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Age, sex, and length for Chinook and summer chum salmon within the Yukon Area, 2017

by

Sean Larson

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Alaska Department of Fish and Game **Division of Commercial Fisheries**

Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

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ABSTRACT

Biological data were collected from Chinook (*Oncorhynchus tshawytscha*) and summer chum (*O. keta*) salmon along the United States portion of the Yukon River drainage in 2017. Age, sex, and length data were obtained from 5,980 Chinook and 6,413 summer chum salmon from commercial and subsistence harvests, test fisheries, and escapement projects. Samples were collected from salmon caught using gillnets, dip nets, fish wheels, beach seines, weir traps, and from hand-picked carcasses. Ages were successfully estimated for 90% of the Chinook salmon and 95% of the summer chum salmon. Sex and length were recorded for nearly all salmon sampled. This report provides a summary of the age, sex, and length data collected in 2017 for Chinook and summer chum salmon and is a single source document for historical summaries of long-term projects that collect age, sex, and length data from the Yukon Area. This report also provides a brief description of the Arctic-Yukon-Kuskokwim Database Management System which is a publicly-accessible online data archiving system that acts as an interface for querying and downloading historical age, sex, and length data.

Key words: Pacific salmon, *Oncorhynchus* spp., Chinook salmon, *Oncorhynchus tshawytscha*, summer chum salmon *Oncorhynchus keta*, age, sex, and length, ASL, age class composition, sex composition, length composition, Arctic-Yukon-Kuskokwim Database Management System, AYKDBMS, Yukon River.

INTRODUCTION

The Yukon River is the longest river in Alaska and supports runs of all 5 species of Pacific salmon *Oncorhynchus* spp. The Yukon River drainage exceeds 855,000 km^2 and is the fourth largest drainage basin in North America (Brabets et al. 2000; Figure 1). For management purposes, the Alaska portion of the drainage is divided into 7 Yukon Fishery Management districts and 10 subdistricts (Figure 2).

Adult Chinook salmon *Oncorhynchus tshawytscha* and summer chum salmon *O. keta* typically enter the mouth of the Yukon River during late May or early June to begin their upstream migration. These runs are followed by pink *O. gorbuscha*, fall chum *O. keta*, and coho salmon *O. kisutch*. Summer chum salmon are genetically distinct from fall chum salmon and can be distinguished by their smaller size, lower oil content, and different spawning locations. Chum salmon entering the Yukon River after July 15 are considered fall chum salmon for the purposes of fishery management. July 15 is the approximate date that half of the chum salmon entering the river are genetically distinguished as fall chum salmon, and the proportion of fall chum salmon continues to increase throughout the remainder of the run (Flannery and Wenburg 2015). As chum salmon migrate upriver, the transition dates for management are typically applied by district or subdistrict. Chum salmon that migrate up the mainstem Yukon River past the confluence of the Tanana River are predominately fall chum salmon.

Age, sex, and length (ASL) data have been collected for Chinook and summer chum salmon within the Yukon Area since the early 1960s. To characterize annual spawning runs of each species, sampling must adequately represent all major components of harvest and escapement. Through the ASL sampling program, data have been collected from salmon harvested in commercial, subsistence, and sport fisheries, as well as escapement monitoring projects, test fisheries, and independent research projects. These data allow researchers to evaluate changes in the ASL composition of salmon throughout the Yukon River drainage. Each year there are notable fluctuations in the ASL compositions observed at individual projects or components of projects. Some of these fluctuations are continuations of past observations, whereas others may occur at random. It is important to monitor fluctuations in ASL composition because they can reveal larger patterns in population structure over time.

In 2017, salmon ASL data were collected at numerous projects within the Yukon Area, including test fisheries and escapement monitoring projects (Table 1). Samples were collected from Chinook and summer chum within the Lower Yukon Test Fishery (LYTF) near Emmonak. Since 1979, the LYTF has utilized set and drift gillnets to estimate run timing, relative abundance, and characterize the ASL composition of salmon as they enter the Yukon River. Chinook salmon were also sampled at test fisheries at the mainstem Yukon River sonar near Pilot Station (hereafter, Pilot Station sonar). Chinook salmon ASL data were collected at the mainstem Yukon River sonar near Eagle (hereafter, Eagle sonar). Chinook and summer chum salmon ASL data were collected at projects monitoring salmon in tributary escapements; including, 3 weirs (Andreafsky and Gisasa rivers and Henshaw Creek), 1 sonar (Anvik River), and 2 counting towers (Chena and Salcha rivers). On the Chena and Salcha rivers, Chinook salmon ASL data were collected from carcasses recovered upriver of the tower escapement projects. Chum salmon are not typically sampled on the Chena River and were not sampled on the Salcha River in 2017. Sampling designs at escapement projects are believed to adequately represent the escapement to individual systems. The ASL composition at the Pilot Station sonar test fishery is believed to be representative of the total run of Chinook and summer chum. The ASL composition at the Eagle sonar test fishery is representative of the Canadian-origin Chinook salmon boarder passage and used to update the brood table for this stock. The ASL composition at the LYTF is not representative of the run; however, it provides an index of ASL that can be monitored through time.

In 2017, summer chum ASL was sampled from commercial fisheries and Chinook salmon were sampled from the subsistence fishery (Table 1). ASL sampling of the commercial summer chum salmon fishery occurred for harvest in Districts 1 and 2. Sampling occurred systematically throughout the duration of the summer chum salmon commercial fishery to encompass each gear type used. Chinook salmon caught in the subsistence fishery were sampled for ASL within select villages in Districts 1–5. Chinook salmon age data from subsistence harvests are used to update the brood table for the Canadian component of the stock.

Annual ASL data summaries have been reported in a variety of formats since sampling began in the 1960's. For example, ASL data have been reported in Annual Management Reports, Arctic Anadromous Fishery Investigation Reports, Special Report Series, Technical Fisheries Report series (e.g., Buklis 1987), Regional Information Report series (e.g., Menard 1996), and ADF&G Fishery Data Series (e.g., Schumann and DuBois 2011). More recently, ASL data collected in the Yukon Area were entered into the Arctic-Yukon-Kuskokwim Database Management System[1] (AYKDBMS) by ADF&G staff. Escapement and ASL data were archived in the AYKDBMS to provide the public and staff an interface for querying and downloading historical ASL data. Beginning with the 2016 report, ASL data for Chinook salmon and summer chum salmon have been reported separately from fall chum salmon and coho salmon due to the timing of data availability and a desire to expedite reporting.

The primary purpose of the ASL catalog presented here is to provide a summary of the ASL data collected for Chinook and summer chum salmon in the Yukon Area during 2017. This document also includes historical summaries for select long term projects that collect ASL data, and a brief introduction to the AYKDBMS. Readers should exercise caution when using historical data

[1] http://www.adfg.alaska.gov/CommFishR3/WebSite/AYKDBMSWebsite/Default.aspx

because some assessment projects assess escapements thoroughly whereas others may only focus on certain components of the run; i.e., larger, older, fish.

OBJECTIVES

The goal of this work was to process, compile, and analyze Chinook and summer chum salmon scale, sex, and length samples collected in 2017 from Yukon Area commercial fisheries, subsistence fisheries, escapement monitoring projects, and test fisheries. Specific objectives of this report were as follows:

1. Provide an overview of projects and methods used to collect ASL data;
2. Provide detailed project ASL data summaries for data collected in 2017;
3. Provide a historical summary of annual ASL composition estimates for select long-term monitoring projects; and,
4. Provide a quick reference guide to the available historical ASL data archived in the AYKDBMS.

METHODS

DATA COLLECTION

Sampling Procedures

ASL samples were collected from commercial harvests, subsistence harvests, test fisheries, and escapement monitoring projects. The species sampled, capture gear, and sampling methods differed across projects (Table 1). A minimum of 3 scales for Chinook salmon and 1 scale for chum salmon were removed from the preferred area of the fish and mounted on gum cards for age determination by ADF&G staff. The preferred area was located on the left side of the fish, 2 rows of scales above the lateral line, in an area crossed by a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963). Scales collected from the preferred area have been shown to be less affected by scale regeneration or loss relative to other areas of the body and therefore are a more complete record of total age. The sex of the fish was determined by either cutting the fish open and examining gonads (internal sex-ID) or through examination of external characteristics (external sex-ID). Only the LYTF, carcass sampling surveys at escapement projects, and subsistence harvest sampling used internal sex-ID. Fish length was measured from the mid-eye to tail-fork (METF) to the nearest millimeter using a ridged measuring device.

Commercial Harvest

Summer chum salmon ASL data were collected from commercial harvests in Districts 1 and 2. The sample goal was 160 summer chum salmon within each fishing period (Bromaghin 1993). Data collection in District 1 occurred at a fish processing plant in Emmonak, which included summer chum harvested in District 2.

Subsistence Harvest

In 2017, ADF&G partnered with Spearfish Research to continue a long-standing Chinook salmon subsistence harvest sampling program. The objective of the program was to collect at least 200 ASL and axillary tissue samples from subsistence-harvested Chinook salmon in each

management district sampled. The following communities were selected for sampling based on past success and data gaps among management districts: Kotlik, Alakanuk, and Emmonak in District 1; Mountain Village, St. Mary's, and Marshall in District 2; Russian Mission in District 3; Kaltag and Nulato in Subdistrict 4A-Upper, Galena and Ruby in Subdistricts 4-B and 4-C, respectively; and Tanana in Subdistrict 5-B.

Participants were given formal training about sampling protocol and were asked to sample each Chinook salmon caught for subsistence purposes. Sampling methods followed routine procedures outlined by ADF&G (Larson and Dann 2018). Collecting subsistence harvest samples was opportunistic and depended on timing and willingness of fishermen to participate.

Test Fisheries

In 2017, ASL data were collected from Chinook and summer chum salmon caught in the LYTF near Emmonak and test fisheries associated with the Pilot Station and Eagle sonars. Fishing at the LYTF was performed at the Big Eddy and Middle Mouth test fish sites. At each site, an 8.5 in mesh set gillnet was used to catch Chinook salmon and 5.5 in mesh drift gillnets were used to catch summer chum salmon. In addition, an 8.25 in mesh drift gillnet was used to catch Chinook salmon at the Big Eddy site, but all fish caught in the drift gillnet were released alive immediately and not sampled. Daily sampling goals were 30 fish per day per site for Chinook salmon and 15 fish per day per site for summer chum salmon. Every fish was sampled until the daily sampling goal was reached, which was typically attained only during periods of peak run passage. The LYTF used only large mesh gear to assess Chinook salmon abundance and only a single mesh size to assess summer chum salmon; therefore, the age composition of the samples does not represent the age or sex structure of the total run. For example, younger, smaller, Chinook salmon are less likely to be selected for than older, larger, Chinook salmon.

At the test fishery associated with the Pilot Station sonar, salmon were caught using a suite of drift gillnets of various mesh sizes, including 2.75 in, 4.0 in, 5.25 in, 6.5 in, 7.5 in, and 8.5 in stretch mesh and sampled for ASL and genetic axillary tissue (Schumann et al. 2017). Because this project used a comprehensive suite of gear, which selected fish of all age classes, samples probably reflect the composition of the total run. However, because external sex-ID was used, and fish in the lower river are brighter and less dimorphic than those on spawning grounds, sex ratio of the run may have varied accuracy. All summer chum salmon were sampled for sex, length, and genetic axillary tissue in the Pilot Station test fishery (no age structure), whereas complete ASL was collected for Chinook salmon. Every fish caught in the test fishery was sampled each day.

At the test fishery associated with the Eagle sonar, Chinook salmon were caught with drift gillnets of various mesh sizes, including 5.25 in, 6.5 in, 7.5 in, and 8.5 in stretch mesh (McDougall and Lozori 2017). Although this suite of mesh sizes probably represents the age structure of most of the run, the lack of smaller mesh, such as 4.0 in may cause the relative proportion of age-3 and age-4 fish to be underrepresented. This project performed external sex-ID which can affect accuracy; however, salmon in the upper Yukon River have begun to develop dimorphic characteristics. The ASL composition of samples collected at the Eagle sonar represents only the Canadian-origin stock. All Chinook salmon caught in the test fishery were sampled for ASL each day.

Escapement Projects

Escapement projects were operated by multiple agencies. A range of different fish capture methods and sampling designs were used depending on the type of assessment project and the objectives of the individual programs. Efforts were made to have consistent protocols among projects for measuring fish length and determining sex. Age was estimated by ADF&G for all projects.

Salmon ASL data were collected at projects utilizing resistance board weirs, a beach seine, and carcass sampling methods for data collection. ASL sampling at the East Fork Andreafsky River, Gisasa River, and Henshaw Creek weirs involved sampling live fish from a weir trap. Samples collected from weir traps typically represent all age classes present in the escapement because weir traps are not size selective. At the East Fork Andreafsky River and Gisasa River weirs, which used external sex-ID, all Chinook salmon less than 655 mm in length were assumed to be male (Table 1). Sampling at the Anvik River sonar involved sampling summer chum salmon caught in a beach seine. Because sampling was shore-based, not all fish sizes may be represented. Sampling at the Chena and Salcha river towers involved sampling dead fish during carcass surveys. Each of these sampling methods may have varied effects of bias on the age composition, length structure, or sex ratio in the dataset. For example, carcass surveys tend to bias towards older, larger, female fish (Kissner and Hubartt 1986).

Sampling goals varied among projects. In general, researchers attempted 160 ASL collections per sampling event for Chinook and summer chum salmon. An event may have been weekly sampling, quartiles based on run timing, or a single sample goal for the season. Sampling schedules were adjusted as needed inseason to account for observed run abundance.

PROCESSING AND ANALYSIS

Age Estimation

Scales were used to determine ages of Chinook and summer chum salmon. Scales were mounted on gum cards during sampling and later impressed into cellulose acetate (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 pairs. Annuli are the regions of the scale where the circuli, or growth rings, are tightly spaced relative to the preceding and proceeding circuli, representing slower growth rates associated with winter conditions (Mosher 1969). Freshwater annuli are distinguishable from saltwater annuli because the circuli formed in freshwater are finer and closer together than those formed while the fish was in the ocean (Major et al. 1972). Ages were recorded using European notation (Koo 1962), where the number of freshwater annuli is followed by a decimal and then the number of marine annuli. Total age from the brood year is the sum of freshwater and marine annuli plus 1 to account for time spent in the gravel before hatching.

Estimates of Age, Sex, and Length Composition

The ASL composition of a returning salmon population often changes over the course of the season (Molyneaux et al. 2006); therefore, sample proportions may not be representative of the entire season if samples were not collected throughout the season or proportional to the harvest or escapement. Samples collected from the commercial harvest and at escapement projects were used to estimate their respective ASL composition for the entire season. To account for seasonal

changes in ASL composition, samples collected from the commercial fishery and escapement projects were grouped into time strata and the sample proportions from each stratum were applied to the harvest or escapement for each respective stratum. Strata were determined by examining the number and distribution of samples collected relative to the size of harvest or escapement and making a good fit; i.e., making sample sizes more similar between them using 3 or more strata. An attempt was made to include sufficient sample sizes within each stratum to estimate the proportion of each major age class to obtain a 95% confidence interval width no greater than 10% of the estimate (Bromaghin 1993). The escapement or harvest by date was provided by project leaders and ADF&G fish ticket harvest reports.

For projects where sample ASL estimates were applied to the harvest or escapement, the proportion of fish of age class (*a*) of sex (*s*) during the stratified period (*i*) was estimated as:

$$\hat{p}_{a,s,i} = \frac{n_{a,s,i}}{n_i}, \tag{1}$$

where

$n_{a,s,i}$ = number of samples for age class (*a*) of sex (*s*) in stratified period (*i*), and

n_i = number of samples in stratified period (*i*).

The number of fish of specific age class (*a*) and sex (*s*) during a stratified period (*i*) was estimated as:

$$\hat{N}_{a,s,i} = \hat{p}_{a,s,i} N_i, \tag{2}$$

where

N_i = number of fish during the stratified period (*i*).

