

**Fishery Management Report No. 09-15**

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**Chignik Management Area Commercial Salmon  
Fishery Harvest Strategy, 2009**

by

**James V. Jackson**

April 2009

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



## Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

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

***FISHERY MANAGEMENT REPORT NO. 09-15***

**CHIGNIK MANAGEMENT AREA COMMERCIAL SALMON FISHERY  
HARVEST STRATEGY, 2009**

by

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April 2009

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*This document should be cited as:*

*Jackson, J. V. 2009. Chignik Management Area commercial salmon fishery harvest strategy, 2009. Alaska Department of Fish and Game, Fishery Management Report No. 09-15, Anchorage.*

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## ABSTRACT

This plan provides stakeholders with general information regarding how the Alaska Department of Fish and Game will manage the 2009 Chignik Management Area (CMA) commercial salmon fishery. The 2009 total sockeye salmon *Oncorhynchus nerka* forecasted run for the Chignik River watershed is 1,380,000 fish. Approximately 632,000 sockeye salmon are expected to be harvested in the CMA. The first commercial fishing period in the Chignik Bay, Central, and Eastern districts and the Inner Castle Cape Subsection of the Western District may occur when approximately 20,000 sockeye salmon have passed the Chignik River weir. Two concurrent fishing periods of up to 48 hours in length, separated by at least 48 hours, may occur in the Western District during June and early July. All subsequent Western District fishing periods as well as the first commercial fishing period in the Perryville District may occur on July 6, as long as Chignik River sockeye salmon escapement objectives are expected to be met. From the end of the transition period until the end of the fishing season, the department shall manage the CMA based on its evaluation of the local pink, chum, and coho salmon runs, as well as the Chignik watershed late-run sockeye salmon escapement.

Key words: FMR, Chignik, sockeye salmon, *Oncorhynchus tshawytscha*, *O. gorbuscha*, *O. keta*, *O. kisutch*, Chignik Management Area, CMA, 2009 management plan, subsistence fishing, commercial fishery SEG.

## INTRODUCTION

This document provides stakeholders with the basic framework of how the Alaska Department of Fish and Game (ADF&G) will manage the 2009 Chignik Management Area (CMA; Area L) commercial salmon fishery. The CMA encompasses all coastal waters and inland drainages of the northwest Gulf of Alaska between Kilokak Rocks and Kupreanof Point (Figure 1). For management purposes, the CMA is divided into five fishing districts: Eastern, Central, Chignik Bay, Western, and Perryville. Each district is further divided into statistical reporting areas (Figure 2).

The 2009 CMA commercial salmon fishery will be managed by the ADF&G in accordance with the guidelines established in the Chignik Salmon Management Plan (5 AAC 15.357). The goal of this management plan is to allow commercial fisheries on CMA salmon stocks and to achieve escapement goals for early-run (Black Lake) and late-run (Chignik Lake) sockeye salmon *Oncorhynchus nerka* runs as well as local stocks of pink *O. gorbuscha*, chum *O. keta*, coho *O. kisutch*, and Chinook salmon *O. tshawytscha*. Complete details of this plan are found in the Chignik and Kodiak Areas Commercial Salmon Fishing Regulations booklet (ADF&G 2008) available from regional Alaska Department of Fish and Game offices, or online at: [http://www.cf.adfg.state.ak.us/geninfo/regs/cf\\_regs.php](http://www.cf.adfg.state.ak.us/geninfo/regs/cf_regs.php) (Accessed March 2009).

## GEAR DESCRIPTION

Purse and hand purse seines are the only legal commercial salmon fishing gear within the CMA. Legal seine gear must be between 100 and 125 fathoms in length in the Chignik Bay District and between 100 and 225 fathoms in length in all other districts. No seine may be less than three fathoms or more than 375 meshes in depth. Up to 25 meshes of chafing gear with a maximum mesh size of seven inches may be used. Additionally, no lead may be more than 75 fathoms in length. Complete seine specifications are listed in 5 AAC 15.332.

## CLOSED WATERS

Closed water areas within the CMA are described in 5 AAC 15.350., and determined using the global positioning system (GPS; 5 AAC 15.206). Where regulatory markers are posted, it is illegal to take salmon for commercial purposes on the streamward side of the markers (5 AAC 39.290 (b)).

## **REPORTING REQUIREMENTS**

Tender and processor reporting requirements are detailed in the CMA commercial fishing regulations (5 AAC 15.355). Processors are required to report the previous day's commercial harvest information to ADF&G staff by 10:00 AM daily by e-mail, telephone, or radio (SSB or VHF). The preferred method of catch reporting is to e-mail an Excel spreadsheet (template provided by ADF&G) to the Chignik Area Management Biologist ([james.jackson@alaska.gov](mailto:james.jackson@alaska.gov)). It is the responsibility of the processor to contact the department to determine catch reporting protocols. Failure to report daily catch information in a timely manner is a violation of commercial fishing regulations (5 AAC 15.355).

Commercial fishermen are reminded that all salmon caught must be reported on an ADF&G fish ticket. Fishermen may retain finfish from lawfully taken commercial catch for personal use (home pack), including for use as bait in a commercial fishery (5 AAC 39.010). However, commercially caught salmon retained for personal use must be recorded on the fish ticket and may not be sold or bartered. Fishermen are reminded that it is their responsibility to secure a market for all of their catch before harvesting fish. Discarding commercially caught salmon is prohibited by Alaska Statute (AS 16.05.831), and will be strictly enforced.

Commercial fishers or tenders operating in the Eastern District during June and early July are strongly encouraged to contact the Chignik weir to report the prior day's catch information. Timely and accurate catch information allows for informed and consistent management actions in the outlying fishing districts. Information needs, reporting formats, and timetables will be discussed in detail at the preseason industry/departments fisheries meeting held during early June and/or obtained by contacting the management staff at the Chignik weir.

## **EMERGENCY ORDERS AND NEWS RELEASES**

Fishing periods will be established by emergency order (EO) when salmon abundance is expected to exceed escapement requirements. News releases will be issued prior to fishery openings to notify the fishermen and processors. When possible, a 24-hour notice will be given before opening or closing commercial fishing periods. News releases will be broadcast over VHF channel 6 and sent via e-mail to interested parties at the time of release. Please contact ADF&G staff at the Chignik weir or at the Kodiak office in the post season, to be placed on the e-mail list. In addition, information including catch, escapement, and other fishery data will be broadcast over VHF channel 6 at 9:15 AM and 6:15 PM daily. News releases and related fishery data will also be posted on the Region IV web page at [www.cf.adfg.state.ak.us/region4/finfish/salmon/salmhom4.php](http://www.cf.adfg.state.ak.us/region4/finfish/salmon/salmhom4.php) (Accessed March 2009).

## **2009 SALMON FORECASTS**

### **SOCKEYE SALMON**

Preseason salmon forecasts provide fishermen and processors with the expected run strength of Chignik River watershed sockeye salmon for planning purposes. The department also uses these forecasts to formulate a preseason management strategy; however, the fishery is primarily managed based on inseason indicators of actual run strength as they become available.

