
		Total	13	8.4	131	85.1	10	6.5	154	100.0
		Male Mean Length	569		574		585			
		SE	8		4		15			
		Female Mean Length	571		584		576			
		SE	10		2		15			

Note: Samples were collected by the Asacarsarmiut Traditional Council.

Appendix D8.—Otter Creek, Nenana River escapement coho salmon age and sex composition and mean length (mm), 2009.

Sample Dates	Sample Size	Brood Year (Age)						Total		
		2006 (1.1)		2005 (2.1)		2004 (3.1)		No.	%	
		No.	%	No.	%	No.	%			
9/16	42	Male	8	19.0	24	57.1	0	0.0	32	76.2
		Female	1	2.4	8	19.0	1	2.4	10	23.8
		Total	9	21.4	32	76.2	1	2.4	42	100.0
		Male Mean Length	560		556		-			
		SE	9		8		-			
		Female Mean Length	580		574		610			
		SE	-		11		-			

Note: Samples were collected by Bering Sea Fisherman's Association with rod and reel gear.