When data for all strata were available, the season total proportion of fish of specific age (*a*) and sex (*s*) was estimated as

$$\hat{p}_{a,s} = \frac{1}{N} \sum_i N_i \hat{p}_{a,s,i}, \tag{3}$$

where

$$N = \sum_i N_i. \tag{4}$$

The season total number of fish of specific age (*a*) and sex (*s*) was estimated as:

$$\hat{N}_{a,s} = \sum_i \hat{N}_{a,s,i}. \tag{5}$$

The season total age proportion was estimated as:

$$\hat{p}_a = \frac{1}{N} \sum_i \sum_s N_i \hat{p}_{a,s,i}. \tag{6}$$

The season total female proportion was estimated as:

$$\hat{p}_{s=f} = \frac{1}{N}\sum_i \sum_a N_i \hat{p}_{a,s=f,i} \cdot \quad (7)$$

Mean length for fish of age (a) and sex (s) in stratified period (i) was estimated as:

$$\bar{y}_{a,s,i} = \frac{\sum_j y_{a,s,i,j}}{n_{a,s,i}}, \quad (8)$$

where $y_{a,s,i,j}$ is the length of the fish (j) of age (a) and sex (s), sampled during period (i), with a standard error (se) of

$$se = \sqrt{\frac{s^2_{a,s,i}}{n_{a,s,i}}}, \quad (9)$$

where

$$s^2_{a,s,i} = \frac{\sum_j (y_{a,s,i,j} - \bar{y}_{a,s,i})^2}{n_{a,s,i} - 1}. \quad (10)$$

When data for all strata were available, season total mean length for fish of age (a) and sex (s) were estimated as:

$$\bar{y}_{a,s} = \frac{1}{N_{a,s}}\sum_i N_{a,s,i}\bar{y}_{a,s,i}, \quad (11)$$

with a standard error of

$$se = \sqrt{\hat{V}(\bar{y}_{a,s})}, \quad (12)$$

where

$$\hat{V}(\bar{y}_{a,s}) = \frac{1}{N^2_{a,s}}\sum_i N^2_{a,s,i}\hat{V}(\bar{y}_{a,s,i}), \quad (13)$$

and

$$\hat{V}(\bar{y}_{a,s,i}) = \left(\frac{s^2_{a,s,i}}{n_{a,s,i}}\right). \quad (14)$$

Seasonal and historical summaries were generated. Season total ASL summaries were produced for each project; however, ASL composition was further summarized by village for the subsistence fishery, sampling locations for the LYTF, and mesh size for test fisheries associated with the Pilot Station and Eagle sonars. Data summaries include the dates of data collection, the

total number of samples that were collected and successfully aged, and the brood year (age) and mean length of the samples by male, female, and both sexes combined. Historical ASL data summaries were produced to allow for the identification of temporal trends in ASL structure at select projects. Each historical summary presents the sample size, percent by age and sex, and mean length for each year the project operated for samples that contained all 3 ASL components. Data used to produce historical summaries were derived from the AYKDBMS and do not consider any adjustments for bias or weighting by project daily or annual estimates. The unweighted historical estimates provided in this report may differ from historical ASL data summaries published in other reports, which may be weighted or had adjustment factors applied.

ARCHIVING AND USER GENERATED REPORTS

Raw data forms, scale cards, and acetate impressions were archived in the ADF&G, Anchorage Regional Office, and ASL data were archived and made publicly accessible in the AYKDBMS. By selecting the "Search" link on the main database page, users are directed to a series of data filters that allow for focused searches by management area, data type, project type, species group, and species. The user can also access an alphabetical list of all available projects by selecting the "Go to Projects" link on the data filters page. Selection of a specific project will yield a general project description and annual year notes that provide context (i.e., metadata) regarding the type, quality, quantity, and utility of the data available. An ASL link will be visible under "Available Data Views by Data Type" if ASL data are available for the selected project. If data are available and the "ASL" link is selected, the user will be prompted to select a specific year(s) for which ASL data are desired. Once the year(s) is selected and the user selects "Go to Data View", a report will be generated with all the data associated with each fish sampled; including, information about data collection (e.g., date of sample, location, method of capture, method of sex determination, etc.); archival references (i.e., scale card number and fish number), and primary biological data such as fresh water age, saltwater ASL. The reports are generated online; however, users can export them into Microsoft Excel or other formats (CSV, tab delimited, PDF etc.). Similarly, many of the assessment projects with abundance data used in conjunction with ASL samples such as CPUE from test fisheries and escapement enumerations are also available within the AYKDBMS.

RESULTS

A total of 5,980 Chinook and 6,413 summer chum salmon were sampled for ASL data from the Alaska portion of the Yukon River drainage in 2017 (Tables 2 and 3). Ages were successfully read for 90% of the Chinook salmon and 95% of the summer chum salmon sampled, and sex and length were recorded for nearly all salmon sampled. Temporal stratification was applied to the ASL compositions at the Gisasa and East Fork Andreafsky River and Henshaw Creek weirs for Chinook and summer chum salmon (Table 4). Temporal stratification was also applied to the ASL compositions at the Anvik River sonar for summer chum salmon (Table 4).

Over 60 subsistence fishermen were trained by Spearfish Research to collect ASL samples in 2017. Samples were collected from Chinook salmon caught in a range of gear; including, dip nets, fish wheels, and set and drift gillnets using stretched mesh ranging from 4.0–7.5 inches. Only 175 (9%) of the fish sampled were caught using dip nets or fish wheels, probably due to the low frequency of use of fish wheels in Districts 1–4. In addition, retention of Chinook salmon caught using dip nets was not legal in 2017. Drift and set gillnets accounted for 1,338 (65%) and 538 (26%) of the Chinook salmon sampled, respectively.

ASL summaries were generated for Chinook and summer chum salmon sampled from commercial harvests, subsistence harvests, test fisheries, and escapement projects. Summaries for Chinook salmon include ASL composition for salmon harvested in the subsistence fishery (Table 5), the LYTF (Table 6), and test fisheries associated with the Pilot Station sonar (Table 7) and Eagle sonar (Table 8). ASL composition for Chinook salmon is also provided for 5 escapement monitoring projects, encompassing 5 distinct tributaries within the Yukon River drainage (Tables 9–13). Summaries for summer chum salmon include ASL composition for salmon harvested in the commercial fishery in Districts 1–2 (Table 14) and the LYTF (Table 15). In the test fishery associated with the Pilot Station sonar project, a summary of summer chum salmon sex and length was provided because no age structure was collected (Table 16). Summer chum salmon escapement ASL was collected at 5 monitoring projects, encompassing 4 distinct tributaries within the Yukon River drainage (Tables 17–20).

Historical summaries were produced for 16 projects that have an extended time series of ASL data collection; including, 8 projects for Chinook salmon and 8 projects for summer chum salmon. Historical data summaries for Chinook salmon include ASL composition for the LYTF (Table 21); the test fisheries associated with the Pilot Station and Eagle sonars on the mainstem Yukon River (Tables 22 and 23); and escapement monitoring projects on the East Fork Andreafsky and Gisasa rivers, Henshaw Creek, and the Chena and Salcha rivers (Tables 24–28). Historical data summaries for summer chum salmon include ASL composition for the LYTF (Table 29); the commercial harvest in Districts 1–2 (Table 30) and District 6 (Table 31); and escapement monitoring projects on the East Fork Andreafsky, Anvik, and Gisasa rivers, Henshaw Creek, and the Salcha River (Tables 32–36).

The AYKDBMS acts as a platform for managers, researchers, and the public to access current and historical ASL data for the Yukon Area. The AYKDBMS contains ASL data collected from 63 different projects for Chinook salmon and 47 projects for summer chum salmon; including, commercial, subsistence, sport, and test fisheries, escapement monitoring projects, and independent (Chinook and summer chum salmon) radiotelemetry studies (Tables 37 and 38). The length and continuity of the time series of available data varies considerably within and between project types. For example, ASL composition for summer chum salmon caught in the Districts 1 and 2 commercial fisheries has a nearly complete time series beginning in 1964 but many other projects may have only operated for a single season. Any ASL data not described in this report can be found in AYKDBMS.

DISCUSSION

There were several distinct patterns observed in the ASL structure of the Chinook salmon runs returning to the Yukon River in 2017. For example, age-5 Chinook salmon comprised an above average (years 2012–2016) percentage of the run at all projects other than the East Fork Andreafsky River weir. The age-4 percentage of the run was the highest ever observed for Chinook salmon on the East Fork Andreafsky River. Sampling at the Pilot Station sonar test fishery indicated over half (53%) of the Chinook salmon returning to the Yukon River in 2017 were age-5 fish. In addition, the percentage of the samples that were female was the sixth highest observed since 1985. Sampling at the Eagle sonar test fishery indicated the Chinook salmon that escaped into Canada were predominately age-5 and age-6 fish and the percentage of samples that were female was the highest observed since the project began in 2005. There may be an above

average percentage of age-6 Chinook salmon returning in 2018, given the above average percentage of age-5 fish observed in 2017.

Summer chum salmon typically mature as age-4 or age-5 fish. Age-4 fish made up a larger percentage of the run than age-5 fish at all assessment locations in 2017. Age-5 summer chum salmon were also above the long-term average at all escapement monitoring projects. There may be an above average percentage of age-6 summer chum salmon returning in 2018, given the above average percentage of age-5 fish observed in 2017.

Yukon River ASL sampling projects were designed to account for temporal and spatial variability that exists within salmon populations. The collection of regenerated scales was the primary reason some ages could not be read in 2017. Of the ASL samples that were used, there is potential for bias caused by small sample sizes, scale absorption, and collection methods. Scale absorption refers to 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 underestimating saltwater age because less of the outermost annulus remains. Carcass sampling can result in a high number of absorbed scales. Vertebra or otolith sampling can alleviate issues with resorbed scales but are more time-consuming methods of collection and reading. Representative carcass sampling can be challenging because male Chinook salmon tend to drift downstream but females tend to remain near their redds; thus, smaller fish have a greater potential to be carried downstream and out of the study area during periods of increased water velocities (Kissner and Hubartt 1986). This nonrandom dispersal of carcasses could bias ASL data towards fish that are female, larger size, and older; although, proper sampling designs have been shown to reduce this (Evenson 1991; Skaugstad 1990). Bias may also exist in weir sampling towards smaller fish when larger fish are more reluctant 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.

There is also inherent size selectivity in some sample collection methods, potentially skewing sex composition because of the size difference between male and female fish. Gillnets are size selective based on mesh size and fish wheels tend to be biased towards smaller fish that migrate near shore in lower water velocities (Meehan 1961; Molyneaux et al. 2005). This bias is most apparent with Chinook salmon because males and younger-aged fish are predominately smaller in size than females. In 2017, regulatory requirements to use relatively small mesh (≤6 in) gillnets for much of the season probably contributed to the low female percentages observed in the subsistence sampling project. Additional information about sampling biases and data quality concerns in salmon populations are documented in previously published ASL reports (e.g., Molyneaux et al. 2006). ASL data users are cautioned to be aware of inherent biases when interpreting data.

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TABLES AND FIGURES

Table 1.–Projects and salmon species for which ASL data were collected, Yukon Area, 2017.

Project type	Location	Capture gear	Sex ID	Species	
				Chinook	Chum
Commercial [a]					
	Districts 1–2	Dip net/Gillnet	External		X
Subsistence [b]					
	Kotlik	Gillnet	Internal	X	
	Alakanuk	Gillnet	Internal	X	
	Emmonak	Gillnet	Internal	X	
	Mountain Village	Gillnet	Internal	X	
	St. Mary's	Dip net/Gillnet	Internal	X	
	Russian Mission	Gillnet	Internal	X	
	Kaltag	Gillnet	Internal	X	
	Nulato	Gillnet	Internal	X	
	Galena	Gillnet	Internal	X	
	Ruby	Gillnet	Internal	X	
	Tanana	Fish wheel/Gillnet	Internal	X	
Test fishery [a]					
	LYTF Big Eddy	Gillnet	Internal	X	X
	LYTF Middle Mouth	Gillnet	Internal	X	X
	Pilot Station	Gillnet	External	X	X
	Eagle	Gillnet	External	X	
Escapement					
	Andreafsky River, East Fork [c]	Weir	External	X	X
	Anvik River [a]	Beach Seine	External		X
	Gisasa River [c]	Weir	External	X	X
	Henshaw Creek [d]	Weir	External	X	X
	Chena River [e]	Carcass Survey	Internal	X	
	Salcha River [e]	Carcass Survey	Internal	X	

Note: The X indicates that samples were collected in 2017. Only length and sex data (no age structure) were collected for summer chum salmon at the Pilot Station test fishery.

[a] Project was operated by the Alaska Department of Fish and Game, Division of Commercial Fisheries.

[b] Project was operated by Spearfish Research.

[c] Project was operated by the United States Fish and Wildlife Service.

[d] Project was operated by the Tanana Chiefs Conference.

[e] Project was operated by the Alaska Department of Fish and Game, Division of Sport Fish.

Table 2.–Number of Chinook salmon samples collected from Yukon Area projects and percent used to determine ASL, 2017.

				Age		Sex ID		Length	
Project type	Location	Capture gear	Number sampled	Number	Percent	Number	Percent	Number	Percent
Subsistence									
	Kotlik	Gillnet	56	48	85.7	56	100.0	56	100.0
	Alakanuk	Gillnet	122	95	77.9	121	99.2	121	99.2
	Emmonak	Gillnet	25	24	96.0	25	100.0	25	100.0
	Mountain Village	Gillnet	109	89	81.7	97	89.0	97	89.0
	St. Mary's	Dip net/Gillnet	190	155	81.6	190	100.0	190	100.0
	Russian Mission	Gillnet	259	235	90.7	259	100.0	259	100.0
	Kaltag	Gillnet	66	57	86.4	66	100.0	66	100.0
	Nulato	Gillnet	223	212	95.1	50	22.4	200	89.7
	Galena	Gillnet	399	348	87.2	399	100.0	398	99.7
	Ruby	Gillnet	255	214	83.9	236	92.5	236	92.5
	Tanana	Fish wheel/Gillnet	347	284	81.8	347	100.0	347	100.0
Test fishery									
	LYTF Big Eddy	Set Gillnet	208	197	94.7	205	98.6	208	100.0
	LYTF Middle Mouth	Set Gillnet	583	551	94.5	583	100.0	583	100.0
	Pilot Station	Drift Gillnet	613	547	89.2	613	100.0	612	99.8
	Eagle	Drift Gillnet	804	719	89.4	804	100.0	804	100.0
Escapement									
	Andreafsky River, East Fork	Weir	167	162	97.0	167	100.0	167	100.0
	Gisasa River	Weir	138	133	96.4	138	100.0	138	100.0
	Henshaw Creek	Weir	491	457	93.1	488	99.4	469	95.5
	Chena River	Carcass Survey	421	387	91.9	420	99.8	420	99.8
	Salcha River	Carcass Survey	504	471	93.5	504	100.0	504	100.0
Total			5,980	5,385	90.1	5,768	96.5	5,900	98.7

Table 3.–Number of summer chum salmon samples collected from Yukon Area projects and percent used to determine ASL, 2017.

				Age		Sex ID		Length	
Project type	Location	Capture gear	Number sampled	Number	Percent	Number	Percent	Number	Percent
Commercial									
	Districts 1–2	Dip net/Gillnet	1,120	1,046	93.4	1,113	99.4	1,113	99.4
Test fishery									
	LYTF Big Eddy	Drift Gillnet	553	546	98.7	551	99.6	553	100.0
	LYTF Middle Mouth	Drift Gillnet	447	436	97.5	447	100.0	447	100.0
Escapement									
	Andreafsky River, East Fork	Weir	1,723	1,669	96.9	1,723	100.0	1,722	99.9
	Anvik River	Beach Seine	717	672	93.7	717	100.0	716	99.9
	Gisasa River	Weir	1,093	1,049	96.0	1,093	100.0	1,093	100.0
	Henshaw Creek	Weir	760	702	92.4	760	100.0	760	100.0
Total			6,413	6,120	95.4	6,404	99.9	6,404	99.9

Table 4.–Postseason stratification of Chinook and chum salmon at escapement monitoring projects in the Yukon Area, 2017.

Species	Project	Stratum	Sample size	Escapement / harvest	Stratum dates	Sample dates
Chinook salmon	Andreafsky River, East Fork	1	60	1,374	6/14-7/07	06/23, 06/25-07/07
		2	102	1,528	7/08-7/23	7/08-7/20, 7/23
	Gisasa River	1	49	313	6/18-7/07	6/29 -7/4
		2	44	375	7/08-7/14	7/5-7/7
		3	40	395	7/15-7/30	7/8-7/14
	Henshaw Creek	1	83	116	6/25-7/07	06/30-07/07
		2	96	144	7/08-7/11	7/08-7/11
		3	57	78	7/12	7/12
		4	105	190	7/13-7/17	7/13, 7/15-7/17
		5	98	149	7/18-7/30	7/18-7/29
Summer chum salmon	Andreafsky River, East Fork	1	368	10,020	6/14-6/26	6/21-6/26
		2	252	12,166	6/27-7/01	6/27-7/01
		3	181	7,620	7/02-7/04	7/02-7/04
		4	431	13,214	7/05-7/11	7/05-7/11
		5	436	12,512	7/12-7/30	7/12-7/20, 7/22-7/27
	Anvik River	1	130	73,157	6/15-6/27	6/23-6/25
		2	33	85,150	6/28-7/01	6/28
		3	130	69,187	7/02-7/04	7/02-7/03
		4	129	100,065	7/05-7/11	7/05, 7/10-7/11
		5	249	87,580	7/12-7/26	7/12, 7/16-7/19
	Gisasa River	1	229	14,476	6/18-6/30	6/22-6/30
		2	93	10,998	7/01-7/03	7/01-7/03
		3	76	17,526	7/04-7/07	7/04-7/07
		4	101	14,171	7/08-7/12	7/08, 7/10-7/12
		5	550	16,423	7/13-7/30	7/13-7/14, 7/16, 7/18-7/29
	Henshaw Creek	1	223	61,773	6/25-7/07	6/28-6/29, 7/01-7/03, 7/05, 7/07
		2	64	65,231	7/08-7/11	7/09, 7/11
		3	39	68,136	7/12-7/13	7/12
		4	73	81,945	7/14-7/17	7/15-7/16
		5	303	83,602	7/18-7/30	7/18, 7/20-7/21, 7/24-7/26, 7/28-7/29

Table 5.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon caught during subsistence fishery in the Yukon Area, 2017.