## **Total Run**

The 2009 total sockeye salmon run for the Chignik River watershed is forecasted at 1,380,000 fish (Appendix A1; Volk et al. 2009). The total projected commercial harvest for 2009 is 781,000 sockeye salmon, of which 632,000 are expected to be harvested in the CMA.

The total early-run estimate is projected to be approximately 846,000 sockeye salmon (Appendix A1; Volk et al. 2009). The Chignik early-run harvest is projected harvest to be 392,000 fish. The early-run sustainable escapement goal (SEG) range is 350,000 to 400,000 sockeye salmon through July 4 (Table 1; Witteveen et al. 2007). The early run typically peaks in late June and returns primarily to Black Lake and its tributaries.

## **Late-Run (Chignik Lake)**

The total late-run estimate is projected to be approximately 535,000 sockeye salmon (Appendix A1; Volk et al. 2009). The Chignik late-run harvest is projected to be 240,000 fish. The late-run SEG range is 200,000 to 400,000 sockeye salmon from July 5 through the end of the run. For subsistence fishermen an inriver run goal (IRRG) of 50,000 sockeye salmon (25,000 sockeye salmon in August and 25,000 in September) is added to the late-run (SEG) and yields a total late-run escapement objective range of 250,000 to 400,000 sockeye salmon (Witteveen et al. 2007). The late run typically peaks in late July and returns primarily to Chignik Lake and its tributaries.

## **OTHER SALMON SPECIES**

Past projections for the Chignik Management Area Chinook, pink, chum, and coho salmon harvests have been based on average historic harvest levels. Currently, historical harvest averages are not a reliable predictor of future harvests because only sockeye salmon have been targeted by the commercial fishery in recent years.

# **2009 CHIGNIK SALMON MANAGEMENT**

## **REGULATORY CHANGES**

Several notable regulatory changes resulted from the Chignik Area Board of Fisheries (BOF) meeting held during January 2008. Following is a brief summary of regulatory changes that were adopted at that meeting. The regulatory changes that significantly influence the management of the fishery are further discussed in detail in the subsequent sections below.

- The Castle Bay Section (273-94) in the Western District was divided into two separate subsections; the Inner Castle Cape Subsection (273-93) and the Outer Castle Cape Subsection (273 95; Figure 3). Beginning in 2008, the Inner Castle Cape Section (273-93) opens concurrently with the Chignik Bay, Central, and Eastern districts from the beginning of the fishing season through July 5. The Outer Castle Cape Subsection (273-95) will open with the remainder of the Western and Perryville districts on or after July 6.
- The BOF adopted a regulation that allows the Western District to open for two fishing periods up to 48 hours in length from the beginning of the fishing season through July 5. Both fishing periods shall open concurrently with the Chignik Bay and Central districts and must be separated by a minimum of 48 hours.
- The 60,000 coho salmon harvest cap in the Western and Perryville districts during July was repealed and is no longer in effect.

- To provide late season management flexibility, fishing periods in the Western and Perryville districts after August 20 will be based pink and chum salmon abundance in addition to local stocks coho salmon and Chignik River sockeye salmon.
- To allow subsistence salmon fishing in the Chignik Lake tributaries of Clark River and Home Creek from their confluence with Chignik Lake upstream one mile.
- To restrict subsistence gillnets that are fixed, anchored, or otherwise held in place to obstruct no more than one half the width of any stream open to subsistence salmon fishing.

## **JUNE**

By regulation, the first commercial salmon fishing period may occur when 20,000 sockeye salmon have escaped past the Chignik River weir. However, if the department determines that a strong buildup of sockeye salmon exists in Chignik Lagoon and 20,000 sockeye salmon are expected to escape into the Chignik River, the department may open the commercial fishery before 20,000 sockeye salmon have passed the weir (5 AAC 15.357 (b)(1)). The purpose of this regulation is to allow subsistence fishing opportunity prior to the commercial fishing season and to avoid a large buildup of salmon in the lagoon.

During June, commercial salmon fishing may occur in the Chignik Bay, Central, and Eastern districts, and the Inner Castle Cape Subsection of the Western District (Figure 2). Through approximately June 26, the Chignik Bay, Central, and Eastern districts and the Inner Castle Cape Subsection (273-93) of the Western District (Figure 3) open and close concurrently by regulation (5 AAC 15.357 (c)(1)) and are based upon achieving the early-run interim escapement objectives (Table 1).

In June, the Western District, in its entirety, may open for two fishing periods up to 48 hours in length separated by a minimum closure of 48 hours. Both fishing periods in the Western District shall be opened concurrently with fishing periods in the Chignik Bay, Central, and Eastern districts (5 AAC 15.357 (d)).

Within Chignik Lagoon, the department will primarily use the Humes Point and the Mensis Point markers to designate closed waters (Figure 4). Alternating between Humes and Mensis Point allows the department to control escapement of sockeye salmon entering the Chignik River. The Pillar Rock markers may be used during periods of high escapement or limited harvest capacity by the fleet (Figure 4).

The department will likely begin test fishing on or about June 2 to assess any salmon buildup in Chignik Lagoon. The department may test fish several times in early June depending on test fish vessel catch rates and escapement levels (Jackson 2009). Subsequent commercial fishing periods during June will be based on the evaluation of interim escapement objectives (Table 1), commercial and subsistence catches, and additional test fishing results.

## **TRANSITION PERIOD**

Prior to 2004, scale pattern analysis (SPA) was used to differentiate stock composition during the transition from the early- to late-run sockeye salmon, and the fishery was managed based on the results of this analysis (Witteveen and Botz 2004). This program was discontinued prior to the 2004 season. However, department staff found that, on average, the number of early-run sockeye salmon that passed the Chignik River weir after July 4 was approximately equal to the number of

late-run sockeye salmon that passed the weir prior to July 4. The 2009 fishery will be managed such that through July 4, fishing periods will be based on achieving the interim early-run escapement objectives and beginning July 5, fishing periods will be based on achieving the interim late-run escapement objectives (Table 1).

During the transition period (approximately June 26 through July 8), the Chignik Bay and Central districts will be managed based on interim escapement objectives for both runs (Table 1). The Eastern District will likely be closed until the strength of the Chignik River watershed sockeye salmon late run can be determined. With the exception of the Inner Castle Cape Subsection of the Western District, the remainder of the Western and Perryville districts will likely remain closed during the transition period.

## **JULY**

During July, the Chignik Bay and Central districts (Figure 2) will be managed primarily based on Chignik River watershed sockeye salmon run strength. However, the department may adjust closed waters in Chignik Lagoon based on Chignik River watershed Chinook salmon escapement goals (1,300 to 2,700 fish; Witteveen et al. 2007). If Chinook salmon escapement during early July is weak and the escapement goal is unlikely to be met, waters upstream of the Humes Point markers may be closed to improve escapement by removing commercial fishing pressure from areas where Chinook salmon hold before entering the Chignik River (5 AAC 15.357(b)(3); Figure 4).

