

**Kodiak Management Area Salmon Escapement and
Catch Sampling Results, 2019**

by

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December 2019

Alaska Department of Fish and Game

Divisions of Commercial Fisheries



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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

<i>all standard mathematical signs, symbols and abbreviations</i>	
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 ₀
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	Var
population	Var
sample	var

REGIONAL INFORMATION REPORT 4K19-14

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SAMPLING RESULTS, 2019**

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December 2019

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This document should be cited as follows:

Wattum, M. L. 2019. Kodiak Management Area salmon escapement and catch sampling results, 2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K19-14, Anchorage.

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ABSTRACT

Approximately 2.2 million salmon were enumerated through Alaska Department of Fish and Game (ADF&G) salmon counting weirs in the Kodiak Management Area (KMA) during 2019. Of these fish, over 1.2 million were sockeye salmon *Oncorhynchus nerka*, which are the focus of sampling efforts. Approximately 8,500 adult sockeye salmon that were sampled for age, sex, and length (ASL) on major river systems in the KMA had scales with identifiable ages; these data were used to represent escapement age compositions. The predominant age classes in the escapement were age-2.2 (39.6%), -1.2 (16.2%), -2.3 (14.6%), and -1.3 (12.3%) fish, but primary age classes varied by system.

Commercially-caught sockeye salmon were sampled by ADF&G for age estimation from several areas throughout the KMA. Approximately 8,000 scales had identifiable ages and were used to represent a combined commercial harvest of approximately 1.5 million sockeye salmon from sampled areas. ASL samples collected from the 2019 commercial catch revealed an age structure composed predominantly of age-1.3 (37.9%), -2.2 (24.3%), and -2.3 (17.9%) sockeye salmon; however, primary age classes varied by section and district.

Sockeye salmon brood tables were updated for the Ayakulik, Frazer, Karluk, and Upper Station systems; 10-year average return-per-spawner estimates ranged from 1.5 for the Upper Station late run to 2.9 for the Frazer run. The examination of historical trends in sockeye salmon age compositions shows continued variability within and among systems.

Key words: Kodiak, escapement, sockeye salmon, commercial harvest, age, historical trends

INTRODUCTION

The Kodiak Management Area (KMA) encompasses western Gulf of Alaska waters surrounding the entire Kodiak Archipelago in addition to the waters along the portion of the Alaska Peninsula from Cape Douglas to Kilokak Rocks (Figure 1). There are over 900 anadromous salmon systems identified in the KMA (Johnson and Daigneault 2013). All combined, these systems support 5 commercially important salmon species: Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta* salmon. An estimated 61 of these systems support sockeye salmon runs (Anderson et al. 2019).

Weirs operated by the Alaska Department of Fish and Game (ADF&G) are vital for salmon enumeration into many KMA streams and provide the basis for inseason management actions regulating the commercial, sport, and subsistence fisheries in the area (Figure 2). Additional streams are monitored by aerial and foot surveys to index pink, chum, coho, and the remaining sockeye salmon escapements.

The KMA is composed of 7 commercial salmon fishing districts and 56 sections (Figures 1, 3–6). Directed commercial fisheries occur for sockeye, pink, chum, and coho salmon; Chinook salmon are not targeted. Specific details of the KMA salmon fishery for the 2019 season can be found in the *Kodiak Management Area Commercial Salmon Fishery Annual Management Report* (Anderson et al. 2019). To open and close fisheries inseason, managers use qualitative analyses of run timing, catch-per-unit-effort statistics, species composition estimates, regulatory management plans, aerial survey estimates, test fishery results, and weir escapement counts (Fuerst et al. 2019). The targeted escapement goals for KMA salmon are found in Schaberg et al. (2016).

The ADF&G Division of Commercial Fisheries initiated an expanded catch and escapement sampling program in the KMA in 1985 focusing on sockeye salmon. The purpose of this program was to collect representative age, sex, and length (ASL) data from major sockeye salmon systems as well as representative age data from selected commercial sockeye salmon harvests. These data continue to expand the KMA salmon baseline ASL database. Samples are used to reconstruct sockeye salmon runs, employ age marker analyses, conduct scale pattern analyses, and examine historical harvest proportions to estimate specific stock contributions to commercial fisheries in

the KMA (Baer and Honnold 2002; Barrett and Nelson 1995; Foster 2006–2011; Moore 2012–2014; Nelson 1999; Nelson and Barrett 1994; Nelson and Swanton 1996, 1997; Sagalkin 1999; Swanton 1992; Wattum 2015–2019; Witteveen et al. 2005). Accordingly, these samples provide the foundation for pre-season run forecasting and escapement goal evaluation.

Data published in this report supersede any data previously published.

OBJECTIVES

This report presents the results of the 2019 KMA salmon sampling programs. Although there is some interpretation and discussion of these data, this report does not provide a rigorous analysis, but rather aims to cover the following objectives:

1. Report the escapements by system and species in 2019 (sockeye salmon returning to systems with weirs).
2. Provide ASL summaries from sockeye salmon sampled from both the escapement and commercial harvest. Historical trends and productivity (return-per-spawner) for select salmon stocks will be described.
3. Reconstruct the 2019 run size for select sockeye salmon stocks in the KMA.

METHODS

ABUNDANCE ESTIMATES

Escapement

Salmon escapement was estimated by ADF&G using weirs at 8 river systems in the KMA. The following 7 systems are included in this report: Afognak (Litnik), Ayakulik (Red Lake), Frazer (Dog Salmon Creek), Karluk, Pasagshak, Saltery, and Upper Station (South Olga lakes; Table 1). The Division of Sport Fish operated weirs within the Buskin River system, but this system falls outside the scope of this report.

Escapements at weirs were enumerated by field technicians and biologists using hand-held tally denominators as fish migrated upstream. Gates were closed to allow fish buildup and were intermittently opened to allow salmon enumeration and passage. Full descriptions of most weirs are reported in the Kodiak Management Weir Descriptions and Salmon Escapement Report (Fuerst 2019) and general operating procedures are found in the *Kodiak Commercial Fisheries Salmon Management Field Camp and Weir Operational Plan, 2017–2019* (Fuerst 2017). Additionally, some projects have specific operational plans (Afognak, Ruhl 2017a; Frazer, Ruhl 2017b; Pasagshak, Witteveen 2016; Saltery, Ruhl 2017c). Escapement estimates by system included weir counts plus estimates of escapement added to the total weir counts when high water events washed out weirs or before or after weir removal. Escapements were estimated by aerial or foot surveys when not directly counted through a weir.

Commercial Harvest

KMA salmon catch numbers for the 2019 season were obtained from summary reports of individual harvest receipts (fish tickets). The fish ticket and escapement databases were edited by Kodiak area salmon management biologists prior to summary reports being generated in December 2019.

AGE, SEX, AND LENGTH SAMPLING

ASL data were collected from both the escapement and the commercial catch. When possible, all scales were collected from the preferred area of each fish following procedures outlined by the International North Pacific Fisheries Commission (INPFC 1963). Scales were mounted on scale “gum” cards and impressions were made on cellulose acetate (Clutter and Whitesel 1956). Fish ages were assigned by examining scale impressions for annual growth increments using a microfiche reader fitted with a 60X lens following designation criteria established by Mosher (1968). Ages were recorded directly into a database via the Kodiak intranet salmon aging utility and are displayed in this report using European notation (Koo 1962), in which a decimal separates the number of winters spent in fresh water (after emergence) from the number of winters spent in salt water. The total age of the fish includes an additional year that does not show up on scale as an annual growth increment and is not recorded using this notation, which represents the time between egg deposition and emergence of fry. Length measurements were taken from mid eye to tail fork in millimeters, and sex was determined from external morphological characteristics. Data were typically recorded in field notebooks and then digitized using tablets or netbook computers (Wattum and Foster 2017). The ASL data summaries were computed for each escapement sample. Age and sex composition were estimated daily by interpolating between sampling events, then summarized by statistical (sampling) week. When sampling goals were not achieved, the escapement age composition estimate was limited to the statistical week in which the sample was taken. Length composition data were summarized by age and sex. Descriptions of component programs used to compute ASL composition summaries can be found in database end user documentation (Neil Moomey, ADF&G Kodiak, unpublished Division of Commercial Fisheries database documentation, 2019).

Escapement

Sockeye salmon escapements were sampled weekly for ASL data at the Afognak (ADF&G stream number 252-34-342), Ayakulik (ADF&G stream number 256-15-201), Frazer (ADF&G stream number 257-40-403), Karluk (ADF&G stream number 255-10-101), Pasagshak (ADF&G stream number 259-43-411), Saltery (ADF&G stream number 259-41-415), and Upper Station (ADF&G stream number 257-30-304) weirs (Figure 2; Wattum and Foster 2017). Frazer Lake salmon were initially enumerated at the Dog Salmon weir (near saltwater) to obtain timely counts and then counted again as they ascend the fish pass into Frazer Lake. Statistical weeks and dates are presented in Table 2. Fish were generally collected using a live-box trap attached to the upstream side of the weir. During August and September, Karluk River samples were sometimes collected with a beach seine in the lagoon when scale samples collected at the weir indicated heavy reabsorption or if fish movement was sporadic. Reabsorption occurs when spawning adults stop feeding and absorb protein from their bodies, leaving only the center of their scales (Clutter and Whitesel 1956). Escapement sampling methods can be found in Wattum and Foster (2017).

Commercial Harvest

Catch samples were collected weekly when possible in Kodiak and Larsen Bay (Figures 2–6) for age data from fish harvested in several geographical areas throughout the KMA (Table 3). Catch sampling methods can be found in Wattum and Foster (2017).

Total catch-at-age by area and day were estimated by multiplying the daily age composition of a particular sample by the daily catch from the corresponding catch area. Age composition of the catch from days not sampled was estimated using linear interpolation between sampling events.

SOCKEYE SALMON RUN RECONSTRUCTION ESTIMATES

Ayakulik River (Red Lake)

The majority of sockeye salmon bound for Ayakulik are assumed to be harvested within the Southwest Kodiak District (Figures 1 and 6). Historically, the Ayakulik run reconstruction was accomplished by combining the Ayakulik River weir sockeye salmon escapement, 90% of the total Inner and Outer Ayakulik sections sockeye salmon catch, and 33% of the Halibut Bay Section sockeye salmon catch for the period from 21 June through 1 August by age class (Witteveen et al. 2005). In 2019, due to the age composition (using specific age marker analysis) and timing of the catch samples, 75% of the Ayakulik-Halibut Bay sections harvest were used to estimate the commercial catch attributable to the 2019 Ayakulik sockeye salmon run. In the Karluk and Sturgeon sections of the Southwest Kodiak District, 15% of the fish caught were attributable to the Ayakulik sockeye salmon run through 29 August. Estimates by age class were assigned to the parent year (brood year) escapement and return-per-spawner (R/S) estimates were calculated by dividing annual returns by respective parent year escapements. Although the Ayakulik sockeye salmon run reconstruction and brood tables were not separated into early- and late-run components, historically (prior to 1989) the run was treated as such. In addition, separate early- and late-run goals for Ayakulik sockeye salmon were reinstated in 2011 (Nemeth et al. 2010). Thus, the 2019 Ayakulik age and sex composition tables contained in this report are separated into early and late components for comparative purposes; however, separate early- and late-run brood tables have not yet been developed. Although Ayakulik early- and late-run sockeye salmon are genetically distinct, the 2 runs are not as temporally distinct as that observed at Karluk and Upper Station. Therefore the early- and late-run separation date of 15 July is fairly arbitrary but was chosen for consistency with the other early- and late-run Kodiak sockeye salmon systems.

Frazer Lake (Dog Salmon)

Run timing of Frazer Lake (Dog Salmon Creek) sockeye salmon coincides with both the early and late runs to Upper Station (Sagalkin 1999); therefore, run reconstructions are done concurrently. The majority of sockeye salmon bound for Frazer Lake are assumed to be harvested in the Alitak District. Based on previous studies (Swanton 1992; Tyler et al. 1986), typically 80% of the catch in the Cape Alitak and Humpy-Deadman sections and 95% of the catch in the Alitak Bay, Moser Bay, and Olga Bay sections is assumed to be of either Frazer Lake or Upper Station origin (Witteveen et al. 2005). To account for the harvest of outside stocks in these areas, a blanket adjustment across all age classes was made. The Frazer Lake catch estimate was calculated by initially estimating the percentage of each stock (Frazer and Upper Station) in the water that would be available for harvest using escapement counts from Dog Salmon and Upper Station weirs (lagged for travel time) and applying a weekly average proportion to the harvest in the Cape Alitak, Humpy-Deadman, Alitak Bay, Moser Bay, and Olga Bay sections' harvest. The differences between Frazer and Upper Station travel time between gillnet harvest and escapement were accounted for in the analysis (Foster 2003). The Frazer and Upper Station age composition estimates, determined from scale samples collected weekly from the escapement and the harvest, were also used to apportion harvest between the Frazer and Upper Station runs. In 2019, fishing occurred in the Dog Salmon Flats Section. Harvest from Dog Salmon Flats section was sampled

for age composition. Harvest in this section was attributed mostly to Frazer (95%), and to a lesser extent Upper Station (5%). To account for the harvest of outside stocks in this area, a blanket adjustment across all age classes was then made. The catch estimate for Frazer Lake, by age class, was added to escapement counted at Frazer. Total run estimates by age class were assigned to the parent year (brood year) escapement, and R/S estimates were calculated by dividing annual returns by respective parent year escapements.

Frazer Lake sockeye salmon are initially enumerated at the Dog Salmon weir (but not sampled) and then counted again (and sampled for ASL) as they ascend the fish pass into Frazer Lake. Typically, the age composition of the escapement is determined by applying the jack age composition at Frazer to the number of jacks counted at Dog Salmon weir, and the age composition of the larger fish (nonjacks) at Frazer to the count of large fish from Dog Salmon weir. In 2019, because more fish were counted at Frazer fish pass than at Dog Salmon weir, the escapement at Frazer fish pass was used as the best estimate of escapement. The age composition of the escapement was determined by applying the jack age composition at Frazer to the number of jacks counted at Frazer fish pass, and the age composition of the larger fish (nonjacks) at Frazer to the count of large fish from Frazer fish pass.

Karluk Lake

Early Run

The majority of Karluk sockeye salmon are assumed to be harvested within the Northwest and Southwest Kodiak districts (Figures 1, 3, 4 and 6; Barrett and Nelson 1995). A natural age marker (freshwater-age-3) was used to estimate the number by age class of sockeye salmon bound for Karluk Lake that were harvested in the westside Kodiak commercial fishery (Witteveen et al. 2005). Karluk early- and late-run sockeye salmon are temporally and genetically distinct. The early run typically returns in June and early July. Catch through 15 July and escapement through 21 July has historically been considered the early run; the 6-day difference accounts for the considerable lag time between harvest and escapement at Karluk weir (Barrett and Nelson 1995).

The number of Karluk Lake-bound sockeye salmon harvested in the Central, Outer Karluk, Inner Karluk, Sturgeon, Halibut Bay, Outer Ayakulik, and Inner Ayakulik sections through 15 July was estimated following the methods described in Barrett and Nelson (1995). The total Karluk Lake early-run estimate was calculated by summing the escapement (through 21 July) and assigned catch numbers by age class. Estimates by age class were assigned to the parent year (brood year) escapement, and R/S estimates were calculated by dividing annual returns by respective parent year escapements.

Late Run

Karluk Lake late-run sockeye salmon typically escape in August and September. Catches after 15 July and escapements after 21 July have historically been considered the late run.

The number of Karluk Lake-bound sockeye salmon harvested in the Central, Outer Karluk, Inner Karluk, Sturgeon, Halibut Bay, Outer Ayakulik, and Inner Ayakulik sections after 15 July were estimated following the methods described in Barrett and Nelson (1995). The total Karluk late-run estimate was determined by summing the escapement (after 21 July) and assigned catch numbers by age class. Estimates by age class were assigned to the parent year (brood year) escapement, and R/S estimates were calculated by dividing annual returns by respective parent-year escapements.

Upper Station (South Olga Lakes)

Early Run

Upper Station (South Olga Lakes) has a temporally and genetically distinct early- and late-run sockeye salmon component that was estimated separately in 2019. The early run typically escapes in June and early July. Catch and escapement through 15 July has historically been considered the early run.

Upper Station early-run sockeye salmon are generally harvested along with the Frazer Lake run in the Alitak District during June and early July. The early-run catch estimate was based on an average weekly proportion of Frazer/Upper Station escapement differences as described above for the Frazer Lake run reconstruction through 15 July. Total run estimates by age class were assigned to the parent year (brood year) escapement, and R/S estimates were calculated by dividing annual returns by respective parent year escapements.

Late Run

Upper Station late-run sockeye salmon typically escape in August and September. Catch and escapement after 15 July has historically been considered the late run.

The number of Upper Station late-run sockeye salmon harvested in the Alitak District after 15 July were estimated in an identical fashion as the early run. The total Upper Station late-run estimate was determined by summing escapement counts from the Upper Station weir and assigned catch numbers after 15 July relative to age class. Estimates by age class were assigned to the parent year (brood year) escapement, and R/S estimates were calculated by dividing annual returns by respective parent year escapements.

BROOD TABLES AND HISTORICAL TRENDS

All run reconstruction estimates were used to update their respective brood tables. Reliable and consistent run reconstruction data for Karluk Lake only date back to 1985; however, smaller more defined harvest areas for Ayakulik, Frazer Lake, and Upper Station salmon provide reliable data back to the early 1970s. Total run estimates and annual trends in freshwater and saltwater ages of sockeye salmon, by run year, were graphed for visual interpretation (Figures 7–14).

RESULTS

ABUNDANCE ESTIMATES AND ASL DATA

Escapement

Escapement estimates from the 8 weirs in the KMA are found in Tables 4 and 5. Salmon counted at the Frazer fish pass initially travel through Dog Salmon weir. Typically, there are a varying number of fish that pass Dog Salmon weir but fail to ascend the Frazer fish pass. Due to early removal of Dog Salmon weir and Frazer fish pass closure timing, more sockeye salmon were estimated through the Frazer fish pass than at Dog Salmon weir in 2019. Sockeye salmon that fail to ascend Frazer fish pass may not spawn; therefore, the Frazer fish pass count is considered the best escapement estimate.

A total of 8,508 escapement scale samples were ageable and used to represent a combined escapement of 1,225,015 sockeye salmon (Table 6). To simplify reporting hereafter, all estimates of age composition will be rounded to the nearest percent. Primary age classes varied by system

and area, but overall age-2.2 (40%), -1.2 (16%), -2.3 (15%), and -1.3 (12%) sockeye salmon were most abundant. Individual age, length, and sex composition summaries by escapement area are presented in Tables 7 through 36.

Age-1.2 (49%) and -1.3 (35%) sockeye salmon predominated Afognak Lake escapement (Table 7). Escapement to Ayakulik River was composed of age-1.3 (45%), -1.2 (23%) and -2.2 (14%) sockeye salmon in the early run (Table 10) and by age-2.2 (36%), -1.3 (29%), and -1.2 (21%) sockeye salmon in the late run (Table 13). Frazer Lake escapement was predominated by age-2.2 (33%), -1.1 (26%), and -1.2 (17%) sockeye salmon (Table 15). Escapement at Karluk Lake was predominated by age-2.3 (39%), -2.2 (35%), and -2.1 (12%) sockeye salmon in the early run (Table 18) and by age-2.2 (58%), -2.3 (16%), and -3.2 (9%) sockeye salmon in the late run (Table 21). Pasagshak River sockeye salmon were composed primarily of age-0.3 (48%), -1.2 (27%), and -1.3 (21%) fish (Table 23). Saltery Lake escapement was predominated by age-1.2 (52%) and -1.3 (28%) sockeye salmon (Table 26). Escapement at Upper Station was predominantly age-1.2 (32%), -1.1 (23%), -2.2 (22%), and -1.3 (14%) sockeye salmon in the early run (Table 29) and age-2.2 (61%), -1.2 (17%), and -1.1 (5%) sockeye salmon in the late run (Table 32).

In 2019, for all ages combined, the average length of sockeye salmon was largest at Pasagshak (529 mm; Table 24), and smallest at Frazer (440 mm; Table 16). For age-2.2 sockeye salmon, average length was largest in the Ayakulik late run (510 mm; Tables 14 and 34) and smallest at Afognak (437 mm; Tables 8 and 34). Age-2.3 sockeye salmon were largest in the Ayakulik late run (540 mm; Tables 14 and 35) and smallest at Afognak (509 mm; Tables 8 and 35). Sex percentages of sockeye salmon escapement samples ranged from 23% female in the Frazer run (Table 17) to 51% female for the Ayakulik early run (Table 12). Length and sex data were unavailable from Upper Station at the time of publication.

Commercial Harvest

During the 2019 season, samples from commercially harvested sockeye salmon (7,969 ageable scales) were used to represent the commercial catch from areas throughout the KMA (Table 36). These samples were used to represent a combined catch of 1,511,780 sockeye salmon. The overall sockeye salmon catch was predominantly composed of age-1.3 (38%), -2.2 (24%), and -2.3 (18%) fish; however, primary age classes varied by section and district. Individual age composition summaries by catch area are presented in Tables 37 through 42.

The commercial sockeye salmon catch from Uganik Bay, Viekoda Bay, and Kupreanof Strait was composed predominately of age-1.3 (39%), -2.3 (20%), -2.2 (19%), and -1.2 (15%) fish (Table 37). Commercial sockeye salmon catch in Uyak Bay was predominantly composed of age-1.3 (35%), -2.2 (29%), and -2.3 (17%) fish (Table 38). The Karluk and Sturgeon sections' sockeye salmon catch was composed primarily of age-1.3 (45%), -2.3 (20%), and -2.2 (19%) fish (Table 39). The Ayakulik and Halibut Bay sections' commercial sockeye salmon catch was composed predominately of age-1.3 (49%), -2.2 (19%), -1.2 (14%) fish (Table 40). The inside gillnet areas of Alitak Bay, Moser Bay, and Olga Bay sections (not including the Dog Salmon Flats Section) had catch samples that were predominantly composed of age-2.3 (37%), -2.2 (34%), and -1.3 (13%) sockeye salmon (Table 41). The sockeye salmon catch from the Dog Salmon Flats Section was composed predominately of age-2.2 (52%), -1.2 (19%), and -2.3 (17%) fish (Table 42).

SOCKEYE SALMON RUN RECONSTRUCTION ESTIMATES

Ayakulik River (Red Lake)

The total run of sockeye salmon to the Ayakulik River in 2019 was estimated at 579,850 fish, with age-1.3 (44%), -2.2 (21%), and -1.2 (18%) fish accounting for the majority of the run (Table 43). The 2019 estimated run was greater than the 2018 run estimate of 444,310 fish, and above the recent 10-year average (2009–2018) of 502,390 fish (Figure 7). The 2003–2012 Ayakulik sockeye salmon escapements have produced an estimated average total return of 473,900 fish (range: 233,520–992,538) with an average R/S estimate of 2.2 (Table 44).

Frazer Lake (Dog Salmon Creek)

The 2019 Frazer Lake sockeye salmon total run estimate of 416,606 fish was predominantly composed of age-2.2 (38%), -2.3 (20%), -1.2 (16%), and -1.1 (15%) fish (Table 45). The 2019 run was greater than the 2018 estimated run of 321,831 fish, and above the recent 10-year average (2009–2018) of 330,217 fish (Figure 8). The 2003–2012 Frazer Lake sockeye salmon escapements have produced an estimated average total return of 332,926 fish (range: 54,044–557,803) with an average R/S estimate of 2.9 (Table 46).

Karluk Lake

Early Run

The 2019 Karluk Lake sockeye salmon total early-run estimate of 242,761 was predominantly composed of age-2.3 (40%), -2.2 (36%), and -2.1 (9%) fish (Table 47). The estimated early run was less than the 2018 run estimate of 247,528 fish, and was below the recent 10-year average (2009–2018) of 263,463 fish (Figure 9). The 2003–2012 Karluk early-run sockeye salmon escapements produced an estimated average total return of 240,150 fish (range: 54,010–414,946) and an average R/S estimate of 2.3 (Table 48).

Late Run

The 2019 Karluk Lake sockeye salmon total late-run estimate of 737,156 was predominately composed of age-2.2 (56%), -2.3 (21%), and -3.2 (8%) fish (Table 49). This estimated late run was less than the 2018 run estimate of 1,086,597 fish, and above the recent 10-year average (2009–2018) of 727,888 fish (Figure 10). The 2003–2012 Karluk Lake late-run sockeye salmon escapements produced an estimated average total return of 623,005 fish (range: 168,266–1,089,820) and an average R/S estimate of 2.4 (Table 50).

Upper Station (South Olga Lakes)

Early Run

The 2019 Upper Station sockeye salmon total early-run estimate of 64,599 was predominantly composed of age-1.2 (29%), -2.2 (26%), -1.1 (19%), and -1.3 (14%) fish (Table 51). This estimated early run was less than the 2018 run estimate of 70,856 fish, and similar to the 10-year average (2009–2018) of 64,738 fish (Figure 11). The 2003–2012 Upper Station early-run sockeye salmon escapements produced an estimated average total return of 64,079 fish (range: 48,373–110,570) and an average R/S estimate of 1.6 (Table 52).

Late Run

The 2019 Upper Station sockeye salmon total late-run estimate of 190,574 fish was predominantly composed of age-2.2 (59%), -1.2 (17%) and -0.3 (6%) fish (Table 53). This estimated late run was less than the 2018 run estimate of 384,015 fish, and below the recent 10-year average (2009–2018) of 235,917 fish (Figure 12). The 2003–2012 Upper Station late-run sockeye salmon escapements produced an estimated average total return of 233,927 fish (range: 137,943–431,685) and an average R/S estimate of 1.5 (Table 54).

HISTORICAL SIZE AND AGE TRENDS OF KODIAK SOCKEYE SALMON

Ayakulik (Red Lake)

Freshwater residence time for Ayakulik sockeye salmon has generally been 2 years, but in recent years an increasing number of fish have been migrating to the ocean after spending only 1 year in Red Lake. In 2019, roughly 64% of the run was freshwater-age-1 and 32% of the run was freshwater-age-2 (Figure 13).

Ayakulik River sockeye salmon commonly spend 2 years in the ocean but frequently rear at sea for 3 years. Age composition estimates from the 2019 run show that the saltwater-age-2 component was approximately 40% and the saltwater-age-3 component was approximately 59% (Figure 14).

In 2019, the average size of age-2.2 and -2.3 sockeye salmon at Ayakulik was below average; the average size at Ayakulik has generally declined since the 1980s (Tables 34 and 35).

Frazer Lake

Freshwater residence time for Frazer Lake sockeye salmon has typically been 2 years, but often fish will outmigrate to the ocean after 1 year (Figure 13; Barrett 1989; Foster 2010; Sagalkin 1999). An increasing proportion of freshwater-age-3 fish were seen beginning in the 1990s. This component of the run declined for several years, spiked again in 2013, but remained low in 2019 (Figure 13). In 2019, the Frazer Lake sockeye salmon freshwater-age-2 component was the most abundant freshwater age class (61%). The freshwater-age-1 component was 38% in 2019 (Figure 13).

Frazer Lake sockeye salmon spend 1–3 years in the ocean (Figure 14). Inconsistent cycles and highly variable saltwater ages present at Frazer are not surprising considering the recent colonization of this newly anadromous system. The last 10 years have shown considerable increases in the variability of the abundance of saltwater-age-1 fish, highlighted during the 2003 and 2007 runs, in which saltwater-age-1 sockeye salmon (jacks) outnumbered the saltwater-age-2 and -3 fish (Figure 14). The 2019 run was predominately saltwater-age-2 (55%), followed by saltwater-age-3 (26%) and saltwater-age-1 (18%).

The average size of both Frazer age-2.2 and age-2.3 sockeye salmon in 2019 was below the historical averages (Tables 34 and 35).

Frazer Lake freshwater and saltwater ages experience fluctuations in the dominant age class. The recent relatively high abundance of saltwater-age-1 sockeye salmon has raised concern in the Alitak District, leading management and research staff to closely monitor returns to the system.

Karluk Lake

Sockeye salmon freshwater residence time in Karluk Lake is typically 2 years, but often will extend to 3 years (Kyle et al. 1988; Rounsefell 1958). Since 1985, freshwater-age-2 sockeye salmon have predominated the annual runs, with the exception of the early 1990s and 2010 when freshwater-age-3 fish spiked in abundance (Figure 13). Freshwater-age-3 fish, although not normally predominant since the inception of sampling for salmon age (1920s), have consistently been an important part of the Karluk Lake early and late runs. It is important to note that extended freshwater residence for sockeye salmon often signifies decreased overall lake productivity and subsequent adult salmon returns (Foerster 1968). Recently, decreases in the freshwater-age-3 component from highly elevated levels have been evident. Between 2003 and 2010, the freshwater-age-3 component of the early run increased from 13% to 47% (Figure 13). The freshwater-age-3 component of the Karluk Lake late run saw slight increases beginning in the early 2000s, but the Karluk Lake late-run freshwater-age-3 component was unusually high in 2009 (90%) and 2010 (73%). This component of the runs has decreased in recent years, with the freshwater-age-3 component totaling only 4% in the early run and 9% in the late run during 2019 (Figure 13).

Both early- and late-run Karluk Lake sockeye salmon typically spend 2 years in the ocean, making age-2.2 the dominant historical age class since the 1920s. The late run has historically had a smaller saltwater-age-3 component. Following the historical trend, in 2019 both the early and late runs were composed predominately of saltwater-age-2 fish, but the saltwater-age-3 component of the early run was greater than it was in 2018 (Figure 14).