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/9, 6/13, 6/16, 6/18 (Kotlik)	48	Male n	0	5	21	7	0	0	0	33
		Female n	0	0	8	7	0	0	0	15
		Total n	0	5	29	14	0	0	0	48
		Male %	0.0	10.4	43.8	14.6	0.0	0.0	0.0	68.8
		Female %	0.0	0.0	16.7	14.6	0.0	0.0	0.0	31.3
		Total %	0.0	10.4	60.4	29.2	0.0	0.0	0.0	100.0
		Male Mean Length		551	707	796				
		SD		57	34	53				
		Range		470-630	650-800	720-875				
		n	0	5	21	7	0	0	0	
		Female Mean Length			782	835				
		SD			26	51				
		Range			740-820	780-900				
		n	0	0	8	7	0	0	0	
Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
5/27-5/29, 5/31-6/3, 6/5-6/7, 6/18, 6/25, 6/27-6/28, 6/30-7/2, 7/5-7/6, 7/11, 7/20 (Alakanuk)	94	Male n	0	27	35	12	0	0	0	74
		Female n	0	1	9	7	2	0	1	20
		Total n	0	28	44	19	2	0	1	94
		Male %	0	28.7	37.2	12.8	0	0	0	78.7
		Female %	0	1.1	9.6	7.4	2.1	0	1.1	21.3
		Total %	0	29.8	46.8	20.2	2.1	0	1.1	100.0
		Male Mean Length		569	709	823				
		SD		49	61	72				
		Range		455-655	549-835	734-958				
		n	0	27	35	12	0	0	0	
		Female Mean Length		634	780	836	730		833	
		SD		0	58	43	13		0	
		Range		634-634	674-860	780-901	721-739		833-833	
		n	0	1	9	7	2	0	1	

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Table 5.–Page 2 of 6.

Sample dates (community)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/6, 6/26, 6/28, 6/30 (Emmonak)	24	Male n	0	6	8	0	0	0	0	14
		Female n	0	0	4	6	0	0	0	10
		Total n	0	6	12	6	0	0	0	24
		Male %	0	25	33.3	0	0	0	0	58.3
		Female %	0	0	16.7	25	0	0	0	41.7
		Total %	0	25	50	25	0	0	0	100.0
		Male Mean Length		555	634					
		SD		40	103					
		Range		505-600	465-750					
		n	0	6	8	0	0	0	0	
		Female Mean Length			713	805				
		SD			61	70				
		Range			625-764	705-904				
		n	0	0	4	6	0	0	0	
Sample dates (community)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/2, 6/5, 6/8, 6/18, 6/22-6/23, 6/25, 6/27, 7/1-7/3, 7/13, 7/23 (Mountain Village)	81	Male n	0	7	27	10	0	0	0	44
		Female n	0	9	13	15	0	0	0	37
		Total n	0	16	40	25	0	0	0	81
		Male %	0.0	8.6	33.3	12.3	0.0	0.0	0.0	54.3
		Female %	0.0	11.1	16.0	18.5	0.0	0.0	0.0	45.7
		Total %	0.0	19.8	49.4	30.9	0.0	0.0	0.0	100.0
		Male Mean Length		583	728	844				
		SD		55	75	71				
		Range		510-668	561-890	711-991				
		n	0	7	27	10	0	0	0	
		Female Mean Length		569	755	831				
		SD		46	64	46				
		Range		495-620	640-870	750-902				
		n	0	9	13	15	0	0	0	

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Table 5.–Page 3 of 6.

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/1, 6/4-6/5, 6/7-6/9, 6/18-6/19, 6/21-6/22, 6/24, 6/26-7/2, 7/4, 7/18 (Saint Mary's)	155	Male n	0	28	47	16	1	0	0	92
		Female n	0	1	34	26	1	1	0	63
		Total n	0	29	81	42	2	1	0	155
		Male %	0.0	18.1	30.3	10.3	0.6	0.0	0.0	59.4
		Female %	0.0	0.6	21.9	16.8	0.6	0.6	0.0	40.6
		Total %	0.0	18.7	52.3	27.1	1.3	0.6	0.0	100.0
		Male Mean Length		576	719	793	730			
		SD		45	64	75	0			
		Range		509-672	490-840	700-1000	730-730			
		n	0	28	47	16	1	0	0	
		Female Mean Length		547	762	817	760	930		
		SD		0	57	61	0	0		
		Range		547-547	680-900	667-915	760-760	930-930		
		n	0	1	34	26	1	1	0	

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/5-6/9, 6/14, 6/18-6/21, 6/23, 6/25-6/29, 7/3, 7/6 (Russian Mission)	235	Male n	0	19	81	22	1	0	1	124
		Female n	0	7	59	45	0	0	0	111
		Total n	0	26	140	67	1	0	1	235
		Male %	0	8.1	34.5	9.4	0.4	0	0.4	52.8
		Female %	0	3	25.1	19.1	0	0	0	47.2
		Total %	0	11.1	59.6	28.5	0.4	0	0.4	100.0
		Male Mean Length		543	735	777	690		840	
		SD		44	43	49	0		0	
		Range		470-650	632-846	706-939	690-690		840-840	
		n	0	19	81	22	1	0	1	
		Female Mean Length		575	749	808				
		SD		32	53	39				
		Range		517-615	580-876	725-890				
		n	0	7	59	45	0	0	0	

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Table 5.–Page 4 of 6.

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/27, 6/29	57	Male n	1	4	27	7	0	0	0	39
(Kaltag)		Female n	0	1	11	6	0	0	0	18
		Total n	1	5	38	13	0	0	0	57
		Male %	1.8	7.0	47.4	12.3	0.0	0.0	0.0	68.4
		Female %	0.0	1.8	19.3	10.5	0.0	0.0	0.0	31.6
		Total %	1.8	8.8	66.7	22.8	0.0	0.0	0.0	100.0
		Male Mean Length	407	636	737	829				
		SD	0	52	49	25				
		Range	407-407	608-714	650-843	790-861				
		n	1	4	27	7	0	0	0	
		Female Mean Length		600	732	822				
		SD		0	32	66				
		Range		600-600	690-800	760-942				
		n	0	1	11	6	0	0	0	
Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	
6/26-6/30, 7/4	45	Male n	0	1	17	10	0	0	0	28
(Nulato)		Female n	0	0	6	11	0	0	0	17
		Total n	0	1	23	21	0	0	0	45
		Male %	0.0	2.2	37.8	22.2	0.0	0.0	0.0	62.2
		Female %	0.0	0.0	13.3	24.4	0.0	0.0	0.0	37.8
		Total %	0.0	2.2	51.1	46.7	0.0	0.0	0.0	100.0
		Male Mean Length		520	730	802				
		SD		0	47	43				
		Range		520-520	670-850	740-850				
		n	0	1	17	10	0	0	0	
		Female Mean Length			781	839				
		SD			39	46				
		Range			720-820	760-890				
		n	0	0	6	11	0	0	0	

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Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/20, 6/25-6/30, 7/2-7/3, 7/5, 7/7, 7/10-7/11 (Galena)	347	Male n	0	36	142	38	2	0	0	218
		Female n	0	5	64	60	0	0	0	129
		Total n	0	41	206	98	2	0	0	347
		Male %	0	10.4	40.9	11	0.6	0	0	62.9
		Female %	0	1.4	18.4	17.3	0	0	0	37.1
		Total %	0	11.8	59.3	28.3	0.6	0	0	100.0
		Male Mean Length		582	724	804	660			
		SD		54	49	56	57			
		Range		500-790	600-855	710-910	620-700			
		n	0	36	142	38	2	0	0	
		Female Mean Length		568	766	825				
		SD		35	58	51				
		Range		520-610	580-880	710-930				
		n	0	5	64	60	0	0	0	

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/18, 6/22-6/23, 6/26-6/30, 7/3-7/7, 7/10-7/11 (Ruby)	201	Male n	0	13	101	28	0	0	1	143
		Female n	0	0	16	40	1	0	1	58
		Total n	0	13	117	68	1	0	2	201
		Male %	0	6.5	50.2	13.9	0	0	0.5	71.1
		Female %	0	0	8	19.9	0.5	0	0.5	28.9
		Total %	0	6.5	58.2	33.8	0.5	0	1	100.0
		Male Mean Length		600	723	824			850	
		SD		76	58	57			0	
		Range		525-820	565-904	690-960			850-850	
		n	0	13	101	28	0	0	1	
		Female Mean Length			765	843	780		860	
		SD			64	38	0		0	
		Range			555-830	740-902	780-780		860-860	
		n	0	0	16	40	1	0	1	

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Table 5.–Page 6 of 6.

Sample dates (community)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	
6/19, 6/21-6/23, 6/28-6/29, 7/2, 7/5-7/6, 7/8-7/9, 7/12-7/13, 7/15-7/17,7/20, 7/22-7/23, 7/26-7/27 (Tanana)	284	Male n	0	15	112	58	2	0	0	187
		Female n	0	0	38	57	2	0	0	97
		Total n	0	15	150	115	4	0	0	284
		Male %	0	5.3	39.4	20.4	0.7	0	0	65.8
		Female %	0	0	13.4	20.1	0.7	0	0	34.2
		Total %	0	5.3	52.8	40.5	1.4	0	0	100.0
		Male Mean Length		603	757	849	735			
		SD		55	53	61	78			
		Range		546-770	620-913	723-970	680-790			
		n	0	15	112	58	2	0	0	
		Female Mean Length			789	851	752			
		SD			54	45	59			
		Range			623-855	770-985	710-794			
		n	0	0	38	57	2	0	0	
Total All communities	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	
	1,571	Male n	1	161	618	208	6	0	2	996
		Female n	0	24	262	280	6	1	2	575
		Total n	1	185	880	488	12	1	4	1,571
		Male %	0.1	10.2	39.3	13.2	0.4	0.0	0.1	63.4
		Female %	0.0	1.5	16.7	17.8	0.4	0.1	0.1	36.6
		Total %	0.1	11.8	56.0	31.1	0.8	0.1	0.3	100.0
		Male Mean Length	407	577	729	819	702		845	
		SD		55	57	63	56		7	
		Range	407-407	455-820	465-913	690-1000	620-790		840-850	
		n	1	161	618	208	6	0	2	
		Female Mean Length		574	763	830	751	930	846	
		SD		38	56	49	33		19	
		Range		495-634	555-900	667-985	710-794	930-930	833-860	
		n	0	24	262	280	6	1	2	

Table 6.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon caught in the Lower Yukon test fishery, 2017.

Sample dates (project)	Sample size	Brood year / Age	2013 1.2	2012 1.3	2012 2.2	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/1-6/28	195	Male n	8	54	0	40	1	0	1	104
(Big Eddy 8.5" set gillnet)		Female n	0	26	0	62	0	1	2	91
		Total n	8	80	0	102	1	1	3	195
		Male %	4.1	27.7	0.0	20.5	0.5	0.0	0.5	53.3
		Female %	0.0	13.3	0.0	31.8	0.0	0.5	1.0	46.7
		Total %	4.1	41.0	0.0	52.3	0.5	0.5	1.5	100.0
		Male Mean Length	541	754		832	776		894	
		SD	47	57		54	0		0	
		Range	464-592	629-844		690-950	776-776		894-894	
		n	8	54	0	40	1	0	1	
		Female Mean Length		782		842		819	850	
		SD		38		37		0	7	
		Range		685-843		760-917		819-819	845-855	
		n	0	26	0	62	0	1	2	

Sample dates (project)	Sample size	Brood year / Age	2013 1.2	2012 1.3	2012 2.2	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/6-6/7, 6/9-7/12	551	Male n	24	151	1	87	1	1	4	269
(Middle Mouth 8.5" set gillnet)		Female n	0	89	0	186	2	2	3	282
		Total n	24	240	1	273	3	3	7	551
		Male %	4.4	27.4	0.2	15.8	0.2	0.2	0.7	48.8
		Female %	0.0	16.2	0.0	33.8	0.4	0.4	0.5	51.2
		Total %	4.4	43.6	0.2	49.5	0.5	0.5	1.3	100.0
		Male Mean Length	564	759	489	834	727	920	832	
		SD	54	61	0	63	0	0	69	
		Range	474-660	540-893	489-489	589-981	727-727	920-920	773-931	
		n	24	151	1	87	1	1	4	
		Female Mean Length		802		843	792	932	863	
		SD		43		42	38	47	35	
		Range		666-888		730-983	765-818	898-965	823-886	
		n	0	89	0	186	2	2	3	

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Total *All projects*	Sample size	Brood year / Age	2013 1.2	2012 1.3	2012 2.2	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
	746	Male n	32	205	1	127	2	1	5	373
		Female n	0	115	0	248	2	3	5	373
		Total n	32	320	1	375	4	4	10	746
		Male %	4.3	27.5	0.1	17.0	0.3	0.1	0.7	50.0
		Female %	0.0	15.4	0.0	33.2	0.3	0.4	0.7	50.0
		Total %	4.3	42.9	0.1	50.2	0.6	0.5	1.4	100.0
		Male Mean Length	558	757	489	833	752	920	844	
		SD	53	60		60	35		66	
		Range	464-660	540-893	489-489	589-981	727-776	920-920	773-931	
		n	32	205	1	127	2	1	5	
		Female Mean Length		798		843	792	894	858	
		SD		42		40	38	73	26	
		Range		666-888		730-983	765-818	819-965	823-886	
		n	0	115	0	248	2	3	5	

Note: This project used only large mesh gear and therefore data may not be representative of younger age classes and sex ratios should not be considered representative of the total run.

Table 7.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon caught in the Pilot Station sonar drift gillnet test fishery, 2017.

Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/4, 6/11, 6/17, 6/21, 6/23, 6/26, 7/1, 7/8 (2.75")	8	Male n	0	1	2	0	0	0	0	3
		Female n	0	1	4	0	0	0	0	5
		Total n	0	2	6	0	0	0	0	8
		Male %	0.0	12.5	25.0	0.0	0.0	0.0	0.0	37.5
		Female %	0.0	12.5	50.0	0.0	0.0	0.0	0.0	62.5
		Total %	0.0	25.0	75.0	0.0	0.0	0.0	0.0	100.0
		Male Mean Length		564	636					
		SD		0	28					
		Range		564-564	616-655					
		n	0	1	2	0	0	0	0	
		Female Mean Length		668	752					
		SD		0	71					
		Range		668-668	695-847					
		n	0	1	4	0	0	0	0	
Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/6, 6/9, 6/12-6/15, 6/17-6/19, 6/21, 6/23, 6/24, 6/27-6/28, 7/4, 7/6, 7/8, 7/10, 7/14, 7/29, 8/6 (4.00")	36	Male n	2	6	6	8	0	0	0	22
		Female n	0	0	6	8	0	0	0	14
		Total n	2	6	12	16	0	0	0	36
		Male %	5.6	16.7	16.7	22.2	0.0	0.0	0.0	61.1
		Female %	0.0	0.0	16.7	22.2	0.0	0.0	0.0	38.9
		Total %	5.6	16.7	33.3	44.4	0.0	0.0	0.0	100.0
		Male Mean Length	395	563	731	758				
		SD	7	48	78	113				
		Range	390-400	518-633	653-840	537-892				
		n	2	6	6	8	0	0	0	
		Female Mean Length			773	806				
		SD			41	52				
		Range			727-815	721-850				
		n	0	0	6	8	0	0	0	

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Table 7.–Page 2 of 5.

Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
7/23-7/24, 7/27 (5.00")	3	Male n	0	2	0	0	0	0	0	2
		Female n	0	1	0	0	0	0	0	1
		Total n	0	3	0	0	0	0	0	3
		Male %	0.0	66.7	0.0	0.0	0.0	0.0	0.0	66.7
		Female %	0.0	33.3	0.0	0.0	0.0	0.0	0.0	33.3
		Total %	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0
		Male Mean Length		572						
		SD		31						
		Range		550-594						
		n	0	2	0	0	0	0	0	
		Female Mean Length		582						
		SD		0						
		Range		582-582						
		n	0	1	0	0	0	0	0	
Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/8-6/9, 6/12, 6/14-6/16, 6/18-6/20, 6/22, 6/26-6/28, 7/1-7/3, 7/5-7/8, 7/13, 7/15 (5.25")	28	Male n	0	7	5	3	0	0	0	15
		Female n	0	2	10	1	0	0	0	13
		Total n	0	9	15	4	0	0	0	28
		Male %	0.0	25.0	17.9	10.7	0.0	0.0	0.0	53.6
		Female %	0.0	7.1	35.7	3.6	0.0	0.0	0.0	46.4
		Total %	0.0	32.1	53.6	14.3	0.0	0.0	0.0	100.0
		Male Mean Length		621	761	691				
		SD		81	58.3	146				
		Range		558-795	681-808	525-798				
		n	0	7	5	3	0	0	0	
		Female Mean Length		584	720	810				
		SD		16	43	0				
		Range		572-595	645-769	810-810				
		n	0	2	10	1	0	0	0	

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Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
7/20, 7/23 (5.75")	2	Male n	0	0	1	0	0	0	0	1
		Female n	0	0	0	1	0	0	0	1
		Total n	0	0	1	1	0	0	0	2
		Male %	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0
		Female %	0.0	0.0	0.0	50.0	0.0	0.0	0.0	50.0
		Total %	0.0	0.0	50.0	50.0	0.0	0.0	0.0	100.0
		Male Mean Length			708					
		SD			0					
		Range			708-708					
		n	0	0	1	0	0	0	0	
		Female Mean Length				709				
		SD				0				
		Range				709-709				
		n	0	0	0	1	0	0	0	

Sample dates (mesh size)	Sample size	Brood year / Age	2014 1.1	2013 1.2	2012 1.3	2011 1.4	2011 2.3	2010 1.5	2010 2.4	Total
6/4-7/4, 7/6, 7/8-7/10, 7/14-7/16, 7/19, 7/25, 8/10-8/11 (6.50")	127	Male n	0	15	36	11	0	0	2	64
		Female n	0	1	37	22	1	0	2	63
		Total n	0	16	73	33	1	0	4	127
		Male %	0.0	11.8	28.3	8.7	0.0	0.0	1.6	50.4
		Female %	0.0	0.8	29.1	17.3	0.8	0.0	1.6	49.6
		Total %	0.0	12.6	57.4	26.0	0.8	0.0	3.2	100.0
		Male Mean Length		582	714	773			789	
		SD		24	57	73			1	
		Range		542-614	612-835	685-910			788-790	
		n	0	15	36	11	0	0	2	
		Female Mean Length		612	754	815	728		781	
		SD		0	64	61	0		18	
		Range		612-612	598-860	700-895	728-728		768-794	
		n	0	1	37	22	1	0	2	

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Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
6/2-6/3, 6/5-6/6, 6/8-7/14, 7/16, 7/18, 8/1, 8/8 (7.50")	234	Male n	0	8	70	28	0	0	2	108
		Female n	0	1	61	61	1	0	2	126
		Total n	0	9	131	89	1	0	4	234
		Male %	0.0	3.4	29.9	12.0	0.0	0.0	0.9	46.2
		Female %	0.0	0.4	26.1	26.1	0.4	0.0	0.9	53.8
		Total %	0.0	3.8	56.0	38.0	0.4	0.0	1.7	100.0
		Male Mean Length		576	738	800			873	
		SD		59	59	59			74	
		Range		495-666	545-843	700-930			821-925	
		n	0	8	70	28	0	0	2	
		Female Mean Length		650	767	811	737		800	
		SD		0	53	56	0		19	
		Range		650-650	638-900	690-922	737-737		786-813	
		n	0	1	61	61	1	0	2	

Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
5/31, 6/6-6/7, 6/9-7/4, 7/6, 7/8-7/9, 7/12-7/13, 7/17 (8.50")	108	Male n	0	3	21	16	1	0	1	42
		Female n	0	1	31	32	0	1	1	66
		Total n	0	4	52	48	1	1	2	108
		Male %	0.0	2.8	19.4	14.8	0.9	0.0	0.9	38.9
		Female %	0.0	0.9	28.7	29.6	0.0	0.9	0.9	61.1
		Total %	0.0	3.7	48.1	44.4	0.9	0.9	1.9	100.0
		Male Mean Length		623	732	835	700		868	
		SD		15	52	80	0		0	
		Range		614-640	641-815	624-956	700-700		868-868	
		n	0	3	21	16	1	0	1	
		Female Mean Length		608	768	826		979	874	
		SD		0	56	64		0	0	
		Range		608-608	650-887	693-947		979-979	874-874	
		n	0	1	31	32	0	1	1	

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Total	Sample	Brood year	2014	2013	2012	2011	2011	2010	2010	
All mesh sizes	size	Age	1.1	1.2	1.3	1.4	2.3	1.5	2.4	Total
	546	Male n	2	42	141	66	1	0	5	257
		Female n	0	7	149	125	2	1	5	289
		Total n	2	49	290	191	3	1	10	546
		Male %	0.4	7.7	25.8	12.1	0.2	0.0	0.9	47.1
		Female %	0.0	1.3	27.3	22.9	0.4	0.2	0.9	52.9
		Total %	0.4	9.0	53.1	35.0	0.5	0.2	1.8	100.0
		Male Mean Length	395	587	730	794	700		838	
		SD	7	50	59	83			58	
		Range	390-400	495-795	545-843	525-956	700-700		788-925	
		n	2	42	141	66	1	0	5	
		Female Mean Length		612	761	814	732	979	807	
		SD		35	57	59	6		41	
		Range		572-668	598-900	690-947	728-737	979-979	768-874	
		n	0	7	149	125	2	1	5	

Note: Although this data probably represents the ASL of the total run (excluding fish bound for the Andreafsky River), the sex ratios may be inaccurate due to visual inspections of external characteristics to determine sex.

Table 8.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon caught in the Eagle sonar drift gillnet test fishery, 2017.

Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4	Total
7/3, 7/8, 7/10-7/12, 7/14-7/16, 7/18-7/20, 7/22-7/24, 7/26-7/28, 7/30-8/13, 8/15, 8/17, 8/23-8/24, 8/27 (5.25")	193	Male n	1	22	70	1	16	2	0	0	112
		Female n	0	0	20	0	58	1	0	2	81
		Total n	1	22	90	1	74	3	0	2	193
		Male %	0.5	11.4	36.3	0.5	8.3	1.0	0.0	0.0	58.0
		Female %	0.0	0.0	10.4	0.0	30.1	0.5	0.0	1.0	42.0
		Total %	0.5	11.4	46.7	0.5	38.4	1.5	0.0	1.0	100.0
		Male Mean Length	512	590	742	573	826	689			
		SD	0	51.3	73.1	0	61.6	69.3			
		Range	512-512	519-718	617-976	573-573	700-929	640-738			
		n	1	22	70	1	16	2	0	0	
		Female Mean Length			787		849	818		829	
		SD			71		47	0		41	
		Range			583-876		700-954	818-818		800-858	
		n	0	0	20	0	58	1	0	2	

Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4	Total
7/2, 7/8-7/10, 7/12-7/14, 7/16-7/18, 7/20-7/22, 7/24-7/26, 7/28-7/30, 8/1-8/3, 8/5, 8/9-8/10 (6.50")	170	Male n	0	4	54	2	19	3	0	0	82
		Female n	0	0	31	0	56	0	0	1	88
		Total n	0	4	85	2	75	3	0	1	170
		Male %	0.0	2.4	31.8	1.2	11.2	1.8	0.0	0.0	48.2
		Female %	0.0	0.0	18.2	0.0	32.9	0.0	0.0	0.6	51.8
		Total %	0.0	2.4	50.0	1.2	44.1	1.8	0.0	0.6	100.0
		Male Mean Length		680	743	602	893	754			
		SD		49	61.5	59.4	63.6	17.8			
		Range		609-716	610-925	560-644	768-1004	738-773			
		n	0	4	54	2	19	3	0	0	
		Female Mean Length			768		855			782	
		SD			55		43			0	
		Range			574-864		758-940			782-782	
		n	0	0	31	0	56	0	0	1	

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Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4	Total
7/3, 7/8-7/9, 7/11-7/13, 7/15-7/17, 7/19-7/21, 7/23-7/25, 7/28-7/29, 7/31-8/13, 8/18-8/19, 8/22, 8/28 (7.50")	248	Male n	0	2	76	0	24	0	0	0	102
		Female n	0	0	30	0	113	0	1	2	146
		Total n	0	2	106	0	137	0	1	2	248
		Male %	0.0	0.8	30.6	0.0	9.7	0.0	0.0	0.0	41.1
		Female %	0.0	0.0	12.1	0.0	45.6	0.0	0.4	0.8	58.9
		Total %	0.0	0.8	42.7	0.0	55.3	0.0	0.4	0.8	100.0
		Male Mean Length		577	757		839				
		SD		51	75		62				
		Range		541-613	616-964		740-955				
		n	0	2	76	0	24	0	0	0	
		Female Mean Length			793		846		828	800	
		SD			51		47		0	70	
		Range			720-947		724-990		828-828	750-849	
		n	0	0	30	0	113	0	1	2	
Sample dates (mesh size)	Sample size	Brood year	2014	2013	2012	2012	2011	2011	2010	2010	
		Age	1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4	Total
7/7, 7/9-7/11, 7/13-7/15, 7/17-7/19, 7/21-7/23, 7/25-7/27, 7/29-7/31, 8/2-8/4, 8/6-8/7 (8.50")	108	Male n	0	2	33	0	21	1	0	0	57
		Female n	0	0	17	0	30	2	0	2	51
		Total n	0	2	50	0	51	3	0	2	108
		Male %	0.0	1.9	30.6	0.0	19.4	0.9	0.0	0.0	52.8
		Female %	0.0	0.0	15.7	0.0	27.8	1.9	0.0	1.9	47.2
		Total %	0.0	1.9	46.3	0.0	47.2	2.8	0.0	1.9	100.0
		Male Mean Length		526	776		884	630			
		SD		67	87		56	0			
		Range		479-573	629-954		778-995	630-630			
		n	0	2	33	0	21	1	0	0	
		Female Mean Length			805		865	816		792	
		SD			43		41	20		11	
		Range			718-880		778-984	802-830		785-800	
		n	0	0	17	0	30	2	0	2	

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Total	Sample	Brood year	2014	2013	2012	2012	2011	2011	2010	2010	
All mesh sizes	size	Age	1.1	1.2	1.3	2.2	1.4	2.3	1.5	2.4	Total
	719	Male n	1	30	233	3	80	6	0	0	353
		Female n	0	0	98	0	257	3	1	7	366
		Total n	1	30	331	3	337	9	1	7	719
		Male %	0.1	4.2	32.4	0.4	11.1	0.8	0.0	0.0	49.1
		Female %	0.0	0.0	13.6	0.0	35.7	0.4	0.1	1.0	50.9
		Total %	0.1	4.2	46.0	0.4	46.9	1.3	0.1	1.0	100.0
		Male Mean Length	512	597	752	592	861	712			
		SD		61	74	45	66	61			
		Range	512-512	479-718	610-976	560-644	700-1004	630-773			
		n	1	30	233	3	80	6	0	0	
		Female Mean Length			786		851	817	828	803	
		SD			56		46	14		38	
		Range			574-947		700-990	802-830	828-828	750-858	
		n	0	0	98	0	257	3	1	7	

Note: This data set may not adequately represent smaller or younger age class fish.

Table 9.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon that escaped past the East Fork Andreafsky River weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	
		Age	1.1	1.2	1.3	1.4	Total
6/23, 6/25-7/20, 7/23	162	Male n	0	1773	339	63	2,175
		Female n	0	77	348	370	795
		Total n	0	1850	687	433	2,970
		Male %	0.0	59.7	11.4	2.1	73.2
		Female %	0.0	2.6	11.7	12.5	26.8
		Total %	0.0	62.3	23.1	14.6	100.0
		Male Mean Length		523	709	684	
		SD		1	3	14	
		Range		432-653	605-798	570-790	
		n	0	1773	339	63	
		Female Mean Length		608	729	798	
		SD		9	3	2	
		Range		530-676	561-813	708-864	
		n	0	77	348	370	

Note: Sample size was not sufficient to stratify and apply to escapement. Only a summary of the samples was generated for this project.

Table 10.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon that escaped past the Gisasa River weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	
		Age	1.1	1.2	1.3	1.4	Total
06/29-07/08, 07/09-07/13, 7/16, 7/18-7/23, 7/25, 7/27-7/28	133	Male n	0	286	444	23	753
		Female n	0	0	241	88	329
		Total n	0	286	685	111	1,082
		Male %	0.0	26.4	41.0	2.1	69.6
		Female %	0.0	0.0	22.3	8.1	30.4
		Total %	0.0	26.4	63.3	10.3	100.0
		Male Mean Length		547	689	785	
		SE		3	2	3	
		Range		458-640	586-801	770-800	
		n	0	286	444	23	
		Female Mean Length			739	820	
		SE			3	4	
		Range			670-815	775-876	
		n	0	0	241	88	

Table 11.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon that escaped past the Henshaw Creek weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	2011	2010	
		Age	1.1	1.2	1.3	1.4	2.3	1.5	Total
6/30-7/29	439	Male n	0	215	137	39	1	0	392
		Female n	0	7	82	191	0	2	282
		Total n	0	222	219	230	1	2	674
		Male %	0.0	31.9	20.3	5.8	0.1	0.0	58.2
		Female %	0.0	1.0	12.2	28.3	0.0	0.3	41.8
		Total %	0.0	32.9	32.5	34.1	0.1	0.3	100.0
		Male Mean Length		547	720	806	741		
		SE		4	5	10	0		
		Range		423-795	595-915	685-898	741-741		
		n	0	215	137	39	1	0	
		Female Mean Length		598	764	832		910	
		SE		48	6	2		0	
		Range		502-800	648-877	750-935		910-910	
		n	0	7	82	191	0	2	

Table 12.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon that escaped past the Chena River tower, 2017.

Sample dates	Sample size	Brood year	2013	2012	2011	2011	2010	
		Age	1.2	1.3	1.4	2.3	1.5	Total
	385	Male n	10	176	23	2	0	211
8/01-8/04, 8/08-8/10		Female n	1	109	64	0	0	174
		Total n	11	285	87	2	0	385
		Male %	2.6	45.7	6.0	0.5	0.0	54.8
		Female %	0.3	28.3	16.6	0.0	0.0	45.2
		Total %	2.9	74.0	22.6	0.5	0.0	100.0
		Male Mean Length	574	740	786	698		
		SD	86	53	74	46		
		Range	430-755	550-875	640-915	665-730		
		n	10	176	23	2	0	
		Female Mean Length	665	756	805			
		SD		44	58			
		Range	665-665	575-845	680-935			
		n	1	109	64	0	0	

Table 13.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of Chinook salmon that escaped past the Salcha River tower, 2017.

Sample dates	Sample size	Brood year	2013	2012	2012	2011	2011	2010	
		Age	1.2	1.3	2.2	1.4	2.3	1.5	Total
8/01-8/03	471	Male n	26	230	1	20	0	0	277
		Female n	0	109	0	84	1	0	194
		Total n	26	339	1	104	1	0	471
		Male %	5.5	48.8	0.2	4.2	0.0	0.0	58.8
		Female %	0.0	23.1	0.0	17.8	0.2	0.0	41.2
		Total %	5.5	72.0	0.2	22.1	0.2	0.0	100.0
		Male Mean Length	554	717	585	772			
		SD	44	64		79			
		Range	475-645	430-850	585-585	615-905			
		n	26	230	1	20	0	0	
		Female Mean Length		758		810	775		
		SD		42		46			
		Range		645-855		690-910	775-775		
		n	0	109	0	84	1	0	

Table 14.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon caught in the District 1 and 2 commercial fishery, from dip nets (DN) and beach seines (BS), and gillnets (by mesh size) 2017.

Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/12 (Period 1-3; DN/BS)	108	Male n	0	3,590	6,668	0	10,258
		Female n	171	2,906	5,129	0	8,206
		Total n	171	6,497	11,796	0	18,464
		Male %	0.0	19.4	36.1	0.0	55.6
		Female %	0.9	15.7	27.8	0.0	44.4
		Total %	0.9	35.2	63.9	0.0	100.0
		Male Mean Length	-	551	564	-	
		SE	-	5	3	-	
		Range	-	512-595	526-619	-	
		n	-	21	39	-	
		Female Mean Length	488	521	542	-	
		SE	-	6	3	-	
		Range	488-488	461-588	503-570	-	
		n	1	17	30	-	
Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/16 (Period 4-6; DN/BS)	106	Male n	0	6,083	8,336	0	14,419
		Female n	0	4,731	4,731	0	9,463
		Total n	0	10,814	13,068	0	23,882
		Male %	0.0	25.5	34.9	0.0	60.4
		Female %	0.0	19.8	19.8	0.0	39.6
		Total %	0.0	45.3	54.7	0.0	100.0
		Male Mean Length	-	556	589	-	
		SE	-	6	5	-	
		Range	-	496-627	528-653	-	
		n	-	27	37	-	
		Female Mean Length	-	532	553	-	
		SE	-	4	5	-	
		Range	-	487-562	505-599	-	
		n	-	21	21	-	

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Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/20 (Period 7-8; DN/BS)	114	Male n	0	9,376	5,260	0	14,636
		Female n	0	6,861	4,574	0	11,434
		Total n	0	16,237	9,833	0	26,070
		Male %	0.0	36.0	20.2	0.0	56.1
		Female %	0.0	26.3	17.5	0.0	43.9
		Total %	0.0	62.3	37.7	0.0	100.0
		Male Mean Length	-	551	570	-	
		SE	-	3	8	-	
		Range	-	509-596	517-651	-	
		n	-	41	23	-	
		Female Mean Length	-	527	541	-	
		SE	-	4	5	-	
		Range	-	491-557	505-591	-	
		n	-	30	20	-	
Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/22 (Period 9-10; DN/BS)	117	Male n	0	8,837	4,713	196	13,747
		Female n	0	5,302	3,731	196	9,230
		Total n	0	14,140	8,445	393	22,977
		Male %	0.0	38.5	20.5	0.9	59.8
		Female %	0.0	23.1	16.2	0.9	40.2
		Total %	0.0	61.5	36.8	1.7	100.0
		Male Mean Length	-	558	566	529	
		SE	-	4	4	-	
		Range	-	513-613	531-600	529-529	
		n	-	45	24	1	
		Female Mean Length	-	542	540	523	
		SE	-	5	5	-	
		Range	-	494-584	487-571	523-523	
		n	-	27	19	1	

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Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/24, 6/26 (Period 11-12; 5.5")	149	Male n	0	15,746	7,070	643	23,458
		Female n	0	16,067	8,355	0	24,423
		Total n	0	31,814	15,425	643	47,881
		Male %	0.0	32.9	14.8	1.3	49.0
		Female %	0.0	33.6	17.4	0.0	51.0
		Total %	0.0	66.4	32.2	1.3	100.0
		Male Mean Length	-	570	581	574	
		SE	-	2.9	6.4	0.5	
		Range	-	523-613	532-648	573-574	
		n	-	49	22	2	
		Female Mean Length	-	547	553	-	
		SE	-	3	4	-	
		Range	-	501-605	520-593	-	
		n	-	50	26	-	
Sample dates (period; gear)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/27, 6/29 (Period 13-14; 5.5")	148	Male n	0	15,715	8,462	403	24,581
		Female n	0	24,983	9,671	403	35,057
		Total n	0	40,699	18,133	806	59,638
		Male %	0.0	26.4	14.2	0.7	41.2
		Female %	0.0	41.9	16.2	0.7	58.8
		Total %	0.0	68.2	30.4	1.4	100.0
		Male Mean Length	-	559	564	588	
		SE	-	4	8	-	
		Range	-	517-604	516-642	588-588	
		n	-	39	21	1	
		Female Mean Length	-	538	533	542	
		SE	-	3	5	-	
		Range	-	479-602	494-576	542-542	
		n	-	62	24	1	

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Sample dates (period; gear)	Sample size	Brood year / Age	2014 0.2	2013 0.3	2012 0.4	2011 0.5	Total
7/4, 7/6 (Period 15-18; 6.0")	154	Male n	0	53,015	14,910	1,657	69,582
		Female n	0	41,418	16,567	0	57,985
		Total n	0	94,433	31,478	1,657	127,567
		Male %	0.0	41.6	11.7	1.3	54.5
		Female %	0.0	32.5	13.0	0.0	45.5
		Total %	0.0	74.0	24.7	1.3	100.0
		Male Mean Length	-	569	590	570	
		SE	-	3	8	4	
		Range	-	485-638	532-658	566-573	
		n	-	64	18	2	
		Female Mean Length	-	543	565	-	
		SE	-	3	6	-	
		Range	-	505-610	523-606	-	
		n	-	50	20	-	
Sample dates (period; gear)	Sample size	Brood year / Age	2014 0.2	2013 0.3	2012 0.4	2011 0.5	Total
7/11, 7/13 (Period 19-22; 6.0")	150	Male n	0	7,945	2,774	0	10,719
		Female n	0	7,062	1,135	0	8,197
		Total n	0	15,007	3,909	0	18,916
		Male %	0.0	42.0	14.7	0.0	56.7
		Female %	0.0	37.3	6.0	0.0	43.3
		Total %	0.0	79.3	20.7	0.0	100.0
		Male Mean Length	-	566	574	-	
		SE	-	3	7	-	
		Range	-	507-631	521-647	-	
		n	-	63	22	-	
		Female Mean Length	-	545	560	-	
		SE	-	3	7	-	
		Range	-	504-602	516-588	-	
		n	-	56	9	-	

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Total	Sample size	Brood year	2014	2013	2012	2011	
		Age	0.2	0.3	0.4	0.5	Total
	1,046	Male n	0	120,308	58,193	2,899	181,400
		Female n	171	109,331	53,893	599	163,995
		Total n	171	229,639	112,087	3,498	345,395
		Male %	0.0	34.8	16.8	0.8	52.5
		Female %	0.0	31.7	15.6	0.2	47.5
		Total %	0.0	66.5	32.5	1.0	100.0
		Male Mean Length	-	564	577	570	
		SE	-	2	3	2	
		Range	-	485-638	516-658	529-588	
		n	-	349	206	6	
		Female Mean Length	488	540	550	536	
		SE	-	2	2	-	
		Range	488-488	461-610	487-606	523-542	
		n	1	313	169	2	

Note: The mesh size listed was the maximum allowed mesh size for the commercial gillnet period and may also include fish harvested with smaller mesh gear.

Table 15.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon caught in the Lower Yukon test fishery, 2017.

Sample dates (fishing site and gear type)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
5/26, 5/28-7/9, 7/11-7/12, 7/15 (Big Eddy 5.5" Drift)	544	Male n	0	115	110	3	228
		Female n	0	154	154	8	316
		Total n	0	269	264	11	544
		Male %	0.0	21.1	20.2	0.6	41.9
		Female %	0.0	28.3	28.3	1.5	58.1
		Total	0.0	49.4	48.5	2.1	100.0
		Male Mean Length		573	583	637	
		SD		29	25	29	
		Range		511-694	528-632	609-667	
		n	0	115	110	3	
		Female Mean Length		549	562	572	
		SD		24	22	12	
		Range		484-607	457-616	552-585	
		n	0	154	154	8	

Sample dates (fishing site and gear type)	Sample size	Brood year / Age	2014 / 0.2	2013 / 0.3	2012 / 0.4	2011 / 0.5	Total
6/7-6/10, 6/12-7/11 (Middle Mouth 5.5" Drift)	436	Male n	1	105	55	2	163
		Female n	1	127	138	7	273
		Total n	2	232	193	9	436
		Male %	0.2	24.1	12.6	0.5	37.4
		Female %	0.2	29.1	31.7	1.6	62.6
		Total %	0.4	53.2	44.3	2.1	100.0
		Male Mean Length	519	564	574	594	
		SD	0	26	28	16	
		Range	519-519	494-636	515-633	582-605	
		n	1	105	55	2	
		Female Mean Length	531	550	563	571	
		SD	0	20	19	27	
		Range	531-531	504-609	505-613	527-610	
		n	1	127	138	7	

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Table 15.–Page 2 of 2.

Total All sites	Sample size	Brood year	2014	2013	2012	2011	
		Age	0.2	0.3	0.4	0.5	Total
	980	Male n	1	220	165	5	391
		Female n	1	281	292	15	589
		Total n	2	501	457	20	980
		Male %	0.1	22.4	16.8	0.5	39.9
		Female %	0.1	28.7	29.8	1.5	60.1
		Total %	0.2	51.1	46.6	2.0	100.0
		Male Mean Length	519	569	580	620	
		SD		28	26	33	
		Range	519-519	494-694	515-633	582-667	
		n	1	220	165	5	
		Female Mean Length	531	549	563	571	
		SD		22	21	19	
		Range	531-531	484-609	457-616	527-610	
		n	1	281	292	15	

Table 16.–Sex composition and mean length (mm) of summer chum salmon from the mainstem Yukon River test fishery project operated near Pilot Station, 2.75 in, 4.0 in, 5.25 in, 6.5 in, 7.5 in, and 8.5 in, mesh drift gillnets combined, 2017.

			Total	
Sample dates	Sample size		N	%
Total	4,374	Male	2,089	47.8
		Female	2,285	52.2
		Subtotal	4,374	100.0
		Male Mean Length	596	
		SE	1	
		Range	491-815	
		n	2,089	
		Female Mean Length	555	
		SE	1	
		Range	461-768	
		n	2,285	

Table 17.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon that escaped past the East Fork Andreafsky River weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	2010	
		Age	0.2	0.3	0.4	0.5	0.6	Total
6/21-7/20, 7/21-7/27	1,668	Male n	31	16,632	15,879	513	0	33,055
		Female n	88	14,642	7,388	329	29	22,476
		Total n	119	31,274	23,267	842	29	55,531
		Male %	0.1	30.0	28.6	0.9	0.0	59.5
		Female %	0.2	26.4	13.3	0.6	0.1	40.5
		Total %	0.2	56.3	41.9	1.5	0.1	100.0
		Male Mean Length	509	563	574	586		
		SE	0	0	0	1		
		Range	509-509	476-659	473-664	522-621		
		n	31	16,632	15,879	513	0	
		Female Mean Length	496	526	536	558	524	
		SE	3	0	0	2	0	
		Range	465-514	428-601	439-591	508-636	524-524	
		n	88	14,642	7,388	329	29	

Table 18.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon that escaped past the Anvik River sonar, sampled with beach seine, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	
		Age	0.2	0.3	0.4	0.5	Total
	671	Male n	352	99,768	131,051	2,251	233,422
6/23-6/25, 6/28, 7/02-7/03,		Female n	352	94,201	86,632	532	181,717
7/05, 7/10-7/12, 7/16-7/19		Total n	704	193,969	217,683	2,783	415,139
		Male %	0.1	24.0	31.6	0.5	56.2
		Female %	0.1	22.7	20.9	0.1	43.8
		Total %	0.2	46.7	52.5	0.6	100.0
		Male Mean Length	551	585	606	635	
		SE	0	1	1	1	
		Range	551-551	511-668	524-680	610-654	
		n	352	99,768	131,051	2,251	
		Female Mean Length	476	556	562	615	
		SE	0	1	1	0	
		Range	476-476	490-617	483-638	615-615	
		n	352	94201	86632	532	

Table 19.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon that escaped past the Gisasa River weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	
		Age	0.2	0.3	0.4	0.5	Total
6/22-7/08, 7/10-7/14, 7/16, 7/18-7/29	964	Male n	0	11,372	19,999	610	28,828
		Female n	149	19,463	21,200	790	37,843
		Total n	149	30,835	41,199	1,400	66,671
		Male %	0.0	15.5	27.2	0.8	43.2
		Female %	0.2	26.5	28.8	1.1	56.8
		Total %	0.2	42.0	56.0	1.9	100.0
		Male Mean Length		564	589	576	
		SE		1	1	2	
		Range		477-622	509-656	521-639	
		n	0	11,372	19,999	610	
		Female Mean Length	501	537	555	554	
		SE	2	1	1	1	
		Range	477-520	458-617	446-610	542-573	
		n	149	19,463	21,200	790	

Table 20.–Age and sex composition, by sample size (n) and percent (%), and mean length (mm) of summer chum salmon that escaped past the Henshaw Creek weir, 2017.

Sample dates	Sample size	Brood year	2014	2013	2012	2011	
		Age	0.2	0.3	0.4	0.5	Total
6/28-6/29, 7/01-7/03, 7/05, 7/07, 7/09, 7/11-7/12, 7/15-7/16, 7/18, 7/20-7/21, 7/24-7/26, 7/28-7/29	702	Male n	0	68,009	59,084	1,108	128,201
		Female n	0	155,702	74,001	2,784	232,487
		Total n	0	223,711	133,085	3,892	360,688
		Male %	0.0	18.9	16.4	0.3	35.5
		Female %	0.0	43.2	20.5	0.8	64.5
		Total %	0.0	62.0	36.9	1.1	100.0
		Male Mean Length		552	578	606	
		SE		1	1	1	
		Range		481-640	497-653	587-632	
		n	0	68,009	59,084	1,108	
		Female Mean Length		539	553	559	
		SE		1	1	1	
		Range		458-629	436-640	470-607	
		n	0	155,702	74,001	2,784	

Table 21.–Age, female percentage, and mean length (mm) of Chinook salmon from the Lower Yukon River test fishery 8.5 in mesh set gillnet (Big Eddy and Middle Mouth sites combined), 1985–2017.

		Percent by age class							
Year	Sample size	Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)	Age-8 (1.6, 2.5)	Percent female	Mean length
1985	326	0.0	5.5	8.6	77.9	7.7	0.3	52.1	837
1986	815	0.1	5.9	37.8	40.0	16.1	0.1	37.9	785
1987	609	0.2	8.0	6.6	69.3	15.6	0.3	56.3	842
1988	366	0.5	14.5	19.1	34.7	30.1	1.1	46.2	816
1989	407	0.0	1.5	20.1	64.9	13.0	0.5	51.4	859
1990	510	0.0	25.3	21.6	47.6	5.5	0.0	39.2	768
1991	477	0.0	3.6	46.1	42.6	7.1	0.6	50.9	818
1992	367	0.0	1.9	11.2	81.5	4.9	0.5	56.4	861
1993	871	0.0	21.1	30.3	42.3	6.2	0.1	38.0	765
1994	776	0.1	3.5	45.1	46.5	4.8	0.0	44.2	802
1995	531	0.0	7.0	13.0	74.8	5.3	0.0	45.8	829
1996	490	0.0	3.7	65.7	18.4	12.2	0.0	48.6	779
1997	339	0.0	1.5	9.7	85.8	2.9	0.0	49.9	857
1998	952	0.0	1.3	43.9	45.0	9.8	0.1	50.4	830
1999	942	0.0	0.7	9.1	87.0	3.1	0.0	61.4	854
2000	1014	0.1	0.6	18.5	71.8	9.0	0.0	51.9	830
2001	1,523	0.0	1.9	13.4	76.2	8.5	0.0	52.7	833
2002	1,365	0.0	2.8	21.8	64.0	11.5	0.0	50.1	829
2003	1,722	0.0	0.6	25.4	66.7	7.2	0.1	52.5	847
2004	912	0.1	5.2	18.8	73.2	2.7	0.0	56.8	837
2005	1,159	0.0	1.6	41.8	54.2	2.4	0.0	48.7	824
2006	1,117	0.0	2.1	49.0	46.6	2.2	0.0	49.5	813
2007	1,422	0.0	4.4	17.4	77.2	1.0	0.0	52.4	820
2008	1,444	0.0	1.2	46.6	49.1	3.1	0.0	44.3	804
2009	1,507	0.0	3.9	11.5	82.7	1.8	0.0	57.4	829
2010	1,642	0.1	4.4	59.0	33.9	2.6	0.0	47.4	799
2011	1,208	0.0	1.4	32.2	61.8	4.5	0.1	52.5	823
2012	1,026	0.0	1.4	30.3	66.2	2.1	0.0	62.3	809
2013	733	0.1	5.0	22.4	68.9	3.5	0.0	59.2	801
2014	615	0.2	1.1	50.7	45.4	2.6	0.0	45.5	790
2015	595	0.0	9.7	17.0	72.1	1.2	0.0	53.4	800
2016	927	0.1	8.1	55.1	35.0	1.6	0.1	47.8	774
2017	746	0.0	4.3	43.0	50.8	1.9	0.0	50.0	798
Average (1985-2016)	897	0.1	5.0	28.7	59.5	6.6	0.1	50.4	818
5-yr Average (2012-2016)	779	0.1	5.1	35.1	57.5	2.2	0.0	53.7	795

Note: The Lower Yukon River test fishery was conducted from the end of May through July 15. Before 1998, this test fishery was often discontinuous or was not conducted throughout the season. All values are unweighted.

[a] Average was not weighted by number of fish sampled each year.

Table 22.–Age, female percentage, and mean length (mm) of Chinook salmon in the mainstem Yukon River drift test fishery project operated near Pilot Station, 1985–2017.

		Percent by age class							
Year	Sample size	Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)	Age-8 (1.6, 2.5)	Percent female	Mean length
1998	506	0.2	11.5	69.6	15.8	2.8	0.2	50.4	722
1999	451	0.4	8.2	24.2	66.1	1.1	0.0	49.3	773
2000	449	0.0	5.8	39.0	49.7	5.6	0.0	61.2	748
2001	538	0.4	6.7	33.3	56.1	3.5	0.0	59.7	770
2002	538	0.0	23.2	40.3	30.7	5.8	0.0	31.3	722
2003	831	0.4	5.9	49.1	43.0	1.7	0.0	46.1	771
2004	932	0.5	27.6	30.3	39.7	1.9	0.0	34.7	741
2005	662	0.0	9.5	59.2	30.1	1.2	0.0	32.6	769
2006	507	0.0	5.5	58.0	36.1	0.4	0.0	36.9	751
2007	483	0.0	13.0	34.8	51.1	1.0	0.0	33.9	747
2008	622	0.8	5.0	62.2	28.0	4.0	0.0	30.2	742
2009	790	0.3	15.7	25.2	57.7	1.1	0.0	41.4	760
2010	256	1.2	10.5	57.8	27.7	2.7	0.0	38.0	739
2011	487	0.4	9.4	54.2	33.3	2.7	0.0	29.8	742
2012	387	0.8	5.7	48.1	43.2	2.3	0.0	42.8	752
2013	272	0.0	6.6	35.7	55.5	2.2	0.0	41.8	770
2014	444	4.1	9.5	66.0	19.6	0.9	0.0	31.2	710
2015	410	0.0	22.4	33.9	43.2	0.5	0.0	35.6	740
2016	618	0.3	14.1	69.3	15.4	1.0	0.0	44.7	723
2017	546	0.4	9.0	53.1	35.6	2.0	0.0	51.4	754
Average (1998-2016)	536	0.5	11.4	46.9	39.1	2.2	0.0	40.6	747
5-yr Average (2012-2016)	426	1.0	11.7	50.6	35.4	1.4	0.0	39.2	739

Note: All values are unweighted.

