

South Alaska Peninsula Salmon Management Strategy, 2020

by

Elisabeth K. C. Fox

Tyler D. Lawson

and

Cassandra J. Whiteside

April 2020

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.

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

REGIONAL INFORMATION REPORT 4K20-04

**SOUTH ALASKA PENINSULA SALMON MANAGEMENT STRATEGY,
2020**

by

Elisabeth K. C. Fox
Tyler D. Lawson
and
Cassandra J. Whiteside

Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

April 2020

The Regional Information Report Series was established in 1987 and was redefined in 2007 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as area management plans, budgetary information, staff comments and opinions to Alaska Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at: <http://www.adfg.alaska.gov/sf/publications/>.

*Elisabeth K. C. Fox, Tyler D. Lawson, and Cassandra J. Whiteside
Alaska Department of Fish and Game, Division of Commercial Fisheries
351 Research Court, Kodiak, AK 99615, USA*

This document should be cited as follows:

Fox, E. K. C., T. D. Lawson, and C. J. Whiteside. 2020. South Alaska Peninsula salmon management strategy, 2020. Alaska Department of Fish and Game, Division of commercial Fisheries, Regional Information Report 4K20-04, Kodiak.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

The department's ADA Coordinator can be reached via phone at the following numbers:

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

For information on alternative formats and questions on this publication, please contact:

ADF&G Division of Sport Fish, Research and Technical Services, 333 Raspberry Road, Anchorage AK 99518 (907) 267-2375.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	ii
LIST OF APPENDICES	ii
ABSTRACT	1
INTRODUCTION	1
ANNOUNCEMENTS	2
HARVEST REPORTING	2
ALASKA BOARD OF FISHERIES REGULATION CHANGES FROM THE FEBRUARY 2019 MEETING	3
2020 MANAGEMENT PLANS	3
June Salmon Fishery	3
Post-June Salmon Fishery	4
Immature Test Fishery	4
Harvest Strategy for July	5
Harvest Strategies after July	6
Salmon Escapement Goals	6
Southeastern District Mainland Salmon Fishery	6
Northwest Stepovak Section	7
Stepovak Flats Section	7
FORECAST AND ALLOCATION	7
South Alaska Peninsula Pink Salmon Forecast	7
Chignik River Sockeye Salmon Forecast and SEDM Allocation	8
REFERENCES CITED	8
APPENDIX A. 2020 SALMON FORECASTS	27

LIST OF FIGURES

Figure	Page
1. Map of the South Alaska Peninsula Management Area and the locations of the South Unimak and Shumagin Islands June fisheries.....	10
2. Map depicting the locations of June South Alaska Peninsula fisheries for purse seine and set gillnet gear.	11
3. Map depicting the locations of June South Alaska Peninsula fishery for drift gillnet gear.....	12
4. Map depicting the locations of post-June South Alaska Peninsula fisheries and permitted gear types.	13
5. Map of the South Alaska Peninsula Management Area with the Southeastern District Mainland defined.	14
6. Map of the Southeastern District Mainland from Kupreanof Point to McGinty Point with the commercial salmon fishery sections defined.....	15
7. All gear types fishing periods in the South Unimak and Shumagin Islands June fisheries, 2020.	17
8. Map depicting the statistical areas (283-20 through 283-26 and 284-36 through 284-42) that contribute to the “Dolgoi Island area” sockeye salmon harvest for the June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.....	18
9. Map depicting the statistical areas (283-15 through 283-26 and 284-36 through 284-42) that contribute to the “Dolgoi Island area” sockeye salmon harvest for the post-June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.....	16
10. All gear types fishing periods in the South Unimak and Shumagin Islands post-June fisheries, 2020.	19
11. Zachary Bay closed waters and post-June terminal fishing area.	20
12. Canoe Bay Section and Upper Pavlof Bay closed waters and post-June terminal fishing areas.....	21
13. Cold Bay, Thin Point, and Morzhovoi Bay sections closed waters and post-June terminal fishing areas.	22
14. South Alaska Peninsula post-June terminal fishing areas from July 6 to July 21.	23
15. South Alaska Peninsula post-June terminal fishing areas from July 22 to July 31.	24
16. Map of Kupreanof Point area closed waters.	25
17. Orzinski Lake interim sockeye salmon escapement objectives by date. Interim escapement objectives are general guidelines for inseason management and are subject to adjustment based on run timing of sockeye salmon returns in a given year.....	26

LIST OF APPENDICES

Appendix	Page
A1. 2020 South Alaska Peninsula pink salmon forecast.....	28
A2. 2020 Chignik Management Area sockeye salmon forecast.....	30

ABSTRACT

The South Alaska Peninsula Management Area (Area M) commercial salmon fisheries are regulated by 3 management plans. The South Unimak and Shumagin Islands June fisheries occur from June 6 to June 28 and target sockeye salmon *Oncorhynchus nerka*. The June fisheries commence according to 1 schedule that combines all gear types. The post-June fishery may occur from July 6 to October 31 and is guided by the results of an immature salmon test fishery and the strength of local sockeye, chum *O. keta*, pink *O. gorbuscha*, and coho salmon *O. kisutch* returns. The Southeastern District Mainland (SEDM) is managed independently (June 1 to October 31) from the remainder of the South Alaska Peninsula fisheries. A sockeye salmon allocation exists between the Chignik Management Area (CMA) and the SEDM—up to 7.6% of the sockeye salmon harvested in the CMA may be harvested in the SEDM. Of the sockeye salmon harvested in the SEDM during the allocation timeframe (June 1 to July 25, excluding the Northwest Stepovak Section from July 1 to July 25), 80% are attributed to the allocation. After July 25, the SEDM is managed strictly on local stocks. This document summarizes the management strategy of the South Alaska Peninsula fisheries and outlines the requirements for industry participation in 2020.

Key words: Alaska Peninsula, Area M, Shumagin Islands, South Unimak, June fishery, post-June, Southeastern District Mainland, SEDM, commercial salmon fisheries, sockeye salmon, *Oncorhynchus nerka*, chum salmon, *O. keta*, pink salmon, *O. gorbuscha*, coho salmon, *O. kisutch*, management plan, Alaska Department of Fish and Game, Fishery Management Report, CMA, Chignik, forecasts

INTRODUCTION

The South Alaska Peninsula salmon management area consists of those waters south of the Alaska Peninsula bounded on the west by Scotch Cap and on the east by Kupreanof Point (Figure 1). Three management plans guide the Alaska Department of Fish and Game's (ADF&G) approach to managing salmon fisheries in this area annually; they are the *South Unimak and Shumagin Islands June Salmon Management Plan* (5 AAC 09.365), the *Post-June Salmon Management Plan for the South Alaska Peninsula* (5 AAC 09.366), and the *Southeastern District Mainland Salmon Management Plan* (5 AAC 09.360). Three gear types are fished in the South Alaska Peninsula fisheries: purse seine, set gillnet, and drift gillnet (Figures 2 and 3).

The South Unimak and Shumagin Islands June commercial salmon fisheries target sockeye salmon *Oncorhynchus nerka* and are in effect from June 6 through June 28. The South Unimak June fishery occurs in the Unimak and Southwestern districts, a portion of the South Central District, and the Bechevin Bay Section of the Northwestern District (Figures 2 and 3). The Shumagin Islands June fishery includes the Shumagin Islands Section of the Southeastern District (Figure 1).

The *Post-June Salmon Management Plan for the South Alaska Peninsula* covers all waters of the South Alaska Peninsula management area (except the Southeastern District Mainland) from July 1 to October 31 (Figure 4).

The Southeastern District Mainland (SEDM) fishery occurs in the northern portion of the Southeastern District between McGinty Point in the west and Kupreanof Point in the east (Figures 5 and 6). The SEDM is further subdivided into 6 sections: the Beaver Bay, Balboa Bay, Southwest Stepovak, Northwest Stepovak, East Stepovak, and Stepovak Flats sections (Figure 6). ADF&G will manage the SEDM fishery according to 3 distinct conditions and timeframes: 1) the strength of Chignik sockeye salmon stocks; 2) the strength of Orzinski Lake sockeye salmon escapement in the Northwest Stepovak Section (NWSS) from July 1 to July 25; and 3) abundance of local coho *O. kisutch*, pink *O. gorbuscha*, and chum salmon *O. keta* stocks after July 25. From June 1 to July 25 (June 1 to June 30 in the NWSS), the SEDM fishery is allocated 7.6% of the total Chignik Management Area (CMA) sockeye salmon harvest. From

July 1 to July 25, the NWSS is managed based on the strength of sockeye salmon returning to Orzinski Lake.

