

**Fishery Management Report No. 11-30**

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**Kodiak Management Area Salmon Escapement and  
Catch Sampling Results, 2010**

by

**M. Birch Foster**

May 2011

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

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## ABSTRACT

Roughly one million sockeye salmon *Oncorhynchus nerka* were enumerated through Alaska Department of Fish and Game (ADF&G) salmon counting weirs in the Kodiak Management Area (KMA) during 2010. Adult sockeye salmon were sampled for age, sex, and length on major river systems in the KMA and scale samples were aged from approximately 10 thousand salmon to represent escapement age compositions. The overall estimated sockeye salmon escapement was predominantly composed of age-2.2 (33.9%), -3.2 (23.5%) and -1.3 (14.1%) fish, but primary age classes varied by system.

The 2010 commercial salmon catch for the KMA totaled roughly 11.3 million fish, the lowest total since 1996. The commercial harvest consisted of approximately 15 thousand Chinook *O. tshawytscha*, 1.4 million sockeye, 270 thousand coho *O. kisutch*, 8.9 million pink *O. gorbuscha*, and 730 thousand chum *O. keta* salmon. Sockeye salmon were sampled by ADF&G for age determination from a variety of catch areas throughout the KMA and of these samples, roughly 13 thousand scales were used to represent a combined harvest of approximately 810 thousand sockeye salmon. The sockeye salmon catch sample was predominantly composed of age-2.2 (49.6%), -1.3 (16.5%) and -1.2 (16.3%) fish; however, primary age classes varied by section and district.

Sockeye salmon brood tables were updated for the Karluk, Ayakulik, Upper Station, and Frazer systems; 10-year average return-per-spawner estimates ranged from 1.5 for Ayakulik to 2.5 for Upper Station early run. The examination of historical trends in sockeye salmon age compositions show tremendous 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 that portion of the Alaska Peninsula from Cape Douglas to Kilokak Rocks (Figure 1). There are about 800 anadromous salmon systems identified in the KMA (Johnson and Blanche 2010). These systems combined support five commercially harvested salmon species: Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta* salmon. About 39 of these systems support various sizes of sockeye salmon runs (Jackson et al. 2010).

Weirs operated by the Alaska Department of Fish and Game (ADF&G) provide the primary mode of enumeration for virtually all Chinook salmon and a majority of the sockeye salmon escapements into KMA streams (Figure 2; Tiernan and Caldentey 2010). Remaining streams are monitored by aerial and foot surveys to index pink, chum, coho, and remaining sockeye salmon escapements (Jackson et al. 2010).

The KMA is composed of seven commercial salmon fishing districts and 56 sections (Figures 1 and 3–6). The primary emphasis of the ADF&G salmon management program is to promote maximum production for future KMA salmon returns by supporting salmon escapement of sufficient magnitude and distribution (Jackson and Dinnocenzo 2010). Simultaneously, the goal is to provide for orderly fisheries, maximize harvest opportunities and product quality, and adhere to management plans adopted by the Alaska Board of Fisheries (BOF). Escapement goals are developed for individual stocks or stock aggregates using the sustained yield principle (Honnold et al. 2007; Nelson et al. 2005). Directed commercial fisheries occur on sockeye, pink, chum, and coho salmon; Chinook salmon are not targeted. To open and close the fishery in season, managers use qualitative analyses of run timing, CPUE statistics, species composition estimates, regulatory management plans, aerial survey estimates, test fishery results, and weir escapement counts (Jackson et al. 2010; Jackson and Dinnocenzo 2010).

Age, sex, and length (ASL) composition of KMA sockeye salmon escapements have been collected under the direction of various researchers and agencies since the mid 1920s. The Commercial Fisheries Division (CFD) of ADF&G, initiated an expanded catch and escapement sampling program in 1985 focusing on sockeye salmon. The purpose of this program was to collect representative ASL data from major sockeye salmon systems and representative age data from selected commercial sockeye salmon harvests. These data continue to expand the KMA salmon baseline ASL database. These samples are used to reconstruct numerous sockeye salmon runs, employing age marker analysis, scale pattern analysis (SPA), and historical harvest proportions to estimate specific stock contributions to commercial fisheries in the KMA (Baer and Honnold 2002; Barrett and Nelson 1995; Foster 2006–2010a; Nelson 1999; Nelson and Barrett 1994; Nelson and Swanton 1996, 1997; Sagalkin 1999; Swanton 1992; Witteveen et al. 2005). Accordingly, these samples provide the foundation for preseason run forecasting and escapement goal evaluation.

This report is a summary of the results of the 2010 KMA salmon escapement and catch sampling program. This report is a compilation of data, with some interpretation and discussion but is not intended as a rigorous analysis. The emphasis of this report is on sockeye salmon.

## **METHODS**

### **ADULT SALMON ESCAPEMENT AND CATCH ESTIMATES**

Salmon escapement enumeration was accomplished via weir counts at seven systems throughout the KMA in 2010 (Figure 2). Major systems enumerated by ADF&G, CFD personnel included Karluk, Ayakulik (Red Lake), Frazer (Dog Salmon Creek), and South Olga Lakes (Upper Station). A weir was located at the mouth of Dog Salmon Creek and at the outlet to Frazer Lake (Frazer fish pass), within the same sockeye salmon system, to facilitate timely management of the fishery. Minor systems with weirs operated by ADF&G personnel included Afognak (Litnik) Lake, Saltery Lake, and Buskin River. Division of Sport Fish monitored salmon escapement through a weir at Buskin Lake and Lake Louise (within the Buskin River system) and Alaska State Parks operated a salmon weir at Big Bay Creek (Shuyak Island) in 2010 enumerating coho and pink salmon; however, the results of these smaller systems are outside the scope of this report which concentrates on sockeye salmon.

Escapements at weirs were enumerated by field technicians and biologists using hand tally denominators as fish migrated upstream through aluminum panel gates (Tiernan and Caldentey 2010). Gates are normally closed to allow fish buildup and are intermittently opened to allow salmon enumeration and passage. Therefore, these counts were treated as a census with minor adjustments made to the total counts only when high water events washed out weirs or after weir removal at season's end. In these cases, when escapements were not directly counted, they were estimated by aerial or foot surveys conducted by field personnel.

KMA salmon catch numbers for the 2010 season were obtained from summary reports of individual harvest receipts (fish tickets). The fish ticket database was edited by Kodiak area salmon management biologists prior to summary reports being generated on February 1, 2011.

### **ADULT SALMON ESCAPEMENT AND CATCH SAMPLING**

Sockeye salmon escapements were sampled weekly for ASL data at weirs on the Karluk, Ayakulik, Upper Station, Dog Salmon, and Frazer river systems (Figure 2; Foster 2010b). Frazer

Lake salmon are initially enumerated at the Dog Salmon weir (near saltwater) and then counted again as they transit the fish pass and into Frazer Lake. Sampling weeks and dates are presented in Table 1. Fish were collected using a live-box trap attached to the upstream side of the weir. At Karluk River during August and September, samples are often collected with a beach seine in the lagoon when scale samples collected at the weir indicated heavy reabsorption. Ideally, three samples of 80 fish were collected weekly on alternating days to meet the required weekly sample size of 240 fish. Within-week adjustments were made in the schedule when necessary to obtain the full sample. The weekly escapement sample size enabled all age classes to be simultaneously estimated within  $\pm 6.5\%$  of the true proportions with 90% confidence (Thompson 1987). For Afognak and Saltery lakes a goal of 600 fish (Table 2) was established, with the sampling effort distributed throughout the season and proportional to escapement counts (i.e., peaks in sampling effort occurred during peaks of escapement).

Specific commercial sockeye salmon catches were sampled weekly for age during commercial fisheries (Foster 2010b; Table 3; Figures 3-7). The catch sample size of 400 fish per week enabled all age classes to be simultaneously estimated within  $\pm 6.5\%$  of the true proportion with 95% confidence (Thompson 1987). Consistent with weir sampling, 240 fish per week were sampled for ASL data from the Spiridon Bay Special Harvest Area (SBSHA) to represent the Spiridon Lake sockeye salmon run (Thomsen 2010; Duesterloh 2008; Nelson and Swanton 1997).

Catch samples were collected at the Port of Kodiak, Larsen Bay, Alitak, Olga Bay, SBSHA, Foul Bay SHA, and Waterfall Bay SHA (Figures 2–7). The catch sampling crew obtained fish ticket information before collecting samples to determine if the fish were exclusively harvested from the section designated to be sampled. If fish ticket data were not available, the sampling crew interviewed the processing facility dock foreman or tender operator. Once fish ticket information became available, the origin of the catch was confirmed.

All scales, when possible, 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 48X lens following designation criteria established by Mosher (1968). Ages were recorded on sampling forms 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 representing the time between egg deposition and emergence of fry. Length measurements were taken from METF (mm) and sex was determined from external morphological characteristics. All ASL data were recorded on handheld digital sampling devices (Foster 2010a). The ASL data summaries were computed for each escapement sample. Age and sex composition were estimated daily by interpolating between sampling events, then summarized weekly. When limited sampling events occurred throughout the season and the targeted goals not achieved, the escapement age composition estimate was limited to the particular statistical week only. Length composition data were summarized by age and sex.

When weekly targeted catch sample sizes were obtained, 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. Descriptions of component

programs used to compute ASL composition summaries can be found in database end user documentation (Unpublished ADF&G Commercial Fisheries Division database documentation obtained from Neil Moomey 2010, Kodiak, Alaska).

## **SOCKEYE SALMON RUN RECONSTRUCTION ESTIMATES**

### **Spiridon Lake**

The majority of Spiridon-bound sockeye salmon are assumed to be harvested within the SW Afognak Section and the NW Kodiak District. The calculated average estimated proportion of Spiridon sockeye harvest occurring in the SBSHA from 1994 to 1997 (41% using SPA) was used to estimate the number of Spiridon Lake sockeye salmon harvested in the SW Afognak Section and NW Kodiak District combined (Nelson 1999) from 1998 to 2007.

With the unusual Kodiak Management Area (KMA) Central Section commercial salmon fishing time and harvest, and the low Karluk Lake sockeye abundance during the 2008 through 2010 seasons, research staff were concerned about the utility of using the standard Spiridon run reconstruction method (described above) that was developed under a different fishery climate and broodstock. Therefore, a visual determination (Baer and Honnold 2002) of commercial catch scale samples was conducted of the Uyak and Uganik (Westside) commercial sockeye scale samples. From 7 June through early August, roughly 4,000 individual scales from the commercial harvests in Uyak and Uganik were assessed for the presence of the unique 2010 Spiridon age-2.2 scale pattern, similar to the method used in 2008 and 2009. Results were compared to the stock separation SPA conducted from 1994 to 1997 and 2008 (Nelson and Barrett 1994; Nelson and Swanton 1996–1997; Nelson 1999; Foster 2008, 2009, 2010a) to gauge the validity of the analysis.

This Spiridon-bound Westside catch estimate was combined with the SBSHA sockeye salmon catch to estimate the size of the 2010 Spiridon Lake run. This enhanced run was fully utilized; therefore, there was no escapement. The age composition of the SBSHA commercial harvest samples was applied to the total Spiridon Lake run to estimate the age structure of the run.

### **Karluk Lake Early Run**

The majority of Karluk sockeye salmon are assumed to be harvested within the NW and SW Kodiak Districts. A natural age marker (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 escape in June and early July. Catch through 15 July and escapement through 21 July has historically been considered the early run; the six day difference between the two dates accounts for considerable lag time between harvest and escapement at Karluk weir.

The number of Karluk Lake bound sockeye salmon harvested in the Central, Inner and Outer Karluk and Sturgeon 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 return-per-spawner (R/S) estimates were calculated by dividing total returns by respective parent year escapements.

## **Karluk Lake Late Run**

Karluk Lake late run sockeye salmon typically escape in August and September. Catch post 15 July and escapement post 21 July has historically been considered the late run.

The number of Karluk Lake bound sockeye salmon harvested in the Central, Inner and Outer Karluk, and Sturgeon sections post 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 (post 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 total returns by respective parent year escapements.

## **Ayakulik River (Red Lake)**

The majority of sockeye salmon bound for Ayakulik are assumed to be harvested within the SW Kodiak District. 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 one third of the Halibut Bay Section sockeye salmon catch for the period from 21 June through 1 August by age class (Witteveen et al. 2005). Due to the age composition and timing of the Ayakulik-Halibut Bay catch samples, 100% of the Ayakulik-Halibut Bay sections harvest through 15 August and 33% of the post 15 August harvest was used to estimate the commercial catch attributable to the 2010 Ayakulik sockeye salmon run. Estimates by age class were assigned to the parent year (brood year) escapement and R/S estimates were calculated by dividing total returns by respective parent year escapements. Although the Ayakulik sockeye salmon run reconstruction and brood tables are not separated into early- and late-run components, historically (prior to 1989) the run was treated as such. In addition, proposed reinstatement of separate early- and late-run goals for Ayakulik sockeye salmon were approved at the 2011 Alaska Board of Fisheries meeting in Kodiak. Thus, the 2010 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 estimated. Although Ayakulik early- and late-run sockeye are genetically distinct, the two 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 Creek)**

The majority of sockeye salmon bound for Frazer Lake are assumed to be harvested in the Alitak District. Run timing of Frazer Lake (Dog Salmon Creek) sockeye salmon coincides with both the early and late sockeye salmon runs to Upper Station (Sagalkin 1999) and therefore run reconstructions for both are done in conjunction. Based on previous studies (Swanton 1992, Tyler et al. 1986), 80% of the catch in the Cape Alitak and Humpy-Deadman sections and 95% of the catch in the Alitak, Moser, and Olga Bay sections were assumed to be of either Frazer Lake or Upper Station origin (Witteveen et al. 2005). The Frazer Lake catch estimate was based on a weekly proportion (using a running 3-day average) of Frazer/Upper Station harvest proportion escapement on 80% of the Cape Alitak Section harvest and 95% of the Alitak, Moser, and Olga Bay sections harvest. The Frazer/Upper Station estimate by week was used for catch by age unless the age class was exclusive to a system; this was based on scale samples collected weekly from the gillnet harvest. The differences between Frazer and Upper Station travel time between gillnet harvest and escapement were accounted for in the analysis (Foster 2003) and

jacks were eliminated for standardization. The catch estimate for Frazer Lake, by age class, was added to escapement counted at the Dog Salmon Creek weir (based on age classes sampled 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 total returns by respective parent year escapements.

### **South Olga Lakes (Upper Station) Early Run**

The South Olga Lakes system (colloquially referred to as Upper Station) has a temporally and genetically distinct early- and late-run sockeye salmon component and each component was estimated separately in 2010. The early run typically escape 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 a 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 total returns by respective parent year escapements.

### **South Olga Lakes (Upper Station) Late Run**

Upper Station late run sockeye salmon typically escape in August and September. Catch and escapement post 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 until August 22. All harvest in the Alitak District after August 22 (week 34) was attributed to Upper Station. The total Upper Station late-run estimate was determined by summing escapement counts post 15 July from the Upper Station weir and assigning 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 total 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 run year; however, reliable data for Ayakulik River, Upper Station, and Frazer Lake date back to the early 1970s. Annual trends in freshwater and saltwater ages of sockeye salmon, by run year, were graphed for visual interpretation.

## **RESULTS**

### **ADULT SALMON ESCAPEMENT ABUNDANCE, AGE, SEX, AND SIZE DATA**

A total of 1,007,792 individual sockeye salmon were estimated as escapement through seven weirs in the KMA during 2010 (Tables 4 and 5); this figure accounts for 94,680 fish enumerated at Frazer fish pass originally counted through Dog Salmon weir. A total of 10,472 of the escapement scale samples were ageable, representing a combined escapement of 967,372 sockeye salmon (Table 6), not including the duplicated counts at the Frazer Lake fish pass. The escapement was roughly composed of 5- (49%), 6- (28%) and 4- (18%) year-old fish. Primary age classes varied by system and area, but major overall age classes were 2.2 (34%) and 3.2

(24%), followed by smaller percentages of age-1.3, -1.2 and -2.1 (Table 6). Individual age, length, and sex composition summaries by escapement area are presented in Tables 7 through 34.

On Afognak Island, age-1.3 (81%) sockeye salmon dominated Afognak Lake escapement (Table 7). On the westside of Kodiak Island, escapement to Karluk Lake was dominated by age-3.2 (39%), -1.2 (18%) and -2.2 (17%) sockeye salmon in the early run (Table 10), and by age-3.2 (71%) and -2.2 (20%) sockeye salmon in the late run (Table 13). On the SW end of Kodiak Island, escapement to Ayakulik River was dominated by age-1.2 (28%), -1.3 (25%) and -2.2 (25%) sockeye salmon in the early run (Table 15), and by age-2.2 (68%), and -1.2 (17%) sockeye salmon in the late run (Table 18). In the Alitak District, escapement to Upper Station was dominated by age-2.2 (82%) in the early run (Table 20), and by age-2.2 (86%) sockeye salmon in the late-run (Table 23). Escapement to Frazer Lake was dominated by age-2.1 (42%), -1.3 (19%) and -2.2 (15%) sockeye salmon (Table 25). On the eastside of Kodiak Island, escapement to Saltery Lake was dominated by age-1.3 (64%), -1.2 (16%) and -2.3 (14%) sockeye salmon (Table 28).

In 2010, for all ages combined, average body size of sockeye salmon was largest at Saltery Lake (550 mm; Table 29) and smallest at Frazer (449 mm; Table 26) due to the abundance of jacks. For age-2.2 sockeye salmon, average body size was largest at Upper Station (late run) and smallest for Afognak (Tables 33-34). Sex percentages of sockeye salmon escapement samples ranged from 71% male at Frazer (Table 27) to 39% male at Afognak (Table 9).

The age composition of Kitoi Bay hatchery chum salmon broodstock samples were predominately age-0.3 (58%), -0.2 (37%) and -0.4 (5%) (Table 31); however, broodstock samples were evenly distributed between male and female instead of random and thus should not be viewed as representative of the run. Average size of age-0.3 Kitoi Bay broodstock chum salmon sampled was roughly 555 mm for both males and females (Table 32).

## **COMMERCIAL SALMON CATCH ABUNDANCE AND AGE DATA**

The 2010 commercial salmon catch in the KMA totaled 11,329,616 fish consisting of 14,710 Chinook, 1,439,535 sockeye, 269,407 coho, 8,871,063 pink, and 734,901 chum salmon (Tables 35 and 36). To most accurately represent run strength, these numbers include test fish harvests and personal use fish retained from commercial catch. The 2010 overall salmon harvest was much less than the recent 10-year (2000–2009) average of 24.6 million fish, due mostly to the weak return of pink salmon. The greatest district harvest of commercial sockeye salmon occurred within the Northwest Kodiak, followed by the Southwest Kodiak and Mainland districts (Table 36).

During the 2010 season, harvested sockeye salmon were sampled (12,663 ageable scales) and used to represent the commercial catch from a variety of catch areas throughout the KMA (Table 37). These samples were used to represent a combined catch of roughly 800 thousand sockeye salmon (Table 37). The overall sockeye salmon catch was predominantly composed of age-2.2 (50%), -1.3 (17%), and -1.2 (16%) fish; however, primary age classes varied by section and district. Individual age, length, and sex composition summaries by catch are presented in Tables 38 through 47.

Uganik-Viekoda bays commercial sockeye salmon catch were predominately age-2.2 (39%), -1.3 (24%) and -2.3 (20%) fish (Table 38). Commercial harvests in Uyak Bay were predominantly composed of age-2.2 (31%), -1.3 (28%), and -2.3 (19%) sockeye salmon (Table 39).

The Spiridon Bay Special Harvest Area (SBSHA) catch was predominantly composed of age-2.2 (55%), -1.3 (20%), and -1.2 (17%) sockeye salmon (Table 40). On average, the sampled SBSHA sockeye salmon measured 539 mm in length (Table 41) and the estimated percentage of females in the SBSHA catch was about 53% (Table 42). The commercial sockeye salmon catch from Foul Bay SHA was predominantly age-1.2 (84%). Sockeye salmon catch from Waterfall Bay SHA were predominantly age-1.2 (86%) fish. (Table 43). On average, sockeye salmon sampled at Foul Bay SHA measured 486 mm while Waterfall Bay SHA sockeye salmon measured 467 mm (Table 44).

Southwest Kodiak District (Ayakulik and Halibut Bay sections) commercial sockeye salmon catch from was dominated by age-2.2 (66%) and -1.2 (15%) fish; however there was a strong influx of age-3.2 fish post 15 August (Table 45). The inside gillnet areas of Alitak Bay, Moser Bay, and Olga Bay sections showed catch samples that were predominantly composed of age-2.2 (65%), -1.3 (14%), and -2.3 (13%) sockeye salmon (Table 46).

The only chum salmon harvest scale samples were taken in the Kitoi Bay Section, where the catch was predominately age-0.3 (75%) followed by -0.2 (19%) and -0.4 (6%) fish (Table 47).

## **SOCKEYE SALMON RUN RECONSTRUCTION ESTIMATES**

### **Spiridon Lake**

A total of 100,727 sockeye salmon were commercially harvested in the SBSHA during 2010 (Table 48). An average estimate of 41% (ranging from 33% to 45%) of Spiridon Lake bound sockeye salmon were harvested in the SBSHA from 1994 to 1997 (Nelson 1999); updating that analysis in 2008 and 2009 resulted in an estimate of 67% and 53% respectively. Using a SPA method in 2010 (visual), an estimated 58% of the Spiridon Lake bound sockeye salmon were harvested in the SBSHA. The 2010 results yield a total harvest of 73,746 Spiridon Lake sockeye salmon in the Southwest Afognak Section and Northwest Kodiak District (not including the SBSHA) combined. The 2010 estimated Spiridon Lake run of 174,473 sockeye salmon was well below the estimated 10-year (2000–2009) average of 245,589 sockeye salmon (Figure 8). Over half (96,031 fish) of the total estimated Spiridon Lake run were age-2.2 (Table 48).

### **Karluk Lake Early Run**

The 2010 Karluk Lake early sockeye salmon run estimate of 81,361 was predominantly composed of age-3.2 (39%), -1.2 (19%) and -2.2 (17%) fish (Table 49). The estimated 2010 Karluk early run showed a small increase from the historic low level observed in 2009 but the run was far below the recent 10-year average (2000–2009) of 515,780 fish (Figure 9). The 1994 through 2003 Karluk early-run sockeye salmon escapements have produced an estimated average return of 547,481 fish (range: 79,221-854,229) with an average R/S estimate of 1.9 (Table 50).

### **Karluk Lake Late Run**

The Karluk Lake late sockeye salmon run was estimated to be 315,996 fish in 2010 (Table 51). Age-3.2 fish were predominant (71%). The estimated 2010 run was a little less than the 2009 run of 329,783 but well below the recent 10-year average (2000–2009) estimated run of 748,516 fish (Figure 10). The 1994 through 2003 Karluk Lake late-run sockeye salmon escapements have produced an estimated average return of 817,021 fish (range: 352,728–1,204,530) with an average R/S estimate of 1.9 (Table 52).



### **Ayakulik River (Red Lake)**

The 2010 estimated Ayakulik sockeye salmon run totaled 518,269 fish, with age-2.2 (50%) and -1.2 (21%) fish accounting for the majority of the run (Table 53). The 2010 estimated Ayakulik run was more than the 2009 run of 385,772 and greater than the recent 10-year average (2000–2009) of 334,997 fish (Figure 11). The 1994–2003 Ayakulik sockeye salmon escapements have produced an estimated average return of 443,230 fish (range: 91,802–1,454,921) with an average R/S estimate of 1.5 (Table 54).

### **Frazer Lake (Dog Salmon Creek)**

The 2010 Frazer Lake sockeye salmon run estimate of 165,112 (Table 55) was predominantly composed of age-2.1 (36%), -1.3 (21%) and -2.2 (18%) fish. The 2010 run was less than the 2009 estimated run (474,976), and below the recent 10-year average (2000–2009) of 384,248 fish (Figure 12). Frazer Lake sockeye salmon escapements from 1994–2003 have produced an estimated average return of 364,991 fish (range: 53,837–867,981) with an average R/S estimate of 2.0 (Table 56).

### **South Olga Lakes (Upper Station) Early Run**

The 2010 Upper Station early sockeye salmon run estimate of 55,164 was predominantly composed of age-2.2 (77%) fish (Table 57). This estimated run was less than the 2009 run of 81,208 fish and below the 10-year average (2000–2009) of 111,469 sockeye salmon (Figure 13). The 1994–2003 Upper Station early-run sockeye salmon escapements have produced an estimated average return of 114,343 fish (range: 19,289–254,768; Table 58) with an average R/S of 2.5.

### **South Olga Lakes (Upper Station) Late Run**

The 2010 Upper Station sockeye salmon late-run estimate of 204,458 fish was predominantly composed of age-2.2 (84%) fish (Table 59). The 2010 estimated run was less than the 2009 estimated run (349,139) and below the recent 10-year average (2000–2009) of 299,636 fish (Figure 14). Upper Station late-run salmon escapements from 1994–2003 have produced an estimated average return of 321,058 fish (range: 110,971–493,960) with an average R/S estimate of 1.7 (Table 60).

## **KODIAK SOCKEYE SALMON HISTORICAL TRENDS IN AGE AND SIZE**

### **Karluk**

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 dominated the annual runs with the exception of the early 1990s when freshwater-age-3 fish spiked in abundance (Figure 15). Freshwater-age-3 fish, while not normally dominant since the inception of sampling for salmon age (1920s), have consistently been an important part of the Karluk Lake early and late runs. Over the last 10 years freshwater-age-3 fish have normally composed over 20% of the annual run, but have increased in the early run over the last seven years. In 2009 and 2010, the Karluk Lake late-run freshwater-age-3 component was unusually high at 90% and 73% respectively (Figure 15).

Both early- and late-run Karluk Lake sockeye salmon typically spend two years in the ocean, making age-2.2 the dominant historical age class since the 1920s. Since 1985, saltwater-age-2

sockeye salmon have dominated both runs but are more numerous during the late run (Figure 16). There appears to be a 5- or 6-year cycle of saltwater-age-3 sockeye salmon which dominate the early run. The late run has historically had a lesser saltwater-age-3 component. In 2010 the early and late runs had unusually low levels of saltwater-age-3 fish (Figure 16).

Average size of age-2.2 sockeye salmon at Karluk Lake has generally declined since the mid 1980s. In 2010 while the early run age-2.2 fish averaged only 479 mm, the late-run fish were above average size at 526 mm (Table 33 and Figure 17).

### **Ayakulik**

Freshwater residence time for Ayakulik sockeye salmon has generally been 2 years but often they will migrate to the ocean after only 1 year in Red Lake, as indicated by age samples of the escapement (Foster 2010a). On average, freshwater-age-2 sockeye salmon have composed 63% of the run while freshwater-age-1 fish have composed 34%. In 2010, roughly 60% of the run was freshwater-age-2 and 39% freshwater-age-1 fish (Figure 15).

Ayakulik River sockeye salmon commonly spend two years in the ocean but frequently (~40%) rear at sea for three years. Similar to Karluk Lake, there is a 5- or 6-year cycle of increased proportions of saltwater-age-3 sockeye salmon (Figure 16). Age composition estimates from the 2010 run show saltwater-age-2 (72%) relatively high again as the cycle would predict.