The Eastern District (Figure 2) will be primarily managed for pink and chum salmon during July. The first commercial salmon fishing period after the transition period in the Eastern District can occur as early as July 9, and will likely be 48 hours in duration. Extensions to this fishing period will depend on pink and chum salmon fishery performance (catch per unit effort; CPUE) as compared to historical catch records, local pink and chum salmon escapements, and Chignik River watershed sockeye salmon escapement levels. The entire district will be opened to commercial salmon fishing only if interim Chignik River watershed sockeye salmon escapement objectives are expected to be met and a harvestable surplus of sockeye salmon is anticipated.

If the Chignik late-run sockeye salmon escapement is lower than expected, fishing periods in terminal areas in the Eastern District may be announced via emergency order to target pink and chum salmon. In these cases, the commercial salmon fishery in the Eastern District may close on short notice if substantial numbers of sockeye salmon are harvested. Closed waters may be expanded around individual streams if pink and chum salmon escapements are not sufficient in those areas.

With the exception of the Inner Castle Cape Section (Figure 3) which opens concurrently with the Chignik Bay and Central districts, commercial fishing periods in the Western and Perryville districts (Figure 2) may be allowed beginning July 6 if Chignik River escapement objectives are expected to be met and surplus Chignik River sockeye salmon are available for harvest. These early July periods will likely take place south of a line drawn from Cape Ikta to Coal Cape to Cape Alexander, and outside of Ivanof Bay south of Alexander Point (the Cape Ikta line; Figure 5). Depending on expected Chignik River sockeye salmon run strength, those portions of the Chignik Bay and Central districts known as “Jack’s Box”, may also be opened concurrently with the Western and Perryville districts (Figure 6). The first commercial salmon fishing period in these districts is likely to be 48 hours in duration. Extensions will depend on pink and chum salmon fishery performance (CPUE) as compared to historical catch records and expected Chignik River sockeye salmon escapements.

If surplus Chignik River sockeye salmon are not expected to be available for harvest, the commercial fisheries in the Western and Perryville districts will likely occur north of the Cape Iteki line beginning in mid-July to target local pink and chum salmon while avoiding Chignik River-bound sockeye salmon (Figure 5). In these cases, the commercial salmon fishery in the Western and Perryville districts may close on short notice if substantial numbers of sockeye salmon are harvested. Closed waters may be expanded around individual streams if pink and chum salmon escapements are not sufficient in those areas.

## **AUGUST AND SEPTEMBER**

In August and September, the Chignik Bay and Central districts and the Inner Castle Cape Subsection of the Western District (Figure 3) will be managed based on Chignik River watershed sockeye salmon run strength. The CMA will be managed to meet the lower end escapement objectives for the month of August (59,500 sockeye salmon) and from September 1-15 (25,000 sockeye salmon; Table 1).

The Chignik River weir will be removed on or about September 4. After this point, the following methods may be used to assess Chignik River sockeye salmon escapements:

- Time series analysis of total run to project post-weir run magnitude,
- Comparison of aerial survey data in the sockeye salmon spawning areas in the Chignik River watershed to aerial survey estimates from previous years,
- Interviewing commercial and subsistence users regarding the late-season sockeye salmon run strength, and
- Commercial and subsistence harvest CPUE, if available.

Beginning September 15, commercial fishing periods in the Chignik Bay and Central districts are limited to a maximum of 48 hours per week, and will be based on the evaluation of the sockeye salmon run strength and the Chignik Lake late-season sockeye salmon subsistence needs (5 AAC 15.357(b)(4)). Post-September 14 management options include:

- Allowing the maximum fishing time of 48 hours per week to be divided into one, two, three, or four commercial fishing periods, depending upon estimated sockeye and/or coho salmon escapements. For example, the fishing time could be distributed over 4 days with 12-hour fishing periods per day within a floating 7-day period,
- Allowing a weekly fishing schedule of less than 48 hours, if the sockeye and or coho salmon run strength is determined to be weak, and
- Allowing for a complete closure.

During August and September, the Eastern District (Figure 2) will be managed based on local pink, chum, and coho salmon abundance (5 AAC 15.357(c)(3)). Fishing times and areas will be based on actual escapement counts to local streams. Specific areas may be opened to directed fisheries if pink and chum salmon abundance is sufficient to warrant fisheries in those areas. However, district-wide openings will not be allowed unless Chignik River sockeye salmon escapement objectives are expected to be met and overall pink and chum salmon abundance is sufficient to meet Eastern District escapement objectives.

Until approximately August 20, fishing periods in the Western and Perryville districts (Figure 2) will be based on pink and chum salmon escapement counts to local streams (5 AAC 15.357(d)(2)). Specific areas may be opened to directed fisheries if pink and chum salmon abundance is sufficient to warrant fisheries in those areas. District-wide openings will not be allowed unless Chignik River sockeye salmon escapement objectives are expected to be met and overall pink and chum salmon abundance is sufficient to meet Western and Perryville district's escapement objectives. After August 20, fishing time in the Western and Perryville districts will be based on Chignik River sockeye salmon escapement and local pink, chum, and coho salmon abundance.

## **2009 SUBSISTENCE SALMON FISHERY**

All subsistence salmon fishermen must obtain a subsistence salmon permit for the 2009 season (5 AAC 01.015; Appendix B1). The permits will be available at the Chignik weir facility and from several local vendors. Catch information obtained from subsistence permits is compiled annually and used to assess regional subsistence salmon fisheries.

An Alaskan resident, who obtains a state subsistence permit and who does not hold a commercial salmon fishing license (CFEC permit or those with a 2009 crewmember license), may subsistence fish for salmon at any time. Commercial salmon license holders may subsistence fish for salmon during the commercial fishing season at any time except for 12 hours before and 12 hours after a commercial salmon fishing period (5 AAC 01.485).

Subsistence salmon fishing is permitted in the Chignik River. However, salmon may not be taken upstream from the weir to the outlet of Chignik Lake from July 1 to August 31 (5 AAC 01.475(1)). Fishing in this area is prohibited to protect spawning Chinook salmon. The Chignik River, beginning 100 yards below the weir, is open to subsistence salmon fishing year round. All fishing is prohibited 100 yards upstream and downstream of the weir while it is operational.

The Chignik Lake tributaries of Clark River and Home Creek, starting from their confluence with Chignik Lake upstream one mile, are open to subsistence salmon fishing (5 AAC 01.475(2)). The Alaska Board of Fisheries (BOF) amended the subsistence regulations to include these tributaries for the purposes of providing additional harvest opportunities for subsistence users.

Subsistence users are reminded that purse seine gear is not allowed for taking of subsistence salmon in Chignik Lake (5 AAC 01.470(a)). Additionally, any gillnet that is fixed, anchored, or otherwise held in place may not obstruct more than one half of the width of any stream open to subsistence fishing. All subsistence salmon fishing gear must be marked with a buoy listing the first initial and last name as well as the address of the person operating the gear (5 AAC 01.010 (h)). Subsistence users must carry their subsistence fishing permit with them while fishing. The adipose fin must be removed from all subsistence-caught salmon immediately after harvest.