This document provides commercial fishermen and processors with the ADF&G harvest strategy for the South Alaska Peninsula salmon fisheries. It also outlines the requirements of the industry to participate in these fisheries as well as how to provide information to ADF&G.

ANNOUNCEMENTS

Inseason announcements will be broadcast on radio station KSDP AM 830 KHz in Sand Point and rebroadcast over K201DA FM 88.1 MHz in King Cove, as well as on marine VHF channels 6 and 73 daily at 9:30 AM and 5:00 PM. Recorded information may also be obtained by calling the ADF&G recorder phone in Sand Point at (907) 383-2334 (383-ADFG) and in Cold Bay at (907) 532-2419. During the 2020 season, inseason harvest reports and fishery announcements will be available at the Division of Commercial Fisheries website:

<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareaakpeninsula.salmon>.

HARVEST REPORTING

As required by 5 AAC 39.130(c), buyers, transporters, and catcher/processors must report the following to the ADF&G office in Sand Point or Cold Bay by 10:00 AM the day following delivery: their daily salmon harvest/purchases by species (in both numbers of fish and pounds), statistical area, and number of deliveries by gear type. Timely and accurate reporting is appreciated and helps to manage an orderly fishery. Buyers may contact ADF&G offices in Cold Bay or Sand Point with their harvest information by phone, email, fax, and VHF channels 6 and 73.

Sand Point	Phone: 907-383-2066	Fax: 907-383-2606
Lisa Fox	E-mail: elisabeth.fox@alaska.gov	
Cassandra Whiteside	E-mail: cassandra.whiteside@alaska.gov	
Cold Bay	Phone: 907-532-2419	Fax: 907-532-2470
Tyler Lawson	E-mail: tyler.lawson@alaska.gov	

Fish tickets must be received in the ADF&G office in Sand Point or Cold Bay (listed below) within 7 days of the purchase date per 5 AAC 39.130(c). Properly filled out fish tickets are essential to the management of these fisheries and an informational packet containing detailed instructions for filling out and submitting fish tickets is available to all fish transporters, tender operators, and processor/buyers at ADF&G offices in Sand Point and Cold Bay.

Alaska Department of Fish and Game
P.O. Box 129
Sand Point, AK 99661

Alaska Department of Fish and Game
P.O. Box 50
Cold Bay, AK 99571

ALASKA BOARD OF FISHERIES REGULATION CHANGES FROM THE FEBRUARY 2019 MEETING

During the February 2019 Alaska Peninsula, Aleutian Islands, and Chignik meeting, the Alaska Board of Fisheries (board) made changes to the *South Unimak and Shumagin Islands June Salmon Management Plan* (5AAC 09.365) by amending subsection (d) that establishes the June fishing schedule. The first commercial fishing period will begin at 10:00 AM on June 6 and close June 8 at 10:00 PM—a 64-hour fishing period for set gillnet gear only. Beginning at 6:00 AM on June 10, commercial fishing by all gear types will be allowed for an 88-hour fishing period which will end at 10:00 PM on June 13. This fishing period will be followed by a closure of 32 hours for all gear types. The commercial salmon fishery will reopen for 3 more 88-hour fishing periods, followed by closures of 32 hours. The final commercial fishing period in June ends at 10:00 PM on June 28 (Figure 7).

Additionally, the board added a new subsection (g) to the 5 AAC 09.365. *South Unimak and Shumagin Islands June Salmon Management Plan* to close the waters of the Volcano Bay Section of the Southwestern District, the Belkofski Bay Section of the Southwestern District, excluding those waters inside of a line between Vodapoini Point at lat 55°01.88'N, long 162°24.80'W, and Bold Cape at lat 55°01.24'N, long 162°16.40'W, and the South Central District to purse seine gear in June (Figure 2).

The board amended 5 AAC 09.330. *Gear*, subsection (g) to allow a registered salmon fishing vessel, when it has set gillnet gear on board, to tow another registered salmon fishing vessel with set gillnet gear on board if the permit holder for the vessel being towed is on board 1 of the vessels, or to allow a registered salmon fishing vessel to have on board no more than 2 legal limits of set gillnet fishing gear in the aggregate to transport gear during a closed fishing period, if the 2 permit holders are on board the vessel. Additional gear may be transported to another district under conditions specified by ADF&G.

The board also amended 5 AAC 09.331. *Gillnet specifications and operations* to remove minimum mesh size regulations for set gillnets.

The escapement goal ranges for chum salmon were changed and a new criterion for escapement assessment was adopted. The single peak aerial survey method was chosen, utilizing specific index streams in a district rather than all the streams in a district. This lowered the ranges of the chum salmon sustainable escapement goals (SEGs) for the Southwestern, South Central, and Southeastern districts. The Southeastern District will now use 26 index streams with an SEG of 62,500–151,900 chum salmon. The South Central District will now use 10 index streams with an SEG of 68,900–99,200 chum salmon. The Southwestern District will now use 19 index streams with an SEG of 86,900–159,500. Although the 55 streams will be monitored in order to provide an escapement index, the previously monitored streams will continue to be monitored to assess quality and spatial distribution of the runs.

2020 MANAGEMENT PLANS

JUNE SALMON FISHERY

The *South Unimak and Shumagin Islands June Salmon Management Plan* (5 AAC 09.365) is in effect from June 6 to June 28. Complete details can be found in the Alaska Peninsula commercial salmon fishing regulations (5 AAC 09.365) available at ADF&G offices.

The South Unimak June fishery includes the following locations (Figures 1–3):

- a. Unimak District as described in 5 AAC 09.200(c),
- b. Bechevin Bay Section as described in 5 AAC 09.200(b)(2),
- c. Southwestern District as described in 5 AAC 09.200(d), and
- d. West Pavlof Bay and East Pavlof Bay sections of the South Central District as described in 5 AAC 09.200(e)(1) and (2).

The Shumagin Islands fishery includes the Shumagin Islands Section of the Southeastern District (Figures 1 and 2) as described in 5 AAC 09.200(f)(3).

Fishing periods for the 2020 June fishery will be as follows (Figure 7):

<u>Dates and Times</u>	<u>Duration</u>
Set gillnet only:	
6:00 AM Saturday, June 6 until 10:00 PM Monday June 8	64 hours
All gear types:	
6:00 AM Wednesday, June 10 until 10:00 PM Saturday, June 13	88 hours
6:00 AM Monday, June 15 until 10:00 PM Thursday, June 18	88 hours
6:00 AM Saturday, June 20 until 10:00 PM Tuesday, June 23	88 hours
6:00 AM Thursday, June 25 until 10:00 PM Sunday, June 28	88 hours

In addition to the scheduled fishing periods during the month of June, the harvest of sockeye salmon in the *Dolgoi Island area*, described in the Western Alaska Salmon Stock Identification Program (WASSIP), will be monitored through fish ticket information. Once the harvest of sockeye salmon reaches 191,000 fish, the waters of the West Pavlof Bay Section south of Black Point and the waters of the Volcano Bay Section will close to commercial salmon fishing for the remainder of the June fisheries (Figures 8 and 9). Commercial fisherman operating in the South Central and Southwestern districts during June are advised that short notice closure of the designated *Dolgoi Island area* will occur in the likely event the harvest of sockeye salmon approaches 191,000 fish. ADF&G will to the extent practical give a minimum of 6 hours notice of closure to all gear types.

Fishermen should be aware that waters closed to commercial salmon fishing, as specified under 5 AAC 09.350 are in effect during June.

Latitude and longitude coordinates in the Alaska Peninsula Management Area will be determined and enforced using the Global Positioning System (North American Datum of 1983).

POST-JUNE SALMON FISHERY

Immature Test Fishery

In order to assess the abundance of immature salmon and reduce incidental harvest, ADF&G will conduct a purse seine test fishery in the Shumagin Islands Section in early July, before the post-June fishery begins. If 100 or more immature salmon, per set, are present, the commercial fishery will be closed to purse seine gear in an area to be determined by ADF&G per 5 AAC 09.366(i). For the purpose of this management plan, “immature salmon, per set, are present” is defined by

5 AAC 09.366(i) as the number of Chinook *O. tshawytscha*, sockeye, coho, and chum salmon that are observed to be gilled in the seine web. Test fishing is standardized to purse seine gear, conducting two 20-minute sets at Popof Head, Middle Set, and Red Bluff located on Popof Island. The commercial fishery may be constrained based on the abundance of immature salmon observed during the test fishery. Gillnet gear is permitted to fish in these areas during the presence of immature salmon because the larger mesh size permits immature salmon to pass through the nets.

