

**Fishery Management Report No. 09-53**

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**The North Alaska Peninsula Salmon Report to the  
Alaska Board of Fisheries, 2010**

by

**Robert L. Murphy**

and

**Trent G. Hartill**

December 2009

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Measures (fisheries)</b>	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid eye to fork	MEF
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	mid eye to tail fork	METF
hectare	ha	at	@	standard length	SL
kilogram	kg	compass directions:		total length	TL
kilometer	km	east	E		
liter	L	north	N	<b>Mathematics, statistics</b>	
meter	m	south	S	<i>all standard mathematical signs, symbols and abbreviations</i>	
milliliter	mL	west	W	alternate hypothesis	H <sub>A</sub>
millimeter	mm	copyright	©	base of natural logarithm	<i>e</i>
		corporate suffixes:		catch per unit effort	CPUE
<b>Weights and measures (English)</b>		Company	Co.	coefficient of variation	CV
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	common test statistics	(F, t, $\chi^2$ , etc.)
foot	ft	Incorporated	Inc.	confidence interval	CI
gallon	gal	Limited	Ltd.	correlation coefficient (multiple)	R
inch	in	District of Columbia	D.C.	correlation coefficient (simple)	r
mile	mi	et alii (and others)	et al.	covariance	cov
nautical mile	nmi	et cetera (and so forth)	etc.	degree (angular)	°
ounce	oz	exempli gratia (for example)	e.g.	degrees of freedom	df
pound	lb	Federal Information Code	FIC	expected value	<i>E</i>
quart	qt	id est (that is)	i.e.	greater than	>
yard	yd	latitude or longitude	lat. or long.	greater than or equal to	≥
		monetary symbols (U.S.)	\$, ¢	harvest per unit effort	HPUE
<b>Time and temperature</b>		months (tables and figures): first three letters	Jan, ..., Dec	less than	<
day	d	registered trademark	®	less than or equal to	≤
degrees Celsius	°C	trademark	™	logarithm (natural)	ln
degrees Fahrenheit	°F	United States (adjective)	U.S.	logarithm (base 10)	log
degrees kelvin	K	United States of America (noun)	USA	logarithm (specify base)	log <sub>2</sub> , etc.
hour	h	U.S.C.	United States Code	minute (angular)	'
minute	min	U.S. state	use two-letter abbreviations (e.g., AK, WA)	not significant	NS
second	s			null hypothesis	H <sub>0</sub>
<b>Physics and chemistry</b>				percent	%
all atomic symbols				probability	P
alternating current	AC			probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
ampere	A			probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
calorie	cal			second (angular)	"
direct current	DC			standard deviation	SD
hertz	Hz			standard error	SE
horsepower	hp			variance	
hydrogen ion activity (negative log of)	pH			population	Var
parts per million	ppm			sample	var
parts per thousand	ppt, ‰				
volts	V				
watts	W				

***FISHERY MANAGEMENT REPORT NO. 09-53***

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ALASKA BOARD OF FISHERIES, 2010**

by  
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December 2009

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*This document should be cited as:*

*Murphy, R. L and T. G. Hartill. 2009. The North Alaska Peninsula salmon report to the Alaska Board of Fisheries, 2010. Alaska Department of Fish and Game, Division of Commercial Fisheries, Fishery Management Report No. 09-53, Anchorage.*

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## ABSTRACT

North Alaska Peninsula includes Bering Sea waters of the Alaska Peninsula Management Area (Area M) within three miles of the shore from Cape Sarichef on Unimak Island to Cape Menshikof, which borders Bristol Bay Management Area (Area T). North Alaska Peninsula is divided into two districts: Northwestern and Northern districts. Chinook salmon *Oncorhynchus tshawytscha*, sockeye salmon *O. nerka*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and chum salmon *O. keta* are harvested in commercial fisheries in the waters of North Alaska Peninsula. The majority of the sockeye salmon harvest occurs in Northern District from June through September from Nelson Lagoon to Port Heiden. This area includes Nelson Lagoon, Bear River, Three Hills, Ilnik, and Outer Port Heiden sections, and is predominately fished by drift gillnet gear, although some areas are open to purse seine and set gillnet gear. The 2009 commercial salmon harvest in North Alaska Peninsula waters was 3,189 Chinook, 2,426,601 sockeye, 67,609 coho, 275,083 pink, and 106,014 chum salmon, and aside from Chinook salmon, all harvests were above recent harvest averages.

North Alaska Peninsula sockeye salmon escapement in 2009 was 934,400 fish: 157,000 fish were estimated in Nelson River; 349,500 fish in Bear River; 36,000 fish in Sandy River; 66,000 fish in the Ilnik River system; 88,200 fish in river systems draining into Port Heiden; and 133,600 fish in river systems draining into Cinder River Lagoon. All of these systems met or exceeded their escapement goals. Bear River is the largest sockeye salmon producing system in Area M. Bear River has two sockeye salmon runs; the early run begins in early June and ends in the latter part of July, while the late run begins in late July and ends in September. Timing of Nelson, Sandy, Ilnik, Meshik, and Cinder River sockeye salmon runs are similar to the run timing of Bear River early run.

Key words: North Alaska Peninsula, Area M, Chinook salmon, *Oncorhynchus tshawytscha*, sockeye salmon, *Oncorhynchus nerka*, coho salmon, *Oncorhynchus kisutch*, pink salmon, *Oncorhynchus gorbuscha*, chum salmon, *Oncorhynchus keta*, commercial, escapement, fishery, harvest, Bear River, Sandy River, Nelson River, Ilnik River, Meshik River, Cinder River, Alaska Board of Fisheries.

## INTRODUCTION

North Alaska Peninsula, which is part of Alaska Peninsula Management Area (Area M), includes the state coastal waters of the Bering Sea from Cape Sarichef on Unimak Island northeast to Cape Menshikof, a distance of 350 miles, and borders Bristol Bay Management Area (Area T; Figure 1). This report describes those commercial salmon fisheries that are located on North Alaska Peninsula which is subdivided into two districts: 1) Northwestern District, which encompasses the coastal waters from Cape Sarichef to Moffet Point, and 2) Northern District, which ranges from Moffet Point to Cape Menshikof (Figure 1). Chinook salmon *Oncorhynchus tshawytscha*, sockeye salmon *O. nerka*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and chum salmon *O. keta* are all harvested in commercial fisheries in the waters of North Alaska Peninsula; however, sockeye salmon are the most economically valuable.

Legal commercial salmon fishing gear in Northwestern and Northern districts includes purse seine (also hand purse seine) and drift and set gillnet gear (5 AAC 09.330). The majority of the salmon harvest occurs in Northern District, specifically the sections between Nelson Lagoon and Outer Port Heiden sections (Figure 2). Within the district, many gear restrictions apply: Nelson Lagoon Section is open to set gillnet and drift gillnet gear only, Bear River Section to seine and drift gillnet gear, Three Hills Section to drift gillnet gear only, Ilnik Section to set gillnet and drift gillnet gear, and Outer Port Heiden Section is open only to drift gillnet gear (5 AAC 09.330).

Commercial salmon fishing seasons open in most of Northwestern District on June 1 and in parts of Northern District on May 1 (5 AAC 09.310). Generally, the sections of Northern District have progressively later opening dates from west to east (Figure 3). Scheduled weekly fishing periods occur in most areas and are usually either 6:00 AM Monday to 6:00 PM Wednesday (2.5 days/week) or 6:00 AM Monday to 6:00 PM Thursday (3.5 days/week; Table 1). Although

North Alaska Peninsula has scheduled weekly fishing periods, those periods may be modified through emergency order authority based on escapement into local salmon systems.

Sockeye salmon are the primary species harvested on North Alaska Peninsula. In the area from Nelson Lagoon to Strogonof Point, from June 1 through September 15, management emphasis is on four sockeye salmon systems: Nelson, Bear, Sandy, and Ilnik rivers. Of these, Nelson and Bear rivers are the dominant systems with the largest sockeye salmon runs. Alaska Department of Fish and Game (ADF&G) weir camps are located at these four systems and provide daily escapement counts that are used to manage commercial fisheries.

## **ESCAPEMENT BY SPECIES**

There are at least 90 salmon streams on North Alaska Peninsula that are surveyed annually with fixed-wing aircraft. The 2009 North Alaska Peninsula salmon escapements are summarized in Appendix A1 (Chinook, sockeye, pink, and chum salmon numbers are estimated total escapements, while coho salmon numbers are peak aerial counts).

### **CHINOOK**

Chinook salmon runs occur almost exclusively within streams of Northern District. Northwestern District has only three documented Chinook salmon streams, while Chinook salmon are found in 18 streams in the Northern District (McCullough 2001). The bulk of known Chinook salmon escapement occurs in Nelson, Meshik, and Cinder River systems.

Nelson River is the only North Alaska Peninsula system with a Chinook salmon biological escapement goal (BEG<sup>1</sup>), which is 2,400 to 4,400 fish (Honnold et al. 2007). The 2009 Nelson River Chinook salmon escapement of 2,048 fish did not meet the escapement goal. The 2009 Chinook salmon escapement for the entire North Alaska Peninsula was 12,807 fish (Table 2; Appendix A1). This escapement was lower than the 1990-2009 average (19,350 fish), the 2000-2009 average (21,611 fish), and the 2005-2009 average (26,471 fish; Figure 4).

### **SOCKEYE**

There are 55 sockeye salmon streams on North Alaska Peninsula, 26 of which are in Northwestern District and 29 in Northern District (McCullough 2001). In 2009, sockeye salmon were observed in 46 streams. The 2009 North Alaska Peninsula sockeye salmon escapement was 934,400 fish, of which, 90% (845,400 fish) were documented in Northern District streams (Table 2 and 3; Appendix A1). Major sockeye salmon systems with weirs met or exceeded their escapement goals in 2009 (Table 4). Average North Alaska Peninsula sockeye salmon escapement from 1990-2009 was 1,058,811 fish, while the 2000-2009 average escapement was 1,109,402 fish (Table 2), and the 2005-2009 average escapement was 1,146,336 fish (Figure 5). The majority of the sockeye salmon escapement occurred in Northern District's four systems in which escapement is enumerated with weirs (Bear, Nelson, Sandy, and Ilnik rivers). Escapements during 2007-2009 were within escapement goal range of 97,000-219,000 fish (SEG; Honnold et al. 2007; Table 4). Ilnik River met its escapement goal of 40,000-60,000 fish (Honnold et al. 2007; Table 4) in 2007, but slightly exceeded the goal in 2008 (93,000 fish) and 2009 (66,000 fish; Table 4). In 2007 and 2009, Sandy River met its escapement goal of 34,000-74,000 fish (Honnold et al. 2007; Table 4), but was slightly

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<sup>1</sup> Biological escapement goals are established for salmon stocks where reliable escapement levels and total annual returns (catch plus escapement) can be determined.



below it in 2008 with an escapement of 32,200 fish (Table 4). Since 2007 Bear River late-run has met or exceeded its escapement goal of 117,000-195,000 fish (Honnold et al. 2007; Table 4). In both 2007 and 2009, Bear River early-run met its escapement goal of 176,000-293,000 fish (Honnold et al. 2007; Table 4). However, in 2008 the late-run failed to meet the goal.

Northwestern District also has two sockeye salmon escapement goals: Christianson Lagoon and Swanson Lagoon. In 2009, Christianson Lagoon had an escapement of 48,000 sockeye salmon meeting its goal of 25,000-50,000 fish (Honnold et al. 2007). However, Swanson Lagoon's escapement of 1,000 sockeye salmon did not meet its escapement goal of 6,000 to 16,000 fish (Honnold et al. 2007).

In each of the last five years, substantial sockeye salmon escapements (>100,000 fish) have occurred in Cinder River Section (Table 3 and 5). The 2009 Cinder River sockeye salmon escapement of 102,600 fish (Table 5; Appendix A1) was above the escapement goal of 12,000-48,000 sockeye salmon (Honnold et al. 2007). Total sockeye salmon escapement into Cinder River Lagoon, (Cinder River and Mud Creek) was 133,600 fish (Table 3 and 5; Appendix A1). Mud Creek, which has a strong run but no escapement goal, drains into the same lagoon as Cinder River.

In 2009, Meshik River sockeye salmon escapement was 63,500 fish which slightly exceeded the escapement goal of 20,000-60,000 fish (Table 5; Appendix A1). Total sockeye salmon escapement into Inner Port Heiden, which includes mainstem Meshik River, Yellow and Red Bluff Creeks, and other tributaries that do not have escapement goals, was 88,200 fish (Table 5; Appendix A1).

### **Run Timing**

The Nelson River sockeye salmon run begins in mid June, peaks in early July, and ends by mid August. Bear River supports two distinct runs: an early run that begins in early June, peaks in early July, and ends in late July; and a late run, which begins in late July, peaks in early-mid August, and ends in mid-to-late September. Sandy River run timing begins in mid June, peaks in early July, and ends in late July. Run timing of sockeye salmon in Ilnik, Meshik, and Cinder River systems is early and closely parallels Bear River run timing.

### **COHO**

Currently there are 17 coho salmon streams documented in Northwestern District and 33 documented in Northern District (McCullough 2001). However, many systems have not been surveyed for coho salmon and the number of systems documented is considered minimum. Due to inadequate funding and adverse fall weather conditions, too few surveys are flown to accurately estimate total coho salmon escapement. In 2009, 206,695 coho salmon were documented in 31 streams (Appendix A1).

On North Alaska Peninsula, only Nelson River system has a sustainable escapement goal (SEG<sup>2</sup>) for coho salmon (18,000 fish). In 2009, the SEG was met with a minimum of 22,000 coho salmon documented in Nelson River (Appendix A1). Major coho salmon systems are found in Uria Bay, Joshua Green, Nelson, Ilnik, Meshik, and Cinder rivers. Other significant coho salmon runs also occur in rivers located in Swanson Lagoon, and in Bear, Sandy, and Unangashak rivers, and numerous other systems throughout North Alaska Peninsula.

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<sup>2</sup> Sustainable escapement goals are established for salmon stocks where reliable escapement levels can be determined but there is not sufficient information to enumerate total annual return (catch plus escapement).

## **PINK**

With few exceptions, pink salmon are of limited economic importance on North Alaska Peninsula. There are 39 streams with documented pink salmon runs in Northern and Northwestern districts combined (McCullough 2001). The average odd-year 2001-2009 pink salmon escapement was 46,776 fish and ranged from 20,000 (2003) to 91,441 (2009; Table 2; Figure 6). Bechevin Bay Section has historically been the largest pink salmon producer on the North Alaska Peninsula and the only section that has a SEG (1,600 during odd-numbered years and 31,000 fish during even-numbered years), which was exceeded in 2009 with an estimated escapement of 72,000 fish (Appendix A1). In Northern District, Herendeen Bay has also produced substantial pink salmon runs during even years since 1990, although in recent years, poor market conditions have prevented a directed fishery. In 2009, 91,441 pink salmon were counted in North Alaska Peninsula streams (Table 2; Appendix A1). This escapement was higher than the 1991-2009 odd-year average (37,118 fish), the 2001-2009 odd-year average (46,776 fish), and the 2005-2009 odd-year average (63,193 fish; Figure 6).

## **CHUM**

There are more chum salmon streams on North Alaska Peninsula (73) than any other species (McCullough 2001). The 2009 escapement of 232,591 fish was below the 2000-2009 average of 500,726 chum salmon (Table 2; Appendix A1). North Alaska Peninsula has two chum salmon escapement goals: one for the entire Northwestern District (SEG; 100,000-215,000 fish) and one for the entire Northern District (SEG; 119,600 to 239,200 fish; Honnold et al. 2007). In 2009, the chum salmon escapement was 78,460 fish in Northwestern District which was below the SEG range of 100,000 to 215,000 fish, while in Northern District the escapement was 154,131 chum salmon, within the SEG range of 119,600 to 239,200 fish (Appendix A1; Figures 7 and 8; Honnold et al. 2007). The chum salmon escapement in Northern and Northwestern districts in 2009 was below the previous 5-, 10-, and 20-year averages (Figures 7 and 8).

## **HARVEST BY SPECIES**

### **CHINOOK**

The 2009 Chinook salmon harvest on North Alaska Peninsula was 3,189 fish, which was below the 2000-2009 average of 5,655 (Table 2). Harvest from 2000-2009 ranged from 1,799 in 2008 to 10,402 fish in 2004 (Table 2). In most years, the majority of the harvest occur incidental to sockeye salmon fishing in Nelson Lagoon Section. However, it is not uncommon for the majority of the harvest to occur incidental to the sockeye salmon fishery in Bear River Section as it did in 2009.

Throughout the 1980's and early 1990's the Inner Port Heiden Section was a major Chinook salmon harvest location; however, there has not been a directed Chinook salmon fishery in Inner Port Heiden since 2006. Most of the effort in this section was from Area T permit holders, and by late June, those permit holders went fishing in Bristol Bay and no further harvests occurred. Area T permit holders are allowed to fish within open waters of Area M of Cinder River and Inner Port Heiden sections during May and June, and August and September, as well as Ilnik Lagoon portion of the Ilnik Section during August and September (5 AAC 39.120(d) and 5 AAC 09.310).

## **SOCKEYE**

The 2009 sockeye salmon harvest on North Alaska Peninsula was 2,426,601 fish, which was higher than the 1990-2009 average harvest of 2,350,603 fish, and the 2000-2009 average harvest of 2,177,323 fish, but lower than the 2005-2009 average harvest of 2,666,055 fish (Table 2; Figure 9). The record harvest of 3,866,479 fish occurred in 1993. The bulk of North Alaska Peninsula sockeye salmon harvest occurred in sections from Nelson Lagoon to Outer Port Heiden (Table 3; Figure 2).

### **Nelson Lagoon Section**

In 2009, Nelson Lagoon sockeye salmon harvest was 214,217 fish (Table 3; Figure 10), lower than the 1990-2009 average (322,089), the 2000-2009 average (291,992), and the 2005-2009 average (265,014; Figure 10). Annually, 30 to 40 permit holders typically fish in this section, with the majority of the gear being set gillnet. The peak weekly sockeye salmon harvest typically occurs in early-to-mid July, however, in 2009 the run was earlier than usual and the fishery peaked around the end of June (Figure 11).

### **Bear River Section**

The 2009 Bear River sockeye salmon harvest of 652,732 fish was below the 20-year and 5-year averages, but above the 10-year average (Table 3; Figure 12). The 1990-2009 average sockeye salmon harvest in Bear River Section was 799,814 fish, the 2000-2009 average was 599,513 fish, and the 2005-2009 average was 658,987 fish (Table 3; Figure 12). The number of permits fished in Bear River Section peaked in 1993 when 190 vessels participated (Figure 13). Since then, the number of permits gradually decreased to lows of 88 permits in 2002 and 72 in 2008. In 2009, 91 permits were fished in Bear River Section. The peak weekly harvest in Bear River Section usually occurs in late June and early July, and then decreases before the late Bear River sockeye salmon run peaks in mid-August. In 2009, the peak weekly harvest of 130,858 sockeye salmon occurred between July 5 and July 11 (Figure 14). The sockeye salmon harvest in 2009 continued into the second week of September when the local processing facility in the area closed for the season.

### **Three Hills Section**

The 2009 Three Hills Section sockeye salmon harvest of 93,388 fish was below the 5-, 10-, and 20- year averages (Table 3; Figure 12). The 1990-2009 average sockeye salmon harvest was 295,719 fish, the 2000-2009 average was 192,196 fish, and the 2005-2009 average was 159,725 fish (Table 3; Figure 12). The number of permits fished in the Three Hills Section peaked in 1992 when 140 permits operated in the area and generally decreased until 2008 when 44 permits operated in the section. However in 2009, the number of permits fished increased to 70 in this section (Figure 13). The peak weekly harvest in Three Hills Section during 2009 occurred during the last week of August when 18,903 sockeye salmon were harvested (Figure 14).

### **Ilnik Section**

The 2009 Ilnik Section sockeye salmon harvest of 651,624 fish (Table 3) was below the 5-year, 10-year, and 20-year averages (Table 3; Figure 12). The 1990-2009 average sockeye salmon harvest was 753,461 fish, while the 2000-2009 average harvest was 847,976 fish and the 2005-2009 average was 1,200,318 fish (Table 3; Figure 12). A peak of 159 permits fished in Ilnik Section in 1989, but effort then decreased until 2002 and 2003 when 73 permits were fished.

Since then the number of permits has steadily increased to 127 in 2009 (Figure 13). Catches within Ilnik Section typically peak in late June to early July. The peak weekly sockeye salmon harvest was 202,261 sockeye salmon during late June to early July and then decreased until mid to late August, when harvest of Bear River late-run sockeye salmon increased (Figure 14).