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## **TABLES AND FIGURES**

Table 1.–Chignik River sockeye salmon interim escapement objectives, 2009.

Date	Escapement		Date	Escapement	
	Lower	Upper		Lower	Upper
June 2	1,200	1,400	August 3	172,500	295,700
June 4	4,000	4,500	August 6	178,700	306,300
June 6	9,800	11,200	August 9	184,600	316,300
June 8	17,900	20,400	August 12	190,600	326,600
June 10	29,500	33,700	August 15	196,200	336,200
June 12	51,200	58,500	August 18	201,900	346,000
June 14	83,000	94,800	August 21	207,400	355,400
June 16	116,000	132,600	August 24	213,300	365,600
June 18	145,300	166,100	August 27	218,800	374,900
June 20	170,900	195,400	August 31	225,000	385,700
June 22	202,100	231,000			
June 25	248,900	284,600	September 3	228,000	391,100
June 28	282,900	323,300	September 5	231,000	393,000
July 1	323,600	369,900	September 7	235,000	395,000
July 4	350,000	400,000 <sup>a</sup>	September 9	239,000	396,800
			September 11	243,000	398,100
July 6	7,000	11,900	September 13	247,000	399,000
July 8	19,900	34,100	September 15	250,000	400,000
July 10	32,600	56,000			
July 12	44,400	76,100			
July 14	58,900	101,000			
July 16	76,400	131,000			
July 19	96,600	165,700			
July 23	122,200	209,500			
July 26	141,800	243,100			
July 29	158,200	271,100			
July 31	165,500	283,700			
<b><u>Escapement Objectives</u></b>					
			<b>Through July 4:</b>	<b>350,000</b>	<b>- 400,000</b>
			<b>July 5 - September 15:</b>	<b>250,000</b>	<b>- 400,000<sup>b</sup></b>

<sup>a</sup> Through July 4 is historically the date on which the inseason escapement most closely approximated the early-run escapement as estimated by post-season scale pattern analysis.

<sup>b</sup> The late-run escapement objective (July 5 – September 15) includes the late-run sockeye salmon sustainable escapement goal (SEG; 200,000 – 400,000) plus an additional 50,000 sockeye salmon inriver run goal (25,000 in August and 25,000 in September) to meet late season subsistence needs.

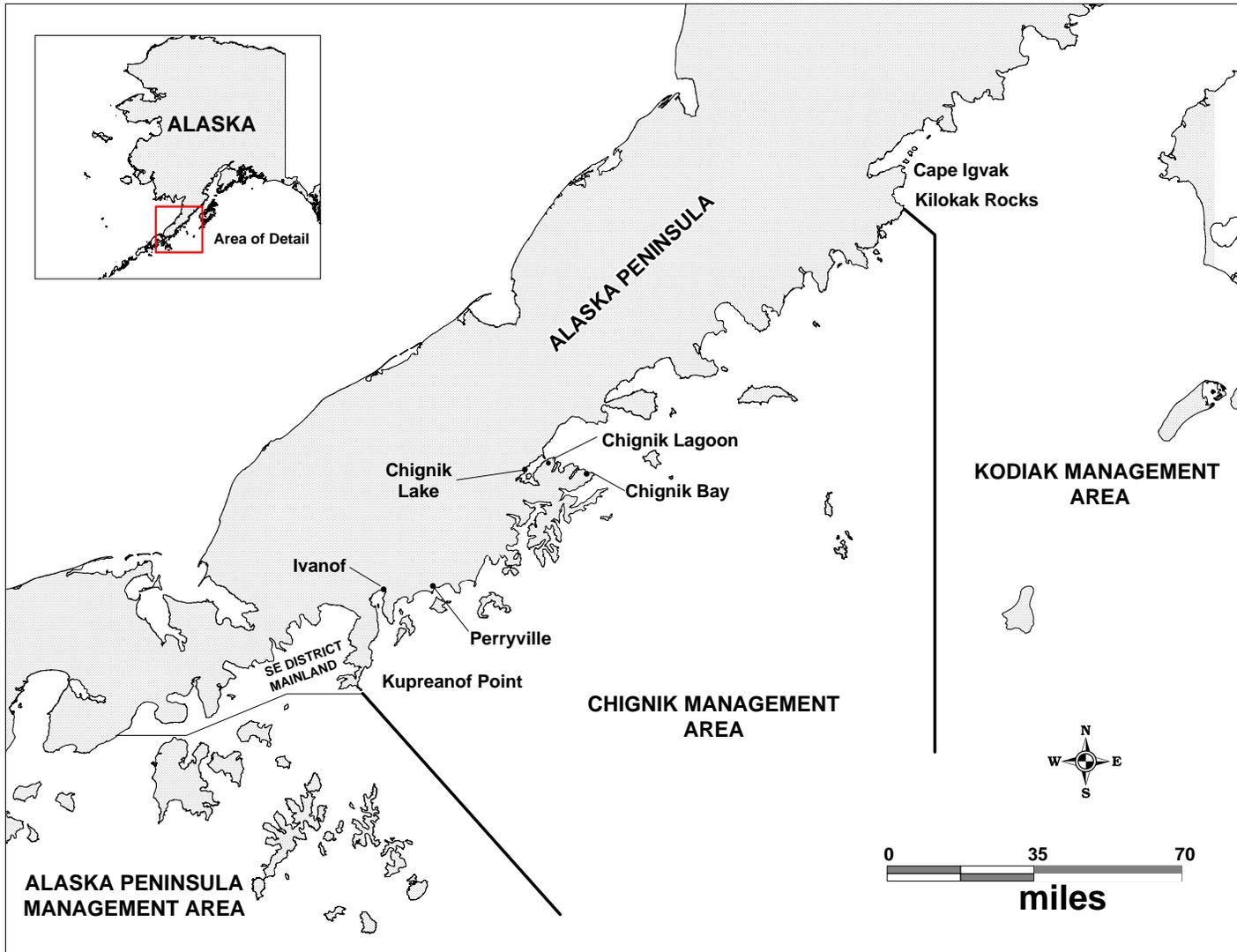


Figure 1.—Map of the Alaska Peninsula depicting the relative locations of the Chignik, Kodiak, and Alaska Peninsula Management Areas.