In 2010 average size of age-2.2 and -2.3 sockeye salmon at Ayakulik was below average for both the early and late portion of the run; similar to Karluk, Ayakulik has also generally declined since the 1980s (Tables 33-34 and Figure 17).

### **South Olga Lakes**

Freshwater residence time for Upper Station early run sockeye salmon has typically been 2 years but often they will migrate to the ocean after only 1 year, as indicated by age data from the escapement; in 2010 the proportions greatly favored freshwater-age-2 fish in both the early run (89%) and the late run (91%). From the late 1980s to the mid 1990s, freshwater-age-2 fish were dominant in the early run but the late run demonstrated strong components of freshwater-age-0 (Figure 15) sockeye salmon and coincided with extremely large runs (Foster 2010a). 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 strictly dominated by freshwater-age-2 fish.

Upper Station sockeye salmon typically spend two years in the ocean but occasionally rear at sea for three years. There is a possible 4- or 5-year cycle of increased proportions of saltwater-age-3 sockeye salmon in the early run (Figure 16). In 2010, the Upper Station early run had predominantly saltwater-age-2 (81%) fish and the late run continued its trend of predominantly saltwater-age-2 fish in the run (91%; Figure 16).

In 2010, the average size of age-2.2 and -2.3 sockeye salmon in both the early and late runs at Upper Station was smaller than the historical average (Tables 33-34 and Figure 17).

### **Frazer**

Freshwater residence time for Frazer Lake sockeye salmon has typically been 2 years but often they will migrate to the ocean after only 1 year (Barrett 1989; Foster 2010a; Sagalkin 1999). While freshwater-age-2 fish still dominate the annual runs, there has been an increasing proportion of freshwater-age-3 fish in recent years (Figure 15). In 2010, however, the Frazer

Lake sockeye salmon showed strong components of freshwater-age-2 and -1 fish but few age-3 fish (Figure 15).

Frazer Lake sockeye salmon commonly spend two years in the ocean but occasionally rear at sea for three years (Figure 16). There is not a consistent cycle similar to that of Karluk, Ayakulik, and Upper Station fish but one may be developing. In addition, proportions of saltwater-age-2 and-3 fish vary much more dramatically than the nearby native stocks, which is not surprising considering the recent colonization of this newly anadromous system. The last ten years have shown considerable increase in the abundance of saltwater-age-1 sockeye salmon (jacks) which have outnumbered the saltwater-age-2 and -3 fish during the 2003 and 2007 runs (Figure 16). The 2010 run was dominated by saltwater-age-1 (44%) and age-3 (34%) fish.

In 2010, average size of age-2.2 sockeye salmon at Frazer (506 mm) was near the historical average since 1985. (Table 33 and Figure 17).

Considering the short time that sockeye salmon have been naturally spawning in the lake, it is not surprising that the Frazer Lake fresh and saltwater-ages are, by far, the most wildly fluctuating of any major Westward Region sockeye salmon stock. The recent abundance of saltwater-age-1 sockeye salmon has raised concern in the Alitak Bay area. Although the majority of the Alitak Bay salmon catch since 1970 has been taken in a size-selective (larger) gillnet fishery (as opposed to purse seining), a similar abundance of early maturing sockeye salmon is not seen at the neighboring Upper Station system, which undergoes similar fishing pressure. Furthermore, jacks are not prevalent by any measure in the major donor stocks of Karluk and Ayakulik, suggesting that the jack increase in Frazer Lake is due not to net selectivity in the fishery or genetic influence but to an aspect of the ecosystem in Frazer Lake that may be selective toward smaller fish.

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## **TABLES AND FIGURES**

Table 1.–Sampling weeks and corresponding calendar dates, 2010.

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 2.–Kodiak Management Area sockeye salmon escapement sampling schedule, 2010.

<i>System</i> Sample Location	Crew Supervision	Stream No.	Sampling Frequency	Date		Sample Size
				Starting	Ending	
<i>Major Systems</i>						
Karluk River weir	G. Spalinger	255-10-101	3 times per week	25-May	30-Sep	240 (weekly total)
Ayakulik River weir	G. Spalinger	256-15-201	3 times per week	1-Jun	15-Aug	240 (weekly total)
Upper Station weir	J. Dinnocenzo	257-30-304	3 times per week	25-May	30-Sep	240 (weekly total)
Frazer Lake fish pass	R. Baer	257-40-403	3 times per week	15-Jun	30-Aug	240 (weekly total)
<i>Minor Systems</i>						
Afognak (Litnik) Weir	R. Baer	252-34-342	Run-dependent	1-Jun	1-Aug	600 (season total)
Saltery Lake weir	S. Thomsen	259-41-415	Run-dependent	25-Jun	1-Aug	600 (season total)

Table 3.—Kodiak Management Area sockeye and chum salmon catch sampling schedule, 2010.

District	Geographic Area	Species	Statistical Area(s)	Primary Sampling Site	Crew Leader	Sample		
						Frequency	Dates	Size
Afognak District								
	Waterfall Bay SHA <sup>a,b</sup>	Sockeye	251-84	Waterfall Bay	Shoutis	seasonally	6/1 - 7/1	600
	Foul Bay SHA <sup>a,b</sup>	Sockeye	251-41	Foul Bay	Shoutis	seasonally	6/1 - 6/15	600
	Kitoy Bay SHA <sup>a,b</sup>	Chum	253-32	Kitoy Bay	Aro	seasonally	6/1-8/1	400
NW Kodiak District								
	Uganik Bay (incl. Kupreanof)	Sockeye	253-11 - 253-35	Kodiak	Moore	weekly	6/1 - 9/5	400
	Uyak Bay	Sockeye	254-10 - 254-40	Larsen Bay	Moore	weekly	6/1 - 9/5	400
	Spiridon Bay SHA/Telrod Cove <sup>c</sup>	Sockeye	254-50	Telrod Cove	Buckhout	weekly	7/15 - 9/15	240
SW Kodiak District								
	Inner/Outer Karluk Section	Sockeye	255-10 - 255-20	Larsen Bay	Moore	when available	6/1 - 9/5	400
	Sturgeon Section <sup>b</sup>	Sockeye	256-40	Kodiak	Moore	when available	6/23 - 8/1	400
	Halibut/Gurney Bay	Sockeye	256-25 - 256-30	Lazy Bay (Alitak)	Moore	when available	6/23 - 8/1	400
	Inner/Outer Ayakulik Section	Sockeye	256-10 - 256-20	Lazy Bay (Alitak)	Moore	when available	6/1 - 8/1	400
Alitak Bay District								
	Moser/Olga Bay	Sockeye	257-40 - 257-43	Olga Bay	Dias	weekly	6/5 - 8/31	400

<sup>a</sup> Waterfall, Foul, and Kitoy bays special harvest areas (SHA) typically collect 600 samples (400 chum) total; the frequency depends on the harvest magnitude.

<sup>b</sup> Due to harvest magnitude, no samples were collected during the 2010 season.

<sup>c</sup> Spiridon Bay SHA collected 240 fish per week (consistent with escapement sampling).

Table 4.-Daily and cumulative (cum.) sockeye salmon escapement counted through weirs by system, Kodiak Management Area, 2010.

Date	System (weir)													
	Afognak		Karluk		Ayakulik		Upper Station		Dog Salmon Creek		Frazer fish pass		Saltery	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
5/19-21	54	54			0	0	0	0			0	0		
5/22	70	124			0	0	0	0			0	0		
5/23	3	127	0	0	41	41	0	0			0	0		
5/24	6	133	0	0	55	96	288	288			0	0		
5/25	19	152	0	0	0	96	63	351	0	0	0	0		
5/26	1	153	7	7	0	96	168	519	0	0	0	0		
5/27	2	155	14	21	151	247	166	685	0	0	0	0		
5/28	643	798	629	650	0	247	299	984	0	0	0	0		
5/29	3,087	3,885	35	685	8	255	216	1,200	0	0	0	0		
5/30	2,458	6,343	439	1,124	12	267	282	1,482	0	0	0	0		
5/31	142	6,485	39	1,163	41	308	203	1,685	0	0	0	0		
6/1	1,672	8,157	303	1,466	1,258	1,566	446	2,131	12	12	0	0		
6/2	1,786	9,943	32	1,498	912	2,478	700	2,831	0	12	0	0		
6/3	104	10,047	643	2,141	5	2,483	2,044	4,875	0	12	0	0		
6/4	206	10,253	835	2,976	121	2,604	1,852	6,727	0	12	0	0		
6/5	754	11,007	290	3,266	7,616	10,220	1,294	8,021	1	13	0	0		
6/6	1,806	12,813	1,229	4,495	9,555	19,775	1,423	9,444	0	13	0	0		
6/7	3,518	16,331	795	5,290	5,476	25,251	1,517	10,961	0	13	0	0		
6/8	2,310	18,641	45	5,335	98	25,349	1,327	12,288	2	15	0	0		
6/9	4,367	23,008	123	5,458	12,061	37,410	2,361	14,649	0	15	0	0		
6/10	4,556	27,564	58	5,516	13,508	50,918	2,610	17,259	0	15	0	0		
6/11	5,023	32,587	61	5,577	10,465	61,383	475	17,734	0	15	0	0		
6/12	1,848	34,435	50	5,627	4,605	65,988	883	18,617	0	15	0	0		
6/13	58	34,493	451	6,078	5,748	71,736	2,030	20,647	0	15	0	0		
6/14	72	34,565	42	6,120	7,837	79,573	720	21,367	38	53	0	0		
6/15	580	35,145	162	6,282	2,945	82,518	116	21,483	1,293	1,346	0	0		
6/16	862	36,007	30	6,312	1,600	84,118	303	21,786	1	1,347	0	0		
6/17	1,935	37,942	275	6,587	1,073	85,191	776	22,562	5,347	6,694	0	0		
6/18	622	38,564	249	6,836	9,721	94,912	1,786	24,348	2,336	9,030	0	0		
6/19	749	39,313	9,471	16,307	18,674	113,586	281	24,629	1,607	10,637	0	0		
6/20	688	40,001	25,069	41,376	4,742	118,328	1,560	26,189	3,446	14,083	438	438		
6/21	208	40,209	8,092	49,468	584	118,912	1,683	27,872	1,133	15,216	145	583		
6/22	742	40,951	1,027	50,495	4,554	123,466	2,051	29,923	10,153	25,369	88	671	0	0

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Table 4.-Page 2 of 4.

Date	System (weir)													
	Afognak		Karluk		Ayakulik		Upper Station		Dog Salmon Creek		Frazer fish pass		Saltery	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/23	316	41,267	370	50,865	463	123,929	1,313	31,236	262	25,631	18	689	63	63
6/24	348	41,615	292	51,157	168	124,097	1,217	32,453	811	26,442	2,225	2,914	446	509
6/25	689	42,304	2,857	54,014	4,096	128,193	989	33,442	2,011	28,453	76	2,990	101	610
6/26	905	43,209	429	54,443	4,972	133,165	871	34,313	8,519	36,972	27	3,017	64	674
6/27	219	43,428	1,012	55,455	2,792	135,957	87	34,400	4,564	41,536	453	3,470	65	739
6/28	221	43,649	313	55,768	657	136,614	2,033	36,433	2,159	43,695	1,320	4,790	473	1,212
6/29	225	43,874	539	56,307	3,631	140,245	1,207	37,640	2,697	46,392	30	4,820	282	1,494
6/30	447	44,321	1,930	58,237	5,974	146,219	262	37,902	7,347	53,739	67	4,887	52	1,546
7/1	523	44,844	329	58,566	2,079	148,298	1,165	39,067	0	53,739	0	4,887	40	1,586
7/2	98	44,942	5,003	63,569	464	148,762	206	39,273	1,755	55,494	65	4,952	21	1,607
7/3	429	45,371	1,773	65,342	5,904	154,666	33	39,306	2,565	58,059	246	5,198	66	1,673
7/4	314	45,685	381	65,723	3,191	157,857	549	39,855	211	58,270	3,866	9,064	1,020	2,693
7/5	128	45,813	1,066	66,789	5,288	163,145	105	39,960	1,295	59,565	1,154	10,218	77	2,770
7/6	116	45,929	267	67,056	1,324	164,469	77	40,037	843	60,408	75	10,293	881	3,651
7/7	1,052	46,981	531	67,587	6,931	171,400	141	40,178	5,425	65,833	0	10,293	282	3,933
7/8	151	47,132	327	67,914	3,902	175,302	202	40,380	5,555	71,388	99	10,392	100	4,033
7/9	526	47,658	37	67,951	4,475	179,777	518	40,898	924	72,312	7,956	18,348	822	4,855
7/10	125	47,783	937	68,888	11,009	190,786	124	41,022	5,200	77,512	215	18,563	944	5,799
7/11	83	47,866	28	68,916	9,051	199,837	32	41,054	2,981	80,493	400	18,963	437	6,236
7/12	79	47,945	107	69,023	12	199,849	180	41,234	7,942	88,435	691	19,654	253	6,489
7/13	243	48,188	1,324	70,347	37	199,886	292	41,526	5,639	94,074	480	20,134	520	7,009
7/14	122	48,310	33	70,380	2,025	201,911	349	41,875	1,407	95,481	287	20,421	1,074	8,083
7/15	183	48,493	164	70,544	22	201,933	185	42,060	6,783	102,264	1,933	22,354	732	8,815
7/16	279	48,772	77	70,621	482	202,415	92	42,152	6,544	108,808	141	22,495	769	9,584
7/17	319	49,091	505	71,126	896	203,311	70	42,222	2,227	111,035	1,276	23,771	990	10,574
7/18	84	49,175	81	71,207	502	203,813	69	42,291	416	111,451	14	23,785	988	11,562
7/19	23	49,198	144	71,351	98	203,911	241	42,532	2,780	114,231	1,216	25,001	1,472	13,034
7/20	258	49,456	81	71,432	59	203,970	15	42,547	833	115,064	3,046	28,047	1,501	14,535
7/21	46	49,502	21	71,453	1,400	205,370	124	42,671	1,965	117,029	10,448	38,495	167	14,702
7/22	56	49,558	23	71,476	255	205,625	53	42,724	1,526	118,555	7,050	45,545	548	15,250
7/23	60	49,618	1	71,477	1	205,626	32	42,756	240	118,795	515	46,060	740	15,990
7/24	5	49,623	26	71,503	7	205,633	127	42,883	1,628	120,423	162	46,222	844	16,834

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Table 4.-Page 3 of 4.

Date	System (weir)													
	Afognak		Karluk		Ayakulik		Upper Station		Dog Salmon Creek		Frazer fish pass		Saltery	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/25	95	49,718	58	71,561	6	205,639	77	42,960	329	120,752	26	46,248	71	16,905
7/26	11	49,729	222	71,783	450	206,089	80	43,040	1,737	122,489	7	46,255	329	17,234
7/27	60	49,789	24	71,807	332	206,421	398	43,438	1,024	123,513	11,947	58,202	331	17,565
7/28	14	49,803	47	71,854	374	206,795	748	44,186	1,631	125,144	5,085	63,287	2,309	19,874
7/29	28	49,831	351	72,205	473	207,268	2,032	46,218	451	125,595	2	63,289	1,027	20,901
7/30	1,343	51,174	460	72,665	2,741	210,009	725	46,943	3,321	128,916	165	63,454	2,318	23,219
7/31	48	51,222	637	73,302	1,100	211,109	67	47,010	240	129,156	358	63,812	28	23,247
8/1	9	51,231	358	73,660	400	211,509	141	47,151	472	129,628	450	64,262	50	23,297
8/2	127	51,358	25	73,685	255	211,764	601	47,752	657	130,285	919	65,181	161	23,458
8/3	134	51,492	233	73,918	116	211,880	1,295	49,047	344	130,629	214	65,395	418	23,876
8/4	102	51,594	129	74,047	61	211,941	1,389	50,436	885	131,514	1,435	66,830	411	24,287
8/5	46	51,640	964	75,011	304	212,245	3,174	53,610	255	131,769	369	67,199	1,045	25,332
8/6	145	51,785	192	75,203	2,882	215,127	4,190	57,800	721	132,490	526	67,725	449	25,781
8/7	4	51,789	305	75,508	1,800	216,927	1,800	59,600	252	132,742	366	68,091	685	26,466
8/8	228	52,017	158	75,666	2,200	219,127	524	60,124	527	133,269	735	68,826	332	26,798
8/9	25	52,042	2,221	77,887	6,000	225,127	559	60,683	322	133,591	1,809	70,635	11	26,809
8/10	14	52,056	398	78,285	1,900	227,027	557	61,240	184	133,775	205	70,840		
8/11	12	52,068	1,789	80,074	1,600	228,627	2,897	64,137	285	134,060	631	71,471		
8/12	46	52,114	494	80,568	2,600	231,227	4,026	68,163	1,040	135,100	840	72,311		
8/13	0	52,114	51	80,619	27,000	258,227	3,058	71,221			1,163	73,474		
8/14	1	52,115	78	80,697	4,100	262,327	1,264	72,485			972	74,446		
8/15	55	52,170	345	81,042			7,863	80,348			25	74,471		
8/16	23	52,193	203	81,245			2,430	82,778			231	74,702		
8/17	10	52,203	191	81,436			7,678	90,456			3,937	78,639		
8/18	7	52,210	54	81,490			14,843	105,299			2,421	81,060		
8/19	0	52,210	585	82,075			7,505	112,804			1,213	82,273		
8/20	1	52,211	3,635	85,710			7,712	120,516			64	82,337		
8/21	3	52,214	2,343	88,053			5,535	126,051			275	82,612		
8/22	5	52,219	1,295	89,348			9,572	135,623			838	83,450		
8/23	0	52,219	1,636	90,984			1,736	137,359			160	83,610		
8/24	0	52,219	782	91,766			1,899	139,258			62	83,672		
8/25	2	52,221	2,552	94,318			5,249	144,507			775	84,447		

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Table 4.–Page 4 of 4.

Date	System (weir)													
	Afognak		Karluk		Ayakulik		Upper Station		Dog Salmon Creek		Frazer fish pass		Saltery	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
8/26	6	52,227	3,907	98,225			7,893	152,400			1,795	86,242		
8/27	4	52,231	5,217	103,442			6,651	159,051			241	86,483		
8/28	1	52,232	1,644	105,086			5,418	164,469			310	86,793		
8/29	1	52,233	753	105,839			1,520	165,989			650	87,443		
8/30	1	52,234	601	106,440			2,183	168,172			935	88,378		
8/31	2	52,236	1,662	108,102			847	169,019			1,108	89,486		
9/1	0	52,236	1,221	109,323			878	169,897			683	90,169		
9/2	0	52,236	1,295	110,618			1,751	171,648			1,005	91,174		
9/3	0	52,236	499	111,117			836	172,484			827	92,001		
9/4	0	52,236	491	111,608			397	172,881			210	92,211		
9/5	19	52,255	69,158	180,766			2,141	175,022			738	92,949		
9/6	0	52,255	20,885	201,651			563	175,585			559	93,508		
9/7	0	52,255	54,669	256,320			804	176,389			606	94,114		
9/8			249	256,569			891	177,280			199	94,313		
9/9			569	257,138			930	178,210			126	94,439		
9/10			343	257,481			665	178,875			111	94,550		
9/11			286	257,767			460	179,335			130	94,680		
9/12			94	257,861			993	180,328			0	94,680		
9/13			24	257,885			780	181,108						
9/14			20	257,905			330	181,438						
9/15			44	257,949			387	181,825						
9/16			21	257,970			520	182,345						
9/17			67	258,037			354	182,699						
9/18			65	258,102			500	183,199						
9/19			90,000	348,102										
Totals	52,131		348,102		262,327		183,199		135,100		94,680		26,809	

Note: Estimates of escapement were made for Karluk (9/19), Ayakulik (8/7-8/14), and Upper Station (9/18).

Table 5.—Fish weir installation and removal dates and salmon escapements for the major systems with fish weirs in the Kodiak Management Area, 2010.

Weir Locations	Dates		Species <sup>a</sup>					Totals
	Installed	Removed	Chinook	Sockeye	Coho	Pink	Chum	
Karluk River	5/23	9/29	2,917	348,102	14,778	1,324,368	150	1,690,315
Ayakulik River	5/21	8/14	5,291	262,327	227	532,428	63	800,336
Dog Salmon Creek	5/25	8/12	354	135,100	86	170,645	3,696	309,881
Frazer Lake fish pass <sup>b</sup>	5/20	9/12	41	94,680	0	11,451	2	106,174
Upper Station	5/20	9/18	0	183,199	11,157	19,434	0	213,790
Afognak River	5/16	9/7	1	52,255	10,288	62,237	59	124,840
Saltery River	6/23	8/9	0	26,809	0	3,107	4	29,920
Totals			8,563	1,007,792	36,536	2,112,219	3,972	3,169,082

<sup>a</sup> Counts include post weir estimates after weirs were removed.

<sup>b</sup> Salmon counted at the Frazer fish pass were initially counted at Dog Salmon weir and all species, except sockeye, counted at Frazer are not included in totals. Since sockeye salmon that pass Dog Salmon weir but fail to get counted at Frazer fish pass may not spawn, the fish pass count is considered the best escapement estimate of sockeye salmon.

Table 6.—Estimated age composition of sockeye salmon escapements by system, Kodiak Management Area, 2010.

System	Sample Size		Age											Total
			1.1	0.3	1.2	2.1	1.3	2.2	3.1	2.3	3.2	3.3	Other <sup>a</sup>	
Afognak Lake														
(Litnik)	954	Percent	2.6	0.0	15.8	0.2	80.6	0.5	0.0	0.2	0.0	0.0	0.1	100.0
		Numbers	1,377	0	8,234	103	42,108	267	0	114	0	0	52	52,255
Karluk Lake														
Early Run	1,155	Percent	1.1	0.0	18.3	7.2	2.9	16.9	5.9	6.2	39.3	1.2	0.9	100.0
		Numbers	754	18	13,078	5,174	2,104	12,090	4,214	4,400	28,114	868	639	71,453
Late Run	1,255	Percent	0.0	0.0	0.5	0.6	0.2	19.6	0.2	2.0	71.4	1.7	3.8	100.0
		Numbers	72	0	1,503	1,706	466	54,151	527	5,639	197,509	4,634	10,442	276,649
Ayakulik River														
Early Run	1,461	Percent	6.4	0.2	28.3	6.2	25.0	24.9	0.4	8.0	0.3	0.2	0.1	100.0
		Numbers	12,998	454	57,055	12,446	50,465	50,210	726	16,224	695	362	299	201,933
Late Run	520	Percent	3.3	0.0	17.2	2.5	4.7	67.5	0.0	4.7	0.0	0.0	0.0	100.0
		Numbers	2,021	8	10,388	1,524	2,841	40,750	7	2,856	0	0	0	60,394
Upper Station														
Early Run	1,288	Percent	0.1	0.0	3.3	5.3	4.3	82.1	0.1	4.7	0.0	0.0	0.1	100.0
		Numbers	25	0	1,372	2,233	1,813	34,550	61	1,959	0	0	46	42,060
Late Run	1,361	Percent	0.5	0.1	4.6	5.4	1.5	85.7	0.1	1.2	0.8	0.0	0.0	100.0
		Numbers	764	71	6,457	7,683	2,183	121,026	148	1,649	1,101	0	57	141,139
Frazer														
Fish Pass	1,963	Percent	4.0	0.0	3.0	42.2	18.7	14.8	6.1	10.4	0.0	0.5	0.2	100.0
		Numbers	3,784	42	2,841	39,988	17,666	13,990	5,774	9,889	21	457	228	94,680
Saltery Lake														
515	515	Percent	0.0	0.8	16.1	0.1	63.9	5.2	0.0	13.5	0.0	0.0	0.4	100.0
		Numbers	0	205	4,325	25	17,144	1,385	0	3,629	0	0	96	26,809
Totals														
10,472	10,472	Percent	2.3	0.1	10.9	7.3	14.1	33.9	1.2	4.8	23.5	0.7	1.2	100.0
		Numbers	21,794	798	105,252	70,881	136,790	328,420	11,457	46,359	227,441	6,321	11,859	967,372

<sup>a</sup> The “Other” age class listed in the table above consists of age-0.1, -0.2, -0.4, -1.4, -4.1, -2.4, -4.2, -4.3, and -3.4.



Table 7.—Estimated age composition of Afognak Lake (Litnik) sockeye salmon escapement by week, 2010.

Week	Sample Size		Age							Total
			1.1	1.2	1.3	1.4	2.1	2.2	2.3	
21	0	Percent	0.0	2.6	97.4	0.0	0.0	0.0	0.0	100.0
5/17-5/23		Numbers	0	3	124	0	0	0	0	127
22	76	Percent	0.0	2.9	97.0	0.0	0.0	0.1	0.1	100.0
5/24-5/30		Numbers	0	214	5,981	0	0	10	10	6,216
23	113	Percent	0.0	6.4	92.4	0.0	0.0	0.6	0.6	100.0
5/31-6/06		Numbers	0	425	5,974	0	0	36	36	6,470
24	287	Percent	0.5	12.6	86.2	0.1	0.2	0.2	0.2	100.0
6/07-6/13		Numbers	88	2,577	18,897	15	29	37	37	21,680
25	275	Percent	3.7	23.6	71.0	0.3	0.5	0.5	0.5	100.0
6/14-6/20		Numbers	199	1,326	3,876	15	31	31	31	5,508
26	39	Percent	8.2	30.3	61.5	0.0	0.0	0.0	0.0	100.0
6/21-6/27		Numbers	276	1,037	2,114	0	0	0	0	3,427
27	0	Percent	3.4	29.1	67.4	0.0	0.0	0.0	0.0	100.0
6/28-7/04		Numbers	75	657	1,525	0	0	0	0	2,257
28	60	Percent	0.1	28.8	71.1	0.0	0.0	0.0	0.0	100.0
7/05-7/11		Numbers	1	625	1,555	0	0	0	0	2,181
29	10	Percent	0.5	31.1	67.6	0.2	0.0	0.7	0.0	100.0
7/12-7/18		Numbers	6	408	882	3	0	10	0	1,309
30	46	Percent	4.8	38.7	49.5	1.7	0.1	5.3	0.0	100.0
7/19-7/21		Numbers	24	207	276	9	0	27	0	543
31	0	Percent	21.7	32.8	38.3	0.9	1.3	5.1	0.0	100.0
7/26-8/01		Numbers	367	477	563	10	22	74	0	1,513
32	48	Percent	33.3	27.1	33.3	0.0	2.1	4.2	0.0	100.0
8/02-8/08		Numbers	262	213	262	0	16	33	0	786
33-37	0	Percent	33.3	27.1	33.3	0.0	2.1	4.2	0.0	100.0
8/09-9/12		Numbers	79	64	79	0	5	10	0	238
Total	954	Percent	2.6	15.8	80.6	0.1	0.2	0.5	0.2	100.0
		Numbers	1,377	8,234	42,108	52	103	267	114	52,255

Table 8.—Length composition of Afognak Lake (Litnik) sockeye salmon escapement samples by age and sex, 2010.