Harvest Strategy for July

Commercial salmon fishing opportunities during the month of July will consist of one 33-hour fishing period followed by a 63-hour closure, followed by six 36-hour fishing periods separated by 60-hour closures per 5 AAC 09.366(d). The first post-June fishing period will be on July 6, pending the results from the immature test fishery. July fishing periods begin at 6:00 AM on July 6 and end on July 31 at 6:00 PM (5 AAC 09.366(d)).

The July fishing schedule for the post-June fishery will be as follows (Figure 10):

<u>Dates and Times</u>	<u>Duration</u>
All gear types:	
6:00 AM Monday, July 6 until 3:00 PM Tuesday, July 7	33 hours
6:00 AM Friday, July 10 until 6:00 PM Saturday, July 11	36 hours
6:00 AM Tuesday, July 14 until 6:00 PM Wednesday, July 15	36 hours
6:00 AM Saturday, July 18 until 6:00 PM Sunday, July 19	36 hours
6:00 AM Wednesday, July 22 until 6:00 PM Thursday, July 23	36 hours
6:00 AM Sunday, July 26 until 6:00 PM Monday, July 27	36 hours
6:00 AM Thursday, July 30 until 6:00 PM Friday, July 31	36 hours

Under the current management plan, commercial salmon fishing is permitted to occur concurrently in both terminal and nonterminal areas during the scheduled openings for the month of July in all areas of the South Alaska Peninsula. Terminal harvest areas are depicted in Figures 11 through 15.

Additional fishing time in terminal harvest areas may also be provided during closures in the July fishing schedule based on local salmon stock strength which is evaluated from harvest data, escapement counts, and aerial surveys. From July 6 to July 21 terminal harvest areas are Zachary Bay, Canoe Bay, Cold Bay, Thin Point, and Morzhovoi Bay sections, and the East and West Pavlof Bay sections north of the latitude of Black Point (Figures 11–14). Terminal harvest areas during the July 22 to July 31 time period include those areas specified for the July 6 to July 21 period, as well as the Deer Island, Belkofski Bay, and Mino Creek-Little Coal Bay sections (Figure 15).

In addition to the scheduled fishing periods during the month of July, the harvest of sockeye salmon in the *Dolgoi Island area* will be monitored through fish ticket information from the opening of the commercial salmon season through July 25 (Figures 8 and 9). Once the harvest of sockeye salmon reaches 191,000 fish based on fish tickets, the waters of the West Pavlof Bay Section south of Black Point and the waters of the Volcano Bay Section will close until July 26.

However, the portion of the West Pavlof Bay Section south of Black Point will reopen to commercial salmon fishing on July 17 consistent with scheduled fishing periods during the post-June fishery. Commercial fishermen operating in the South Central and Southwestern districts prior to July 25 are advised that short notice closure of the designated *Dolgoi Island area* will occur when the sockeye salmon harvest approaches the 191,000 fish (Figures 8 and 9). ADF&G will to the extent practical give 6 hours notice of closure to all gear types.

Harvest Strategies after July

From August 1 to August 31, fishing periods in the South Alaska Peninsula will be based on the strength of local sockeye, coho, pink, and chum salmon runs.

From September 1 to October 31, fishing periods will be based primarily on coho salmon abundance, although late pink and chum salmon run strength may be considered when determining fishing time. Fishing effort typically declines during the fall fishery.

In an effort to allow enforcement activities during daylight hours, with minimum impact to legal fishing activities, fishing periods in August will open at 8:00 AM and close at 9:00 PM per 5 AAC 09.366(c)(2), and fishing periods in September and October will open at 9:00 AM and close at 8:00 PM per 5 AAC 09.366(c)(3).

Salmon Escapement Goals

Aerial surveys will be conducted by ADF&G staff to estimate the escapement of sockeye, coho, pink, and chum salmon on the South Alaska Peninsula. Information from these surveys will be used for inseason management of the South Alaska Peninsula commercial salmon fishery. Aerial survey methods can be found in Fox and Whiteside (*In prep*).

Pink and chum salmon escapements will be estimated with the indexed total escapement method, and sockeye salmon escapements will be estimated using peak escapement observations from mid-July to mid-September. Due to the late run timing of coho salmon, limited survey data is gathered, and no indexed total escapement can be calculated. There are 3 sockeye salmon SEGs in the South Alaska Peninsula: 15,000–20,000 fish at Orzinski Lake, 3,200–6,400 fish at Mortensens Lagoon, and 14,000–28,000 fish at Thin Point Lake (Schaberg et al. 2018). The 2020 pink salmon SEG range for the South Alaska Peninsula is 1,750,000–4,000,000 fish. The 2020 chum management objectives using the indexed total escapement method are 106,400–212,800 fish in the Southeastern District, 89,800–179,600 fish in the South Central District, and 133,400–266,800 fish in the Southwestern District.

New escapement goal ranges for chum salmon were developed during the February 2019 Alaska Peninsula, Aleutian Islands, and Chignik Board of Fisheries meeting. New, lower chum salmon SEGs were established for each district that utilized specific index streams in a district rather than all streams in a district, and the single peak aerial survey method rather than the indexed total escapement method (incorporates 21-day stream life, carcasses, mouth counts; Fox and Whiteside *In prep*) to estimate escapement (Schaberg et al. 2018). Using the Southeastern District's 26 index streams, the SEG is 62,500–151,900 fish. Using the South Central District's 10 index streams, the SEG is 68,900–99,200 fish. Using the Southwestern District's 19 index streams, the SEG is 86,900–159,500 fish.

SOUTHEASTERN DISTRICT MAINLAND SALMON FISHERY

Under the current *Southeastern District Mainland Salmon Management Plan* (5 AAC 09.360),

1. The percentage of Chignik-bound sockeye salmon allocated to the SEDM fishery is 7.6% of the total number of sockeye salmon harvested in the CMA through July 25.
2. From June 1 to July 25, 80% of the sockeye salmon caught in the SEDM are considered Chignik-bound salmon, excluding NWSS after July 1.
3. Beginning July 1, sockeye salmon caught in NWSS will not be counted toward the Chignik allocation. Fishing periods in NWSS after June 30 will be based on sockeye salmon escapement into Orzinski Lake and there may not be more than 96 hours of fishing time during a 7-day period.
4. If the Orzinski Lake escapement meets or exceeds 25,000 sockeye salmon, NWSS and Orzinski Bay may be opened as follows:
 - (a) set gillnet gear may be operated continuously until midnight July 25;
 - (b) purse seine and hand purse seine gear may not be operated for more than 96 hours during a 7-day period.
5. The board established a closed waters area encompassing Kupreanof Point from July 6 to August 31 (Figure 16) per 5 AAC 09.350(37). ADF&G may extend the Kupreanof Point closed waters area through the end of the season by emergency order when the waters specified in 5 AAC 15.350(20) are closed to conserve coho salmon.
6. From July 26 to October 31, the fishery is managed for local pink, chum, and coho salmon stocks.
7. From July 26 to October 31, the fishery will be closed for at least one 36-hour period within a 7-day period.

Northwest Stepovak Section

The Orzinski Lake sockeye salmon SEG range is 15,000–20,000 fish (Schaberg et al. 2018). Based on aerial surveys and weir counts, ADF&G developed interim sockeye salmon escapement objectives for Orzinski Lake (Figure 17). ADF&G has operated a weir on the Orzinski Lake system every year since 1990 and plans to do so again in 2020.

Stepovak Flats Section

The Stepovak Flats Section is open to commercial salmon fishing concurrently with the rest of SEDM (Figure 6). Of the sockeye salmon harvested in the Stepovak Flats Section prior to July 26, 80% are assigned to the 7.6% allocation criteria stated in the current *Southeastern District Mainland Salmon Management Plan*. The Stepovak Flats Section is closed to all commercial fishing from July 29 to October 31 to protect schooling chum salmon.

FORECAST AND ALLOCATION

SOUTH ALASKA PENINSULA PINK SALMON FORECAST

The 2020 South Alaska Peninsula harvest estimate is 450,000 pink salmon and the total run estimate is 2.2 million fish (Appendix A1). ADF&G will manage the commercial fishery according to the June and post-June schedules through July 31, after which time the commercial salmon fishing periods will be based upon strength of local pink and chum salmon stocks.

CHIGNIK RIVER SOCKEYE SALMON FORECAST AND SEDM ALLOCATION

The 2020 Chignik River forecast for the early-run harvest estimate is 101,000 sockeye salmon, and the late-run harvest estimate is 485,000 sockeye salmon (Appendix A2). ADF&G will manage the fisheries so that the number of sockeye salmon harvested in CMA, for both runs combined, will be at least 600,000 fish and the harvest of sockeye salmon considered to be Chignik-bound in the SEDM will approach—as near as possible—7.6% of the total CMA sockeye salmon harvest through July 25.