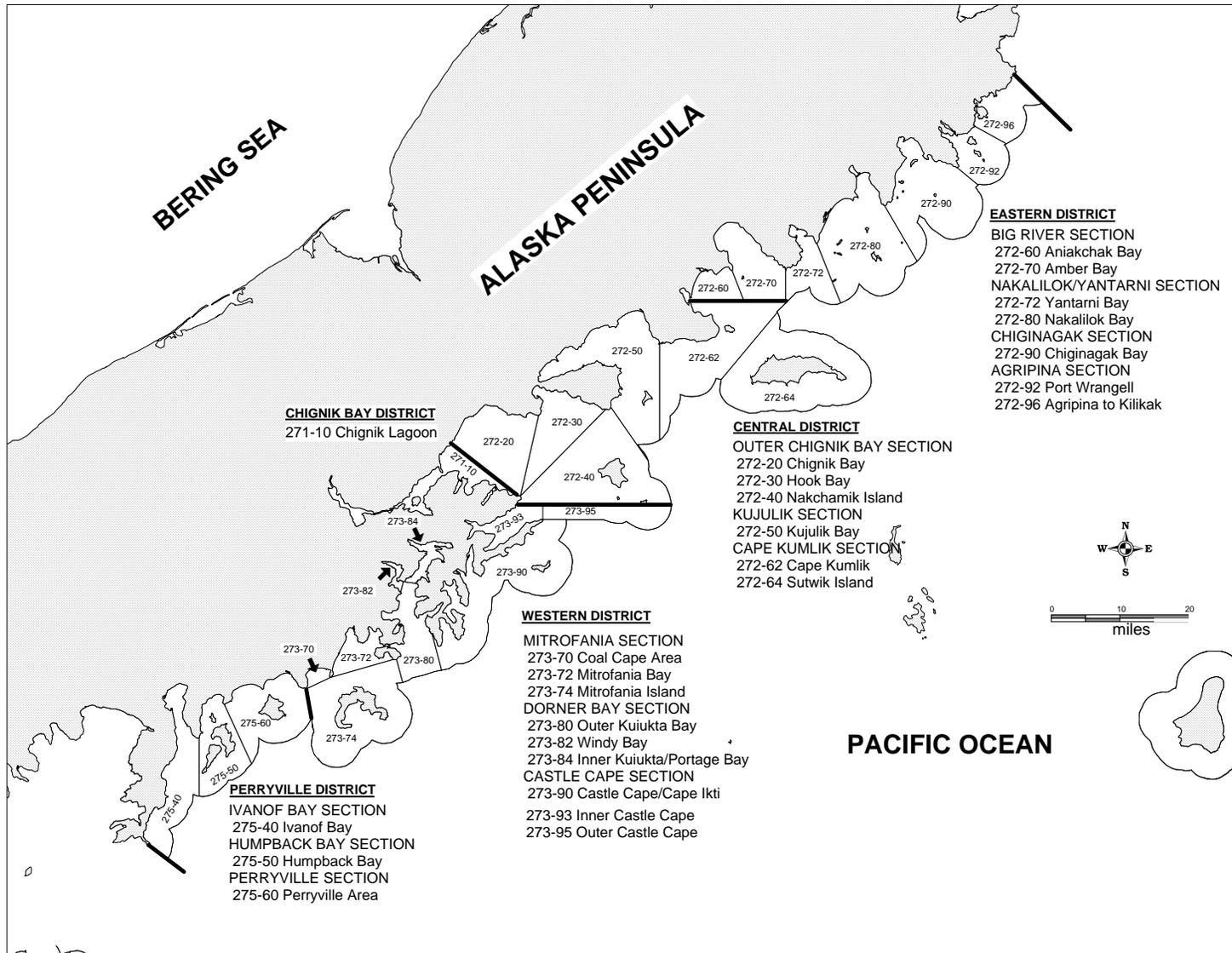


Figure 2.—Map of the Chignik Management Area depicting district boundaries and statistical areas.

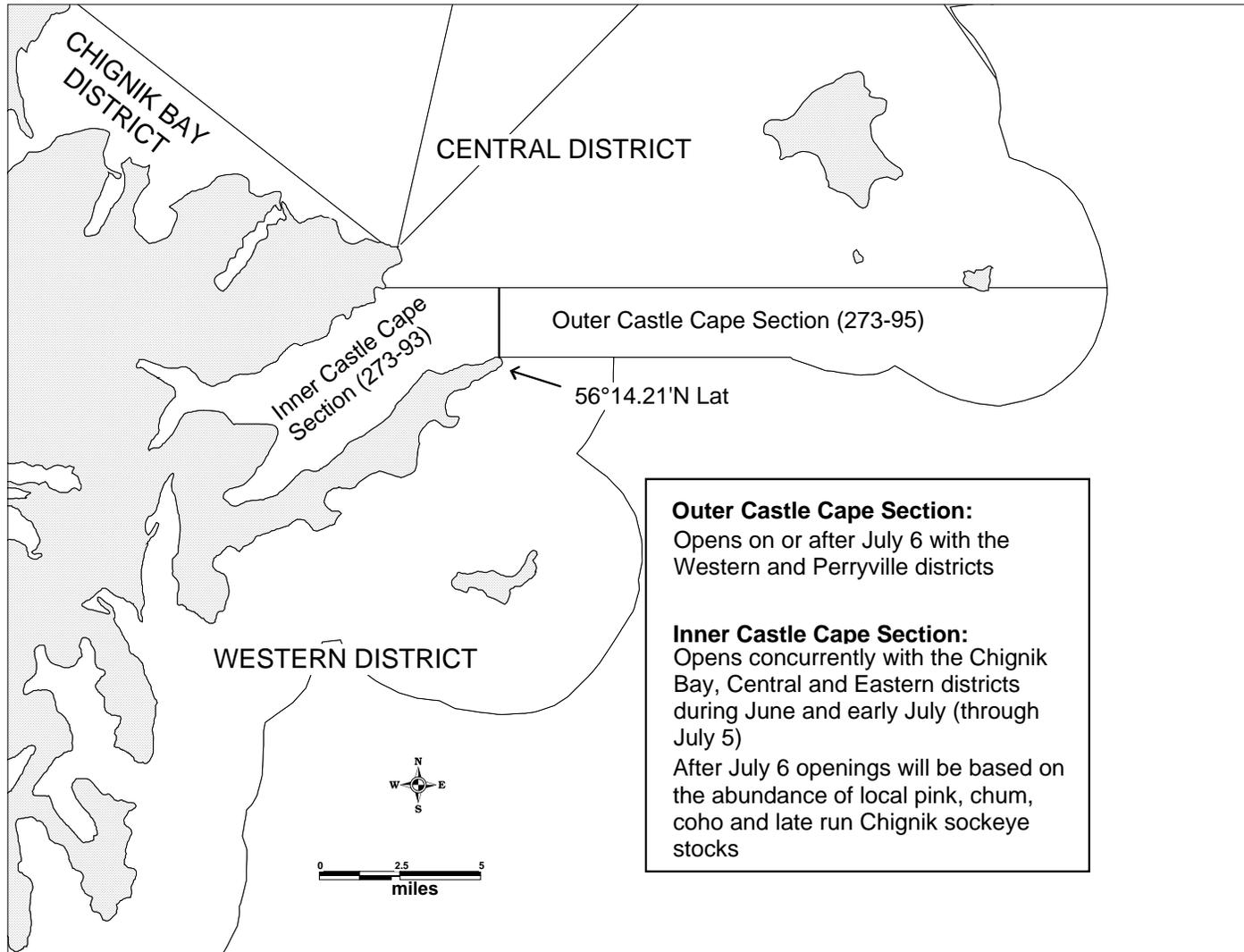


Figure 3.—Map depicting the newly established Inner (273-93), and Outer (273-95) Castle Cape Subsections of the Western District.