	Age						Total	
	1.1	1.2	1.3	1.4	2.1	2.2		2.3
<b>Females</b>								
Mean Length (mm)	333	460	507	509	356	457	516	497
SE	4	2	1	0	0	2	2	2
Range	312-344	406-540	352-569	509-509	356-356	452-461	512-519	312-569
Sample Size	8	86	479	1	1	4	3	582
<b>Males</b>								
Mean Length (mm)	353	469	527	561	353	458	—	503
SE	5	3	1	0	24	12	—	3
Range	311-398	390-532	436-579	561-561	329-376	425-479	—	311-579
Sample Size	20	78	252	1	2	4	0	357
<b>All Fish</b>								
Mean Length (mm)	348	464	514	535	354	457	516	500
SE	4	2	1	26	14	5	2	1
Range	311-398	390-540	352-579	509-561	329-376	425-479	512-519	311-579
Sample Size	28	165	745	2	3	8	3	954

Table 9.—Estimated sex composition of Afognak Lake (Litnik) sockeye salmon escapement by week, 2010.

Week	Dates	Escapement							
		Sample Size			Percent		Number		
		Females	Males	Total	Females	Males	Females	Males	Total
21	5/17-5/23	0	0	0	54.2	45.8	69	58	127
22	5/24-5/30	45	38	83	54.9	45.1	3,410	2,806	6,216
23	5/31-6/06	71	52	123	58.5	41.5	3,787	2,683	6,470
24	6/07-6/13	209	104	313	66.1	33.9	14,320	7,360	21,680
25	6/14-6/20	192	104	296	61.2	38.8	3,370	2,138	5,508
26	6/21-6/27	18	22	40	49.1	50.9	1,681	1,746	3,427
27	6/28-7/04	0	0	0	57.8	42.2	1,305	952	2,257
28	7/05-7/11	39	22	61	62.5	37.5	1,364	817	2,181
29	7/12-7/18	8	6	14	58.8	41.2	770	539	1,309
30	7/19-7/25	34	16	50	64.6	35.4	351	192	543
31	7/26-8/01	0	0	0	51.4	48.6	778	735	1,513
32	8/02-8/08	25	32	57	43.9	56.1	345	441	786
33-36	8/09-9/05	0	0	0	43.9	56.1	104	134	238
<b>Total</b>		<b>641</b>	<b>396</b>	<b>1037</b>	<b>60.6</b>	<b>39.4</b>	<b>31,654</b>	<b>20,601</b>	<b>52,255</b>

Table 10.—Estimated age composition of Karluk Lake early-run sockeye salmon escapement by week, 2010.

Week	Sample													Total
	Size		0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.2	
22 5/24-5/30	66	Percent	0.0	0.0	3.2	2.9	0.0	20.5	12.6	0.1	57.5	3.2	0.0	100.0
		Numbers	0	0	37	32	0	242	133	3	639	37	0	1,124
23 5/31-6/06	53	Percent	0.0	0.0	7.2	2.3	0.3	31.4	4.5	2.3	47.5	4.5	0.1	100.0
		Numbers	0	0	304	80	18	1,076	135	100	1,510	144	6	3,371
24 6/07-6/13	122	Percent	0.0	0.1	21.6	3.9	2.4	23.6	8.2	6.2	32.5	0.8	0.7	100.0
		Numbers	0	1	317	58	34	394	114	87	545	23	10	1,583
25 6/14-6/20	228	Percent	0.0	0.4	32.3	4.7	4.7	17.4	5.2	4.3	29.1	1.0	0.9	100.0
		Numbers	0	229	9,651	1,409	2,135	5,873	1,687	1,737	11,815	367	394	35,298
26 6/21-6/27	187	Percent	0.0	1.1	9.4	1.6	8.4	16.7	6.5	8.2	46.0	0.7	1.3	100.0
		Numbers	0	136	2,027	324	1,092	2,366	844	1,024	5,974	109	183	14,079
27 6/28-7/04	197	Percent	0.0	2.2	5.5	0.6	10.7	13.3	8.5	8.5	49.3	0.9	0.5	100.0
		Numbers	0	239	546	68	1,129	1,335	888	868	5,059	94	43	10,268
28 7/05-7/11	165	Percent	0.1	4.3	2.9	2.6	14.8	11.6	10.4	6.6	45.6	1.0	0.1	100.0
		Numbers	3	135	99	79	467	369	329	214	1,466	30	3	3,193
29 7/12-7/18	124	Percent	0.6	0.4	3.8	2.2	11.5	17.3	10.5	7.2	43.9	2.6	0.0	100.0
		Numbers	15	14	81	52	265	383	236	164	1,020	61	0	2,291
30 7/19-7/25	13	Percent	0.2	0.0	6.5	0.7	14.1	21.4	13.8	7.6	34.9	0.9	0.0	100.0
		Numbers	1	0	16	2	35	53	34	19	86	2	0	246
Total	1,155	Percent	0.0	1.1	18.3	2.9	7.2	16.9	6.2	5.9	39.3	1.2	0.9	100.0
		Numbers	18	754	13,078	2,104	5,174	12,090	4,400	4,214	28,114	868	639	71,453

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

Table 11.—Length composition of Karluk Lake early-run sockeye salmon escapement samples by age and sex, 2010.

	Age											Total
	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.2	
<b>Females</b>												
Mean Length (mm)	537	—	445	509	0	472	524	—	488	541	458	484
SE	0	—	3	8	0	4	4	—	2	8	21	3
Range	537-537	—	405-515	478-557		395-556	478-579	—	402-587	511-578	421-512	395-587
Sample Size	1	0	65	9	0	98	47	0	235	9	4	468
<b>Males</b>												
Mean Length (mm)	—	343	451	508	363	485	546	367	500	519	489	460
SE	—	5	4	7	2	4	6	3	2	19	27	3
Range	—	289-367	384-559	461-593	311-420	394-561	456-603	321-427	403-567	452-576	438-530	289-603
Sample Size	0	15	85	22	89	95	42	69	247	6	3	673
<b>All Fish</b>												
Mean Length (mm)	537	343	448	509	363	479	534	367	494	532	471	469
SE	0	5	3	5	2	3	4	3	1	9	16	2
Range	537-537	289-367	384-559	461-593	311-420	394-561	456-603	321-427	402-587	452-578	421-530	289-603
Sample Size	1	15	151	31	89	193	89	69	482	15	7	1,142

Table 12.—Estimated sex composition of Karluk Lake sockeye salmon escapement by week, 2010.

Week	Dates	Sample Size		Total	Escapement				
		Females	Males		Percent		Number		
					Females	Males	Females	Males	Total
22	5/24-5/30	29	49	78	39.0	61.0	439	685	1,124
23	5/31-6/06	31	30	61	47.7	52.3	1,607	1,764	3,371
24	6/07-6/13	58	92	150	42.0	58.0	665	918	1,583
25	6/14-6/20	115	154	269	40.5	59.5	14,310	20,988	35,298
26	6/21-6/27	87	153	240	38.5	61.5	5,417	8,662	14,079
27	6/28-7/04	102	142	244	41.9	58.1	4,306	5,962	10,268
28	7/05-7/11	87	116	203	43.4	56.6	1,384	1,809	3,193
29	7/12-7/18	75	77	152	48.3	51.7	1,108	1,183	2,291
30	7/19-7/25	6	7	13	47.7	52.3	117	129	246
<b>Early Run Total</b>		<b>590</b>	<b>820</b>	<b>1,410</b>	<b>41.1</b>	<b>58.9</b>	<b>29,354</b>	<b>42,099</b>	<b>71,453</b>
30	7/19-7/25	6	7	13	40.9	59.1	44	64	108
31	7/26-8/01	32	38	70	46.5	53.5	977	1,122	2,099
32	8/02-8/08	39	36	75	50.6	49.4	1,015	991	2,006
33	8/09-8/15	109	145	254	43.9	56.1	2,361	3,015	5,376
34	8/16-8/22	96	124	220	45.0	55.0	3,737	4,569	8,306
35	8/23-8/29	132	107	239	54.5	45.5	8,982	7,509	16,491
36	8/30-9/05	144	123	267	54.7	45.3	40,968	33,959	74,927
37	9/06-9/12	136	104	240	55.4	44.6	42,706	34,389	77,095
38	9/13-9/19	110	129	239	46.0	54.0	41,535	48,706	90,241
<b>Late Run Total</b>		<b>804</b>	<b>813</b>	<b>1,617</b>	<b>51.4</b>	<b>48.6</b>	<b>142,325</b>	<b>134,324</b>	<b>276,649</b>

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

Table 13.—Estimated age composition of Karluk Lake late-run sockeye salmon escapement by week, 2010.

Week	Sample Size		Age											Total	
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.2		4.3
30	13	Percent	0.2	0.0	6.5	0.7	14.1	21.4	13.8	7.6	34.9	0.9	0.0	0.0	100.0
7/19-7/25		Numbers	0	0	7	1	15	23	15	8	38	1	0	0	108
31	46	Percent	0.0	3.0	1.4	1.8	15.1	17.7	10.8	2.6	45.6	0.0	2.0	0.0	100.0
7/26-8/01		Numbers	0	62	20	39	315	376	212	43	984	0	47	0	2,099
32	61	Percent	0.0	0.7	1.2	1.5	13.4	22.6	7.3	0.5	50.0	0.1	2.7	0.0	100.0
8/02-8/08		Numbers	0	10	27	31	274	461	141	7	999	2	57	0	2,006
33	191	Percent	0.0	0.0	0.5	0.1	4.4	27.5	7.9	0.9	57.5	0.8	0.5	0.0	100.0
8/09-8/15		Numbers	0	0	31	9	290	1,410	429	48	3,088	45	26	0	5,376
34	176	Percent	0.0	0.0	0.2	0.1	2.2	33.2	7.0	0.8	54.7	0.5	1.4	0.0	100.0
8/16-8/22		Numbers	0	0	13	6	154	2,831	571	66	4,494	44	127	0	8,306
35	164	Percent	0.0	0.0	1.1	0.5	2.0	28.5	6.4	1.9	54.7	3.4	1.5	0.0	100.0
8/23-8/29		Numbers	0	0	193	80	334	4,667	1,071	325	8,991	593	237	0	16,491
36	224	Percent	0.0	0.0	1.2	0.1	0.4	22.7	3.0	0.4	65.6	1.8	4.9	0.0	100.0
8/30-9/05		Numbers	0	0	736	102	125	15,273	1,482	30	52,228	964	3,987	0	74,927
37	209	Percent	0.0	0.0	0.3	0.3	0.3	17.1	1.2	0.0	75.2	1.2	4.4	0.1	100.0
9/06-9/12		Numbers	0	0	476	198	198	14,335	1,190	0	55,973	875	3,849	1	77,095
38	171	Percent	0.0	0.0	0.0	0.0	0.0	16.3	0.6	0.0	78.3	2.2	2.0	0.5	100.0
9/13-9/19		Numbers	0	0	0	0	0	14,776	528	0	70,715	2,111	1,584	528	90,241
Total	1,255	Percent	0.0	0.0	0.5	0.2	0.6	19.6	2.0	0.2	71.4	1.7	3.6	0.2	100.0
		Numbers	0	72	1,503	466	1,706	54,151	5,639	527	197,509	4,634	9,914	528	276,649

*Note:* A post-weir estimate of 90,000 fish was included on 9/19. Samples were collected using a beach seine in the lagoon in late August and September. Karluk late-run escapement is summed post 21 July; however, samples from all of week 30 were utilized in the estimates.

Table 14.—Length composition of Karluk Lake late-run sockeye salmon escapement samples by age and sex, 2010.

	Age											Total
	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.2	4.3	
<b><i>Females</i></b>												
Mean Length (mm)	–	461	563	366	519	536	–	519	543	510	–	519
SE	–	12	8	19	2	4	–	1	8	4	–	2
Range	–	431-490	549-578	334-401	429-584	483-575	–	409-583	511-597	486-540	–	334-597
Sample Size	0	5	3	3	147	33	0	409	9	15	0	624
<b><i>Males</i></b>												
Mean Length (mm)	321	504	424	363	532	563	381	541	578	539	594	528
SE	9	12	0	5	3	6	8	1	7	3	0	2
Range	312-330	480-517	424-424	309-409	402-595	516-622	344-421	430-600	550-606	522-560	594-594	309-622
Sample Size	2	3	1	31	146	26	9	385	9	17	1	630
<b><i>All Fish</i></b>												
Mean Length (mm)	321	477	529	364	526	548	381	530	560	525	594	524
SE	9	11	35	4	2	4	8	1	7	3	0	1
Range	312-330	431-517	424-578	309-409	402-595	483-622	344-421	409-600	511-606	486-560	594-594	309-622
Sample Size	2	8	4	34	293	59	9	795	18	32	1	1,255



Table 15.—Estimated age composition of Ayakulik River (Red L.) early-run sockeye salmon escapement by week, 2010.

Week	Sample Size		Age										Total	
			0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2		3.3
21 5/17-5/23	0	Percent	6.3	0.0	6.3	56.3	0.0	6.3	18.8	6.3	0.0	0.0	0.0	100.0
		Numbers	3	0	3	23	0	3	8	3	0	0	0	41
22 5/24-5/30	16	Percent	6.1	0.0	7.0	55.6	0.0	6.1	18.9	6.3	0.0	0.0	0.0	100.0
		Numbers	14	0	15	127	0	14	42	14	0	0	0	226
23 5/31-6/6	292	Percent	1.3	0.0	29.1	37.5	0.1	2.3	21.7	7.1	0.0	0.8	0.0	100.0
		Numbers	84	0	6,360	7,080	47	287	4,111	1,375	0	164	0	19,508
24 6/7-6/13	157	Percent	0.0	0.3	34.9	35.1	0.4	0.7	20.6	6.9	0.2	0.7	0.2	100.0
		Numbers	6	160	18,105	18,510	244	355	10,539	3,538	80	343	80	51,961
25 6/14-6/20	148	Percent	0.0	3.1	36.2	20.2	0.0	4.6	27.1	7.1	0.9	0.5	0.5	100.0
		Numbers	0	1,681	16,228	9,449	8	2,749	12,540	3,143	427	188	179	46,592
26 6/21-6/27	227	Percent	0.1	7.3	23.7	20.8	0.0	12.8	26.3	7.8	0.9	0.0	0.2	100.0
		Numbers	31	1,324	4,002	3,717	0	2,257	4,627	1,494	144	1	32	17,629
27 6/28-7/4	216	Percent	0.5	8.9	17.2	20.9	0.0	11.3	27.9	13.0	0.0	0.0	0.3	100.0
		Numbers	102	1,956	3,754	4,540	0	2,468	6,148	2,862	1	0	67	21,900
28 7/5-7/11	207	Percent	0.5	15.5	19.6	16.0	0.0	10.0	29.0	9.3	0.1	0.0	0.0	100.0
		Numbers	206	7,205	8,204	6,710	0	4,136	11,754	3,696	66	0	3	41,980
29 7/12-7/18	198	Percent	0.2	16.4	9.7	7.8	0.0	4.5	11.3	2.6	0.2	0.0	0.0	52.7
		Numbers	9	671	383	309	0	176	441	99	8	0	0	2,096
Total	1,461	Percent	0.2	6.4	28.3	25.0	0.1	6.2	24.9	8.0	0.4	0.3	0.2	100.0
		Numbers	454	12,998	57,055	50,465	299	12,446	50,210	16,224	726	695	362	201,933

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

Table 16.—Length composition of Ayakulik River (Red L.) early-run sockeye salmon escapement samples by age and sex, 2010.

	Age											Total
	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	
<b>Females</b>												
Mean Length (mm)	—	336	479	512	—	361	493	523	360	502	521	476
SE	—	3	2	2	—	3	2	4	7	17	8	2
Range	—	287-388	396-596	434-601	—	312-407	428-560	456-594	346-368	485-519	513-528	287-601
Sample Size	0	50	156	185	0	49	152	61	3	2	2	660
<b>Males</b>												
Mean Length (mm)	534	332	490	540	518	362	500	525	371	492	—	491
SE	19	5	2	2	0	4	2	3	8	6	—	2
Range	464-576	267-417	427-576	449-598	518-518	306-406	433-577	482-593	363-379	482-501	—	267-598
Sample Size	5	35	205	163	1	42	178	54	2	3	0	688
<b>All Fish</b>												
Mean Length (mm)	534	334	485	525	518	362	497	524	364	496	521	484
SE	19	3	1	2	0	2	2	2	5	7	8	2
Range	464-576	267-417	396-596	434-601	518-518	306-407	428-577	456-594	346-379	482-519	513-528	267-601
Sample Size	5	85	361	348	1	91	330	115	5	5	2	1,348

Table 17.—Estimated sex composition of Ayakulik River (Red L.) sockeye salmon escapement by week, 2010.

Week	Dates	Sample Size			Escapement					
		Females	Males	Total	Percent		Number			
					Females	Males	Females	Males	Total	
21	5/24-5/30	0	0	0	33.3	66.7	14	27	41	
22	5/24-5/30	6	12	18	33.4	66.6	75	151	226	
23	5/31-6/06	121	193	314	40.9	59.1	7,980	11,528	19,508	
24	6/07-6/13	78	94	172	46.7	53.3	24,280	27,681	51,961	
25	6/14-6/20	86	78	164	53.0	47.0	24,703	21,889	46,592	
26	6/21-6/27	143	120	263	54.9	45.1	9,672	7,957	17,629	
27	6/28-7/04	138	109	247	55.1	44.9	12,062	9,838	21,900	
28	7/05-7/11	127	113	240	49.7	50.3	20,868	21,112	41,980	
29	7/12-7/18	92	125	217	43.6	56.4	914	1,182	2,096	
<b>Early Run Total</b>		<b>791</b>	<b>844</b>	<b>1,635</b>	<b>49.8</b>	<b>50.2</b>	<b>100,566</b>	<b>101,367</b>	<b>201,933</b>	
29	7/12-7/18	92	125	217	45.5	54.5	855	1,025	1,880	
30	7/19-7/25	33	28	61	51.7	48.3	944	882	1,826	
31	7/26-8/01	48	23	71	64.3	35.7	3,775	2,095	5,870	
32	8/02-8/08	103	116	219	47.6	52.4	3,629	3,989	7,618	
33	8/09-8/15	0	0	0	47.0	53.0	20,318	22,882	43,200	
<b>Late Run Total</b>		<b>276</b>	<b>292</b>	<b>568</b>	<b>48.9</b>	<b>51.1</b>	<b>29,520</b>	<b>30,874</b>	<b>60,394</b>	

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

Table 18.—Estimated age composition of Ayakulik River (Red L.) late-run sockeye salmon escapement by week, 2010.

Week	Sample Size		Age								Total
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	
29	198	Percent	0.2	14.7	8.7	7.0	4.0	10.1	2.3	0.2	47.3
7/12-7/18		Numbers	8	602	344	277	158	396	89	7	1,880
30	56	Percent	0.0	28.1	13.7	10.7	7.5	34.5	5.5	0.0	100.0
7/19-7/25		Numbers	0	583	256	195	150	560	83	0	1,826
31	70	Percent	0.0	6.9	12.4	9.4	3.3	58.1	9.9	0.0	100.0
7/26-8/1		Numbers	0	310	728	540	178	3,522	594	0	5,870
32	196	Percent	0.0	1.6	16.7	4.7	2.2	69.4	5.4	0.0	100.0
8/2-8/8		Numbers	0	85	1,346	286	157	5,416	327	0	7,618
33	0	Percent	0.0	1.0	17.9	3.6	2.0	71.4	4.1	0.0	100.0
8/9-8/15		Numbers	0	441	7,714	1,543	882	30,857	1,763	0	43,200
Total	520	Percent	0.0	3.3	17.2	4.7	2.5	67.5	4.7	0.0	100.0
		Numbers	8	2,021	10,388	2,841	1,524	40,750	2,856	7	60,394

*Note:* Weir counts were estimated by the weir crew due to high water from 8/7 to 8/14. Ayakulik late-run escapement is summed post 15 July; however, samples from all of week 29 were utilized in the estimates.

Table 19.—Length composition of Ayakulik River (Red L.) late-run sockeye salmon escapement samples by age and sex, 2010.

	Age						Total
	1.1	1.2	1.3	2.1	2.2	2.3	
<b>Females</b>							
Mean Length (mm)	322	494	533	352	508	532	483
SE	5	5	16	8	3	16	6
Range	272-372	389-543	464-774	305-402	412-597	427-585	272-774
Sample Size	20	42	17	12	117	9	217
<b>Males</b>							
Mean Length (mm)	322	512	550	343	530	569	481
SE	4	4	14	10	2	8	6
Range	277-372	456-549	472-620	296-387	443-604	507-603	277-620
Sample Size	42	34	10	9	107	11	213
<b>All Fish</b>							
Mean Length (mm)	322	502	539	348	519	552	482
SE	3	3	11	6	2	9	4
Range	272-372	389-549	464-774	296-402	412-604	427-603	272-774
Sample Size	62	76	27	21	224	20	430

Table 20.—Estimated age composition of South Olga Lakes (Upper Station) early-run sockeye salmon escapement by week, 2010.

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	
22	65	Percent	0.0	0.0	0.0	6.2	7.6	0.5	79.8	6.0	0.0	0.0	100.0
5/24-5/30		Numbers	0	0	0	91	113	8	1,182	88	0	0	1,482
23	224	Percent	0.0	0.0	0.0	5.8	6.5	2.6	80.4	4.7	0.0	0.0	100.0
5/31-6/06		Numbers	0	0	0	450	500	210	6,445	357	0	0	7,962
24	227	Percent	0.0	0.0	0.0	4.0	4.0	3.0	85.4	3.6	0.0	0.0	100.0
6/07-6/13		Numbers	0	0	0	450	452	329	9,573	400	0	0	11,203
25	221	Percent	0.0	0.0	0.0	2.4	3.0	5.3	85.7	3.7	0.0	0.0	100.0
6/14-6/20		Numbers	0	0	0	123	166	280	4,768	205	0	0	5,542
26	227	Percent	0.0	0.0	0.1	1.0	3.8	4.8	85.9	4.4	0.0	0.0	100.0
6/21-6/27		Numbers	0	0	5	87	295	328	7,152	344	0	0	8,211
27	214	Percent	0.7	0.0	0.3	0.7	3.4	14.5	72.5	7.1	0.7	0.0	100.0
6/28-7/04		Numbers	20	0	20	44	215	672	4,108	356	20	0	5,455
28	39	Percent	2.0	0.0	0.0	2.1	1.5	22.3	60.2	9.7	2.2	0.0	100.0
7/05-7/11		Numbers	24	0	0	25	17	271	717	118	27	0	1,199
29	71	Percent	0.3	0.0	0.0	10.2	5.5	13.4	60.2	9.1	1.4	0.0	100.0
7/12-7/18		Numbers	3	0	0	103	56	135	605	91	14	0	1,006
Total	1,288	Percent	0.1	0.0	0.1	3.3	4.3	5.3	82.1	4.7	0.1	0.0	100.0
		Numbers	46	0	25	1,372	1,813	2,233	34,550	1,959	61	0	42,060

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

Table 21.—Length composition of South Olga Lakes (Upper Station) early-run sockeye salmon escapement samples by week, 2010.

	Age								Total
	0.2	1.1	1.2	1.3	2.1	2.2	2.3	3.1	
<b>Females</b>									
Mean Length (mm)	423	—	493	524	289	489	527	—	492
SE	0	—	5	4	0	1	3	—	2
Range	423-423	—	451-582	464-569	289-289	410-563	478-557	—	289-582
Sample Size	1	0	25	34	1	601	34	0	696
<b>Males</b>									
Mean Length (mm)	—	333	498	544	362	497	540	358	484
SE	—	0	8	5	3	1	6	19	2
Range	—	333-333	430-593	494-615	312-432	392-590	485-597	339-377	312-615
Sample Size	0	1	18	23	70	432	28	2	574
<b>All Fish</b>									
Mean Length (mm)	423	333	495	532	361	492	533	358	488
SE	0	0	5	3	3	1	3	19	1
Range	423-423	333-333	430-593	464-615	289-432	392-590	478-597	339-377	289-615
Sample Size	1	1	43	57	71	1,033	62	2	1,270

Table 22.—Estimated sex composition of South Olga Lakes (Upper Station) sockeye salmon escapement by week, 2010.

Week	Dates	Sample Size		Total	Percent		Escapement		
		Females	Males		Females	Males	Number		Total
							Females	Males	
22	5/24-5/30	57	14	71	75.1	24.9	1,113	369	1,482
23	5/31-6/06	125	119	244	53.8	46.2	4,285	3,677	7,962
24	6/07-6/13	141	99	240	58.4	41.6	6,538	4,665	11,203
25	6/14-6/20	142	99	241	58.6	41.4	3,250	2,292	5,542
26	6/21-6/27	140	103	243	56.0	44.0	4,596	3,615	8,211
27	6/28-7/04	105	137	242	45.3	54.7	2,473	2,982	5,455
28	7/05-7/11	24	23	47	49.5	50.5	594	605	1,199
29	7/12-7/18	46	59	105	45.1	54.9	454	552	1,006
<b>Early Run Total</b>		<b>780</b>	<b>653</b>	<b>1,433</b>	<b>55.4</b>	<b>44.6</b>	<b>23,303</b>	<b>18,757</b>	<b>42,060</b>
29	7/12-7/18	46	59	105	55.8	44.2	129	102	231
30	7/19-7/25	46	35	81	54.2	45.8	363	306	669
31	7/26-8/01	71	67	138	52.2	47.8	2,186	2,005	4,191
32	8/02-8/08	126	99	225	56.1	43.9	7,275	5,698	12,973
33	8/09-8/15	94	66	160	59.0	41.0	11,934	8,290	20,224
34	8/16-8/22	148	100	248	59.4	40.6	32,840	22,435	55,275
35	8/23-8/29	142	100	242	59.5	40.5	18,078	12,288	30,366
36	8/30-9/05	77	48	125	61.1	38.9	5,523	3,510	9,033
37	9/06-9/12	55	36	91	59.7	40.3	3,169	2,137	5,306
38	9/13-9/19	71	52	123	57.7	42.3	1,657	1,214	2,871
<b>Late Run Total</b>		<b>876</b>	<b>662</b>	<b>1,538</b>	<b>58.9</b>	<b>41.1</b>	<b>83,155</b>	<b>57,984</b>	<b>141,139</b>

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



Table 23.—Estimated age composition of South Olga Lakes (Upper Station) late-run sockeye salmon escapement by week, 2010.