If the Chignik River early run fails to develop as predicted, ADF&G will curtail fishing in the SEDM (excluding Orzinski Bay) until at least 300,000 sockeye salmon have been harvested in the CMA through July 8. From approximately June 26 to July 8, the strength of the Chignik River sockeye salmon late run cannot be accurately evaluated due to the mixing of early- and late-run stocks. During this transition period, ADF&G may close or restrict commercial salmon fishing in SEDM until the strength of the late run has been determined. After July 8, if at least 300,000 sockeye salmon have been harvested in the CMA and escapement objectives are being met for the Chignik late run, ADF&G will manage the fishery so that the number of sockeye salmon harvested in the CMA is at least 600,000. The number of sockeye salmon harvested in the SEDM before July 25 (before July 1 in the NWSS) will be managed so that 7.6% of the total harvest of Chignik River sockeye salmon is taken in the SEDM. However, the harvest in SEDM at any time before July 25 may be permitted to fluctuate above or below 7.6% of the Chignik Area harvest as stated in 5 AAC 09.360(g).

REFERENCES CITED

- Fox, E. K. C., and C. J. Whiteside. *In prep.* South Alaska Peninsula salmon annual management report, 2019 and the 2018 subsistence fisheries in the Alaska Peninsula, Aleutian Islands, and Atka-Amlia Islands management areas. Alaska Department of Fish and Game, Regional Information Report, Kodiak.
- Schaberg, K. L., H. Finkle, M. B. Foster, A. St. Saviour, and M. L. Wattum. 2018. Review of salmon escapement goals in the Alaska Peninsula and Aleutian Islands Management Areas, 2018. Alaska Department of Fish and Game, Fishery Manuscript No. 19-01, Anchorage.

FIGURES

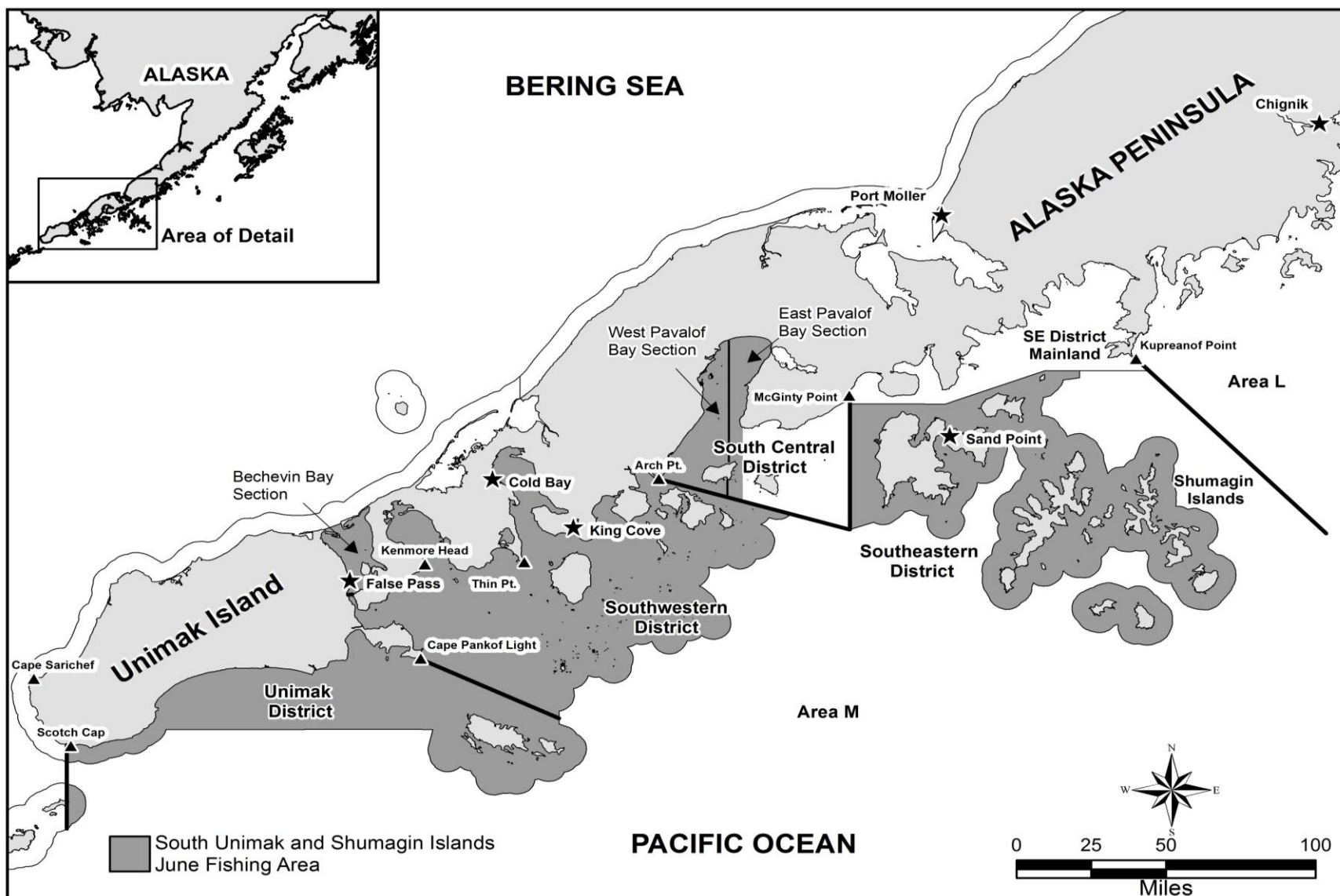


Figure 1.—Map of the South Alaska Peninsula Management Area and the locations of the South Unimak and Shumagin Islands June fisheries.

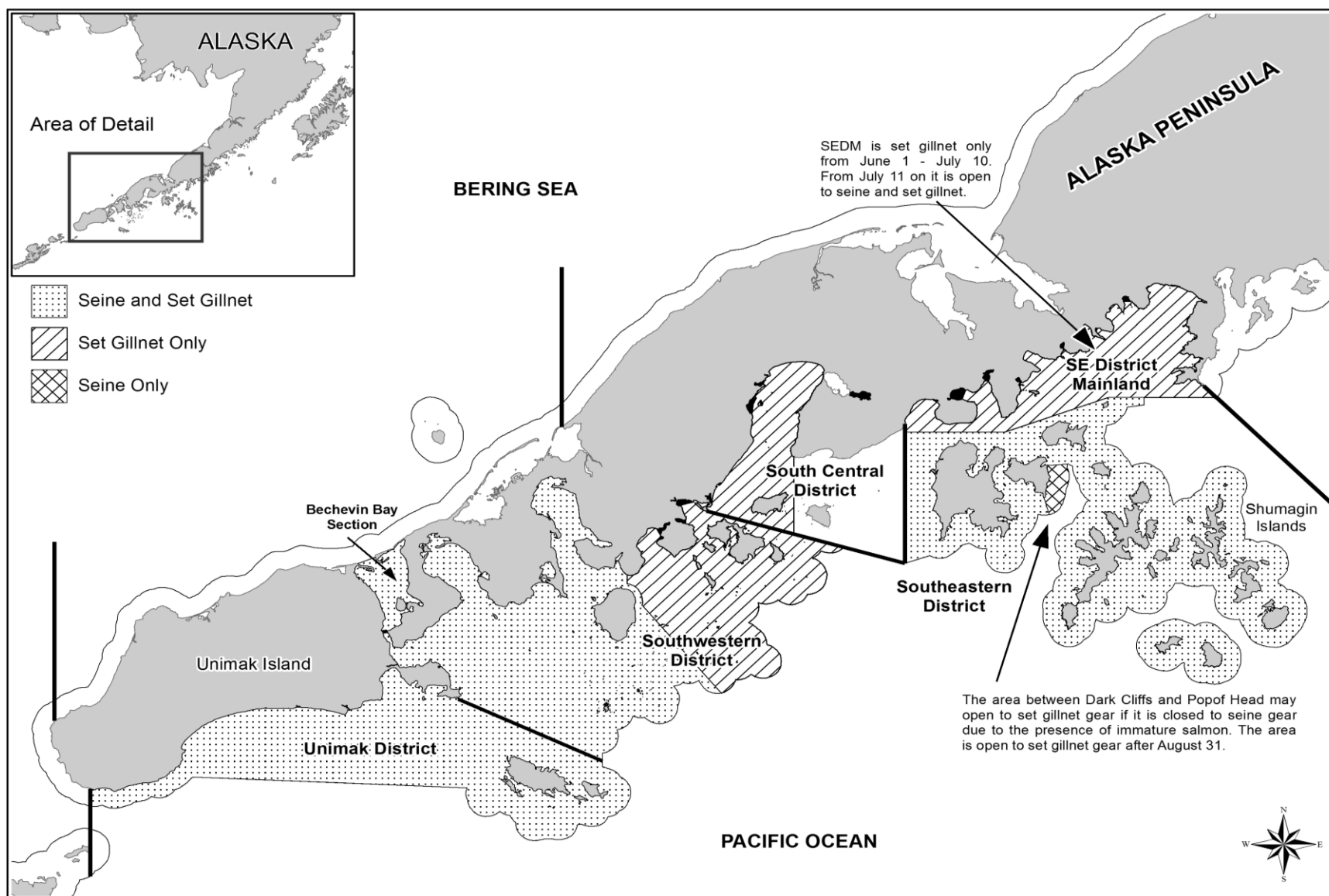


Figure 2.—Map depicting the locations of June South Alaska Peninsula fisheries for purse seine and set gillnet gear.