Table 23.–Age, female percentage, and mean length (mm) of Chinook salmon in the mainstem Yukon River sonar test fishery project operated near Eagle, Alaska, 2005–2017.

Year	Sample size	Percent by age class					Percent female	Mean length
		Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)		
2005	171	0.0	8.2	50.3	38.0	3.5	33.9	779
2006	256	0.0	16.8	60.2	22.7	0.4	37.9	737
2007	389	0.0	5.7	40.1	53.7	0.5	43.4	787
2008	375	0.0	2.7	56.3	36.5	4.5	36.8	780
2009	647	0.0	7.7	33.2	59.0	0.0	39.6	791
2010	336	0.0	7.4	46.4	42.0	4.2	40.5	770
2011	419	0.0	2.1	29.6	60.4	7.9	51.3	809
2012	246	0.4	6.1	29.7	59.3	4.5	49.6	780
2013	265	0.0	4.2	27.5	63.4	4.9	51.7	807
2014	606	0.2	6.6	50.5	40.1	2.6	35.1	763
2015	926	0.3	10.8	34.3	52.4	2.2	42.1	776
2016	666	0.0	9.2	65.0	25.2	0.6	32.4	759
2017	719	0.1	4.2	46.5	48.1	1.1	50.9	797
Average (2005-2016)	442	0.1	7.3	43.6	46.1	3.0	41.2	778
5-yr Average (2012-2016)	542	0.2	7.4	41.4	48.1	3.0	42.2	777

Note: All values are unweighted.

Table 24.–Age, female percentage, and mean length (mm) of Chinook salmon that escaped past the East Fork Andreafsky River weir, 1985–2017.

Year	Sample size	Percent by age class						Percent female	Mean length
		Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)	Age-8 (1.6, 2.5)		
1985 [ab]	108	0.0	29.6	16.7	49.1	4.6	0.0	31.5	728
1986 [bc]	80	0.0	2.5	57.5	35.0	5.0	0.0	28.8	737
1987 [bc]	192	0.5	3.1	7.3	86.5	2.6	0.0	52.6	816
1988 [bc]	189	0.5	18.5	33.3	29.6	18.0	0.0	42.3	763
1989 [b]	84	0.0	2.4	75.0	21.4	1.2	0.0	4.8	735
1990 [b]	291	0.7	35.1	28.5	34.7	1.0	0.0	38.5	747
1991 [b]	239	0.0	6.7	61.5	29.7	2.1	0.0	27.6	762
1992 [b]	23	0.0	34.8	34.8	21.7	8.7	0.0	26.1	693
1993 [b]	255	0.4	16.9	39.2	42.0	1.6	0.0	29.4	745
1994	440	0.0	8.0	53.0	34.5	4.3	0.2	35.5	748
1995	313	0.0	36.7	16.3	45.4	1.6	0.0	42.2	700
1996 [b]	340	1.5	7.1	73.8	13.5	4.1	0.0	42.1	713
1997	410	0.0	52.7	15.6	31.7	0.0	0.0	36.8	672
1998	378	0.0	16.4	70.6	12.2	0.8	0.0	28.8	700
1999	357	0.3	34.5	32.2	32.5	0.6	0.0	28.6	668
2000	303	0.0	10.6	56.1	33.0	0.3	0.0	32.3	722
2001 [d]	124	0.0	14.5	18.5	64.5	2.4	0.0	63.7	785
2002	436	0.0	30.5	48.2	20.0	1.4	0.0	21.1	664
2003	533	0.4	15.9	50.5	32.1	1.1	0.0	47.7	726
2004	508	0.0	39.2	39.8	20.5	0.6	0.0	34.8	686
2005	389	0.0	15.2	63.8	20.6	0.5	0.0	49.9	738
2006	454	0.0	17.4	55.5	27.1	0.0	0.0	43.6	721
2007	631	0.0	42.0	26.1	31.2	0.6	0.0	44.5	660
2008	470	0.0	3.2	71.3	23.6	1.9	0.0	38.9	724
2009	2,687	0.1	23.6	15.5	60.1	0.6	0.0	47.2	749
2010 [b]	624	0.3	38.6	48.7	11.2	1.0	0.2	48.7	665
2011 [b]	542	0.0	43.9	41.3	14.6	0.2	0.0	19.9	633
2012	572	0.3	12.4	64.2	22.9	0.2	0.0	27.4	689
2013	447	0.4	44.5	24.2	30.4	0.4	0.0	39.4	661
2014	317	1.9	9.8	77.9	10.4	0.0	0.0	47.9	691
2015	547	0.0	38.4	14.3	47.3	0.0	0.0	39.7	710
2016	160	1.9	26.3	65.0	6.9	0.0	0.0	49.4	705
2017	162	0.0	63.0	22.8	14.2	0.0	0.0	25.9	605
Average (1985-2016)	420	0.3	22.8	43.6	31.1	2.1	0.0	37.2	714
5-yr Average (2012-2016)	409	0.9	26.3	49.1	23.6	0.1	0.0	40.8	691

Note: All values are unweighted. En-dashes indicate no data.

[a] Project was operated as sonar.

[b] Samples are from ancillary ASL collections.

[c] Project was operated as a counting tower.

[d] Sampling dates were limited and may not represent run; not included in average.

Table 25.–Age, female percentage, and mean length (mm) of Chinook salmon that escaped past the Gisasa River weir, 1995–2017.

		Percent by age class							
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Age-8	Percent	Mean
Year	size	(1.1)	(1.2, 2.1)	(1.3, 2.2)	(1.4, 2.3)	(1.5, 2.4)	(1.6, 2.5)	female	length
1995	346	0.0	15.9	30.1	52.0	2.0	0.0	44.2	776
1996	339	1.2	18.0	59.9	13.9	7.1	0.0	19.7	686
1997	497	0.4	37.0	26.8	35.6	0.2	0.0	25.0	683
1998	352	0.0	16.8	61.4	19.3	2.6	0.0	16.6	678
1999	509	0.4	16.9	41.7	40.5	0.6	0.0	25.5	697
2000	662	0.0	6.8	51.2	39.9	2.1	0.0	33.3	738
2001	637	0.2	16.6	21.8	58.6	2.8	0.0	49.4	761
2002	526	0.0	31.9	41.8	23.4	2.9	0.0	21.2	664
2003	473	0.2	5.5	69.6	23.7	1.1	0.0	38.3	750
2004	541	0.7	39.6	30.9	28.5	0.4	0.0	34.5	712
2005	591	0.0	27.2	56.9	15.6	0.3	0.0	36.4	697
2006	530	0.2	19.4	62.1	17.7	0.6	0.0	29.7	691
2007	337	0.0	28.5	20.5	50.7	0.3	0.0	40.6	711
2008	475	0.4	19.4	64.4	13.3	2.5	0.0	16.7	679
2009	521	0.0	42.0	26.1	31.7	0.2	0.0	27.0	686
2010	493	0.2	42.4	47.9	8.9	0.6	0.0	28.7	663
2011	597	0.0	31.0	56.8	11.9	0.2	0.2	19.5	659
2012	528	0.0	11.7	60.8	26.9	0.6	0.0	40.6	702
2013	458	0.0	27.9	31.4	39.5	1.1	0.0	33.2	701
2014	131	0.8	17.6	66.4	13.7	1.5	0.0	18.4	674
2015	243	0.8	25.9	39.5	33.7	0.0	0.0	29.7	690
2016	239	0.4	34.3	44.8	20.1	0.4	0.0	27.9	662
2017	133	0.0	26.3	63.9	9.8	0.0	0.0	27.5	673
Average (1995-2016)	456	0.3	24.2	46.0	28.1	1.4	0.0	29.8	698
5-yr Average (2012-2016)	320	0.4	23.5	48.6	26.8	0.7	0.0	30.0	686

Note: All values are unweighted.

Table 26.–Age, female percentage, and mean length (mm)of Chinook salmon that escaped past the Henshaw Creek weir, 1995–2017.

Year	Sample size	Percent by age class						Percent female	Mean length
		Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)	Age-8 (1.6, 2.5)		
2000	37	0.0	18.9	62.2	18.9	0.0	0.0	29.7	678
2001	377	0.0	11.7	44.0	43.2	1.1	0.0	36.3	736
2002	347	0.0	30.3	36.0	31.4	2.3	0.0	30.8	693
2003	304	1.6	19.4	44.1	33.2	1.6	0.0	39.1	711
2004	636	0.2	45.1	28.3	25.8	0.6	0.0	23.1	682
2005	127	0.0	25.2	51.2	23.6	0.0	0.0	41.7	696
2006	–	–	–	–	–	–	–	–	–
2007	352	0.0	41.8	18.8	39.5	0.0	0.0	42.6	667
2008	349	0.6	17.2	69.6	10.6	1.7	0.3	26.9	674
2009	348	0.0	32.8	29.6	37.6	0.0	0.0	53.7	707
2010	209	0.5	20.1	58.4	20.1	1.0	0.0	48.8	712
2011	428	0.2	20.6	49.5	29.2	0.5	0.0	33.6	708
2012	286	0.0	17.5	47.6	34.6	0.3	0.0	43.4	725
2013	223	0.9	26.9	31.8	39.9	0.4	0.0	46.6	705
2014	–	–	–	–	–	–	–	–	–
2015	459	0.0	24.6	40.7	34.4	0.2	0.0	41.4	723
2016	381	0.5	10.2	63.8	25.2	0.3	0.0	47.5	740
2017	439	0.0	33.3	32.3	34.2	0.2	0.0	41.7	705
Average (2000-2016)	324	0.3	24.1	45.0	29.8	0.7	0.0	39.0	704
5-yr Average (2012-2016)	337	0.4	19.8	46.0	33.5	0.3	0.0	44.7	723

Note: All values are unweighted. En-dashes indicate no data.

Table 27.–Age, female percentage, and mean length (mm) of Chinook salmon that escaped past the Chena River tower, 1985–2017.

Year	Sample size	Percent by age class						Percent female	Mean length
		Age-3	Age-4	Age-5	Age-6	Age-7	Age-8		
		(1.1)	(1.2, 2.1)	(1.3, 2.2)	(1.4, 2.3)	(1.5, 2.4)	(1.6, 2.5)		
1986 [a]	721	0.1	9.4	50.8	30.1	9.4	0.1	25.4	737
1987 [a]	560	0.0	2.9	13.0	75.7	8.4	0.0	58.0	837
1988 [a]	464	0.0	10.6	17.7	46.8	24.6	0.4	61.2	813
1989 [a]	288	0.3	4.2	30.2	54.9	10.4	0.0	64.9	841
1990 [a]	382	0.0	24.6	23.0	49.2	3.1	0.0	46.9	765
1991 [a]	338	0.0	8.3	55.6	28.4	7.7	0.0	31.7	776
1992 [a]	463	1.9	40.8	16.2	40.6	0.4	0.0	37.8	694
1993	186	0.5	29.6	41.4	27.4	1.1	0.0	16.7	704
1994	512	0.0	2.9	43.6	51.2	2.3	0.0	45.1	791
1995	790	0.0	4.4	20.9	70.9	3.8	0.0	65.9	850
1996	515	2.1	6.2	44.3	23.5	23.9	0.0	43.9	802
1997	702	0.3	37.2	13.4	48.0	1.1	0.0	39.6	753
1998	228	0.0	4.4	72.4	18.4	4.8	0.0	41.2	748
1999	177	0.0	4.5	24.9	70.6	0.0	0.0	65.5	796
2000	467	0.2	27.0	37.9	30.6	4.3	0.0	25.9	705
2001	521	0.6	9.6	33.6	51.2	5.0	0.0	42.5	-
2002	944	0.1	29.2	29.6	38.3	2.8	0.0	31.9	724
2003	370	0.0	5.1	46.5	41.6	6.8	0.0	44.9	808
2004	239	0.0	10.9	17.2	69.0	2.9	0.0	63.2	820
2005	553	0.0	6.5	49.9	39.4	4.2	0.0	42.3	770
2006	361	0.0	12.7	45.7	40.4	1.1	0.0	46.0	768
2007 [b]	50	0.0	16.0	50.0	34.0	0.0	0.0	40.0	661
2008 [b]	36	0.0	8.3	61.1	25.0	5.6	0.0	44.4	775
2009	440	0.0	14.3	17.3	67.7	0.7	0.0	55.0	790
2010	81	0.0	13.6	54.3	29.6	2.5	0.0	30.9	719
2011	425	0.2	22.6	46.8	28.7	1.6	0.0	31.8	715
2012	197	0.5	5.1	45.7	48.7	0.0	0.0	55.8	758
2013	176	1.1	29.0	22.2	46.6	1.1	0.0	40.3	716
2014	283	1.4	3.5	83.0	11.7	0.4	0.0	32.9	714
2015	499	0.6	19.8	16.0	62.9	0.6	0.0	55.3	746
2016	368	0.0	43.8	45.9	9.8	0.5	0.0	22.8	662
2017	385	0.0	2.9	74.0	23.1	0.0	0.0	45.2	753
Average (1986-2016)	422	0.4	15.3	36.5	43.2	4.7	0.0	43.6	762
5-yr Average (2012-2016)	305	0.7	20.2	42.6	35.9	0.5	0.0	41.4	719

Note: All values are unweighted. En-dashe indicates no data.

[a] Samples were from mark-recapture project.

[b] Small sample size, not included in average.

Table 28.–Age, female percentage, and mean length (mm) of Chinook salmon that escaped past the Salcha River tower 1985–2017.

		Percent by age class							
Year	Sample size	Age-3 (1.1)	Age-4 (1.2, 2.1)	Age-5 (1.3, 2.2)	Age-6 (1.4, 2.3)	Age-7 (1.5, 2.4)	Age-8 (1.6, 2.5)	Percent female	Mean length
1985 [a]	473	0.0	12.7	16.3	65.5	5.5	0.0	48.6	784
1986 [a]	570	0.2	12.1	43.0	29.6	15.1	0.0	34.6	771
1987 [a]	600	0.7	4.5	16.3	72.2	6.3	0.0	62.8	832
1988 [a]	495	0.4	20.2	22.6	42.0	14.7	0.0	39.6	797
1989 [a]	223	0.4	4.0	28.7	58.3	8.5	0.0	61.9	857
1990 [a]	368	0.0	19.6	23.1	49.7	7.6	0.0	46.7	811
1991 [a]	507	0.2	8.3	44.2	41.2	5.9	0.2	47.3	796
1992 [a]	626	1.3	30.8	28.4	38.5	1.0	0.0	34.3	724
1993	452	0.7	28.1	39.2	31.2	0.9	0.0	27.7	717
1994	521	0.6	2.7	39.3	52.6	4.8	0.0	44.7	806
1995	544	0.0	13.4	20.6	62.9	3.1	0.0	55.9	798
1996	412	2.7	6.1	38.3	28.4	24.5	0.0	50.7	808
1997	180	0.0	14.4	14.4	69.4	1.7	0.0	50.0	822
1998	123	2.4	4.9	72.4	17.9	2.4	0.0	30.1	709
1999	307	0.0	9.1	24.1	66.4	0.3	0.0	54.7	788
2000 [a]	41	0.0	22.0	48.8	24.4	4.9	0.0	43.9	703
2001	192	0.5	10.4	33.9	52.1	3.1	0.0	37.5	766
2002	282	0.0	36.2	13.8	38.7	11.3	0.0	34.8	737
2003	151	0.7	7.3	42.4	42.4	7.3	0.0	42.4	797
2004	228	0.0	8.8	8.3	82.0	0.9	0.0	63.2	850
2005	602	0.0	9.3	41.5	46.2	3.0	0.0	54.3	789
2006	509	0.0	5.7	49.3	43.0	2.0	0.0	43.4	777
2007	308	0.0	22.4	26.9	50.3	0.3	0.0	35.7	730
2008	303	0.7	9.9	51.8	36.0	1.7	0.0	39.3	756
2009	458	0.0	31.7	21.4	46.7	0.2	0.0	39.1	741
2010	460	0.4	23.9	56.7	17.4	1.5	0.0	32.6	713
2011	527	0.2	14.6	35.5	48.2	1.5	0.0	42.1	746
2012	418	0.2	6.0	33.0	59.1	1.7	0.0	59.8	781
2013	179	1.1	11.2	15.6	69.3	2.8	0.0	50.3	789
2014	403	1.5	14.6	59.8	22.6	1.5	0.0	32.0	732
2015	468	0.6	23.5	34.8	41.0	0.0	0.0	42.9	750
2016	473	0.0	42.3	40.8	16.7	0.2	0.0	38.9	673
2017	471	0.0	5.5	72.2	22.3	0.0	0.0	41.2	736
Average (1985-2016)	388	0.5	15.3	33.9	45.7	4.6	0.0	44.4	770
5-yr Average (2012-2016)	388	0.7	19.5	36.8	41.7	1.2	0.0	44.8	745

Note: All values are unweighted.