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
29	71	Percent	0.3	0.0	0.0	10.2	5.5	13.4	60.2	9.1	1.4	0.0	100.0
7/12-7/18		Numbers	1	0	0	24	13	31	139	21	3	0	231
30	72	Percent	0.0	0.1	0.0	13.3	1.4	14.6	59.6	10.8	0.3	0.0	100.0
7/19-7/25		Numbers	0	1	0	88	12	96	399	70	2	0	669
31	122	Percent	0.1	1.2	0.2	20.1	1.7	4.8	70.2	1.9	0.0	0.0	100.0
7/26-8/01		Numbers	3	58	5	902	71	174	2,929	48	0	0	4,191
32	203	Percent	0.4	0.2	1.1	9.8	2.5	2.5	82.6	0.9	0.0	0.0	100.0
8/02-8/08		Numbers	53	12	139	1,169	332	308	10,838	123	0	0	12,973
33	138	Percent	0.0	0.0	1.7	6.2	3.3	4.0	84.1	0.7	0.0	0.1	100.0
8/09-8/15		Numbers	1	0	295	1,187	637	819	17,126	129	0	29	20,224
34	227	Percent	0.0	0.0	0.1	3.9	1.9	4.8	88.3	0.5	0.0	0.5	100.0
8/16-8/22		Numbers	0	0	39	2,130	1,014	2,648	48,902	249	0	293	55,275
35	227	Percent	0.0	0.0	0.5	2.1	0.4	8.0	86.3	1.1	0.3	1.4	100.0
8/23-8/29		Numbers	0	0	161	630	100	2,450	26,177	337	81	431	30,366
36	109	Percent	0.0	0.0	1.4	2.6	0.0	7.5	83.2	2.6	0.7	2.1	100.0
8/30-9/05		Numbers	0	0	119	236	3	679	7,525	227	60	185	9,033
37	81	Percent	0.0	0.0	0.1	1.7	0.0	8.0	84.9	4.0	0.1	1.2	100.0
9/06-9/12		Numbers	0	0	5	92	0	425	4,505	214	3	62	5,306
38	111	Percent	0.0	0.0	0.0	0.0	0.0	1.8	86.6	8.0	0.0	3.6	100.0
9/13-9/19		Numbers	0	0	0	0	0	51	2,486	231	0	103	2,871
Total	1,361	Percent	0.0	0.1	0.5	4.6	1.5	5.4	85.7	1.2	0.1	0.8	100.0
		Numbers	57	71	764	6,457	2,183	7,683	121,026	1,649	148	1,101	141,139

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

Table 24.--Length composition of South Olga Lakes (Upper Station) late-run sockeye salmon escapement samples by week, 2010.

	Age										Total
	0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	
<b>Females</b>											
Mean Length (mm)	492	563	–	520	538	416	532	560	–	508	531
SE	0	25	–	5	11	6	1	7	–	29	3
Range	492-492	538-588	–	443-605	477-582	405-432	424-607	502-625	–	450-543	405-625
Sample Size	1	2	0	53	10	4	666	21	0	3	760
<b>Males</b>											
Mean Length (mm)	–	–	350	537	563	390	557	569	412	535	532
SE	–	–	19	8	15	4	2	8	0	12	3
Range	–	–	305-454	426-598	456-626	302-508	399-638	524-599	412-412	491-594	302-638
Sample Size	0	0	7	33	11	70	410	9	1	7	548
<b>All Fish</b>											
Mean Length (mm)	492	563	350	527	551	392	541	563	412	527	531
SE	0	25	19	4	10	4	1	5	0	12	1
Range	492-492	538-588	305-454	426-605	456-626	302-508	399-638	502-625	412-412	450-594	302-638
Sample Size	1	2	7	86	21	74	1,076	30	1	10	1,308

Table 25.—Estimated age composition of Frazer Lake sockeye salmon escapement by week, 2010.

Week	Sample Size		Age													Total
			0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	
25	0	Percent	0.0	0.0	1.9	73.8	0.5	2.8	16.4	2.3	0.0	1.9	0.0	0.5	0.0	100.0
6/14-6/20		Numbers	0	0	8	323	2	12	72	10	0	8	0	2	0	438
26	214	Percent	0.2	0.4	2.7	70.5	0.4	4.2	15.9	2.9	0.0	2.1	0.1	0.6	0.0	100.0
6/21-6/27		Numbers	5	13	80	2,138	12	127	483	87	0	65	3	19	0	3,032
27	207	Percent	0.7	2.0	5.6	54.2	0.1	11.0	15.0	5.6	0.0	4.0	0.4	1.3	0.1	100.0
6/28-7/04		Numbers	32	106	303	2,769	2	719	901	364	0	289	16	76	17	5,594
28	208	Percent	0.1	1.5	4.7	34.8	0.0	20.6	18.4	9.4	0.0	8.5	0.1	1.3	0.7	100.0
7/05-7/11		Numbers	5	138	454	3,287	0	2,127	1,849	962	0	879	2	124	71	9,899
29	208	Percent	0.0	2.1	3.4	28.8	0.0	35.0	13.6	9.1	0.0	7.6	0.0	0.4	0.0	100.0
7/12-7/18		Numbers	0	97	163	1,402	0	1,673	658	441	0	366	0	19	1	4,822
30	212	Percent	0.0	5.4	3.2	14.6	0.1	50.1	11.4	8.1	0.0	7.2	0.0	0.1	0.0	100.0
7/19-7/25		Numbers	0	1,158	736	3,485	1	11,340	2,410	1,731	0	1,591	0	11	0	22,463
31	207	Percent	0.0	6.6	2.9	7.5	0.4	52.2	14.0	9.2	0.0	7.3	0.0	0.0	0.0	100.0
7/26-8/01		Numbers	0	1,255	527	1,422	75	8,973	2,646	1,751	0	1,364	0	0	0	18,014
32	206	Percent	0.0	4.8	2.7	7.4	0.1	61.8	10.6	7.3	0.0	5.3	0.0	0.0	0.0	100.0
8/02-8/08		Numbers	0	222	123	333	3	2,816	486	333	0	249	0	0	0	4,564
33	203	Percent	0.0	4.9	1.6	11.6	0.0	53.8	13.2	12.0	0.1	2.5	0.0	0.2	0.0	100.0
8/09-8/15		Numbers	0	283	93	660	0	3,081	723	648	5	143	0	11	0	5,645
34	194	Percent	0.0	2.4	1.6	8.3	0.0	47.1	17.6	17.4	0.3	4.3	0.0	1.0	0.0	100.0
8/16-8/22		Numbers	0	197	143	693	0	4,292	1,558	1,568	38	400	0	90	0	8,979
35	104	Percent	0.0	2.8	1.9	10.2	0.0	43.1	19.6	17.8	0.0	3.8	0.0	0.9	0.0	100.0
8/23-8/29		Numbers	0	112	75	410	0	1,718	783	709	0	149	0	37	0	3,993
36-37	0	Percent	0.0	2.8	1.9	10.3	0.0	43.0	19.6	17.8	0.0	3.7	0.0	0.9	0.0	100.0
8/30-9/12		Numbers	0	203	135	744	0	3,111	1,420	1,285	0	271	0	68	0	7,237
Total	1,963	Percent	0.0	4.0	3.0	18.7	0.1	42.2	14.8	10.4	0.0	6.1	0.0	0.5	0.1	100.0
		Numbers	42	3,784	2,841	17,666	95	39,988	13,990	9,889	44	5,774	21	457	89	94,680

Table 26.—Length composition of Frazer Lake sockeye salmon escapement samples by age and sex, 2010.

	Age													Total
	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	
<b>Females</b>														
Mean Length (mm)	540	—	515	539	527	371	505	537	—	—	460	543	538	527
SE	0	—	4	1	0	13	2	3	—	—	0	7	0	4
Range	540-540	—	481-551	428-600	527-527	340-417	430-598	450-605	—	—	460-460	507-570	538-538	340-605
Sample Size	1	0	24	289	1	5	150	115	0	0	1	9	1	596
<b>Males</b>														
Mean Length (mm)	571	335	515	551	540	352	506	556	562	356	—	552	—	414
SE	0	3	5	2	0	1	3	4	0	2	—	17	—	2
Range	571-571	283-407	445-581	449-615	540-540	270-421	354-594	473-629	562-562	305-433	—	535-568	—	270-629
Sample Size	1	63	36	223	1	727	135	62	1	106	0	2	0	1,357
<b>All Fish</b>														
Mean Length (mm)	556	335	515	544	534	352	506	544	562	356	460	544	540	449
SE	16	3	4	1	7	1	2	2	0	2	0	6	2	2
Range	540-571	283-407	445-581	428-615	527-540	270-421	354-598	450-629	562-562	305-433	460-460	507-570	538-542	270-629
Sample Size	2	63	60	517	2	733	287	178	1	106	1	11	2	1,963

Table 27.—Estimated sex composition of Frazer Lake sockeye salmon escapement by week, 2010.

Week	Dates	Sample Size			Escapement					
		Females	Males	Total	Percent		Number			
					Females	Males	Females	Males	Total	
25	6/14-6/20	0	0	0	42.7	57.3	187	251	438	
26	6/21-6/27	102	137	239	42.9	57.1	1,300	1,732	3,032	
27	6/28-7/04	104	133	237	42.6	57.4	2,386	3,208	5,594	
28	7/05-7/11	95	141	236	39.3	60.7	3,890	6,009	9,899	
29	7/12-7/18	81	155	236	31.7	68.3	1,528	3,294	4,822	
30	7/19-7/25	52	186	238	23.1	76.9	5,188	17,275	22,463	
31	7/26-8/01	52	184	236	21.9	78.1	3,937	14,077	18,014	
32	8/02-8/08	36	204	240	17.1	82.9	781	3,783	4,564	
33	8/09-8/15	59	180	239	24.3	75.7	1,372	4,273	5,645	
34	8/16-8/22	70	169	239	30.0	70.0	2,695	6,284	8,979	
35	8/23-8/29	47	72	119	39.4	60.6	1,574	2,419	3,993	
36-67	8/30-9/12	0	0	0	51.9	79.5	2,858	4,379	5,506	
Total		698	1,561	2,259	29.3	70.7	27,697	66,983	94,680	

Table 28.—Estimated age composition of Sallery Lake sockeye salmon escapement by week, 2010.

Week	Sample Size		Age							Total
			0.2	0.3	1.2	1.3	2.1	2.2	2.3	
26	46	Percent	1.9	0.2	7.0	63.1	0.0	10.2	17.6	100.0
6/21-6/27		Numbers	15	1	50	466	0	78	129	739
27	58	Percent	0.2	1.8	9.6	65.5	0.0	4.4	18.4	100.0
6/28-7/04		Numbers	5	38	180	1,300	0	77	353	1,954
28	35	Percent	0.0	2.2	9.5	68.6	0.0	1.5	18.2	100.0
7/05-7/11		Numbers	0	76	341	2,420	0	57	649	3,543
29	110	Percent	0.1	0.5	12.0	61.3	0.0	5.3	20.6	100.0
7/12-7/18		Numbers	9	25	647	3,248	3	297	1,098	5,326
30	164	Percent	1.3	1.3	14.2	63.2	0.4	5.3	14.3	100.0
7/19-7/25		Numbers	65	65	699	3,382	22	287	823	5,343
31	32	Percent	0.1	0.1	25.2	61.4	0.0	6.0	7.2	100.0
7/26-8/01		Numbers	1	1	1,656	3,869	0	388	475	6,392
32	70	Percent	0.0	0.0	21.4	70.0	0.0	5.7	2.9	100.0
8/02-8/08		Numbers	0	0	750	2,451	0	200	100	3,501
33	0	Percent	0.0	0.0	21.4	70.0	0.0	5.7	2.9	100.0
8/09-8/15		Numbers	0	0	2	8	0	1	0	11
Total	515	Percent	0.4	0.8	16.1	63.9	0.1	5.2	13.5	100.0
		Numbers	96	205	4,325	17,144	25	1,385	3,629	26,809

Table 29.—Length composition of Sallery Lake sockeye salmon escapement samples by age and sex, 2010.

	Age							Total
	0.2	0.3	1.2	1.3	2.1	2.2	2.3	
<b><i>Females</i></b>								
Mean Length (mm)	513	538	496	546	—	515	555	539
SE	16	22	5	2	—	8	7	2
Range	497-529	516-560	427-550	443-600	—	480-558	439-592	427-600
Sample Size	2	2	31	172	0	11	22	240
<b><i>Males</i></b>								
Mean Length (mm)	504	525	511	569	366	531	582	559
SE	8	40	5	2	0	7	3	2
Range	496-511	445-568	445-569	505-620	366-366	496-596	471-618	366-620
Sample Size	2	3	37	159	1	18	55	275
<b><i>All Fish</i></b>								
Mean Length (mm)	508	530	504	557	366	524	574	550
SE	8	23	4	1	0	6	3	2
Range	496-529	445-568	427-569	443-620	366-366	480-596	439-618	366-620
Sample Size	4	5	68	331	1	29	77	515

Table 30.—Estimated sex composition of Sallery Lake sockeye salmon escapement by week, 2010.

Week	Dates	Sample Size			Escapement					
		Females	Males	Total	Percent		Number			
					Females	Males	Females	Males	Total	
26	6/21-6/27	21	32	53	39.6	60.4	292	447	739	
27	6/28-7/04	26	41	67	48.6	51.4	951	1,003	1,954	
28	7/05-7/11	26	14	40	59.2	40.8	2,098	1,445	3,543	
29	7/12-7/18	56	76	132	45.4	54.6	2,416	2,910	5,326	
30	7/19-7/25	92	95	187	47.2	52.8	2,521	2,822	5,343	
31	7/26-8/01	18	22	40	46.2	53.8	2,952	3,440	6,392	
32	8/02-8/08	39	41	80	48.8	51.3	1,707	1,794	3,501	
33	8/09-8/15	0	0	0	48.8	51.3	5	6	11	
Total		278	321	599	48.3	51.7	12,943	13,866	26,809	



Table 31.—Age composition of Kitoi Bay hatchery chum salmon broodstock samples by week, 2010.

Week	Sample Size		Age			Total
			0.2	0.3	0.4	
30 7/19-7/25	126	Percent	30.2	63.5	6.3	100.0
		Numbers	38	80	8	126
31 7/26-8/01	254	Percent	36.2	60.6	3.1	100.0
		Numbers	92	154	8	254
32 8/02-8/08	106	Percent	45.3	47.2	7.5	100.0
		Numbers	48	50	8	106
Total	486	Percent	36.6	58.4	4.9	100.0
		Numbers	178	284	24	486

Table 32.–Length composition of Kitoi Bay hatchery chum salmon broodstock samples by age and sex, 2010.

	Age			Total
	0.2	0.3	0.4	
<b><i>Females</i></b>				
Mean Length (mm)	538	564	578	559
SE	3	2	5	2
Range	502-587	491-647	550-610	491-647
Sample Size	53	178	14	245
<b><i>Males</i></b>				
Mean Length (mm)	530	570	600	550
SE	3	4	13	3
Range	454-604	472-690	544-664	454-690
Sample Size	125	106	10	241
<b><i>All Fish</i></b>				
Mean Length (mm)	532	566	587	555
SE	2	2	7	2
Range	454-604	472-690	544-664	454-690
Sample Size	178	284	24	486

Table 33.—Kodiak sockeye salmon escapement age-2.2 average length (metf mm) by year, system 1985 to 2010.

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

Note: \* represent years where no data was collected.

Table 34.—Kodiak sockeye salmon escapement age-2.3 average length (metf mm) by year, system 1985 to 2010.

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

Note: \* represent years where no data was collected.

Table 35.—Kodiak Management Area commercial salmon harvest by species and year, 1970 through 2010.

Year	Species <sup>a</sup>					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1970	1,089	917,047	66,424	12,036,598	919,972	13,941,130
1971	920	478,479	22,844	4,334,492	1,541,444	6,378,183
1972	1,300	222,408	16,587	2,478,064	1,163,426	3,881,785
1973	800	167,341	3,573	511,708	317,921	1,001,343
1974	545	418,761	13,631	2,647,244	249,294	3,329,475
1975	101	136,418	23,659	2,942,801	84,431	3,187,410
1976	766	641,484	23,714	11,077,992	740,495	12,484,451
1977	585	623,468	27,920	6,252,405	1,072,313	7,976,691
1978	3,228	1,071,782	48,795	15,004,065	814,345	16,942,215
1979	1,907	630,756	140,629	11,285,809	358,336	12,417,437
1980	529	651,394	139,154	17,290,615	1,075,557	19,157,249
1981	1,418	1,288,980	121,544	10,336,829	1,345,328	13,094,099
1982	1,214	1,203,787	344,823	8,089,780	1,262,587	10,902,191
1983	3,839	1,231,989	157,612	4,603,371	1,085,165	7,081,976
1984	4,657	1,950,639	229,524	10,844,293	649,092	13,678,205
1985	4,970	1,842,731	284,166	7,334,825	430,757	9,897,449
1986	4,381	3,188,046	168,690	11,807,727	1,134,372	16,303,216
1987	4,613	1,794,773	192,540	5,075,101	682,023	7,749,050
1988	22,374	2,699,014	303,298	14,559,038	1,426,410	19,010,134
1989 <sup>b</sup>	106	1,289,511	2,599	183,235	19,972	1,495,423
1990	18,808	5,248,400	293,819	5,983,812	577,750	12,122,589
1991	22,234	5,704,100	324,860	16,642,841	1,029,071	23,723,106
1992	24,299	4,167,871	280,085	3,310,644	679,559	8,462,458
1993	41,029	4,378,886	313,467	34,019,420	588,331	39,341,133
1994	22,576	2,877,999	296,311	8,162,564	738,856	12,098,306
1995	18,704	4,488,502	307,795	42,849,309	1,522,810	49,187,120
1996	13,071	4,970,362	201,836	3,486,930	543,751	9,215,950
1997	18,735	2,506,427	381,099	11,035,134	520,331	14,461,726
1998	17,349	3,623,712	425,152	22,062,465	316,115	26,444,793
1999	18,299	4,653,057	296,979	11,898,382	913,867	17,780,584
2000	12,293	2,906,441	333,052	9,927,397	1,194,448	14,373,631
2001	23,843	2,659,637	409,193	19,567,163	1,053,763	23,713,599
2002	19,320	1,831,014	503,615	18,328,638	650,178	21,332,765
2003	18,603	4,053,847	351,767	14,067,235	1,151,885	19,643,337
2004	28,907	4,169,565	490,161	21,440,905	1,121,873	27,251,411
2005	14,465	3,052,048	396,841	30,143,647	477,435	34,084,436
2006	20,383	1,585,630	556,310	31,694,492	1,082,132	34,938,947
2007	17,248	2,014,141	356,583	24,811,459	728,920	27,928,351
2008	17,252	1,821,629	301,460	8,788,476	908,030	11,836,847
2009	7,268	1,727,776	291,470	27,649,826	955,814	30,632,154
2010	14,710	1,439,535	269,407	8,871,063	734,901	11,329,616
Average						
2005-2009	15,323	2,040,245	380,533	24,617,580	830,466	27,884,147
2000-2009	17,958	2,582,173	399,045	20,641,924	932,448	24,573,548

<sup>a</sup> Catch numbers include personal use with commercial gear and ADF&G test fisheries.

<sup>b</sup> Actual harvest numbers for 1989 are shown above. For the projected harvest if the *Exxon Valdez* oil spill had not eliminated a major portion of the commercial fishery consult Barrett et al. 1990.

Table 36.—Commercial salmon catch numbers by species, district, and section, Kodiak Management Area, 2010.

District	Section	Species									
		Chinook		Sockeye		Coho		Pink		Chum	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
<b>Afognak District</b>											
S.W.AFOGNAK & RASPBERRY STRAITS SECTIONS											
	(251-10,11,12,20)	1,458	11,262	41,336	220,017	9,317	71,869	908,147	3,147,701	24,552	187,371
N.W. AFOGNAK SECTION											
	(251-30,40,41,50)	705	3,166	41,089	184,018	3,011	22,890	255,680	892,781	3,882	28,970
	Personal use of commercial catch	0	0	61	275	0	0	0	0	0	0
SHUYAK ISLAND SECTION											
	(251-60,70,81)	0	0	34	177	1,161	9,058	7,538	25,751	45	416
PERENOSA & PAULS BAYS SECTIONS COMBINED											
	(251-82,83,84,85)	7	74	25,835	115,452	6,134	48,232	152,730	555,554	797	6,082
N.E.AFOGNAK SECTION											
	(251-90, 252-10,20)	8	43	2,350	13,406	3,663	28,083	321,444	1,138,548	2,846	17,658
DUCK, IZHUT, & KITOI BAYS SECTIONS COMBINED											
	(252-30,31,32)	530	4,583	89,045	457,108	112,090	883,281	3,213,286	11,950,155	190,203	1,316,495
	Personal use of commercial catch	36	299	91	375	2,325	16,475	2,667	8,802	0	0
S.E.AFOGNAK											
	(252-33,34,35)	107	1,113	14,612	69,068	4,482	33,940	389,615	1,388,373	6,566	48,286
	Personal use of commercial catch	1	12	6	30	36	288	0	0	0	0
	<b>Subtotal</b>	<b>2,852</b>	<b>20,552</b>	<b>214,459</b>	<b>1,059,926</b>	<b>142,219</b>	<b>1,114,116</b>	<b>5,251,107</b>	<b>19,107,665</b>	<b>228,891</b>	<b>1,605,278</b>
<b>Northwest Kodiak District</b>											
UGANIK, TERROR, VIEKODA, & KUPREANOF AREAS COMBINED											
	(253-11,12,13,14,31-35)	2,463	20,689	159,553	911,264	28,659	226,416	1,358,193	4,874,607	82,736	644,958
	Personal use of commercial catch	100	718	346	1,753	464	3,260	3,240	10,692	4	32
UYAK, SPIRIDON, & ZACHAR, AREAS COMBINED											
	(254-10,20,21,30,31,40,41)	1,536	12,454	136,899	734,432	15,393	112,492	675,967	2,617,493	74,283	604,957
	Personal use of commercial catch	0	0	1,775	8,675	0	0	0	0	0	0
TELROD COVE (SHA)											
	(254-50)	1	5	100,727	555,871	36	258	53,516	200,745	5,887	50,814
NORTH CAPE, ANTON LARSEN, SHERATIN, & KIZHUYAK AREAS COMBINED											
	(259-30,31,33,34,35,36,37,38,39)	167	1,368	28,735	156,783	8,024	59,158	347,152	1,315,125	33,825	279,090
	<b>Subtotal</b>	<b>4,267</b>	<b>35,234</b>	<b>428,035</b>	<b>2,368,778</b>	<b>52,576</b>	<b>401,584</b>	<b>2,438,068</b>	<b>9,018,662</b>	<b>196,735</b>	<b>1,579,851</b>

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District	Section	Species									
		Chinook		Sockeye		Coho		Pink		Chum	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
<b>Southwest Kodiak District</b>											
INNER and OUTER KARLUK SECTION											
(255-10, 20)		0	0	975	4,817	399	3,172	57	211	118	990
Personal use of commercial catch		0	0	0	0	91	637	0	0	0	0
STURGEON SECTION											
(256-40)		0	0	0	0	0	0	0	0	0	0
HALIBUT BAY SECTION											
(256-25,30)		220	2,209	17,948	95,766	1,471	11,318	115,596	370,939	3,645	29,010
INNER & OUTER AYAKULIK SECTIONS											
(256-10,15,20)		228	2,099	255,836	1,344,913	12,180	105,674	442,469	1,498,824	8,716	70,859
Personal use of commercial catch		2	24	40	200	0	0	0	0	0	0
Subtotal		450	4,332	274,799	1,445,696	14,141	120,801	558,122	1,869,974	12,479	100,859
<b>Alitak District</b>											
CAPE ALITAK AND HUMPY-DEADMAN SECTIONS											
(257-10,20,50,60,70)		153	2,315	24,539	125,682	10,709	60,758	82,192	275,996	14,315	119,384
Personal use of commercial catch		4	60	0	0	0	0	0	0	0	0
ALITAK BAY, MOSER BAY, OLGA BAY, AND OUTER UPPER STATION SECTIONS											
(257-30,40,41,42,43)		5	63	91,399	496,603	3,838	36,119	64,171	253,289	4,521	35,775
Personal use of commercial catch		0	0	0	0	0	0	360	916	11	88
Subtotal		162	2,438	115,938	622,285	14,547	96,877	146,723	530,201	18,847	155,247
<b>Eastside Kodiak District</b>											
SEVEN RIVERS SECTION											
(258-70,80,83,85,90)		350	3,105	35,820	196,043	2,741	19,595	28,925	89,086	13,548	103,669
TWO-HEADED SECTION											
(258-54,55,60)		41	321	6,334	31,680	36	268	1,013	3,024	1,405	11,913
SITKALIDAK SECTION											
(258-10,20,30,40,51,52,53)		2,427	17,752	99,930	500,714	17,910	94,183	269,683	915,543	67,247	524,210
Personal use of commercial catch		10	111	0	0	0	0	0	0	0	0
INNER & OUTER UGAK											
(259-40,41,42,43,44,45,46)		711	7,571	8,418	46,417	3,183	23,937	23,215	86,134	19,509	153,751
Subtotal		3,539	28,860	150,502	774,854	23,870	137,983	322,836	1,093,787	101,709	793,543

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Table 36.–Page 3 of 3.

District	Section	Species									
		Chinook		Sockeye		Coho		Pink		Chum	
		Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
<b>Northeast Kodiak District</b>											
MONASHKA MILLBAY SECTION											
	(259-10)	1	13	34	189	21	133	11,000	45,382	81	607
INNER AND OUTER CHINIAK BAY SECTIONS											
	(259-21,22,23,24,25,26,27)	26	144	312	1,688	200	1,263	1,899	7,987	819	6,448
	Subtotal	27	157	346	1,877	221	1,396	12,899	53,369	900	7,055
<b>Mainland District</b>											
BIG RIVER SECTION											
	(262-10,15)	0	0	0	0	0	0	0	0	0	0
HALLO BAY SECTION											
	(262-20)	0	0	0	0	0	0	0	0	0	0
INNER AND OUTER KUKAK BAY SECTIONS											
	(262-25,27,30)	27	123	2,741	13,219	1,022	7,979	3,655	13,296	7,077	61,606
	Personal use of commercial catch	2	25	0	0	60	420	0	0	0	0
DAKAVAK BAY SECTION											
	(262-35,40,45,50,55)	628	3,689	19,191	110,461	4,335	28,295	49,672	191,687	21,424	160,823
	Personal use of commercial catch	3	35	11	60	0	0	0	0	0	0
KATMAI SECTION											
	(262-60)	315	2,165	3,690	23,189	368	2,850	5,303	30,745	3,184	29,292
ALINCHAK BAY SECTION											
	(262-65,70)	545	3,808	16,269	92,154	1,999	14,210	10,038	34,830	43,164	351,800
CAPE IGVAK											
	(262-75,80,90,95)	1,891	15,951	213,554	1,190,143	14,049	101,065	72,640	252,625	100,491	793,610
	Personal use of commercial catch	2	45	0	0	0	0	0	0	0	0
	Subtotal	3,413	25,841	255,456	1,429,226	21,833	154,819	141,308	523,183	175,340	1,397,131
TOTAL excluding personal use		14,550	116,085	1,437,205	7,691,274	266,431	2,006,496	8,864,796	32,176,431	734,886	5,638,844
Personal use of commercial catch		160	1,329	2,330	11,368	2,976	21,080	6,267	20,410	15	120
<b>GRAND TOTAL</b>		<b>14,710</b>	<b>117,414</b>	<b>1,439,535</b>	<b>7,702,642</b>	<b>269,407</b>	<b>2,027,576</b>	<b>8,871,063</b>	<b>32,196,841</b>	<b>734,901</b>	<b>5,638,964</b>

Note: Catch numbers include personal use with commercial gear and ADF&G test fisheries.



Table 37.—Estimated age composition of commercial sockeye salmon catches by sample area, Kodiak Management Area, 2010.