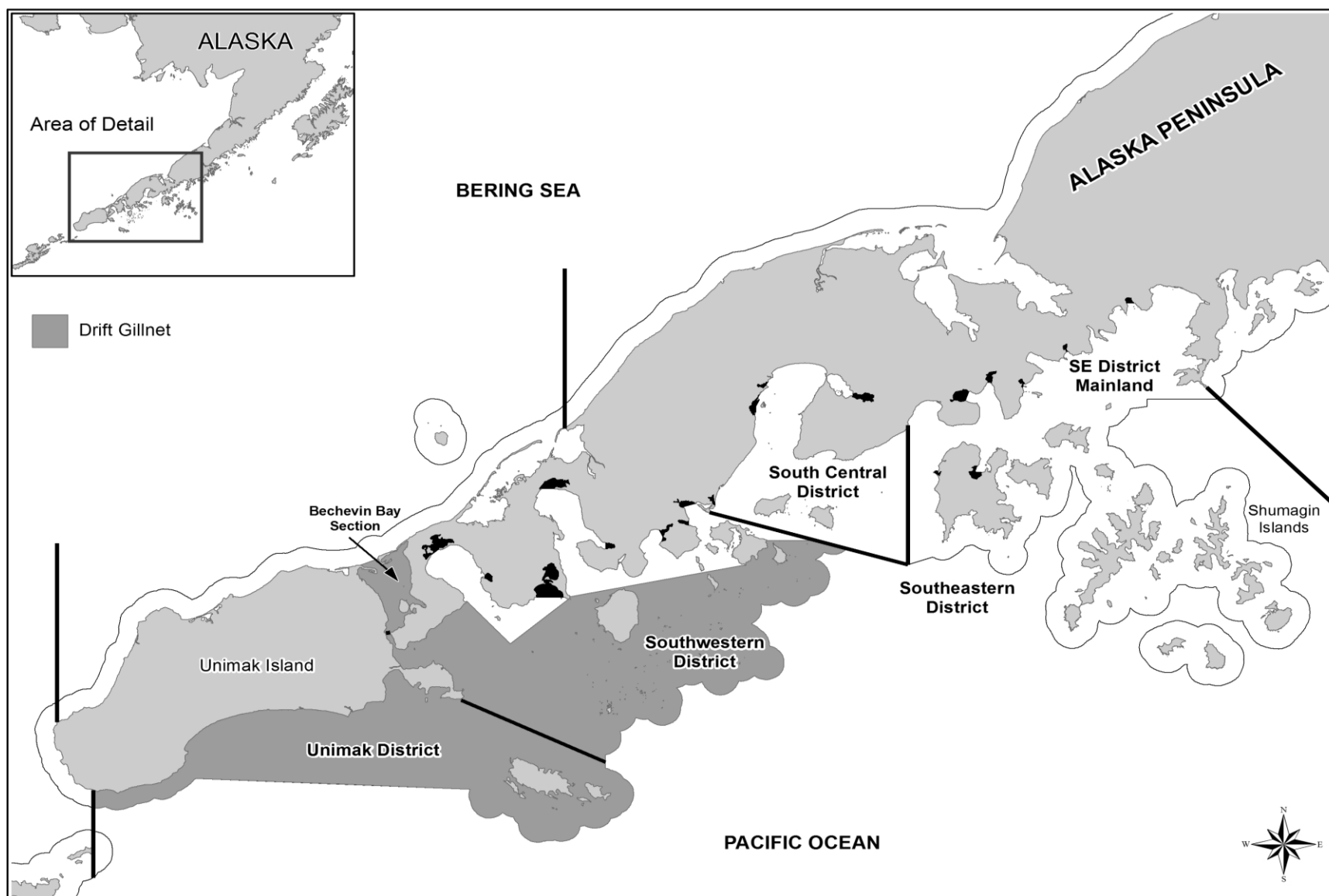


Figure 3.—Map depicting the locations of June South Alaska Peninsula fishery for drift gillnet gear.

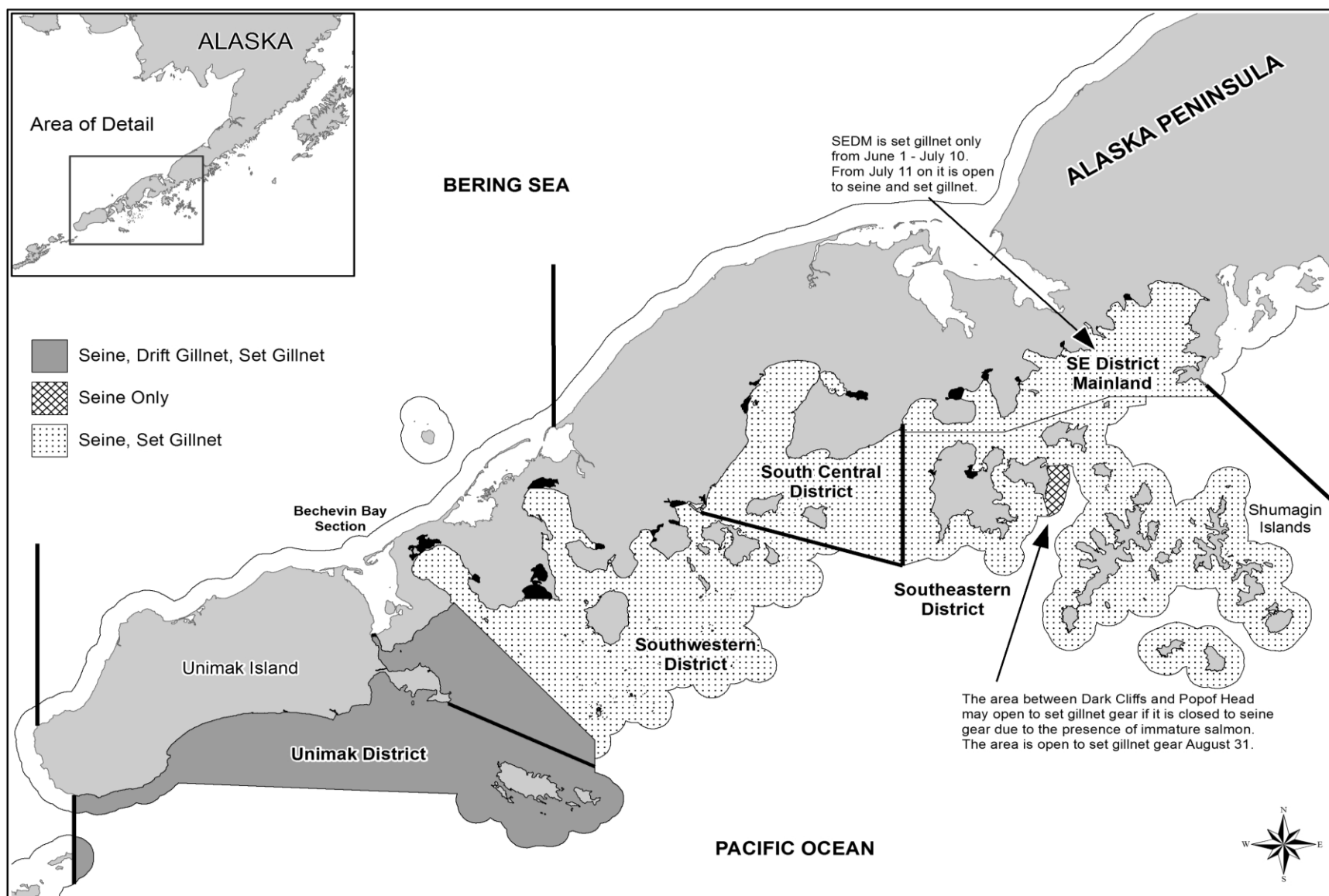


Figure 4.—Map depicting the locations of post-June South Alaska Peninsula fisheries and permitted gear types.