### **Outer Port Heiden Section**

In 2007, the Alaska Board of Fisheries (board) re-opened Outer Port Heiden section to commercial salmon fishing, with an open fishing season from June 20-July 31 (5 AAC 09.310 (2)(B)). The section had previously been closed since 1990. A detailed description of this and other board changes can be found in Table 6. Since re-opening in 2007, the number of permits fishing in the section has steadily increased from 63 in 2007, to 92 in 2008, and 107 in 2009 (Figure 13). The harvest was similar in 2007 (387,786 fish) and 2008 (320,857); however, it increased to 762,643 fish in 2009 (Table 3; Figure 12). Much of this increase in harvest during 2009 was due to commercial fishing closures in other areas of North Peninsula, which concentrated the effort in the Outer Port Heiden Section. As a percentage of total harvest in sections from Bear River to Outer Port Heiden, Outer Port Heiden Section's total harvest has increased each year, from 13 percent in 2007, to 18 percent in 2008, to 35 percent in 2009 (Figure 15). The peak harvest typically occurs at the end of June to beginning of July. In 2009 the peak weekly harvest was from June 28 to July 4, when 250,004 sockeye salmon were harvested, which is consistent with previous years (Figure 14).

### **COHO**

The majority of North Alaska Peninsula coho salmon harvest typically occurs in Nelson Lagoon, Bear River, Three Hills, and Ilnik sections of Northern District (Table 7). In previous years when market conditions existed, Inner Port Heiden and Cinder River sections had sizable harvests and were important harvest areas on North Alaska Peninsula (Table 7). In 2009, 67,609 coho salmon were harvested in North Alaska Peninsula management area (Tables 2 and 7). The 2000-2009 average harvest was 64,612 coho salmon, and the harvest since 2000 has ranged from 22,162 fish in 2001 to 125,237 fish in 2008. Coho salmon harvests typically begin during the first week of August, peak during the last 10 days of August and first week of September, and end in early September when processing facilities close for the season. In 2009, several major coho salmon stocks were underexploited or not exploited at all due to poor market conditions, which typifies recent years. Only Nelson Lagoon had a directed coho salmon fishery in 2009 where 37,060 fish were harvested (Table 7).

### **PINK**

Directed pink salmon fisheries usually occur when market conditions and salmon surplus to escapement requirements permit a fishery in Bechevin Bay Section of Northwestern District and occasionally, in Herendeen Bay Section of Northern District. The only directed pink salmon fisheries that occurred on North Alaska Peninsula in 2009 were in Bechevin Bay where 274,510 fish were harvested, which is the third highest harvest in Bechevin Bay Section on record.

For North Alaska Peninsula the 2000-2009 odd-year average pink salmon harvest was 89,578 fish, with a range from a low of 3,830 in 2005 to a high of 275,083 in 2009 (Table 2).

## **CHUM**

In 2009, 106,014 chum salmon were harvested on North Alaska Peninsula (Table 2). Of those, about half were harvested in Bechevin Bay Section of Northwestern District. The remaining half was caught incidentally to the sockeye salmon fishery throughout Northern District. Due to poor market conditions and limited effort, North Alaska Peninsula chum salmon have been underexploited in recent years, although a directed chum salmon fishery occurred in Bechevin and Izembek-Moffet Bays in 2009.

The 2000-2009 average chum salmon harvest is 101,162 fish, and ranges from 14,958 in 2004 to 181,009 in 2007 (Table 2). The bulk of North Peninsula chum salmon harvest usually occurs in Izembek-Moffet Bay and Bechevin Bay sections of Northwestern District. Catches from Herendeen-Moller Bay and Bear River sections typically dominate the Northern District catch.

## **SOCKEYE SALMON RUN PRODUCTION POTENTIAL**

North Alaska Peninsula sockeye salmon run production potential is intended to be used as an indicator of potential sockeye salmon production from four North Alaska Peninsula sockeye salmon systems (Nelson, Bear, Sandy, and Ilnik rivers). The production potential estimates for those systems are based on return per spawner, and run reconstruction data from Nelson River and Bear River late-run and their formal forecasts. Actual North Alaska Peninsula production is unknown.

After August 1, all local and non-local sockeye salmon runs are considered to have ended in the Port Moller to Strogonof Point area, except Bear River late run, and all sockeye salmon harvested in the area are considered to be bound for Bear River. Prior to August 1, harvest in the Port Moller to Strogonof Point area is composed of multiple stocks and at this time there is not a method available to apportion the catch to North Alaska Peninsula stocks-of-origin. To estimate run production potential of those mixed stocks (Bear River early-run, Ilnik, and Sandy rivers), the Bear River late-run average return per spawner for the last five fully recruited years (4.88:1; 1998-2002; Appendix B1) was used for those sockeye salmon runs that have escapement data (i.e., systems with weirs), but lack stock specific harvest data. Return per spawner data from Bear River late run was applied to the five-year average escapements of those systems with weirs (Bear River early run, and Sandy and Ilnik rivers) to estimate the combined run production for those systems.

Formal forecasts for Bear River late run and Nelson River run were added to production potential estimates of Bear (early-run), Sandy, and Ilnik rivers to calculate a total production potential for 2010 for these four systems. Estimated run potential for each of those systems and a total estimate, which includes escapement, is outlined in Table 8. The potential run size for these four systems in recent years for the entire season would be expected to range from 2,126,000 to 5,317,000 sockeye salmon with a midpoint of 3,722,000 fish (Figure 16). This estimate does not include production from other Northern District sockeye salmon systems, which have averaged an escapement of 369,491 sockeye salmon from 2005-2009

The 2000-2009 average harvest in the region from Nelson Lagoon to Port Heiden is 2,079,810 fish, with a range of 1,074,541 fish in 2001 to 3,355,152 fish in 2007 (Table 9). Average sockeye salmon escapement from systems in that region from 2000-2009 has averaged 788,088 fish, with a range of 553,200 in 2000 to 1,118,500 in 2005 (Table 9). The 2000 through 2009 average combined catch and escapement in Nelson Lagoon to Port Heiden region is 2,867,898

fish, with a range of 1,691,941 in 2001 to 4,173,954 in 2007 (Table 9). The most recent ten year combined catch and escapement average falls within estimated run production potential range for the four systems used in the analysis.

## **AREA M AND AREA T OVERLAP AREA**

Area M (Alaska Peninsula) and Area T (Bristol Bay) overlap area consists of Cinder River Section, Inner Port Heiden Section, and Ilnik Lagoon (Figure 17). The overlap area was created shortly after statehood to allow Bristol Bay fishermen, primarily those residents of Port Heiden and Pilot Point, the opportunity to fish close to home before and after the Bristol Bay salmon fishery. Permit holders registered for Bristol Bay Area historically fished for Chinook and coho salmon in Inner Port Heiden Section and occasionally, in Ilnik Lagoon, for coho salmon. Pilot Point area permit holders registered for Bristol Bay Area were given the opportunity to fish in Cinder River Section for Chinook and coho salmon, which they historically have done, and still participate in Bristol Bay sockeye salmon fisheries. During every month except July, Area T permit holders are allowed to fish during the open season in Inner Port Heiden and Cinder River sections (Figure 17). Area T permit holders are also allowed to fish inside Ilnik Lagoon during August and September. Regulations allow all Area T permit holders the opportunity to fish within portions of Alaska Peninsula Management Area.

The number of Area T permit holders fishing in the overlap area increased from 16 in 1976 to a high of 122 (104 drift gillnet and 18 set gillnet) in 1992. Prior to 1990, Area T permit holders were allowed to fish in the entire Ilnik Section during August and September. In 1986, Area T fishermen started operating in Ilnik and Outer Port Heiden Sections. In 1990, the board eliminated Area T fishermen from Ilnik Section (except inside Ilnik Lagoon) and closed Outer Port Heiden Section to all commercial salmon fishing operations by both Area M and Area T fishermen due to concern over potential interception of coho salmon during August and September bound for Inner Port Heiden (Meshik River). In 2007, the board re-opened a portion of Outer Port Heiden Section to Area M permit holders from June 20-July 31.

Lack of markets in recent years has greatly reduced fishing effort in the overlap area. From 2007-2009, less than three permit holders fished in the overlap area. In 2006, six Area T permits fished and in 2005, 13 permits fished. In 2009, there were two Area T permit holders that participated within the overlap area. All of the 2009 effort in the overlap area occurred in Cinder River Section during August and September targeting mainly coho salmon. All of the effort in the overlap area from 2005-2008 was in Inner Port Heiden and Cinder River sections, with the majority of the effort from Area T permit holders targeting Chinook salmon in June in Inner Port Heiden Section and coho salmon in August in Cinder River Section.

## **MANAGEMENT STRATEGY**

Nelson Lagoon, Bear River, Three Hills, Ilnik, and Outer Port Heiden sections are managed using catch per unit effort indicators and the escapement strength of Nelson, Bear, Sandy, Ilnik, and Meshik rivers as determined by aerial surveys and weir counts (Murphy and Hartill 2009). Table 10 briefly depicts sockeye salmon stocks used to manage these five sections. This description is not a detailed management strategy, but a general account of factors that are considered when management actions are taken.

## **BEAR RIVER AND THREE HILLS SECTIONS**

Bear River and Three Hills sections are managed on the basis of Bear and Sandy rivers sockeye salmon stocks (Table 10). When inseason escapement objectives in Bear and Sandy rivers are not achieved, Bear River and Three Hills sections may be closed until escapements increase sufficiently to warrant a fishery. If escapements are not far behind interim objectives and harvests indicate sufficient run strength, then closed waters at the river terminus may be expanded to achieve the escapement objectives while allowing effort on incoming fish outside the protected area. This prevents a build-up of fish near river mouths and a resulting excess number of fish moving up river. If escapement into Ilnik and/or Ocean River (if Ocean River flows into the Bering Sea versus Ilnik Lagoon, which occasionally occurs) is low and area closures in Ilnik Section are not effective, the eastern portion of Three Hills Section line may be moved to the west to provide for a larger closed water area in an attempt to increase the escapement.

## **ILNIK SECTION**

Prior to July 21, Ilnik Section southwest of Unangashak Bluffs (Figure 2) and inside of Ilnik Lagoon, will be managed primarily for Ilnik River sockeye salmon stocks unless a management concern exists for Ugashik River stocks<sup>3</sup> (Table 10). That portion of Ilnik Section southwest of Unangashak Bluffs (excluding Ilnik Lagoon which opens May 1) will open to commercial salmon fishing on June 20 if the escapement into Ilnik River is sufficient. Prior to July 21 that portion of Ilnik Section northeast of Unangashak Bluffs to Strogonof Point is managed on the basis of Meshik and Ilnik rivers sockeye salmon stocks (5 AAC 09.369).

If Ilnik, Meshik, and Ugashik rivers sockeye salmon runs are expected to meet escapement objectives prior to July 21, fishing time in the Ilnik Section will be based on the abundance of Ilnik and Meshik rivers sockeye salmon stocks. From July 20 to August 15, Ilnik Section will be managed for Bear River sockeye salmon stock escapement. After August 15, Ilnik Section is managed based on the coho salmon return to Ilnik Lagoon (5 AAC 09.369).

## **OUTER PORT HEIDEN SECTION**

In 2007, the board opened a portion of Outer Port Heiden Section to commercial salmon fishing to provide harvest opportunity on Meshik River sockeye salmon stocks. That portion of Outer Port Heiden Section located west of 158° 36.00' W. long. may be opened on June 20 and will close by regulation on July 31. The section will be managed on the abundance of Meshik River sockeye salmon but may be closed under 5 AAC 09.369 (1) for the conservation of Ugashik River sockeye salmon stocks.

## **REFERENCES CITED**

- Honnold, S. G., M. J. Witteveen, I. Vining, H. Finkle, M. B. Foster, and J. J. Hasbrouck. 2007. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas, 2007. Alaska Department of Fish and Game, Fishery Manuscript No. 07-02, Anchorage.
- McCullough, J. N. 2001. Alaska Peninsula Management Area salmon systems: manager's manual. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K01-1, Kodiak.

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<sup>3</sup> Prior to July 21, management actions will be taken in the Ilnik Section to protect Ugashik River sockeye salmon stocks when district lines are reduced to limit harvest in Egegik District.

## **REFERENCES CITED (Continued)**

Murphy, R. L. and T. G. Hartill. 2009. North Alaska Peninsula salmon management plan, 2009. Alaska Department of Fish and Game, Division of Commercial Fisheries, Fishery Management Report No. 09-13, Anchorage.



## **TABLES AND FIGURES**

Table 1.—Scheduled North Alaska Peninsula fishing periods as described in the 2007-2010 regulation book.

Section	Open Season	Scheduled Fishing Period
Cinder River, Outside Shagong Lagoon	August 1 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Cinder River, inside Shagong Lagoon	May 1 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Outer Port Heiden (west of 158° 36.00' W. long.)	June 20-July 31	6:00 AM Monday to 6:00 PM Wednesday
Inner Port Heiden	May 1 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Ilnik Section southwest of Unangashak Bluffs (159° 10.25' W. long.) excluding Ilnik Lagoon and within Seal Islands	June 20 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Ilnik Section between Unangashak Bluffs (159°10.25' W. long.) to Strogonof Point (158° 50.45' W. long.).	June 20 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Ilnik Lagoon (Ilnik Lagoon and within the Seal Islands)	May 1 – June 19	12:00 Noon Monday to 11:59 PM Wednesday
Ilnik Lagoon (Ilnik Lagoon and within Seal Islands)	June 20 - September 30	6:00 AM Monday to 6:00 PM Wednesday
Three Hills	June 25 - June 30	6:00 AM Monday to 6:00 PM Wednesday
Three Hills	July 1 - September 30	6:00 AM Monday to 6:00 PM Thursday
Bear River	May 1 - June 30	6:00 AM Monday to 6:00 PM Wednesday
Bear River	July 1 - September 30	6:00 AM Monday to 6:00 PM Thursday

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Table 1.–Page 2 of 2.

Section	Open Season	Fishing Period
Port Moller Bight	May 1 - September 30	6:00 AM Monday to 6:00 PM Thursday
Herendeen-Moller Bay	May 1 - July 20	6:00 AM Monday to 6:00 PM Thursday
Nelson Lagoon	May 1 - June 15	6:00 AM Monday to 12:00 Midnight Wednesday
Nelson Lagoon	June 16 - August 15	6:00 AM Monday to 12:00 Midnight Thursday
Nelson Lagoon	August 16 - September 30	6:00 AM Monday to 12:00 Midnight Wednesday
Caribou Flats	No open season	
Black Hills	May 1 - June 30	6:00 AM Monday to 6:00 PM Wednesday
Black Hills	July 1 - September 30	6:00 AM Monday to 6:00 PM Thursday
Izembek-Moffet Bay	June 1 - August 10	6:00 AM Monday to 6:00 PM Thursday
Swanson Lagoon	June 1 - August 10	6:00 AM Monday to 6:00 PM Thursday
Urilia Bay	by Emergency Order only	6:00 AM Monday to 6:00 PM Thursday
Dublin Bay	July 10 - August 10	6:00 AM Monday to 6:00 PM Thursday
Bechevin Bay	June 1 - September 30	by Emergency Order only

Table 2.—North Alaska Peninsula salmon runs by species, 1962-2009.

Year		Number of Salmon					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1962	Catch	5,400	249,700	35,200	31,200	34,900	356,400
	Escapement <sup>a</sup>	4,400	351,200		4,000	150,900	
	Total	9,800	600,900		35,200	185,800	
1963	Catch	3,600	225,200	40,500	6,900	49,900	326,100
	Escapement <sup>a</sup>	6,200	351,000		4,400 <sup>b</sup>	203,200	
	Total	9,800	576,200		11,300 <sup>b</sup>	253,100	
1964	Catch	3,600	250,800	36,600	6,800	139,000	436,800
	Escapement <sup>a</sup>	25,900	419,900		15,100	156,100	
	Total	29,500	670,700		21,900	295,100	
1965	Catch	6,100	199,500	34,500	2,100	69,700	311,900
	Escapement <sup>a</sup>	22,100	238,400		900	49,300	
	Total	28,200	437,900		3,000	119,000	
1966	Catch	5,600	245,300	37,300	16,000	82,800	387,000
	Escapement <sup>a</sup>	8,200	283,300		2,000	149,000	
	Total	13,800	528,600		18,000	231,800	
1967	Catch	5,500	224,700	46,800	700	41,300	319,000
	Escapement <sup>a</sup>	12,200	299,700		700	122,600	
	Total	17,700	524,400		1,400	163,900	
1968	Catch	4,500	237,100	64,900	200	73,500	380,200
	Escapement <sup>a</sup>	15,800	251,300		26,500	250,800	
	Total	20,300	488,400		26,700	324,300	
1969	Catch	4,800	321,300	49,100	100	28,100	403,400
	Escapement <sup>a</sup>	19,500	575,000		4,400	146,800	
	Total	24,300	896,300		4,500	174,900	
1970	Catch	3,829	187,793	26,327	7,904	47,989	273,842
	Escapement <sup>a</sup>	8,300	451,500		11,100	169,800	
	Total	12,129	639,293		19,004	217,789	
1971	Catch	2,187	353,784	8,222	297	64,154	428,644
	Escapement <sup>a</sup>	5,200	435,100		8,600	109,400	
	Total	7,387	788,884		8,897	173,554	
1972	Catch	1,790	179,325	9,684	129	84,687	275,615
	Escapement <sup>a</sup>	5,000	190,200		1,300	124,000	
	Total	6,790	369,525		1,429	208,687	
1973	Catch	2,569	165,388	19,776	143	152,773	340,649
	Escapement <sup>a</sup>	4,300	180,200		200	122,400	
	Total	6,869	345,588		343	275,173	
1974	Catch	2,710	246,209	16,799	10,599	34,417	310,734
	Escapement <sup>a</sup>	3,000	332,800		23,000	105,100	
	Total	5,710	579,009		33,599	139,517	

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Table 2.—Page 2 of 4.

Year		Number of Salmon					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1975	Catch	2,093	233,293	28,349	295	8,770	272,800
	Escapement <sup>a</sup>	4,600	516,800		600	109,200	
	Total	6,693	750,093		895	117,970	
1976	Catch	4,947	641,134	26,061	672	73,589	746,403
	Escapement <sup>a</sup>	6,000	532,600		37,300	293,400	
	Total	10,947	1,173,734		37,972	366,989	
1977	Catch	5,489	472,006	34,137	888	129,168	641,688
	Escapement <sup>a</sup>	7,100	541,100		8,500	681,200	
	Total	12,589	1,013,106		9,388	810,368	
1978	Catch	13,524	896,616	63,341	485,224	163,804	1,622,509
	Escapement <sup>a</sup>	13,700	1,213,500		96,800	310,500	
	Total	27,224	2,110,116		582,024	474,304	
1979	Catch	15,704	1,979,167	112,835	4,994	65,711	2,178,411
	Escapement <sup>a</sup>	15,800	1,574,000		9,300	305,300	
	Total	31,504	3,553,167		14,294	371,011	
1980	Catch	16,627	1,397,118	127,878	301,672	700,196	2,543,491
	Escapement <sup>a</sup>	11,000	1,387,600		103,600	769,500	
	Total	27,627	2,784,718		405,272	1,469,696	
1981	Catch	18,385	1,844,335	155,420	11,217	706,818	2,736,175
	Escapement <sup>a</sup>	12,400	1,347,900		6,100	535,200	
	Total	30,785	3,192,235		17,317	1,242,018	
1982	Catch	29,770	1,435,277	238,016	12,321	331,133	2,046,517
	Escapement <sup>a</sup>	20,000	718,400		51,700	457,600	
	Total	49,770	2,153,677		64,021	788,733	
1983	Catch	29,006	2,090,142	75,138	3,404	348,307	2,545,997
	Escapement <sup>a</sup>	25,700	580,300		4,000	392,600	
	Total	54,706	2,670,442		7,404	740,907	
1984	Catch	22,770	1,798,780	200,482	46,369	805,132	2,873,533
	Escapement <sup>a</sup>	17,700	826,000		56,600	870,200	
	Total	40,470	2,624,780		102,969	1,675,332	
1985	Catch	23,403	2,596,073	176,118	3,054	666,616	3,465,264
	Escapement <sup>a</sup>	12,900	898,100		1,400	344,200	
	Total	36,303	3,494,173		4,454	1,010,816	
1986	Catch	11,735	2,463,734	164,071	22,630	271,216	2,933,386
	Escapement <sup>a</sup>	8,700	580,300		13,300	243,600	
	Total	20,435	3,044,034		35,930	514,816	
1987	Catch	14,186	1,209,435	171,784	3,486	368,696	1,767,587
	Escapement <sup>a</sup>	10,700	556,000		100	510,900	
	Total	24,886	1,765,435		3,586	879,596	

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Table 2.—Page 3 of 4.