District		Sample Size	Age Class									Total
Catch Area			0.3	1.2	2.1	1.3	2.2	2.3	3.2	3.3	Other <sup>a</sup>	
<b>NW Kodiak District</b>												
Uganik-Viekoda-Kupreanof	2,923	Percent	0.8	10.7	0.1	23.8	38.8	20.2	4.5	0.3	0.9	100.0
		Numbers	1,276	17,186	156	37,982	61,998	32,305	7,214	409	1,372	159,899
Uyak Bay	3,174	Percent	0.7	8.6	0.1	27.8	30.8	19.2	11.0	0.7	1.0	100.0
		Numbers	1,008	11,985	180	38,501	42,707	26,652	15,264	1,021	1,357	138,674
Spiridon SHA (Telrod Cove)	1,370	Percent	0.0	17.4	0.7	19.8	55.0	6.7	0.0	0.0	0.4	100.0
		Numbers	0	17,544	667	19,924	55,435	6,762	0	0	394	100,727
<b>Afognak District</b>												
Foul Bay SHA	546	Percent	0.0	83.5	0.2	10.6	3.7	1.5	0.0	0.0	0.5	100.0
		Numbers	0	26,618	58	3,386	1,167	467	0	0	175	31,871
Waterfall Bay SHA	555	Percent	0.0	86.3	0.0	8.4	5.0	0.0	0.0	0.0	0.3	100.0
		Numbers	0	11,886	0	1,163	694	0	0	0	36	13,779
<b>SW Kodiak District</b>												
Ayakulik-Halibut Bay	2,049	Percent	0.1	15.3	0.8	7.0	65.7	5.9	4.1	0.3	0.7	100.0
		Numbers	339	41,996	2,179	19,187	179,858	16,277	11,215	823	1,949	273,824
<b>Alitak Bay District</b>												
Moser-Olga-Alitak (gillnet)	2,046	Percent	0.3	5.4	0.6	14.4	65.4	12.6	0.5	0.3	0.4	100.0
		Numbers	249	4,937	589	13,183	59,764	11,486	498	303	389	91,399
Total	12,663	Percent	0.4	16.3	0.5	16.5	49.6	11.6	4.2	0.3	0.7	100.0
		Number	2,871	132,151	3,830	133,326	401,624	93,949	34,192	2,557	5,673	810,173

<sup>a</sup> The “Other” age class listed in the table above consists of age-0.1, -0.2, -1.1, -0.4, -3.1, -1.4, -2.4, -3.4, -4.2 and -4.3.

Table 38.—Estimated age composition of Uganik-Viekoda-Kupreanof bays (253-11, 12, 13, 14, 31, 32, 33, 35) commercial sockeye salmon catch by week, 2010.

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		4.2
24	361	Percent	0.0	1.3	0.0	12.1	20.8	0.3	0.0	11.7	50.9	0.3	1.8	0.8	0.0	100.0
6/7-6/13		Numbers	0	143	0	1,312	2,301	30	0	1,290	5,586	30	199	88	3	10,982
25	359	Percent	0.0	0.5	0.0	16.9	15.5	0.3	0.0	11.2	51.5	0.3	3.0	0.5	0.3	100.0
6/14-6/20		Numbers	0	46	1	1,436	1,310	23	0	917	4,400	24	256	46	23	8,484
28	398	Percent	0.0	0.0	0.7	13.5	21.8	0.0	0.2	38.0	24.8	0.3	0.6	0.0	0.0	100.0
7/5-7/11		Numbers	0	6	177	3,309	5,360	3	59	9,327	6,101	62	150	6	3	24,564
29	369	Percent	0.0	0.5	0.0	11.3	19.5	0.4	0.0	48.1	18.3	0.3	1.4	0.1	0.0	100.0
7/12-7/18		Numbers	0	166	0	3,466	5,959	116	0	14,715	5,607	83	434	33	0	30,579
30	367	Percent	0.1	1.0	0.0	9.1	27.1	0.8	0.1	41.6	15.3	0.2	4.3	0.4	0.0	100.0
7/19-7/25		Numbers	33	370	0	3,978	11,409	335	17	18,601	6,792	103	1,948	199	0	43,784
31	372	Percent	0.4	2.1	0.0	8.7	36.9	0.5	0.2	34.8	11.7	0.0	4.8	0.1	0.0	100.0
7/26-8/1		Numbers	94	496	0	1,911	8,316	106	47	7,109	2,642	0	848	12	0	21,581
32	342	Percent	0.0	0.5	0.0	8.0	23.2	0.3	0.0	47.7	7.5	0.0	12.4	0.2	0.1	100.0
8/2-8/8		Numbers	0	46	0	765	2,220	28	5	4,561	717	0	1,194	23	9	9,569
33	355	Percent	0.0	0.1	0.0	9.6	11.7	0.3	0.2	52.5	4.7	0.0	20.4	0.0	0.5	100.0
8/9-8/15		Numbers	0	3	0	457	555	13	12	2,495	222	0	972	2	24	4,755
35-38	0	Percent	0.0	0.0	0.0	9.9	9.9	0.3	0.3	53.2	4.2	0.0	21.7	0.0	0.6	100.0
8/23-9/19		Numbers	0	0	0	552	552	16	16	2,982	237	0	1,215	0	32	5,601
Total	2,923	Percent	0.1	0.8	0.1	10.7	23.8	0.4	0.1	38.8	20.2	0.2	4.5	0.3	0.1	100.0
		Numbers	127	1,276	178	17,186	37,982	671	156	61,998	32,305	302	7,214	409	94	159,899

Table 39.—Estimated age composition of Uyak Bay (254-10, 20, 30, 40) commercial sockeye salmon catch by week, 2010.

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	3.1	3.2	3.3	4.2	
24 6/7-6/13	348	Percent	0.3	0.3	0.3	19.4	18.4	0.3	0.8	29.8	10.1	0.5	0.3	17.3	2.1	0.3	100.0
		Numbers	25	22	22	1,683	1,597	22	68	2,589	873	43	22	1,495	183	22	8,665
25 6/14-6/20	357	Percent	0.3	0.0	0.0	22.0	17.0	0.0	0.3	33.8	12.4	0.0	0.0	11.5	2.7	0.0	100.0
		Numbers	22	1	0	1,743	1,356	1	22	2,697	991	0	0	910	216	0	7,959
28 7/5-7/11	367	Percent	0.0	0.2	0.0	6.4	23.9	0.3	0.0	43.6	24.2	0.0	0.0	1.2	0.0	0.0	100.0
		Numbers	0	26	0	706	2,624	30	4	4,785	2,657	4	0	128	4	0	10,969
29 7/12-7/18	367	Percent	0.0	0.1	0.0	8.8	24.9	0.4	0.2	45.0	18.3	0.2	0.0	1.7	0.2	0.0	100.0
		Numbers	0	32	11	1,967	5,502	82	50	10,058	4,063	50	0	384	50	0	22,249
30 7/19-7/25	369	Percent	0.0	1.1	0.2	7.9	43.1	0.7	0.0	21.8	23.0	0.0	0.0	2.1	0.1	0.0	100.0
		Numbers	0	227	58	2,003	10,784	191	3	5,623	5,435	3	0	522	9	0	24,857
31 7/26-8/1	358	Percent	0.1	1.7	0.0	6.7	34.2	0.5	0.0	21.6	27.7	0.0	0.0	6.7	0.6	0.1	100.0
		Numbers	36	651	0	2,397	12,383	181	0	7,262	10,149	0	0	2,007	190	18	35,273
32 8/2-8/8	339	Percent	0.5	0.2	0.0	6.1	18.7	0.3	0.0	37.4	10.4	0.0	0.0	24.5	1.5	0.3	100.0
		Numbers	93	36	3	1,107	3,460	55	0	6,867	1,947	3	0	4,376	287	59	18,292
33 8/9-8/15	339	Percent	0.0	0.3	0.3	6.6	12.8	0.0	0.0	27.9	6.1	0.3	0.1	44.0	0.4	1.3	100.0
		Numbers	0	14	14	346	668	0	2	1,446	315	14	4	2,270	18	66	5,177
35-38 8/23-9/19	330	Percent	0.0	0.0	0.0	0.6	2.4	0.0	0.6	26.4	4.2	0.0	1.2	60.6	1.2	2.7	100.0
		Numbers	0	0	0	32	127	0	32	1,380	222	0	63	3,172	63	143	5,233
Total	3,174	Percent	0.1	0.7	0.1	8.6	27.8	0.4	0.1	30.8	19.2	0.1	0.1	11.0	0.7	0.2	100.0
		Numbers	176	1,008	108	11,985	38,501	560	180	42,707	26,652	118	89	15,264	1,021	307	138,674

Table 40.—Estimated age composition of Spiridon Bay (Telrod Cove: 254-50) Special Harvest Area sockeye salmon catch by week, 2010.

Week	Sample Size		Age							Total	
			0.1	0.2	1.2	1.3	1.4	2.1	2.2		2.3
26	256	Percent	0.0	0.0	14.6	22.7	0.0	0.4	50.4	11.8	100.0
6/21-6/27		Numbers	0	0	886	1,347	0	24	3,048	699	6,005
27	225	Percent	0.2	0.2	18.0	19.5	0.0	0.5	53.6	8.1	100.0
6/28-7/04		Numbers	34	34	4,288	4,714	0	119	13,103	2,025	24,317
28	146	Percent	0.5	0.5	20.1	21.6	0.0	0.7	49.7	6.8	100.0
7/05-7/11		Numbers	116	116	4,263	4,562	0	139	10,278	1,461	20,936
29	260	Percent	0.1	0.1	16.3	18.3	0.1	1.0	59.9	4.3	100.0
7/12-7/18		Numbers	25	25	4,166	4,773	9	267	15,172	1,101	25,539
30	187	Percent	0.0	0.0	16.9	14.1	0.4	0.7	63.7	4.3	100.0
7/19-7/25		Numbers	0	0	1,347	1,148	31	55	5,164	343	8,089
31	221	Percent	0.0	0.0	17.9	17.5	0.0	0.8	58.6	5.1	100.0
7/26-8/01		Numbers	0	0	1,515	1,580	2	60	4,963	476	8,596
32	75	Percent	0.0	0.0	14.9	24.9	0.0	0.0	51.1	9.1	100.0
8/02-8/08		Numbers	0	0	994	1,652	0	4	3,412	602	6,664
33	0	Percent	0.0	0.0	14.7	25.3	0.0	0.0	50.7	9.3	100.0
8/09-8/15		Numbers	0	0	85	147	0	0	294	54	581
Total	1,370	Percent	0.2	0.2	17.4	19.8	0.0	0.7	55.0	6.7	100.0
		Numbers	176	176	17,544	19,924	42	667	55,435	6,762	100,727

Table 41.—Length composition of Spiridon Bay (Telrod Cove: 254-50) Special Harvest Area sockeye salmon catch samples by age and sex, 2010.

	Age								Total
	0.1	0.2	1.2	1.3	1.4	2.1	2.2	2.3	
<b>Females</b>									
Mean Length (mm)	—	—	509	558	520	386	523	565	530
SE	—	—	3	2	0	0	1	3	2
Range	—	—	431-579	508-594	520-520	386-386	403-601	519-594	386-601
Sample Size	0	0	83	116	1	1	327	36	564
<b>Males</b>									
Mean Length (mm)	524	470	520	581	—	401	546	592	548
SE	0	0	4	3	—	15	1	4	2
Range	524-524	470-470	426-595	474-644	—	360-450	445-620	531-642	360-644
Sample Size	1	1	104	92	0	6	304	36	544
<b>All Fish</b>									
Mean Length (mm)	524	470	515	568	520	399	534	578	539
SE	0	0	3	2	0	13	1	3	1
Range	524-524	470-470	426-595	474-644	520-520	360-450	403-620	519-642	360-644
Sample Size	1	1	187	208	1	7	631	72	1,108

Table 42.—Estimated sex composition of Spiridon Bay (Telrod Cove: 254-50) Special Harvest Area sockeye salmon catch by week, 2010.

Week	Dates	Sample Size			Percent		Harvest		
		Females	Males	Total	Females	Males	Number		Total
							Females	Males	
26	6/21-6/27	99	141	240	41.1	58.9	2,471	3,534	6,005
27	6/28-7/04	97	143	240	41.9	58.1	10,184	14,133	24,317
28	7/05-7/11	76	84	160	46.9	53.1	9,825	11,111	20,936
29	7/12-7/18	171	109	280	59.0	41.0	15,059	10,480	25,539
30	7/19-7/25	118	82	200	61.1	38.9	4,942	3,147	8,089
31	7/26-8/01	55	25	80	68.8	31.3	5,910	2,686	8,596
32-33	8/02-8/15	0	0	0	68.8	31.3	4,981	2,264	7,245
<b>Total</b>		<b>616</b>	<b>584</b>	<b>1,200</b>	<b>53.0</b>	<b>47.0</b>	<b>53,371</b>	<b>47,356</b>	<b>100,727</b>

Table 43.—Estimated age composition of Foul Bay (251-41) and Waterfall Bay (251-84) Special Harvest Areas commercial sockeye salmon, 2010.

Special Harvest Area	Week	Sample Size		Age							Total
				1.1	1.2	1.3	1.4	2.1	2.2	2.3	
Foul Bay SHA	34-34 6/07-8/22	546	Percent	0.4	83.5	10.6	0.2	0.2	3.7	1.5	100.0
			Numbers	117	26,618	3,386	58	58	1,167	467	31,871
Waterfall SHA	24-32 6/07-8/8	555	Percent	0.3	86.3	8.4	0.0	0.0	5.0	0.0	100.0
			Numbers	36	11,886	1,163	0	0	694	0	13,779

Table 44.—Length composition of Foul Bay SHA (251-41) and Waterfall Bay SHA (251-84) sockeye salmon catch samples by age and sex, 2010.

Foul Bay SHA	Age							Total
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	
<b>Females</b>								
Mean Length (mm)	370	474	524	—	—	478	530	481
SE	0	2	4	—	—	10	18	2
Range	370-370	410-570	490-580	—	—	430-550	495-550	370-580
Sample Size	1	182	33	0	0	11	3	230
<b>Males</b>								
Mean Length (mm)	380	486	540	530	380	488	533	490
SE	0	1	4	0	0	9	6	2
Range	380-380	410-545	500-570	530-530	380-380	450-540	520-555	380-570
Sample Size	1	273	25	1	1	9	5	315
<b>All Fish</b>								
Mean Length (mm)	375	481	531	530	380	483	532	486
SE	5	1	3	0	0	7	7	1
Range	370-380	410-570	490-580	530-530	380-380	430-550	495-555	370-580
Sample Size	2	456	58	1	1	20	8	546

Waterfall Bay SHA	Age							Total
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	
<b>Females</b>								
Mean Length (mm)	0	455	514	—	—	471	—	461
SE	0	1	7	—	—	4	—	2
Range		407-498	429-578	—	—	456-488	—	407-578
Sample Size	0	226	24	0	0	10	0	260
<b>Males</b>								
Mean Length (mm)	387	468	534	—	—	482	—	473
SE	7	2	7	—	—	6	—	2
Range	380-394	380-540	478-587	—	—	412-541	—	380-587
Sample Size	2	250	22	0	0	21	0	295
<b>All Fish</b>								
Mean Length (mm)	387	462	523	—	—	478	—	467
SE	7	1	5	—	—	4	—	1
Range	380-394	380-540	429-587	—	—	412-541	—	380-587
Sample Size	2	476	46	0	0	31	0	555



Table 45.—Estimated age composition of Inner and Outer Ayakulik and Halibut Bay sections (256-10, 15, 20, 25, 30) commercial sockeye salmon catch, 2010.

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	3.1	3.2	3.3	4.2	
26	381	Percent	0.3	0.5	1.5	21.3	13.2	0.3	5.3	49.0	6.7	0.0	0.0	1.8	0.3	0.0	100.0
6/21-6/27		Numbers	22	45	134	1,888	1,171	22	471	4,345	598	0	0	159	22	0	8,876
29	360	Percent	0.0	0.1	0.1	19.1	6.7	0.1	0.5	66.3	5.9	0.1	0.1	0.8	0.2	0.0	100.0
7/12-7/18		Numbers	0	109	109	25,986	7,739	109	628	88,838	7,473	109	109	1,106	219	0	132,537
30	358	Percent	0.0	0.3	0.3	15.0	12.7	0.3	0.3	61.7	7.7	0.3	0.3	0.8	0.5	0.0	100.0
7/19-7/25		Numbers	0	181	181	10,114	8,568	181	202	41,450	5,175	181	181	557	362	0	67,334
32	0	Percent	0.0	0.1	0.1	9.1	5.8	0.1	0.7	77.8	5.4	0.1	0.1	0.6	0.2	0.0	100.0
8/2-8/8		Numbers	0	4	4	367	230	4	27	3,163	216	4	4	26	7	0	4,054
33	360	Percent	0.0	0.0	0.0	6.1	2.2	0.0	0.9	84.4	4.2	0.0	0.0	2.1	0.0	0.1	100.0
8/9-8/15		Numbers	0	0	0	2,087	766	0	302	28,957	1,439	2	6	623	10	20	34,212
34	0	Percent	0.0	0.0	0.0	5.8	2.6	0.0	1.9	52.9	5.0	0.1	0.4	29.1	0.7	1.3	100.0
8/16-8/22		Numbers	0	0	0	815	364	0	267	7,422	701	19	56	4,039	93	186	13,963
35-36	590	Percent	0.0	0.0	0.0	5.8	2.7	0.0	2.2	44.2	5.3	0.2	0.5	36.6	0.8	1.7	100.0
8/23-9/5		Numbers	0	0	0	740	348	0	283	5,684	675	22	65	4,704	109	218	12,848
Total	2,049	Percent	0.0	0.1	0.2	15.3	7.0	0.1	0.8	65.7	5.9	0.1	0.2	4.1	0.3	0.2	100.0
		Numbers	22	339	428	41,996	19,187	317	2,179	179,858	16,277	337	422	11,215	823	424	273,824

Table 46.—Estimated age composition of Olga Bay, Alitak Bay, and Moser Bay sections (257-40, 41, 43) commercial sockeye salmon catch, 2010.

Week	Sample Size		Age														Total
			0.2	0.3	0.4	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2	3.3	3.4	
24 6/7-6/13	643	Percent Numbers	0.1 18	0.8 96	0.0 0	2.1 266	38.5 4,820	0.0 4	0.0 6	45.9 5,744	10.4 1,300	0.2 20	0.0 0	1.2 149	0.6 81	0.1 18	100.0 12,523
25 6/14-6/20	0	Percent Numbers	0.1 1	0.7 8	0.0 0	2.4 25	36.8 381	0.1 1	0.2 2	44.7 463	13.0 135	0.2 2	0.0 0	1.1 11	0.7 7	0.1 1	100.0 1,037
27 6/28-7/4	357	Percent Numbers	0.0 0	0.5 44	0.0 1	3.9 311	25.5 2,035	0.6 45	0.9 69	36.8 2,933	30.2 2,387	0.3 22	0.0 0	0.3 22	1.1 87	0.0 0	100.0 7,957
29 7/12-7/18	316	Percent Numbers	0.0 0	0.3 21	0.3 20	4.3 296	21.6 1,518	0.6 42	1.5 101	30.6 2,137	39.4 2,749	0.3 21	0.2 9	0.3 21	0.6 43	0.0 0	100.0 6,978
30 7/19-7/25	40	Percent Numbers	0.0 0	0.1 6	0.1 5	10.3 686	14.7 963	0.1 9	4.0 268	36.3 2,408	32.2 2,119	0.1 5	1.8 124	0.1 5	0.2 11	0.0 0	100.0 6,609
31 7/26-8/1	345	Percent Numbers	0.0 0	1.0 74	0.0 0	5.1 349	8.6 606	0.0 0	0.0 2	64.9 4,454	19.0 1,366	0.3 18	0.0 0	0.1 3	1.0 74	0.0 0	100.0 6,946
32 8/2-8/8	345	Percent Numbers	0.0 0	0.0 0	0.0 0	6.1 370	5.8 353	0.0 0	0.3 18	84.3 5,131	2.9 176	0.0 0	0.0 0	0.6 35	0.0 0	0.0 0	100.0 6,083
33-37 8/9-9/12	0	Percent Numbers	0.0 0	0.0 0	0.0 0	6.1 2,634	5.8 2,508	0.0 0	0.3 125	84.3 36,494	2.9 1,254	0.0 0	0.0 0	0.6 251	0.0 0	0.0 0	100.0 43,266
Total	2,046	Percent Numbers	0.0 20	0.3 249	0.0 26	5.4 4,937	14.4 13,183	0.1 101	0.6 589	65.4 59,764	12.6 11,486	0.1 89	0.1 133	0.5 498	0.3 303	0.0 20	100.0 91,399

Table 47.—Estimated age composition of Kitoi Bay Section (252-32) commercial chum salmon catch, 2010.

Week	Sample Size		Age			Total
			0.2	0.3	0.4	
24-25	0	Percent	16.4	78.4	5.2	100.0
6/07-6/20		Numbers	2,233	10,659	711	13,603
26	134	Percent	17.8	76.5	5.7	100.0
6/21-6/27		Numbers	4,608	19,760	1,464	25,832
27	68	Percent	27.9	63.2	8.8	100.0
6/28-7/04		Numbers	879	1,989	278	3,145
31-37	0	Percent	27.9	63.2	8.8	100.0
7/26-9/12		Numbers	797	1,804	252	2,853
Total	202	Percent	18.7	75.3	6.0	100.0
		Numbers	8,518	34,211	2,704	45,433

Table 48.—Spiridon Lake sockeye salmon estimated catch by area and estimated total run by age class, 2010.

Area	Sample Size		Age							Total	
			0.1	0.2	1.2	1.3	1.4	2.1	2.2		2.3
<i>Estimated Spiridon Catch by Area</i>											
Spiridon Bay Special Harvest Area (SBSHA-Telrod Cove: 254-50)											
	1,370	Percent	0.2	0.2	17.4	19.8	0.0	0.7	55.0	6.7	100.0
		Numbers	175	175	17,541	19,921	42	667	55,441	6,763	100,727
SW Afognak Section and NW Kodiak District											
	3,174	Percent <sup>a</sup>	0.2	0.2	17.4	19.8	0.0	0.7	55.0	6.7	100.0
		Numbers <sup>b</sup>	128	128	12,843	14,585	31	489	40,591	4,952	73,746
Total Run											
	4,544	Percent	0.2	0.2	17.4	19.8	0.0	0.7	55.0	6.7	100.0
		Numbers	304	304	30,384	34,507	73	1,156	96,031	11,715	174,473

<sup>a</sup> Age composition based on samples collected at SBSHA.

<sup>b</sup> The estimate of Spiridon contribution in the commercial harvest was quantified via visual Scale Pattern Analysis (SPA) of the Uyak and Uganik-Viekoda-Kupreanof commercial scale samples utilizing the unique scale pattern of the Spiridon age-2.2 fish.

Table 49.—Karluk Lake early-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

Area	Sample Size		Age											Total	
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	2.4	3.1	3.2	3.3		4.2
<i>Estimated Karluk Early-Run Catch by Area</i>															
Uyak Bay (254-10 - 254-40)															
	1,439	Percent	0.0	0.1	21.3	3.4	0.4	19.7	7.2	0.0	0.3	40.9	6.4	0.3	
		Numbers	2	4	1,486	239	26	1,373	500	0	22	2,848	444	22	6,965
Uganik-Viekoda-Kupreanof (253-11 - 253-35)															
	1,487	Percent	0.0	0.0	21.3	3.4	0.0	19.7	7.2	0.0	0.0	40.2	7.1	1.0	
		Numbers	1	0	500	80	0	462	168	0	0	941	166	24	2,343
Inner and Outer Karluk (255-10 - 255-20)															
	536	Percent	0.1	0.0	4.4	3.5	0.3	7.0	2.2	0.0	0.4	6.9	0.7	0.0	
		Numbers	2	1	104	83	7	163	51	1	9	161	16	1	599
<hr/>															
Total Catch	3,462	Percent	0.1	0.1	21.1	4.1	0.3	20.2	7.3	0.0	0.3	39.9	6.3	0.5	
		Numbers	5	5	2,089	402	33	1,999	719	1	31	3,951	626	47	9,908
<hr/>															
<i>Karluk Early-Run Escapement</i>															
	1,155	Percent	0.0	1.1	18.3	2.9	7.2	16.9	6.2	0.0	5.9	39.3	1.2	0.9	
		Numbers	18	754	13,078	2,104	5,174	12,090	4,400	0	4,214	28,114	868	639	71,453
<hr/>															
Total Run	4,617	Percent	0.0	0.9	18.6	3.1	6.4	17.3	6.3	0.0	5.2	39.4	1.8	0.8	
		Numbers	23	759	15,167	2,506	5,207	14,088	5,120	1	4,245	32,065	1,494	686	81,361

Note: Catches were apportioned to Karluk using an age-3. marker.