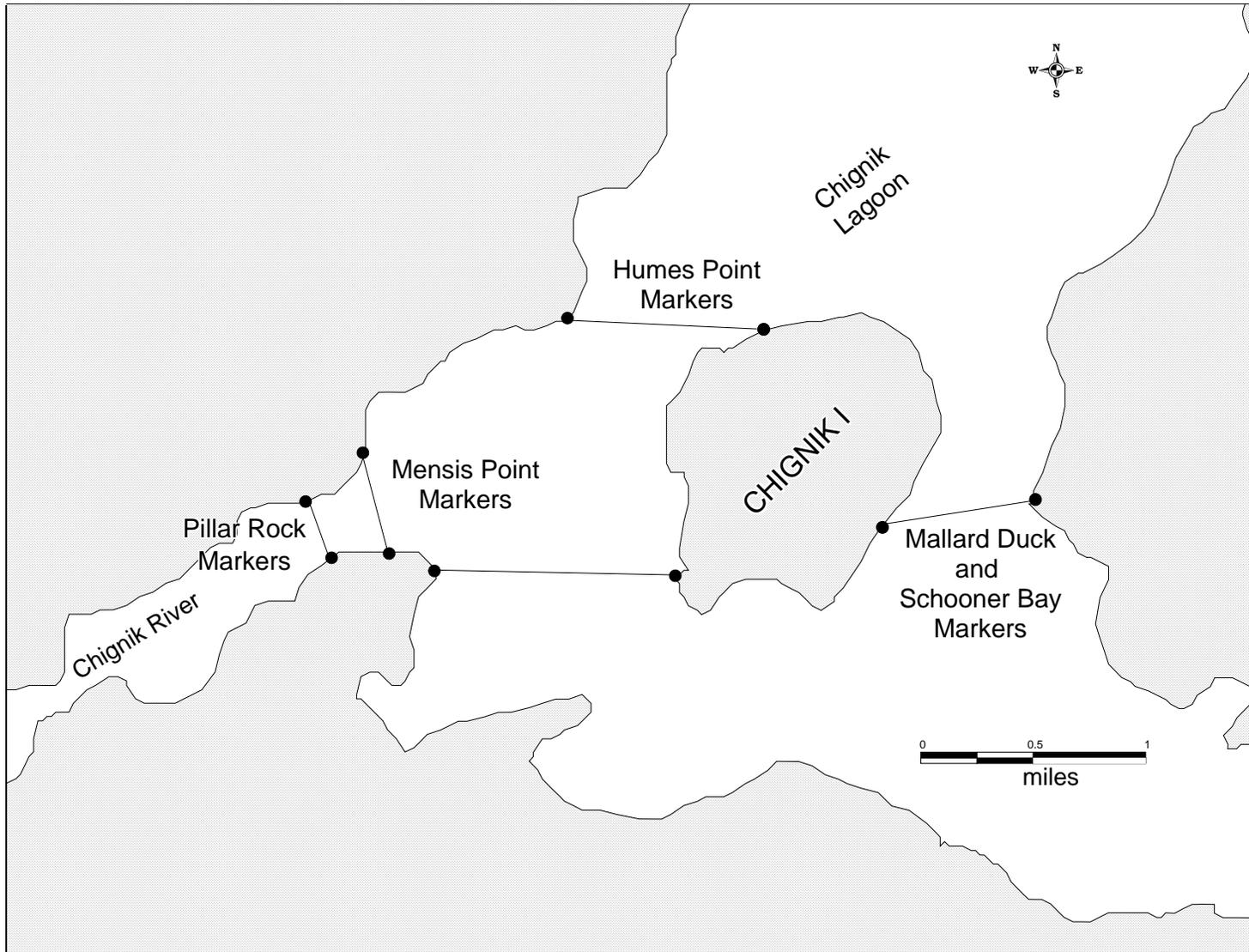


Figure 4.—Map of upper Chignik Lagoon depicting the location of the Pillar Rock, Mensis Point, and Humes Point marker locations.

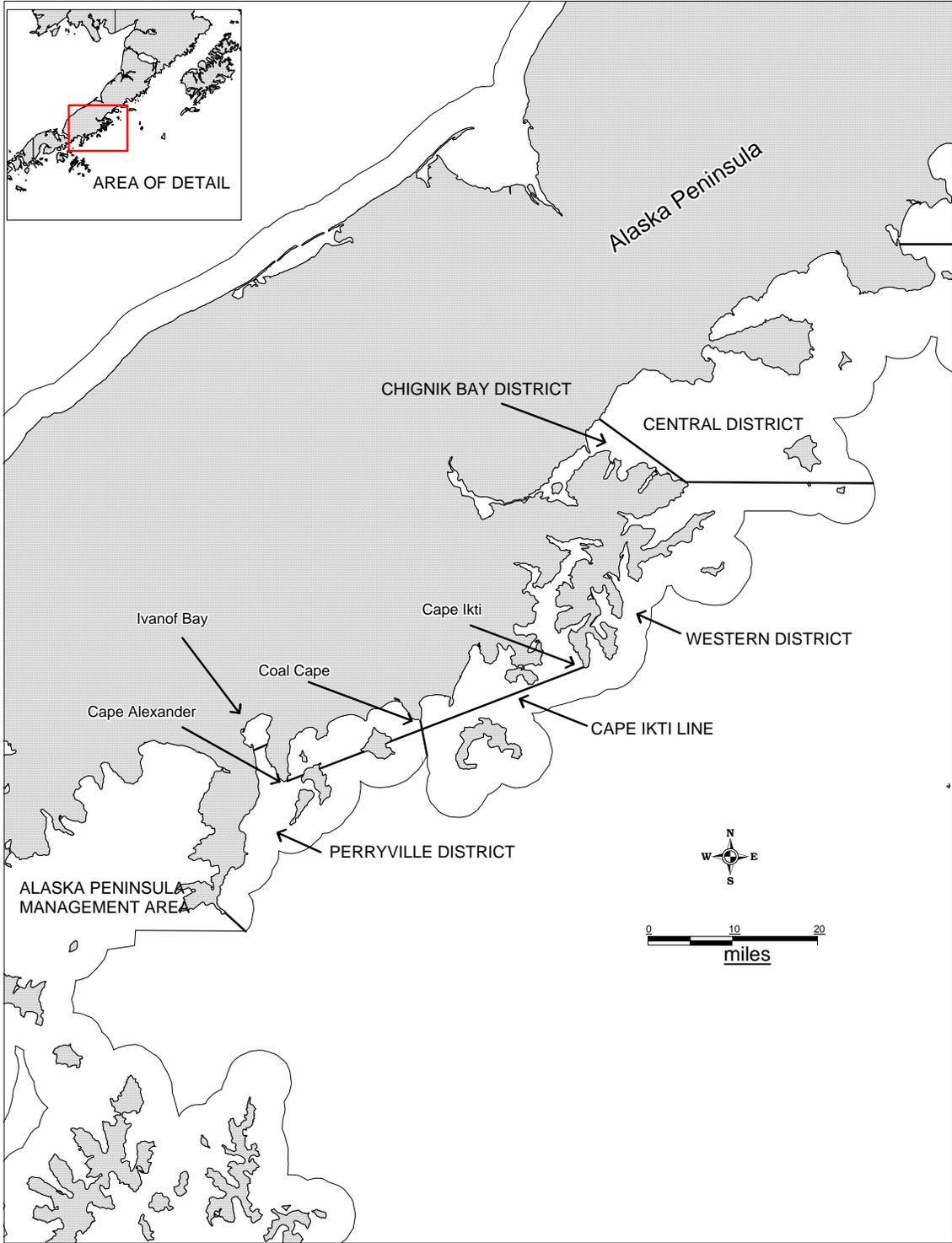


Figure 5.—Map depicting the “Cape Ikti Line” in the Western and Perryville districts.