Average size of age-2.2 and age-2.3 sockeye salmon at Karluk Lake has generally declined since the mid-1980s (Tables 34 and 35). The 2019 average length of age-2.2 and age-2.3 sockeye salmon were below the historical averages in both the early and late runs (Tables 34 and 35).

Upper Station (South Olga Lakes)

Freshwater residence time for Upper Station early-run sockeye salmon has typically been 2 years, but often fish will outmigrate to the ocean after 1 year as indicated by age data from the escapement. In 2019, the early-run freshwater-age-1 component (62%) was larger than the freshwater-age-2 component (38%). The late run was composed predominately of freshwater-age-2 (65%) and freshwater-age-1 (27%) fish. From the late 1980s to the mid-1990s, freshwater-age-2 fish were predominant in the early run, but the late run demonstrated strong components of freshwater-age-0 (Figure 13) sockeye salmon that coincided with extremely large runs (Foster 2011). Since the mid-1990s, the early run has shown strong components of both freshwater-age-1 and age-2 fish, whereas the late run has been predominately freshwater-age-2 fish.

Upper Station sockeye salmon typically spend 2 years in the ocean but also commonly stay at sea for 3 years. In 2019, saltwater-age-2 sockeye salmon were predominant in both the Upper Station early (56%) and late (78%) runs (Figure 14).

KODIAK SALMON TEST FISHERY

Approximately 3,000 sockeye salmon were harvested during the index test fishery in 2019. A summary of the test fishery is presented in Table 55. Scale samples were collected from 428 sockeye salmon for age determination. The 2019 test fish consisted predominantly of age-2.2 (41%), -2.3 (21%), and -1.3 (16%) sockeye salmon (Table 56). Revenue-generating test fisheries were also conducted in 2019, but harvest from these was not sampled.

ACKNOWLEDGEMENTS

Alaska Department of Fish and Game management and research personnel from the Division of Commercial Fisheries collected the data presented in this report with assistance from Kodiak Regional Aquaculture Association staff. The author would like to thank anyone who assisted with data collection or logistics. Birch Foster, Darin Ruhl, and Brad Fuerst provided editorial advice. Amanda Dorner created the statistical area maps.

REFERENCES CITED

- Anderson, T. J., J. Jackson, B. A. Fuerst, and A. E. Dorner. 2019. Kodiak Management Area commercial salmon fishery annual management report, 2019. Alaska Department of Fish and Game, Fishery Management Report No. 19-29, Anchorage.
- Baer, R., and S. Honnold. 2002. A straying assessment of an introduced sockeye salmon stock on the northern Afognak Island as determined by two methods of stock identification. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K02-56, Kodiak.
- Barrett, B. 1989. Frazer Lake sockeye salmon investigations, 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report No. 89-03, Juneau.
- Barrett, B., and P. Nelson. 1995. Estimation of Karluk Lake early- and late-run sockeye returns based on scale age data, 1985-1994. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 4K95-44, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/rir.4k.1995.44.pdf>
- Clutter, R., and L. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. International Pacific Salmon Fisheries Commission, Bulletin 9, New Westminster, British Columbia, Canada.
- Foerster, R. E. 1968. The sockeye salmon, *Oncorhynchus nerka*. Bulletin 162, Fisheries Research Board of Canada, Ottawa.
- Foster, M. 2003. Alitak Bay test fishery research summary 1999-2002. Alaska Department of Fish and Game, Fishery Management Report No. 03-50, Anchorage.
- Foster, M. 2006. Kodiak management area salmon escapement and catch sampling results, 2005. Alaska Department of Fish and Game, Fishery Management Report No. 06-38, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr06-38.pdf>
- Foster, M. 2007. Kodiak management area salmon escapement and catch sampling results, 2006. Alaska Department of Fish and Game, Fishery Management Report No. 07-14, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr07-14.pdf>
- Foster, M. 2008. Kodiak management area salmon escapement and catch sampling results, 2007. Alaska Department of Fish and Game, Fishery Management Report No. 08-37, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr08-37.pdf>
- Foster, M. 2009. Kodiak management area salmon escapement and catch sampling results, 2008. Alaska Department of Fish and Game, Fishery Management Report No. 09-24, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr09-24.pdf>
- Foster, M. B. 2010. Kodiak management area salmon escapement and catch sampling results, 2009. Alaska Department of Fish and Game, Fishery Management Report No. 10-28, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/fmr10-28.pdf>
- Foster, M. B. 2011. Kodiak management area salmon escapement and catch sampling results, 2010. Alaska Department of Fish and Game, Fishery Management Report No. 11-30 Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FMR11-30.pdf>
- Fuerst, B. A. 2017. Kodiak commercial fisheries salmon management field camp and weir operational plan, 2017–2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2017.07, Kodiak.
- Fuerst, B. A. 2019. Kodiak Management Area weir descriptions and salmon escapement report, 2018. Alaska Department of Fish and Game, Fishery Management Report No. 19-14, Anchorage.
- Fuerst, B. A., J. Jackson, and A. E. Dorner. 2019. Kodiak management area harvest strategy for the 2019 commercial salmon fishery. Alaska Department of Fish and Game, Regional Information Report 4K19-06, Kodiak.
- INPFC (International North Pacific Fisheries Commission). 1963. Annual Report 1961. Vancouver, British Columbia.

REFERENCES CITED (Continued)

- Johnson, J., and M. Daigneault. 2013. Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southwestern Region, Effective July 1, 2013. Alaska Department of Fish and Game, Special Publication No. 13-10, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/SP13-10.pdf>
- Koo, T. 1962. Age designation in salmon. Pages 37-48. [In] T. S. Y. Koo, editor. Studies of Alaska red salmon. University of Washington Publications in Fisheries, New Series, Volume I, Seattle.
- Kyle, G., J. Koenings, and B. Barrett. 1988. Density-dependent, trophic level responses to an introduced run of sockeye salmon (*Oncorhynchus nerka*) at Frazer Lake, Kodiak Island, Alaska. Canadian Journal of Fisheries and Aquatic Science 45:856–867.
- Moore, M. L. 2012. Kodiak management area salmon escapement and catch sampling results, 2011. Alaska Department of Fish and Game, Fishery Data Series No. 12-30, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FDS12-30.pdf>
- Moore, M. L. 2013. Kodiak management area salmon escapement and catch sampling results, 2012. Alaska Department of Fish and Game, Fishery Data Series No. 13-48, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FDS13-48.pdf>
- Moore, M. L. 2014. Kodiak Management Area salmon escapement and catch sampling results, 2013. Alaska Department of Fish and Game, Fishery Data Series No. 14-06, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FDS14-06.pdf>
- Mosher, K. 1968. Photographic atlas of sockeye salmon scales. Bureau of the U.S. Fish and Wildlife Service. Fishery Bulletin 67(2):243–280.
- Nelson, P. 1999. An estimate of Spiridon Lake sockeye salmon commercially harvested within the Southwest Afognak Section and Northwest Kodiak District, 1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K99-25, Kodiak. <http://www.adfg.alaska.gov/FedAidpdfs/RIR.4K.1999.25.pdf>
- Nelson, P. A., and B. M. Barrett. 1994. An estimate of the number of Spiridon Lake Sockeye salmon commercially harvested within the Northwest Kodiak and Southwest Kodiak Districts, 1994. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 4K94-43, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/rir.4k.1994.43.pdf>
- Nelson, P., and C. Swanton. 1996. An estimate of Spiridon Lake sockeye salmon commercially harvested within the Northwest Kodiak and Southwest Kodiak Districts, 1995. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K96-32, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/rir.4k.1996.32.pdf>
- Nelson, P., and C. Swanton. 1997. An estimate of Spiridon Lake sockeye salmon commercially harvested within the Southwest Afognak Section and Northwest Kodiak District, 1996. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K97-44, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/RIR.4K.1997.44.pdf>
- Nemeth, M. J., M. J. Witteveen, M. B. Foster, H. Finkle, J. W. Erickson, J. S. Schmidt, S. J. Fleischman, and D. Tracy. 2010. Review of escapement goals in 2010 for salmon stocks in the Kodiak Management Area, Alaska. Alaska Department of Fish and Game, Fishery Manuscript Series No. 10-09, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FMS10-09.pdf>
- Rounsefell, G. 1958. Factors causing decline in sockeye salmon of Karluk River, Alaska. USFWS Fishery Bulletin 58(130)88.
- Ruhl, D. 2017a. Afognak Lake sockeye salmon stock monitoring project operational plan, 2017–2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2017.05, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.4K.2017.05.pdf>

REFERENCES CITED (Continued)

- Ruhl, D. C. 2017b. Frazer Lake fish pass and sockeye salmon sampling operational plan, 2017–2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2017.08, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.4K.2017.08.pdf>
- Ruhl, D. 2017c. Saltery Creek salmon weir operational plan, 2017–2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2017.06, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.4K.2017.06.pdf>
- Sagalkin, N. 1999. Frazer Lake fish pass sockeye salmon smolt and adult research, 1997 and 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K99-59, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/RIR.4K.1997.44.pdf>
- Schaberg, K. L., M. B. Foster, M. Wattum, and T. R. McKinley. 2016. Review of salmon escapement goals in the Kodiak Management Area, 2016. Alaska Department of Fish and Game, Fishery Manuscript Series No.16-09, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FMS16-09.pdf>
- Swanton, C. 1992. Stock interrelationships of sockeye salmon runs, Alitak Bay District, Kodiak Island, Alaska. Master's Thesis, University of Washington, Seattle.
- Tyler, R., L. Malloy, D. Prokopowich, and K. Manthey. 1986. Migration of sockeye salmon in the Kodiak Archipelago, 1981. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet No. 254, Juneau. <http://www.adfg.alaska.gov/FedAidPDFs/afrbil.254.pdf>
- Wattum, M. L. 2015. Kodiak Management Area salmon escapement and catch sampling results, 2014. Alaska Department of Fish and Game, Fishery Data Series No. 15-20, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FDS15-20.pdf>
- Wattum, M. L. 2016. Kodiak Management Area salmon escapement and catch sampling results, 2015. Alaska Department of Fish and Game, Fishery Data Series No. 16-19, Anchorage. <http://www.adfg.alaska.gov/FedAidPDFs/FDS16-19.pdf>
- Wattum, M. L. 2017. Kodiak Management Area salmon escapement and catch sampling results, 2016. Alaska Department of Fish and Game, Fishery Data Series No. 17-18, Anchorage.
- Wattum, M. L. 2018. Kodiak Management Area salmon escapement and catch sampling results, 2017. Alaska Department of Fish and Game, Fishery Data Series No. 18-17, Anchorage.
- Wattum, M. L. 2019. Kodiak Management Area salmon escapement and catch sampling results, 2018. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K19-13, Anchorage.
- Wattum, M. L. and M. B. Foster. 2017. Kodiak Management Area salmon catch and escapement sampling operational plan, 2017–2019. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2017.10, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.4K.2017.10.pdf>
- Witteveen, M. J. 2016. Pasagshak River salmon weir operational plan, 2016–2018. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Operational Plan ROP.CF.4K.2016.08, Kodiak. <http://www.adfg.alaska.gov/FedAidPDFs/ROP.CF.4K.2016.08.pdf>
- Witteveen, M., N. Sagalkin, M. Foster, K. Bouwens, S. Honnold, S. Schrof, and R. Baer. 2005. Westward region salmon run reconstruction for the 2003 season and forecasting for the 2004 season. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K05-02, Kodiak.

TABLES AND FIGURES

Table 1.–Kodiak Management Area sockeye salmon escapement sampling schedule, 2019.

Sample location	Crew supervision	Stream number	Weekly target ^a
Major Systems			
Ayakulik River weir	Spalinger	256-15-201	200
Frazer Lake fish pass	Ruhl	257-40-403	200
Karluk River weir	Spalinger	255-10-101	200
Upper Station weir	Anderson	257-30-304	200
Minor Systems			
Afognak (Litnik) weir	Ruhl	252-34-342	40 to 120
Pasagshak weir	Wattum	259-43-411	40 to 120
Saltery Creek weir	Ruhl	259-41-415	40 to 120

^a The weekly targeted sample size will be determined by the crew leader and based on escapement magnitude; please refer to the *Escapement Sample Size* section within the 2017–2019 Kodiak Management Area Salmon Catch and Escapement Sampling Operational Plan (Wattum and Foster 2017).

Table 2.–Statistical weeks and corresponding calendar dates, 2019.

Week	Calendar dates	Week	Calendar dates
10	1 Mar – 7 Mar	28	5 Jul – 11 Jul
11	8 Mar – 14 Mar	29	12 Jul – 18 Jul
12	15 Mar – 21 Mar	30	19 Jul – 25 Jul
13	22 Mar – 28 Mar	31	26 Jul – 1 Aug
14	29 Mar – 4 Apr	32	2 Aug – 8 Aug
15	5 Apr – 11 Apr	33	9 Aug – 15 Aug
16	12 Apr – 18 Apr	34	16 Aug – 22 Aug
17	19 Apr – 25 Apr	35	23 Aug – 29 Aug
18	26 Apr – 2 May	36	30 Aug – 5 Sep
19	3 May – 9 May	37	6 Sep – 12 Sep
20	10 May – 16 May	38	13 Sep – 19 Sep
21	17 May – 23 May	39	20 Sep – 26 Sep
22	24 May – 30 May	40	27 Sep – 3 Oct
23	31 May – 6 Jun	41	4 Oct – 10 Oct
24	7 Jun – 13 Jun	42	11 Oct – 17 Oct
25	14 Jun – 20 Jun	43	18 Oct – 24 Oct
26	21 Jun – 27 Jun	44	25 Oct – 31 Oct
27	28 Jun – 4 Jul	45	1 Nov – 7 Nov

Table 3.–Kodiak Management Area sockeye salmon catch sampling schedule, 2019.

District	Geographic area	District or sections	Primary sampling site	Weekly target ^a	Strata		Season total
					Early 6/1–7/15	Late 7/16–9/30	
Northwest Kodiak District							
	Uganik-Kupreanof	253	Kodiak	200	600	600	1,200
	Uyak Bay ^b	254	Larsen Bay	200	600	600	1,200
Alitak District							
	Moser Bay/Olga Bay/Alitak Bay	257-40–257-43	Dog Salmon	200	600	600	1,200
Southwest Kodiak District							
	Karluk/Sturgeon	255-10–255-20; 256-40	Larsen Bay	200	600	600	1,200
	Ayakulik/Halibut Bay	256-10–256-30	Larsen Bay	200	600	600	1,200
Total					3,600	3,600	7,200

^a The weekly targeted sample size will be determined by the crew leader and based on weekly nature of the commercial fishery; please refer to the *Catch Sample Size* section within the 2017–2019 Kodiak Management Area Salmon Catch and Escapement Sampling Operational Plan (Wattum and Foster 2017).

^b This area excludes the Spiridon Bay Special Harvest Area (statistical area 254-50).

Table 4.–Daily and cumulative (cum.) sockeye salmon escapement counted through weirs by system, Kodiak Management Area, 2019.

Date	System (weir)															
	Afognak		Ayakulik		Dog Salmon		Frazer fish pass		Karluk		Pasagshak		Saltery		Upper Station	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
5/11	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/12	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/13	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/14	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/15	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/16	0	0	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/17	3	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5/18	4	7	–	–	–	–	–	–	–	–	–	–	–	–	0	0
5/19	10	17	–	–	–	–	–	–	–	–	–	–	–	–	0	0
5/20	49	66	–	–	–	–	–	–	–	–	–	–	–	–	32	32
5/21	2	68	0	0	–	–	–	–	0	0	–	–	–	–	34	66
5/22	0	68	3	3	–	–	–	–	0	0	–	–	–	–	0	66
5/23	1	69	4	7	–	–	–	–	0	0	–	–	–	–	0	66
5/24	10	79	2	9	–	–	–	–	0	0	–	–	–	–	103	169
5/25	6	85	19	28	–	–	–	–	0	0	–	–	–	–	23	192
5/26	36	121	18	46	–	–	–	–	1	1	–	–	–	–	2	194
5/27	12	133	15	61	–	–	–	–	41	42	–	–	–	–	152	346
5/28	1	134	43	104	0	0	–	–	86	128	–	–	–	–	138	484
5/29	240	374	31	135	0	0	–	–	1	129	–	–	–	–	231	715
5/30	104	478	31	166	0	0	–	–	1	130	–	–	–	–	0	715
5/31	27	505	60	226	0	0	–	–	1	131	–	–	–	–	421	1,136
6/1	62	567	311	537	0	0	–	–	63	194	–	–	–	–	0	1,136
6/2	9	576	3,261	3,798	0	0	0	0	10,879	11,073	–	–	–	–	0	1,136
6/3	8	584	6,445	10,243	0	0	0	0	12,996	24,069	–	–	–	–	0	1,136
6/4	964	1,548	1,466	11,709	1	1	0	0	32,577	56,646	–	–	–	–	0	1,136
6/5	958	2,506	1,488	13,197	0	1	0	0	5,446	62,092	–	–	–	–	2,012	3,148
6/6	604	3,110	3,050	16,247	10	11	0	0	3,774	65,866	–	–	–	–	1,257	4,405
6/7	1,345	4,455	2,426	18,673	0	11	0	0	9,188	75,054	–	–	–	–	576	4,981
6/8	907	5,362	316	18,989	0	11	0	0	230	75,284	–	–	–	–	49	5,030
6/9	240	5,602	4,251	23,240	2,046	2,057	0	0	6,968	82,252	–	–	–	–	4,175	9,205
6/10	814	6,416	1,188	24,428	9,219	11,276	0	0	3,071	85,323	–	–	–	–	787	9,992
6/11	305	6,721	1,275	25,703	2,387	13,663	708	708	2,727	88,050	–	–	–	–	3,129	13,121
6/12	3,114	9,835	2,715	28,418	1,243	14,906	3,448	4,156	1,809	89,859	–	–	–	–	980	14,101
6/13	474	10,309	1,407	29,825	5,074	19,980	1,136	5,292	4,769	94,628	0	0	–	–	3,273	17,374
6/14	838	11,147	1,925	31,750	0	19,980	120	5,412	315	94,943	0	0	–	–	2,961	20,335

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Table 4.–Page 2 of 4.

Date	System (weir)															
	Afognak		Ayakulik		Dog Salmon		Frazer fish pass		Karluk		Pasagshak		Saltery		Upper Station	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/15	3,704	14,851	5,506	37,256	8,292	28,272	1,354	6,766	3,968	98,911	0	0	–	–	90	20,425
6/16	65	14,916	6,143	43,399	1,833	30,105	1,314	8,080	9,393	108,304	0	0	0	0	51	20,476
6/17	98	15,014	2,838	46,237	4,450	34,555	2,362	10,442	2,672	110,976	0	0	0	0	169	20,645
6/18	442	15,456	1,218	47,455	11,649	46,204	4,453	14,895	4	110,980	0	0	5	5	2,479	23,124
6/19	490	15,946	6,527	53,982	6,369	52,573	2,962	17,857	4,479	115,459	0	0	18	23	1,593	24,717
6/20	537	16,483	1,875	55,857	1,013	53,586	7,384	25,241	320	115,779	0	0	2	25	0	24,717
6/21	1,037	17,520	5,401	61,258	199	53,785	5,198	30,439	549	116,328	0	0	4	29	4,334	29,051
6/22	854	18,374	1,428	62,686	3,543	57,328	3,568	34,007	12,139	128,467	0	0	14	43	1,513	30,564
6/23	914	19,288	359	63,045	1,532	58,860	7,696	41,703	3,353	131,820	0	0	39	82	1,839	32,403
6/24	49	19,337	1,824	64,869	331	59,191	5,354	47,057	2,287	134,107	0	0	34	116	2,413	34,816
6/25	71	19,408	84	64,953	30	59,221	2,043	49,100	1,670	135,777	0	0	5	121	127	34,943
6/26	742	20,150	1,563	66,516	1,053	60,274	1,030	50,130	1,258	137,035	0	0	8	129	478	35,421
6/27	194	20,344	211	66,727	1,495	61,769	596	50,726	1,982	139,017	100	100	0	129	1,449	36,870
6/28	400	20,744	2,960	69,687	2,432	64,201	1,494	52,220	1,760	140,777	0	100	14	143	19	36,889
6/29	268	21,012	3,854	73,541	2,537	66,738	1,204	53,424	4,415	145,192	0	100	22	165	1,446	38,335
6/30	72	21,084	14,322	87,863	3,906	70,644	4,236	57,660	1,339	146,531	0	100	31	196	2,772	41,107
7/1	285	21,369	8,851	96,714	10,082	80,726	2,607	60,267	638	147,169	27	127	51	247	1,708	42,815
7/2	120	21,489	3,198	99,912	4,402	85,128	3,963	64,230	767	147,936	162	289	34	281	395	43,210
7/3	47	21,536	1,764	101,676	3,773	88,901	1,286	65,516	3,227	151,163	0	289	28	309	680	43,890
7/4	16	21,552	710	102,386	240	89,141	4,585	70,101	5,145	156,308	0	289	65	374	142	44,032
7/5	56	21,608	15,032	117,418	335	89,476	6,925	77,026	731	157,039	0	289	118	492	2,428	46,460
7/6	254	21,862	13,979	131,397	801	90,277	2,653	79,679	2,638	159,677	38	327	128	620	21	46,481
7/7	169	22,031	856	132,253	2,049	92,326	2,073	81,752	1,819	161,496	0	327	146	766	18	46,499
7/8	113	22,144	915	133,168	480	92,806	4,790	86,542	1,075	162,571	4	331	48	814	177	46,676
7/9	290	22,434	3,349	136,517	2,838	95,644	1,119	87,661	595	163,166	122	453	76	890	98	46,774
7/10	305	22,739	8,523	145,040	5,087	100,731	1,283	88,944	5,932	169,098	2	455	43	933	416	47,190
7/11	220	22,959	4,794	149,834	6,964	107,695	1,636	90,580	3,258	172,356	194	649	278	1,211	405	47,595
7/12	71	23,030	273	150,107	4,868	112,563	2,017	92,597	2,296	174,652	31	680	526	1,737	306	47,901
7/13	8	23,038	6,546	156,653	5,192	117,755	3,083	95,680	6,334	180,986	38	718	202	1,939	925	48,826
7/14	18	23,056	1,274	157,927	2,371	120,126	4,013	99,693	3,941	184,927	65	783	105	2,044	177	49,003
7/15	262	23,318	4,503	162,430	6,809	126,935	8,832	108,525	1,583	186,510	370	1,153	565	2,609	514	49,517
7/16	310	23,628	10,308	172,738	2,774	129,709	2,920	111,445	386	186,896	363	1,516	445	3,054	287	49,804
7/17	181	23,809	2,257	174,995	3,906	133,615	5,032	116,477	430	187,326	233	1,749	171	3,225	60	49,864
7/18	76	23,885	2,236	177,231	1,714	135,329	3,916	120,393	413	187,739	183	1,932	88	3,313	180	50,044
7/19	163	24,048	1,581	178,812	2,954	138,283	2,580	122,973	605	188,344	207	2,139	1,594	4,907	82	50,126

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Table 4.–Page 3 of 4.

Date	System (weir)															
	Afognak		Ayakulik		Dog Salmon		Frazer fish pass		Karluk		Pasagshak		Saltery		Upper Station	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/20	10	24,058	577	179,389	5,693	143,976	5,476	128,449	919	189,263	123	2,262	1,819	6,726	38	50,164
7/21	459	24,517	236	179,625	1,225	145,201	4,653	133,102	905	190,168	146	2,408	332	7,058	3	50,167
7/22	273	24,790	3,237	182,862	3,776	148,977	4,053	137,155	1,713	191,881	39	2,447	476	7,534	11	50,178
7/23	186	24,976	13,652	196,514	1,251	150,228	2,486	139,641	1,346	193,227	124	2,571	1,005	8,539	72	50,250
7/24	141	25,117	3,169	199,683	1,763	151,991	2,523	142,164	637	193,864	198	2,769	829	9,368	8	50,258
7/25	22	25,139	3,825	203,508	396	152,387	1,807	143,971	362	194,226	57	2,826	1,227	10,595	1	50,259
7/26	228	25,367	2,656	206,164	1,309	153,696	1,977	145,948	199	194,425	4	2,830	428	11,023	0	50,259
7/27	339	25,706	2,471	208,635	1,520	155,216	2,031	147,979	683	195,108	47	2,877	203	11,226	311	50,570
7/28	80	25,786	1,496	210,131	1,535	156,751	1,495	149,474	277	195,385	43	2,920	107	11,333	34	50,604
7/29	169	25,955	488	210,619	510	157,261	1,823	151,297	402	195,787	72	2,992	463	11,796	0	50,604
7/30	143	26,098	4,942	215,561	2,471	159,732	1,502	152,799	768	196,555	440	3,432	400	12,196	13	50,617
7/31	19	26,117	3,143	218,704	752	160,484	1,471	154,270	535	197,090	237	3,669	929	13,125	0	50,617
8/1	27	26,144	4,656	223,360	700	161,184	974	155,244	71	197,161	70	3,739	556	13,681	0	50,617
8/2	37	26,181	729	224,089	349	161,533	1,651	156,895	193	197,354	199	3,938	808	14,489	1	50,618
8/3	144	26,325	284	224,373	509	162,042	968	157,863	87	197,441	61	3,999	821	15,310	40	50,658
8/4	41	26,366	90	224,463	655	162,697	886	158,749	260	197,701	68	4,067	685	15,995	9	50,667
8/5	162	26,528	907	225,370	0	162,697	1,001	159,750	517	198,218	79	4,146	220	16,215	27	50,694
8/6	78	26,606	6,762	232,132	–	162,697	1,503	161,253	465	198,683	97	4,243	219	16,434	150	50,844
8/7	32	26,638	6,267	238,399	–	162,697	1,994	163,247	1,306	199,989	7	4,250	369	16,803	214	51,058
8/8	123	26,761	2,154	240,553	–	162,697	1,729	164,976	1,127	201,116	9	4,259	412	17,215	1,397	52,455
8/9	5	26,766	648	241,201	–	162,697	1,224	166,200	2,100	203,216	1	4,260	158	17,373	313	52,768
8/10	11	26,777	4,085	245,286	–	162,697	863	167,063	2,383	205,599	0	4,260	124	17,497	142	52,910
8/11	40	26,817	12,555	257,841	–	162,697	690	167,753	2,395	207,994	15	4,275	90	17,587	355	53,265
8/12	–	26,817	869	258,710	–	162,697	780	168,533	2,969	210,963	121	4,396	24	17,611	665	53,930
8/13	–	26,817	818	259,528	–	162,697	341	168,874	1,774	212,737	38	4,434	40	17,651	4,938	58,868
8/14	–	26,817	772	260,300	–	162,697	593	169,467	776	213,513	47	4,481	32	17,683	1,314	60,182
8/15	–	26,817	454	260,754	–	162,697	160	169,627	1,188	214,701	6	4,487	4,500	22,183	2,670	62,852
8/16	–	26,817	606	261,360	–	162,697	–	169,627	1,370	216,071	50	4,537	–	22,183	3,393	66,245
8/17	–	26,817	1,939	263,299	–	162,697	–	169,627	1,418	217,489	–	4,537	–	22,183	3,178	69,423
8/18	–	26,817	2,417	265,716	–	162,697	–	169,627	467	217,956	–	4,537	–	22,183	2,823	72,246
8/19	–	26,817	3,459	269,175	–	162,697	–	169,627	111	218,067	–	4,537	–	22,183	4,487	76,733
8/20	–	26,817	1,225	270,400	–	162,697	–	169,627	32	218,099	–	4,537	–	22,183	3,357	80,090
8/21	–	26,817	1,673	272,073	–	162,697	–	169,627	1,675	219,774	–	4,537	–	22,183	2,157	82,247
8/22	–	26,817	1,561	273,634	–	162,697	–	169,627	111	219,885	–	4,537	–	22,183	4,391	86,638
8/23	–	26,817	2,278	275,912	–	162,697	–	169,627	8,092	227,977	–	4,537	–	22,183	2,245	88,883

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Table 4.–Page 4 of 4.