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

Brood Year	Escap.	Age																	Total Return/ Return Spawner		
		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	
1976	204,037																			0	
1977	185,312																			0	0
1978	248,741														0	10,989		0	0	0	
1979	212,872									0	50,484	45,654	0	641	14,673		0	0	0		
1980	132,396						0	11,635	193,760	4,085	0	103,899	60,395	0	0	37,689		0	0	0	
1981	97,937			0	8,558	18,604	0	3,735	278,831	1,672	0	117,158	38,129	0	272	22,433		0	0	0	
1982	122,705	0	1,244	841	4,650	5,466	0	21,058	197,293	4,169	0	93,560	37,079	0	0	20,728		0	0	320	386,408 3.1
1983	215,620	0	143	564	8,159	7,032	0	14,244	149,947	1,728	0	183,829	33,945	0	337	14,082		0	0	0	414,009 1.9
1984	288,422	0	0	0	4,090	8,393	0	5,830	97,537	738	0	94,258	30,589	0	908	19,634		0	0	0	261,977 0.9
1985	316,688	0	0	24	4,258	2,842	0	3,969	72,857	3,010	0	88,599	57,934	0	1,955	40,331		0	68	0	275,847 0.9
1986	358,756	24	0	337	6,152	2,201	346	6,443	87,691	4,031	94	129,381	131,218	0	479	61,223	1,508	348	0	0	431,475 1.2
1987	354,094	427	0	1,456	958	2,884	0	8,503	114,504	19,876	416	44,051	337,905	0	285	60,244	2,309	2,659	0	0	596,477 1.7
1988	296,510	0	0	0	8,383	6,297	0	9,708	84,322	13,770	0	37,096	202,729	0	320	70,357	231	2,945	0	0	436,159 1.5
1989	349,753	0	1,621	0	8,492	7,624	0	13,979	104,564	5,517	0	167,751	101,296	0	1	69,709	5,362	1,713	0	0	487,630 1.4
1990	196,197	0	181	0	18,149	2,780	0	50,649	79,156	6,586	652	146,751	97,063	0	269	70,863	760	0	0	0	473,858 2.4
1991	243,069	0	1,224	1,062	26,661	12,015	0	83,430	326,422	7,087	0	127,809	81,364	809	107	12,113	2,476	247	0	0	682,826 2.8
1992	217,152	0	2,669	4	9,627	9,642	0	13,159	52,730	14,935	0	42,891	58,375	0	769	36,603	0	79	0	0	241,483 1.1
1993	261,169	2	1,534	350	3,309	18,252	0	7,718	226,377	2,275	0	128,158	35,029	0	1,752	42,563	437	288	0	0	468,044 1.8
1994	260,771	0	1,017	0	8,956	7,266	0	41,179	294,780	1,857	427	182,133	54,148	0	587	33,887	1,781	1,042	0	0	629,059 2.4
1995	238,079	0	218	0	23,268	13,106	0	33,004	231,809	3,463	0	245,934	83,559	0	1,405	52,470	835	492	0	0	689,562 2.9
1996	250,357	0	0	0	2,063	5,959	0	2,217	253,847	2,326	0	215,129	84,029	0	61	42,035	0	1,575	0	0	609,241 2.4
1997	252,859	0	0	1,838	3,930	11,696	0	6,691	233,964	3,274	0	131,879	63,748	0	0	24,066	0	0	0	0	481,086 1.9
1998	252,298	0	574	0	4,258	19,885	0	5,410	531,206	4,517	532	168,024	104,530	715	0	14,578	0	0	0	0	854,229 3.4
1999	392,419	0	898	0	15,382	28,948	0	33,620	432,204	10,393	76	192,314	80,270	0	0	48,461	0	116	0	0	842,682 2.1
2000	291,351	0	939	0	9,611	4,286	0	3,393	223,141	6,013	129	109,252	78,082	0	483	74,506	523	1,561	0	0	511,919 1.8
2001	338,799	0	0	0	3,223	6,573	0	1,102	216,151	5,644	0	274,770	51,394	0	3,144	42,585	425	895	0	0	605,906 1.8
2002	456,842	0	78	0	4,894	11,188	0	7,592	69,773	1,251	99	59,363	12,086	0	698	4,882	0	0	0	0	171,904 0.4
2003	451,856	0	0	286	2,237	9,403	0	1,150	30,926	638	49	15,852	15,878	621	1	1,494	686				79,221 0.2
2004	393,468	760	0	99	196	390	0	946	17,044	4,700	0	5,120	32,065	0							
2005	283,860	0	279	0	6,029	1,257	0	2,506	14,088	4,245											
2006	202,366	0	0	23	15,167	5,207															
2007	294,740	0	759																		
2008	82,191																				
2009	52,798																				
2010	71,453																				
																	10-year average (1994-2003):	547,481	1.9		

Table 51.—Karluk Lake late-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

Area	Sample Size		Age											Total	
			0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.2		4.3
<i>Estimated Karluk Late-Run Catch by Area</i>															
Uyak Bay (254-10 - 254-40)															
	2,102	Percent	0.0	0.1	0.6	0.2	0.3	20.0	2.1	0.4	71.5	3.3	1.6	0.0	
		Numbers	0	9	97	30	45	3,481	362	67	12,416	576	285	0	17,369
Uganik-Viekoda-Kupreanof (253-11 - 253-35)															
	1,805	Percent	0.0	0.0	0.6	0.2	0.0	20.4	2.1	0.0	73.2	2.8	0.8	0.0	
		Numbers	0	0	48	15	0	1,746	182	0	6,274	243	65	0	8,573
Ayakulik-Halibut Bay (256-10 - 256-30)															
	590	Percent	0.0	0.0	1.0	0.4	3.2	48.3	10.5	2.0	85.7	3.0	2.3	0.0	
		Numbers	0	0	85	33	278	4,137	901	174	7,347	254	196	0	13,405
<hr/>															
Total Catch	4,497	Percent	0.0	0.0	0.6	0.2	0.8	23.8	3.7	0.6	66.2	2.7	1.4	0.0	
		Numbers	0	9	230	78	323	9,363	1,445	242	26,037	1,073	546	0	39,347
<hr/>															
<i>Karluk Late-Run Escapement</i>															
	1,255	Percent	0.0	0.0	0.5	0.2	0.6	19.6	2.0	0.2	71.4	1.7	3.6	0.2	
		Numbers	0	72	1,503	466	1,706	54,151	5,639	527	197,509	4,634	9,914	528	276,649
<hr/>															
Total Run	5,752	Percent	0.0	0.0	0.5	0.2	0.6	20.1	2.2	0.2	70.7	1.8	3.3	0.2	
		Numbers	0	81	1,734	544	2,029	63,514	7,084	768	223,546	5,707	10,460	528	315,996

Note: Catches were apportioned to Karluk using an age-3. marker.

Table 52.—Karluk Lake 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	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	4.2	8yo	9yo			
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	85,143		0	0	0		
1980	14,227							0	446	596,053	4,476	0	156,074	177,587	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	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	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	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	471	71,764	651	0	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	462	43,998	0	42	0	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	563	60,240	325	1,770	0	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	79	54,451	1,600	0	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	16,740	0	9	0	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	12,030	950	0	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	591	62,392	1,095	64	0	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	952	13,107	659	111	0	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	513	28,379	0	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	23,523	0	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	551	41,274	821	128	0	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	424	28,253	405	1,668	0	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	83,431	0	934	0	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	12,330	0	421	0	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	12,558	0	284	0	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	65,446	0	302	0	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	2,875	100,967	1,046	4,014	10	0	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	13,374	38,224	0	262	0	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	9	14,881	99	528			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	0	5,707	10,460				352,728	0.6
2004	326,466	0	277	5	301	1,998	510	0	543	15,162	10,973	0	7,084	223,546								
2005	498,102	0	3,532	63	0	423	2,022	0	544	63,514	768											
2006	288,007	0	0	15	0	1,734	2,029															
2007	251,835	0	0	81																		
2008	164,299	0																				
2009	277,280																					
2010	276,649																					
10-year average (1994-2003):																		817,021	1.9			



Table 53.—Ayakulik River (Red L.) sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

Area	Sample Size		Age											Total	
			0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2		3.3
<i>Estimated Ayakulik Catch by Area</i>															
Ayakulik-Halibut Bay (256-10 to 256-30) through 15 July															
	741	Percent	0.1	0.1	21.4	3.8	0.0	1.0	67.7	4.9	0.0	0.0	0.9	0.0	100.0
		Numbers	67	134	19,649	3,477	22	932	62,242	4,519	0	0	851	22	91,916
Ayakulik-Halibut Bay (256-10 to 256-30) post 15 July															
	1,308	Percent	0.2	0.5	14.1	10.2	0.2	0.7	65.6	6.7	0.2	0.2	1.0	0.4	100.0
		Numbers	310	806	23,087	16,811	304	1,173	107,606	11,031	296	325	1,645	631	164,026
<b>Total Catch</b>															
	2,049	Percent	0.1	0.4	16.7	7.9	0.1	0.8	66.4	6.1	0.1	0.1	1.0	0.3	100.0
		Numbers	377	940	42,736	20,288	326	2,105	169,847	15,550	296	325	2,496	654	255,942
<i>Ayakulik Escapement</i>															
Early Run															
	1,350	Percent	0.2	6.4	28.3	25.0	0.1	6.2	24.9	8.0	0.0	0.4	0.3	0.2	100.0
		Numbers	456	12,961	57,075	50,485	299	12,445	50,193	16,235		728	695	362	201,933
Late Run															
	433	Percent	0.0	1.8	17.9	5.4	0.0	2.4	67.5	5.0	0.0	0.0	0.0	0.0	100.0
		Numbers	10	1,083	10,815	3,285	6	1,424	40,754	2,993		6	14	4	60,394
<b>Total</b>															
	1,783	Percent	0.2	5.4	25.9	20.5	0.1	5.3	34.7	7.3	0.0	0.3	0.3	0.1	100.0
		Numbers	466	14,044	67,890	53,770	304	13,869	90,947	19,228	0	734	709	365	262,327
<b>Total Run</b>															
	3,832	Percent	0.2	2.9	21.3	14.3	0.1	3.1	50.3	6.7	0.1	0.2	0.6	0.2	100.0
		Numbers	843	14,984	110,627	74,058	631	15,974	260,794	34,778	296	1,059	3,206	1,019	518,269

Table 54.—Ayakulik River (Red L.) 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	2.4	3.3	3.4		
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					
2005	251,906	0	67	5,423	694	99,530	13,239	0	73,594	260,808	1,059								
2006	87,780	0	0	8,645	839	110,179	16,074												
2007	283,042	0	0	15,958															
2008	162,888	0																	
2009	315,184																		
2010	262,327																		
10-year average (1994-2003):																		443,230	1.5

Table 55.—Frazer Lake (Dog Salmon Creek) sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

Area	Sample Size	Age											Total			
		0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.1	3.2		3.3	3.4	
<i>Estimated Frazer Catch by Area</i>																
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41) adjusted 95% for other stocks.																
	2,046	Percent	0.6	0.0	4.2	31.4	0.4	1.2	34.9	24.3	0.4	0.6	0.8	1.3	0.1	100.0
		Numbers	140	0	966	7,151	96	262	7,955	5,532	85	127	174	288	19	22,794
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70) adjusted 80% for other stocks.																
	0	Percent	0.3	2.0	3.6	25.0	0.3	21.7	24.8	17.4	0.2	3.3	0.4	0.9	0.1	100.0
		Numbers	24	144	261	1,805	19	1,566	1,793	1,253	15	240	28	63	6	7,217
Total Catch	2,046	Percent	0.5	0.5	4.1	29.8	0.4	6.1	32.5	22.6	0.3	1.2	0.7	1.2	0.1	100.0
		Numbers	164	144	1,227	8,957	114	1,828	9,747	6,785	100	367	202	351	25	30,012
<i>Dog Salmon Creek Escapement</i>																
	1,963	Percent	0.0	4.0	3.0	18.7	0.1	42.2	14.8	10.4	0.0	6.1	0.0	0.5	0.1	100.0
		Numbers	61	5,399	4,053	25,207	135	57,060	19,962	14,111	62	8,239	30	652	128	135,100
Total Run	4,009	Percent	0.1	3.4	3.2	20.7	0.2	35.7	18.0	12.7	0.1	5.2	0.1	0.6	0.1	100.0
		Numbers	224	5,543	5,281	34,164	250	58,888	29,710	20,896	162	8,606	233	1,004	153	165,112

Table 56.—Frazer Lake (Dog Salmon Creek) sockeye salmon brood table showing estimated returns from parent escapements by age class.

Brood Year	Escap.	Age																Total Return/Spawner	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			
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	815	0	5,387	0	608,857	3.1	
1996	198,695	0	20,062	0	41,983	22,276	81,667	32,786	26	1,641	50,325	101	0	191	0	201	0	251,259	1.3	
1997	205,264	0	626	0	8,327	1,639	9,831	14,560	231	630	15,665	2,251	0	0	0	0	77	53,837	0.3	
1998	233,755	0	367	0	1,374	24,808	14,710	87,861	16,454	0	57,957	88,617	0	366	0	33,880	0	326,394	1.4	
1999	216,565	0	1,152	0	3,507	136,968	77	481,220	0	0	241,075	1,299	0	496	0	2,090	97	867,981	4.0	
2000	158,044	0	35,476	0	68,494	15,072	219,630	107,018	0	521	58,178	330	0	547	233	289	521	506,309	3.2	
2001	154,349	0	814	0	21,700	557	5,639	3,657	23,842	131	11,476	29,633	293	776	718	81,003	1,501	181,739	1.2	
2002	85,317	0	335	0	5,659	14,124	5,844	27,492	11,173	0	44,559	35,868	0	415	0	29,071	153	174,694	2.0	
2003	201,679	0	3,365	0	8,565	58,042	16,372	170,743	2,948	0	81,058	31,271	0	162	0	1,004		373,528	1.9	
2004	120,664	0	14,757	0	148,241	16,861	90,953	197,458	0	250	20,896	233	0							
2005	136,949	0	1,993	0	34,005	9,131	34,164	29,710	8,606											
2006	89,516	0	113	224	5,281	58,888														
2007	120,185	0	5,543																	
2008	105,363																			
2009	101,845																			
2010	94,680																			
																		10-Year Average (1994-2003):	364,991	2.0

Table 57.—South Olga Lakes (Upper Station) early-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

Area	Sample Size	Age									Total	
		0.2	0.3	1.1	1.2	1.3	2.1	2.2	2.3	3.1		
<i>Estimated Upper Station Early-Run Catch by Area</i>												
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41) adjusted 95% for other stocks.												
	1,000	Percent	0.2	0.0	0.0	3.4	18.0	0.3	58.7	19.4	0.0	100.0
		Numbers	19	0	0	312	1,654	25	5,394	1,780	0	9,183
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70) adjusted 80% for other stocks.												
	0	Percent	0.2	0.0	0.0	3.3	11.2	2.8	70.4	12.0	0.1	100.0
		Numbers	6	0	1	131	438	109	2,762	471	3	3,922
<b>Total Catch</b>												
	1,000	Percent	0.2	0.0	0.0	3.4	16.0	1.0	62.2	17.2	0.0	100.0
		Numbers	25	0	1	443	2,091	134	8,156	2,251	3	13,105
<i>Upper Station Early Run Escapement</i>												
	1,288	Percent	0.1	0.0	0.1	3.3	4.3	5.3	82.1	4.7	0.1	100.0
		Numbers	46	0	25	1,372	1,813	2,233	34,550	1,959	61	42,060
<b>Total Run</b>												
	2,288	Percent	0.1	0.0	0.0	3.3	7.1	4.3	77.4	7.6	0.1	100.0
		Numbers	71	0	26	1,815	3,904	2,367	42,706	4,211	64	55,164

Table 58.—South Olga Lakes (Upper Station) early-run sockeye salmon brood table showing estimated returns from parent escapements by age class.

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	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					
2005	60,349	0	233	281	0	5,884	3,446	0	3,904	42,706	64								
2006	24,997	0	0	269	0	1,815	2,367												
2007	31,895	0	71	26															
2008	38,800	0																	
2009	34,585																		
2010	42,060																		
10-Year Average (1994-2003):																	114,343	2.5	

Table 59.—South Olga Lakes (Upper Station) late-run sockeye salmon estimated catch by area, escapement, and estimated total run by age class, 2010.

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		
<i>Estimated Upper Station Late-Run Catch by Area</i>													
Olga, Moser, and Alitak Bay gillnet sections (257-40, -43, -41) adjusted 95% for other stocks.													
	1,046	Percent	0.0	0.2	0.0	6.2	6.8	0.5	79.2	6.6	0.0	0.5	100.0
		Numbers	0	97	0	3,412	3,719	272	43,428	3,600	0	299	54,827
Cape Alitak and Humpy-Deadman sections (257-10, -20, -50, -60, -70) adjusted 80% for other stocks.													
	158	Percent	0.0	0.1	0.3	5.4	4.2	3.0	82.5	3.9	0.1	0.7	100.0
		Numbers	2	10	23	458	354	252	7,004	328	4	56	8,492
<hr/>													
Total Catch													
	1,204		0.0	0.2	0.0	6.1	6.4	0.8	79.6	6.2	0.0	0.6	100.0
			2	106	23	3,870	4,073	525	50,432	3,928	4	355	63,319
<hr/>													
<i>Upper Station Late Run Escapement</i>													
	1,361	Percent	0.0	0.1	0.5	4.6	1.5	5.4	85.7	1.2	0.1	0.8	100.0
		Numbers	57	71	764	6,457	2,183	7,683	121,026	1,649	148	1,101	141,139
<hr/>													
Total Run													
	2,565	Percent	0.0	0.1	0.4	5.1	3.1	4.0	83.9	2.7	0.1	0.7	100.0
		Numbers	59	177	787	10,327	6,256	8,207	171,458	5,577	153	1,457	204,458

Table 60.—South Olga Lakes (Upper Station) late-run 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	3.3	2.4	Return	R/S
1975	74,456	901	3,021	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	24,845	99,160	7,094	0	29,761	255,957	181	0	5,577	1,457				
2005	156,401	139	2,828	2,423	3,067	20,933	20,082	0	6,256	171,458	153							
2006	153,153	0	931	1,561	177	10,327	8,207											
2007	149,709	218	59	787														
2008	184,856	0																
2009	161,736																	
2010	141,139																	
10-Year Average (1994-2003):																	321,058	1.7



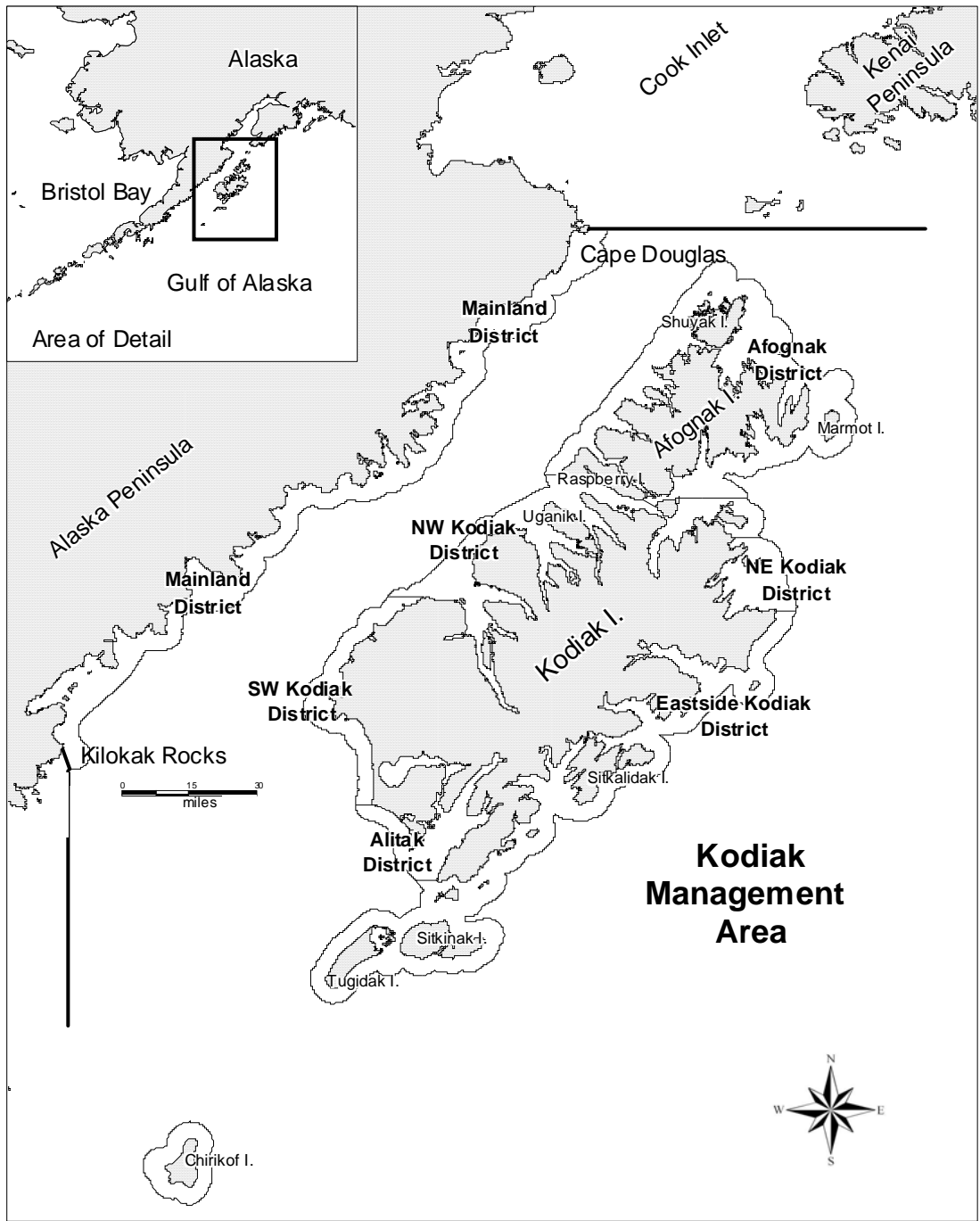


Figure 1.–Kodiak Management Area commercial salmon fishing districts.

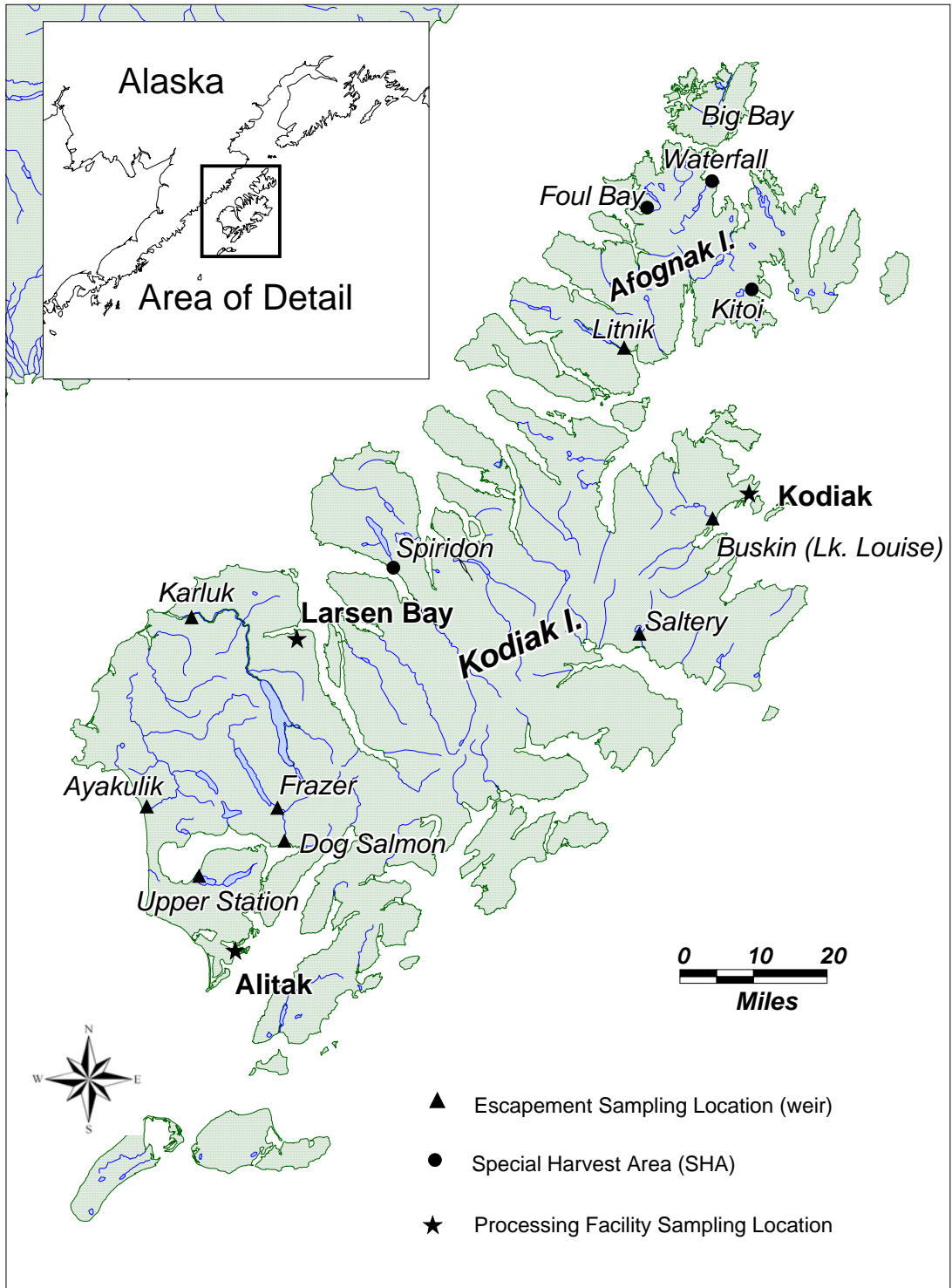


Figure 2.—Salmon escapement, special harvest areas, and processing facility sampling locations in the Kodiak Management Area, 2010.

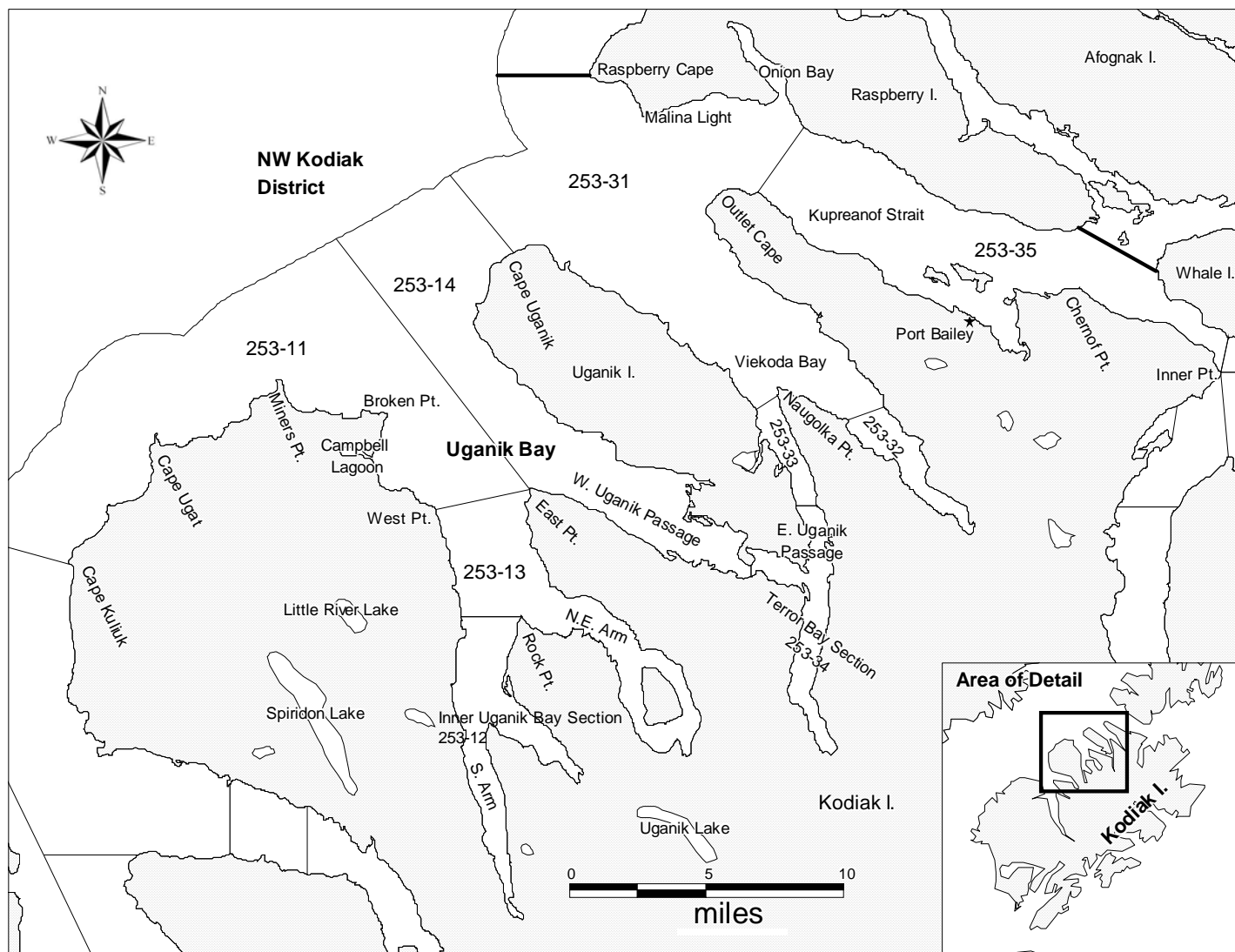


Figure 3.—Kodiak Management Area commercial salmon statistical areas sampled to represent Uganik/Viekoda/Kupreanof harvest within the Northwest Kodiak District.