Year		Number of Salmon					Total
		Chinook	Sockeye	Coho	Pink	Chum	
1988	Catch	16,721	1,528,107	233,966	65,242	393,075	2,237,111
	Escapement <sup>a</sup>	11,700	614,900	200-300 <sup>b,c</sup>	43,500	500,300	
	Total	28,421	2,143,007		108,742	893,375	
1989	Catch	10,698	1,718,001	227,551	4,103	156,992	2,117,345
	Escapement <sup>a</sup>	5,600	814,400	150-250 <sup>b,c</sup>	1,900	212,300	
	Total	16,298	2,532,401		6,003	369,292	
1990	Catch	12,320	2,416,047	192,978	517,724	126,113	3,265,182
	Escapement <sup>a</sup>	7,100	1,032,200	140-175 <sup>b,c</sup>	132,200	226,400	
	Total	19,420	3,448,247		649,924	352,513	
1991	Catch	9,359	2,391,406	218,274	4,249	191,278	2,814,566
	Escapement <sup>a</sup>	9,600	1,317,300		6,300	303,300	
	Total	18,959	3,708,706		10,549	494,578	
1992	Catch	13,136	3,575,507	206,813	194,395	341,616	4,331,467
	Escapement <sup>a</sup>	6,600	861,300		207,600	351,700	
	Total	19,736	4,436,807		401,995	693,316	
1993	Catch	22,417	3,866,479	64,376	5,328	134,957	4,093,557
	Escapement <sup>a</sup>	13,700	1,003,800		72,800	402,400	
	Total	36,117	4,870,279		78,128	537,357	
1994	Catch	18,508	2,783,156	241,913	226,315	83,897	3,353,789
	Escapement <sup>a</sup>	38,400	1,211,400		133,200	480,200	
	Total	56,908	3,994,556		359,515	564,097	
1995	Catch	7,540	3,272,748	135,639	12,171	99,293	3,527,391
	Escapement <sup>a</sup>	24,400	1,077,000		8,200	756,300	
	Total	31,940	4,349,748		20,371	855,593	
1996	Catch	4,941	1,911,126	157,313	53,842	67,956	2,195,178
	Escapement <sup>a</sup>	25,700	967,900		382,600	823,100	
	Total	30,641	2,879,026		436,442	891,056	
1997	Catch	10,352	2,151,010	94,776	50,701	97,380	2,404,219
	Escapement <sup>a</sup>	19,500	820,000		25,000	388,200	
	Total	29,852	2,971,010		75,701	485,580	
1998	Catch	5,928	1,087,552	134,724	34,810	69,516	1,332,530
	Escapement <sup>a</sup>	15,000	894,000		300,000	729,500	
	Total	20,928	1,981,552		334,810	799,016	
1999	Catch	4,886	1,783,804	53,907	4,367	50,120	1,897,084
	Escapement <sup>a</sup>	10,900	897,300		25,000	666,300	
	Total	15,786	2,681,104		29,367	716,420	

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Table 2.–Page 4 of 4.

Year		Number of Salmon					Total
		Chinook	Sockeye	Coho	Pink	Chum	
2000	Catch	3,904	1,968,882	83,655	34,373	93,696	2,184,510
	Escapement <sup>a</sup>	9,600	927,200		70,900	594,700	
	Total	13,504	2,896,082		105,273	688,396	
2001	Catch	4,412	1,147,030	22,162	12,469	174,523	1,360,596
	Escapement <sup>a</sup>	13,300	875,400		24,300	692,700	
	Total	17,712	2,022,430		36,769	867,223	
2002	Catch	3,852	1,415,872	28,751	21,461	51,040	1,520,976
	Escapement <sup>a</sup>	18,900	894,500		24,900	679,900	
	Total	22,752	2,310,372		46,361	730,940	
2003	Catch	4,545	1,477,391	53,137	18,624	38,755	1,592,452
	Escapement <sup>a</sup>	11,078	1,231,411		20,000	450,660	
	Total	15,623	2,708,802		38,624	489,415	
2004	Catch	10,402	2,433,778	33,920	15,828	14,958	2,508,886
	Escapement <sup>a</sup>	30,874	1,433,827		122,000	434,950	
	Total	41,276	3,867,605		137,828	449,908	
2005	Catch	9,198	3,115,792	68,680	3,830	42,539	3,240,039
	Escapement <sup>a</sup>	30,617	1,556,811		52,628	296,640	
	Total	39,815	4,672,603		56,458	339,179	
2006	Catch	7,637	2,375,158	93,955	64,207	131,718	2,672,675
	Escapement <sup>a</sup>	32,173	1,157,546		252,462	576,043	
	Total	39,810	3,532,704		316,669	707,761	
2007	Catch	7,609	3,408,818	69,010	137,882	181,009	3,804,328
	Escapement <sup>a</sup>	20,685	1,069,752		45,509	578,784	
	Total	28,294	4,478,570		183,391	759,793	
2008	Catch	1,799	2,003,906	125,237	21,136	177,364	2,329,442
	Escapement <sup>a</sup>	36,072	1,013,170		49,400	470,287	
	Total	37,871	3,017,076		70,536	647,651	
2009	Catch	3,189	2,426,601	67,609	275,083	106,014	2,878,496
	Escapement <sup>a</sup>	12,807	934,400		91,441	232,591	
	Total	15,996	3,361,001		366,524	338,605	
2000-2009 Average							
	Catch	5,655	2,177,323	64,612	89,578 <sup>d</sup>	101,162	2,409,240
	Escapement <sup>a</sup>	21,611	1,109,402		46,776 <sup>d</sup>	500,726	
	Total	27,265	3,286,725		136,353 <sup>d</sup>	601,887	

Note: catch numbers do not include test fish harvest or fish retained for personal use.

<sup>a</sup> Escapements are indexed totals.

<sup>b</sup> These figures are very rough extrapolated estimates.

<sup>c</sup> Number of fish in thousands.

<sup>d</sup> Averages for pink salmon include only the odd-numbered years 2001, 2003, 2005, 2007 and 2009.

Table 3.—Northern District sockeye salmon runs by section (number of fish), 1962-2009.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1962 <sup>c</sup>	Catch	900	0	17,800	9,700	<sup>d</sup> 142,900	152,600	0	69,600	0	240,900
	Escapement	5,000	0	19,000	5,900	<sup>d</sup> 215,000	220,900	100	54,200	1,000	300,200
	Total	5,900	0	36,800	15,600	<sup>d</sup> 357,900	373,500	100	123,800	1,000	541,100
1963 <sup>c</sup>	Catch	0	0	0	26,600	<sup>d</sup> 120,000	146,600	0	71,500	0	218,100
	Escapement	1,400	0	14,200	10,400	<sup>d</sup> 238,600	249,000	100	31,000	1,300	297,000
	Total	1,400	0	14,200	37,000	<sup>d</sup> 358,600	395,600	100	102,500	1,300	515,100
1964 <sup>c</sup>	Catch	0	0	6,300	33,300	<sup>d</sup> 107,500	140,800	0	88,700	0	235,800
	Escapement	1,500	0	10,000	6,500	<sup>d</sup> 250,200	256,700	200	80,000	1,500	349,900
	Total	1,500	0	16,300	39,800	<sup>d</sup> 357,700	397,500	200	168,700	1,500	585,700
1965 <sup>c</sup>	Catch	0	0	9,700	58,400	<sup>d</sup> 62,400	120,800	100	53,800	0	184,400
	Escapement	7,500	0	30,000	12,500	<sup>d</sup> 137,000	149,500	0	37,000	500	224,500
	Total	7,500	0	39,700	70,900	<sup>d</sup> 199,400	270,300	100	90,800	500	408,900
1966 <sup>c</sup>	Catch	0	0	8,000	11,000	<sup>d</sup> 152,600	163,600	0	60,000	0	231,600
	Escapement	3,000	0	11,700	24,300	<sup>d</sup> 185,000	209,300	600	36,500	2,300	263,400
	Total	3,000	0	19,700	35,300	<sup>d</sup> 337,600	372,900	600	96,500	2,300	495,000
1967 <sup>c</sup>	Catch	0	0	3,100	0	<sup>d</sup> 156,100	156,100	12,500	40,200	0	211,900
	Escapement	3,800	0	12,000	26,400	<sup>d</sup> 200,000	226,400	200	42,000	500	284,900
	Total	3,800	0	15,100	26,400	<sup>d</sup> 356,100	382,500	12,700	82,200	500	496,800
1968 <sup>c</sup>	Catch	0	0	0	78,600	<sup>d</sup> 90,500	169,100	3,400	51,100	0	223,600
	Escapement	4,100	0	15,000	15,000	<sup>d</sup> 166,000	181,000	400	31,000	2,000	233,500
	Total	4,100	0	15,000	93,600	<sup>d</sup> 256,500	350,100	3,800	82,100	2,000	457,100
1969 <sup>c</sup>	Catch	0	0	5,200	24,000	<sup>d</sup> 205,500	229,500	4,400	72,800	0	311,900
	Escapement	3,800	0	15,000	15,600	<sup>d</sup> 406,000	421,600	100	78,500	2,500	521,500
	Total	3,800	0	20,200	39,600	<sup>d</sup> 611,500	651,100	4,500	151,300	2,500	833,400

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Table 3.—Page 2 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals	
1970 <sup>c</sup>	Catch	0	0	0	21,011	<sup>d</sup>	109,209	130,220	1,672	52,043	21	183,956
	Escapement	1,500	0	14,100	15,300	800	294,000	310,100	0	82,400	1,400	409,500
	Total	1,500	0	14,100	36,311	800	403,209	440,320	1,672	134,443	1,421	593,456
1971 <sup>c</sup>	Catch	0	0	0	16,153	40,929	238,628	295,710	1,301	47,536	0	344,547
	Escapement	2,000	0	30,800	26,100	400	281,000	307,500	200	60,100	500	401,100
	Total	2,000	0	30,800	42,253	41,329	519,628	603,210	1,501	107,636	500	745,647
1972 <sup>c</sup>	Catch	0	0	2	4,478	7,513	136,160	148,151	1,006	23,227	0	172,386
	Escapement	400	0	3,500	13,100	0	135,400	148,500	0	28,000	0	180,400
	Total	400	0	3,502	17,578	7,513	271,560	296,651	1,006	51,227	0	352,786
1973 <sup>c</sup>	Catch	0	0	0	16,659	117,678	134,337	134,337	3,287	23,896	0	161,520
	Escapement	1,200	0	7,200	16,000	0	130,100	146,100	0	18,700	0	173,200
	Total	1,200	0	7,200	16,000	16,659	247,778	280,437	3,287	42,596	0	334,720
1974 <sup>c</sup>	Catch	0	0	0	46,895	157,457	204,352	204,352	7,730	25,611	34	237,727
	Escapement	1,300	0	1,400	14,500	100	266,500	281,100	0	39,900	1,800	325,500
	Total	1,300	0	1,400	14,500	46,995	423,957	485,452	7,730	65,511	1,834	563,227
1975 <sup>c</sup>	Catch	0	0	644	411	8,296	165,730	174,437	3,739	51,519	0	230,339
	Escapement	900	0	5,100	40,500	300	310,000	350,800	100	138,600	2,000	497,500
	Total	900	0	5,744	40,911	8,596	475,730	525,237	3,839	190,119	2,000	727,839
1976 <sup>c</sup>	Catch	3	0	4,973	11,954	207,765	310,869	530,588	9,912	74,914	0	620,390
	Escapement	6,300	0	30,300	15,100	600	328,000	343,700	500	108,900	7,400	497,100
	Total	6,303	0	35,273	27,054	208,365	638,869	874,288	10,412	183,814	7,400	1,117,490
1977 <sup>c</sup>	Catch	8	0	3,416	12,592	85,295	268,676	366,563	11,061	56,314	44	437,406
	Escapement	3,900	0	23,600	20,600	100	265,200	285,900	13,500	155,000	4,100	486,000
	Total	3,908	0	27,016	33,192	85,395	533,876	652,463	24,561	211,314	4,144	923,406

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Table 3.—Page 3 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
1978 <sup>c</sup>	Catch	0	829	7,457	24,711	556,393	588,561	53,731	213,430	0	856,551
	Escapement	3,800	18,800	21,200	0	814,000	835,200	4,900	304,300	1,500	1,168,500
	Total	3,800	19,629	28,657	24,711	1,370,393	1,423,761	58,631	517,730	1,500	2,025,051
1979 <sup>c</sup>	Catch	140	36,940	53,972	140,390	1,320,851	1,515,213	32,121	320,856	0	1,905,270
	Escapement	6,000	46,700	97,200	300	1,013,000	1,110,500	5,000	360,100	3,000	1,531,300
	Total	6,140	83,640	151,172	140,690	2,333,851	2,625,713	37,121	680,956	3,000	3,436,570
1980 <sup>c</sup>	Catch	46	24,628	121,574	130,653	741,861	994,088	10,460	318,526	0	1,347,748
	Escapement	30,000	47,000	100,000	0	751,000	851,000	1,500	352,600	3,900	1,286,000
	Total	30,046	71,628	221,574	130,653	1,492,861	1,845,088	11,960	671,126	3,900	2,633,748
1981 <sup>c</sup>	Catch	24	3,847	24,334	44,559	1,327,219	1,396,112	18,610	374,722	0	1,793,315
	Escapement	100,000	26,600	151,000	0	741,500	892,500	600	251,000	4,000	1,274,700
	Total	100,024	30,447	175,334	44,559	2,068,719	2,288,612	19,210	625,722	4,000	3,068,015
1982 <sup>c</sup>	Catch	0	8,782	35,088	107,418	1,009,291	1,151,797	11,336	229,203	419	1,401,537
	Escapement	13,000	62,000	41,700	1,300	361,300	404,300	500	179,600	6,000	665,400
	Total	13,000	70,782	76,788	108,718	1,370,591	1,556,097	11,836	408,803	6,419	2,066,937
1983 <sup>c</sup>	Catch	71	68	390,883	338,730	1,122,976	1,852,589	15,007	192,947	5	2,060,687
	Escapement	9,000	8,600	40,000	100	358,000	398,100	500	128,800	2,600	547,600
	Total	9,071	8,668	430,883	338,830	1,480,976	2,250,689	15,507	321,747	2,605	2,608,287
1984 <sup>c</sup>	Catch	0	1,746	409,883	333,832	637,400	1,381,115	31,447	118,756	48	1,533,112
	Escapement	16,000	31,100	22,300	0	414,000	436,300	700	251,000	600	735,700
	Catch	16,000	32,846	432,183	333,832	1,051,400	1,817,415	32,147	369,756	648	2,268,812
1985 <sup>c</sup>	Catch	333	5,090	508,887	469,267	821,312	1,799,466	4,519	703,546	0	2,512,954
	Escapement	12,600	45,500	22,700	0	451,500	474,200	700	314,800	3,700	851,500
	Total	12,933	50,590	531,587	469,267	1,272,812	2,273,666	5,219	1,018,346	3,700	3,364,454

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Table 3.—Page 4 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals	
1986 <sup>c</sup>	Catch	3	686	38,042	560,339	588,501	938,177	2,087,017	1,294	178,401	2	2,305,445
	Escapement	25,700	0	26,400	66,800	100	279,400	346,300	300	117,900	2,300	518,900
	Total	25,703	686	64,442	627,139	588,601	1,217,577	2,433,317	1,594	296,301	2,302	2,824,345
1987 <sup>c</sup>	Catch	214	0	2,359	506,916	212,435	213,958	933,309	679	128,471	62	1,065,094
	Escapement	15,300	0	28,300	30,700	0	266,700	297,400	700	155,700	8,700	506,100
	Total	15,514	0	30,659	537,616	212,435	480,658	1,230,709	1,379	284,171	8,762	1,571,194
1988 <sup>c</sup>	Catch	43	647	9,951	494,616	258,982	494,951	1,248,549	3,850	186,616	0	1,449,656
	Escapement	2,000	0	35,900	26,900	0	347,500	374,400	400	142,500	6,900	562,100
	Total	2,043	647	45,851	521,516	258,982	842,451	1,622,949	4,250	329,116	6,900	2,011,756
1989 <sup>c</sup>	Catch	817	2,227	11,365	149,399	599,588	557,100	1,306,087	5,670	324,979	14,266	1,665,411
	Escapement	4,000	0	11,200	16,600	100	487,000	503,700	500	206,800	7,600	733,800
	Total	4,817	2,227	22,565	165,999	599,688	1,044,100	1,809,787	6,170	531,779	21,866	2,399,211
1990 <sup>c</sup>	Catch	1,246	0	9,701	753,030	189,870	876,248	1,819,148	4,250	410,417	13,265	2,258,027
	Escapement	14,000	0	26,800	35,700	100	564,300	600,100	400	269,200	5,700	916,200
	Total	15,246	0	36,501	788,730	189,970	1,440,548	2,419,248	4,650	679,617	18,965	3,174,227
1991 <sup>c</sup>	Catch	296	0	5,439	610,975	253,880	1,044,660	1,909,515	4,587	273,960	16,382	2,210,179
	Escapement	47,400	0	26,500	135,000	200	681,200	816,400	500	279,200	9,000	1,179,000
	Total	47,696	0	31,939	745,975	254,080	1,725,860	2,725,915	5,087	553,160	25,382	3,389,179
1992 <sup>c</sup>	Catch	4,472	0	8,023	740,992	959,223	1,398,253	3,098,468	5,911	378,706	878	3,496,458
	Escapement	15,200	0	33,100	45,100	0	471,200	516,300	200	179,700	16,600	761,100
	Total	19,672	0	41,123	786,092	959,223	1,869,453	3,614,768	6,111	558,406	17,478	4,257,558
1993 <sup>c</sup>	Catch	8,903	0	518	868,790	411,277	2,041,716	3,321,783	10,045	452,842	4,005	3,798,096
	Escapement	20,000	0	50,000 <sup>d</sup>	70,000	300	501,900	572,200	400	267,200	10,200	920,000
	Total	28,903	0	50,518 <sup>d</sup>	938,790	411,577	2,543,616	3,893,983	10,445	720,042	14,205	4,718,096

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Table 3.—Page 5 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals	
1994 <sup>c</sup>	Catch	5,197	0	633	838,945	481,600	1,089,249	2,409,794	2,244	329,212	1,202	2,748,282
	Escapement	83,400	0	44,900	75,300	0	581,200	656,500	400	333,400	5,100	1,123,700
	Total	88,597	0	45,533	914,245	481,600	1,670,449	3,066,294	2,644	662,612	6,302	3,871,982
1995 <sup>c</sup>	Catch	1,280	0	768	320,473	931,168	1,536,039	2,787,680	5,936	448,281	3,569	3,247,514
	Escapement	47,500	0	85,600	39,000	400	430,400	469,800	2,000	338,700	3,700	947,300
	Total	48,780	0	86,368	359,473	931,568	1,966,439	3,257,480	7,936	786,981	7,269	4,194,814
1996 <sup>c</sup>	Catch	3,726	0	3,603	612,761	188,556	592,413	1,393,730	1,546	445,335	5,077	1,853,017
	Escapement	60,000	0	60,000	62,500	0	431,100	493,600	6,000	257,000	8,500	885,100
	Total	63,726	0	63,603	675,261	188,556	1,023,513	1,887,330	7,546	702,335	13,577	2,738,117
1997 <sup>c</sup>	Catch	8,342	0	2,222	762,638	263,089	642,461	1,668,188	8,693	384,370	20,741	2,092,556
	Escapement	33,000	0	40,000	83,000	400	398,000	481,400	900	190,100	6,100	751,500
	Total	41,342	0	42,222	845,638	263,489	1,040,461	2,149,588	9,593	574,470	26,841	2,844,056
1998 <sup>c</sup>	Catch	8,321	0	249	470,560	106,856	251,327	828,743	799	161,441	36,684	1,036,237
	Escapement	57,000	0	59,200	50,600	300	469,100	520,000	700	165,300	7,700	809,900
	Total	65,321	0	59,449	521,160	107,156	720,427	1,348,743	1,499	326,741	44,384	1,846,137
1999 <sup>c</sup>	Catch	19,004	0	877	617,330	200,239	557,805	1,375,374	2,397	237,293	25,324	1,660,269
	Escapement	12,400	0	76,000	75,000	100	408,000	483,100	2,500	223,300	11,300	808,600
	Total	31,404	0	76,877	692,330	200,339	965,805	1,858,474	4,897	460,593	36,624	2,468,869
2000 <sup>c</sup>	Catch	7,984	0	68	769,548	403,470	473,631	1,646,649	4,090	193,694	13,951	1,866,436
	Escapement	51,000	0	184,600	95,000	0	275,000	370,000	500	182,700	8,400	797,200
	Total	58,984	0	184,668	864,548	403,470	748,631	2,016,649	4,590	376,394	22,351	2,663,636
2001 <sup>c</sup>	Catch	5,482	0	0	205,041	165,878	527,284	898,203	1,975	174,363	16,263	1,096,286
	Escapement	33,000	0	115,000	59,000	300	351,000	410,300	500	207,100	8,600	774,500
	Total	38,482	0	115,000	264,041	166,178	878,284	1,308,503	2,475	381,463	24,863	1,870,786