Date	System (weir)															
	Afognak		Ayakulik		Dog Salmon		Frazer fish pass		Karluk		Pasagshak		Saltery		Upper Station	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
8/24	–	26,817	1,062	276,974	–	162,697	–	169,627	3,272	231,249	–	4,537	–	22,183	2,939	91,822
8/25	–	26,817	668	277,642	–	162,697	–	169,627	1,478	232,727	–	4,537	–	22,183	5,217	97,039
8/26	–	26,817	1,000	278,642	–	162,697	–	169,627	4,469	237,196	–	4,537	–	22,183	4,050	101,089
8/27	–	26,817	997	279,639	–	162,697	–	169,627	6,085	243,281	–	4,537	–	22,183	6,233	107,322
8/28	–	26,817	0	279,639	–	162,697	–	169,627	3,646	246,927	–	4,537	–	22,183	3,773	111,095
8/29	–	26,817	0	279,639	–	162,697	–	169,627	2,974	249,901	–	4,537	–	22,183	4,261	115,356
8/30	–	26,817	0	279,639	–	162,697	–	169,627	2,590	252,491	–	4,537	–	22,183	6,335	121,691
8/31	–	26,817	0	279,639	–	162,697	–	169,627	1,538	254,029	–	4,537	–	22,183	2,443	124,134
9/1	–	26,817	0	279,639	–	162,697	–	169,627	8,587	262,616	–	4,537	–	22,183	3,162	127,296
9/2	–	26,817	0	279,639	–	162,697	–	169,627	32,159	294,775	–	4,537	–	22,183	2,878	130,174
9/3	–	26,817	0	279,639	–	162,697	–	169,627	41,249	336,024	–	4,537	–	22,183	3,177	133,351
9/4	–	26,817	0	279,639	–	162,697	–	169,627	6,107	342,131	–	4,537	–	22,183	4,659	138,010
9/5	–	26,817	0	279,639	–	162,697	–	169,627	1,428	343,559	–	4,537	–	22,183	2,673	140,683
9/6	–	26,817	0	279,639	–	162,697	–	169,627	262	343,821	–	4,537	–	22,183	3,156	143,839
9/7	–	26,817	0	279,639	–	162,697	–	169,627	334	344,155	–	4,537	–	22,183	3,291	147,130
9/8	–	26,817	0	279,639	–	162,697	–	169,627	297	344,452	–	4,537	–	22,183	2,443	149,573
9/9	–	26,817	0	279,639	–	162,697	–	169,627	8,270	352,722	–	4,537	–	22,183	4,962	154,535
9/10	–	26,817	0	279,639	–	162,697	–	169,627	14,455	367,177	–	4,537	–	22,183	10,076	164,611
9/11	–	26,817	0	279,639	–	162,697	–	169,627	1,769	368,946	–	4,537	–	22,183	5,462	170,073
9/12	–	26,817	0	279,639	–	162,697	–	169,627	55,336	424,282	–	4,537	–	22,183	6,329	176,402
9/13	–	26,817	0	279,639	–	162,697	–	169,627	12,998	437,280	–	4,537	–	22,183	4,965	181,367
9/14	–	26,817	0	279,639	–	162,697	–	169,627	4,449	441,729	–	4,537	–	22,183	3,552	184,919
9/15	–	26,817	0	279,639	–	162,697	–	169,627	5,820	447,549	–	4,537	–	22,183	6,696	191,615
9/16	–	26,817	0	279,639	–	162,697	–	169,627	60,000	507,549	–	4,537	–	22,183	3,048	194,663
9/17	–	26,817	0	279,639	–	162,697	–	169,627	–	507,549	–	4,537	–	22,183	20,000	214,663
Totals	26,817		279,639		162,697		169,627		507,549		4,537		22,183		214,663	

Note: A post-weir estimate of escapement (aerial or foot survey) was made after weir removal for Karluk (9/16), Pasagshak (8/16), Saltery (8/15), and Upper Station (9/17).

Table 5.—Fish weir installation and removal dates and salmon escapements for the major systems with fish weirs in the Kodiak Management Area, 2019.

Weir locations	Dates		Species ^a					Totals
	Installed	Removed	Sockeye	Chinook	Pink	Coho	Chum	
Afognak River	5/11	8/12	26,817	0	460	18	9	27,304
Ayakulik River	5/21	8/28	279,639	1,948	27,172	5,206	486	314,451
Dog Salmon Creek ^b	5/28	8/5	162,697	17	372,414	4	181	535,313
Frazer Lake fish pass	6/2	8/16	169,627	24	4,336	0	0	173,987
Karluk River	5/21	9/16	507,549	3,898	433,673	17,884	416	963,420
Pasagshak River	6/13	8/16	4,537	0	70	1	4	4,612
Saltery Creek	6/16	8/15	22,183	0	579	0	1	22,763
Upper Station	5/18	9/17	214,663	0	50,833	12,648	17	278,161
Totals			1,225,015	5,863	885,201	35,761	1,114	2,152,954

^a Counts include post weir estimates.

^b Salmon counted at the Frazer fish pass initially pass through the Dog Salmon weir. Typically there are a varying number of fish that pass Dog Salmon weir but fail to get counted at the Frazer fish pass. Sockeye salmon that fail to get counted at Frazer fish pass may not spawn, and therefore the Frazer fish pass count is considered the best escapement estimate for sockeye salmon. Totals for sockeye salmon include Frazer, and exclude Dog Salmon. Totals for Chinook, pink, coho, and chum salmon include Dog Salmon, and exclude Frazer.

Table 6.—Estimated age composition of sockeye salmon escapements by system, Kodiak Management Area, 2019.

System	Sample size		Age										Total
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	Other	
Afgnak (Litnik)	549	Percent	0.3	9.8	48.6	34.8	3.2	0.4	1.6	0.0	0.0	1.4	100.0
		Numbers	67	2,641	13,027	9,320	853	106	438	0	0	363	26,817
Ayakulik Early run	868	Percent	6.8	2.4	22.8	45.1	0.6	14.0	8.3	0.0	0.0	0.0	100.0
		Numbers	11,033	3,906	37,092	73,255	929	22,809	13,407	0	0	0	162,430
Late run	708	Percent	0.7	3.4	21.3	29.3	0.2	36.0	9.0	0.0	0.0	0.0	100.0
		Numbers	841	3,998	24,989	34,307	247	42,239	10,588	0	0	0	117,209
Frazer	635	Percent	0.0	25.9	16.8	3.7	5.9	32.7	13.6	0.0	1.4	0.0	100.0
		Numbers	0	43,856	28,542	6,274	9,942	55,462	23,129	0	2,422	0	169,627
Karluk Early run	1,321	Percent	1.2	0.1	8.2	1.4	11.7	34.9	38.8	0.3	3.3	0.3	100.0
		Numbers	2,315	110	15,654	2,573	22,282	66,294	73,731	492	6,237	478	190,168
Late run	1,317	Percent	2.9	0.4	7.3	1.0	4.6	57.9	16.2	0.0	9.2	0.5	100.0
		Numbers	9,097	1,354	23,076	3,201	14,731	183,694	51,441	0	29,137	1,650	317,381
Pasagshak	640	Percent	47.6	0.1	27.0	21.1	0.0	0.5	0.0	0.0	0.0	3.7	100.0
		Numbers	2,158	5	1,227	955	0	24	0	0	0	168	4,537
Saltery	508	Percent	0.2	1.9	51.6	27.6	0.8	10.6	7.1	0.0	0.0	0.3	100.0
		Numbers	45	411	11,457	6,114	168	2,352	1,571	0	0	64	22,183
Upper Station Early run	965	Percent	0.0	22.9	31.7	14.4	4.8	22.2	3.9	0.0	0.1	0.1	100.0
		Numbers	0	11,333	15,683	7,127	2,359	11,016	1,921	0	42	36	49,517
Late run	997	Percent	4.4	5.0	16.8	4.5	3.8	61.5	1.7	0.0	0.0	2.5	100.0
		Numbers	7,234	8,202	27,801	7,354	6,230	101,503	2,732	0	0	4,090	165,146
Totals	8,508	Percent	2.7	6.2	16.2	12.3	4.7	39.6	14.6	0.0	3.1	0.6	100.0
		Numbers	32,791	75,818	198,548	150,480	57,740	485,500	178,958	492	37,839	6,850	1,225,015

Table 7.—Estimated age composition of Afognak Lake (Litnik) sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age							Total		
			0.3	1.1	1.2	1.3	1.4	2.1	2.2		2.3	
20: 5/10–5/16	0	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	0	0	0	0	0	0	0	0
21: 5/17–5/23	0	Percent	0.0	0.0	50.0	50.0	0.0	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	35	35	0	0	0	0	0	69
22: 5/24–5/30	2	Percent	0.0	0.0	50.0	47.4	2.6	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	205	194	11	0	0	0	0	409
23: 5/31–6/6	12	Percent	0.0	0.0	50.0	42.6	7.4	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	1,316	1,120	196	0	0	0	0	2,632
24: 6/7–6/13	100	Percent	0.0	2.1	57.6	36.4	2.2	0.3	0.1	1.3	100.0	
		Numbers	0	153	4,149	2,618	157	22	6	95	7,199	
25: 6/14–6/20	104	Percent	0.1	3.5	65.8	26.5	0.0	2.8	0.6	0.7	100.0	
		Numbers	4	218	4,061	1,638	0	174	37	42	6,174	
26: 6/21–6/27	67	Percent	1.0	23.0	47.6	19.2	0.0	8.7	0.2	0.2	100.0	
		Numbers	39	888	1,839	741	0	336	9	9	3,861	
27: 6/28–7/04	67	Percent	0.4	21.1	27.9	39.0	0.0	9.2	0.1	2.3	100.0	
		Numbers	5	255	337	472	0	111	1	28	1,208	
28: 7/5–7/11	55	Percent	1.4	26.6	28.9	32.6	0.0	6.2	1.8	2.5	100.0	
		Numbers	19	374	407	458	0	87	26	35	1,407	
29: 7/12–7/18	36	Percent	0.1	19.6	22.0	42.7	0.0	7.5	2.4	5.7	100.0	
		Numbers	1	182	204	395	0	70	22	53	926	
30: 7/19–7/25	39	Percent	0.0	18.3	18.7	51.6	0.0	3.6	0.5	7.3	100.0	
		Numbers	0	230	235	647	0	45	7	92	1,254	
31: 7/26–8/1	37	Percent	0.0	20.4	16.7	54.2	0.0	0.8	0.0	7.9	100.0	
		Numbers	0	205	168	545	0	8	0	79	1,005	
32: 8/2–8/8	30	Percent	0.0	20.2	10.7	68.1	0.0	0.0	0.0	1.0	100.0	
		Numbers	0	125	66	420	0	0	0	6	617	
33: 8/9–8/15	0	Percent	0.0	20.0	10.0	70.0	0.0	0.0	0.0	0.0	100.0	
		Numbers	0	11	6	39	0	0	0	0	56	
Total	549	Percent	0.3	9.8	48.6	34.8	1.4	3.2	0.4	1.6	100.0	
		Numbers	67	2,641	13,027	9,320	363	853	106	438	26,817	

Table 8.—Length composition of Afognak Lake (Litnik) sockeye salmon escapement samples by age and sex, 2019.

	Age								Total
	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	
Females									
Mean length (mm)	500	—	456	509	560	—	447	500	488
SE	—	—	2	2	—	—	11	6	2
Range	—	—	385–503	438–587	—	—	436–458	477–528	385–587
Sample size	1	0	95	136	1	0	2	9	244
Males									
Mean length (mm)	538	330	463	523	—	338	416	530	431
SE	—	2	3	3	—	3	—	6	5
Range	—	289–395	380–516	471–579	—	300–376	—	519–545	289–579
Sample size	1	82	130	63	0	24	1	4	305
All fish									
Mean length (mm)	519	330	460	514	560	338	437	509	456
SE	19	2	2	2	—	3	12	6	3
Range	500–538	289–395	380–516	438–587	—	300–376	416–458	477–545	289–587
Sample size	2	82	225	199	1	24	3	13	549

Table 9.—Estimated sex composition of Afognak Lake (Litnik) sockeye salmon escapement by week, 2019.

Week	Dates	Sample size	Escapement				
			Percent		Number		
			Females	Males	Females	Males	Total
20	5/10–5/16	0	0.0	0.0	0	0	0
21	5/17–5/23	0	33.3	66.7	23	46	69
22	5/24–5/30	3	36.1	63.9	148	261	409
23	5/31–6/6	19	41.2	58.8	1,083	1,549	2,632
24	6/7–6/13	107	37.1	62.9	2,669	4,530	7,199
25	6/14–6/20	117	43.2	56.8	2,669	3,505	6,174
26	6/21–6/27	80	42.5	57.5	1,641	2,220	3,861
27	6/28–7/4	81	43.4	56.6	525	683	1,208
28	7/5–7/11	63	44.8	55.2	631	776	1,407
29	7/12–7/18	46	52.8	47.2	489	437	926
30	7/19–7/25	42	47.2	52.8	592	662	1,254
31	7/26–8/1	43	53.9	46.1	541	464	1,005
32	8/2–8/8	40	48.8	51.2	301	316	617
33	8/9–8/15	0	47.5	52.5	27	29	56
Total		641	42.3	57.7	11,338	15,479	26,817

Table 10.—Estimated age composition of Ayakulik River (Red Lake) early-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age							Total
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	
21: 5/17–5/23	0	Percent	7.0	0.0	35.7	36.5	0.0	19.1	1.7	100.0
		Numbers	0	0	2	3	0	1	0	7
22: 5/24–5/30	0	Percent	7.0	0.0	35.7	36.5	0.0	19.1	1.7	100.0
		Numbers	11	0	57	58	0	30	3	159
23: 5/31–6/6	115	Percent	7.0	0.0	35.7	36.5	0.0	19.1	1.7	100.0
		Numbers	1,119	0	5,733	5,873	0	3,076	280	16,081
24: 6/7–6/13	186	Percent	7.5	0.4	31.7	42.8	0.0	12.7	4.9	100.0
		Numbers	1,017	56	4,303	5,807	5	1,722	670	13,578
25: 6/14–6/20	174	Percent	8.9	1.5	28.8	43.1	0.5	12.1	5.1	100.0
		Numbers	2,327	389	7,496	11,212	130	3,160	1,317	26,032
26: 6/21–6/27	167	Percent	6.4	5.4	25.7	42.0	1.0	14.0	5.5	100.0
		Numbers	694	590	2,792	4,566	106	1,525	598	10,870
27: 6/28–7/4	73	Percent	5.5	2.9	17.9	50.0	0.3	14.9	8.5	100.0
		Numbers	1,950	1,037	6,383	17,843	115	5,301	3,030	35,659
28: 7/5–7/11	153	Percent	7.1	2.5	17.2	47.4	0.9	12.6	12.4	100.0
		Numbers	3,347	1,201	8,146	22,495	421	5,976	5,862	47,448
29: 7/12–7/18	0	Percent	4.5	5.0	17.3	42.9	1.2	16.0	13.1	100.0
		Numbers	569	633	2,180	5,398	152	2,016	1,647	12,596
Total	868	Percent	6.8	2.4	22.8	45.1	0.6	14.0	8.3	100.0
		Numbers	11,033	3,906	37,092	73,255	929	22,809	13,407	162,430

Note: Ayakulik early-run escapement is summed through 15 July; however, samples from all of week 29 were utilized in the age composition estimates.

Table 11.—Length composition of Ayakulik River (Red Lake) early-run sockeye salmon escapement samples by age and sex, 2019.

	Age						Total	
	0.3	1.1	1.2	1.3	2.1	2.2		2.3
Females								
Mean length (mm)	534	—	491	526	—	493	529	515
SE	4	—	3	2	—	3.11	3	1
Range	496–585	—	416–560	435–585	—	417–535	480–590	416–590
Sample size	30	0	83	200	0	49	39	401
Males								
Mean length (mm)	552	352	490	531	371	497	530	506
SE	4	4	3	2	10	3	5	2
Range	485–589	327–384	425–574	449–613	345–395	418–544	499–566	327–613
Sample size	33	20	140	163	4	58	19	437
All fish								
Mean length (mm)	543	352	490	528	371	496	530	510
SE	3	4	2	1	10	2	3	1
Range	485–589	327–384	416–574	435–613	345–395	417–544	480–590	327–613
Sample size	63	20	223	363	4	107	58	838

Table 12.—Estimated sex composition of Ayakulik River (Red Lake) sockeye salmon escapement by week, 2019.

Statistical			Escapement				
			Percent		Number		
week	Dates	Sample size	Females	Males	Females	Males	Total
21	5/17–5/23	0	39.6	60.4	3	4	7
22	5/24–5/30	0	39.6	60.4	63	96	159
23	5/31–6/6	144	39.6	60.4	6,365	9,716	16,081
24	6/7–6/13	205	49.1	50.9	6,664	6,914	13,578
25	6/14–6/20	200	45.0	55.0	11,719	14,313	26,032
26	6/21–6/27	200	46.4	53.6	5,047	5,823	10,870
27	6/28–7/4	80	52.9	47.1	18,858	16,801	35,659
28	7/5–7/11	180	54.8	45.2	26,008	21,440	47,448
29	7/12–7/18	0	58.5	41.5	7,365	5,231	12,596
Early-run total		1,009	50.5	49.5	82,091	80,339	162,430
29	7/12–7/18	200	60.1	39.9	8,899	5,902	14,801
30	7/19–7/25	114	48.2	51.8	12,671	13,606	26,277
31	7/26–8/1	200	42.4	57.6	8,416	11,436	19,852
32	8/2–8/8	200	47.6	52.4	8,189	9,004	17,193
33	8/9–8/15	79	48.7	51.3	9,833	10,368	20,201
34	8/16–8/22	0	49.9	50.1	6,423	6,457	12,880
35	8/23–8/29	44	51.7	48.3	3,106	2,899	6,005
Late-run total		837	49.1	50.9	57,537	59,672	117,209

Note: Ayakulik early-run escapement is summed through 15 July and late-run escapement after 15 July; however, samples from all of week 29 were utilized for both early- and late-run sex composition estimates.

Table 13.—Estimated age composition of Ayakulik River (Red Lake) late-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age							Total
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	
29: 7/12–7/18	173	Percent	2.8	6.0	17.0	41.8	1.1	18.5	12.8	100.0
		Numbers	410	890	2,516	6,182	170	2,745	1,889	14,801
30: 7/19–7/25	91	Percent	1.4	4.1	21.5	36.8	0.3	24.5	11.4	100.0
		Numbers	370	1,071	5,642	9,672	77	6,442	3,003	26,277
31: 7/26–8/1	172	Percent	0.3	3.4	26.3	28.4	0.0	33.8	7.8	100.0
		Numbers	61	665	5,219	5,643	0	6,718	1,545	19,852
32: 8/2–8/8	167	Percent	0.0	1.2	21.0	29.5	0.0	39.4	8.9	100.0
		Numbers	0	206	3,608	5,073	0	6,773	1,533	17,193
33: 8/9–8/15	67	Percent	0.0	2.6	20.8	25.6	0.0	43.3	7.8	100.0
		Numbers	0	517	4,200	5,177	0	8,741	1,566	20,201
34: 8/16–8/22	0	Percent	0.0	3.7	20.7	15.4	0.0	54.5	5.7	100.0
		Numbers	0	476	2,667	1,981	0	7,026	730	12,880
35: 8/23–8/29	38	Percent	0.0	2.9	19.0	9.6	0.0	63.2	5.4	100.0
		Numbers	0	173	1,138	578	0	3,794	322	6,005
Total	708	Percent	0.7	3.4	21.3	29.3	0.2	36.0	9.0	100.0
		Numbers	841	3,998	24,989	34,307	247	42,239	10,588	117,209

Note: Ayakulik late-run escapement is summed after 15 July; however, samples from all of week 29 were utilized in the age composition estimates.

Table 14.—Length composition of Ayakulik River (Red Lake) late-run sockeye salmon escapement samples by age and sex, 2019.

	Age							Total
	0.3	1.1	1.2	1.3	2.1	2.2	2.3	
Females								
Mean length (mm)	528	—	492	534	—	504	531	517
SE	13	—	3	2	—	2	3	1
Range	502–541	—	421–532	482–581	—	455–572	477–573	421–581
Sample size	3	0	62	139	0	100	41	345
Males								
Mean length (mm)	548	326	509	554	357	514	555	509
SE	33	5	3	3	3	2	5	3
Range	515–580	283–360	419–577	480–610	354–359	415–580	501–589	283–610
Sample size	2	25	86	72	2	139	22	348
All fish								
Mean length (mm)	536	326	502	541	357	510	540	513
SE	13	5	2	2	3	2	3	2
Range	502–580	283–360	419–577	480–610	354–359	415–580	477–589	283–610
Sample size	5	25	148	212	2	239	63	694

Table 15.—Estimated age composition of Frazer Lake (Dog Salmon Creek) sockeye salmon escapement, 2019.

Statistical week	Sample size		Age						Total	
			1.1	1.2	1.3	2.1	2.2	2.3		3.2
24: 6/7–6/13	34	Percent	4.3	38.9	0.0	0.0	29.9	23.9	3.0	100.0
		Numbers	230	2,056	0	0	1,582	1,265	158	5,292
25: 6/14–6/20	83	Percent	4.6	24.8	5.7	0.2	42.4	20.8	1.5	100.0
		Numbers	912	4,956	1,132	33	8,451	4,159	306	19,949
26: 6/21–6/27	109	Percent	6.3	23.8	4.3	0.7	48.2	14.6	2.2	100.0
		Numbers	1,598	6,073	1,096	183	12,274	3,708	553	25,485
27: 6/28–7/04	93	Percent	19.4	21.9	2.0	9.7	35.5	9.8	1.5	100.0
		Numbers	3,768	4,253	393	1,881	6,884	1,903	293	19,375
28: 7/5–7/11	76	Percent	25.6	21.0	2.6	7.0	31.1	10.8	2.0	100.0
		Numbers	5,236	4,311	528	1,427	6,362	2,210	404	20,479
29: 7/12–7/18	99	Percent	31.8	12.5	5.5	4.6	28.5	16.1	1.0	100.0
		Numbers	9,486	3,719	1,635	1,373	8,508	4,788	304	29,813
30: 7/19–7/25	73	Percent	36.9	6.5	5.2	9.8	24.0	16.3	1.3	100.0
		Numbers	8,708	1,539	1,219	2,316	5,649	3,835	313	23,578
31: 7/26–8/1	36	Percent	50.8	1.6	2.4	10.4	23.8	10.2	0.8	100.0
		Numbers	5,730	180	270	1,169	2,681	1,153	90	11,273
32: 8/2–8/8	32	Percent	59.4	8.2	0.0	11.1	20.3	1.1	0.0	100.0
		Numbers	5,780	796	0	1,078	1,971	108	0	9,732
33: 8/9–8/15	0	Percent	51.8	14.2	0.0	10.4	23.7	0.0	0.0	100.0
		Numbers	2,408	660	0	482	1,101	0	0	4,651
Frazer Lake Escapement	635	Percent	25.9	16.8	3.7	5.9	32.7	13.6	1.4	100.0
		Numbers	43,856	28,542	6,274	9,942	55,462	23,129	2,422	169,627
Dog Salmon Escapement	0	Percent	25.9	16.8	3.7	5.9	32.7	13.6	1.4	100.0
		Numbers	43,856	28,542	6,274	9,942	55,462	23,129	2,422	169,627

Note: To estimate the Dog Salmon escapement age composition, the relative age composition of jacks (age -1.1, -2.1, and -3.1 fish) collected at Frazer fish pass was applied to the total manual count of jacks from the Frazer fish pass. The relative age composition of all other age classes (large fish) sampled at Frazer fish pass was applied to the large fish counts from the Frazer fish pass. In 2019, more sockeye were counted at Frazer fish pass than Dog Salmon weir, so Frazer fish pass numbers are used for Dog Salmon escapement.

Table 16.—Length composition of Frazer Lake sockeye salmon escapement samples by age and sex, 2019.

	Age							Total
	1.1	1.2	1.3	2.1	2.2	2.3	3.2	
Females								
Mean length (mm)	–	473	507	–	476	519	466	485
SE	–	4	9	–	2	4	12	2
Range	–	432–523	463–554	–	408–535	445–615	409–490	408–615
Sample size	0	42	11	0	101	39	6	199
Males								
Mean length (mm)	336	467	521	340	482	515	476	419
SE	2	5	5	4	3	4	13	4
Range	221–390	399–553	497–554	295–396	406–545	446–571	446–501	221–571
Sample size	157	72	11	36	111	45	4	436
All fish								
Mean length (mm)	336	469	514	340	479	517	470	440
SE	2	3	5	4	2	3	9	3
Range	221–390	399–553	463–554	295–396	406–545	445–615	409–501	221–615
Sample size	157	114	22	36	212	84	10	635

Table 17.—Estimated sex composition of Frazer Lake sockeye salmon escapement by week, 2019.

Statistical week	Dates	Adult Sample size			Escapement							
		Females	Males	Total	Percent			Number				
					Females	Males	Jacks	Females	Males	Jacks	Total	
24	6/7–6/13	9	25	34	35.1	60.6	4.3	1,858	3,204	230	5,292	
25	6/14–6/20	27	56	83	35.0	60.3	4.7	6,974	12,030	945	19,949	
26	6/21–6/27	40	69	109	34.1	58.9	7.0	8,699	15,005	1,781	25,485	
27	6/28–7/4	29	64	93	22.1	48.8	29.2	4,280	9,446	5,649	19,375	
28	7/5–7/11	36	40	76	32.0	35.5	32.5	6,544	7,272	6,663	20,479	
29	7/12–7/18	30	69	99	19.3	44.3	36.4	5,744	13,210	10,859	29,813	
30	7/19–7/25	20	53	73	14.6	38.7	46.8	3,439	9,115	11,024	23,578	
31	7/26–8/1	4	32	36	4.3	34.5	61.2	486	3,888	6,899	11,273	
32	8/2–8/8	4	28	32	3.7	25.8	70.5	359	2,515	6,858	9,732	
33	8/9–8/15	0	0	0	4.7	33.1	62.1	220	1,541	2,890	4,651	
Total		199	436	635	22.8	45.5	31.7	38,603	77,226	53,798	169,627	

Note: The term jack refers to ocean-age 1 (age-1.1, -2.1, and -3.1) males.

Table 18.—Estimated age composition of Karluk Lake early-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age										Total	
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2		3.3
21: 5/17–5/23	0	Percent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	0	0	0	0	0	0	0	0	0	0
22: 5/24–5/30	0	Percent	0.0	1.1	0.0	9.5	1.1	4.5	36.3	43.0	0.0	4.5	0.0	100.0
		Numbers	0	1	0	12	1	6	47	56	0	6	0	130
23: 5/31–6/6	179	Percent	0.0	1.1	0.0	9.5	1.1	4.5	36.3	43.0	0.0	4.5	0.0	100.0
		Numbers	0	734	0	6,259	738	2,944	23,839	28,290	0	2,932	0	65,736
24: 6/7–6/13	190	Percent	0.0	1.1	0.0	10.7	1.4	6.8	33.2	42.8	0.1	3.8	0.1	100.0
		Numbers	0	317	0	3,090	400	1,954	9,554	12,316	19	1,094	19	28,762
25: 6/14–6/20	139	Percent	0.0	1.4	0.0	8.7	0.9	20.7	32.5	31.8	0.6	3.0	0.6	100.0
		Numbers	0	295	0	1,830	193	4,372	6,875	6,716	125	625	119	21,151
26: 6/21–6/27	183	Percent	0.0	1.9	0.1	7.5	1.0	25.5	26.9	33.9	0.9	1.7	0.6	100.0
		Numbers	0	449	15	1,733	232	5,918	6,255	7,889	217	396	133	23,238
27: 6/28–7/4	162	Percent	0.1	0.8	0.4	5.7	1.0	14.8	34.2	38.4	0.2	3.8	0.5	100.0
		Numbers	23	146	75	991	180	2,550	5,918	6,636	36	656	81	17,291
28: 7/5–7/11	175	Percent	0.4	1.1	0.0	5.4	2.3	15.1	40.0	33.7	0.4	1.5	0.0	100.0
		Numbers	69	178	7	870	365	2,417	6,412	5,408	69	244	7	16,048
29: 7/12–7/18	171	Percent	0.2	1.2	0.0	4.6	2.7	11.6	43.1	34.9	0.2	1.6	0.0	100.0
		Numbers	27	177	1	713	417	1,792	6,623	5,365	27	241	0	15,383
30: 7/19–7/25	122	Percent	0.0	0.7	0.5	6.4	1.9	13.6	31.7	43.4	0.0	1.7	0.0	100.0
		Numbers	0	17	12	156	47	329	771	1,055	0	42	0	2,429
Total	1,321	Percent	0.1	1.2	0.1	8.2	1.4	11.7	34.9	38.8	0.3	3.3	0.2	100.0
		Numbers	119	2,315	110	15,654	2,573	22,282	66,294	73,731	492	6,237	359	190,168

Note: Karluk early-run escapement is summed through 21 July; however, samples from all of week 30 were utilized in the age composition estimates.

Table 19.—Length composition of Karluk Lake early-run sockeye salmon escapement samples by age and sex, 2019.

	Age											Total
	0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	
Females												
Mean length (mm)	–	489	–	463	514	–	482	520	–	476	501	501
SE	–	6	–	5	8	–	2	1	–	10	–	1
Range	–	464–519	–	403–525	454–563	–	401–546	427–583	–	414–550	–	401–583
Sample size	0	8	0	56	16	0	204	333	0	16	1	634
Males												
Mean length (mm)	498	495	360	484	538	360	495	533	362	475	520	465
SE	–	12	–	5	14	2	2	2	11	6	7	3
Range	–	473–541	–	387–555	504–564	296–476	380–593	457–610	337–390	438–542	513–526	296–610
Sample size	1	5	1	40	4	180	232	165	4	18	2	652
All fish												
Mean length (mm)	498	491	360	472	519	360	489	524	362	476	513	483
SE	–	6	–	4	7	2	2	1	11	5	7	2
Range	–	464–541	–	387–555	454–564	296–476	380–593	427–610	337–390	414–550	501–526	296–610
Sample size	1	13	1	96	20	180	436	498	4	34	3	1,286

Table 20.—Estimated sex composition of Karluk Lake sockeye salmon escapement by week, 2019.