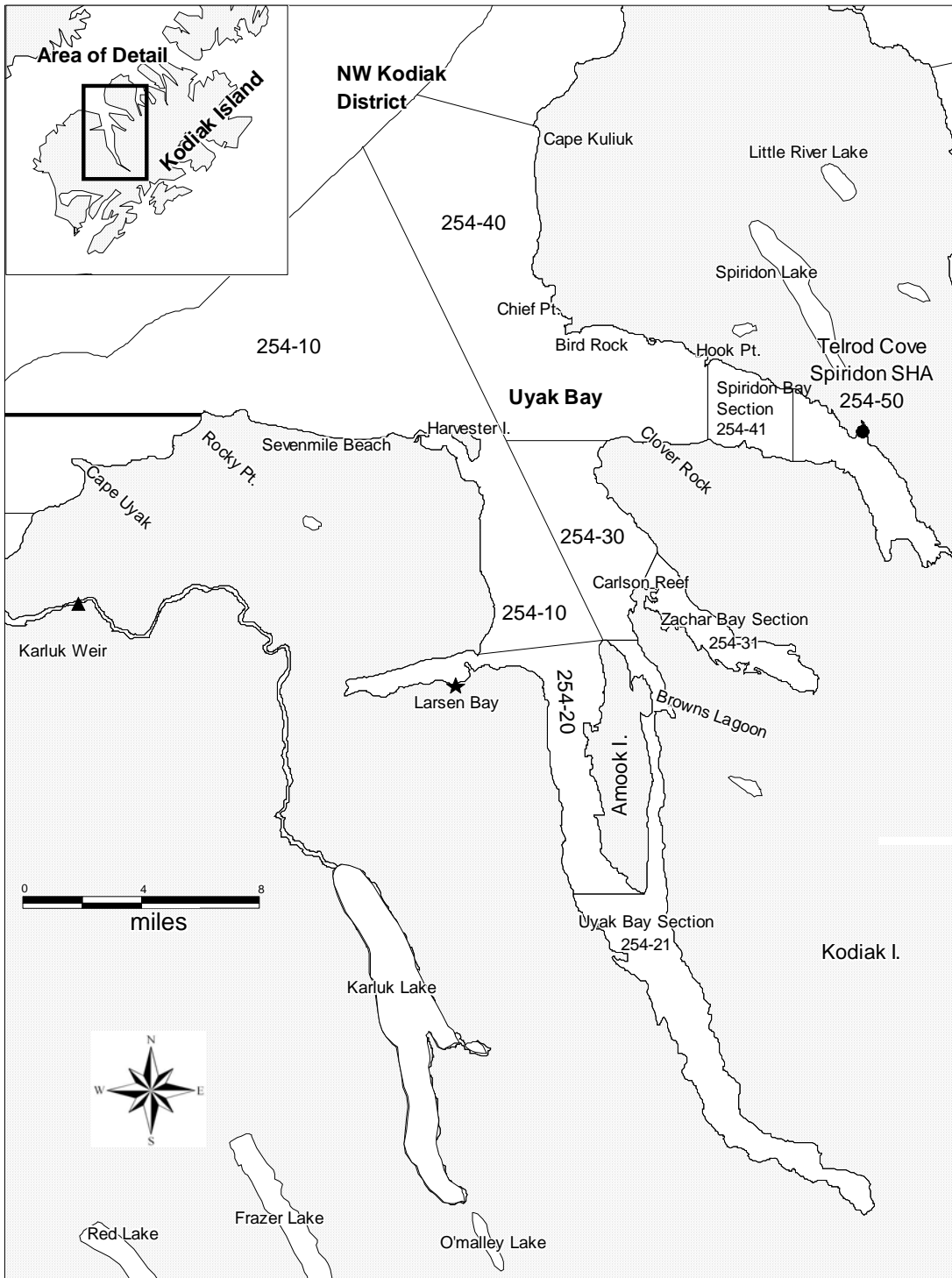


Figure 4.–Kodiak Management Area commercial salmon statistical areas sampled to represent Uyak Bay harvest within the Northwest Kodiak District.

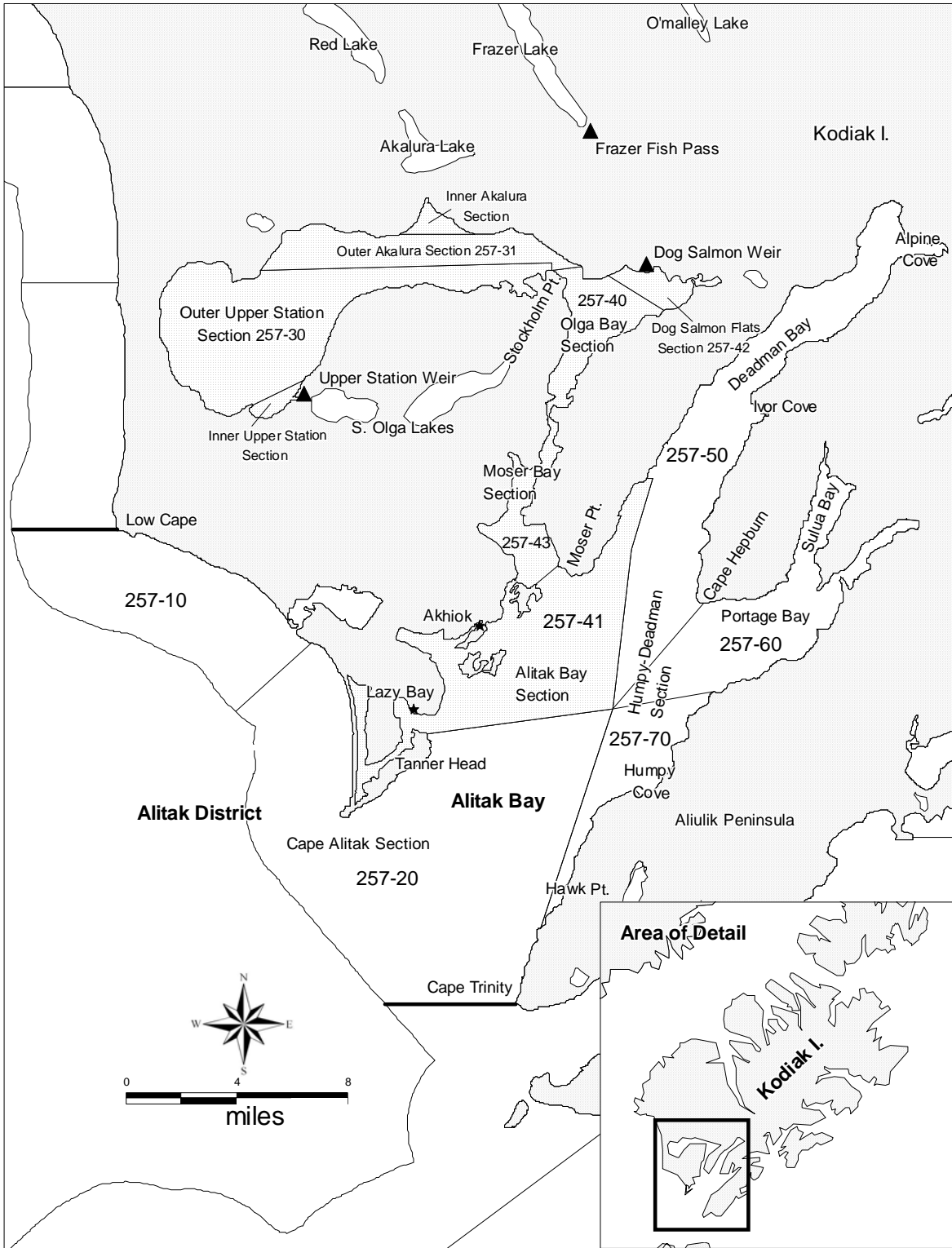


Figure 5.—Kodiak Management Area commercial salmon statistical areas sampled to represent Moser/Olga gillnet (dotted) and Alitak seine area harvest.

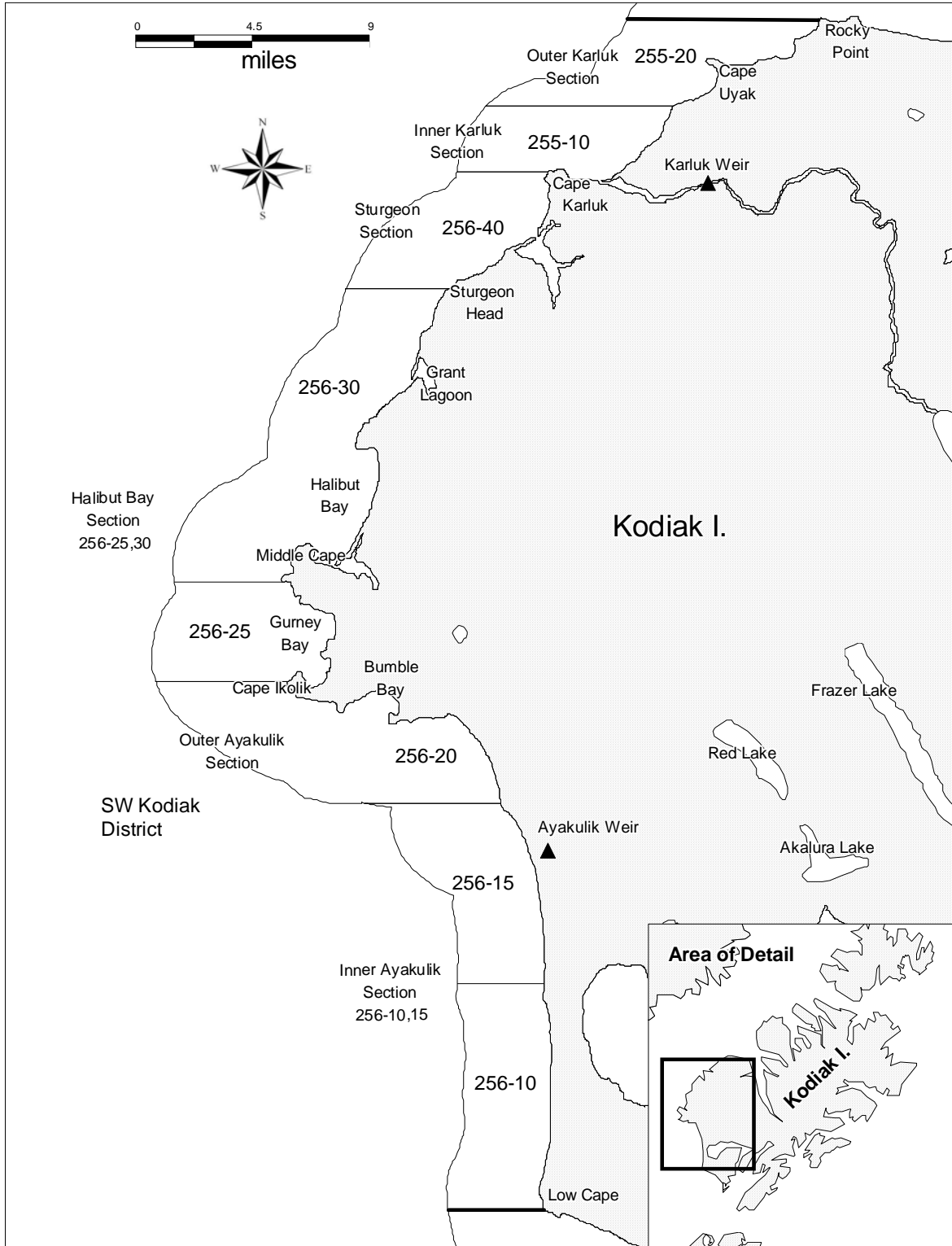


Figure 6.—Kodiak Management Area commercial salmon statistical areas sampled to represent the Southwest Kodiak District (Karluk/Sturgeon, Halibut/Gurney bays, and Ayakulik areas) harvests.

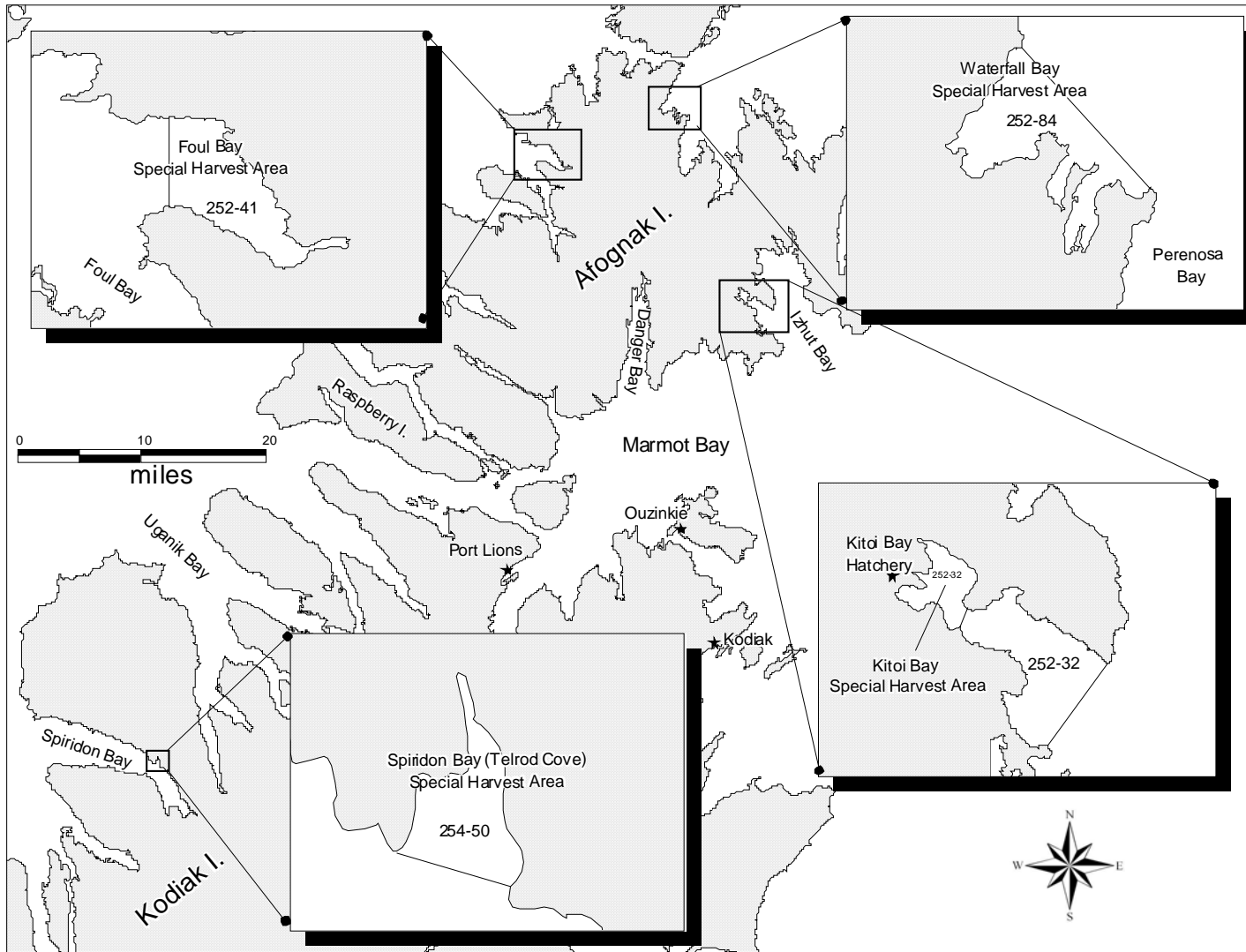


Figure 7.—Kodiak Management Area commercial salmon statistical areas sampled to represent Special Harvest Areas (SHA) at Waterfall, Foul, Kitoi, and Spiridon bays.

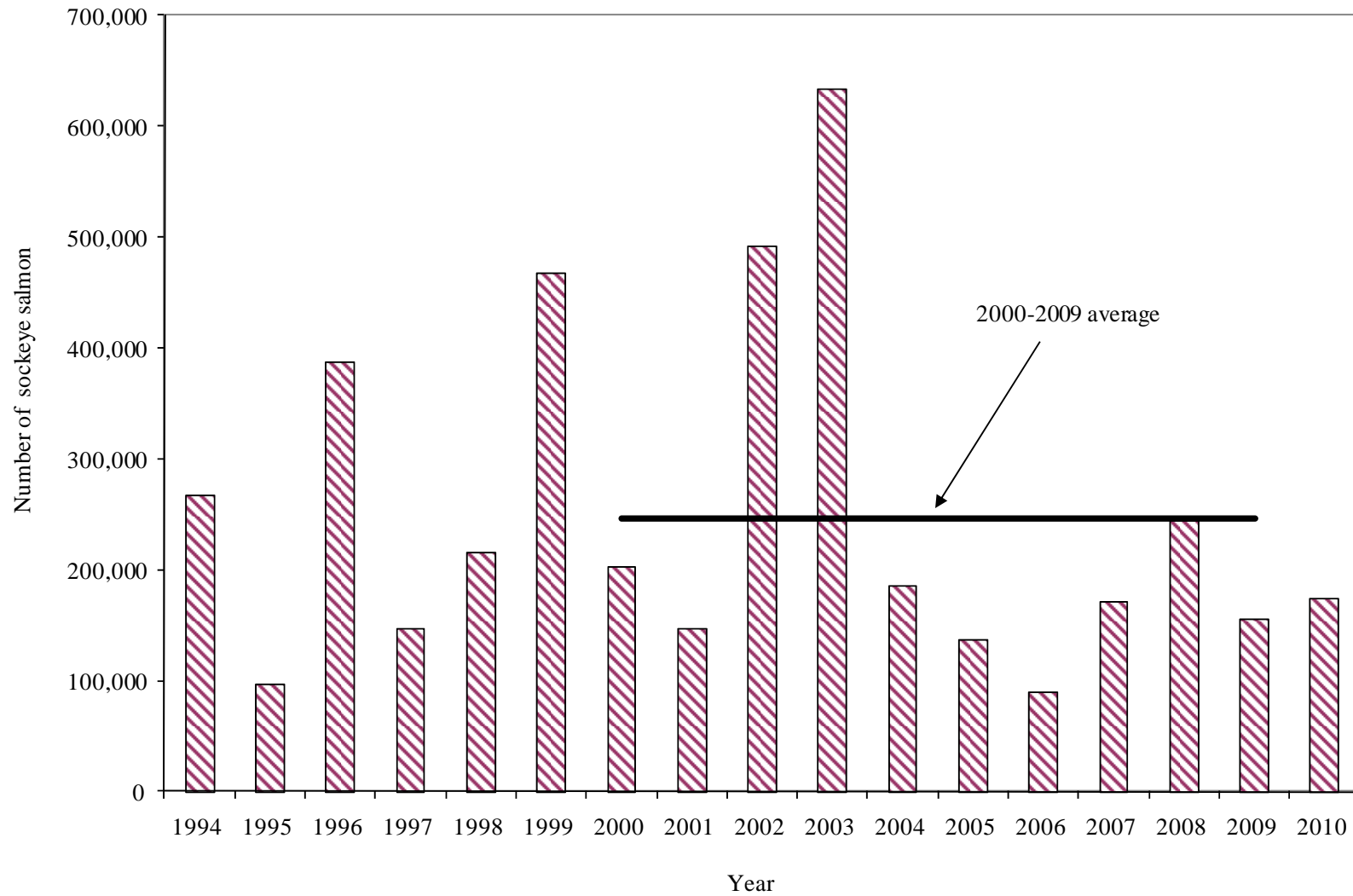


Figure 8.—Spiridon Lake (SBSHA) sockeye salmon total run estimates, 1994–2009, and the recent 10-year average estimated run (2000–2009).



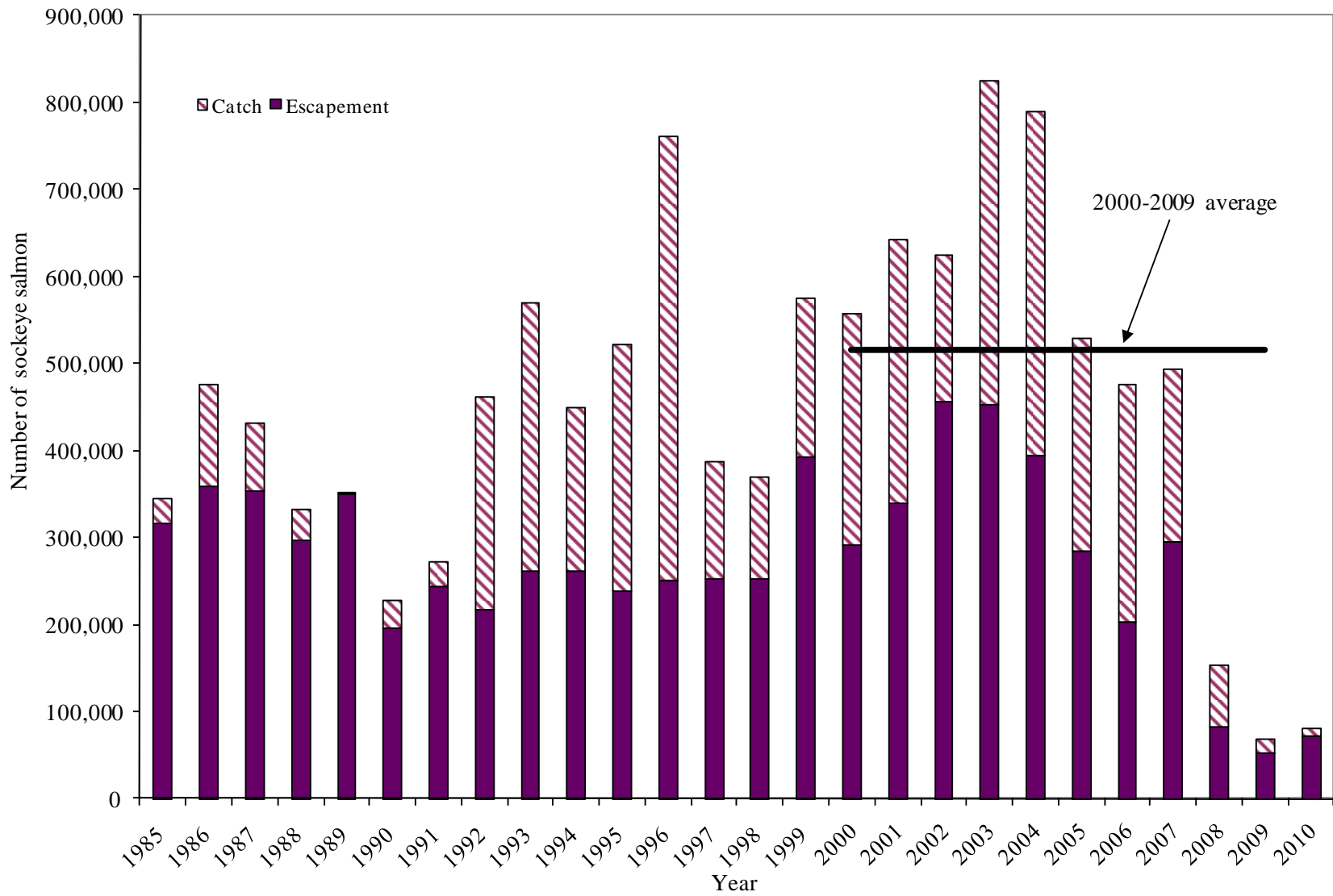


Figure 9.—Karluk Lake early-run sockeye salmon escapement and catch estimates, 1985–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

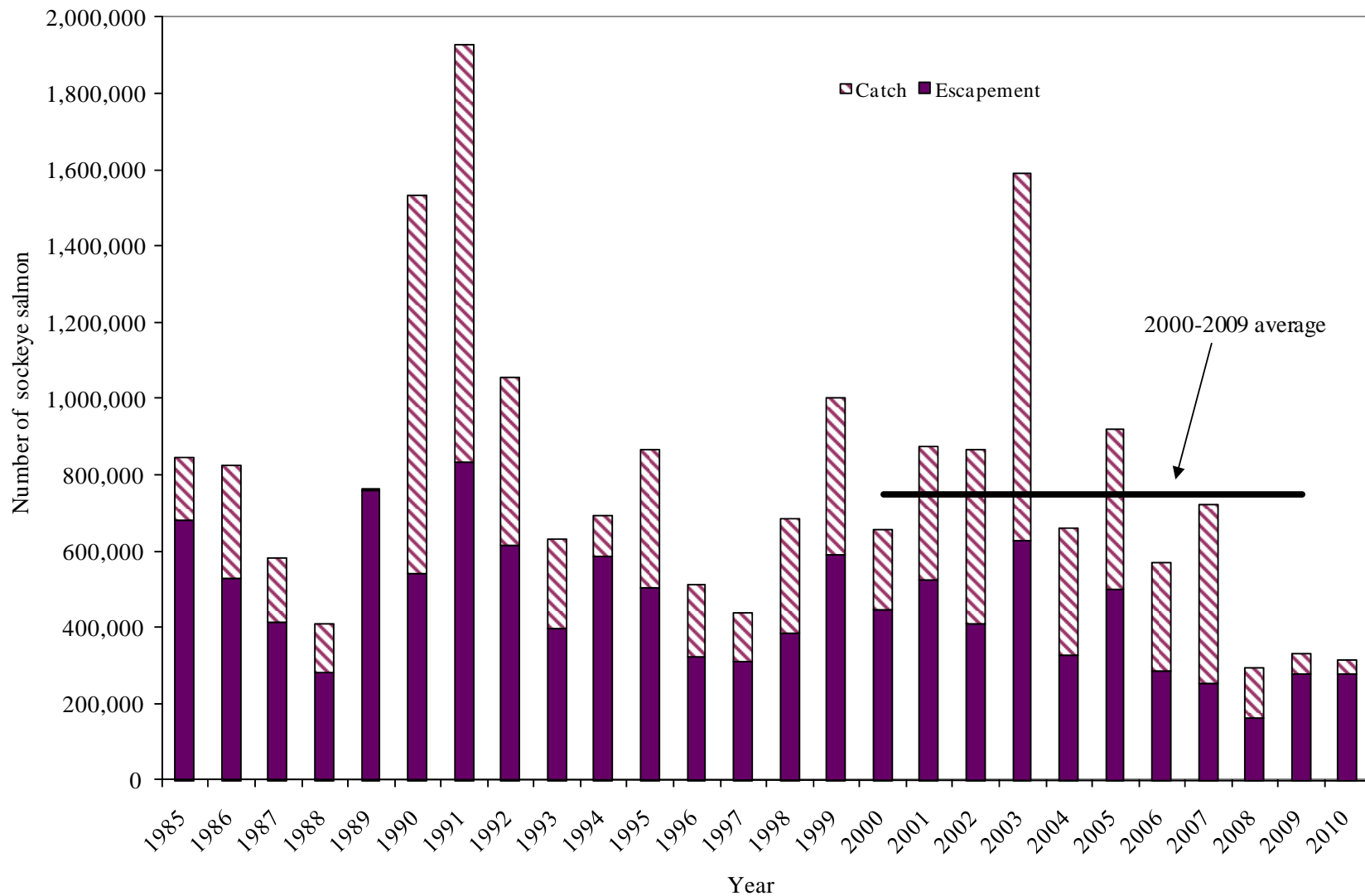


Figure 10.—Karluk Lake late-run sockeye salmon escapement and catch estimates, 1985–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