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Table 3.—Page 6 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals	
2002 <sup>c</sup>	Catch	1,548	0	111	121,054	251,377	596,270	968,701	1,022	325,904	35,744	1,333,030
	Escapement	11,500	0	54,100	43,000	650	275,000	318,650	1,500	338,400	12,000	736,150
	Total	13,048	0	54,211	164,054	252,027	871,270	1,287,351	2,522	664,304	47,744	2,069,180
2003 <sup>c</sup>	Catch	2,775	0	0	267,495	238,674	491,857	998,026	44	373,252	40,126	1,414,223
	Escapement	102,700	0	114,000	69,000	300	432,000	501,300	500	364,211	11,100	1,093,811
	Total	105,475	0	114,000	336,495	238,974	923,857	1,499,326	544	737,463	51,226	2,508,034
2004 <sup>c</sup>	Catch	0	0	0	1,115,036	63,935	611,147	1,790,118	0	527,637	17,604	2,335,359
	Escapement	58,050	0	103,700	82,000	600	467,000	549,600	2,250	515,397	17,900	1,246,897
	Total	58,050	0	103,700	1,197,036	64,535	1,078,147	2,339,718	2,250	1,043,034	35,504	3,582,256
2005 <sup>c</sup>	Catch	116	0	1,835	1,370,001	193,621	1,030,989	2,594,611	12	334,702	9,971	2,941,247
	Escapement	141,000	0	113,100	154,000	5,700	655,300	815,000	500	303,000	47,500	1,420,100
	Total	141,116	0	114,935	1,524,001	199,321	1,686,289	3,409,611	512	637,702	57,471	4,361,347
2006 <sup>c</sup>	Catch	0	0	1,151	1,317,901	153,343	576,552	2,047,796	0	255,265	8,430	2,312,642
	Escapement	101,100	0	142,610	88,000	1,800	493,000	582,800	3,000	226,000	7,530	1,063,040
	Total	101,100	0	143,761	1,405,901	155,143	1,069,552	2,630,596	3,000	481,265	15,960	3,375,682
2007 <sup>c</sup>	Catch	0	387,786	842	1,776,430	234,930	617,402	2,628,762	206	337,556	4,273	3,359,425
	Escapement	142,000	0	58,500	93,000	1,500	475,702	570,202	3,100	187,000	16,800	977,602
	Total	142,000	387,786	59,342	1,869,430	236,430	1,093,104	3,198,964	3,306	524,556	21,073	4,337,027
2008 <sup>c</sup>	Catch	0	320,857	1,574	885,634	123,344	417,261	1,426,239	128	183,330	20,332	1,952,460
	Escapement	129,800	0	86,250	44,300	2,000	353,200	399,500	1,220	178,600	44,000	839,370
	Total	129,800	320,857	87,824	929,934	125,344	770,461	1,825,739	1,348	361,930	64,332	2,791,830

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Table 3.—Page 7 of 7.

Year	Cinder River Section	Outer Port Heiden <sup>a</sup>	Inner Port Heiden	Ilnik	Three Hills	Bear River <sup>b</sup>	Combined Ilnik, Three Hills, & Bear R. Sections	Port Moller Bight & Herendeen-Moller Bay	Nelson Lagoon	Caribou Flats & Black Hills	Northern District Totals
2009 <sup>c</sup> Catch	0	762,643	0	651,624	93,388	652,732	1,397,744	0	214,217	14,712	2,389,316
Escapement	133,600	0	88,200	66,000	1,600	385,500	453,100	3,000	159,500	8,000	845,400
Total	133,600	762,643	88,200	717,624	94,988	1,038,232	1,850,844	3,000	373,717	22,712	3,234,716
2000-2009 Average <sup>c</sup>											
Catch	1,791	367,822 <sup>e</sup>	558	847,976	192,196	599,513	1,639,685	748	291,992	18,141	2,100,042
Escapement	90,375	0 <sup>e</sup>	106,006	79,330	1,445	416,270	497,045	1,607	266,191	18,183	979,407
Total	92,166	367,822 <sup>e</sup>	106,564	927,306	193,641	1,015,783	2,136,730	2,355	558,183	36,324	3,079,449

Note: catch numbers do not include test fish harvest or fish retained for personal use.

<sup>a</sup> Outer Port Heiden Section catches occurred between 1986 and 1989. This section was closed between 1990 and 2006 and re-opened in 2007.

<sup>b</sup> Escapement includes all sockeye systems, mainly Bear and Sandy Rivers combined with post weir estimates.

<sup>c</sup> Escapements are indexed totals except for Bear, Sandy, Ilnik, and Nelson Rivers where weir and tower counts are used.

<sup>d</sup> Ilnik Section and Three Hills Section combined.

<sup>e</sup> Three year average

Table 4.—Sockeye salmon escapement goals and objectives by system, 2000-2009 and 2005-2009 average escapement, and 2009 escapements for sockeye salmon systems with weirs in Northern District.

Year	Nelson River		Bear River				Sandy River		Ilnik River		Meshik River		Cinder River			
	Year escapement <sup>a</sup>	Goal	Early-run Escapement	Goal	Late-run Escapement	Goal	Total Escapement	Goal	Escapement	Goal	Escapement <sup>b</sup>	Goal	Escapement	Goal	Escapement	Goal
1986			174,453		98,047		272,500						26,400		25,700	
1987			168,683		89,317		258,000						28,300		15,300	
1988			169,363		140,637		310,000						35,900		2,000	
1989	193,300		246,196		204,804		451,000						11,200		4,000	
1990	240,700		283,854		262,946		546,800						26,800		14,000	
1991	268,400		432,087		173,913		606,000				135,000		26,500		47,400	
1992	162,300		254,170		195,830		450,000				45,000		33,100		15,200	
1993	207,200		254,012		197,988		452,000				70,000		50,000		20,000	
1994	325,300		260,559	150,000 to	204,441	50,000 to	465,000	200,000 to	115,000		75,000		44,900		83,400	
1995	329,400	100,000 to	197,039	175,000	107,961	75,000	305,000	250,000	125,000		39,000		85,600	10,000 to	47,500	6,000 to
1996	250,500	150,000	247,371		119,629		367,000		64,000		62,000		61,500	20,000	60,000	12,000
1997	183,100		214,689		145,311		360,000		38,000		82,000		40,000		33,000	
1998	159,800		221,580		193,420		415,000		52,000		50,000		58,200		57,000	
1999	202,067		222,110		127,890		350,000		58,000		75,000		76,000		12,400	
2000	182,700		184,053		90,947		275,000		40,000	40,000 to	95,000	40,000 to	184,600		51,000	
2001	201,962		177,495		122,505		300,000		51,000	60,000	58,000	60,000	115,000		33,000	
2002	315,693		179,480		95,520		275,000		49,000		43,000		54,100		11,500	
2003	343,511		226,201		139,799		366,000		66,000		69,000		114,000		102,700	
2004	480,097		354,565		80,435		435,000		32,000		82,000		103,700		58,050	
2005	303,000		332,248		221,752		554,000		101,000		154,000		113,100		141,000	
2006	215,000	97,000 to	262,995	176,000 to	182,005	117,000 to	445,000	293,000 to	48,000		88,000		142,610		101,100	
2007	180,000	219,000	206,233	293,000	224,767	195,000	431,000	488,000	44,700		93,000		45,400 <sup>c</sup>		142,000	
2008	141,600		125,526		195,474		321,000		32,200	34,000 to	44,300		61,250 <sup>c</sup>	20,000 to	129,800	12,000 to
2009	157,000		216,237		133,263		349,500		36,000	74,000	66,000		63,500 <sup>c</sup>	60,000	133,600	48,000
Average <sup>c</sup>																
2000-2009	252,056		226,503		148,647		375,150		49,990		79,230		99,726		90,375	
2005-2009	199,320		228,648		191,452		420,100		52,380		89,060		85,172		129,500	

<sup>a</sup> Does not include David or Caribou rivers.

<sup>b</sup> Since 2005, Ocean River has not flowed into Ilnik Lagoon. In those years Ocean River escapement was added to Ilnik R. weir count.

<sup>c</sup> Estimates are based on weir counts added to post weir escapement estimates. Only those years when weirs were present are included in the table.

Table 5.—Cinder and Meshik rivers escapements and escapement goals and major tributary escapements, 2000-2009.

	Meshik River Escapement	Meshik River Escapement Goal	Yellow and Red Bluff creeks Escapement	Total Inner Port Heiden <sup>a</sup> Escapement	Cinder River Escapement	Cinder River Escapement Goal	Mud Creek Escapement	Total Cinder River System Escapement
2000	157,700		26,000	184,600	51,000		<sup>b</sup>	51,000
2001	100,500		11,500	115,000	24,950		<sup>b</sup>	33,000
2002	47,250	10,000	5,000	54,050	11,500	6,000	<sup>b</sup>	11,500
2003	94,000	to	20,000	114,000	88,700	to	14,000	102,700
2004	82,200	20,000	20,000	103,700	55,050	12,000	3,000	58,050
2005	96,100		15,000	113,100	96,000		45,000	141,000
2006	114,010		24,000	142,610	52,100		49,000	101,100
2007	45,400	20,000 to	11,500	58,500	123,000	12,000 to	19,000	142,000
2008	61,250	60,000	22,000	86,250	96,800		33,000	129,800
2009	63,500		24,500	88,200	102,600	48,000	31,000	133,600
2000-2006 Avg	98,823		17,357	118,151	54,533		20,667	66,208
2007-2009 Avg	56,717		19,333	77,650	107,467		27,667	135,133

<sup>a</sup> Includes Highland and Charles creeks

<sup>b</sup> Not surveyed



Table 6.—Selected Northern District Alaska Board of Fisheries regulation changes.

Year	Board of Fisheries Regulation Changes
1988	Reduced the weekly fishing period in Ilnik Section 24 hours to 6:00 AM Monday to 6:00 PM Wednesday over concern for Unangashak River coho salmon and Ilnik River sockeye salmon stocks.
1990	<p>Closed Outer Port Heiden Section to Area M and Area T permit holders over interception concerns for migrating coho salmon into Port Heiden.</p> <p>Closed the outer portion of Ilnik Section to Area T permit holders.</p> <p>Delayed the season opening in that portion of Ilnik Section between Unangashak Bluffs and Strogonof Point from July 5 to July 15, over sockeye salmon interception concerns with Bristol Bay.</p>
1992	The minimum gillnet mesh size restriction of 5¼" was removed in Bear River Section after July 20. The remainder of North Peninsula minimum 5¼" gillnet mesh restriction remains in effect.
1996	The minimum gillnet mesh restriction of 5¼" was removed in Bear River, Port Moller Bight and Nelson Lagoon sections to fully utilize local salmon stocks.
1998	<p>The minimum gillnet mesh restriction of 5¼" was removed after July 24 in Three Hills and Ilnik Sections.</p> <p>The <i>Northern District Salmon Fisheries Management Plan</i> (5 AAC 09.369) was adopted. Early fishing time in Ilnik Section southwest of Unangashak Bluffs between June 25 and July 4 is permitted if certain strong Ilnik River escapement levels are met. If early fishing is permitted, maximum continuous fishing time is 24 hours, followed by at least a 24 hour closure, a sockeye salmon cap of 100,000 fish, and that portion of Ilnik Section northeast of Unangashak Bluffs to Strogonof Point will remain closed from July 15 to July 25. Ugashik River sockeye salmon considered in management of Ilnik Section prior to July 20.</p>
2001	The minimum gillnet mesh size restriction of 5¼" was removed from the entire North Peninsula to fully utilize local stocks and provide a management tool to control escapement quality.
2004	Ilnik Section portion of the management plan was changed and early fishing was allowed beginning on June 25 in the entire Ilnik Section if Ilnik and Meshik river sockeye salmon escapement warrant. That portion of the plan with the 100,000 sockeye salmon cap, 24 hour maximum continuous fish time, and potential extended closure of Strogonof Point area were removed from the plan. Ugashik River sockeye salmon still considered in management of Ilnik Section prior to July 20.
2007	A portion of Outer Port Heiden Section that had been closed to commercial salmon fishing since 1990 was reopened to commercial salmon fishing for drift gillnet gear from June 20 to July 31 to provide opportunity to harvest surplus salmon bound for Meshik River. Ilnik Section opening date was changed from June 25 to June 20 to provide more harvest opportunity on Ilnik River bound sockeye salmon.

Table 7.—North Alaska Peninsula coho salmon harvest by district and section, 2000-2009.

Section	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2000-2009 Average
Northwestern District											
Dublin Bay	0	0	0	0	0	0	0	0	0	0	0
Urilla Bay	5,601	0	0	0	0	0	0	0	0	0	560
Swanson Lagoon	27	0	0	0	0	0	23	10	0	0	6
Bechevin Bay <sup>a</sup>	0	0	0	0	0	0	109	3	41	50	20
Izembek - Moffet Bay <sup>a</sup>	0	23	25	37	15	901	92	142	1	0	124
Northwestern											
District Total	5,628	23	25	37	15	901	224	155	42	50	710
Northern District											
Black Hills	259	86	335	423	356	78	140	71	2,419	743	491
Caribou Flats	0	0	0	0	0	0	0	0	0	0	0
Nelson Lagoon	25,017	2,918	6,712	30,620	29,879	46,486	66,874	47,647	54,282	37,060	34,750
Herendeen - Moller Bay <sup>b</sup>	19	42	29	7	0	0	0	41	1	0	14
Bear River	10,111	10,031	13,080	10,379	1,743	9,046	11,580	9,076	33,400	9,817	11,826
Three Hills	5,630	3,135	5,863	3,982	944	2,177	4,422	4,111	10,646	6,862	4,777
Ilnik	12,584	4,488	2,387	5,617	649	7,870	10,715	7,281	24,428	11,682	8,770
Inner Port Heiden	11,623	0	0	0	0	0	0	0	0	0	1,162
Outer Port Heiden	0	0	0	0	0	0	0	628	19	507	115
Cinder River	12,784	1,439	320	2,072	334	2,122	0	0	0	888	1,996
Northern											
District Total	78,027	22,139	28,726	53,100	33,905	67,779	93,731	68,855	125,195	67,559	63,902
North Peninsula											
Total	83,655	22,162	28,751	53,137	33,920	68,680	93,955	69,010	125,237	67,609	64,612

Note: Catch numbers do not include test fish harvest or fish retained for personal use.

<sup>a</sup> Statistical area 311-58 was moved from Bechevin Bay Section to Izembek-Moffet Bay Section in 2001.

<sup>b</sup> Includes Port Moller Bight Section.

Table 7.–Estimated run potential for 2010 of four sockeye salmon systems on North Alaska Peninsula.

System	2005-2009 Average Escapement	Estimated Run Using R/S x Average Escapement <sup>a</sup>		
		Estimated Total Run Potential <sup>b</sup>	Estimated Range Using Using 80% Confidence Interval	
			Low	High
Bear River				
Early Run	229,000	1,115,000	546,000	1,686,000
Late Run	191,000	423,000 <sup>c</sup>	232,000	613,000
Nelson River	197,000	492,000 <sup>c</sup>	295,000	689,000
Sandy River	52,000	256,000	47,000	465,000
Ilnik River	93,000	456,000	163,000	749,000
Totals	762,000	2,742,000	2,126,000	5,317,000

<sup>a</sup> Run potential for Bear (early), Sandy, and Ilnik R. runs is based on the 5 year average escapement and average return per spawner of 4.88:1, which is the actual R/S for the late Bear River run from 1998-02. The Bear (late) and Nelson River runs are based on forecasts.

<sup>b</sup> Does not include escapement from Northern District sockeye systems, which have averaged 369,491 sockeye salmon during 2005-2009 in systems other than Nelson, Bear, Sandy, and Ilnik rivers.

<sup>c</sup> The estimated run potentials for late Bear River and Nelson River run are from a formal forecast.

Table 8.– Average catch, escapement and combined catch and escapement for the sections from Nelson Lagoon to Outer Port Heiden, 2000-2009.

Year	Nelson Lagoon -		Total
	Port Heiden Harvest	Port Heiden Escapement	
2000	1,844,501	553,200	2,397,701
2001	1,074,541	617,400	1,691,941
2002	1,295,627	658,550	1,954,177
2003	1,371,322	866,011	2,237,333
2004	2,317,755	1,067,247	3,385,002
2005	2,929,325	1,118,500	4,047,825
2006	2,303,061	811,800	3,114,861
2007 <sup>a</sup>	3,355,152	818,802	4,173,954
2008 <sup>a</sup>	1,932,128	665,570	2,597,698
2009 <sup>a</sup>	2,374,689	703,800	3,078,489
2000-2009 Avg	2,079,810	788,088	2,867,898

<sup>a</sup> Includes harvest from Outer Port Heiden Section and escapement from Inner Port Heiden.

Table 9.—Sockeye salmon stocks used to manage five sections in Northern District.

Section	Sockeye Salmon Stocks	
	Through July 20	After July 20
Bear River	Bear R., Sandy R.	Bear R., Sandy R.
Three Hills	Bear R., Sandy R., Ilnik R.	Bear R., Sandy R.
Ilnik		
SW of Unangashak Bluffs	Ilnik R., Ugashik R. <sup>a</sup>	Bear R.
NE of Unangashak Bluffs	Ilnik R., Meshik R., Ugashik R. <sup>a</sup>	Bear R.
Nelson Lagoon	Nelson R.	Nelson R.
Outer Port Heiden	Meshik R., Ugashik R. <sup>a</sup>	Meshik R. (through July 31)

<sup>a</sup> Ugashik River sockeye salmon will be considered only if a management concern exists for these stocks.

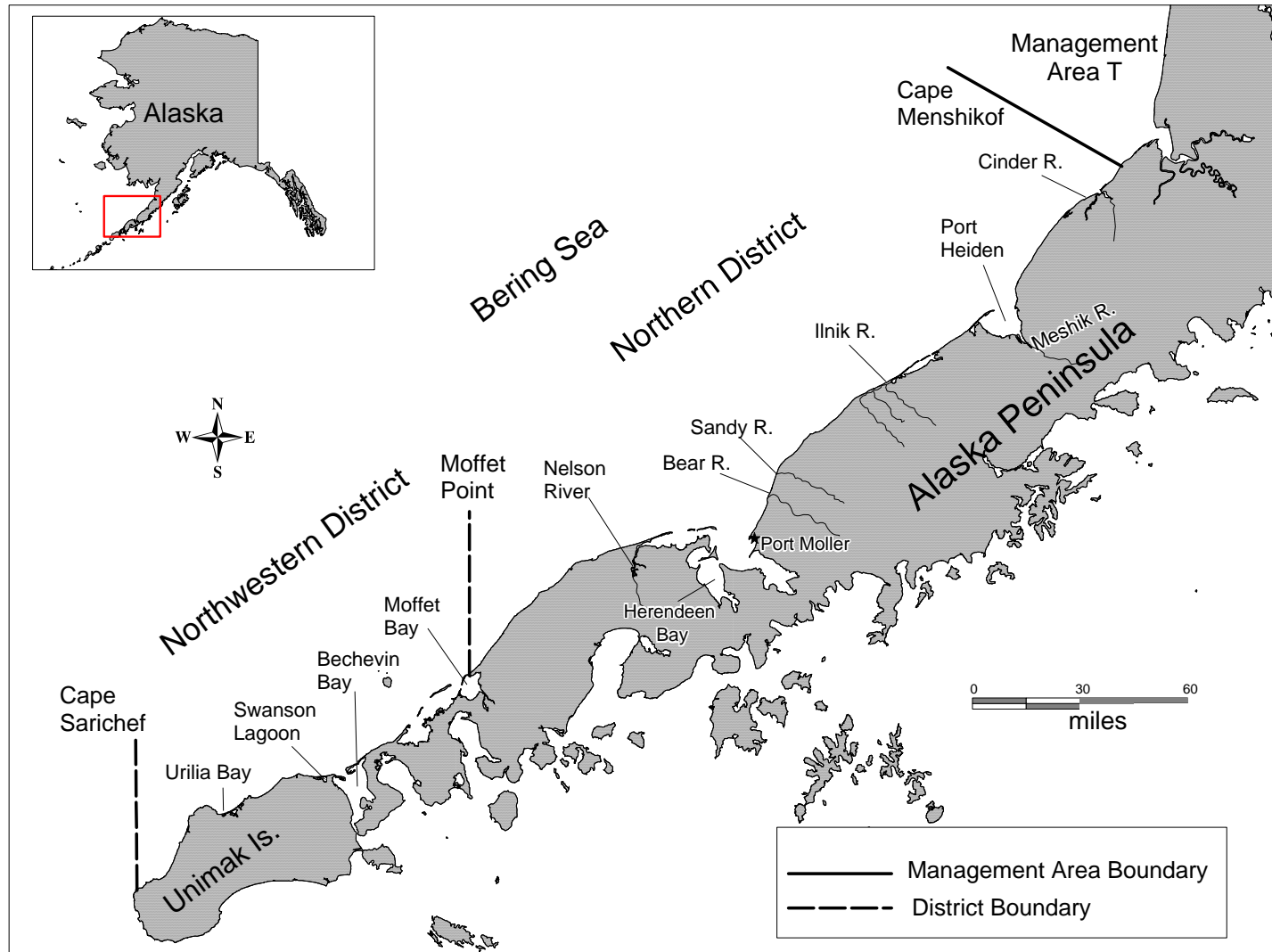


Figure 1.—Map of Alaska Peninsula and North Alaska Peninsula commercial salmon fishing districts and major rivers and bays.