Statistical week	Dates	Sample size	Escapement				
			Percent		Number		Total
			Females	Males	Females	Males	
22	5/24–5/30	0	45.9	61.3	60	70	130
23	5/31–6/6	207	46.0	61.3	30,265	35,471	65,736
24	6/7–6/13	225	54.0	57.4	15,524	13,238	28,762
25	6/14–6/20	161	44.7	48.8	9,458	11,693	21,151
26	6/21–6/27	213	43.3	46.4	10,061	13,177	23,238
27	6/28–7/4	200	46.4	45.3	8,016	9,275	17,291
28	7/5–7/11	205	48.4	42.0	7,771	8,277	16,048
29	7/12–7/18	203	53.3	42.9	8,194	7,189	15,383
30	7/19–7/25	147	54.3	39.7	1,319	1,110	2,429
Early-run total		1,561	47.7	52.3	90,666	99,502	190,168
30	7/19–7/25	59	53.9	46.1	2,186	1,872	4,058
31	7/26–8/1	195	52.4	47.6	1,538	1,397	2,935
32	8/2–8/8	211	39.9	60.1	1,580	2,375	3,955
33	8/9–8/15	205	45.3	54.7	6,159	7,426	13,585
34	8/16–8/22	199	51.0	49.0	2,642	2,542	5,184
35	8/23–8/29	201	57.7	42.3	17,307	12,709	30,016
36	8/30–9/5	171	53.9	46.1	50,460	43,198	93,658
37	9/6–9/12	200	51.2	48.8	41,325	39,398	80,723
38	9/13–9/19	120	44.6	55.4	37,128	46,139	83,267
Late-run total		1,561	50.5	49.5	160,325	157,056	317,381

Note: Karluk early-run escapement is summed through 21 July and late-run escapement after 21 July; however, samples from all of week 30 were utilized for both early- and late-run sex composition estimates.

Table 21.—Estimated age composition of Karluk Lake late-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age										Total
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2	3.3	
30: 7/19–7/25	51	Percent	0.0	0.9	0.9	8.5	2.2	14.8	29.5	41.5	1.6	0.0	100.0
		Numbers	0	37	37	345	91	602	1,197	1,684	66	0	4,058
31: 7/26–8/1	156	Percent	0.0	1.9	1.8	12.4	3.4	16.9	31.2	30.9	1.5	0.0	100.0
		Numbers	0	55	53	365	99	497	915	907	44	0	2,935
32: 8/2–8/8	181	Percent	0.0	2.9	1.9	8.8	0.8	24.7	32.7	24.5	3.3	0.3	100.0
		Numbers	0	117	75	349	31	978	1,292	970	131	12	3,955
33: 8/9–8/15	171	Percent	0.0	3.8	1.2	7.0	0.7	13.9	36.9	30.7	4.3	1.5	100.0
		Numbers	0	510	163	951	100	1,886	5,012	4,165	590	206	13,585
34: 8/16–8/22	164	Percent	0.0	2.7	3.2	5.9	1.8	6.5	37.1	35.4	6.2	1.3	100.0
		Numbers	0	139	167	304	92	336	1,923	1,835	320	68	5,184
35: 8/23–8/29	165	Percent	0.0	2.0	0.9	6.4	3.1	1.8	54.1	24.1	6.3	1.2	100.0
		Numbers	9	607	274	1,931	939	552	16,233	7,224	1,899	348	30,016
36: 8/30–9/5	145	Percent	0.6	3.3	0.6	6.9	1.0	5.0	57.5	16.4	8.6	0.1	100.0
		Numbers	574	3,093	574	6,421	929	4,646	53,863	15,368	8,072	119	93,658
37: 9/6–9/12	179	Percent	0.0	3.6	0.0	6.7	1.1	1.8	62.2	16.4	8.0	0.4	100.0
		Numbers	11	2,871	11	5,369	866	1,425	50,203	13,245	6,437	285	80,723
36: 9/13–9/19	105	Percent	0.0	2.0	0.0	8.5	0.1	4.6	63.7	7.3	13.9	0.0	100.0
		Numbers	0	1,669	0	7,040	54	3,810	53,056	6,042	11,576	18	83,267
Total	1,317	Percent	0.2	2.9	0.4	7.3	1.0	4.6	57.9	16.2	9.2	0.3	100.0
		Numbers	594	9,097	1,354	23,076	3,201	14,731	183,694	51,441	29,137	1,056	317,381

Note: Some samples were collected using a beach seine in Karluk Lagoon in late August and September. Karluk late-run escapement is summed after 21 July; however, samples from all of week 30 were utilized in the age composition estimates.

Table 22.—Length composition of Karluk Lake late-run sockeye salmon escapement samples by age and sex, 2019.

	Age										Total
	0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2	3.3	
Females											
Mean length (mm)	502	522	—	495	526	—	501	528	496	522	511
SE	—	4	—	3	7	—	2	2	4	20	1
Range	—	476–565	—	432–552	491–585	—	422–592	418–576	400–532	427–571	400–592
Sample size	1	25	0	56	12	0	295	222	38	6	655
Males											
Mean length (mm)	—	548	325	498	531	367	511	562	511	557	485
SE	—	6	3	6	8	2	2	3	5	27	3
Range	—	497–574	296–340	379–550	482–578	310–426	397–598	445–625	451–565	530–584	296–625
Sample size	0	13	17	43	10	129	296	96	33	2	639
All fish											
Mean length (mm)	502	531	325	497	528	367	506	538	503	531	498
SE	—	4	3	3	5	2	1	2	3	17	2
Range	—	476–574	296–340	379–552	482–585	310–426	397–598	418–625	400–565	427–584	296–625
Sample size	1	38	17	99	22	129	591	318	71	8	1,294

Table 23.—Estimated age composition of Pasagshak River sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age					Total	
			0.2	0.3	1.1	1.2	1.3		2.2
24: 6/7–6/13	0	Percent	0.0	0.0	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	0	0	0	0	0
25: 6/14–6/20	0	Percent	0.0	0.0	0.0	0.0	0.0	0.0	100.0
		Numbers	0	0	0	0	0	0	0
26: 6/21–6/27	93	Percent	3.2	55.9	0.0	9.7	30.1	1.1	100.0
		Numbers	3	56	0	10	30	1	100
27: 6/28–7/4	87	Percent	3.4	57.4	0.0	17.0	22.1	0.0	100.0
		Numbers	7	109	0	32	42	0	189
28: 7/5–7/11	86	Percent	2.5	44.0	0.0	25.4	28.1	0.0	100.0
		Numbers	9	158	0	92	101	0	360
29: 7/12–7/18	0	Percent	2.5	51.8	0.0	20.5	25.2	0.0	100.0
		Numbers	32	664	0	263	323	0	1,283
30: 7/19–7/25	185	Percent	3.3	58.7	0.0	17.0	20.7	0.2	100.0
		Numbers	30	525	0	152	185	2	894
31: 7/26–8/1	63	Percent	7.3	46.0	0.0	30.2	15.0	1.4	100.0
		Numbers	67	420	0	276	137	13	913
32: 8/2–8/8	71	Percent	3.9	31.8	0.0	45.2	17.6	1.5	100.0
		Numbers	20	165	0	235	92	8	520
33: 8/9–8/15	55	Percent	0	22	2	60	16	0	100.0
		Numbers	0	50	4	137	37	0	228
34: 8/16–8/22	0	Percent	0	22	2	60	16	0	100.0
		Numbers	0	11	1	30	8	0	50
Total	640	Percent	3.7	47.6	0.1	27.0	21.1	0.5	100.0
		Numbers	168	2,158	5	1,227	955	24	4,537

Table 24.—Length composition of Pasagshak River sockeye salmon escapement samples by age and sex, 2019.

	Age						Total
	0.2	0.3	1.1	1.2	1.3	2.2	
Females							
Mean length (mm)	481	529	—	486	530	470	518
SE	7	2	—	3	3	—	2
Range	460–490	420–580	—	425–570	425–590	—	420–590
Sample size	4	169	0	81	63	1	318
Males							
Mean length (mm)	516	555	390	509	554	510	540
SE	7	2	—	3	3	10	2
Range	470–580	440–610	—	420–565	455–605	500–520	390–610
Sample size	15	141	1	83	80	2	322
All fish							
Mean length (mm)	509	541	390	498	544	497	529
SE	6	2	—	2	2	15	1
Range	460–580	420–610	—	420–570	425–605	470–520	390–610
Sample size	19	310	1	164	143	3	640

Table 25.—Estimated sex composition of Pasagshak River sockeye salmon escapement by week, 2019.

Statistical week	Dates	Sample size	Escapement				
			Percent		Number		Total
			Females	Males	Females	Males	
24	6/7–6/13	0	50.0	50.0	0	0	0
25	6/14–6/20	0	50.0	50.0	0	0	0
26	6/21–6/27	100	50.0	50.0	50	50	100
27	6/28–7/4	100	52.9	47.1	100	89	189
28	7/5–7/11	101	42.3	57.7	152	208	360
29	7/12–7/18	0	48.3	51.7	620	663	1,283
30	7/19–7/25	220	54.0	46.0	483	411	894
31	7/26–8/1	80	46.2	53.8	421	492	913
32	8/2–8/8	80	45.7	54.3	238	282	520
33	8/9–8/15	60	43.4	56.6	99	129	228
34	8/16–8/22	0	43.3	56.7	22	28	50
Total		741	48.2	51.8	2,185	2,352	4,537

Table 26.—Estimated age composition of Sallery Lake sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age								Total
			0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	
25: 6/14–6/20	0	Percent	0.0	0.0	44.4	44.4	0.0	0.0	11.1	0.0	100.0
		Numbers	0	0	11	11	0	0	3	0	25
26: 6/21–6/27	0	Percent	0.0	0.0	44.4	44.4	0.0	0.0	11.1	0.0	100.0
		Numbers	0	0	46	46	0	0	12	0	104
27: 6/28–7/4	0	Percent	0.0	0.0	44.4	44.4	0.0	0.0	11.1	0.0	100.0
		Numbers	0	0	109	109	0	0	27	0	245
28: 7/5–7/11	9	Percent	0.0	0.0	44.4	44.4	0.0	0.0	11.1	0.0	100.0
		Numbers	0	0	372	372	0	0	93	0	837
29: 7/12–7/18	94	Percent	0.0	0.0	53.7	23.7	0.0	0.0	14.8	7.8	100.0
		Numbers	0	1	1,128	498	0	0	311	163	2,102
30: 7/19–7/25	139	Percent	0.1	1.1	54.0	24.0	0.0	0.5	10.5	9.7	100.0
		Numbers	8	80	3,936	1,750	0	36	767	705	7,282
31: 7/26–8/1	99	Percent	0.8	1.1	54.5	21.5	0.0	0.1	13.9	8.1	100.0
		Numbers	25	33	1,683	662	0	3	430	250	3,086
32: 8/2–8/8	92	Percent	0.4	1.1	50.6	28.5	0.0	0.1	12.3	7.0	100.0
		Numbers	13	40	1,787	1,009	1	2	434	248	3,534
33: 8/9–8/15	75	Percent	0.0	5.2	48.0	33.3	1.3	2.6	5.6	4.1	100.0
		Numbers	0	256	2,384	1,657	64	127	276	204	4,968
Total	508	Percent	0.2	1.9	51.6	27.6	0.3	0.8	10.6	7.1	100.0
		Numbers	45	411	11,457	6,114	64	168	2,352	1,571	22,183

Table 27.—Length composition of Saltery Lake sockeye salmon escapement samples by age and sex, 2019.

	Age							Total	
	0.3	1.1	1.2	1.3	1.4	2.1	2.2		2.3
Females									
Mean length (mm)	–	–	481	523	–	–	484	518	496
SE	–	–	2	2	–	–	4	5	2
Range	–	–	406–517	477–552	–	–	444–518	483–575	406–575
Sample size	0	0	135	69	0	0	24	20	248
Males									
Mean length (mm)	552	317	497	548	546	331	504	547	507
SE	–	3	3	3	–	13	4	3	3
Range	–	306–331	398–561	470–591	–	315–356	411–552	514–576	306–591
Sample size	1	8	132	61	1	3	33	21	260
All fish									
Mean length (mm)	552	317	489	535	546	331	496	533	502
SE	–	3	2	2	–	13	3	4	2
Range	–	306–331	398–561	470–591	–	315–356	411–552	483–576	306–591
Sample size	1	8	267	130	1	3	57	41	508

Table 28.—Estimated sex composition of Saltery Lake sockeye salmon escapement by week, 2019.

Statistical week	Dates	Sample size	Escapement				Total
			Percent		Number		
			Females	Males	Females	Males	
25	6/14–6/20	0	54.5	45.5	14	11	25
26	6/21–6/27	0	54.5	45.5	57	47	104
27	6/28–7/4	0	54.5	45.5	134	111	245
28	7/5–7/11	11	54.5	45.5	457	380	837
29	7/12–7/18	109	50.5	49.5	1,062	1,040	2,102
30	7/19–7/25	160	47.0	53.0	3,419	3,863	7,282
31	7/26–8/1	120	48.4	51.6	1,493	1,593	3,086
32	8/2–8/8	110	50.5	49.5	1,783	1,751	3,534
33	8/9–8/15	90	45.8	54.2	2,276	2,692	4,968
Total		600	48.2	51.8	10,693	11,490	22,183

Table 29.—Estimated age composition of Upper Station (South Olga Lakes) early-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age								Total
			0.2	1.1	1.2	1.3	2.1	2.2	2.3	3.2	
21: 5/17–5/23	14	Percent	0.2	7.4	50.0	14.1	20.3	7.9	0.0	0.0	100.0
		Numbers	0	5	33	9	13	5	0	0	66
22: 5/24–5/30	26	Percent	3.1	11.1	50.0	11.7	6.2	17.7	0.2	0.0	100.0
		Numbers	20	72	325	76	40	115	1	0	649
23: 5/31–6/6	112	Percent	0.2	17.4	44.8	8.6	6.3	19.3	3.6	0.0	100.0
		Numbers	8	642	1,651	316	231	710	132	0	3,690
24: 6/7–6/13	187	Percent	0.0	27.1	33.7	9.7	4.9	20.5	4.2	0.0	100.0
		Numbers	0	3,514	4,366	1,259	635	2,655	540	0	12,969
25: 6/14–6/20	0	Percent	0.0	24.9	32.0	13.0	4.4	21.7	3.9	0.0	100.0
		Numbers	0	1,830	2,352	953	325	1,597	287	0	7,343
26: 6/21–6/27	201	Percent	0.0	21.4	31.2	16.5	4.1	23.2	3.6	0.0	100.0
		Numbers	0	2,602	3,795	2,005	499	2,814	434	4	12,153
27: 6/28–7/4	197	Percent	0.0	22.1	27.6	17.1	4.6	24.7	3.6	0.4	100.0
		Numbers	0	1,585	1,974	1,223	326	1,767	255	31	7,162
28: 7/5–7/11	96	Percent	0.0	22.4	22.3	21.2	5.5	24.4	4.0	0.2	100.0
		Numbers	0	798	793	757	197	868	143	7	3,563
29: 7/12–7/18	132	Percent	0.4	14.9	20.5	27.6	4.8	25.2	6.7	0.0	100.0
		Numbers	7	285	394	531	92	485	128	0	1,922
Total	965	Percent	0.1	22.9	31.7	14.4	4.8	22.2	3.9	0.1	100.0
		Numbers	36	11,333	15,683	7,127	2,359	11,016	1,921	42	49,517

Note: Upper Station early-run escapement is summed through 15 July; however, samples from all of week 29 were utilized in the age composition estimates.

Table 30.—Length composition of Upper Station (South Olga Lakes) early-run sockeye salmon escapement samples by age and sex, 2019.

Data not available at time of publication.

Table 31.—Estimated sex composition of Upper Station (South Olga Lakes) sockeye salmon escapement by week, 2019.

Data not available at time of publication.

Table 32.—Estimated age composition of Upper Station (South Olga Lakes) late-run sockeye salmon escapement by week, 2019.

Statistical week	Sample size		Age										Total
			0.1	0.2	0.3	1.1	1.2	1.3	2.0	2.1	2.2	2.3	
29: 7/12–7/18	87	Percent	0.0	0.3	0.0	16.6	16.8	26.8	0.0	3.4	28.9	7.2	100.0
		Numbers	0	2	0	87	89	141	0	18	152	38	527
30: 7/19–7/25	86	Percent	0.2	0.3	0.3	21.7	11.1	23.8	0.0	2.0	33.7	6.9	100.0
		Numbers	0	1	1	47	24	51	0	4	72	15	215
31: 7/26–8/1	0	Percent	2.7	3.1	3.5	19.6	13.6	17.0	0.0	3.0	32.6	4.8	100.0
		Numbers	10	11	13	70	49	61	0	11	117	17	358
32: 8/2–8/8	69	Percent	8.5	9.9	11.3	9.1	25.6	3.4	0.0	7.1	24.9	0.2	100.0
		Numbers	156	181	207	168	471	63	0	130	458	3	1,838
33: 8/9–8/15	168	Percent	1.8	6.5	15.3	9.3	24.9	6.2	0.0	2.7	31.0	2.3	100.0
		Numbers	186	679	1,591	963	2,594	642	0	276	3,223	244	10,397
34: 8/16–8/22	178	Percent	1.0	2.4	15.4	8.3	23.0	4.8	0.1	3.0	41.3	1.0	100.0
		Numbers	232	567	3,651	1,963	5,462	1,131	16	719	9,812	232	23,786
35: 8/23–8/29	183	Percent	2.4	1.5	4.3	6.0	22.6	9.6	0.5	4.6	46.8	1.6	100.0
		Numbers	681	443	1,244	1,728	6,494	2,768	133	1,334	13,447	446	28,718
36: 8/30–9/5	0	Percent	1.5	0.9	1.8	4.5	17.7	6.4	0.3	4.3	60.9	1.7	100.0
		Numbers	381	229	457	1,140	4,485	1,625	76	1,089	15,415	430	25,327
37: 9/6–9/12	226	Percent	0.2	0.1	0.2	2.9	11.4	1.5	0.0	3.6	78.4	1.8	100.0
		Numbers	59	35	71	1,021	4,071	533	12	1,294	27,995	629	35,719
38: 9/13–9/19	0	Percent	0.0	0.0	0.0	2.7	10.6	0.9	0.0	3.5	80.5	1.8	100.0
		Numbers	0	0	0	1,016	4,063	339	0	1,354	30,812	677	38,261
Total	997	Percent	1.0	1.3	4.4	5.0	16.8	4.5	0.1	3.8	61.5	1.7	100.0
		Numbers	1,704	2,148	7,234	8,202	27,801	7,354	238	6,230	101,503	2,732	165,146

Note: Upper Station late-run escapement is summed after 15 July; however, samples from all of week 29 were utilized in the age composition estimates.

Table 33.—Length composition of Upper Station (South Olga Lakes) late-run sockeye salmon escapement samples by age and sex, 2019.

Data not available at time of publication.

Table 34.–Kodiak sockeye salmon age-2.2 escapement average length by year and system, 1985 to 2019.

Year	System									
	Afognak	Ayakulik early	Ayakulik late	Frazer	Karluk early	Karluk late	Pasagshak	Saltery	Upper Stn early	Upper Stn late
1985	467	517	539	502	518	538	–	501	530	529
1986	474	519	–	505	519	555	–	542	509	567
1987	485	518	530	505	517	531	–	499	529	567
1988	477	514	545	508	504	532	–	479	520	563
1989	483	538	543	506	510	530	–	528	515	551
1990	478	519	530	504	506	537	–	494	486	527
1991	460	520	545	506	507	522	–	–	498	535
1992	457	514	535	499	482	516	–	–	488	518
1993	480	540	560	497	505	521	–	517	505	541
1994	464	505	523	482	481	512	–	481	480	522
1995	485	530	542	513	503	537	–	514	509	543
1996	473	530	543	526	517	548	–	530	517	563
1997	466	507	498	512	504	504	–	–	510	530
1998	453	485	529	490	486	512	–	–	477	523
1999	492	533	537	515	509	528	–	–	517	539
2000	479	503	535	505	502	523	–	–	509	564
2001	473	510	524	521	518	535	–	521	505	558
2002	480	530	536	515	501	535	–	516	523	551
2003	487	519	539	501	511	534	–	507	501	544
2004	465	512	532	508	491	529	–	–	499	544
2005	473	493	509	486	487	508	–	–	488	529
2006	472	489	513	516	475	488	–	–	497	526
2007	498	518	518	494	491	500	–	–	505	546
2008	480	507	519	490	479	507	–	502	502	554
2009	495	513	509	527	500	514	–	511	520	559
2010	457	497	519	506	479	526	–	524	492	541
2011	490	522	546	503	506	530	468	512	510	545
2012	484	520	529	492	495	520	471	503	506	536
2013	487	516	530	493	498	530	522	486	508	545
2014	425	503	519	482	489	524	534	502	490	533
2015	480	484	504	485	500	509	–	489	492	528
2016	477	488	500	476	486	522	525	509	493	517
2017	475	522	513	508	502	523	–	495	530	549
2018	468	494	520	474	478	514	510	516	492	529
2019	437	496	510	479	489	506	497	496		
1985–2018 Avg.	474	512	527	501	498	523	504	507	504	542

Note: Lengths are measured in mm from mid eye to tail fork (METF). Upper Station length data was not available at the time of publication.

Table 35.–Kodiak sockeye salmon age-2.3 escapement average length by year and system, 1985 to 2019.

Year	System									
	Afognak	Ayakulik early	Ayakulik late	Frazer	Karluk early	Karluk late	Pasagshak	Saltery	Upper Stn early	Upper Stn late
1985	526	551	580	538	555	580	–	555	556	585
1986	536	555	–	555	552	598	–	568	563	588
1987	551	562	581	572	562	576	–	575	567	584
1988	525	557	589	553	569	582	–	555	567	610
1989	502	564	575	565	562	578	–	564	561	572
1990	534	562	572	558	553	571	–	536	542	578
1991	523	556	580	574	549	555	–	–	545	541
1992	522	560	570	534	535	551	–	–	533	562
1993	531	570	612	543	539	556	–	576	539	573
1994	521	544	578	541	524	549	–	554	518	560
1995	533	561	574	549	541	551	–	557	546	551
1996	551	561	584	571	568	581	–	589	556	591
1997	533	548	539	569	563	556	–	–	551	539
1998	511	523	550	546	531	552	–	–	518	549
1999	533	551	578	548	538	542	–	–	537	555
2000	549	551	580	557	551	563	–	–	546	592
2001	563	552	564	568	560	574	–	581	557	591
2002	526	554	576	569	558	587	–	586	554	580
2003	536	569	583	561	547	567	–	556	534	565
2004	543	550	568	562	537	576	–	–	541	583
2005	532	527	524	545	532	541	–	–	539	565
2006	524	523	549	544	527	541	–	–	535	545
2007	558	540	548	554	541	549	–	–	546	549
2008	552	529	547	536	536	552	–	561	518	583
2009	545	545	539	563	543	543	–	571	550	576
2010	516	524	552	544	534	548	–	574	533	563
2011	541	556	572	561	554	551	583	561	544	572
2012	528	555	561	545	541	556	601	559	542	558
2013	529	548	566	539	538	558	–	552	547	564
2014	474	535	545	532	536	556	553	542	527	566
2015	535	521	541	522	518	527	545	531	523	555
2016	515	526	547	517	519	551	543	553	529	534
2017	539	545	539	530	527	541	580	519	547	559
2018	503	532	563	529	527	546	503	547	528	521
2019	509	530	540	517	524	538	–	533	–	–
1985–2018 Avg.	531	547	564	550	543	559	558	559	542	566

Note: Lengths are measured in mm from mid eye to tail fork (METF). Upper Station length data was not available at the time of publication.

Table 36.—Estimated age composition of commercial sockeye salmon catches by sample area, Kodiak Management Area, 2019.

District Catch area	Sample size		Age									Total
			0.3	1.2	2.1	1.3	2.2	2.3	3.2	3.3	Other ^a	
Northwest Kodiak District												
Uganik-Viekoda-Kupreanof	2,137	Percent	3.5	15.3	0.1	38.6	19.5	19.7	2.5	0.7	0.1	100.0
		Numbers	16,176	70,644	295	178,081	89,871	90,824	11,735	3,232	560	461,419
Uyak Bay	1,927	Percent	4.3	11.2	0.3	34.5	29.4	17.5	2.3	0.3	0.2	100.0
		Numbers	15,267	39,278	1,088	121,608	103,335	61,521	8,158	1,064	705	352,023
Southwest Kodiak District												
Karluk ^b -Sturgeon	951	Percent	1.4	13.2	0.3	44.7	19.3	20.2	0.5	0.0	0.5	100.0
		Numbers	2,257	21,912	458	74,126	32,022	33,590	766	0	843	165,973
Ayakulik-Halibut Bay	1,039	Percent	4.1	14.4	0.1	48.9	19.2	11.8	0.9	0.2	0.4	100.0
		Numbers	15,228	53,637	438	182,177	71,603	44,026	3,196	889	1,309	372,502
Alitak District												
Moser-Olga-Alitak (gillnet)	1,209	Percent	2.5	10.4	0.1	12.9	34.1	37.1	1.2	0.2	1.5	100.0
		Numbers	1,745	7,400	64	9,148	24,143	26,302	847	117	1,069	70,836
Dog Salmon Flats	706	Percent	0.1	18.8	0.5	8.5	51.6	16.5	0.9	0.0	3.0	100.0
		Numbers	123	16,757	439	7,567	45,973	14,713	775	0	2,680	89,027
Total	7,969	Percent	3.4	13.9	0.2	37.9	24.3	17.9	1.7	0.4	0.5	100.0
		Number	50,796	209,628	2,781	572,708	366,946	270,976	25,477	5,302	7,167	1,511,780

^a The “Other” age class listed in the table above consists of age -0.2, -1.1, -1.4, -2.4, and -3.1.

^b Includes Test Fishery harvest.

Table 37.—Estimated age composition of Uganik-Viekoda-Kupreanof (253-11, 12, 13, 14, 31, 32, 33, 34, 35) commercial sockeye salmon catch by week, 2019.

Statistical week	Sample size		Age										Total
			0.2	0.3	1.2	1.3	1.4	2.1	2.2	2.3	3.2	3.3	
24: 6/07–6/13	159	Percent	0.0	6.7	18.2	51.9	0.1	0.0	9.2	13.4	0.6	0.0	100.0
		Numbers	0	406	1,096	3,122	4	0	552	805	34	0	6,017
25: 6/14–6/20	174	Percent	0.0	5.4	8.7	54.2	0.5	0.0	7.3	23.9	0.1	0.0	100.0
		Numbers	0	91	146	906	8	0	122	399	2	0	1,673
26: 6/21–6/27	187	Percent	0.0	7.3	17.2	45.8	0.1	0.0	13.3	15.4	1.0	0.0	100.0
		Numbers	0	2,043	4,821	12,836	14	0	3,727	4,330	274	0	28,045
27: 6/28–7/4	210	Percent	0.0	0.8	35.9	32.4	0.0	0.4	17.0	12.5	0.9	0.0	100.0
		Numbers	0	528	23,018	20,765	0	262	10,862	8,027	582	0	64,045
28: 7/5–7/11	175	Percent	0.0	2.9	24.9	47.6	0.0	0.1	12.3	12.1	0.2	0.0	100.0
		Numbers	0	1,189	10,249	19,606	0	33	5,082	4,974	66	0	41,200
29: 7/12–7/18	159	Percent	0.0	5.0	15.3	62.2	0.0	0.0	5.0	12.4	0.0	0.0	100.0
		Numbers	0	3,685	11,209	45,555	0	0	3,678	9,091	0	0	73,217
30: 7/19–7/25	181	Percent	0.0	4.2	13.1	54.3	0.0	0.0	8.0	19.6	0.3	0.4	100.0
		Numbers	0	2,824	8,905	36,857	30	0	5,436	13,283	227	287	67,849
32: 8/2–8/8	172	Percent	0.0	4.4	10.2	43.2	0.4	0.0	14.8	25.6	0.2	1.1	100.0
		Numbers	0	2,811	6,588	27,940	282	0	9,580	16,566	130	713	64,610
33: 8/9–8/15	178	Percent	0.0	3.8	3.3	18.6	0.1	0.0	23.4	46.3	2.4	2.3	100.0
		Numbers	0	1,364	1,189	6,677	20	0	8,404	16,629	845	820	35,948
34: 8/16–8/22	178	Percent	0.0	3.0	5.6	10.9	0.0	0.0	37.1	35.0	5.6	2.9	100.0
		Numbers	0	733	1,382	2,706	0	0	9,191	8,660	1,382	717	24,772
35: 8/23–8/29	184	Percent	0.7	1.5	5.3	3.5	0.0	0.0	57.2	21.4	9.3	1.1	100.0
		Numbers	142	281	1,017	665	0	0	11,011	4,123	1,799	207	19,246
36: 8/30–9/5	180	Percent	0.3	0.7	3.0	1.4	0.0	0.0	63.5	12.5	17.3	1.2	100.0
		Numbers	60	147	644	294	0	0	13,428	2,648	3,663	260	21,144
37: 9/6–9/12	0	Percent	0.0	0.6	2.8	1.1	0.0	0.0	64.4	9.4	20.0	1.7	100.0
		Numbers	0	54	270	108	0	0	6,274	920	1,947	162	9,736
38: 9/13–9/19	0	Percent	0.0	0.6	2.8	1.1	0.0	0.0	64.4	9.4	20.0	1.7	100.0
		Numbers	0	22	109	44	0	0	2,524	370	783	65	3,917
Total	2,137	Percent	0.0	3.5	15.3	38.6	0.1	0.1	19.5	19.7	2.5	0.7	100.0
		Numbers	202	16,176	70,644	178,081	358	295	89,871	90,824	11,735	3,232	461,419

Table 38.—Estimated age composition of Uyak Bay (254-10, 20, 21, 30, 31, 40, 41) commercial sockeye salmon catch by week, 2019.