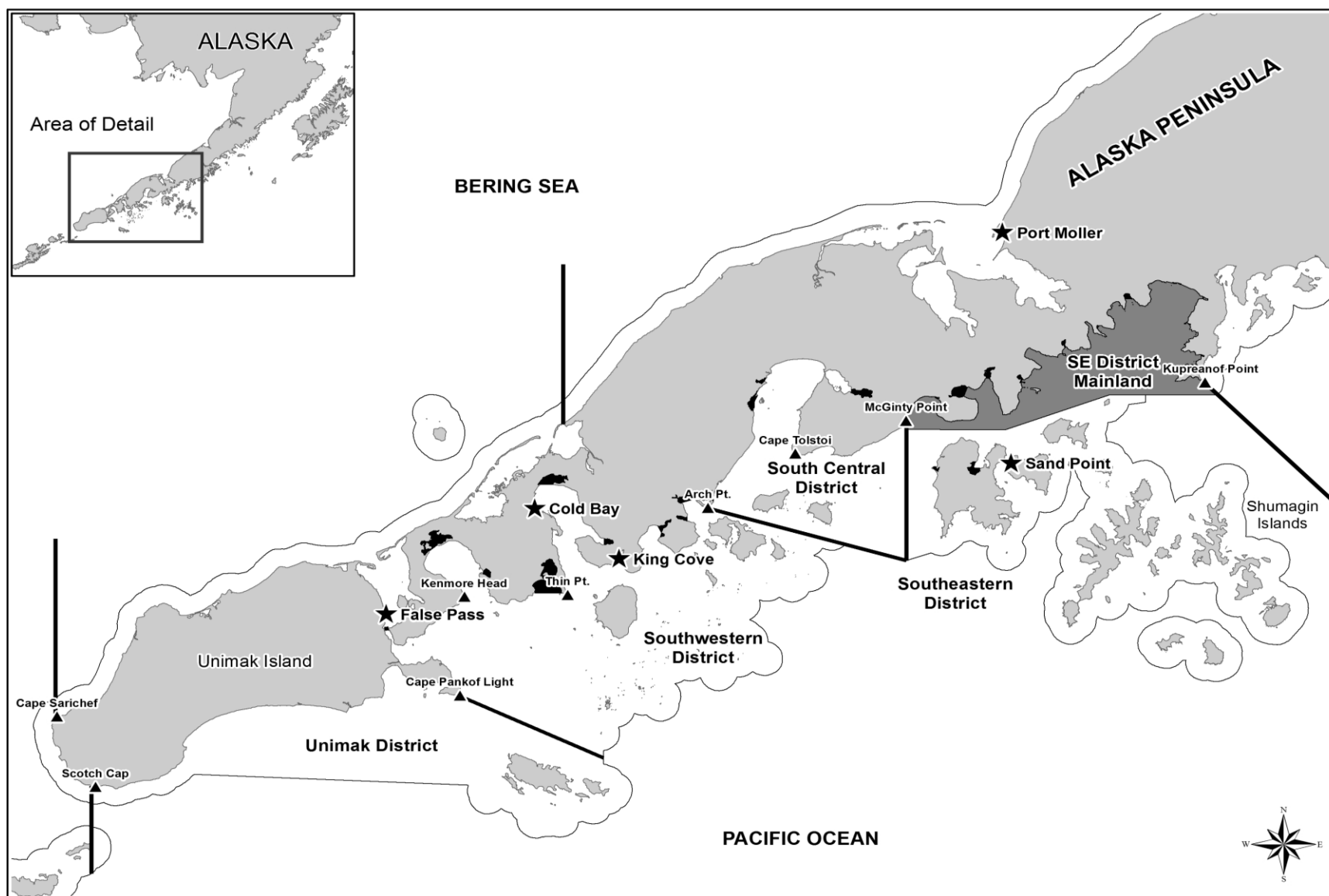


Figure 5.—Map of the South Alaska Peninsula Management Area with the Southeastern District Mainland defined.

Figure 6.—Map of the Southeastern District Mainland from Kupreanof Point to McGinty Point with the commercial salmon fishery sections defined.

June 2020 All Gear Types Schedule						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
Notes: All fishing periods start at 6:00 AM and end at 10:00 PM, closures between periods are 32 hours. The first fishing period is 64 hours, <u>for set gillnet gear only</u> . The remaining fishing periods are 88 hours, for all gear types.						6:00 AM
7	8	9	10	11	12	13
Open 64 hours (Set Gillnet Gear Only)			6:00 AM	Open 88 hours		
14	15	16	17	18	19	20
	6:00 AM	Open 88 hours				6:00 AM
21	22	23	24	25	26	27
Open 88 hours				6:00 AM	Open 88 hours	
28	29	30				
10:00 PM						

Figure 7.—All gear types fishing periods in the South Unimak and Shumagin Islands June fisheries, 2020.

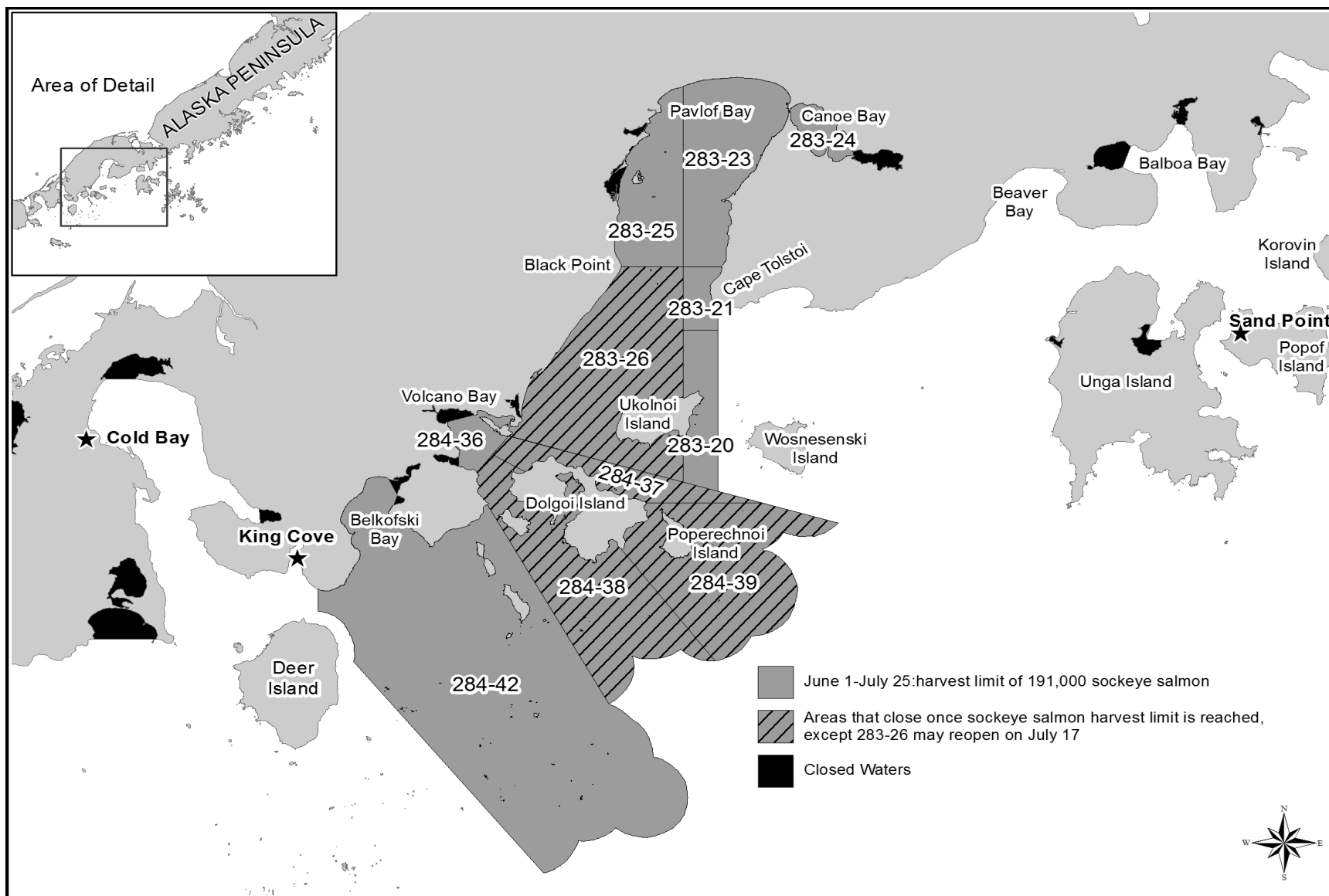


Figure 8.—Map depicting the statistical areas (283-20 through 283-26 and 284-36 through 284-42) that contribute to the *Dolgoi Island* area sockeye salmon harvest for the June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.