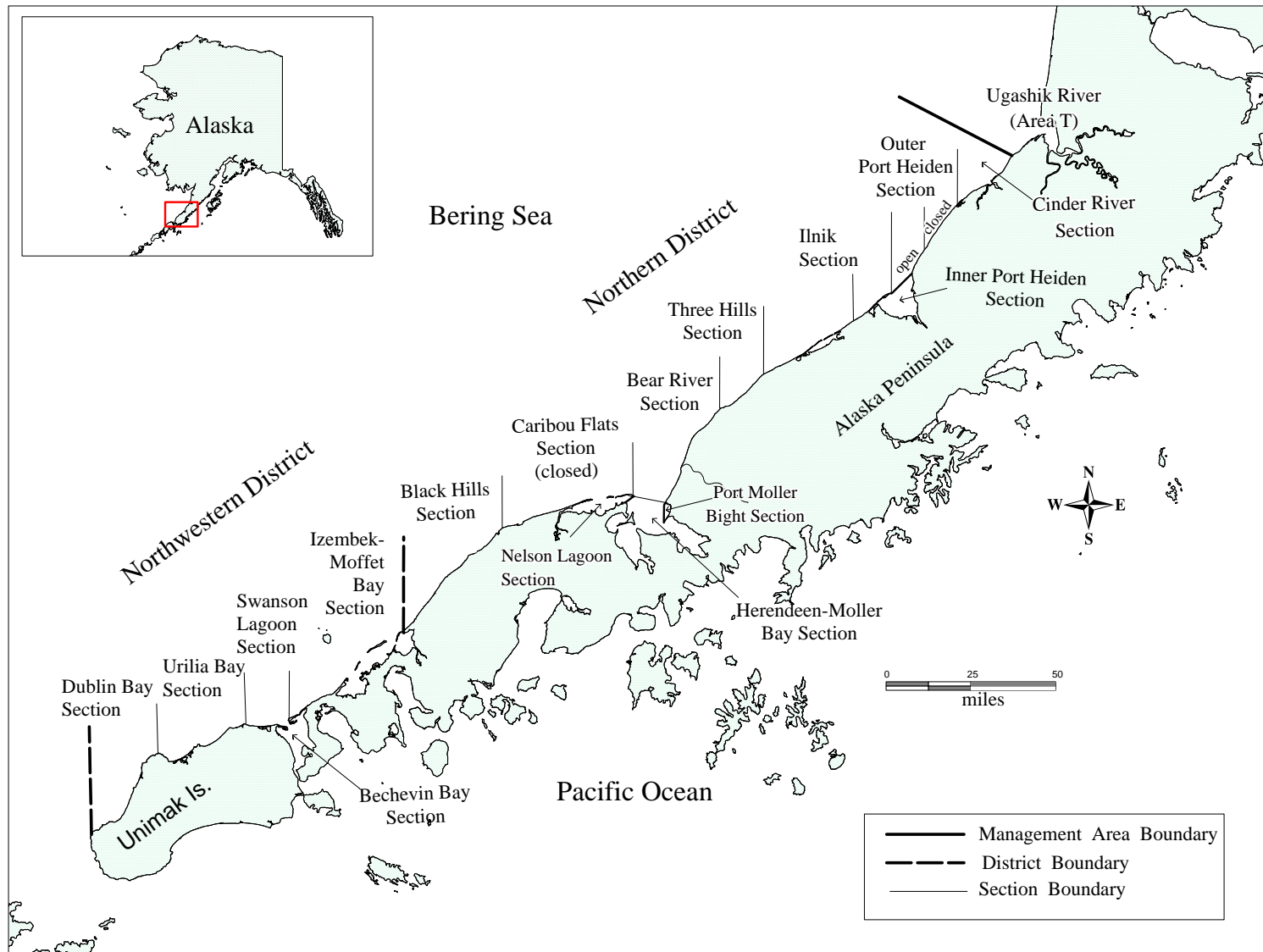


Figure 2.—Map of Alaska Peninsula and North Peninsula commercial salmon fishing districts and sections.

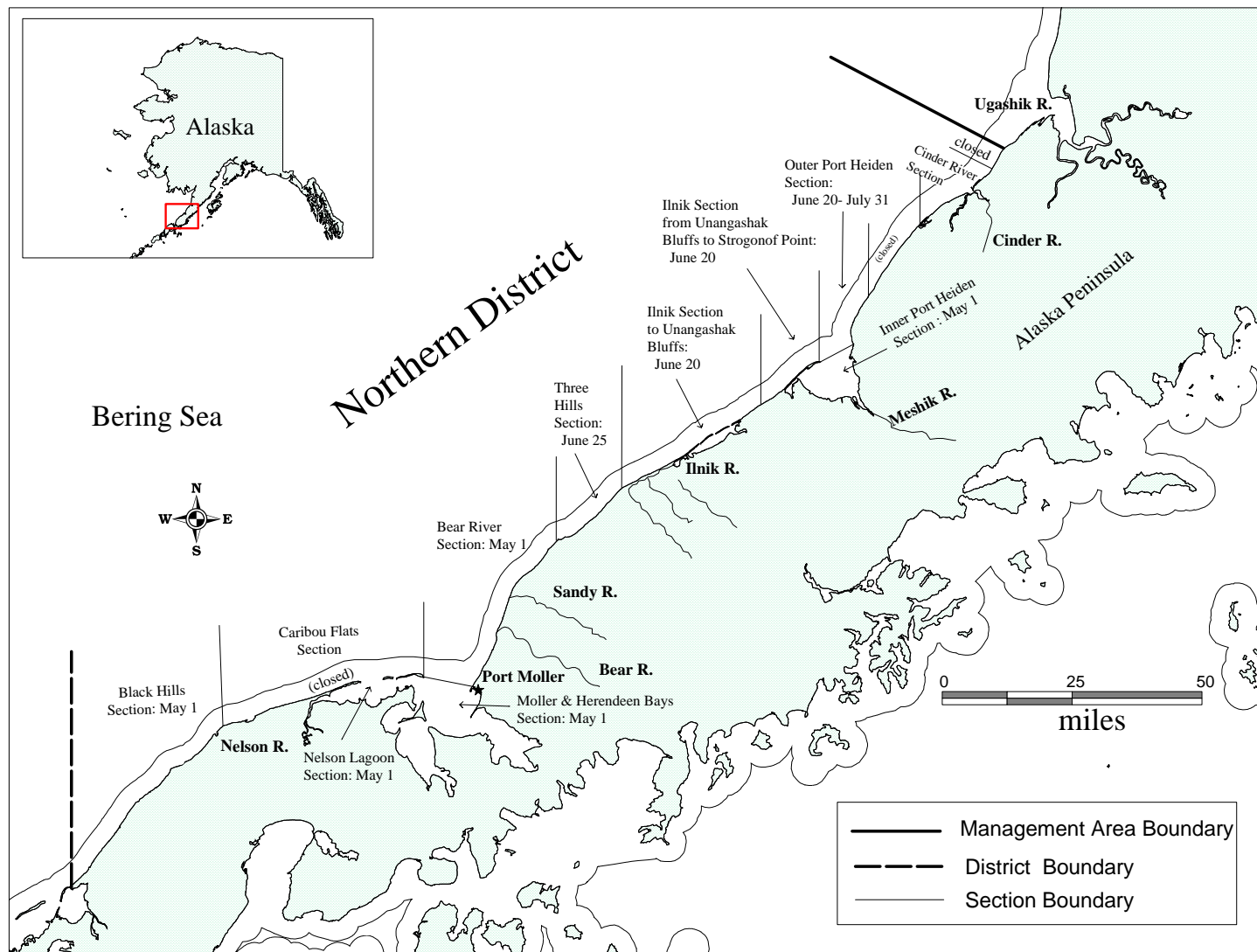


Figure 3.—Map of the Northern District with sections, commercial salmon season opening dates, and major sockeye salmon systems.

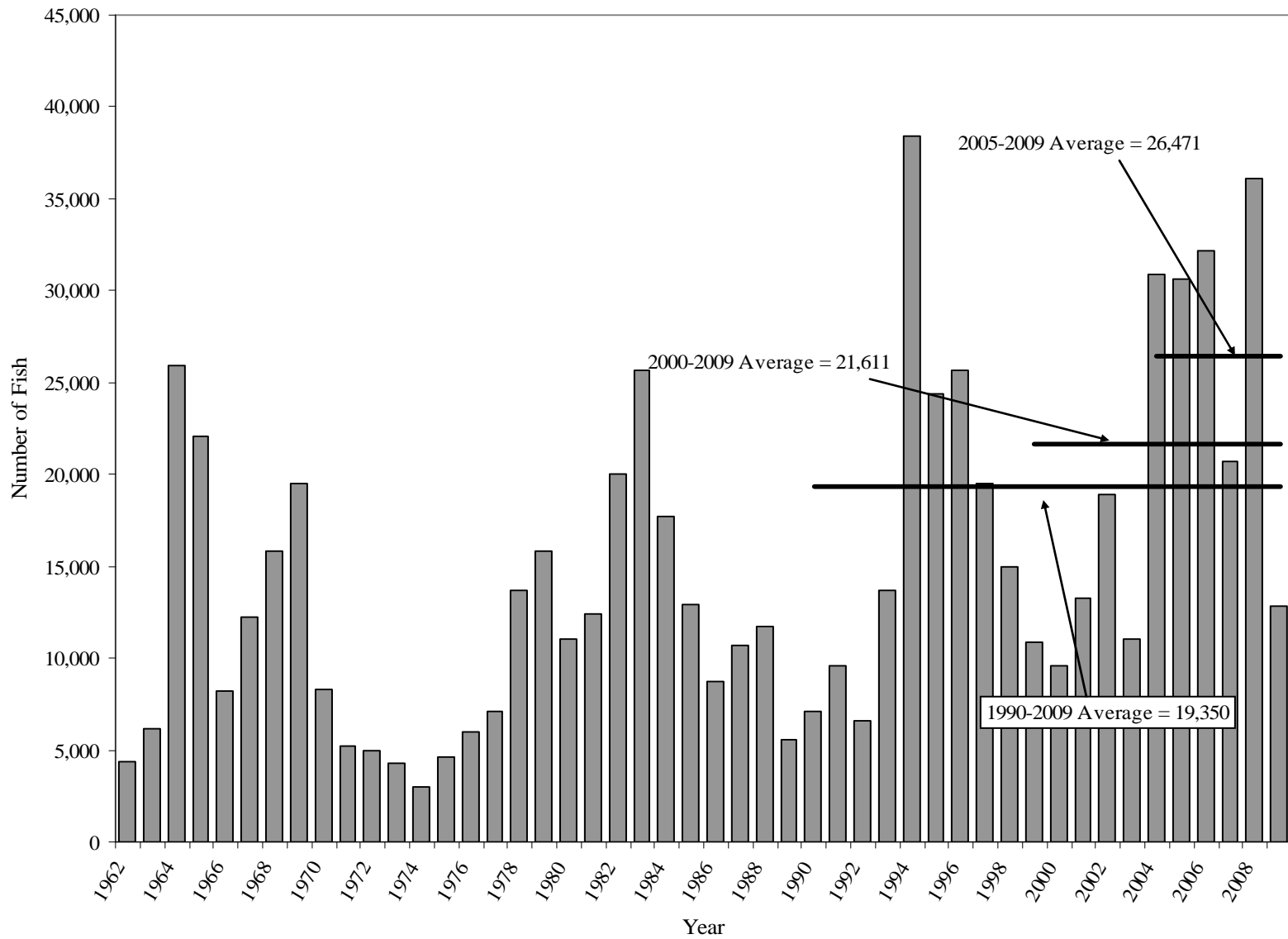


Figure 4.—North Alaska Peninsula Chinook salmon escapement by year, 1962-2009.



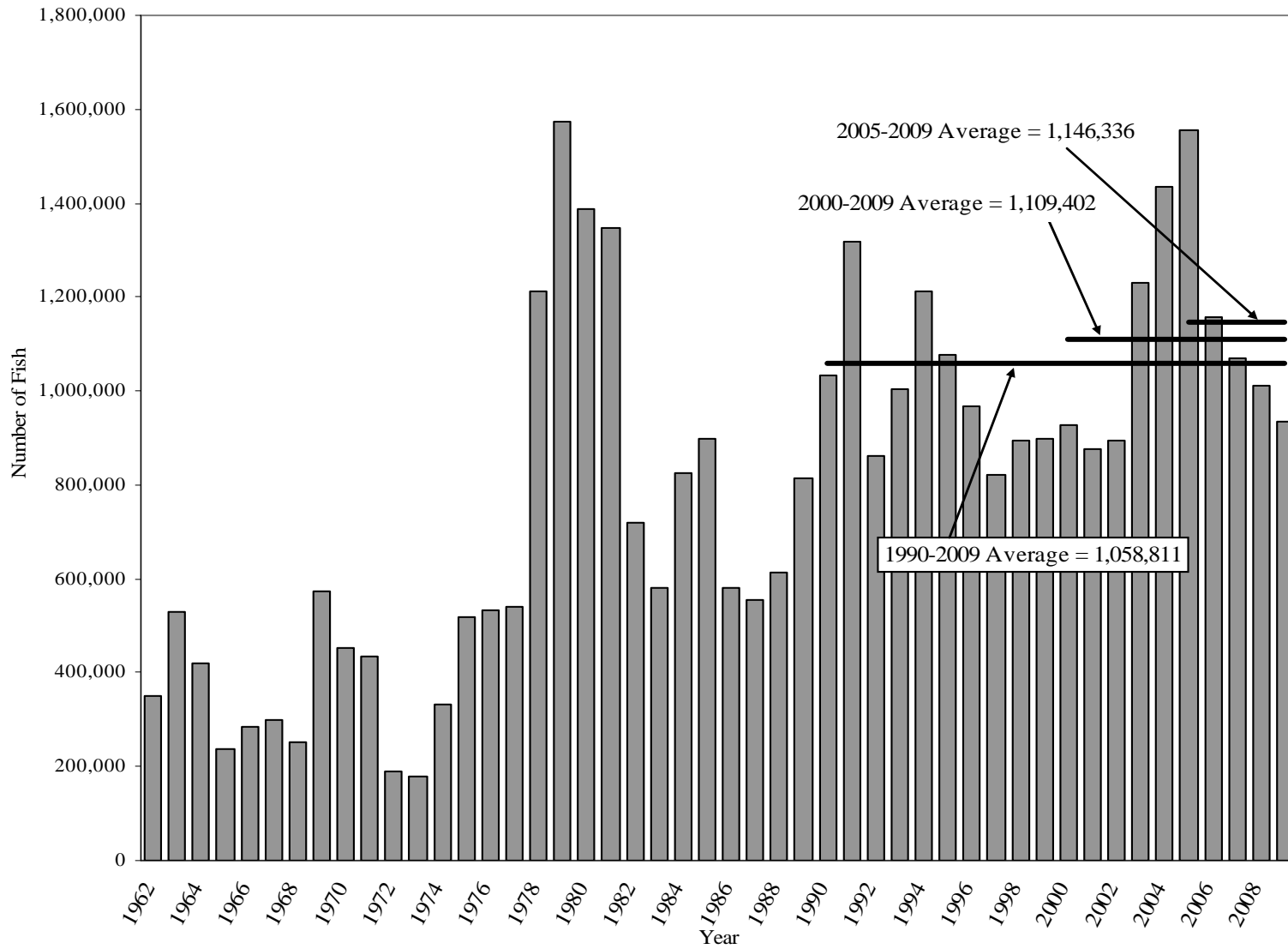


Figure 5.—North Alaska Peninsula sockeye salmon escapement, by year 1962-2009.

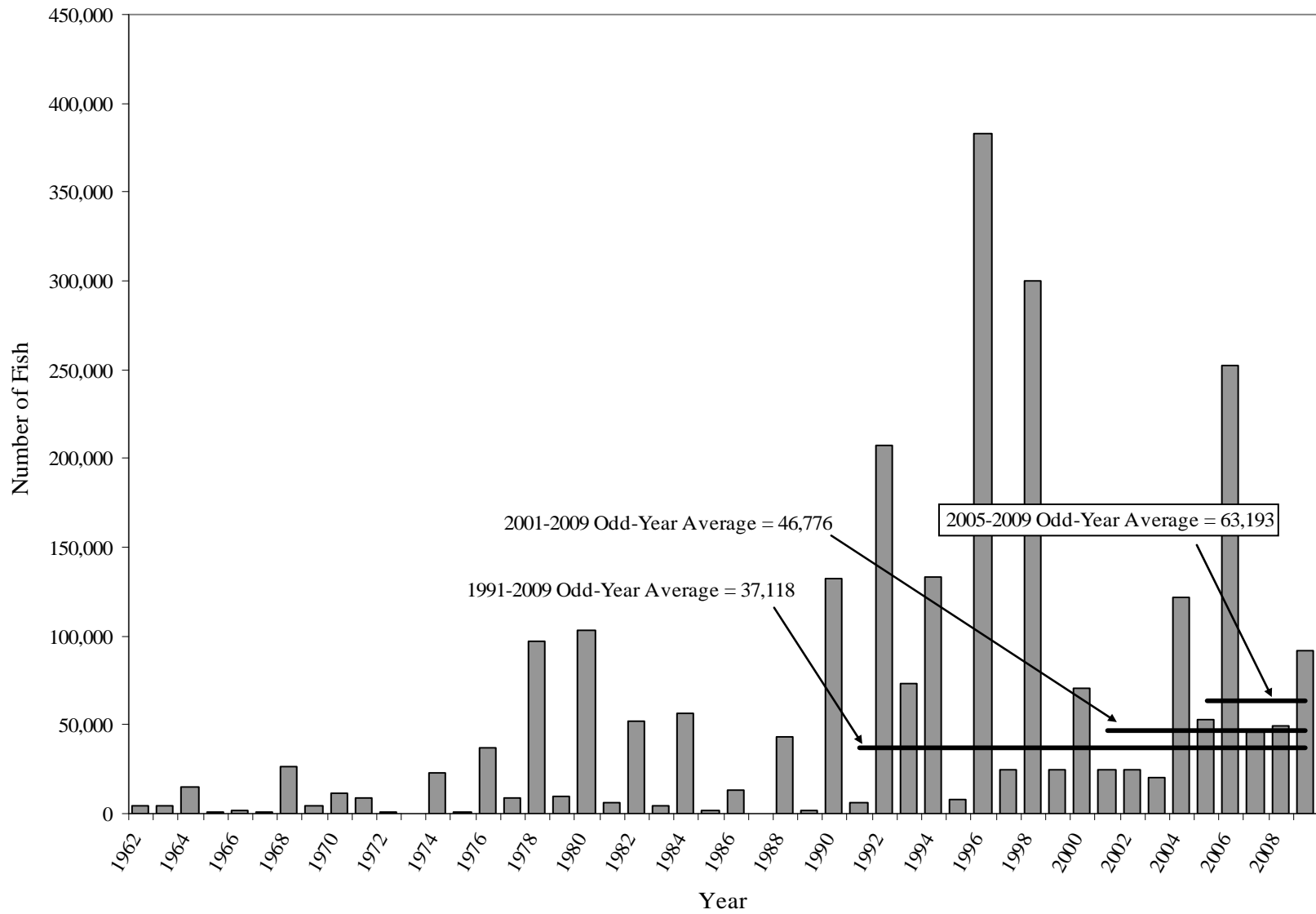


Figure 6.—North Alaska Peninsula pink salmon escapement by year, 1962-2009.