Statistical week	Sample size		Age											Total	
			0.2	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.2		3.3
24: 6/7–6/13	183	Percent	0.5	3.8	0.0	9.3	23.0	0.5	0.5	16.4	43.7	0.0	1.6	0.5	100.0
		Numbers	47	330	0	802	1,982	47	47	1,416	3,775	0	142	47	8,636
25: 6/14–6/20	183	Percent	0.1	3.8	1.0	12.2	16.2	0.1	5.4	30.4	27.3	0.0	3.6	0.1	100.0
		Numbers	3	202	51	643	856	3	283	1,604	1,443	0	188	3	5,281
27: 6/28–7/4	176	Percent	0.0	2.9	2.2	25.9	19.5	0.0	2.6	25.2	18.8	0.5	2.4	0.0	100.0
		Numbers	0	413	304	3,644	2,739	0	370	3,546	2,654	72	341	0	14,084
28: 7/5–7/11	177	Percent	0.0	5.8	0.3	14.6	59.2	0.0	0.3	11.5	8.2	0.1	0.3	0.0	100.0
		Numbers	0	2,932	141	7,413	30,13	0	141	5,832	4,150	35	141	0	50,917
29: 7/12–7/18	171	Percent	0.0	5.5	0.0	10.5	67.1	0.0	0.0	9.8	7.0	0.0	0.1	0.0	100.0
		Numbers	0	3,554	0	6,756	43,11	0	0	6,275	4,525	0	60	0	64,288
30: 7/19–7/25	180	Percent	0.0	6.4	0.0	14.6	60.4	0.0	0.0	7.2	10.7	0.0	0.5	0.1	100.0
		Numbers	0	2,025	0	4,583	18,98	0	0	2,267	3,358	0	171	38	31,427
31: 7/26–8/1	171	Percent	0.0	5.5	0.0	12.3	32.4	0.0	0.0	16.3	30.2	0.0	1.4	1.8	100.0
		Numbers	0	1,255	0	2,786	7,352	0	0	3,697	6,851	0	316	417	22,673
32: 8/2–8/8	169	Percent	0.0	3.8	0.0	10.4	24.5	0.0	0.1	23.1	35.9	0.0	1.1	1.3	100.0
		Numbers	0	867	0	2,388	5,625	0	13	5,311	8,251	0	249	297	23,001
33: 8/9–8/15	167	Percent	0.0	2.8	0.0	9.9	13.8	0.0	0.5	35.5	32.8	0.0	4.2	0.6	100.0
		Numbers	0	1,096	0	3,933	5,465	0	197	14,06	12,98	0	1,666	225	39,630
34: 8/16–8/22	176	Percent	0.0	4.2	0.0	8.5	9.3	0.0	0.2	51.3	20.7	0.0	5.6	0.2	100.0
		Numbers	0	972	0	1,938	2,136	0	36	11,73	4,751	0	1,293	36	22,902
35: 8/23–8/29	174	Percent	0.0	2.5	0.0	6.4	4.9	0.0	0.0	68.1	12.9	0.0	5.3	0.0	100.0
		Numbers	0	358	0	919	692	0	0	9,704	1,838	0	749	0	14,260
36: 8/30–9/5	0	Percent	0.0	2.3	0.0	6.3	4.6	0.0	0.0	69.0	12.6	0.0	5.2	0.0	100.0
		Numbers	0	634	0	1,744	1,269	0	0	19,02	3,488	0	1,427	0	27,590
37: 9/6–9/12	0	Percent	0.0	2.3	0.0	6.3	4.6	0.0	0.0	69.0	12.6	0.0	5.2	0.0	100.0
		Numbers	0	302	0	831	604	0	0	9,064	1,662	0	680	0	13,143
38: 9/13–9/19	0	Percent	0.0	2.3	0.0	6.3	4.6	0.0	0.0	69.0	12.6	0.0	5.2	0.0	100.0
		Numbers	0	285	0	785	571	0	0	8,562	1,570	0	642	0	12,415
39: 9/20–9/26	0	Percent	0.0	2.3	0.0	6.3	4.6	0.0	0.0	69.0	12.6	0.0	5.2	0.0	100.0
		Numbers	0	22	0	60	43	0	0	650	119	0	49	0	943
41: 10/4–	0	Percent	0.0	2.3	0.0	6.3	4.6	0.0	0.0	69.0	12.6	0.0	5.2	0.0	100.0
		Numbers	0	19	0	53	38	0	0	574	105	0	43	0	833
Total	1,927	Percent	0.0	4.3	0.1	11.2	34.5	0.0	0.3	29.4	17.5	0.0	2.3	0.3	100.0
		Numbers	51	15,26	496	39,27	121,6	51	1,088	103,3	61,52	108	8,158	1,064	352,02

Table 39.—Estimated age composition of Inner and Outer Karluk Sections (255-10 and 255-20) and Sturgeon Section (256-40) commercial sockeye salmon catch, 2019.

Statistical week	Sample size		Age										Total
			0.2	0.3	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	
23: 5/31–6/6	201	Percent	3.5	0.0	0.5	13.4	7.5	8.0	41.8	24.4	1.0	0.0	100.0
		Numbers	63	0	9	244	136	145	761	444	18	0	1,820
24: 6/7–6/13	227	Percent	2.2	0.0	0.4	19.4	11.9	7.9	40.5	15.9	1.8	0.0	100.0
		Numbers	26	0	5	225	138	92	470	184	20	0	1,160
27: 6/28–7/4	0	Percent	1.1	1.1	8.5	35.3	5.9	4.0	26.5	16.7	0.9	0.0	100.0
		Numbers	61	63	471	1,965	331	221	1,478	933	49	0	5,573
28: 7/5–7/11	176	Percent	0.0	2.3	16.5	51.1	0.0	0.0	12.5	17.6	0.0	0.0	100.0
		Numbers	0	505	3,658	11,352	0	0	2,775	3,910	0	0	22,200
29: 7/12–7/18	174	Percent	0.0	1.8	15.5	51.8	0.0	0.0	13.0	17.5	0.0	0.5	100.0
		Numbers	0	345	3,024	10,079	0	0	2,525	3,401	0	97	19,470
30: 7/19–7/25	173	Percent	0.0	1.2	12.9	43.9	0.0	0.0	20.3	21.2	0.0	0.6	100.0
		Numbers	0	187	2,028	6,907	0	0	3,204	3,331	0	91	15,748
31: 7/26–8/1	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	49	542	1,847	0	0	887	911	0	25	4,261
36: 8/30–9/5	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	603	6,633	22,612	0	0	10,854	11,155	0	301	52,158
37: 9/6–9/12	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	255	2,809	9,576	0	0	4,596	4,724	0	128	22,088
38: 9/13–9/19	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	166	1,825	6,223	0	0	2,987	3,070	0	83	14,355
39: 9/20–9/26	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	65	718	2,449	0	0	1,176	1,208	0	33	5,650
40: 9/27–10/3	0	Percent	0.0	1.2	12.7	43.4	0.0	0.0	20.8	21.4	0.0	0.6	100.0
		Numbers	0	17	189	646	0	0	310	319	0	9	1,490
Total	951	Percent	0.1	1.4	13.2	44.7	0.4	0.3	19.3	20.2	0.1	0.5	100.0
		Numbers	150	2,257	21,912	74,126	605	458	32,022	33,590	88	766	165,973

Note: Includes test fishery harvest.

Table 40.—Estimated age composition of Inner and Outer Ayakulik and Halibut Bay sections (256-10, 15, 20, 25, 30) commercial sockeye salmon catch, 2019.

Statistical week	Sample size		Age									Total	
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2		3.3
29: 7/12–7/18	174	Percent	0.0	5.6	0.0	5.2	73.8	0.6	6.2	8.5	0.1	0.0	100.0
		Numbers	19	4,401	0	4,107	58,049	433	4,839	6,721	76	0	78,644
30: 7/19–7/25	178	Percent	0.4	3.7	0.2	18.0	45.1	0.0	14.7	16.3	1.5	0.2	100.0
		Numbers	298	2,953	155	14,527	36,299	6	11,829	13,154	1,193	155	80,570
31: 7/26–8/1	171	Percent	0.2	5.3	0.4	17.1	49.1	0.0	14.3	12.5	0.6	0.4	100.0
		Numbers	178	6,305	508	20,295	58,257	0	17,014	14,881	713	508	118,659
32: 8/2–8/8	178	Percent	0.0	0.8	0.0	12.7	46.5	0.0	25.8	12.1	1.5	0.5	100.0
		Numbers	0	330	9	4,936	18,099	0	10,068	4,700	602	209	38,953
33: 8/9–8/15	164	Percent	0.1	1.8	0.0	15.9	27.3	0.0	46.1	8.4	0.4	0.1	100.0
		Numbers	16	516	0	4,554	7,811	0	13,201	2,399	111	16	28,623
34: 8/16–8/22	174	Percent	0.4	2.6	0.0	18.9	15.0	0.0	53.4	8.0	1.6	0.0	100.0
		Numbers	76	475	0	3,483	2,770	0	9,843	1,476	303	0	18,427
35: 8/23–8/29	0	Percent	0.6	2.9	0.0	20.1	10.3	0.0	55.7	8.0	2.3	0.0	100.0
		Numbers	43	214	0	1,496	769	0	4,146	598	171	0	7,437
36: 8/30–9/5	0	Percent	0.6	2.9	0.0	20.1	10.3	0.0	55.7	8.0	2.3	0.0	100.0
		Numbers	1	4	0	27	14	0	76	11	3	0	136
38: 9/13–9/19	0	Percent	0.6	2.9	0.0	20.1	10.3	0.0	55.7	8.0	2.3	0.0	100.0
		Numbers	6	30	0	212	109	0	587	85	24	0	1,053
Total	1,039	Percent	0.2	4.1	0.2	14.4	48.9	0.1	19.2	11.8	0.9	0.2	100.0
		Numbers	637	15,228	672	53,637	182,177	438	71,603	44,026	3,196	889	372,502

Table 41.—Estimated age composition of Olga Bay, Alitak Bay, and Moser Bay sections (excludes Dog Salmon Flats Section; 257-40, 41, and 43) commercial sockeye salmon catch, 2019.

Statistical week	Sample size		Age										Total
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2	3.3	
27: 6/28–7/4	209	Percent	0.0	1.4	0.5	14.7	13.4	0.0	37.8	30.8	1.0	0.5	100.0
		Numbers	0	196	68	2,017	1,830	0	5,166	4,208	131	65	13,682
28: 7/5–7/11	0	Percent	0.0	1.4	1.0	12.6	12.8	0.0	36.8	34.1	1.0	0.4	100.0
		Numbers	0	169	114	1,482	1,501	0	4,324	4,001	112	42	11,746
29: 7/12–7/18	209	Percent	0.0	1.5	2.1	7.5	11.4	0.0	34.5	42.1	1.0	0.1	100.0
		Numbers	0	230	332	1,178	1,802	1	5,448	6,652	153	11	15,807
30: 7/19–7/25	0	Percent	0.0	2.0	1.5	6.9	13.0	0.2	32.5	42.4	1.4	0.0	100.0
		Numbers	0	321	242	1,081	2,041	25	5,093	6,637	222	0	15,662
31: 7/26–8/1	221	Percent	0.5	3.7	0.2	8.9	15.6	0.4	30.1	38.5	2.0	0.0	100.0
		Numbers	51	367	24	877	1,540	36	2,969	3,798	197	0	9,858
32: 8/2–8/8	158	Percent	5.8	11.3	0.0	18.7	10.7	0.0	28.0	24.7	0.8	0.0	100.0
		Numbers	229	444	0	734	418	1	1,099	969	30	0	3,925
38: 9/13–9/19	0	Percent	6.3	12.0	0.0	19.6	10.1	0.0	27.8	23.4	0.6	0.0	100.0
		Numbers	10	19	0	31	16	0	43	37	1	0	156
Total	797	Percent	0.4	2.5	1.1	10.4	12.9	0.1	34.1	37.1	1.2	0.2	100.0
		Numbers	290	1,745	780	7,400	9,148	64	24,143	26,302	847	117	70,836

Table 42.—Estimated age composition of Dog Salmon Flats Section (257-42) commercial sockeye salmon catch, 2019.

Statistical week	Sample size		Age								Total
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2	
25: 6/14–6/20	101	Percent	3.0	0.0	16.8	10.9	0.0	48.5	19.8	1.0	100.0
		Numbers	123	0	699	452	0	2,014	822	41	4,152
26: 6/21–6/27	251	Percent	0.0	1.6	19.6	9.1	0.2	54.1	14.4	0.9	100.0
		Numbers	0	703	8,449	3,924	84	23,352	6,219	397	43,128
27: 6/28–7/4	172	Percent	0.0	3.8	21.3	6.5	0.6	53.5	13.3	1.1	100.0
		Numbers	0	611	3,383	1,032	90	8,508	2,119	173	15,915
28: 7/5–7/11	0	Percent	0.0	4.6	19.5	7.0	0.8	50.8	16.4	0.9	100.0
		Numbers	0	237	1,002	357	40	2,609	840	48	5,132
29: 7/12–7/18	182	Percent	0.0	5.4	16.0	8.5	1.1	46.3	22.2	0.6	100.0
		Numbers	0	377	1,119	599	74	3,250	1,554	42	7,015
30: 7/19–7/25	0	Percent	0.0	5.5	15.4	8.8	1.1	45.6	23.1	0.5	100.0
		Numbers	0	361	1,011	578	72	2,998	1,517	36	6,574
31: 7/26–8/1	0	Percent	0.0	5.5	15.4	8.8	1.1	45.6	23.1	0.5	100.0
		Numbers	0	309	865	494	62	2,563	1,297	31	5,620
32: 8/2–8/8	0	Percent	0.0	5.5	15.4	8.8	1.1	45.6	23.1	0.5	100.0
		Numbers	0	82	229	131	16	680	344	8	1,491
Total	706	Percent	0.1	3.0	18.8	8.5	0.5	51.6	16.5	0.9	100.0
		Numbers	123	2,680	16,757	7,567	439	45,973	14,713	775	89,027

Table 43.—Ayakulik River (Red Lake) sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age						Total	
			0.3	1.1	1.2	1.3	2.1	2.2		2.3
<i>Estimated Ayakulik catch by area</i>										
Ayakulik-Halibut Bay Sections (256-10 – 256-30) harvest through 7/15										
	174	Percent	5.6	0.0	5.2	73.9	0.6	6.2	8.6	100.0
		Numbers	3,301	0	3,080	43,537	324	3,629	5,041	58,912
Ayakulik-Halibut Bay Sections (256-10 – 256-30) harvest post 7/15										
	865	Percent	3.7	0.2	17.1	42.9	0.0	23.1	12.9	100.0
		Numbers	8,120	504	37,148	93,096	4	50,073	27,979	216,924
Karluk-Sturgeon Sections (255-10, 255-20, 256-40) harvest through 7/15										
	551	Percent	2.3	0.1	15.7	43.9	1.4	17.8	18.8	100.0
		Numbers	169	6	1,147	3,218	102	1,304	1,376	7,322
Karluk-Sturgeon Sections (255-10, 255-20, 256-40) harvest post 7/15										
	173	Percent	1.2	0.0	12.8	43.7	0.0	20.8	21.4	100.0
		Numbers	200	0	2,189	7,460	0	3,547	3,657	17,053
Total catch	1,763	Percent	3.9	0.2	14.5	49.1	0.1	19.5	12.7	100.0
		Numbers	11,790	510	43,564	147,311	431	58,553	38,052	300,211
<i>Estimated Ayakulik escapement</i>										
Ayakulik escapement through 7/15										
	868	Percent	6.8	2.4	22.8	45.1	0.6	14.0	8.3	100.0
		Numbers	11,033	3,906	37,092	73,255	929	22,809	13,407	162,430
Ayakulik escapement post 7/15										
	708	Percent	0.7	3.4	21.3	29.3	0.2	36.0	9.0	100.0
		Numbers	841	3,998	24,989	34,307	247	42,239	10,588	117,209
Total escapement	1,576	Percent	4.2	2.8	22.2	38.5	0.4	23.3	8.6	100.0
		Numbers	11,874	7,904	62,081	107,562	1,176	65,048	23,995	279,639
Total run	3,339	Percent	4.1	1.5	18.2	44.0	0.3	21.3	10.7	100.0
		Numbers	23,664	8,415	105,645	254,873	1,606	123,601	62,047	579,850

Note: In 2019, 75% of the Ayakulik and Halibut Bay sections harvest was attributed to Ayakulik based on age composition of the samples. Additionally, 15% of the Karluk and Sturgeon sections harvest was attributed to Ayakulik based on age composition of the samples.

Table 44.—Ayakulik River (Red Lake) sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood year	Escap.	Age																Total	
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	3.4	return	R/S
1976	219,047	0	0	5,835	3,855	405,330	8,408	0	164,495	187,009	0	0	61,395	0	0	0	0	836,328	3.8
1977	306,982	0	0	0	0	5,060	3,431	0	18,656	170,721	0	0	85,541	3,940	0	0	0	287,349	0.9
1978	132,864	0	0	0	0	1,556	15,799	0	14,937	45,081	0	0	42,151	2,747	0	0	0	122,273	0.9
1979	222,270	0	0	3,625	441	16,345	18,352	0	40,958	131,539	0	0	41,815	1,438	0	0	0	254,511	1.1
1980	774,328	0	0	11,780	13,347	402,761	24,781	0	232,583	305,083	0	0	159,440	2,762	0	0	0	1,152,537	1.5
1981	279,200	0	0	17,149	0	310,784	7,450	0	230,889	328,622	0	0	168,527	28,564	0	0	0	1,091,984	3.9
1982	169,678	0	0	6,857	7,500	1,626	2,596	0	16,351	123,667	0	0	77,129	4,751	0	0	0	240,476	1.4
1983	171,415	0	0	548	1,171	20,198	15,116	0	72,231	168,055	0	0	104,765	0	0	0	0	382,085	2.2
1984	283,215	0	0	7,779	3,311	138,185	78,899	0	72,319	197,026	0	0	103,450	3,347	0	0	0	604,316	2.1
1985	388,759	0	0	61,345	3,903	365,489	18,971	0	589,731	513,314	0	0	229,750	4,276	0	0	0	1,786,779	4.6
1986	318,135	0	0	4,480	38,326	571,371	6,489	0	506,463	365,644	0	0	231,471	5,967	0	0	0	1,730,211	5.4
1987	261,913	0	0	12,991	15,380	173,341	13,602	0	103,512	317,142	0	0	341,728	32,807	0	5,063	0	1,015,566	3.9
1988	291,774	0	0	2,822	3,351	81,584	2,832	0	62,159	126,124	0	0	27,783	10,655	0	8,225	0	325,535	1.1
1989	768,101	0	0	2,571	5,565	26,297	29,189	0	18,318	310,379	0	0	254,557	59,553	0	46,238	0	752,667	1.0
1990	371,282	0	0	1,028	8,047	3,618	14,638	0	59,035	295,167	0	0	202,600	16,202	0	102	38	600,475	1.6
1991	384,859	0	640	22,371	17,118	145,925	36,123	0	393,249	482,187	0	19	158,923	5,779	64	2,796	112	1,265,306	3.3
1992	344,184	0	4,591	2,578	9,900	65,889	24,694	205	10,135	200,817	2,188	2,685	230,460	19,788	1,983	6,010	112	582,035	1.7
1993	286,170	0	0	3,093	3,678	2,504	16,283	400	176,539	409,718	516	8,075	138,504	7,591	344	5,426	0	772,671	2.7
1994	380,181	0	465	42,711	7,275	555,246	35,908	17,036	338,728	344,937	546	79	102,628	7,224	401	1,737	0	1,454,921	3.8
1995	317,832	0	0	4,711	4,707	101,292	18,181	516	53,759	227,822	3,186	0	240,294	22,068	1,125	6,135	0	683,795	2.2
1996	337,155	0	269	1,770	17,050	16,902	8,589	332	93,851	198,161	364	0	143,934	802	291	244	0	482,559	1.4
1997	308,214	0	5	1,250	4,810	14,447	5,395	597	11,767	34,814	330	0	16,169	727	0	1,490	0	91,802	0.3
1998	427,208	62	0	4,554	597	29,683	2,929	0	12,657	97,574	1,470	602	46,305	10,818	234	4,760	40	212,288	0.5
1999	295,717	0	0	2,953	4,818	53,015	8,754	353	124,906	192,030	0	240	80,066	4,301	658	1,930	0	474,025	1.6
2000	208,651	130	0	2,261	7,074	56,453	5,858	0	40,660	148,872	148	0	26,019	893	539	2,481	0	291,390	1.4
2001	218,892	0	0	97	0	21,217	4,756	0	12,812	57,133	0	315	95,615	2,218	299	142	0	194,605	0.9
2002	229,292	0	0	499	121	13,352	4,881	141	61,713	162,634	214	1,386	67,474	189	477	311	0	313,392	1.4
2003	197,892	0	40	2,224	1,086	47,900	5,678	0	47,986	88,088	0	152	36,068	2,986	296	1,015	0	233,520	1.2
2004	275,238	0	0	2,445	3,358	24,944	5,073	152	59,544	163,974	0	625	34,630	3,192	195	0	0	298,131	1.1
2005	251,906	0	67	5,423	694	99,530	13,239	0	73,594	260,808	1,059	307	33,847	2,480	0	682	0	491,729	2.0
2006	87,780	0	0	8,645	839	110,179	16,074	0	77,324	161,777	163	317	40,897	4,379	0	0	0	420,593	4.8
2007	283,042	0	0	15,958	1,454	101,723	35,354	0	103,711	318,854	224	336	58,052	1,205	0	0	0	636,871	2.3
2008	162,888	0	0	16,912	866	66,934	11,628	0	67,656	149,978	0	666	37,279	1,460	9	38	0	353,426	2.2
2009	315,184	95	0	9,668	5,863	74,430	21,284	0	74,131	210,247	0	327	83,088	1,432	0	47	0	480,613	1.5
2010	262,327	0	318	50,918	1,376	277,596	20,472	0	394,285	218,636	516	164	26,807	1,449	0	0	0	992,538	3.8
2011	261,141	0	292	3,904	12,313	87,310	13,490	0	45,712	201,976	58	354	125,607	658	0	0	0	491,675	1.9
2012	328,254	0	1,421	4,859	5,419	69,546	8,623	355	96,102	136,435	0	131	17,016	0	0	0	0	339,906	1.0

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Table 44.–Page 2 of 2.

Brood year	Escap.	Age														Total return R/S		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4		3.3	3.4
2013	282,164	0	462	2,893	13,147	46,023	9,726	0	15,716	122,167	0	0	62,047	0				
2014	297,711	0	0	18,572	0	264,673	5,747	0	254,873	123,601	0							
2015	326,435	431	4,337	14,483	23,664	105,645	1,606											
2016	254,967	0	0	8,415														
2017	324,858	0																
2018	266,333																	
2019	279,639																	
														10-year average (2003–2012):	473,900	2.2		

Note: R/S is an abbreviation of returns per spawner.

Table 45.—Frazer Lake (Dog Salmon Creek) sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age						Total	
			1.1	1.2	1.3	2.1	2.2	2.3		3.2
<i>Estimated Frazer catch by area</i>										
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41, -42)	1,122	Percent	2.2	15.0	10.4	0.3	44.3	26.7	1.1	100.0
		Numbers	3,111	20,947	14,483	451	61,686	37,195	1,508	139,382
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70)	0	Percent	14.0	15.9	7.0	3.1	38.5	20.2	1.3	100.0
		Numbers	15,110	17,138	7,580	3,327	41,400	21,692	1,350	107,596
Total catch	1,122	Percent	7.4	15.4	8.9	1.5	41.7	23.8	1.2	100.0
		Numbers	18,222	38,085	22,063	3,778	103,086	58,886	2,859	246,979
Estimated Dog Salmon Creek escapement	635	Percent	25.9	16.8	3.7	5.9	32.7	13.6	1.4	100.0
		Numbers	43,856	28,542	6,274	9,942	55,462	23,129	2,422	169,627
Total run	1,757	Percent	14.9	16.0	6.8	3.3	38.1	19.7	1.3	100.0
		Numbers	62,078	66,627	28,337	13,720	158,548	82,015	5,280	416,606

Table 46.—Frazer Lake (Dog Salmon Creek) sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood year	Escap.	Age																8yo	Total return	return/ spawner
		0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	4.1	2.4	4.2	3.3				
1976	119,321	0	2,150	0	223,444	8,753	73,677	257,625	0	0	143,383	0	0	0	0	393	0	709,424	5.9	
1977	139,548	0	2,764	0	73,189	2,928	92,211	107,917	0	0	146,064	393	0	0	0	0	0	425,466	3.0	
1978	141,981	0	7,807	0	162,130	507	24,148	22,970	0	0	16,844	0	0	0	0	638	0	235,043	1.7	
1979	126,742	0	507	0	1,374	982	2,965	24,323	0	0	26,791	0	0	0	0	2,165	0	59,106	0.5	
1980	405,535	0	0	0	6,064	16,305	7,654	589,393	0	0	141,065	684	0	46	0	52	0	761,264	1.9	
1981	377,716	0	876	0	12,120	0	2,455	7,748	0	172	5,239	0	0	0	0	862	0	29,471	0.1	
1982	430,423	0	1,276	0	23,647	431	28,624	3,735	24	754	10,870	10,812	0	0	0	0	0	80,172	0.2	
1983	158,340	0	10	26	8,935	9,729	13,438	380,531	1,604	0	586,833	0	0	0	0	36,986	0	1,038,092	6.6	
1984	53,524	0	1,001	0	5,771	33,628	7,437	386,832	0	0	67,142	2,046	0	0	0	0	0	503,856	9.4	
1985	485,835	0	192	0	16,502	4,399	49,290	53,978	151	0	22,578	9,032	0	1,595	0	2,694	0	160,412	0.3	
1986	126,529	1,393	67,475	0	727,658	40,794	230,893	972,290	0	0	168,815	9,129	0	0	0	8,584	0	2,227,031	17.6	
1987	40,544	0	1,787	1,851	3,019	26,596	3,902	187,581	0	0	159,822	104	0	156	0	882	0	385,701	9.5	
1988	246,704	0	1,886	0	21,073	7,793	30,096	210,586	133	0	64,565	20,510	0	16	0	7,994	0	364,652	1.5	
1989	360,373	0	16,191	208	327,929	12,847	153,078	373,277	5,752	0	300,182	145,325	0	0	0	40,754	0	1,375,543	3.8	
1990	226,707	0	1,096	0	18,217	12,986	33,393	400,750	1,678	0	210,744	15,341	0	455	0	9,340	0	704,000	3.1	
1991	190,358	0	621	0	2,031	57,463	1,728	330,834	302	0	105,361	630	0	0	0	0	0	498,970	2.6	
1992	185,825	0	3,545	0	20,513	78,168	27,471	211,959	4,666	0	185,148	18,141	0	0	0	2,209	0	551,819	3.0	
1993	178,391	0	2,529	45	12,677	41,759	56,178	291,218	4,831	0	64,155	17,867	0	256	0	5,830	0	497,344	2.8	
1994	206,071	0	2,056	0	23,034	17,688	39,741	112,849	1,048	0	77,546	15,427	0	187	0	15,733	0	305,309	1.5	
1995	196,323	0	10,106	0	59,574	39,574	77,223	152,287	1,251	0	251,356	11,284	0	878	0	5,794	0	609,328	3.1	
1996	198,695	0	20,062	0	41,983	22,276	81,667	32,786	26	1,670	54,175	109	92	211	0	201	0	255,258	1.3	
1997	205,264	0	626	0	8,327	1,639	10,462	15,598	176	833	19,673	2,251	0	0	0	0	77	59,662	0.3	
1998	233,755	0	367	0	1,450	18,943	14,884	128,297	12,803	0	58,315	89,184	0	362	0	33,767	0	358,372	1.5	
1999	216,565	0	879	0	3,754	104,150	79	484,554	0	0	239,961	1,297	0	649	0	2,576	97	837,997	3.9	
2000	158,044	0	26,856	0	69,457	10,097	218,891	105,837	0	721	79,631	435	0	678	316	309	514	513,742	3.3	
2001	154,349	0	565	0	21,563	2,508	7,110	5,096	8,508	145	14,177	38,040	223	774	706	80,473	1,502	181,390	1.2	
2002	85,317	0	1,675	0	6,801	5,173	6,216	34,309	8,528	0	44,275	35,650	0	416	0	29,093	198	172,334	2.0	
2003	201,679	0	1,201	0	9,899	44,359	16,348	169,365	3,430	0	81,123	31,296	0	184	0	1,236	0	358,440	1.8	
2004	120,664	0	11,274	0	147,145	19,606	91,014	197,567	0	298	25,918	243	0	175	0	0	0	493,239	4.1	
2005	136,948	0	2,318	0	34,034	8,824	43,136	36,815	5,935	435	36,735	3,222	89	339	0	500	0	172,382	1.3	
2006	89,516	0	107	246	6,723	40,388	21,539	217,026	7,498	0	116,935	5,777	0	687	0	2,649	0	419,575	4.7	

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Table 46.–Page 2 of 2.