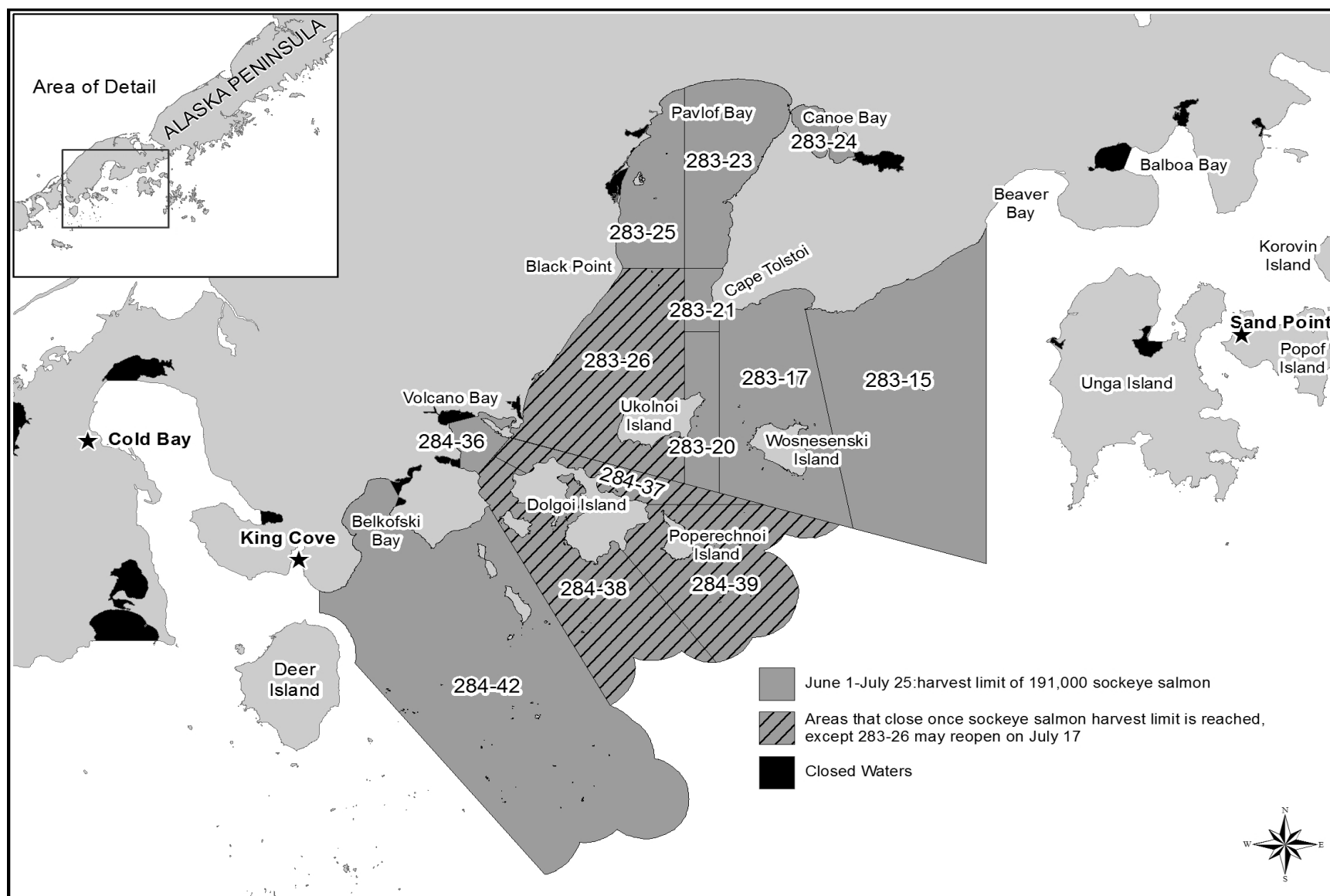


Figure 9.—Map depicting the statistical areas (283-15 through 283-26 and 284-36 through 284-42) that contribute to the *Dolgoi Island* area sockeye salmon harvest for the post-June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.

July 2020 All Gear Types Schedule						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
Note: All fishing periods start at 6:00 AM. All fishing periods are for all gear types.						
5	6	7	8	9	10	11
	6:00 AM 33 Hours 3:00 PM				6:00 AM 36 Hours 6:00 PM	
12	13	14	15	16	17	18
		6:00 AM 36 Hours 6:00 PM				6:00 AM 36 Hours
19	20	21	22	23	24	25
6:00 PM			6:00 AM 36 Hours 6:00 PM			
26	27	28	29	30	31	
6:00 AM 36 Hours 6:00 PM				6:00 AM 36 Hours 6:00 PM		

Figure 10.—All gear types fishing periods in the South Unimak and Shumagin Islands post-June fisheries, 2020.

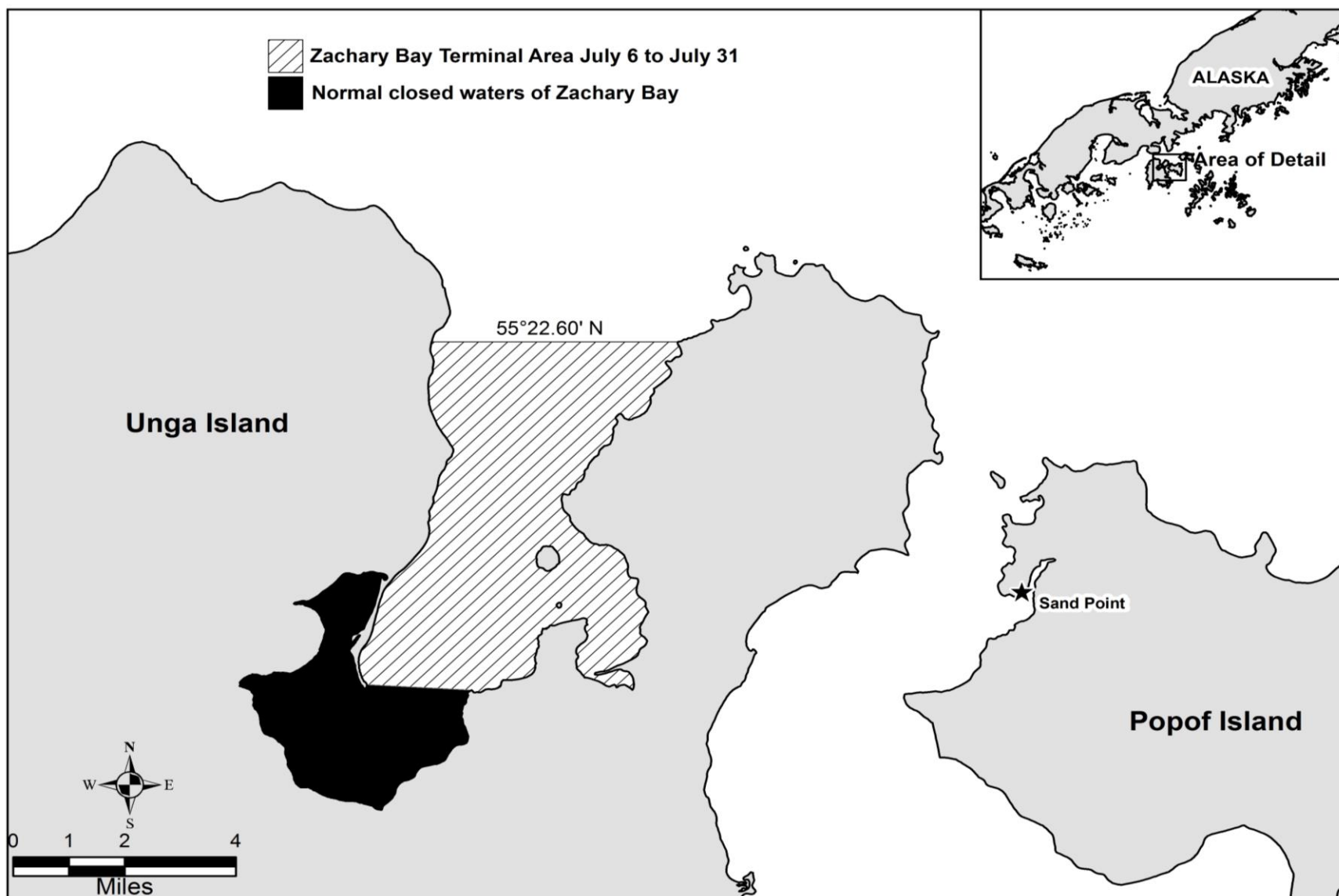


Figure 11.—Zachary Bay closed waters and post-June terminal fishing area.