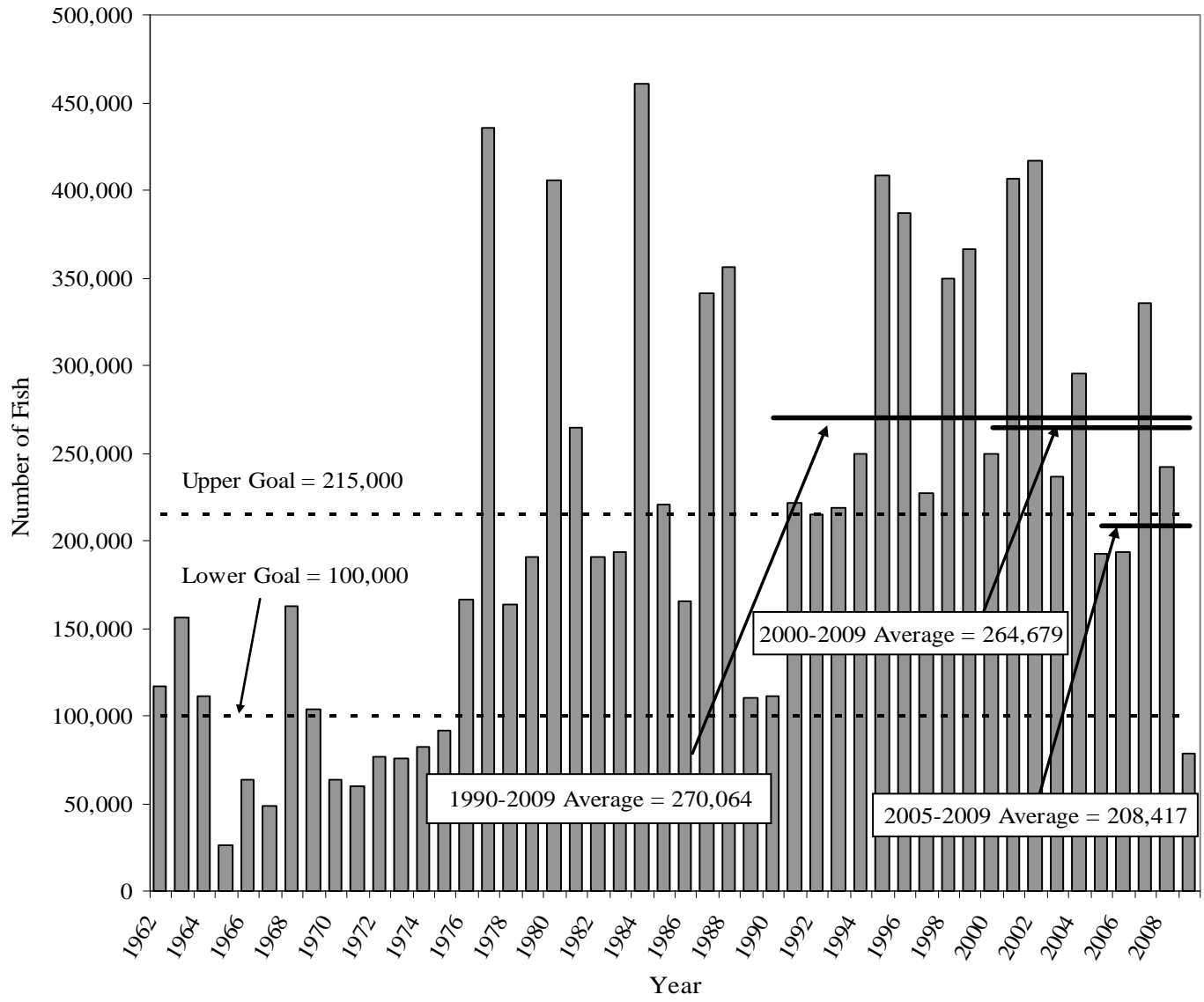


Figure 7.—Northwestern District chum salmon escapement by year, 1962-2009.

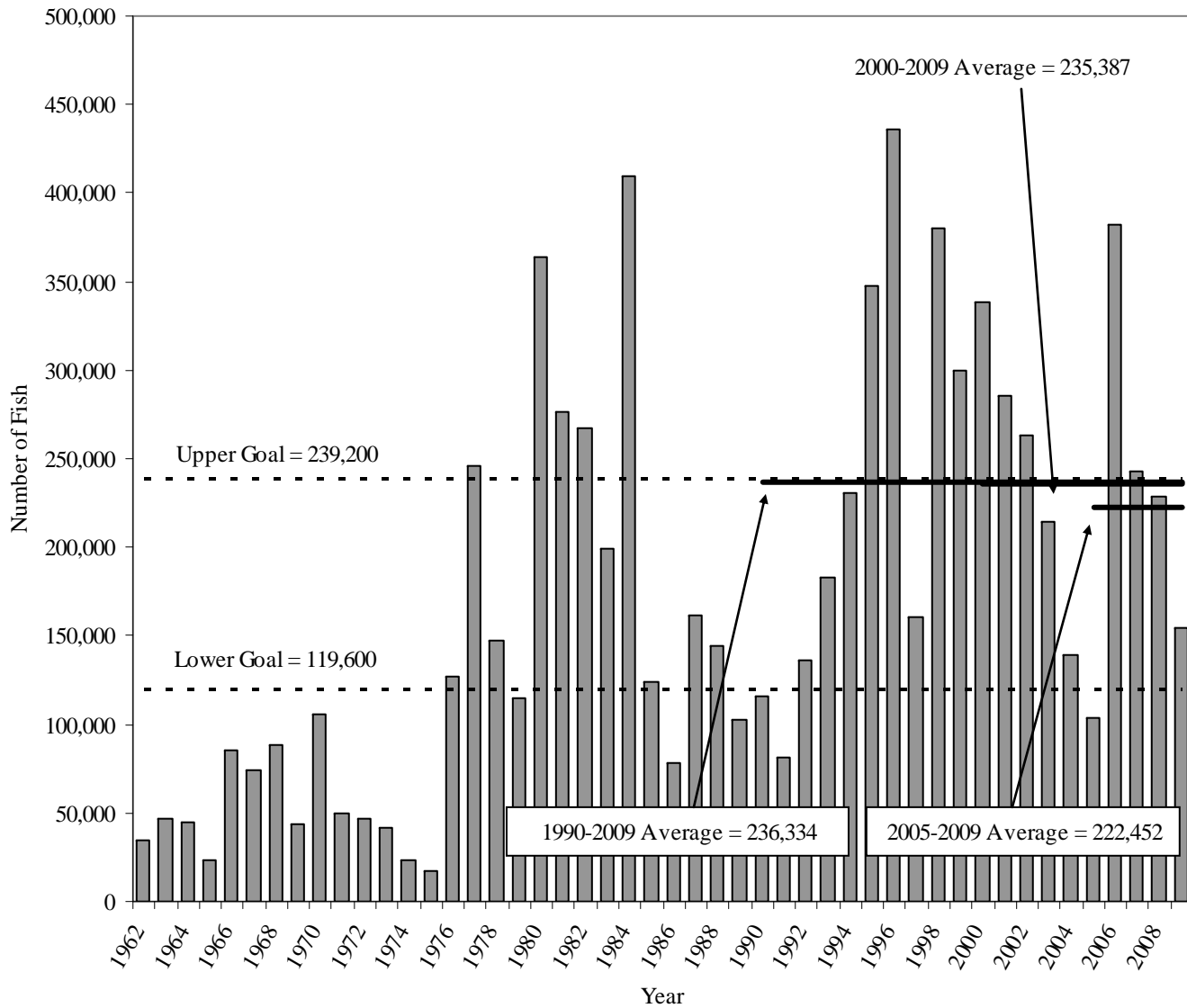


Figure 8.—Northern District chum salmon escapement by year, 1962-2009.

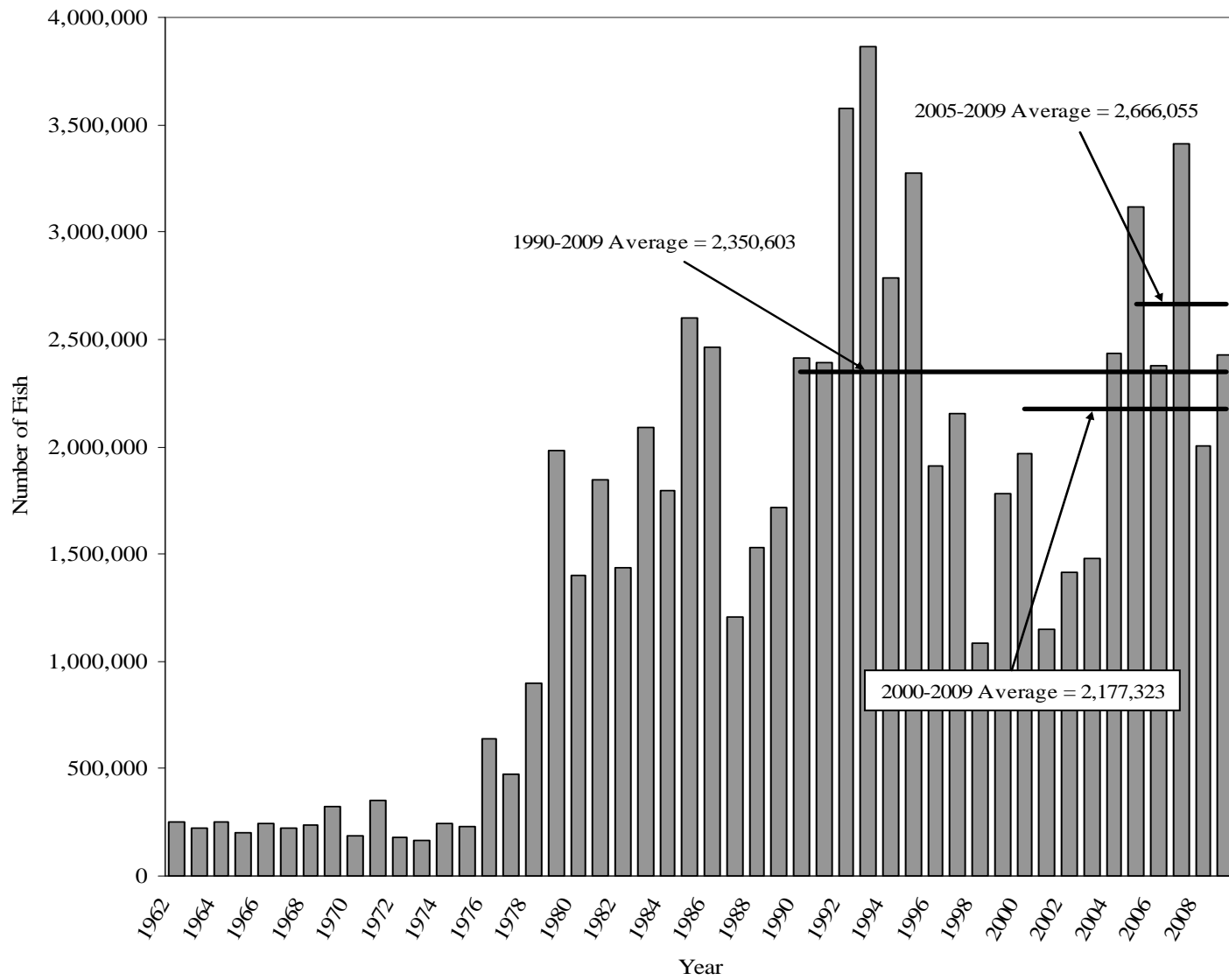


Figure 9.—North Alaska Peninsula commercial sockeye salmon harvest, 1962-2009.

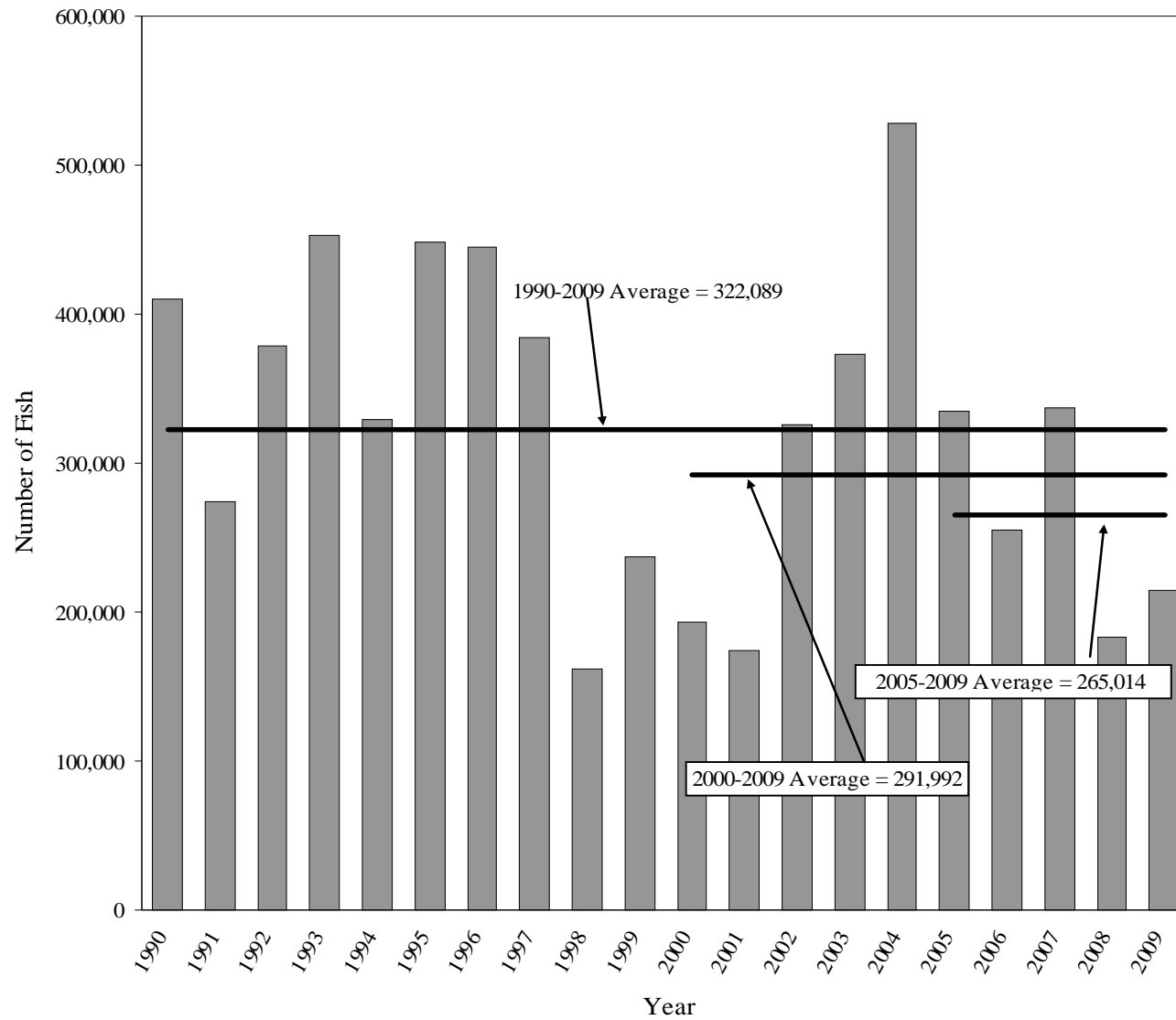


Figure 10.—Nelson Lagoon commercial sockeye salmon harvest, 1990-2009.

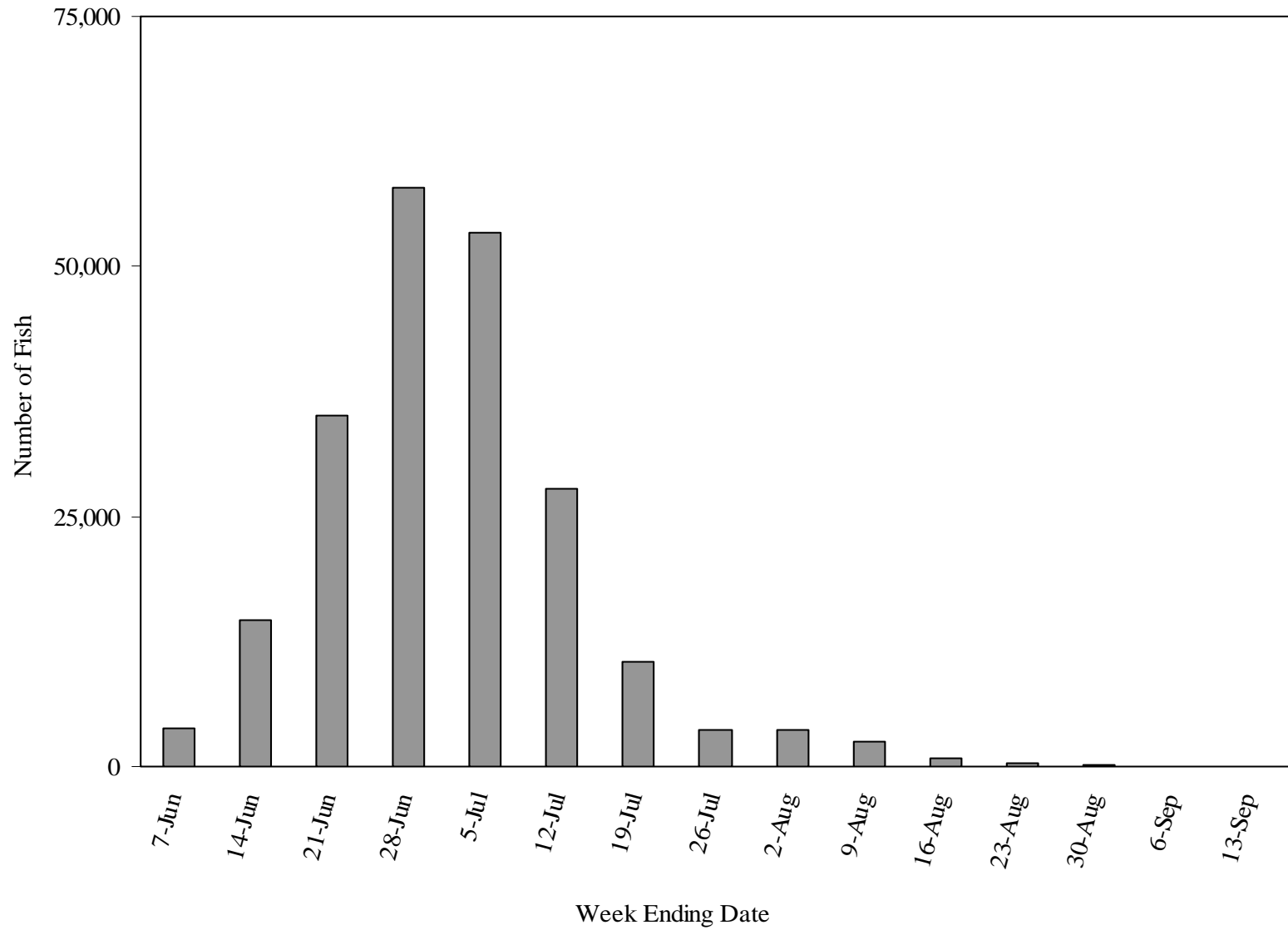


Figure 11.—Nelson Lagoon commercial sockeye salmon harvest by week, 2009.