Brood year	Escap.	Age																Total return/ return spawner	
		0.2	1.1	0.3	1.2	2.1	1.3	2.2	3.1	1.4	2.3	3.2	4.1	2.4	4.2	3.3	8yo		
2007	120,186	0	3,793	661	13,301	67,117	21,050	171,111	0	0	87,987	576	0	454	0	0	0	366,050	3.0
2008	105,363	0	4,623	0	45,645	10,103	48,444	100,680	0	151	44,642	0	0	0	0	277	0	254,565	2.4
2009	101,845	495	93	0	10,784	17,550	16,452	322,752	860	0	174,311	12,255	0	108	0	2,143	0	557,803	5.5
2010	94,680	0	1,873	0	13,154	26,967	23,316	160,354	2,047	0	80,454	5,076	0	0	0	2,782	0	316,023	3.3
2011	134,642	0	832	0	8,207	55,889	6,723	142,675	161	0	121,157	843	0	648	0	0	0	337,135	2.5
2012	148,884	513	388	0	1,296	3,255	1,089	38,025	475	0	6,228	2,775	0	0	0	0		54,044	0.4
2013	136,059	0	2,435	0	19,533	28,978	7,887	193,903	2,901	0	82,015	5,280	0						
2014	200,296	0	3,520	0	41,048	33,946	28,337	158,548	0										
2015	219,093	0	32,496	0	66,627	13,720													
2016	122,585	0	62,078																
2017	129,227																		
2018	201,161																		
2019	169,627																		
																	10-Year Average (2003–2012):	332,926	2.9

Note: Age 8yo refers to a fish of any age that is 8 years old (i.e. age-3.4 or age-2.5).

Table 47.—Karluk Lake early-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age										Total	
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2		3.3
<i>Estimated Karluk early-run catch by Area</i>														
Uyak Bay (254-10–254-40)														
	890	Percent	0.1	1.4	0.0	9.3	1.5	0.0	39.7	44.0	0.0	3.7	0.2	100.0
		Numbers	16	303	0	2,052	337	0	8,709	9,664	0	814	51	21,945
Uganik-Viekoda-Kupreanof (253-11–253-35)														
	730	Percent	0.0	1.4	0.0	9.4	1.5	0.0	39.7	44.1	0.0	3.9	0.0	100.0
		Numbers	0	336	0	2,272	373	0	9,643	10,701	0	957	0	24,283
Karluk-Sturgeon (255-10, 255-20, 256-40)														
	551	Percent	0.0	1.4	0.0	9.4	1.5	0.0	39.7	44.1	0.0	3.9	0.0	100.0
		Numbers	0	61	0	415	68	0	1,761	1,954	0	175	0	4,434
Ayakulik-Halibut Bay (256-10–256-30)														
	174	Percent	0.1	1.4	0.0	9.3	1.5	0.0	39.7	44.0	0.0	3.9	0.0	100.0
		Numbers	1	27	0	180	30	0	766	850	0	76	0	1,930
Total catch														
	2,345	Percent	0.0	1.4	0.0	9.4	1.5	0.0	39.7	44.1	0.0	3.8	0.1	100.0
		Numbers	17	727	0	4,919	809	0	20,879	23,169	0	2,022	51	52,593
Karluk early-run escapement														
	1,321	Percent	0.1	1.2	0.1	8.2	1.4	11.6	34.9	38.8	0.3	3.3	0.2	100.0
		Numbers	119	2,315	110	15,654	2,573	22,131	66,445	73,731	492	6,237	359	190,168
Total run														
	3,666	Percent	0.1	1.3	0.0	8.5	1.4	9.1	36.0	39.9	0.2	3.4	0.2	100.0
		Numbers	136	3,042	110	20,573	3,382	22,131	87,325	96,900	492	8,260	410	242,761

Table 48.–Page 2 of 2.

Brood year	Escap.	Age																		Total		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	4.1	2.4	3.3	4.2	8yo	9yo	return	R/S
2008	82,191	0	0	338	0	15,219	10,309	102	44,996	184,375	2,182	137	145,950	9,675	0	63	1,599	0	0	0	414,946	5.0
2009	52,798	0	0	240	8	20,084	22,414	0	7,071	186,660	978	0	27,530	2,048	0	0	1	0	0	0	267,035	5.1
2010	71,453	0	0	2,288	0	28,315	41,549	0	23,538	276,983	1,242	0	18,647	3,700	0	33	447	0	0	0	396,743	5.6
2011	87,049	148	184	1,556	0	23,576	28,230	0	9,274	129,421	1,155	494	46,345	805	0	49	251	0	0		241,341	2.8
2012	188,085	0	0	932	0	28,938	23,415	280	58,091	266,861	2,089	49	29,594	1,714	0	0	410	0			412,374	2.2
2013	234,880	0	0	1,208	2,883	30,722	21,558	0	6,425	187,432	1,984	0	96,900	8,260	0							
2014	252,097	0	362	605	49	8,380	8,919	0	3,382	87,325	492											
2015	260,758	80	1,165	1,516	3,042	20,573	22,131															
2016	173,874	0	136	110																		
2017	242,599	0																				
2018	205,054																					
2019	190,168																					

10-year average (2003–2012): 240,150 2.3

Note: R/S is an abbreviation of returns per spawner. Age 8yo and 9yo refer to a fish of any age that is 8 or 9 years old respectively (i.e. age-3.4 or age-2.5 and age-4.4 or age-3.5).

Table 49.—Karluk Lake late-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age										Total
			0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.2	3.3	
<i>Estimated Karluk late-run catch by area</i>													
Uyak Bay (254-10–254-40)	1,037	Percent	0.0	2.5	0.0	7.2	3.3	0.0	56.9	23.8	5.4	0.8	100.0
		Numbers	0	3,389	0	9,647	4,419	0	75,724	31,701	7,198	1,013	133,090
Uganik-Viekoda-Kupreanof (253-11–253-35)	1,407	Percent	0.1	2.3	0.0	6.8	2.2	0.0	51.7	26.8	7.7	2.4	100.0
		Numbers	75	3,043	0	9,182	3,036	0	69,869	36,203	10,457	3,208	135,073
Inner and Outer Karluk (255-10–255-20)	173	Percent	0.2	2.9	0.4	7.3	1.0	4.6	57.7	16.5	9.1	0.3	100.0
		Numbers	170	2,656	388	6,754	962	4,221	53,527	15,301	8,473	303	92,755
Ayakulik-Halibut Bay (256-10–256-30)	865	Percent	0.0	2.7	0.0	7.8	2.5	0.0	49.1	31.0	5.3	1.5	100.0
		Numbers	10	1,592	0	4,617	1,469	0	28,901	18,257	3,120	889	58,856
Total catch	3,482	Percent	0.1	2.5	0.1	7.2	2.4	1.0	54.3	24.2	7.0	1.3	100.0
		Numbers	256	10,679	388	30,200	9,887	4,221	228,021	101,462	29,248	5,413	419,775
Karluk late-run escapement	1,317	Percent	0.2	2.9	0.4	7.3	1.0	4.6	57.9	16.2	9.2	0.3	100.0
		Numbers	594	9,097	1,354	23,076	3,201	14,731	183,694	51,441	29,137	1,056	317,381
Total run	4,799	Percent	0.1	2.7	0.2	7.2	1.8	2.6	55.9	20.7	7.9	0.9	100.0
		Numbers	850	19,776	1,743	53,276	13,088	18,952	411,714	152,903	58,385	6,469	737,156

Table 50.—Karluk Lake late-run sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood year	Escap.	Age																		Total R/ return S		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	4.1	2.4	3.3	4.2	8y		9y	
1976	319,459																				0	
1977	366,936																				0	0
1978	112,194														0	6,728		0	0	0		
1979	248,908										0	54,171	167,426	0	0	85,143		0	0	0		
1980	14,227							0	446	596,053	4,476	0	156,074	177,587	0	1,190	25,537		0	0	0	
1981	124,769				0	5,158	13,129	0	0	402,872	2,521	0	187,293	49,557	0	0	14,077		0	0	0	
1982	41,702		0	0	0	0	1,261	0	5,239	290,631	606	0	110,997	34,711	0	0	19,631		0	0	0	
1983	220,795	0	0	0	4,079	4,160	12,830	0	480	241,803	1,268	31	213,452	42,156	0	2,070	47,370		0	0	0	569,699 2.6
1984	131,846	0	885	0	0	445	6,246	0	30,516	424,123	0	937	303,542	271,018	0	471	71,764	651	0	0	1,110,598 8.4	
1985	679,260	169	0	0	1,084	30,165	212	189	60,235	784,914	494	595	493,743	421,972	0	462	43,998		0	42	0	1,838,274 2.7
1986	528,415	0	893	0	15,519	39,109	978	105	57,974	835,214	1,162	0	114,862	655,219	0	563	60,240	325	1,770	0	1,783,933 3.4	
1987	412,157	106	5,976	201	17,067	24,703	1,737	0	550	226,552	2,373	0	23,389	320,723	0	79	54,451	1,600		0	0	679,507 1.6
1988	282,306	0	2,531	111	2,424	4,649	1,512	0	3,127	189,196	7,249	0	71,078	212,649	0	0	16,740		0	9	0	511,274 1.8
1989	758,893	0	3,555	799	3,717	5,909	12,607	0	3,302	308,439	6,233	0	151,212	214,110	0	0	12,030	950		0	0	722,863 1.0
1990	541,891	0	3,591	971	6,292	16,995	3,241	0	10,310	447,371	1,085	18	52,479	80,226	0	591	62,392	1,095	64	0	686,721 1.3	
1991	831,970	0	7,113	340	2,879	16,292	3,023	0	8,568	340,535	4,731	52	191,311	85,334	0	952	13,107	659	111	0	675,007 0.8	
1992	614,262	0	1,567	1,923	0	3,880	6,759	0	12,234	57,188	5,043	0	76,196	138,987	0	513	28,379		0	0	0	332,669 0.5
1993	396,288	0	0	1,501	2,860	3,550	17,168	0	11,541	412,758	1,362	36	202,913	75,591	0	0	23,523		0	0	0	752,802 1.9
1994	587,258	0	0	198	1,192	24,718	4,323	0	17,261	616,350	1,008	0	159,094	109,890	0	551	41,274	821	128	0	976,808 1.7	
1995	504,977	0	1,156	0	3,219	48,766	8,685	0	1,839	353,857	5,252	0	390,880	129,216	0	424	28,253	405	1,668	0	973,619 1.9	
1996	323,969	0	540	633	0	2,970	108	0	469	283,071	2,817	0	149,445	139,820	0	0	83,431		0	934	0	664,238 2.1
1997	311,902	0	0	407	0	1,473	21,821	0	291	494,043	18,682	0	268,631	235,707	0	0	12,330		0	421	0	1,053,807 3.4
1998	384,848	0	0	136	0	586	33,787	1,399	2,716	923,141	8,407	0	78,063	143,454	0	0	12,558		0	284	0	1,204,530 3.1
1999	589,119	0	0	0	0	25,117	41,401	0	7,645	403,399	3,410	85	154,603	210,642	0	0	65,446		0	302	0	912,050 1.5
2000	445,393	155	669	51	3,376	6,049	270	0	1,126	531,303	2,955	0	292,380	55,025	0	2,875	100,967	1,046	4,014	10	1,002,271 2.3	
2001	524,739	0	0	0	0	2,543	5,375	0	2,611	132,216	3,786	0	305,575	113,907	0	13,374	38,224		0	262	0	617,873 1.2
2002	408,734	0	0	62	2,790	3,319	12,383	0	6,844	183,353	672	361	161,086	25,895	0	9	14,881	99	528	0	412,282 1.0	
2003	626,854	0	0	208	1,750	2,494	1,544	0	1,887	41,395	2,247	0	15,635	269,401	348	0	5,707	10,460	1,746	0	354,822 0.6	
2004	326,466	0	277	5	301	1,998	510	0	543	15,162	10,973	0	7,084	223,546	0	0	8,868	2,084		0	0	271,352 0.8
2005	498,102	0	3,532	63	0	423	2,022	0	544	63,514	768	0	20,543	72,929	0	0	3,929		0	0	0	168,266 0.3
2006	288,007	0	0	15	0	1,734	2,029	0	1,553	123,394	11,965	34	38,311	73,030	0	59	7,613		0	0	0	259,736 0.9
2007	251,835	0	0	81	2,235	3,207	18,490	0	6,173	452,112	217	0	183,111	64,437	0	901	9,435		0	0	0	740,399 2.9
2008	164,299	0	0	0	34	8,620	6,489	0	5,738	464,655	508	159	215,642	60,733	0	154	5,958		0	0	0	768,690 4.7
2009	277,280	0	501	349	7	14,742	11,322	0	7,407	921,554	6,778	0	51,167	74,985	0	0	1,009		0	0	0	1,089,820 3.9

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Table 50.–Page 2 of 2.

Brood year	Escap.	Age																		Total R/ return S		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	4.1	2.4	3.3	4.2	8y		9y	
2010	276,649	0	203	1,020	0	34,359	28,966	0	44,158	578,076	2,578	0	29,006	22,456	0	0	8,443	0	0	0	749,264	2.7
2011	230,273	0	0	2,428	0	35,700	48,035	0	17,984	645,806	1,551	1,276	259,900	19,783	0	223	687	0	0	0	1,033,374	4.5
2012	314,605	0	0	846	77	35,769	21,225	0	67,635	555,033	2,524	619	48,225	55,909	0	0	6,469	0			794,330	2.5
2013	336,479	0	129	1,571	7,261	53,487	47,821	0	13,851	889,228	3,421	0	152,903	58,385	0							
2014	543,469	0	3,217	2,948	47	59,007	9,674	0	13,088	411,714	0											
2015	368,896	0	3,889	1,818	19,776	53,276	18,952															
2016	314,935	0	850	1,743																		
2017	385,896	0																				
2018	428,225																					
2019	317,381																					

10-year average (2003–2012): 623,005 2.4

Note: R/S is an abbreviation of returns per spawner. Age 8y and 9y refer to a fish of any age that is 8 or 9 years old respectively (i.e. age-3.4 or age-2.5 and age-4.4 or age-3.5).

Table 51.—Upper Station (South Olga lakes) early-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age							Total	
			0.2	1.1	1.2	1.3	2.1	2.2	2.3		3.2
Estimated Upper Station early-run catch by area											
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41, -42)											
	1,122	Percent	0.0	1.7	16.7	10.8	0.2	46.0	24.2	0.5	100.0
		Numbers	0	112	1,101	708	12	3,024	1,591	33	6,581
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70)											
	0	Percent	0.0	12.3	24.2	12.6	2.5	34.1	14.0	0.3	100.0
		Numbers	3	1,045	2,057	1,069	210	2,899	1,192	25	8,501
Total catch	1,122	Percent	0.0	7.7	20.9	11.8	1.5	39.3	18.5	0.4	100.0
		Numbers	3	1,157	3,158	1,777	223	5,923	2,783	57	15,082
Upper Station early-run escapement											
	965	Percent	0.1	22.9	31.7	14.4	4.8	22.2	3.9	0.1	100.0
		Numbers	36	11,333	15,683	7,127	2,359	11,016	1,921	42	49,517
Total run	2,087	Percent	0.1	19.3	29.2	13.8	4.0	26.2	7.3	0.2	100.0
		Numbers	39	12,490	18,840	8,904	2,582	16,940	4,704	99	64,599

Table 52.—Upper Station (South Olga lakes) early-run sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood year	Escap.	Age														Total return/ return spawner		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	3.3		2.4	
1975	10,325	0	0	0	0	1,458	208	0	6,393	14,783	0	0	8,738	485	0	0	32,065	3.1
1976	28,567	0	0	0	133	9,722	0	0	10,438	47,090	0	0	27,139	0	0	0	94,522	3.3
1977	26,380	0	0	0	0	32,041	243	0	48,850	94,081	0	0	35,526	634	0	0	211,375	8.0
1978	66,157	0	243	243	1,809	28,948	0	0	32,354	70,735	0	0	19,660	0	37	0	154,029	2.3
1979	53,115	0	0	0	0	4,124	0	0	17,554	65,300	0	46	14,870	38	142	0	102,074	1.9
1980	37,866	0	317	0	2,341	11,937	0	0	4,000	7,165	38	0	7,259	0	25	0	33,082	0.9
1981	77,042	0	0	0	542	2,832	1,498	0	4,370	85,872	0	43	23,861	0	0	0	119,018	1.5
1982	170,610	0	2,472	234	1,006	113,439	781	0	75,684	37,220	0	360	18,131	70	0	0	249,398	1.5
1983	115,890	0	285	1,220	1,181	5,491	1,205	0	11,396	87,555	0	0	41,723	217	0	0	150,273	1.3
1984	96,798	0	109	0	3,443	2,118	66	0	1,792	46,879	0	0	14,103	113	60	0	68,683	0.7
1985	27,408	0	1,476	4	2,865	2,314	22,466	0	6,714	86,949	0	0	42,895	633	64	0	166,380	6.1
1986	100,812	0	35	5,680	449	51,361	936	0	36,048	83,179	60	18	8,248	340	408	0	186,763	1.9
1987	74,747	0	2,134	46	1,022	2,027	3,849	0	726	30,417	27	0	25,242	779	57	0	66,326	0.9
1988	56,724	0	17	0	71	82	852	0	1,607	35,640	210	206	7,282	1,072	0	0	47,038	0.8
1989	64,582	0	450	404	5,823	8,751	6,313	0	5,539	67,810	0	0	34,127	0	0	0	129,217	2.0
1990	56,159	0	1,497	578	0	6,275	3,414	0	19,145	82,269	0	0	6,839	361	6	0	120,384	2.1
1991	50,026	0	407	3,258	20,467	46,391	6,815	0	57,478	131,931	0	0	27,274	0	0	0	294,021	5.9
1992	19,076	52	2,338	223	5,878	5,959	3,583	0	3,435	24,099	0	0	7,268	0	0	0	52,835	2.8
1993	34,852	219	669	605	2,423	5,189	2,741	0	11,812	31,749	0	0	5,168	1,229	0	62	61,866	1.8
1994	37,645	0	229	994	4,887	53,607	1,320	0	7,176	33,104	0	0	17,361	570	0	0	119,248	3.2
1995	41,492	0	185	2,467	5,857	33,691	1,497	360	44,415	44,608	0	492	20,938	689	92	0	155,291	3.7
1996	58,686	0	79	177	2,723	30,487	1,973	0	81,164	51,987	4	25	15,238	281	0	0	184,138	3.1
1997	47,655	0	422	45	0	972	2,438	0	558	11,566	34	0	7,233	795	2,006	0	26,069	0.5
1998	30,713	0	0	6	0	145	6,264	0	418	45,950	0	0	16,490	8	0	0	69,281	2.3
1999	36,521	0	0	2,598	328	27,894	6,080	0	34,497	81,382	0	360	38,405	626	28	0	192,198	5.3
2000	55,761	0	780	10,912	7,338	122,434	2,623	69	59,315	40,862	69	121	9,843	139	235	28	254,768	4.6
2001	66,795	0	1,131	1,123	3,856	6,472	5,116	0	4,335	15,475	0	24	13,764	0	0	0	51,298	0.8
2002	36,802	82	532	382	574	1,295	42	36	4,890	2,815	0	0	8,604	0	0	36	19,289	0.5
2003	76,175	0	75	502	88	10,903	3,245	0	9,334	34,250	0	106	13,258	86	0	0	71,846	0.9
2004	78,487	0	191	1,553	6,398	36,836	3,258	0	25,750	32,372	0	0	4,211	0	0	0	110,570	1.4
2005	60,349	0	233	281	0	5,884	3,446	0	3,904	42,706	64	0	9,733	130	0	2	66,385	1.1
2006	24,997	0	0	269	0	1,815	2,367	0	4,513	24,439	5	28	14,943	620	0	4	49,002	2.0

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Table 52.–Page 2 of 2.

Brood year	Escap.	Age														Total return/ return spawner		
		0.1	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	3.3		2.4	
2007	31,895	0	71	26	136	3,578	4,849	0	3,112	28,723	0	16	16,845	0	0	0	57,358	1.8
2008	38,800	0	0	978	52	10,317	2,056	0	10,744	21,686	5	0	2,534	0	0	0	48,373	1.2
2009	34,585	0	108	226	2,346	2,774	2,782	0	2,354	30,938	4	0	7,963	0	0	0	49,495	1.4
2010	42,060	0	0	228	0	1,784	6,735	0	2,353	45,458	89	0	5,892	76	0	0	62,615	1.5
2011	28,759	0	80	132	0	1,376	7,241	0	696	27,850	26	0	16,886	0	0	0	54,286	1.9
2012	25,487	0	0	1,625	438	15,567	4,505	0	14,248	31,792	0	0	2,681	0	0	0	70,856	2.8
2013	27,712	0	319	7,144	976	31,053	2,719	0	8,118	28,517	0	0	4,704	99				
2014	36,823	0	79	3,240	0	26,729	1,373	0	8,904	16,940	0							
2015	54,473	0	148	3,289	0	18,840	2,582											
2016	48,047	0	39	12,490														
2017	83,614	0																
2018	61,732																	
2019	49,517																	
10-Year average (2003–2012):																	64,079	1.6

Table 53.—Upper Station (South Olga lakes) late-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2019.

Area	Sample size		Age										Total
			0.1	0.2	0.3	1.1	1.2	1.3	2.0	2.1	2.2	2.3	
<i>Estimated Upper Station late-run catch by area</i>													
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41, -42)	1,122	Percent	0.0	5.3	22.8	1.2	17.3	13.2	0.0	0.3	36.5	3.4	100.0
		Numbers	0	275	1,185	63	901	688	0	14	1,899	179	5,205
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70)	0	Percent	0.5	3.3	13.6	3.1	17.1	8.8	0.1	2.0	49.0	2.5	100.0
		Numbers	104	666	2,745	625	3,454	1,787	15	408	9,905	514	20,224
Total catch	1,122		0.4	3.7	15.5	2.7	17.1	9.7	0.1	1.7	46.4	2.7	100.0
			104	942	3,929	689	4,355	2,475	15	422	11,805	693	25,428
Upper Station late-run escapement	997	Percent	1.0	1.3	4.4	5.0	16.8	4.5	0.1	3.8	61.5	1.7	100.0
		Numbers	1,704	2,148	7,234	8,202	27,801	7,354	238	6,230	101,503	2,732	165,146
Total run	2,119	Percent	0.9	1.6	5.9	4.7	16.9	5.2	0.1	3.5	59.5	1.8	100.0
		Numbers	1,809	3,090	11,163	8,891	32,156	9,829	252	6,652	113,308	3,425	190,574

Table 54.—Upper Station (South Olga lakes) late-run sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood year	Escap.	Age																Total return/ return spawner	
		0.1	0.2	1.1	2.0	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	3.3	2.4		
1975	74,456	901	3,021	0	0	0	61,142	1,132	0	36,479	76,157	0	0	5,228	0	0	0	184,060	2.5
1976	48,650	0	10,190	0	0	36,479	38,399	2,560	0	11,501	141,154	0	0	10,336	940	0	0	251,559	5.2
1977	49,001	0	640	0	0	3,137	52,279	1,046	0	66,714	312,897	0	0	9,732	0	0	0	446,444	9.1
1978	38,126	0	82,601	1,046	0	90,205	134,367	4,698	0	55,146	217,342	0	0	26,755	2,638	0	0	614,798	16.1
1979	134,579	0	31,947	0	0	63,256	71,366	0	0	103,020	339,950	0	736	10,850	360	280	0	621,765	4.6
1980	77,718	0	124,890	0	0	56,178	35,951	2,131	0	21,758	55,472	399	0	16,555	965	223	0	314,522	4.0
1981	118,900	0	1,294	0	0	17,853	157,249	12,280	1,007	149,158	345,506	0	0	14,809	0	0	879	700,035	5.9
1982	306,161	0	644,017	5,129	0	324,600	364,312	5,029	117	92,824	231,963	0	0	5,168	2,042	0	0	1,675,201	5.5
1983	179,741	4,867	182,514	0	0	135,177	23,242	1,682	0	53,195	92,799	0	0	30,036	0	1,488	0	525,000	2.9
1984	239,608	3,012	37,733	528	0	89,721	187,451	5,064	0	21,543	224,033	0	0	23,712	4,642	0	0	597,438	2.5
1985	408,409	2,313	562,757	1,958	0	309,775	34,924	12,374	0	40,759	179,839	0	578	45,289	6,140	0	0	1,196,706	2.9
1986	367,922	1,449	72,415	1,953	0	94,380	291,815	5,610	678	116,039	451,917	0	0	17,721	1,579	1,289	6	1,056,851	2.9
1987	156,274	0	68,016	495	0	113,821	12,899	127	0	17,053	104,995	0	225	27,470	15,072	39	0	360,212	2.3
1988	247,647	0	9,222	216	0	27,793	76,583	1,000	0	71,330	80,102	177	133	4,037	1,244	0	0	271,836	1.1
1989	221,706	401	169,158	1,125	0	85,530	83,807	12,864	142	53,928	184,067	308	0	21,693	0	0	0	613,023	2.8
1990	198,287	1,432	56,992	3,904	0	115,907	27,747	7,728	444	17,591	237,284	0	0	4,315	0	67	0	473,411	2.4
1991	242,860	6,744	51,810	4,858	0	163,283	73,541	6,484	160	44,507	712,676	31	0	20,546	0	0	0	1,084,640	4.5
1992	199,067	4,913	61,018	1,108	0	15,733	58,923	12,611	79	6,302	279,349	0	0	7,189	156	192	26	447,599	2.2
1993	187,229	5,186	46,015	5,688	0	114,817	35,842	45,256	444	10,769	199,820	191	278	27,883	5,350	0	0	497,539	2.7
1994	221,675	1,417	10,206	6,322	0	23,167	90,488	17,439	44	25,603	293,322	80	0	6,069	968	0	0	475,125	2.1
1995	203,659	233	3,020	3,340	0	3,349	179,562	24,492	0	13,017	251,855	0	254	14,264	307	247	20	493,960	2.4
1996	235,727	277	1,972	6,536	0	1,335	35,606	4,057	0	15,478	88,856	121	1	4,856	2,282	0	1,500	162,877	0.7
1997	230,793	0	347	0	0	916	2,842	11,901	0	1,932	129,206	1,984	130	8,502	17,554	1,942	0	177,256	0.8
1998	171,214	0	0	89	0	0	2,511	13,979	0	3,281	219,890	25,325	0	13,190	890	0	0	279,155	1.6
1999	210,016	0	279	2,323	0	672	80,315	15,939	0	20,091	313,886	19	346	40,906	5,360	465	9	480,610	2.3
2000	176,783	96	34,433	5,197	0	36,394	122,248	4,045	98	30,388	181,491	0	31	16,677	986	187	165	432,436	2.4
2001	74,408	0	522	215	0	1,701	5,696	8,310	0	7,078	77,172	0	78	9,900	300	0	0	110,971	1.5
2002	150,349	411	2,421	3,965	0	7,179	94,543	8,085	0	21,609	95,473	0	0	13,730	0	0	235	247,650	1.6
2003	200,894	43	888	1,667	0	337	51,307	7,446	0	16,131	256,511	0	357	15,308	548	0	0	350,545	1.7
2004	177,108	669	5,264	1,535	0	24,845	99,160	7,094	0	29,761	255,957	181	0	5,577	1,457	185	0	431,685	2.4
2005	156,401	139	2,828	2,423	0	3,067	20,933	20,082	0	6,256	171,458	153	0	8,694	3,150	0	4	239,187	1.5
2006	153,153	0	931	1,561	0	177	10,327	8,207	0	5,267	126,317	182	74	3,988	6,115	531	0	163,678	1.1
2007	149,709	218	59	787	0	287	12,235	11,858	0	10,286	140,872	46	277	8,838	241	0	0	186,005	1.2
2008	184,856	0	0	2,217	0	349	40,340	7,761	0	10,196	105,047	943	0	5,639	0	0	0	172,492	0.9
2009	161,736	376	2,236	1,527	0	5,796	8,546	16,773	0	3,942	171,268	0	0	23,034	250	0	0	233,747	1.4

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Brood year	Escap.	Age																Total return/ return spawner	
		0.1	0.2	1.1	2.0	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	3.3	2.4		
2010	141,139	58	149	2,066	0	38	9,380	3,245	0	4,197	115,614	24	0	1,408	1,764	0	0	137,943	1.0
2011	101,893	0	7	533	0	5,790	26,119	7,436	0	7,460	101,503	8	0	7,343	704	0	0	156,902	1.5
2012	149,325	0	1,699	1,927	0	3,637	56,890	5,748	0	45,927	141,560	0	0	9,326	373	0	0	267,087	1.8
2013	125,573	579	7,762	3,278	0	13,373	66,103	14,350	0	9,025	178,257	0	0	3,425	0				
2014	181,411	593	10,842	2,993	0	4,676	147,013	2,289	0	9,829	113,308	0							
2015	132,864	3,765	29,948	3,107	0	11,163	32,156	6,652											
2016	145,013	0	3,090	8,891	252														
2017	209,298	1,809																	
2018	235,669																		
2019	165,146																		
10-Year average (2003–2012):																		233,927	1.5

Table 55.—Estimated Kodiak salmon test fishery catch, 2019.