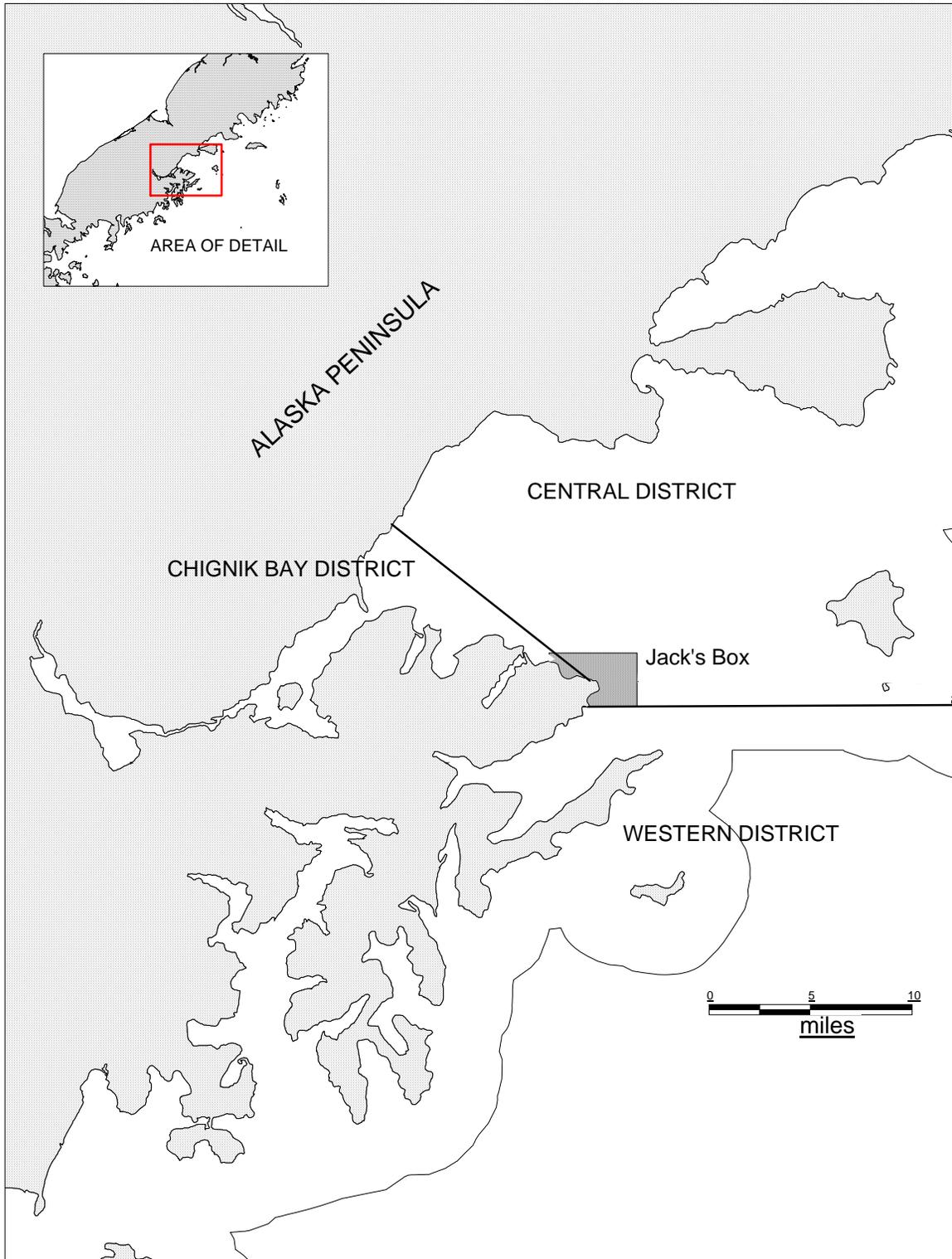


Figure 6.-Map depicting “Jack’s Box” in the Chignik Bay and Central districts.

**APPENDIX A. 2009 CHIGNIK SOCKEYE  
SALMON FORECAST**

**Forecast Area: Chignik**  
**Species: Sockeye Salmon**

Preliminary Forecast of the 2009 Run		Forecast Estimate (thousands)	Forecast Range (thousands)
Total Production			
Early Run (Black Lake)	Total Run Estimate	846	240–1,450
	Escapement Goal	350	350–400
	Harvest Estimate <sup>a</sup>	496	
Late Run (Chignik Lake)	Total Run Estimate	535	22–1,050
	Escapement Objective <sup>b</sup>	250	250–400
	Harvest Estimate <sup>a</sup>	285	
Total Chignik System	Total Run Estimate	1,380	263–2,500
	Escapement Objective <sup>b</sup>	600	600–800
	Harvest Estimate <sup>a</sup>	781	

*Note:* Column numbers may not total or correspond exactly with numbers in text due to rounding.

<sup>a</sup> These figures include harvests of Chignik-bound sockeye salmon from the Southeastern District Mainland and the Cape Igvak fisheries; approximately 632 thousand sockeye salmon are projected to be harvested in the Chignik Management Area.

<sup>b</sup> The Chignik Lake late-run escapement goal is 200,000 to 400,000 sockeye salmon, resulting in an escapement goal for the entire run of 550,000 to 800,000 fish. However, managers try to achieve an additional inriver goal of 50,000 sockeye salmon in August and September.

***Forecast Methods***

The forecasts for the 2009 early and late Chignik sockeye salmon runs were based on available data from 1977 to the present. Simple linear regressions were modeled using recent outmigration year ocean age-class relationships. Each regression model was assessed with standard regression diagnostic procedures. Regression estimates were only used in cases where the slope of the regression was significantly different from zero ( $P < 0.25$ ). The variance of each estimate was calculated from the error structure of the regression. Regression analyses were examined for serial autocorrelation AR(1). When detected, an estimate of the bias from the serial autocorrelation was calculated from the regression residuals and applied to the original point estimate.