[a] Samples were from mark-recapture project.

Table 29.–Age, female percentage, and mean length (mm) of summer chum salmon from the Lower Yukon River test fishery (combined Big Eddy and Middle Mouth sites) 5.5 in mesh gillnet, 1985–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1985	986	0.1	61.7	37.7	0.5	0.0	51.4	583
1986	1,130	0.1	26.4	73.1	0.4	0.0	55.1	573
1987	1,197	0.6	49.3	43.4	6.8	0.0	56.5	576
1988	809	0.1	50.1	48.7	1.1	0.0	59.3	586
1989	1,120	0.0	39.4	60.1	0.5	0.0	62.0	583
1990	1,603	0.7	45.4	51.2	2.7	0.0	65.8	579
1991	1,583	0.0	44.9	54.2	0.9	0.0	55.3	571
1992	1,262	0.0	20.1	74.1	5.8	0.0	60.9	573
1993	1,772	0.1	37.9	57.4	4.6	0.0	50.4	567
1994	2,392	0.0	35.4	62.0	2.6	0.0	62.5	569
1995	2,203	0.5	44.9	49.2	5.3	0.0	58.0	576
1996	1,937	0.1	42.2	52.4	5.2	0.1	63.7	582
1997	1,972	0.1	24.6	70.9	4.4	0.0	61.0	581
1998	1,650	0.0	62.4	33.5	4.0	0.1	52.5	571
1999	1,137	0.4	47.8	50.7	1.1	0.0	49.3	574
2000	882	0.2	50.8	48.0	1.0	0.0	64.7	572
2001	738	0.0	24.7	74.1	1.2	0.0	64.8	575
2002	792	0.5	57.3	40.4	1.8	0.0	63.5	577
2003	822	0.4	78.7	18.7	2.2	0.0	54.4	570
2004	522	3.1	40.4	56.5	0.0	0.0	65.9	572
2005	754	0.1	89.8	9.9	0.1	0.0	54.4	569
2006	859	0.3	27.2	72.3	0.1	0.0	58.9	572
2007 [a]	91	0.0	42.9	47.3	9.9	0.0	65.9	558
2008 [b]	784	0.0	41.2	53.7	5.1	0.0	55.4	571
2009	1,042	1.2	48.8	47.9	1.8	0.2	54.3	573
2010	1,209	3.7	64.8	29.9	1.5	0.0	56.7	563
2011	1,493	0.1	44.1	55.5	0.4	0.0	63.2	568
2012	1,576	0.0	68.7	25.9	5.4	0.0	56.7	556
2013	1,180	0.0	44.8	53.4	1.7	0.1	50.3	566
2014	1,580	0.2	26.1	68.5	5.3	0.0	54.9	571
2015	856	1.5	38.2	59.0	1.3	0.0	53.3	563
2016	910	0.9	63.3	33.1	2.7	0.0	59.8	555
2017	980	0.2	51.1	46.6	2.0	0.0	60.1	563
Average [c] (1987-1988, 1990-2006, 2009-2016)	1,286	0.5	47.1	49.7	2.6	0.0	58.2	571
5-yr Average (2012-2016)	1,220	0.5	48.2	48.0	3.3	0.0	55.0	562

Note: The Lower Yukon River test fishery was conducted from the end of May through July 15. Before 1998, this test fishery was often discontinuous or was not conducted throughout the season.

[a] One set gillnet was operated at Big Eddy only.

[b] Two drift gillnets were operated at Big Eddy and 1 drift gillnet was operated at Middle Mouth.

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

Table 30.–Age, female percentage, and mean length (mm) of summer chum salmon caught in the District 1 and District 2 commercial fishery, 1985–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1985	1,392	0.4	68.3	30.6	0.7	0.0	44.1	582
1986	2,614	0.1	29.4	69.2	1.4	0.0	48.9	586
1987	1,596	0.1	50.5	39.6	9.8	0.0	44.2	583
1988	2,618	0.1	73.8	24.9	1.2	0.0	45.2	586
1989	1,564	0.1	36.3	63.0	0.6	0.0	43.3	593
1990	666	0.6	38.0	58.9	2.6	0.0	44.4	595
1991	1,034	0.0	39.6	59.5	0.9	0.1	36.3	580
1992	1,155	0.0	21.8	73.5	4.7	0.0	49.8	579
1993	1,067	0.2	38.0	54.6	7.2	0.0	49.5	572
1994	938	0.0	32.9	63.8	3.3	0.0	52.0	577
1995	1,661	0.5	36.4	56.1	7.0	0.1	49.4	574
1996	829	0.0	40.7	55.0	4.1	0.2	49.1	595
1997	1,192	0.3	20.9	73.6	5.3	0.0	43.2	589
1998	667	0.1	62.8	33.3	3.7	0.0	39.7	576
1999	668	0.1	44.3	54.3	1.2	0.0	44.8	585
2000	290	0.0	54.1	43.4	2.4	0.0	41.4	587
2001	–	–	–	–	–	–	–	–
2002	352	0.3	55.1	40.9	3.7	0.0	41.8	590
2003	289	0.3	61.2	33.6	4.8	0.0	37.0	592
2004	818	4.3	42.5	52.8	0.4	0.0	45.2	587
2005	621	0.3	86.8	11.1	1.8	0.0	46.5	576
2006	734	0.3	24.5	75.1	0.1	0.0	46.7	585
2007	1881	0.0	32.6	50.3	17.0	0.1	50.3	578
2008	948	0.2	36.9	56.1	6.6	0.1	53.1	577
2009	954	1.4	49.2	47.4	2.0	0.1	48.6	572
2010	1,259	4.6	66.3	28.1	1.0	0.0	44.6	572
2011	1,728	0.2	53.0	46.3	0.6	0.0	40.9	572
2012	787	0.1	70.8	23.8	5.3	0.0	49.2	558
2013	1,729	0.0	44.4	53.3	2.2	0.1	45.4	558
2014	1,096	0.3	32.6	62.5	4.6	0.1	52.6	562
2015	1,108	1.4	40.8	56.0	1.8	0.0	45.4	551
2016	1,006	0.6	63.1	32.9	3.4	0.0	42.3	552
2017	1,046	0.1	63.3	35.9	0.8	0.0	46.4	555
Average (1985-2016)	1,137	0.5	46.7	49.1	3.6	0.0	45.6	578
5-yr Average (2012-2016)	1,145	0.5	50.3	45.7	3.5	0.0	47.0	556

Note: All values are unweighted. En-dashes indicate no data.

Table 31.–Age, female percentage, and mean length (mm) of summer chum salmon from the District 6 commercial fishery, 1985–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1985	461	1.3	77.0	19.7	2.0	0.0	70.1	574
1986	504	0.4	38.3	59.3	2.0	0.0	57.6	584
1987	259	4.2	51.4	34.7	9.7	0.0	53.8	585
1988	1,615	0.1	45.8	53.1	1.1	0.0	57.1	592
1989	544	0.7	64.7	34.0	0.6	0.0	42.9	603
1990	693	1.7	71.1	26.7	0.4	0.0	56.2	592
1991	887	13.2	74.6	12.1	0.0	0.0	38.4	579
1992	155	0.6	59.4	36.1	3.9	0.0	14.4	600
1993	48	6.3	77.1	12.5	4.2	0.0	58.2	569
1994	245	0.4	67.8	31.8	0.0	0.0	57.8	561
1995	132	0.0	50.0	49.2	0.8	0.0	51.2	580
1996	–	–	–	–	–	–	–	–
1997	10	0.0	0.0	100.0	0.0	0.0	50.0	615
1998	–	–	–	–	–	–	–	–
1999	–	–	–	–	–	–	–	–
2000	–	–	–	–	–	–	–	–
2001	–	–	–	–	–	–	–	–
2002	97	0.0	54.6	42.3	3.1	0.0	50.0	594
2003	296	0.0	70.3	26.0	3.7	0.0	55.0	588
2004	614	0.2	44.0	55.4	0.5	0.0	53.4	596
2005	618	0.0	95.6	4.4	0.0	0.0	48.3	590
2006	1,112	0.4	27.5	72.1	0.0	0.0	53.5	581
2007	1,062	0.7	67.2	30.0	2.1	0.0	54.3	577
2008	45	0.0	60.0	37.8	2.2	0.0	31.6	602
2009	679	3.7	70.5	24.4	1.2	0.1	59.2	567
2010	579	9.5	62.0	28.3	0.2	0.0	50.0	571
2011	366	1.1	47.5	51.4	0.0	0.0	37.6	589
2012	212	1.4	70.3	26.9	1.4	0.0	62.3	558
2013	407	0.0	58.5	41.3	0.2	0.0	58.2	559
2014	302	1.0	52.0	46.4	0.7	0.0	51.9	589
2015	130	0.0	33.8	64.6	1.5	0.0	53.1	586
2016	480[a]	–	–	–	–	–	–	–
2017	–	–	–	–	–	–	–	–
Average (1985-2016)	464	1.8	57.3	39.3	1.6	0.0	51.0	583
5-yr Average (2012-2016)	263	0.6	53.6	44.8	1.0	0.0	55.1	572

Note: All values are unweighted. En-dashes indicate no data.

[a] Sample size refers to the number of fish that were measured for length and where sex was identified.

Table 32.–Age, female percentage, and mean length (mm) of summer chum salmon from the East Fork Andreafsky River weir, 1985–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1985 [a]	537	2.0	72.1	25.7	0.2	0.0	58.1	540
1986	775	0.3	60.9	37.2	1.7	0.0	55.4	567
1987	362	0.8	28.7	66.6	3.9	0.0	58.6	572
1988	524	2.5	71.6	23.3	2.5	0.2	49.4	574
1989 [a]	48	0.0	33.3	64.6	2.1	0.0	16.7	581
1990 [a]	108	0.0	92.6	7.4	0.0	0.0	54.6	525
1991 [a]	62	0.0	51.6	48.4	0.0	0.0	58.1	530
1992 [a]	1	0.0	100.0	0.0	0.0	0.0	0.0	565
1993 [a]	179	1.1	64.8	33.0	1.1	0.0	49.2	540
1994	733	0.0	68.9	30.0	1.1	0.0	65.2	530
1995	833	0.7	44.8	52.1	2.4	0.0	48.9	542
1996	1,277	0.5	58.1	35.4	6.0	0.0	51.4	560
1997	1,403	0.0	27.6	66.6	5.8	0.0	56.8	554
1998	888	0.5	81.8	15.5	2.3	0.0	56.3	543
1999	839	1.2	26.9	69.2	2.6	0.0	56.4	563
2000	631	0.2	52.9	43.9	3.0	0.0	48.3	555
2001	102	0.0	19.6	78.4	2.0	0.0	52.0	570
2002	772	0.9	83.5	12.2	3.0	0.4	54.3	553
2003	1,119	0.6	75.2	23.3	0.8	0.0	49.5	545
2004	703	10.8	69.0	20.1	0.1	0.0	52.9	541
2005	658	0.0	94.1	5.8	0.2	0.0	41.8	570
2006	658	0.9	40.6	58.4	0.2	0.0	54.0	542
2007	805	1.4	70.6	22.1	6.0	0.0	44.2	538
2008	746	0.0	16.4	80.6	3.1	0.0	48.4	558
2009	716	8.4	35.1	40.1	16.1	0.4	41.5	556
2010	832	6.0	88.9	4.7	0.4	0.0	53.0	542
2011	944	0.4	39.1	60.2	0.3	0.0	44.8	555
2012	606	0.5	72.4	23.6	3.5	0.0	50.0	540
2013	616	0.0	29.4	70.0	0.6	0.0	51.6	542
2014	592	0.8	63.2	24.8	11.1	0.0	33.8	544
2015	946	1.5	36.9	61.2	0.4	0.0	37.1	553
2016	834	0.8	71.7	25.9	1.6	0.0	47.1	532
2017	1,668	0.2	56.8	41.3	1.6	0.1	41.9	552
Average (1985-1988, 1994-2016)	757	1.5	55.6	39.9	3.0	0.0	50.4	551
5-yr Average (2012-2016)	719	0.7	54.7	41.1	3.4	0.0	43.9	542

Note: All values are unweighted.

[a] Samples are from ancillary ASL collections.

Table 33.–Age, female percentage, and mean length (mm) of summer chum salmon from the Anvik River sonar, 1985–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1985	527	2.1	75.3	22.2	0.4	0.0	56.4	565
1986	486	0.4	30.5	67.7	1.4	0.0	57.8	574
1987	545	1.8	66.6	28.6	2.9	0.0	64.7	568
1988	533	0.8	77.3	21.4	0.6	0.0	66.0	572
1989	593	1.5	40.1	58.2	0.2	0.0	66.3	579
1990	-	-	-	-	-	-	-	–
1991	549	0.0	45.2	54.5	0.4	0.0	56.8	572
1992	277	0.0	37.2	60.6	2.2	0.0	44.0	559
1993	548	0.7	62.6	34.1	2.6	0.0	52.8	570
1994	560	0.0	37.0	61.8	1.3	0.0	56.8	560
1995	616	4.1	57.1	35.6	3.2	0.0	38.5	577
1996	615	0.5	55.4	42.3	1.8	0.0	59.6	573
1997	611	0.5	43.7	54.2	1.6	0.0	57.6	569
1998	494	0.0	78.1	20.4	1.4	0.0	59.5	563
1999	462	0.0	37.4	61.3	1.3	0.0	58.2	579
2000	376	0.8	74.7	22.9	1.6	0.0	61.9	548
2001	538	0.2	13.6	84.2	2.0	0.0	55.1	581
2002	470	1.9	76.2	20.0	1.9	0.0	59.7	565
2003	584	1.5	72.6	24.5	1.4	0.0	54.6	558
2004	559	3.2	41.5	54.7	0.5	0.0	54.0	569
2005	600	0.0	95.3	3.8	0.8	0.0	47.9	564
2006	482	1.2	40.0	58.7	0.0	0.0	52.5	563
2007	569	1.1	60.1	30.1	8.8	0.0	57.7	559
2008	533	1.7	44.7	49.7	3.9	0.0	54.7	569
2009	338	2.7	60.7	32.5	4.1	0.0	57.4	563
2010	572	8.9	83.2	7.9	0.0	0.0	58.8	550
2011	509	0.4	47.9	50.9	0.8	0.0	51.2	567
2012	422	0.7	65.9	29.9	3.6	0.0	56.6	560
2013	582	0.0	27.7	71.0	1.4	0.0	51.6	578
2014	152	0.0	42.8	49.3	7.9	0.0	55.7	576
2015	639	2.8	41.3	54.6	1.3	0.0	57.6	555
2016	675	1.5	73.2	23.9	1.5	0.0	62.8	550
2017	672	0.3	53.4	45.5	0.7	0.0	48.1	576
Average (1985-2016)	517	1.3	55.0	41.7	2.0	0.0	56.3	566
5-yr Average (2012-2016)	494	1.0	50.2	45.7	3.1	0.0	56.9	564

Note: All values are unweighted. En-dashes indicate no data.

Table 34.–Age, female percentage, and mean length (mm) of summer chum salmon from the Gisasa River weir, 1995–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
1995	632	0.9	72.9	25.3	0.8	0.0	46.5	558
1996	765	0.0	42.9	49.7	7.3	0.1	50.8	565
1997	184	0.0	7.1	78.3	14.7	0.0	49.1	579
1998	776	0.0	49.9	41.4	8.8	0.0	46.4	560
1999	739	0.1	44.1	53.9	1.9	0.0	51.6	560
2000	831	0.0	36.1	60.6	3.2	0.0	49.1	571
2001	583	0.2	21.3	73.1	5.5	0.0	50.2	563
2002	777	0.6	60.1	36.8	2.4	0.0	47.7	557
2003	703	0.6	70.1	27.9	1.4	0.0	44.9	577
2004	724	7.6	75.4	17.0	0.0	0.0	48.8	571
2005	619	0.0	98.2	1.8	0.0	0.0	46.2	563
2006	496	0.4	15.3	84.3	0.0	0.0	56.6	550
2007	580	2.6	55.3	35.7	6.4	0.0	58.6	555
2008	659	0.3	28.1	64.5	7.1	0.0	48.5	561
2009	619	3.1	62.2	32.8	1.9	0.0	55.2	561
2010	950	13.6	63.9	21.2	1.4	0.0	55.8	550
2011	846	1.2	50.6	48.1	0.1	0.0	52.2	560
2012	687	0.1	76.3	21.1	2.5	0.0	50.2	549
2013	711	0.0	46.0	53.2	0.8	0.0	57.9	555
2014	249	1.6	47.8	47.0	3.6	0.0	50.5	562
2015	1,110	2.3	32.4	64.6	0.7	0.0	54.6	551
2016	964	0.9	57.2	38.9	3.0	0.0	54.4	549
2017	1,049	0.5	50.6	47.8	1.1	0.0	58.9	556
Average (1995-2016)	691	1.6	50.6	44.4	3.3	0.0	51.2	560
5-yr Average (2012-2016)	744	1.0	51.9	45.0	2.1	0.0	53.5	553

Note: All values are unweighted.