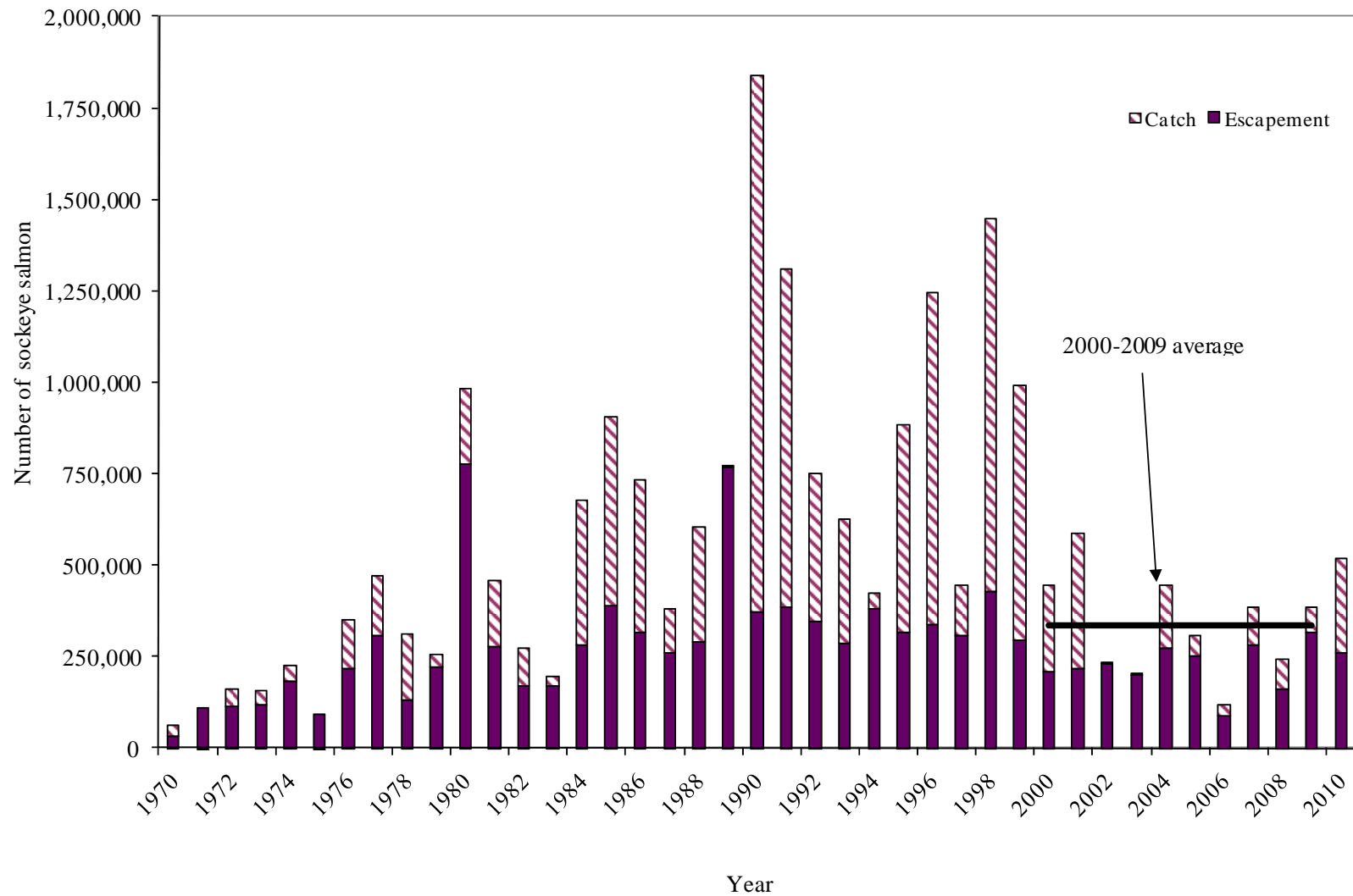


Figure 11.—Ayakulik River (Red Lake) sockeye salmon escapement and catch estimates, 1970–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

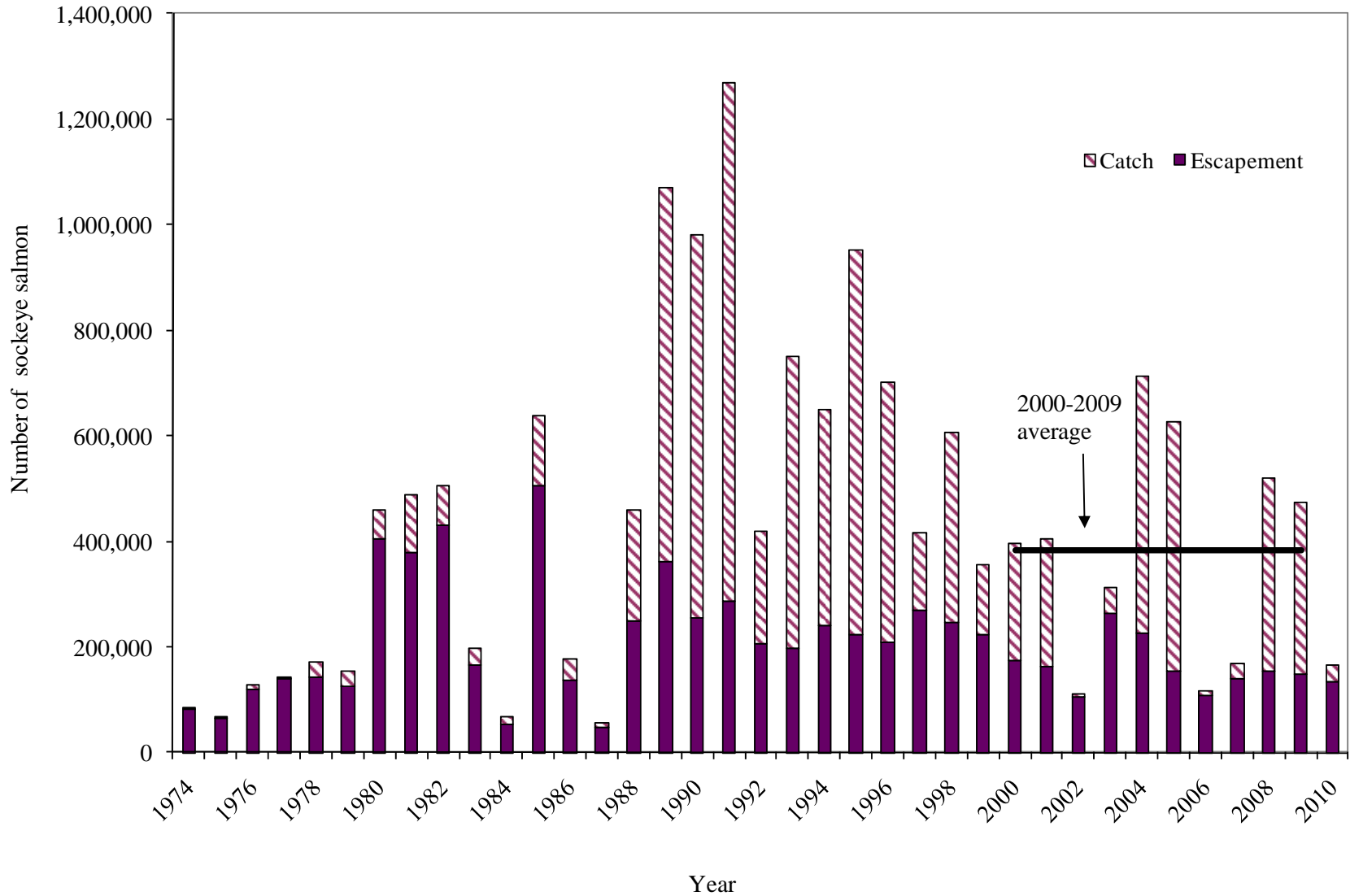


Figure 12.—Frazer Lake sockeye salmon escapement and catch estimates, 1974–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

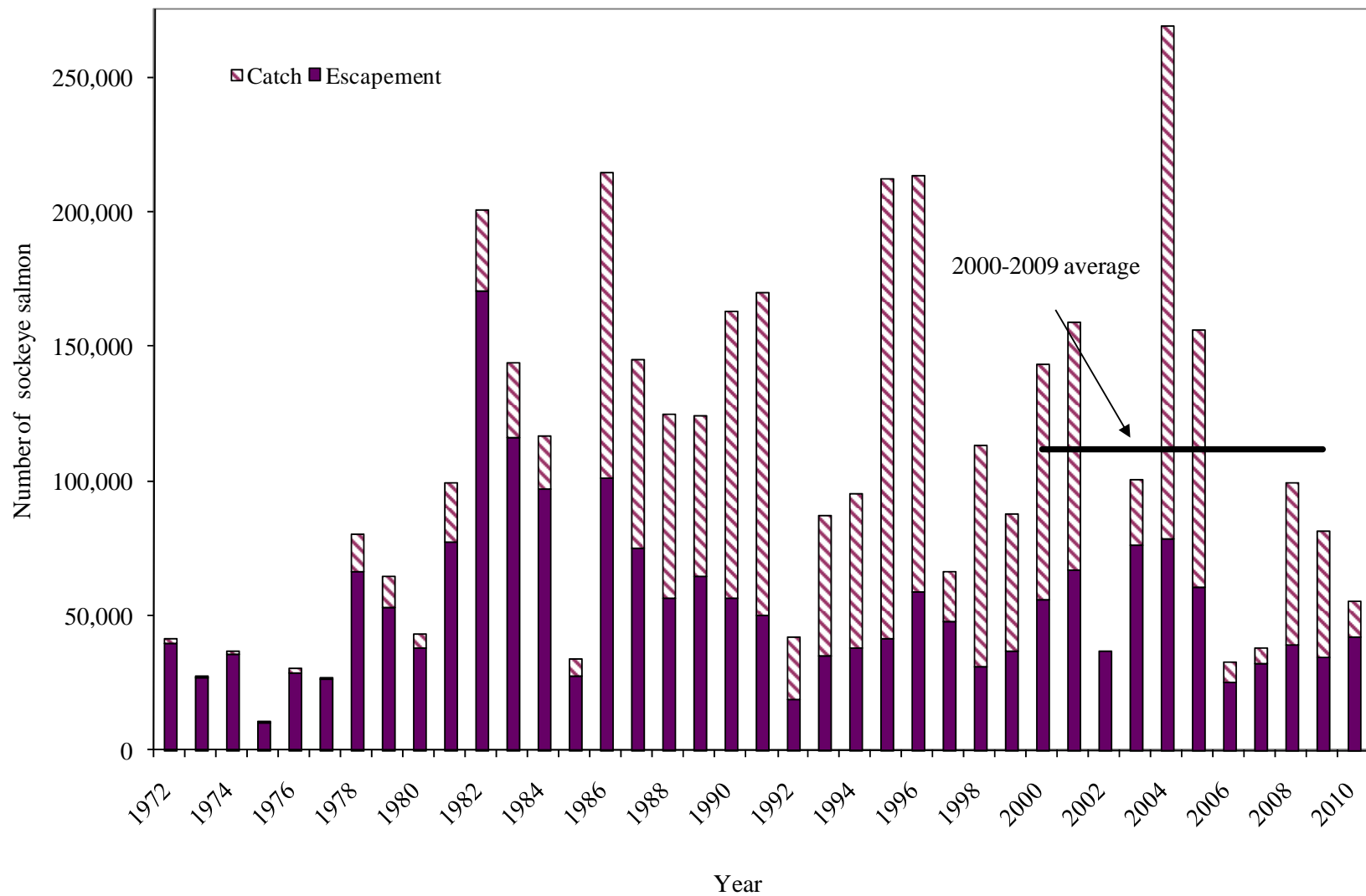


Figure 13.—South Olga Lakes (Upper Station) early-run sockeye salmon escapement and catch estimates, 1972–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

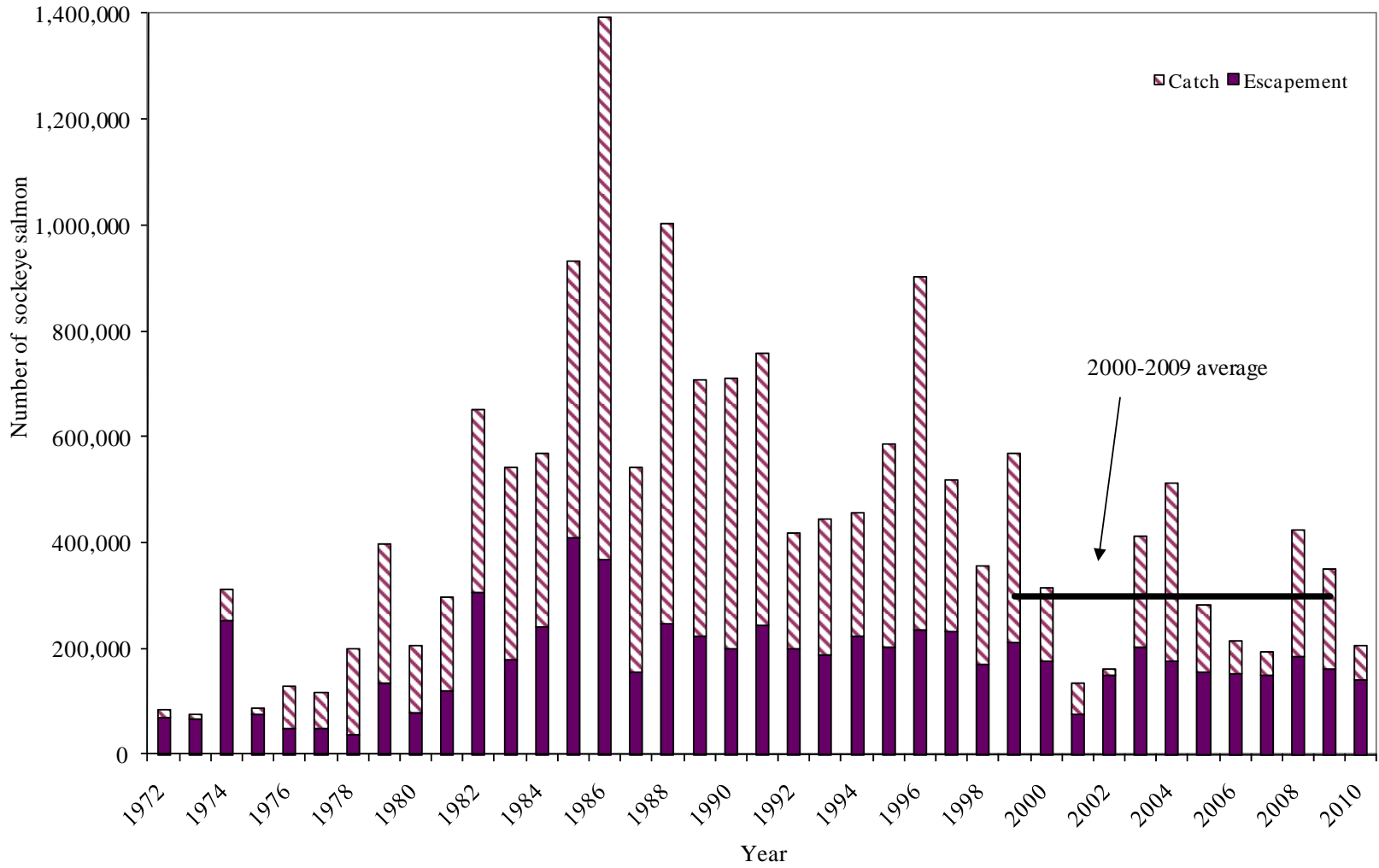


Figure 14.—South Olga Lakes (Upper Station) late-run sockeye salmon escapement and catch estimates, 1972–2010, and the recent 10-year average estimated total run (average catch and escapement combined, 2000–2009).

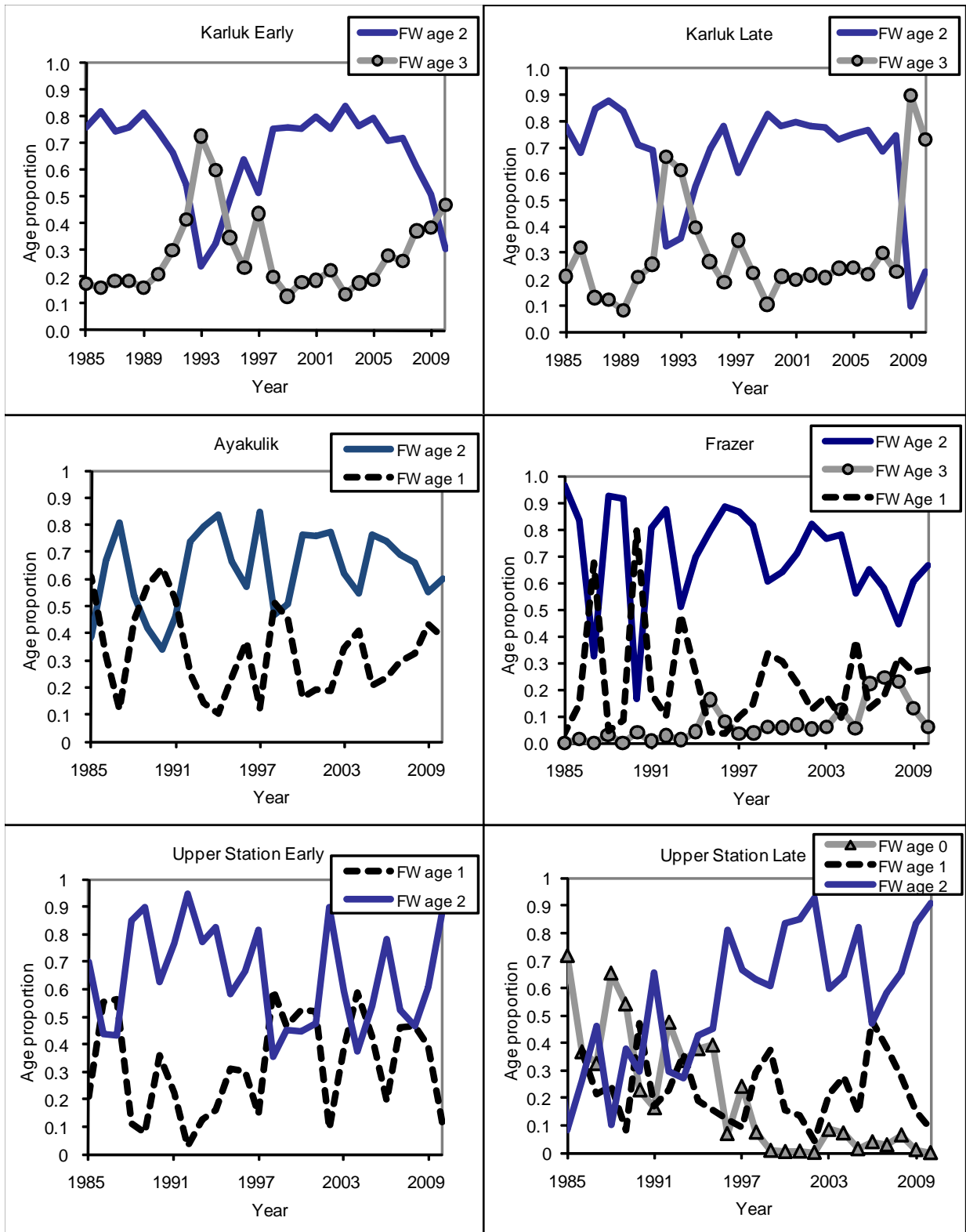


Figure 15.—Historical trends in the proportion of freshwater ages comprising the major Kodiak Island sockeye salmon annual runs 1985 to 2010.

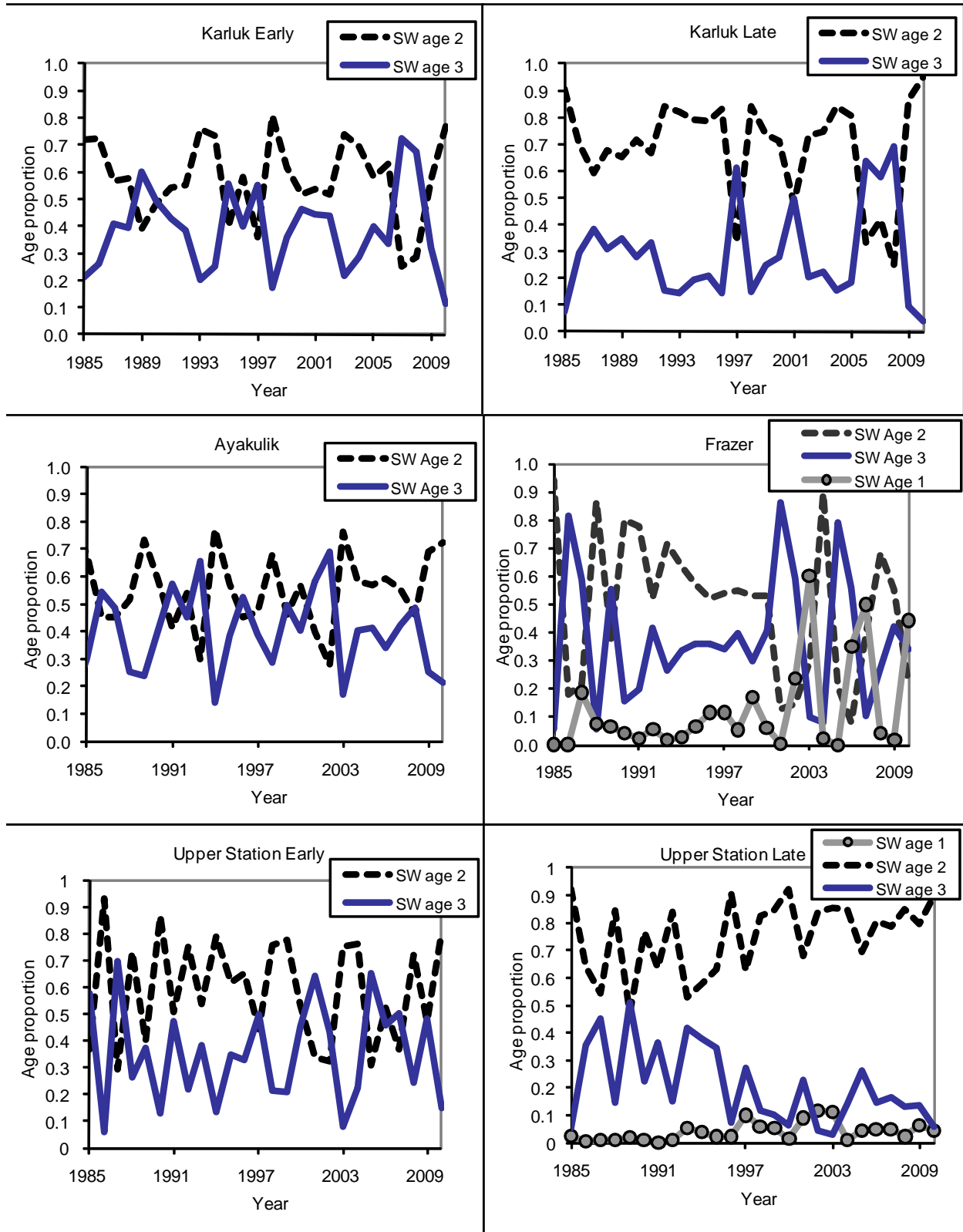


Figure 16.—Historical trends in the proportion of saltwater ages comprising the major Kodiak Island sockeye salmon annual runs 1985 to 2010.



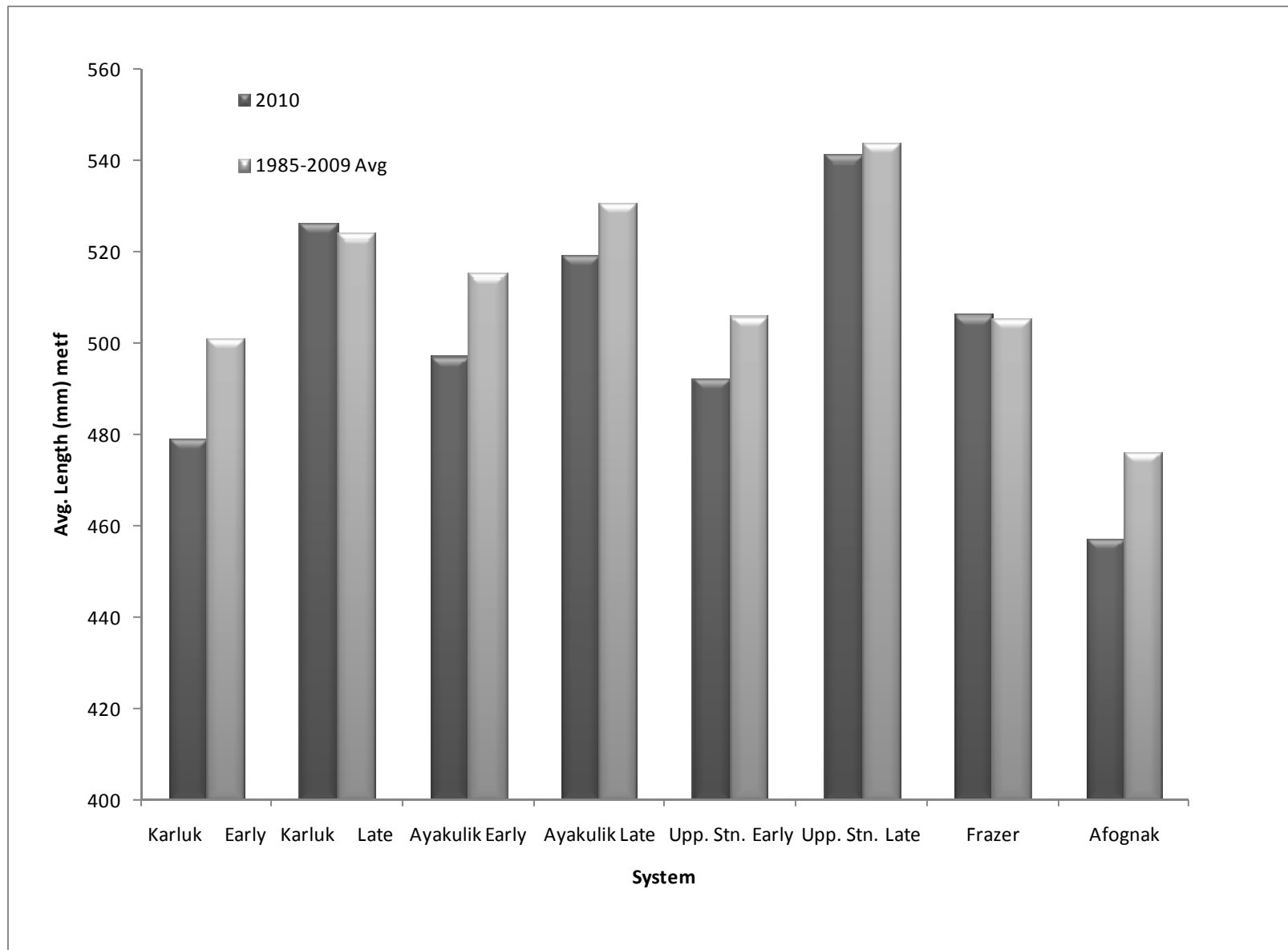


Figure 17.—Average size age-2.2 sockeye salmon by system, 2010 and historical average 1985 to 2009.