The predicted 2009 early-run ocean-age-three (3-ocean; ages-0.3, -1.3, -2.3, -3.3, and -4.3) sockeye salmon returns were estimated based on the abundance of prior 2-ocean sockeye salmon (ages-0.2, -1.2, -2.2, and -3.2;  $P = 2.9 \times 10^{-5}$ ). Following non-significant regression results, the early-run 1-ocean (age-0.1, -1.1, -2.1 and -3.1 fish), 2-ocean (age-0.2, -1.2, -2.2, and -3.2 fish), and 4-ocean (age-0.4, -1.4, -2.4, and -3.4 fish) age class components were predicted by calculating the median returns since 1981.

-continued-

Ocean-age-class and temperature relationships were analyzed for the late-run forecast. The 2-ocean sockeye salmon were predicted from prior year's 1-ocean returns using simple linear regression, ( $P = 1.1 \times 10^{-4}$ ). Returns of 3-ocean sockeye salmon were predicted from an index of average summer temperatures ( $P = 0.02$ ). Temperature data were obtained from the Cold Bay Airport climate database. The temperature index was constructed using a five-year average of temperatures from June through August beginning in the year prior to the year of outmigration. The 4-ocean sockeye salmon were predicted from 3-ocean returns using simple linear regression ( $P = 0.09$ ). The 1- and 5-ocean (age-2.5 fish) sockeye salmon age classes were predicted by calculating the median return.

The variances associated with individual regression estimates by age class were used to calculate 80 percent prediction intervals for those estimates. Prediction intervals for median estimates were calculated using the 10<sup>th</sup> and 90<sup>th</sup> percentiles of the returns. For each run (early and late), the overall 80 percent prediction intervals were calculated as the square root of the sum of the squared 80 percent prediction intervals for each forecasted age class. Prediction intervals were re-estimated utilizing the standard error from a regression of the residuals when serial autocorrelation was detected. The early- and late-run regression and median estimates were summed to estimate the total Chignik watershed sockeye salmon run for 2009. The combined early- and late-run 80 percent prediction interval was calculated by summing the lower prediction bounds and upper prediction bounds of the two runs.

Available smolt data were analyzed and a significant simple linear regression relationship ( $P = 0.003$ ) was found using the number of outmigrating age-2. smolt to predict the subsequent 3-ocean adult returns (about 85 percent of the run). This estimate was then expanded proportionally to account for other ocean ages (1-, 2-, and 4-ocean fish).

### ***Forecast Discussion***

The 2009 sockeye salmon run to the Chignik River is expected to be approximately 1.38 million fish. The early run is expected to be approximately 846 thousand fish. The late run is expected to be approximately 535 thousand fish. The 2009 Chignik sockeye salmon run is expected to be approximately 885 thousand fish less than the recent 10-year average run (2.27 million) and 12 thousand fish less than the 2008 run (1.39 million).

The projected harvest estimate for the early run of 496 thousand fish is based on achievement of the lower end of the early-run escapement goal range of 350 to 400 thousand fish. The projected harvest estimate for the late run of 285 thousand fish is based on achievement of the lower end of the late-run goal range of 250 thousand sockeye salmon, which includes the late-run inriver run goal through September 15. Harvest estimates for the both runs include Chignik-bound sockeye salmon harvested in the Cape Igvak Section of the Kodiak Management Area and the Southeastern District Mainland of the Alaska Peninsula Management Area.

The smolt-based forecast of the 2009 Chignik total sockeye salmon run is 1.62 million sockeye salmon, which is greater (236 thousand fish) than that predicted from ocean-age relationships and median estimates (1.38 million).

The smolt forecast approximates the median and ocean-age-class forecasts. Given this ancillary information, our confidence in this forecast is fair.

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Heather Finkle, Finfish Research Biologist, Alaska Peninsula



**APPENDIX B. 2009 CHIGNIK SALMON  
SUBSISTENCE PERMIT**



**SELECT SUBSISTENCE FISHING REGULATIONS**

These listed regulations are not inclusive of all the regulations that apply to subsistence salmon fishing in the Chignik Area.

**5 AAC 01.015. SUBSISTENCE FISHING PERMITS AND REPORTS.** (b)(3) Permits must be retained in the possession of the permittee and be readily available for inspection while taking fish. A person who transports subsistence-taken fish shall have a subsistence fishing permit in their possession.

**5AAC 01.460.FISHING SEASONS.** Fish, other than rainbow trout and steelhead trout, may be taken at any time, except as may be specified by a subsistence fishing permit. Rainbow trout and steelhead trout, taken incidentally in other subsistence finfish net fisheries, are lawfully taken and may be retained for subsistence purposes.

**5 AAC.01.470. LAWFUL GEAR AND GEAR SPECIFICATIONS.** (a) Salmon may be taken by seines and gillnets, or with gear specified on a subsistence fishing permit, except that salmon in Chignik Lake may not be taken with purse seines. A gillnet may not be set while staked, anchored, or otherwise fixed in a stream while it obstructs more than one-half of the width of the waterway.

**5 AAC 01.475. WATERS CLOSED TO SUBSISTENCE FISHING.** Salmon may not be taken (1) from July 1 through August 31, in the Chignik River from a point 300 feet upstream from the Chignik weir to Chignik Lake; (2) in Black Lake or any tributary to Black Lake or Chignik Lake except in Clark River and Home Creek from their confluence with Chignik Lake upstream one mile.

**5 AAC 01.480. SUBSISTENCE FISHING PERMITS.** (a) Salmon, trout and char may only be taken under the authority of a subsistence fishing permit.

- (b) Not more than 250 salmon may be taken for subsistence purposes unless otherwise specified on the subsistence fishing permit.
- (c) A record of subsistence-caught fish must be kept on the reverse side of the permit. The record must be completed immediately upon taking subsistence-caught fish and must be returned to the local representative of the department no later than December 31 of the year issued.

**5 AAC 01.485. RESTRICTIONS ON COMMERCIAL FISHERMEN.** (a) In the Chignik Area, a commercial salmon fishing license holder may not subsistence fish for salmon during the 12 hours before the first commercial salmon fishing period and the 12 hours following the closure of a commercial salmon fishing period. However, a commercial salmon fishing license holder may subsistence fish for salmon during a commercial salmon fishing period.

**SPECIAL PERMIT PROVISIONS**

1. The adipose fin must be removed from all subsistence-caught salmon immediately upon capture.
2. A commercial license holder may not fish for both subsistence and commercial salmon at the same time. Further, a commercial salmon vessel may not carry both subsistence and commercially caught salmon at the same time.
3. A commercial fishing vessel may not simultaneously carry both commercial seine and subsistence gillnet gear.
4. Commercial fishermen may always remove salmon from their commercial catch for home pack. Mark the number of salmon taken by species for home pack use on your fish ticket.
5. This permit can be withdrawn at any time.

**NOTICE TO FISHERS:**

Before you fish, be sure you know whose land you are on and check the regulations: State regulations apply on all state, private, and federal lands where authorized. Private landowners may restrict entry on their land. Federal lands may be closed to fishing except by certain rural residents. Persons standing on state or private lands should be sure their fishing activities are legal under state regulations. If you have questions regarding the federal subsistence fisheries, please contact the Federal Office of Subsistence Management at (800) 478-1456.

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