Table 35.–Age, female percentage, and mean length (mm) of summer chum salmon from the Henshaw Creek weir, 2000–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
2000	517	0.8	58.0	41.0	0.2	0.0	64.4	548
2001	626	0.2	33.9	63.6	2.4	0.0	65.8	560
2002	693	0.1	15.7	80.1	4.0	0.0	60.6	571
2003	696	1.1	85.9	8.5	4.5	0.0	51.9	555
2004	772	7.4	85.5	7.1	0.0	0.0	54.5	551
2005	693	0.0	97.3	2.7	0.0	0.0	43.1	560
2006	–	–	–	–	–	–	–	–
2007	540	1.9	59.3	36.5	2.4	0.0	45.4	550
2008	646	4.0	72.4	19.2	4.3	0.0	48.1	550
2009	483	4.1	77.2	18.6	0.0	0.0	58.0	554
2010	562	10.3	67.6	21.9	0.2	0.0	52.7	549
2011	580	2.8	46.0	51.2	0.0	0.0	61.6	552
2012	478	0.8	85.6	12.1	1.5	0.0	54.2	550
2013	477	0.0	71.1	28.7	0.2	0.0	61.6	541
2014	–	–	–	–	–	–	–	–
2015	805	3.2	31.8	63.9	1.1	0.0	58.5	558
2016	668	0.3	69.5	29.0	1.2	0.0	57.2	550
2017	702	0.0	59.4	39.0	1.6	0.0	64.0	550
Average (2000-2016)	616	2.5	63.8	32.3	1.5	0.0	55.8	553
5-yr Average (2012-2016)	607	1.1	64.5	33.4	1.0	0.0	57.9	550

Note: All values are unweighted. En-dashes indicate no data.

Table 36.–Age, female percentage, and mean length (mm) of summer chum salmon from the Salcha River tower, 2011–2017.

		Percent by age class						
	Sample	Age-3	Age-4	Age-5	Age-6	Age-7	Percent	Mean
Year	size	0.2	0.3	0.4	0.5	0.6	female	length
2011	150	0.6	31.0	62.7	5.7	0.0	32.0	575
2012	158	1.3	64.2	29.6	5.0	0.0	50.6	549
2013	159	0.0	44.4	48.8	6.3	0.6	65.4	555
2014	160	0.0	26.3	68.8	5.0	0.0	48.1	571
2015	160	5.7	44.7	42.8	6.9	0.0	62.5	574
2016	159	0.6	32.1	61.0	6.3	0.0	50.9	567
2017	–	–	–	–	–	–	–	–
Average (2000-2016)	158	1.4	40.5	52.3	5.9	0.1	51.6	565
5-yr Average (2012-2016)	159	1.5	42.3	50.2	5.9	0.1	55.5	563

Note: Averages were not weighted by number of fish sampled each year. Sample size is the number of fish that were successfully aged.

Table 37.–First and last year sampled, and total number of years for which age, sex, length data was collected for Chinook salmon and archived within the Arctic Yukon Kuskokwim Database Management System.

Project name	First year sampled	Last year sampled	Years of data
Commercial			
Y1 District	1961	2015	51
Y2 District	1961	2012	33
Y3 District	1983	2006	4
Y4 District	1971	2003	27
Y5 District	1966	2007	33
Y5 District	2010	2010	1
Y6 District	1964	2009	32
Subsistence			
Yukon River Subsistence	1960	2017	39
Rapids Research Center	2012	2012	1
Sport			
Anvik River Ancillary ASL	2010	2010	1
Test Fishing			
Dall Point	2009	2011	3
Dogfish Village (Community)	1968	2004	3
Eagle (Sonar)	2005	2017	13
Fish Village (Community)	1982	1983	2
Hooper Bay (Community)	2002	2002	1
Stink Creek	1982	1985	4
Kaltag (Community)	2002	2002	1
Lower Yukon Test Fishing	1965	2017	52
Marshall (Community)	1999	2008	8
Mountain Village (Community)	2010	2012	3
Ohogamiut (Community)	1968	1971	3
Paimiut (Community)	1968	1970	2
Pilot Station Sonar	1991	2017	25
Rapids Research Center	2011	2013	3
Ruby (Community)	1983	1986	3
Tanana River	1991	1993	3
Escapement			
Andreafsky River (East Fork) Ancillary ASL	1980	2011	17
Andreafsky River (East Fork) Escapement	1984	2017	29
Andreafsky River (East Fork) Escapement	1983	2009	3
Andreafsky River (West Fork) Ancillary ASL	1967	1995	16
Anvik River Ancillary ASL	1967	2012	36
Anvik River Escapement	1982	2017	18
Barton Creek Ancillary ASL	1990	1990	1
Beaver Creek Ancillary ASL	2000	2000	1
Beaver Creek Escapement	2001	2001	1
Chandalar River Ancillary ASL	1987	1987	1
Chatanika River Ancillary ASL	1991	2002	9
Chena River Ancillary ASL	1975	2017	39

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Project name	First year sampled	Last year sampled	Years of data
Escapement			
Chena River Escapement	1990	1990	1
Chulinak River Ancillary ASL	1989	1989	1
Clear Creek Hatchery Escapement	1985	1987	3
Coleen River Escapement	2017	2017	1
Gisasa River Ancillary ASL	1982	1988	3
Gisasa River Escapement	1989	2017	24
Goodpaster River Ancillary ASL	1990	2007	5
Henshaw Creek Ancillary ASL	1987	1987	1
Henshaw Creek Escapement	2000	2017	16
Jim River Ancillary ASL	1986	1987	2
Kateel River Escapement	2002	2002	1
Koyukuk River Ancillary ASL	1986	1988	3
Koyukuk River Escapement	1996	1997	2
Nulato River Ancillary ASL	1980	2012	8
Nulato River Escapement	1994	1999	4
Salcha River Ancillary ASL	1966	2017	49
Sheenjek River Escapement	2006	2006	1
Stevens Village Ancillary ASL	1970	1970	1
Tanana River Ancillary ASL	2004	2004	1
Tanana River Escapement	2014	2014	1
Teedraanjik River (Salmon Fork of Black River)	2017	2017	1
Tozitna River Ancillary ASL	2001	2001	1
Tozitna River Escapement	1989	2009	9
Telemetry			
Russian Mission Mark/Recapture	2000	2004	5
Pitkas Point Acoustic Tagging	2011	2012	2

Note: Data collection methods; i.e., protocols followed to measure length, identify sex, and collect and analyze age data, have changed through time at most projects and caution should be used when comparing ASL data between years and projects.

Table 38.–First and last year sampled, and total number of years for which age, sex, length data was collected for summer chum salmon and archived within the Arctic Yukon Kuskokwim Database Management System.

Project name	First year sampled	Last year sampled	Years of data
Commercial Catch			
Y1 District	1964	2017	52
Y2 District	1973	2011	25
Y3 District	1996	2006	2
Y4 District	1974	2014	32
Y5 District	1970	2006	8
Y6 District	1970	2016	39
Kaltag River	1996	1996	1
Subsistence			
Yukon River Subsistence	1964	2010	34
Test Fishing			
Alakanuk (Community)	1967	1967	1
Anvik River	1990	1990	1
Dall Point	2009	2012	4
Dogfish Village (Community)	1968	1968	1
Hooper Bay (Community)	2002	2002	1
Innoko River	1987	1987	1
Stink Creek	1981	1985	5
Kaltag (Community)	2002	2008	7
Ohogamiut (Community)	1968	1971	3
Paimiut (Community	1968	1970	2
Pilot Station (Sonar)	1986	2016	28
Lower Yukon	1964	2017	53
Ruby (Community)	1984	1984	1
Tanana River	1984	1991	3
Escapement			
Andreafsky River (East Fork) Ancillary ASL	1967	1993	10
Andreafsky River (East Fork) Escapement	1982	2017	30
Andreafsky River (West Fork) Ancillary ASL	1967	1993	8
Anvik River Ancillary ASL	1967	1993	14
Anvik River Escapement	1982	2017	35
Chatanika River Ancillary ASL	1987	1987	1
Chena River Ancillary ASL	1974	1997	6
Chulinak River Ancillary ASL	1989	1989	1
Clear Creek Escapement	2004	2005	2
Clear Creek Hatchery Escapement	1995	2003	7
Gisasa River Ancillary ASL	1982	1988	3
Gisasa River Escapement	1989	2017	24
Henshaw Creek Escapement	2000	2017	16
Kaltag River Escapement	1995	1995	1
Kateel River Escapement	2002	2002	1
Koyukuk River Escapement	1996	1996	1
Melozitna River Ancillary ASL	1981	1981	1

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Project name	First year sampled	Last year sampled	Years of data
Escapement			
Melozitna River Escapement	1982	1989	2
Nulato River Ancillary ASL	1987	1998	3
Nulato River Escapement	1994	2003	8
Rodo River Ancillary ASL	1989	1989	1
Salcha River Ancillary ASL	1974	2016	14
Tozitna River Ancillary ASL	2001	2001	1
Tozitna River Escapement	1989	2009	9
Telemetry			
Russian Mission Mark/Recapture	2004	2004	1

Note: Data collection methods; i.e., protocols followed to measure length, identify sex, and collect and analyze age data, have changed through time at most projects and caution should be used when comparing ASL data between years and projects.

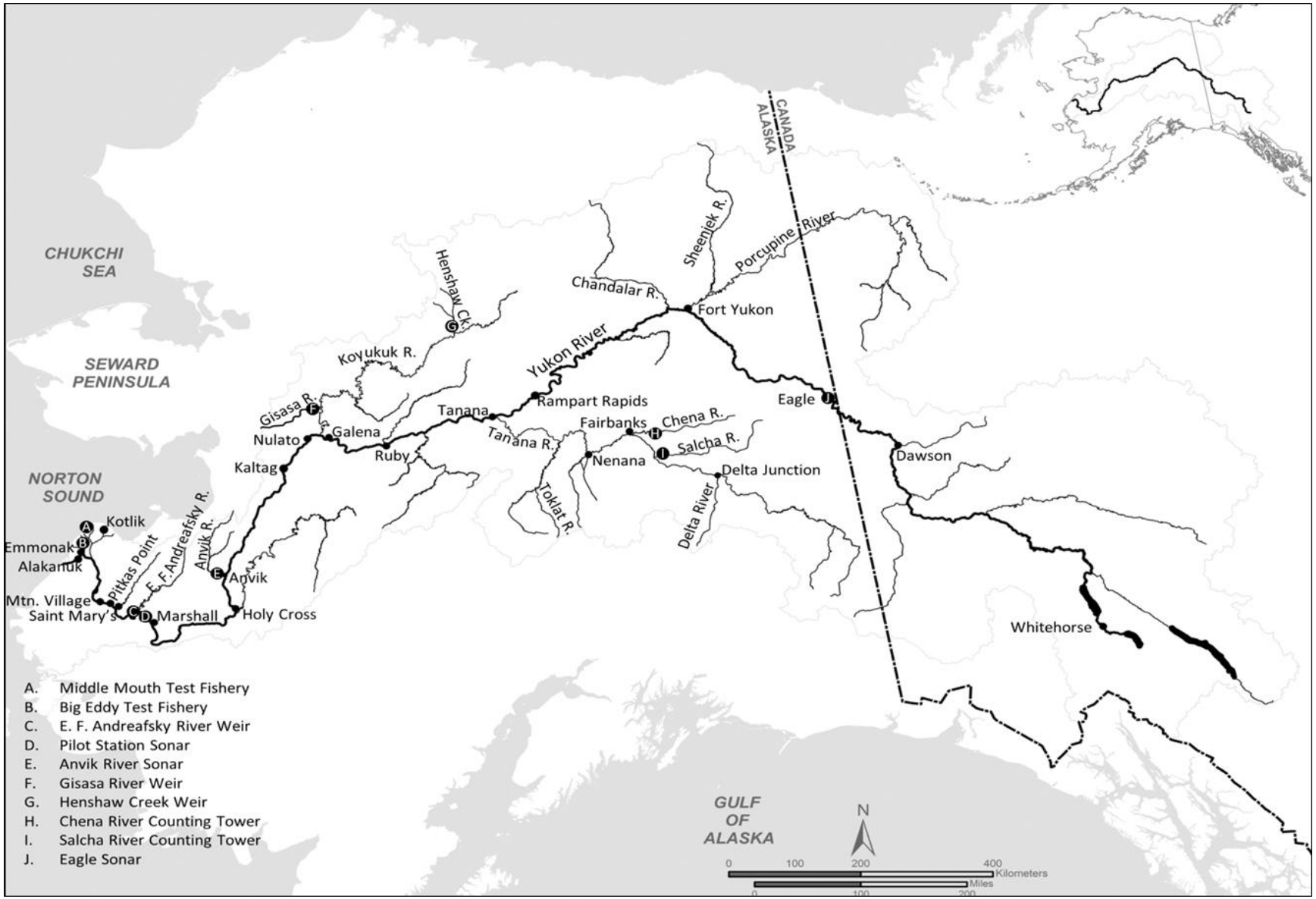

Figure 1.–Map of the Yukon Area showing the locations of major towns and summer season salmon monitoring and assessment projects.

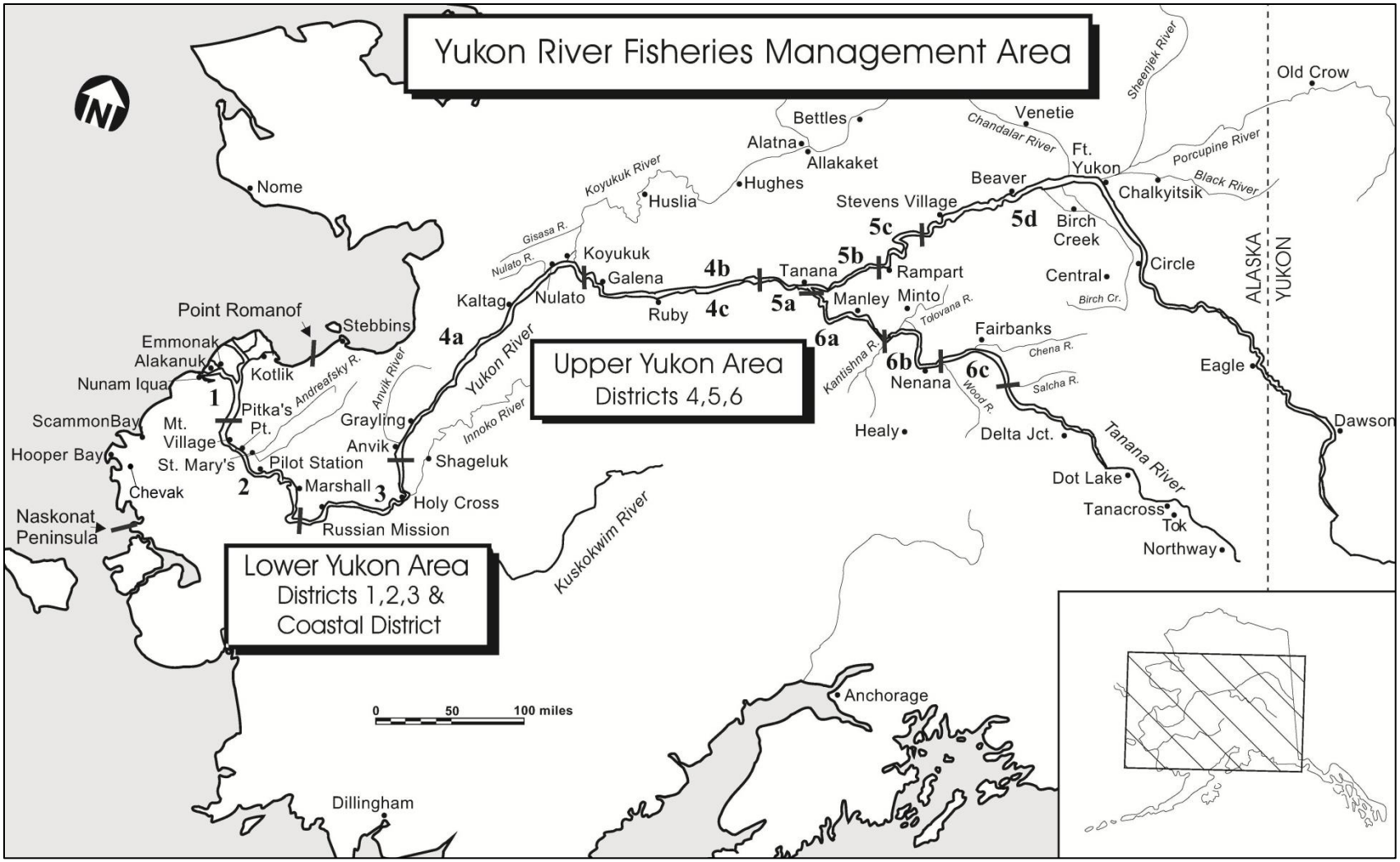

Figure 2.–Map of the Yukon Area showing the fishery management districts and subdistricts.