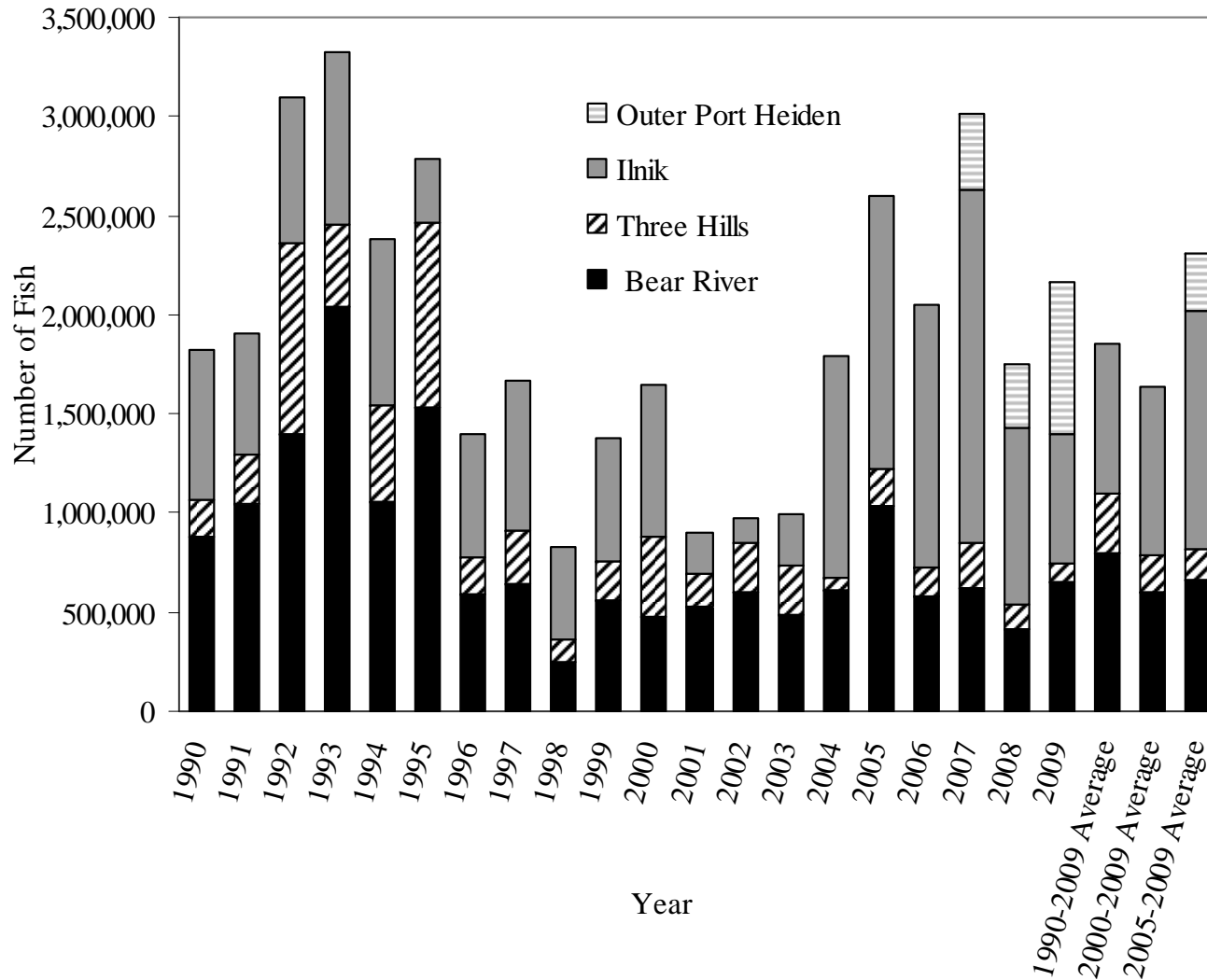


Figure 12.—Bear River, Three Hills, and Ilnik sections commercial sockeye salmon harvest, 1990-2009.



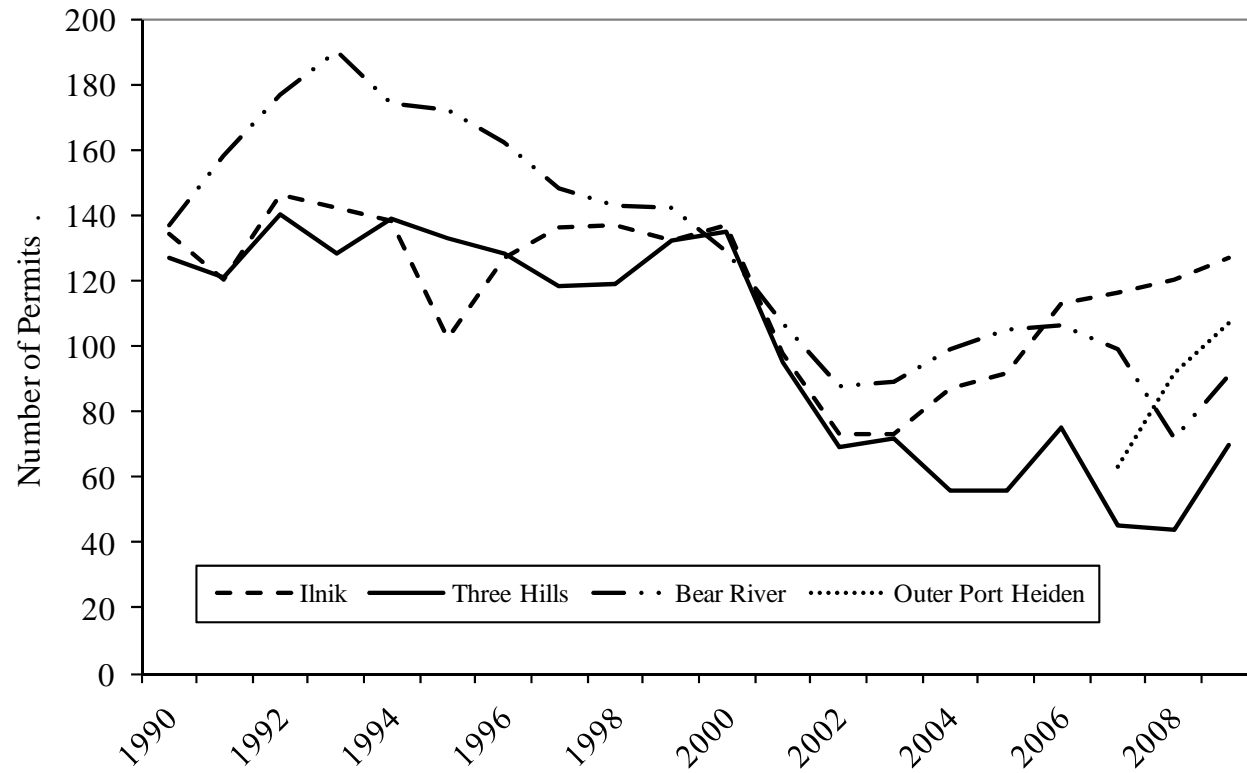


Figure 13.—Number of commercial salmon permits fished in Bear River, Three Hills, Ilnik and Outer Port Heiden sections, 1990-2009.

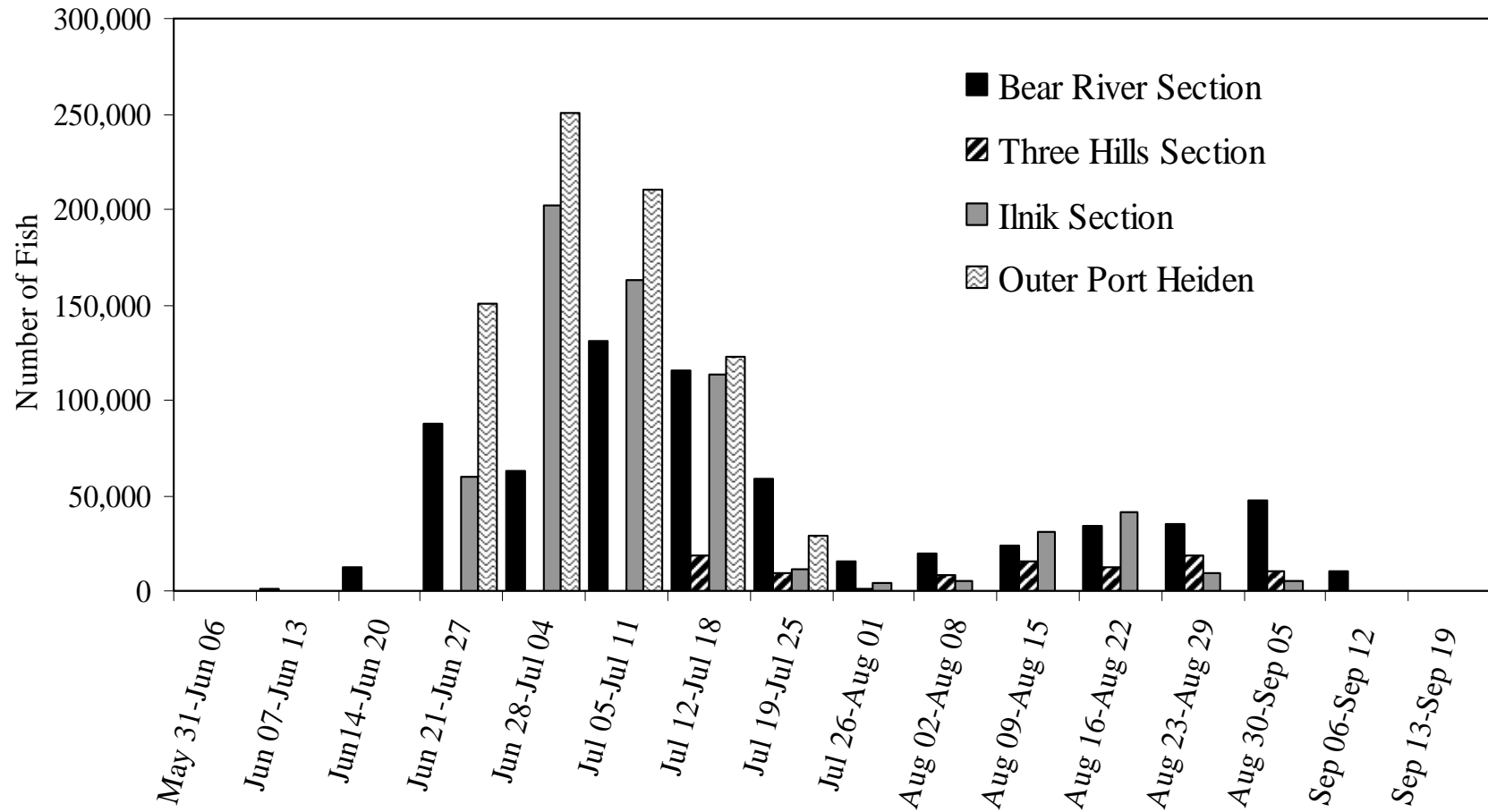


Figure 14.—Port Moller to Outer Port Heiden sockeye salmon harvest by week, 2009.

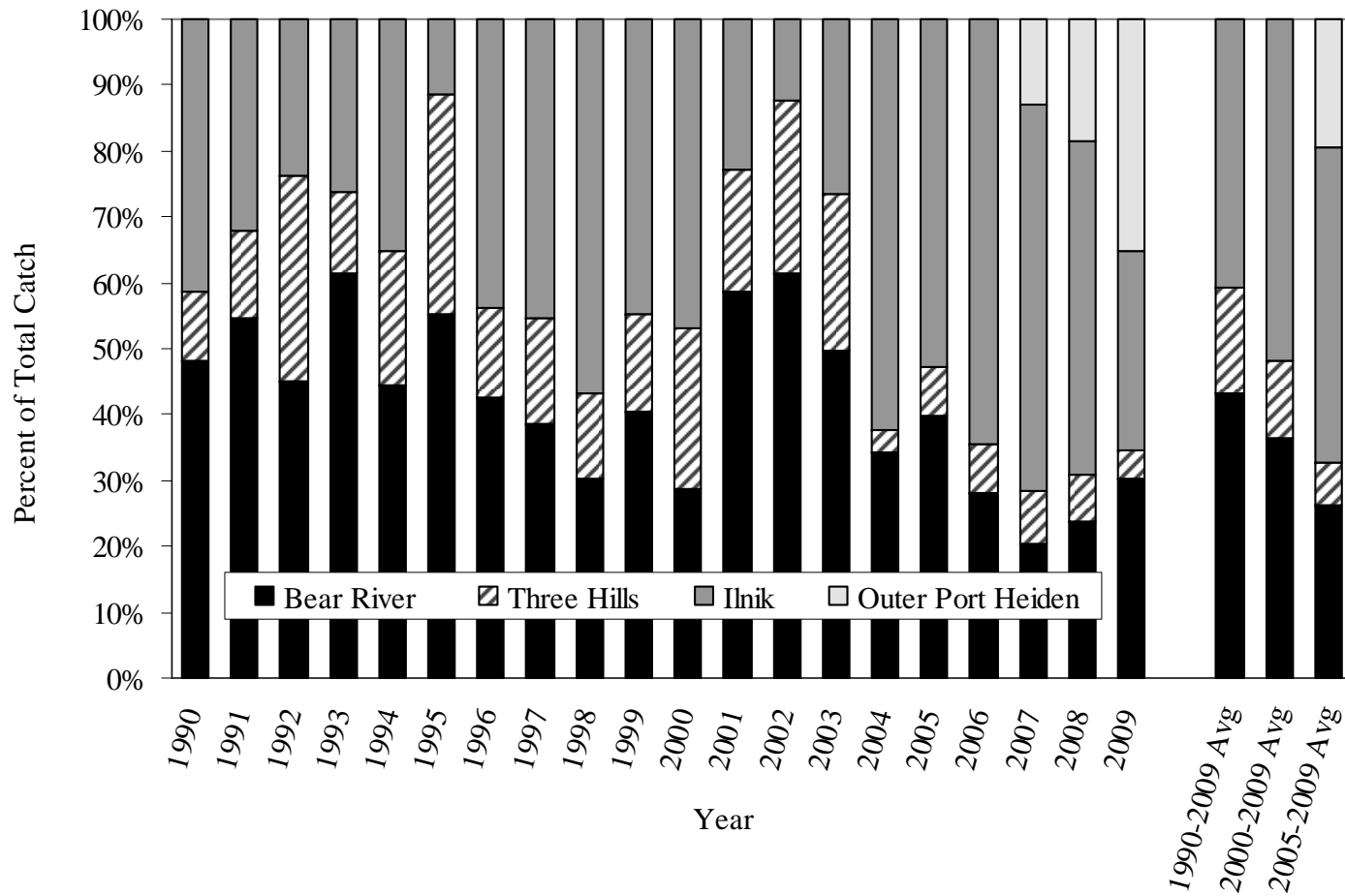


Figure 15.—Percent of the commercial sockeye salmon harvest from Bear River, Three Hills, Ilnik, and Outer Port Heiden sections, 1990-2009.

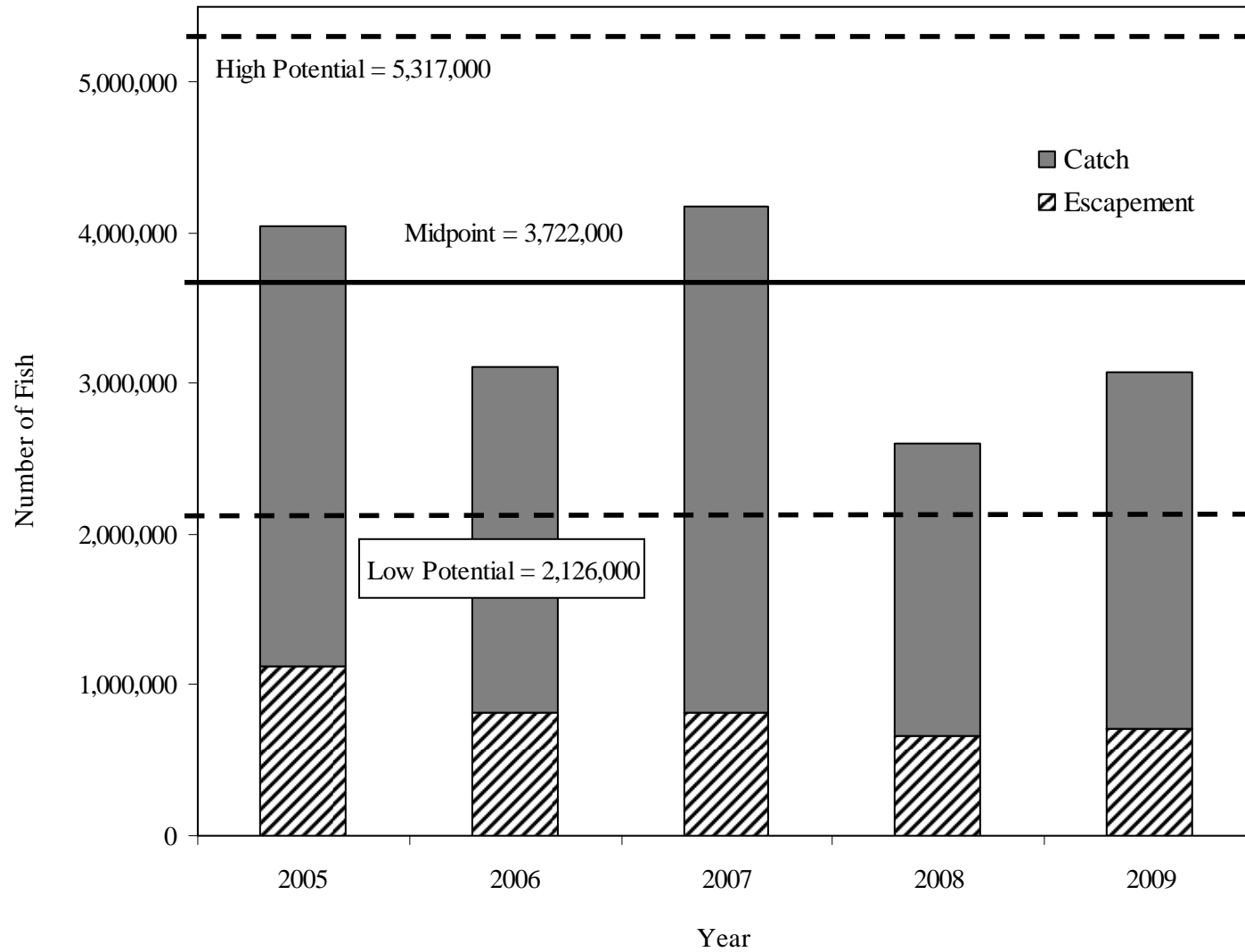


Figure 16.—Nelson Lagoon to Port Heiden actual sockeye salmon escapement and catch, and estimated run potential with low and high range estimates for 2005-2009.

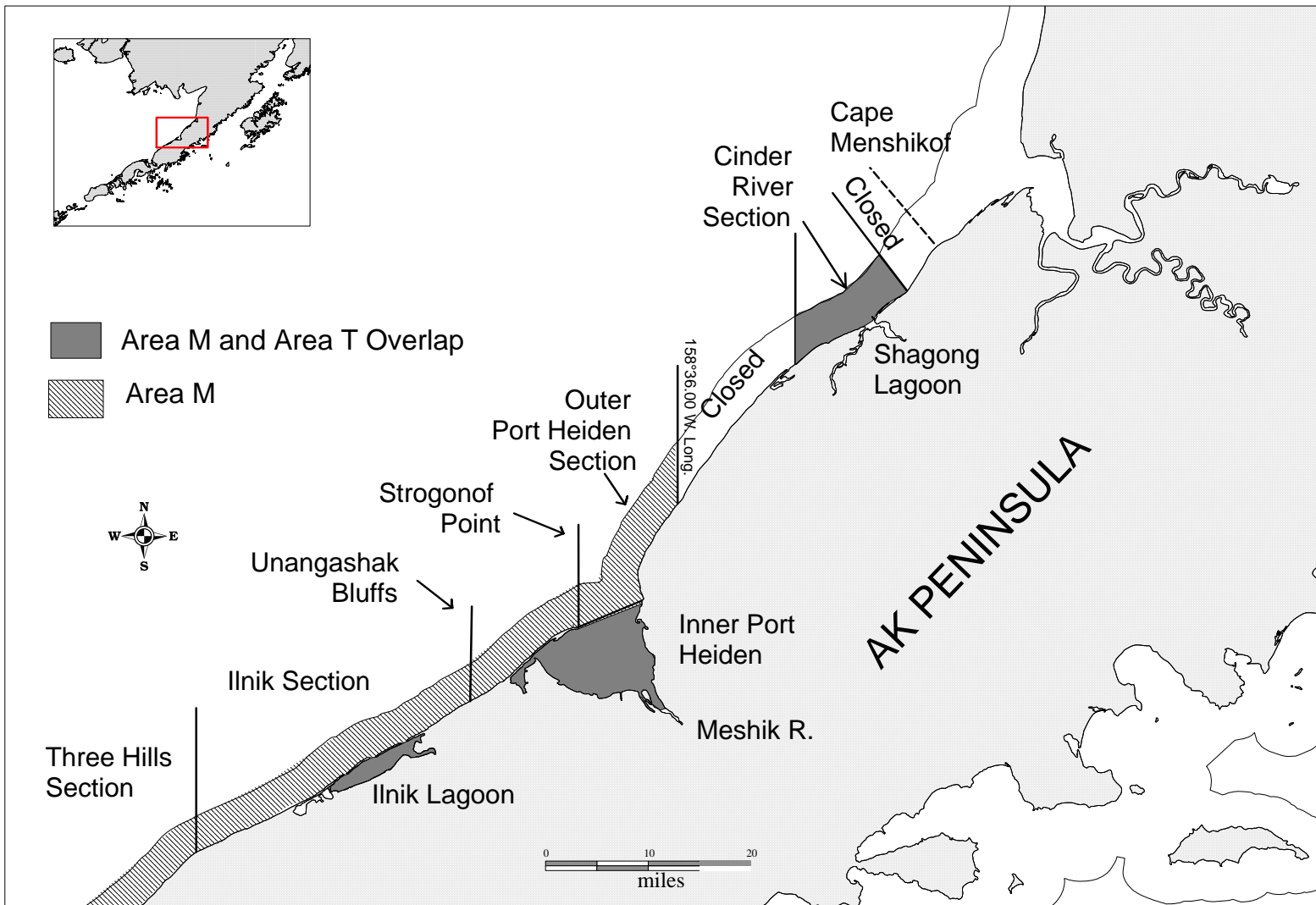


Figure 17.—Alaska Peninsula (Area M) and Bristol Bay (Area T) commercial salmon fishing overlap areas.