Set #	Date	Start time	Area	Hook	Wind	Seas	Duration (minutes)	Catch		
								Sockeye	Chum	Chinook
1	6/6/2019	6:22 AM	Cape Uyak	Southbound	V 10–15	1–2 ft	38	93	0	1
2	6/6/2019	7:40 AM	Cape Uyak	Southbound	V 15–20	3–4 ft	35	135	1	0
3	6/6/2019	8:55 AM	Cape Uyak	Southbound	V 15–20	3–4 ft	35	63	1	15
4	6/6/2019	10:36 AM	Cape Uyak	Southbound	V 10–15	1–2 ft	29	77	0	3
5	6/6/2019	11:35 AM	Cape Uyak	Southbound	V 10–15	1–2 ft	30	164	1	13
6	6/6/2019	12:50 PM	Cape Uyak	Southbound	V 15–20	3–4 ft	25	106	3	7
7	6/6/2019	1:45 PM	Cape Uyak	Southbound	V 15–20	1–2 ft	30	56	0	9
8	6/6/2019	2:20 PM	Cape Uyak	Southbound	V 15–20	3–4 ft	55	83	0	1
9	6/6/2019	3:45 PM	Cape Uyak	Southbound	V 15–20	3–4 ft	35	92	0	0
10	6/6/2019	4:49 PM	Cape Uyak	Southbound	V 10–15	3–4 ft	44	148	0	0
11	6/6/2019	5:50 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	30	193	0	2
12	6/6/2019	6:40 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	35	217	3	2
13	6/6/2019	7:35 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	35	122	0	0
14	6/6/2019	8:31 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	29	119	2	3
15	6/6/2019	9:16 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	39	232	0	0
16	6/6/2019	10:35 PM	Cape Uyak	Southbound	V 10–15	1–2 ft	35	113	0	0
1	6/10/2019	5:55 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	40	2	0	0
2	6/10/2019	7:40 AM	Cape Uyak	Southbound	V 15–20	3–4 ft Chop	45	4	2	0
3	6/10/2019	1:00 PM	Cape Uyak	Southbound	V 15–20	3–4 ft Chop	39	41	3	0
4	6/10/2019	2:00 PM	Cape Uyak	Southbound	V 20	3–4 ft Chop	39	117	2	1
5	6/10/2019	3:07 PM	Cape Uyak	Southbound	V 20	3–4 ft Chop	35	10	0	0
6	6/10/2019	4:30 PM	Cape Uyak	Southbound	V 20	3–4 ft Chop	30	88	0	0
7	6/10/2019	5:25 PM	Cape Uyak	Southbound	V 15–20	3–4 ft Chop	35	68	2	0
8	6/10/2019	6:27 PM	Cape Uyak	Southbound	V 15–20	3–4 ft Chop	23	146	2	0
9	6/10/2019	7:10 PM	Cape Uyak	Southbound	V 15–20	3–4 ft Chop	37	133	4	0
10	6/10/2019	8:00 PM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	36	88	1	0

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Set #	Date	Start time	Area	Hook	Wind	Seas	Duration (minutes)	Catch		
								Sockeye	Chum	Chinook
1	6/11/2019	6:44 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	33	57	2	0
2	6/11/2019	7:30 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	37	26	1	0
3	6/11/2019	10:00 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	30	68	3	0
4	6/11/2019	10:40 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	32	103	5	0
5	6/11/2019	11:30 AM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	37	50	2	0
6	6/11/2019	12:50 PM	Cape Uyak	Southbound	V 10–15	3–4 ft Chop	35	32	1	6
7	6/11/2019	4:30 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	30	20	0	2
8	6/11/2019	5:17 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	43	6	0	0
9	6/11/2019	6:45 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	35	8	0	0
10	6/11/2019	7:47 PM	Cape Uyak	Northbound	V 5–10	3–4 ft Chop	29	15	0	19
11	6/11/2019	8:45 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	34	19	0	0
12	6/11/2019	9:35 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	35	14	0	0
13	6/11/2019	8:37 PM	Cape Uyak	Southbound	V 5–10	3–4 ft Chop	33	16	0	0
								3,144	41	84

Note: Chinook salmon were immediately released back into the water. The number of fish in this table differs from fish ticket; these numbers represent the number of fish counted by department staff, whereas the fish ticket numbers are based on average weights of a subsample of fish harvested.

Table 56.—Estimated age composition of the Kodiak Salmon Test Fishery (255-20) sockeye salmon catch, 2019.

Statistical week	Sample size		Age								Total
			0.2	1.2	1.3	1.4	2.1	2.2	2.3	3.1	
23: 5/31–6/6	201	Percent	3.5	0.5	13.4	7.5	8.0	41.8	24.4	1.0	100
		Numbers	63	9	244	136	145	761	444	18	1,820
24: 6/7–6/13	227	Percent	2.2	0.4	19.4	11.9	7.9	40.5	15.9	1.8	100.0
		Numbers	26	5	225	138	92	470	184	20	1,160
Total	428	Percent	3.0	0.5	15.7	9.2	7.9	41.3	21.1	1.3	100.0
		Numbers	89	14	469	274	237	1,231	628	39	2,980

Note: The number of fish in this table differs from the total sockeye catch in Table 54; these numbers are from fish tickets, whereas the number on Table 54 represents the number of fish estimated by department staff.

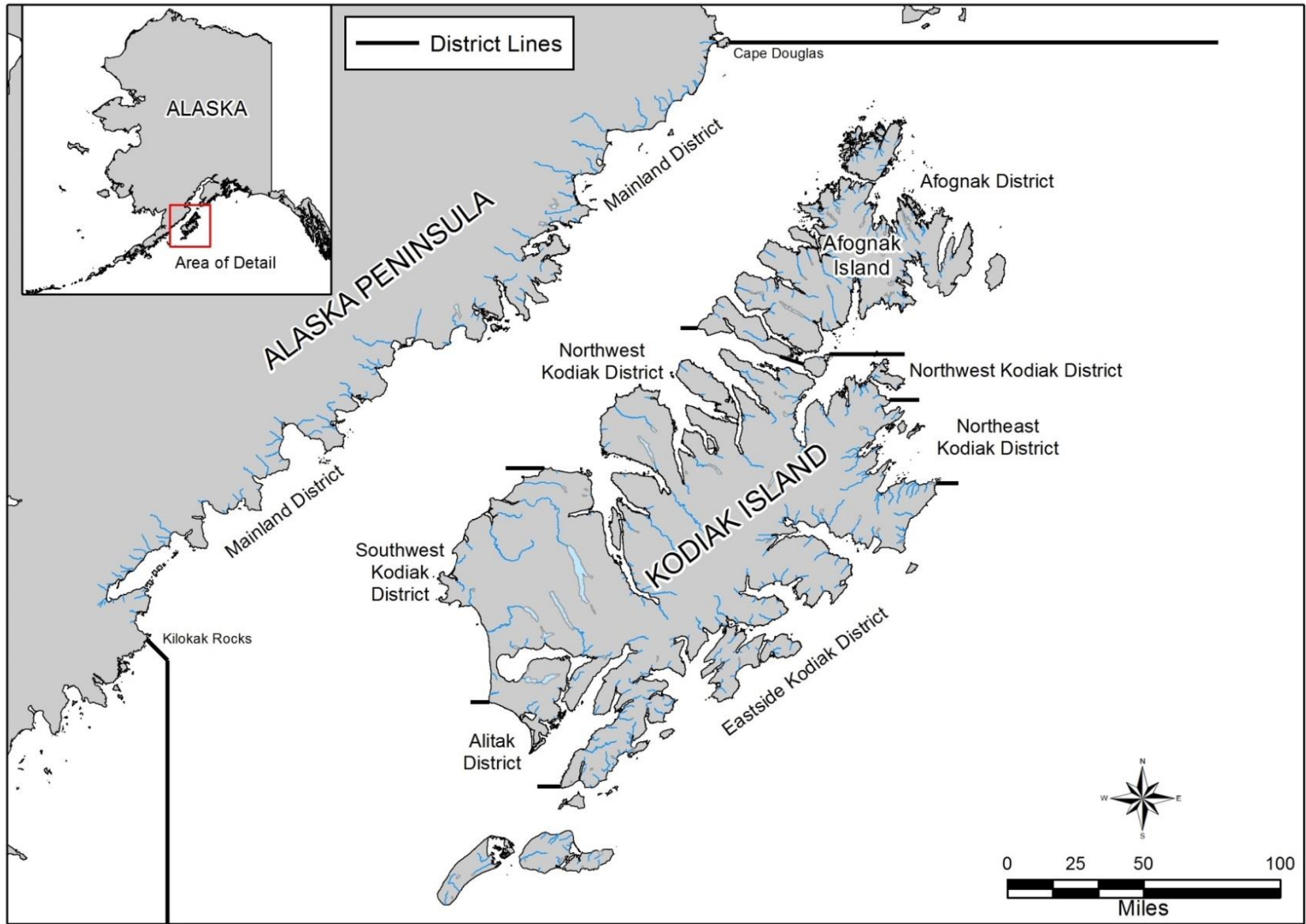


Figure 1.—Kodiak Management Area commercial salmon fishing districts.

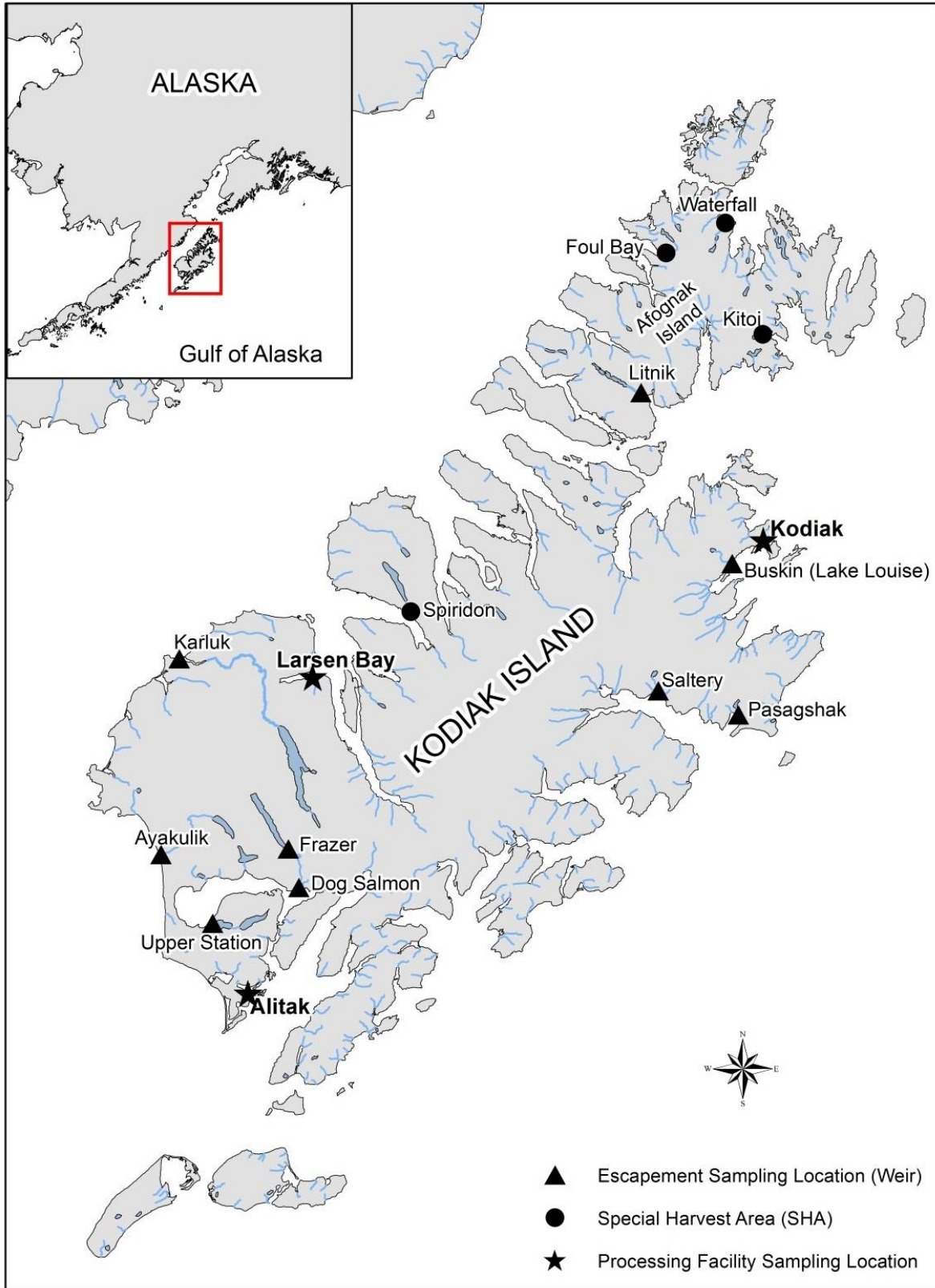


Figure 2.—Salmon escapement sampling locations (weirs), special harvest areas, and processing facility sampling locations in the Kodiak Management Area.

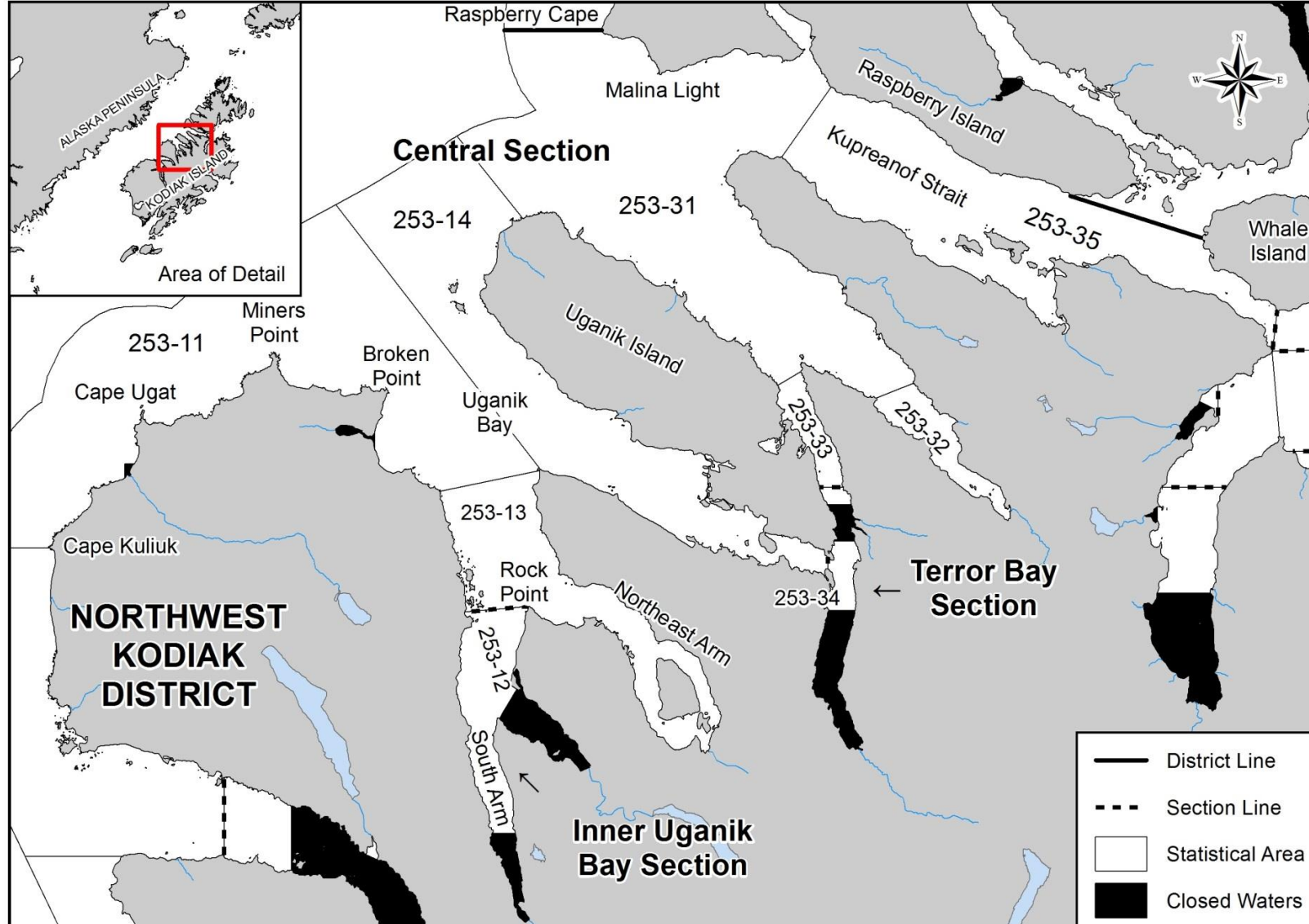


Figure 3.—Kodiak Management Area commercial salmon statistical areas sampled to represent Uganik/Viekoda/Kupreanof harvest within the Northwest Kodiak District.

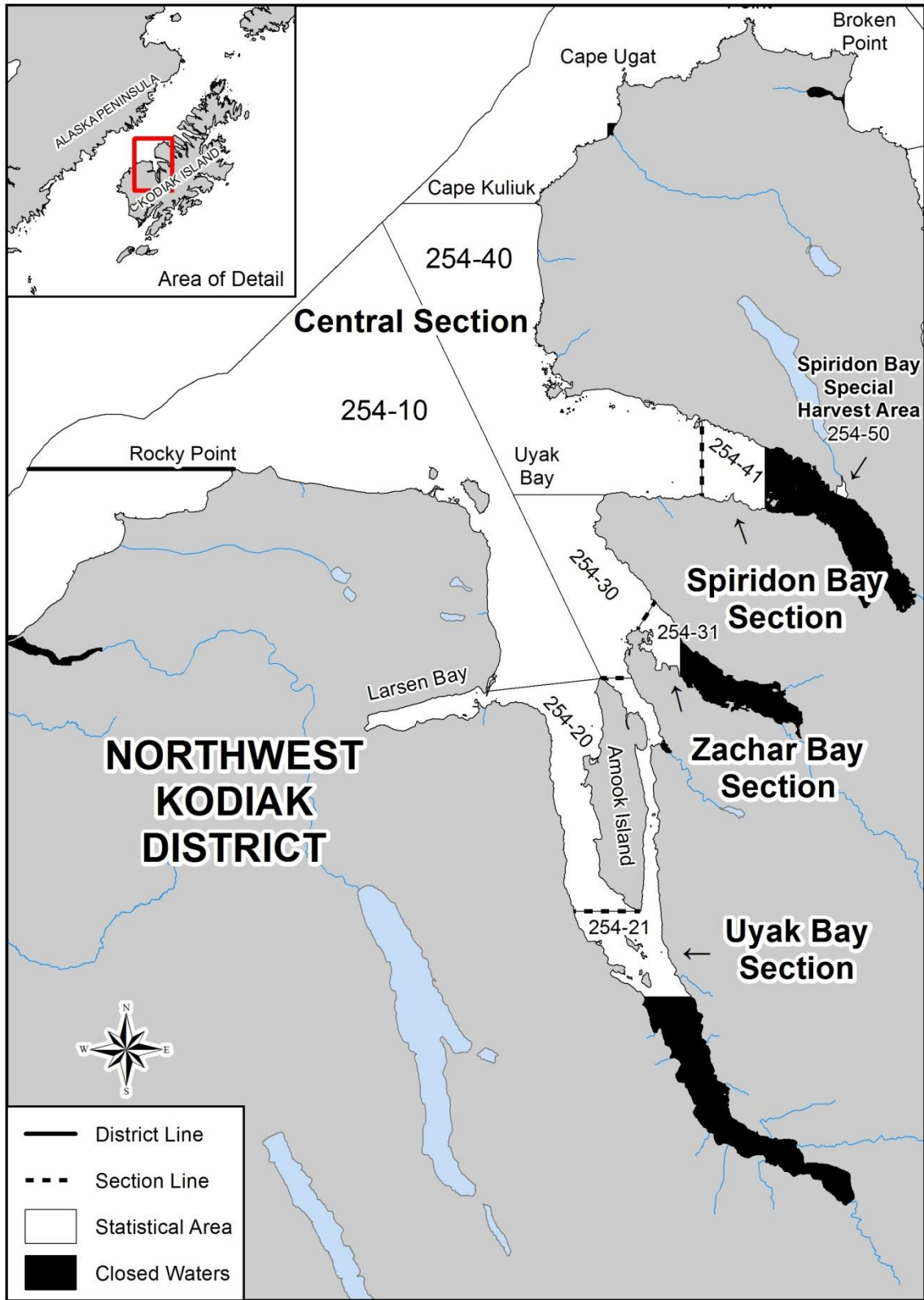


Figure 4.—Kodiak Management Area commercial salmon statistical areas sampled to represent Uyak Bay harvest within the Northwest Kodiak District.

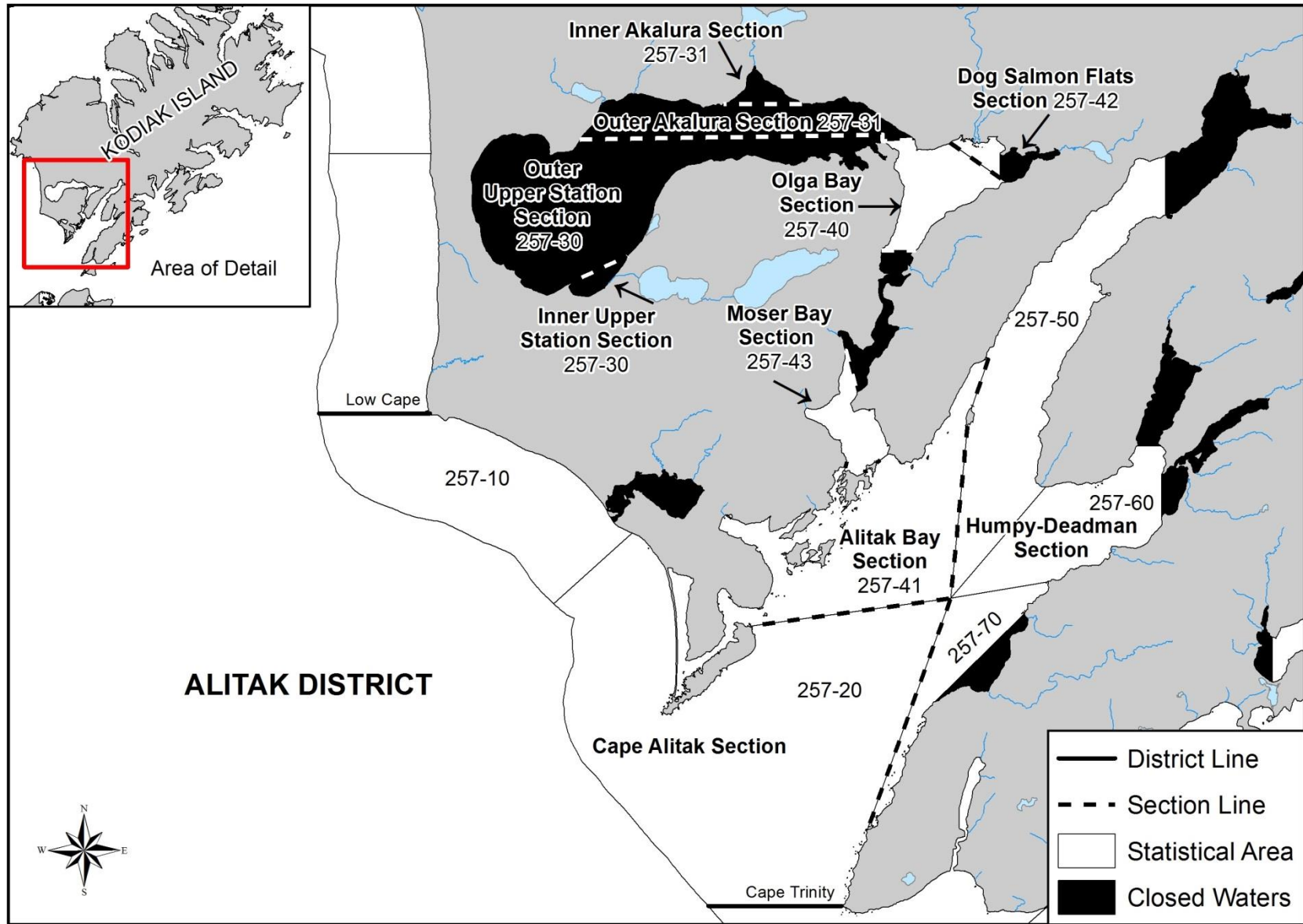


Figure 5.—Kodiak Management Area commercial salmon statistical areas sampled to represent the Alitak District.

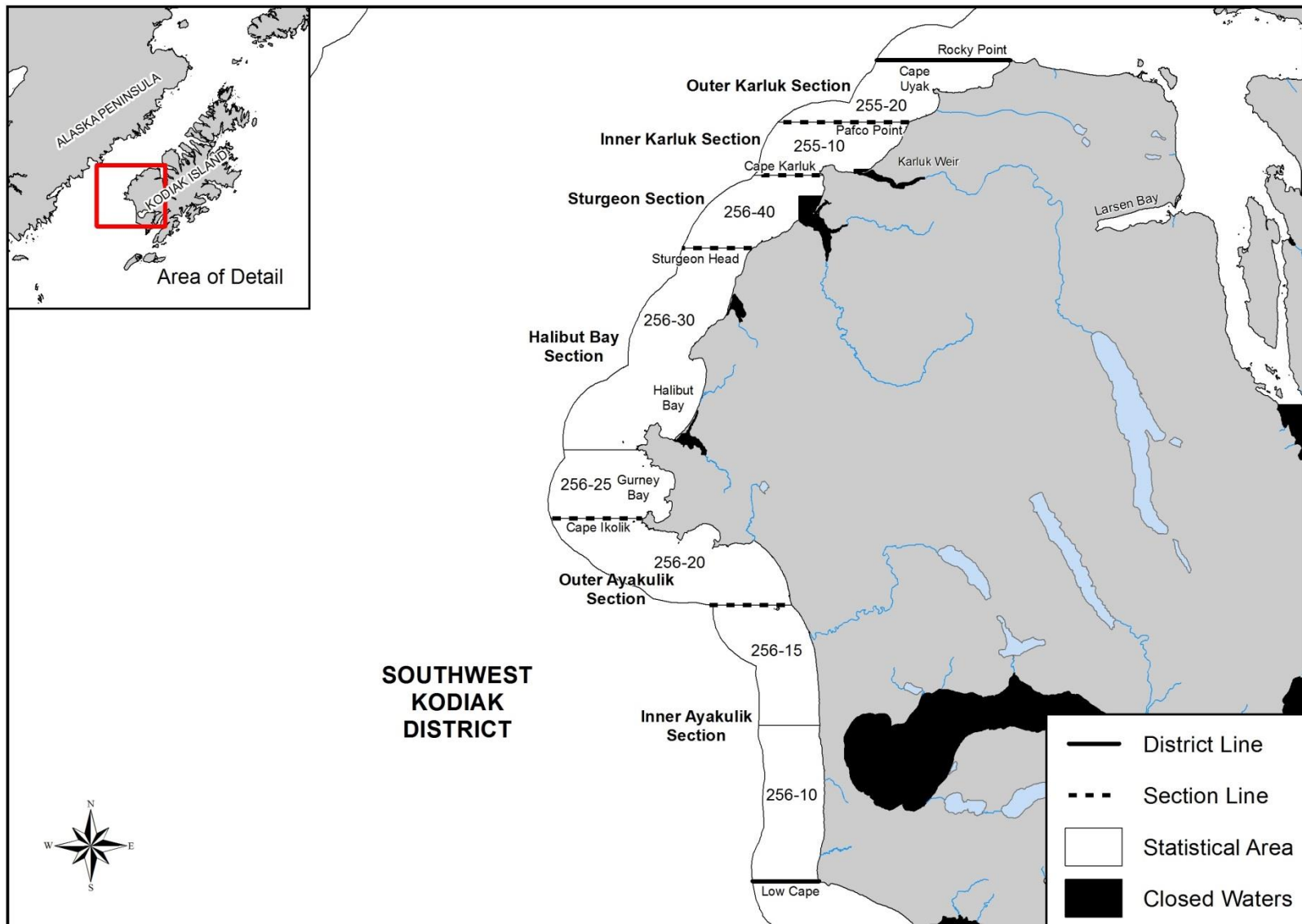


Figure 6.—Kodiak Management Area commercial salmon statistical areas sampled to represent the Southwest Kodiak District (Karluk/Sturgeon, Halibut/Gurney bays, and Ayakulik areas) harvests.