**APPENDIX A. ESCAPEMENT AND PEAK ESCAPEMENT  
COUNTS**

Appendix A1.–North Alaska Peninsula estimated total escapement for Chinook, sockeye, pink, and chum salmon, and peak escapement counts for coho salmon, 2009.

<b>NORTHWESTERN DISTRICT</b>		Number of Salmon <sup>a</sup>				
Stream No.	Stream Name	Chinook	Sockeye	Coho	Pink	Chum
<b>URILIA BAY SECTION</b>						
311-30.06	Divide Cr.					
311-30.07	Whaleback Mtn. Cr.		36,700			
311-30.08	Christianson Lgn.		11,400			
<b>Christianson Lagoon System total</b>			<b>48,100</b>			
311-30.09	Mudhole		500			
311-30.10	Clear Lgn.					
<b>Peterson Lagoon System total</b>			<b>500</b>			
311-40.01	Emil's River					
311-40.04	North Cr.					
311-40.07	Otter Point Cr.					
<b>Total Urilia Bay Section</b>		<b>0</b>	<b>48,600</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>SWANSON LAGOON SECTION</b>						
311-50.01	Big River					
311-50.02	Swanson Lgn. System		1,000			
<b>Total Swanson Lagoon Section</b>		<b>0</b>	<b>1,000</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>BECHEVIN BAY SECTION</b>						
311-60.01	St. Catherine Cove		100			42,020
311-60.06	Anderson's Cr.				31,000	
311-60.07 & .08	Trader's Cove				41,000	
311-60.12	Warm Springs Bay					
311-60.13	Hungry's Cr.					
311-6018	Lampsport Lagoon					
<b>Total Bechevin Bay Section</b>		<b>0</b>	<b>100</b>	<b>0</b>	<b>72,000</b>	<b>42,020</b>
<b>IZEMBEK-MOFFET BAY SECTION</b>						
312-20.01	Norma Bay Lakes		5,000			12,390
312-20.02	Mike's Duck Camp Cr.			50	2,400	
312-20.03	Norma Bay, South		1,100	100		2,200
312-20.04	Third Bridge Cr.					2,600
312-20.05	Frosty Cr.		400			10,790
312-20.06	Blue Bill Lake		2,700			
312-20.13	Outer Marker Lakes					
312-20.51	Springs S Frosty Cr.					6,500
312-20.52	Second Bridge Cr.		100			1,800
<b>Izembek Lagoon Total</b>		<b>0</b>	<b>9,300</b>	<b>150</b>	<b>2,400</b>	<b>36,280</b>
312-40.01	Joshua Green River		27,900	69,800		
312-40.02	Moffet Springs Cr.		2,100			
312-40.03	Moffet Cr.			320		160
312-40.04	Unnamed					
312-40.05	Unnamed					
<b>Moffet Bay total</b>		<b>0</b>	<b>30,000</b>	<b>70,120</b>	<b>0</b>	<b>160</b>
<b>Total Izembek-Moffet Bay Section</b>		<b>0</b>	<b>39,300</b>	<b>70,270</b>	<b>2,400</b>	<b>36,440</b>
<b>NORTHWESTERN DISTRICT TOTAL</b>		<b>0</b>	<b>89,000</b>	<b>70,270</b>	<b>74,400</b>	<b>78,460</b>

-continued-



<b>NORTHERN DISTRICT</b>		Number of Salmon <sup>a</sup>				
Stream No.	Stream Name	Chinook	Sockeye	Coho	Pink	Chum
<b>BLACK HILLS SECTION</b>						
313-10.02	North Cr.	200	8,000	5,700		5,000
313-10.05	Cathedral River					
313-10.06	Russian River					
313-10.09	AMOCO Airstrip Cr.			300		600
313-10.11	Black Hills Cr.	1,200		2,200		
313-10.14	Steelhead Cr.	300		3,000		1,200
<b>Total Black Hills Section</b>		<b>1,700</b>	<b>8,000</b>	<b>11,200</b>	<b>0</b>	<b>6,800</b>
<b>NELSON LAGOON SECTION</b>						
313-30.01	David's R. (early)					
313-30.01 & .04	David's R. (late)		500			
313-30.02	Caribou River		2,000			
313-30.03	Nelson (Sapsuk) River	2,048	157,000	22,000	68	499
<b>Total Nelson Lagoon Section</b>		<b>2,048</b>	<b>159,500</b>	<b>22,000</b>	<b>68</b>	<b>499</b>
<b>HERENDEEN-MOLLER BAY SECTION</b>						
314-20.02	Buck Valley					
314-20.03	Doe Valley					300
314-20.04	Deer Valley			200	2,000	11,000
314-20.05	Portage Valley			200		800
314-20.06	Grass Valley		3,000	300	4,000	25,000
314-20.07	Lawrence Valley			800	5,000	22,000
314-20.08	Mine Hbr.					200
314-20.09	Coal Cr.				1,300	6,100
<b>Herendeen Bay total</b>		<b>0</b>	<b>3,000</b>	<b>1,500</b>	<b>12,300</b>	<b>65,400</b>
314-30.04	Mud Bay, West			50		2,700
314-30.05	Mud Bay, East			200	900	35,100
314-30.07	Head Cr., Rt Head			50		200
314-30.09	Right Head Cr.			700	800	3,000
314-30.10	Left Head Cr.			3,000	2,000	6,000
<b>Moller Bay total</b>		<b>0</b>	<b>0</b>	<b>4,000</b>	<b>3,700</b>	<b>47,000</b>
<b>Total Herendeen-Moller Bay Section</b>		<b>0</b>	<b>3,000</b>	<b>5,500</b>	<b>16,000</b>	<b>112,400</b>
<b>BEAR RIVER SECTION</b>						
315-10.01	Frank's Lgn.			900		2,000
315-10.02	King Salmon R.	350		600		
315-11.02	Bear River	800	349,500		863	123
315-12.01	Sandy River	146	36,000		54	9
<b>Total Bear River Section</b>		<b>1,296</b>	<b>385,500</b>	<b>1,500</b>	<b>917</b>	<b>2,132</b>
<b>THREE HILLS SECTION</b>						
316-10.01	Lime Cr.		800	100		3,000
316-10.02	Unnamed			50		300
316-10.04	SW of 3-Hills		800	400		900
<b>Total Three Hills Section</b>		<b>0</b>	<b>1,600</b>	<b>550</b>	<b>0</b>	<b>4,200</b>

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<b>NORTHERN DISTRICT (continued)</b>		Number of Salmon <sup>a</sup>				
Stream No.	Stream Name	Chinook	Sockeye	Coho	Pink	Chum
<b>ILNIK SECTION</b>						
316-10.05	Ocean River		16,000	7,000		
316-10.06	Willie Creek		11,000			
316-20.01	Ilnik Lagoon System	13	39,000	17,700	56	
316-20.04	Unanagashak			3,575		
<b>Total Ilnik Section</b>		<b>13</b>	<b>66,000</b>	<b>28,275</b>	<b>56</b>	<b>0</b>
<b>INNER PORT HEIDEN SECTION</b>						
317-20.02	Charles Cr.					
317-20.04 A & B	Red & Yellow Bluff Creeks		24,500	4,400		100
317-20.06	Highland Cr.		200			
<b>West Port Heiden Bay Total</b>		<b>0</b>	<b>24,700</b>	<b>4,400</b>	<b>0</b>	<b>100</b>
317-20.07 A	Meshik River, main stem	600	16,000	19,000		
317-20.07 B	Braided Cr.	700	2,000			600
317-20.07 C	Landlocked Cr.		7,000	9,000		
317-20.07 D	Bluff Cr.		3,500			
317-20.07 E	Blue Violet Cr.		10,000			
317-20.07 F	Wolf Cr.					1,000
317-20.07 G	Unnamed					400
317-20.07 H	Shoe Cr.	100	400			6,000
317-20.07 J	Unnamed					300
317-20.07 K	Unnamed		4,000			
317-20.07 L	Unnamed	400	6,000			
317-20.07 M	Unnamed		3,000			1,000
317-20.07 N	Unnamed	400	5,000			
317-20.07 O	Plenty Bear Cr.	800	6,000			1,200
317-20.07 O-A	Paddle Cr.					1,100
317-20.07 P	Waterfall Cr.					
317-20.07 R	Rainbow Cr.		300			900
317-20.07 T	Cub Cr.		300			
<b>Meshik River total</b>		<b>3,000</b>	<b>63,500</b>	<b>28,000</b>	<b>0</b>	<b>12,500</b>
317-20.08	Birthday Cr.					3,000
317-20.09	Barabara Cr.					
<b>Total Inner Port Heiden Section</b>		<b>3,000</b>	<b>88,200</b>	<b>32,400</b>	<b>0</b>	<b>15,600</b>
<b>OUTER PORT HEIDEN SECTION</b>						
318-10.01	Reindeer Cr.					1,200
<b>Total Outer Port Heiden Section</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,200</b>

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<b>NORTHERN DISTRICT (continued)</b>		Number of Salmon <sup>a</sup>				
Stream No.	Stream Name	Chinook	Sockeye	Coho	Pink	Chum
<b>CINDER RIVER SECTION</b>						
318-20.01	Unnamed					
318-20.04	Mud Cr.		31,000	17,000		
318-20.06 A	Cinder River, main stem		24,000	18,000		2,000
318-20.06 B	Unnamed					
318-20.06 C	Unnamed					200
318-20.06 D	Lava Creek		39,000			3,000
318-20.06 E	High Creek		500			
318-20.06 H	Meloy Cr.	1,500	8,000			2,000
318-20.06 J	Wiggly Cr.	3,100	29,000			4,000
318-20.06 K	Ray Cr.	150	2,100			
318-20.06 L	Unnamed					100
<b><i>Cinder River total</i></b>		<b><i>4,750</i></b>	<b><i>102,600</i></b>	<b><i>18,000</i></b>	<b><i>0</i></b>	<b><i>11,300</i></b>
<b>Total Cinder River Section</b>		<b>4,750</b>	<b>133,600</b>	<b>35,000</b>	<b>0</b>	<b>11,300</b>
<b>NORTHERN DISTRICT TOTAL</b>		<b>12,807</b>	<b>845,400</b>	<b>136,425</b>	<b>17,041</b>	<b>154,131</b>
<b>TOTAL NORTH PENINSULA</b>		<b>12,807</b>	<b>934,400</b>	<b>206,695</b>	<b>91,441</b>	<b>232,591</b>

<sup>a</sup> Chinook, sockeye, pink, and chum salmon numbers are estimated total escapements. Coho salmon numbers are peak counts and based on limited data.



## **APPENDIX B. SOCKEYE SALMON BROOD TABLES**

Appendix B1.–Bear River late-run (post July 31) sockeye salmon brood table, 1980-2009.

Year	Escapement	Age																	Return	Spawner
		3			4			5				6			7			8		
		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	1.5	2.4	3.3	3.4		
1980	238,038						0	12,754	400,014	90	54	132,036	330	0	205	17	0	545,500	2.29	
1981	214,728				1,134	43,049	9,594	0	6,463	210,579	0	2	47,413	18	0	41	93	0	318,386	1.48
1982	104,503		0	0	657	1,324	1,333	0	7,344	70,269	0	91	197,258	488	0	1,259	847	0	280,870	2.69
1983	172,143	0	0	0	147	5,044	176	0	16,802	134,380	0	488	160,027	2,093	0	89	0	0	319,246	1.85
1984	108,151	0	0	0	429	2,887	19,898	0	23,787	301,375	0	185	142,790	11,014	0	1,261	0	0	503,626	4.66
1985	170,739	0	0	1	592	24,407	14,756	0	138,603	538,445	0	1,058	217,073	38	0	2,789	2,074	0	939,836	5.50
1986	98,921	0	0	172	2,512	62,610	2,269	0	77,677	412,258	0	1,252	301,036	5,751	0	416	4,290	0	870,243	8.80
1987	83,395	0	0	0	910	77,886	17,721	57	19,211	451,063	1,000	321	490,594	25,598	0	1,909	2,341	0	1,088,611	13.05
1988	140,660	0	0	2,101	256	15,096	29,363	77	18,515	370,999	0	109	250,503	224	0	2,886	143	0	690,272	4.91
1989	204,804	0	0	2,599	1,932	6,504	40,756	0	52,714	638,148	0	2,223	322,645	1,191	0	439	67	0	1,069,218	5.22
1990	262,946	0	0	0	1,037	35,887	11,911	82	77,905	795,302	0	94	250,526	13,215	0	751	1,370	0	1,188,080	4.52
1991	173,913	0	0	1,123	211	39,738	15,637	90	32,615	192,725	146	979	91,586	1,564	0	0	1	0	376,415	2.16
1992	195,830	0	0	247	741	7,789	19,961	226	44,890	356,357	0	0	73,155	339	0	44	215	0	503,964	2.57
1993	197,988	0	189	122	7,940	6,631	30,910	1	6,601	366,291	123	184	114,578	5,819	0	100	1,299	32	540,820	2.73
1994	204,441	0	316	1,705	312	20,444	21,371	0	18,139	566,411	0	55	156,901	1,098	32	714	229	0	787,727	3.85
1995	107,961	0	24	1,279	497	30,943	27,553	0	47,482	455,680	0	860	147,895	32	0	1,149	351	0	713,745	6.61
1996	119,629	0	217	1,208	1,287	37,755	8,026	32	15,639	271,516	0	301	143,781	19,931	0	423	2,901	0	503,017	4.20
1997	145,311	0	0	527	1,095	5,718	28,904	50	2,606	198,531	201	196	103,653	7,179	0	0	10	0	348,670	2.40
1998	193,420	0	2,749	202	1,549	13,224	10,321	0	13,915	163,150	0	0	20,433	375	0	139	25	0	226,082	1.17
1999	127,890	211	2,058	347	1,316	5,837	27,362	0	1,592	42,043	0	520	32,175	69	0	579	11	0	114,120	0.89
2000	90,947	15	722	7,625	225	15,160	7,762	69	78,873	491,468	0	1,916	134,683	339	0	1,062	837	0	740,756	8.14
2001	122,505	134	921	540	3,355	14,271	10,434	106	41,740	203,429	0	816	124,321	5	0	1,670	0	0	401,742	3.28
2002	95,520	11	7,476	6,420	2,354	137,064	15,417	104	150,956	584,702	0	1,123	136,306	0	0	234	0	0	1,042,167	10.91
2003	139,799	221	2,665	4,320	2,046	62,296	17,103	0	230,760	436,775	0	1,841	145,171	233						
2004	80,435	0	0	1,171	5,012	51,056	9,458	0	24,643	115,873	0									
2005	221,752	0	0	419	0	6,422	9,871													
2006	182,005	0	0	0																
2007	224,767	0																		
2008	195,474																			
2009	133,263																			
																		1998-2002 Average R/S	4.88	

Appendix B2.–Nelson River sockeye salmon brood table, 1978-2009.

Brood Year	Escapement	Ages															Return	Return/ Spawner	
		2		3		4		5			6		7						
		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	1.5	2.4	3.3		
1978															101	2,942	779		
1979												5,620	322,104	542	0	701	170		
1980								299	107,873	492,648	0	131	185,282	202	0	239	44		
1981	251,000				1,759	36,372	46,924	72	41,812	47,275	0	660	13,678	35	0	59	0		
1982	179,600		314	65	5,608	11,464	2,635	67	45,490	143,389	0	123	125,841	1,572	0	963	8	337,539	1.88
1983	128,800	0	852	0	5,740	43,856	23,711	244	72,682	53,532	0	936	66,102	210	0	2,964	2,751	273,580	2.12
1984	251,000	0	624	6,638	1,912	59,603	12,678	206	59,696	276,557	154	449	275,013	10,624	0	17	0	704,171	2.81
1985	314,000	0	168	671	976	77,339	8,037	171	110,618	238,924	0	0	109,028	0	0	1,632	46	547,610	1.74
1986	117,500	40	187	353	4,370	33,650	13	0	188,884	175,014	0	7,801	140,116	285	0	1,817	1,979	554,509	4.72
1987	155,700	0	57	0	1,588	71,043	4,221	143	112	151,270	0	2,986	287,652	7,874	0	3,054	288	530,288	3.41
1988	142,900	0	574	3,357	3,441	132,457	9,261	0	126,716	257,895	0	4,422	129,241	2,311	0	1,025	1,051	671,751	4.70
1989	206,800	0	520	394	3,029	21,813	8,550	0	42,705	422,926	333	510	129,324	2,124	0	104	0	632,332	3.06
1990	269,200	0	274	0	1,836	39,391	15,830	47	104,895	490,010	0	770	66,012	0	0	0	388	719,453	2.67
1991	279,200	0	43	57	850	27,591	29,153	13	93,773	397,612	0	1,059	117,254	0	0	0	0	667,405	2.39
1992	179,700	177	372	367	7,022	101,543	16,002	35	88,011	138,846	0	270	65,466	1,950	0	0	323	420,384	2.34
1993	262,200	0	588	696	6,168	32,200	0	0	101,468	68,567	0	757	43,961	0	0	247	822	255,474	0.97
1994	333,400	0	0	66	1,784	56,338	25,719	0	55,711	278,510	0	187	64,812	2,238	0	396	850	486,611	1.46
1995	338,700	0	408	1,225	9053	40,189	8,048	45	40,011	159,412	0	443	59,776	0	0	427	1,805	320,842	0.95
1996	241,600	0	487	369	4,798	103,080	373	1,351	127,901	121,449	179	258	116,142	29,140	0	284	5,141	510,952	2.11
1997	183,000	0	28	336	11,403	40,783	5,776	0	36,770	364,391	234	781	188,100	3,880	0	1,428	592	654,502	3.58
1998	159,810	0	5,419	603	8,105	49,739	8,673	0	88,210	248,385	1,082	989	122,876	1,015	0	77	738	535,911	3.35
1999	202,067	0	23,892	284	13,776	47,362	104,402	591	106,577	677,132	532	1,501	117,938	6,593	0	446	2,055	1,103,081	5.46
2000	182,694	234	10,599	2,296	15,861	42,510	2,498	0	53,774	363,805	0	927	75,988	433	0	258	598	569,781	3.12
2001	201,962	2152	34,953	20	15,722	38,048	8,544	705	60,178	252,169	0	672	124,101	1,063	0	469	1,137	539,933	2.67
2002	315,689	159	16,950	191	12,230	52,044	4,310	271	67,350	238,834	0	392	94,440	836	0	238	0	488,245	1.55
2003	343,511	820	7,994	784	10,424	71,839	884	327	79,730	73,596	0	2,072	30,449	497					
2004	480,097	0	1,166	96	7,016	65,083	1,158	236	144,813	163,350	0								
2005	290,000	0	564	181	1,962	26,112	572												
2006	215,000	0	488	430															
2007	180,000	0																	
2008	141,600																		
2009	157,000																		
																		1998-2002 Average R/S	3.23