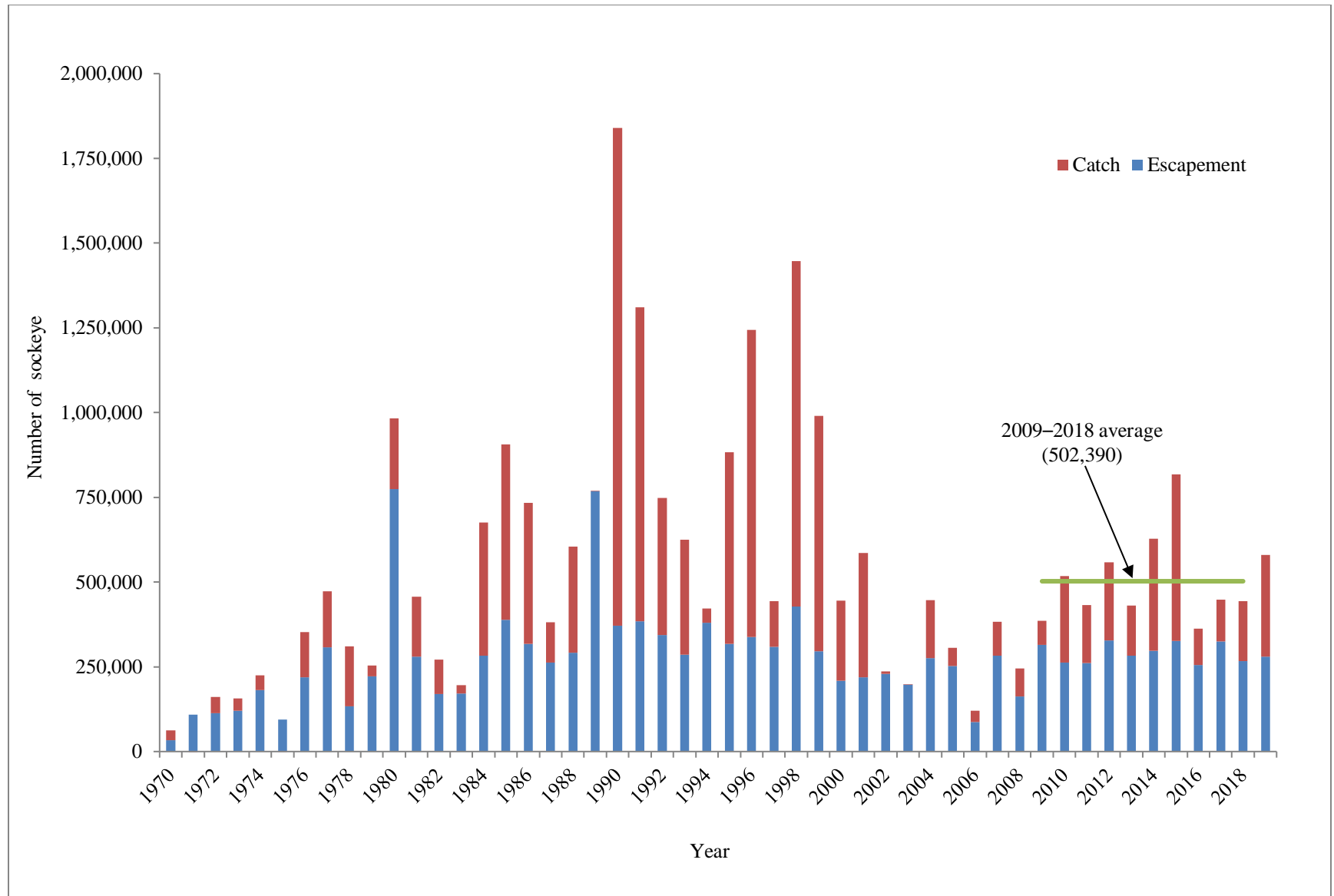


Figure 7.—Ayakulik River (Red Lake) sockeye salmon escapement and catch estimates, 1970–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

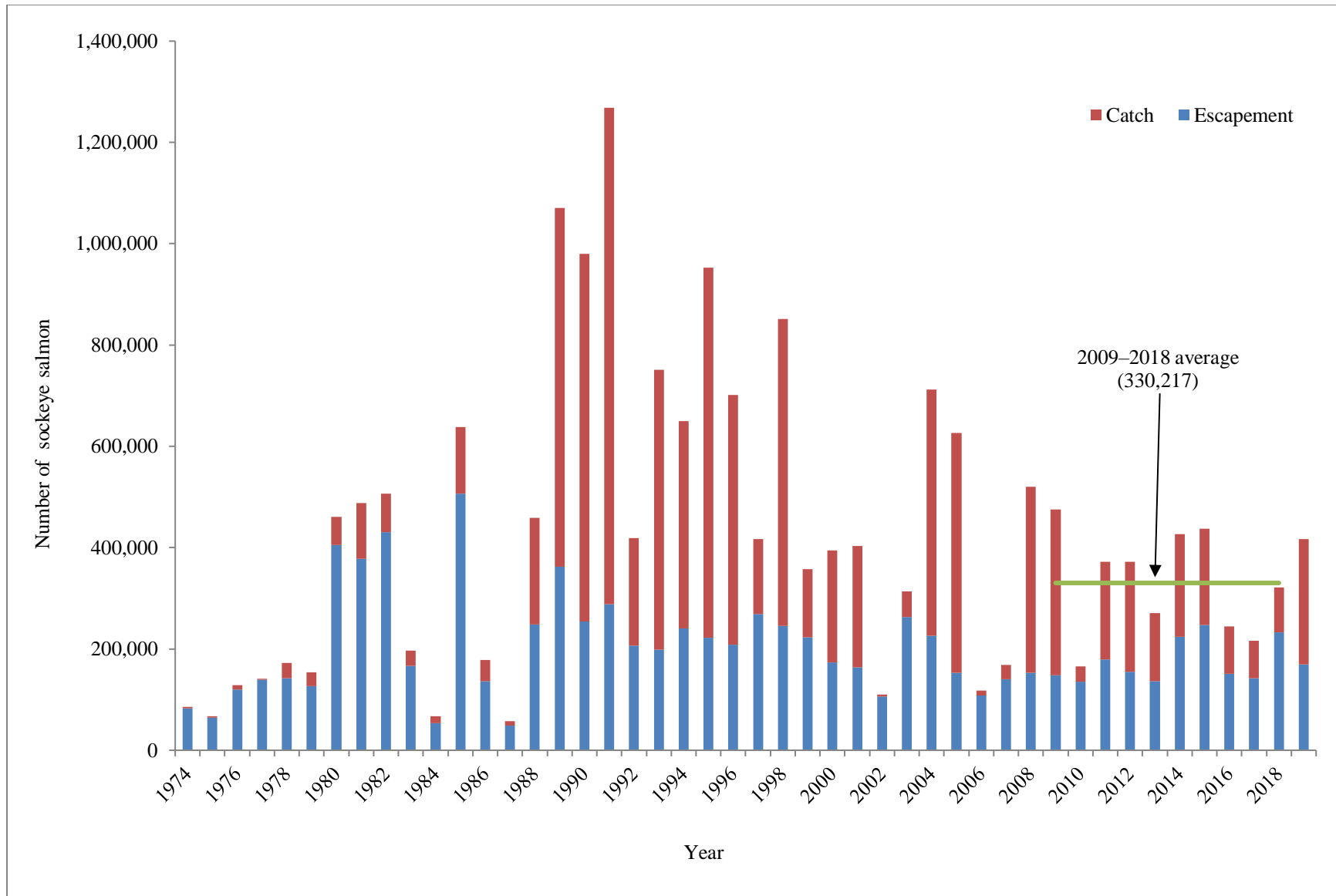


Figure 8.—Frazer Lake sockeye salmon escapement and catch estimates, 1974–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

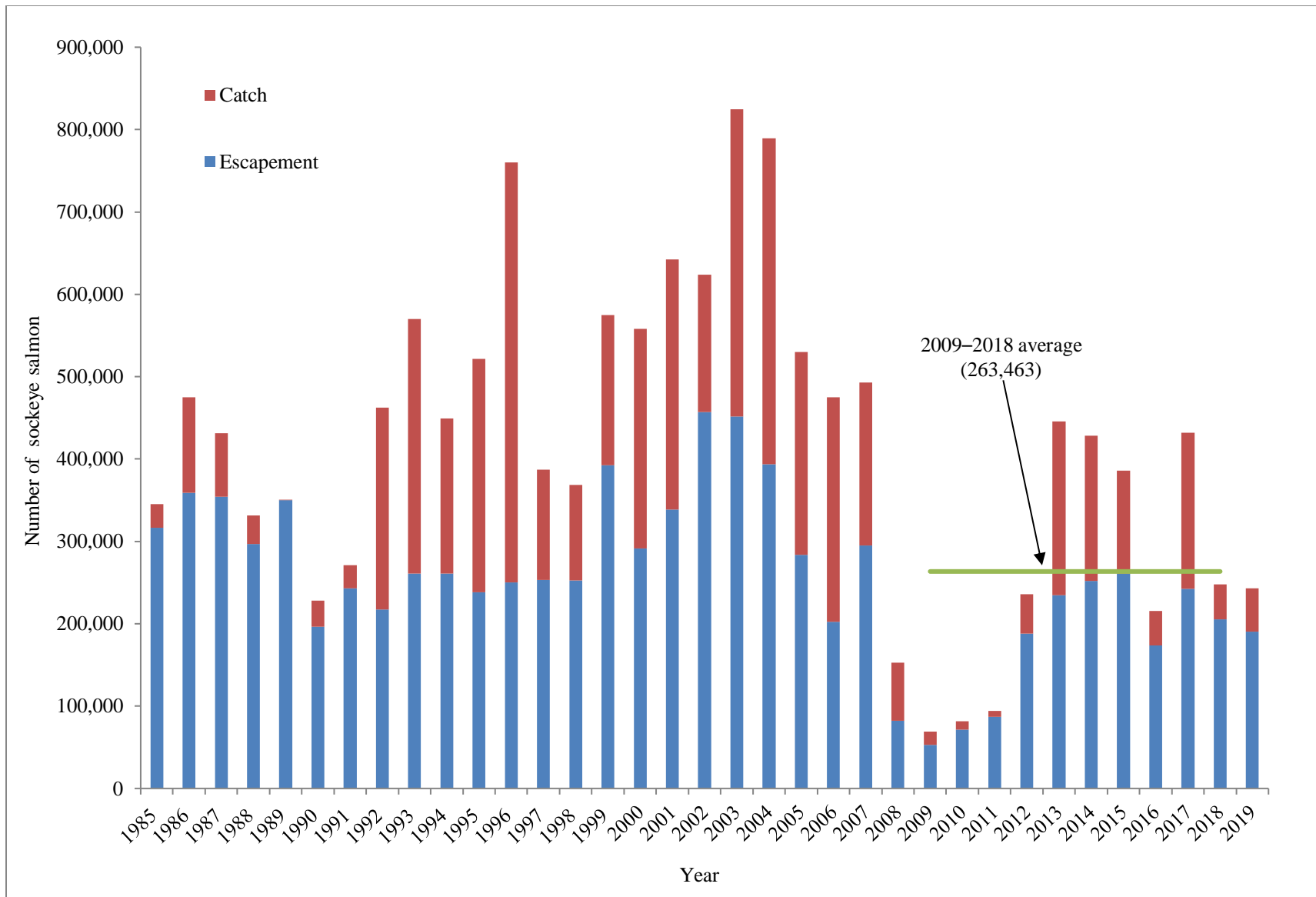


Figure 9.—Karluk Lake early-run sockeye salmon escapement and catch estimates, 1985–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

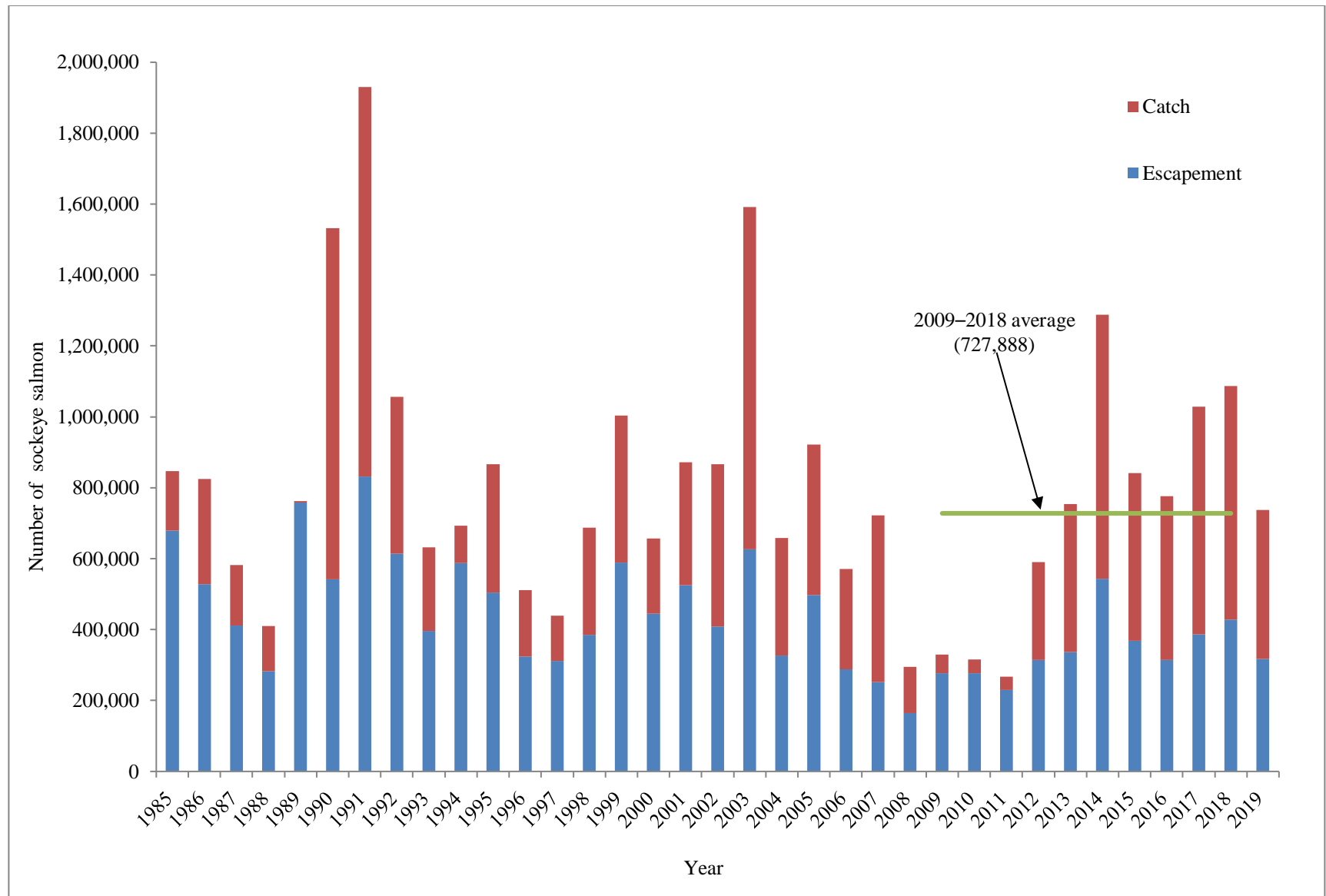


Figure 10.—Karluk Lake late-run sockeye salmon escapement and catch estimates, 1985–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

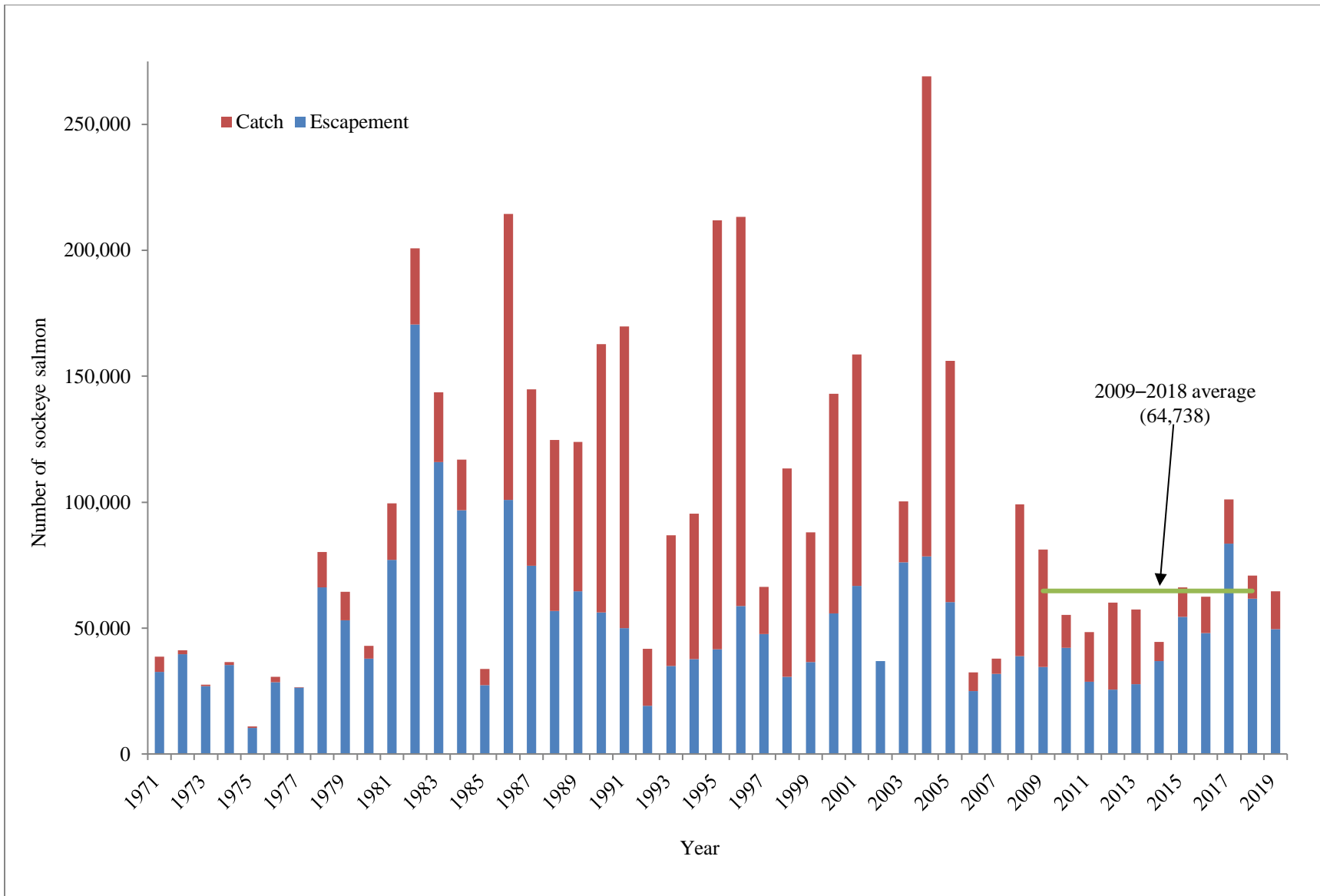


Figure 11.—Upper Station (South Olga Lakes) early-run sockeye salmon escapement and catch estimates, 1971–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

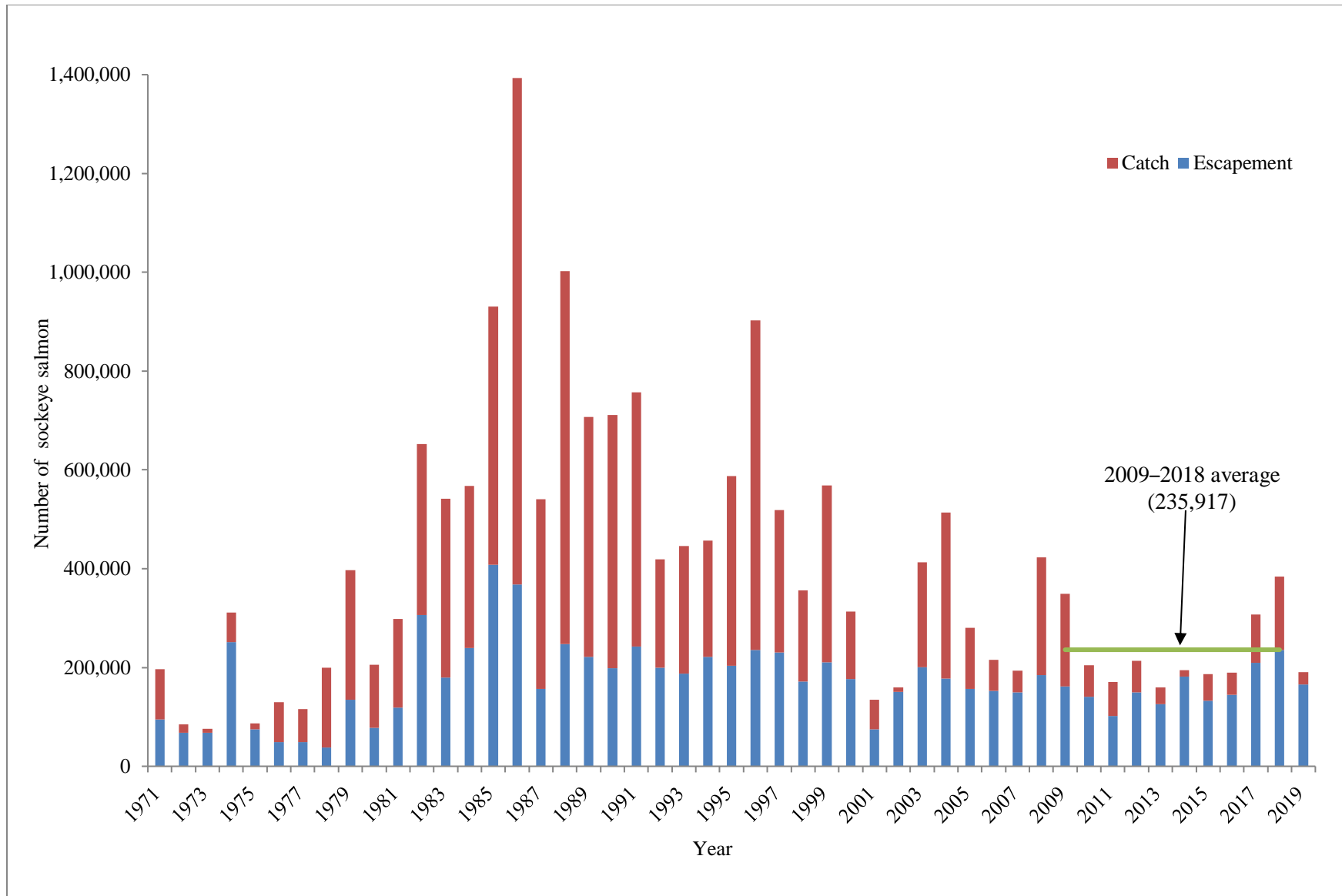


Figure 12.—Upper Station (South Olga Lakes) late-run sockeye salmon escapement and catch estimates, 1971–2019, and the recent 10-year average estimated total run (average catch and escapement combined, 2009–2018).

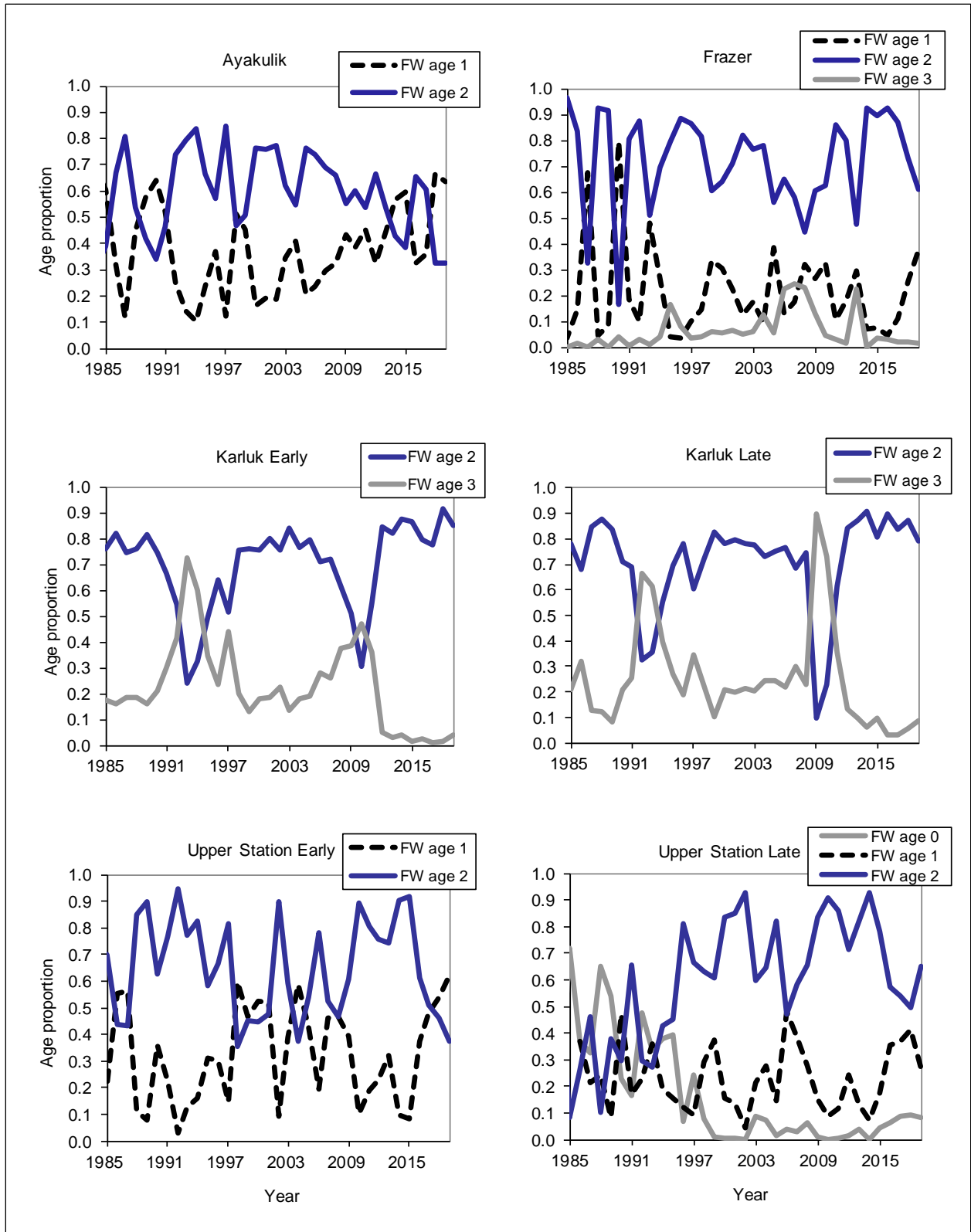


Figure 13.—Historical trends in the proportion of freshwater ages comprising the major Kodiak Island sockeye salmon annual runs, 1985 to 2019.

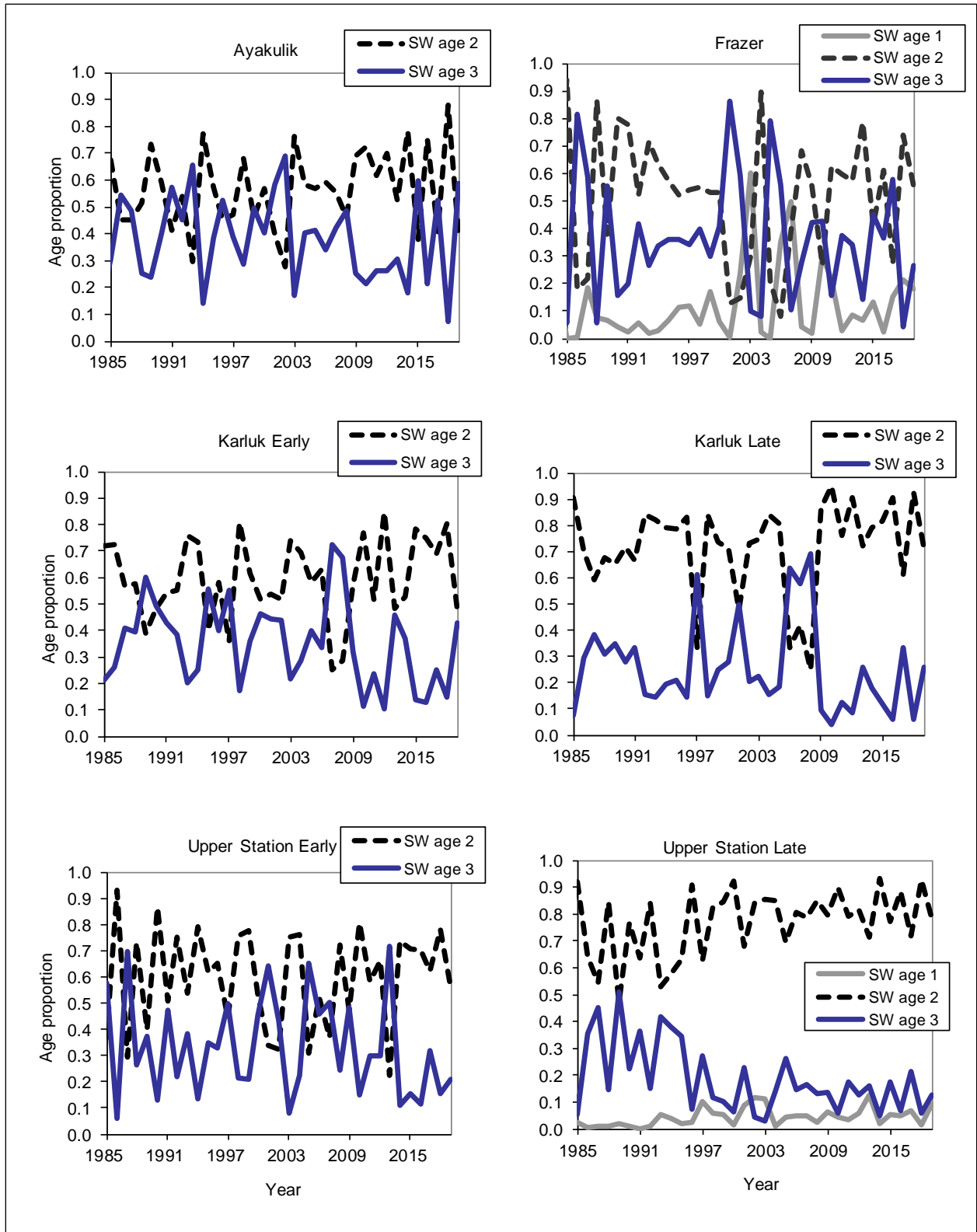


Figure 14.—Historical trends in the proportion of saltwater ages comprising the major Kodiak Island sockeye salmon annual runs, 1985 to 2019.