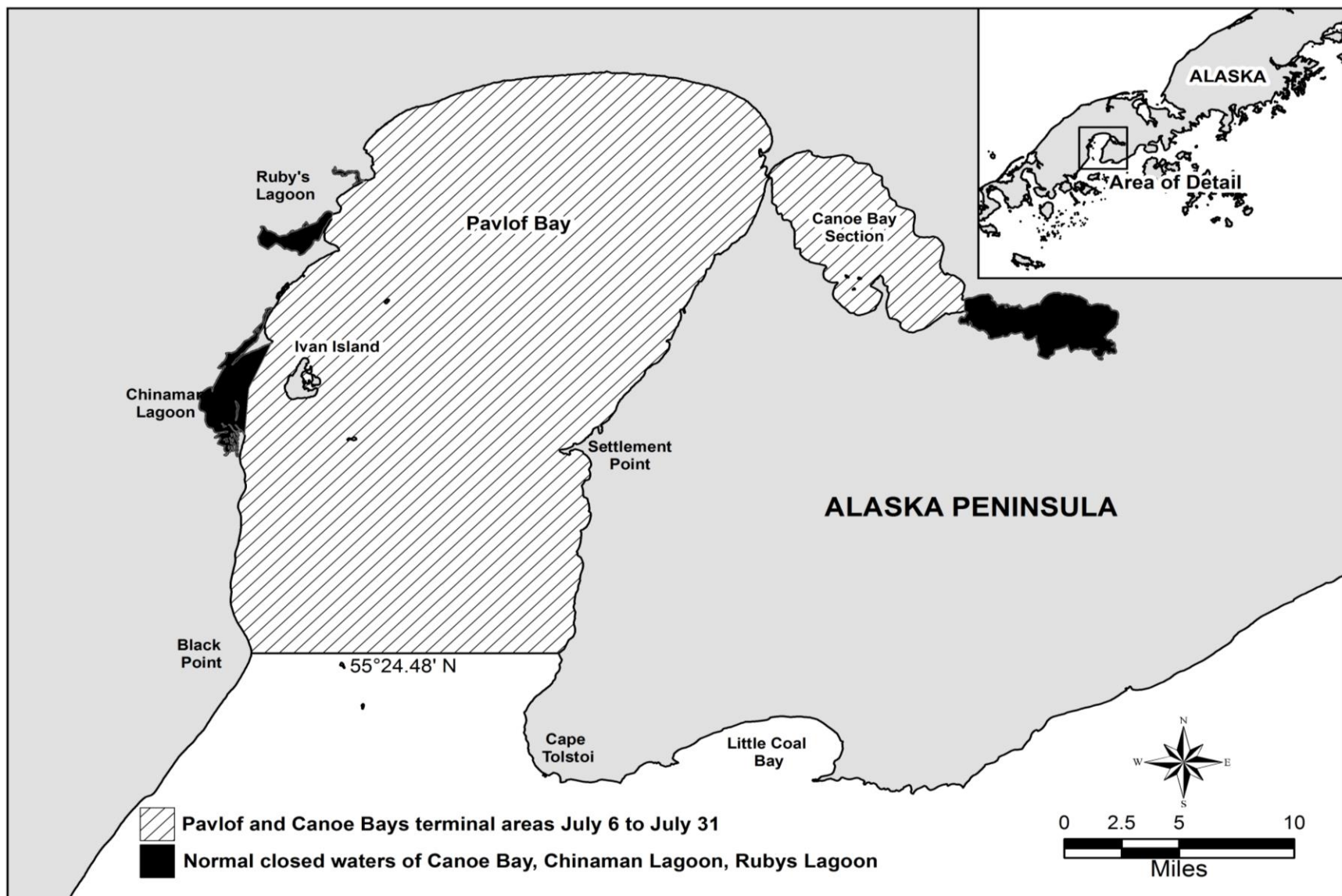


Figure 12.—Canoe Bay Section and Upper Pavlof Bay closed waters and post-June terminal fishing areas.

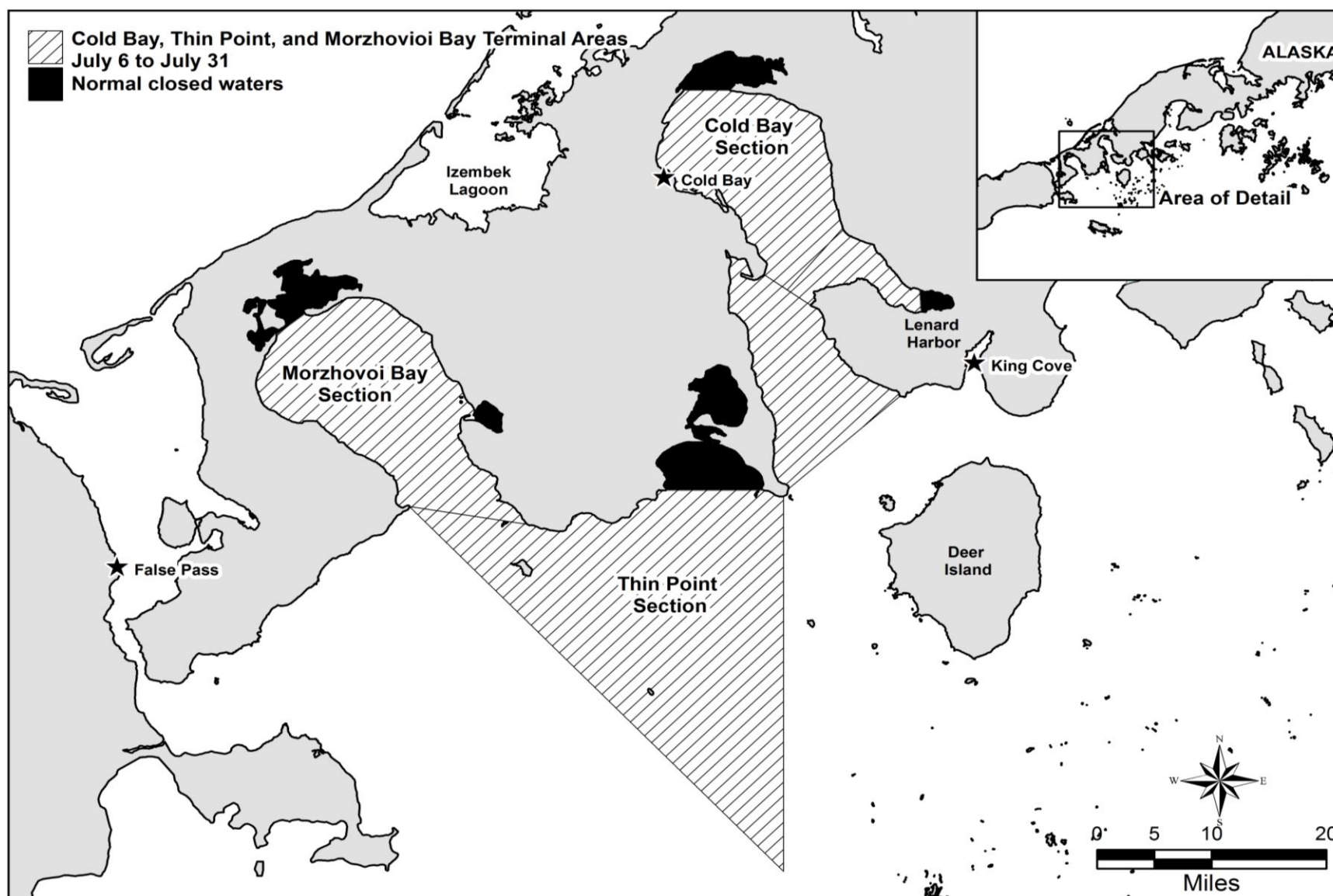


Figure 13.—Cold Bay, Thin Point, and Morzhovoi Bay sections closed waters and post-June terminal fishing areas.

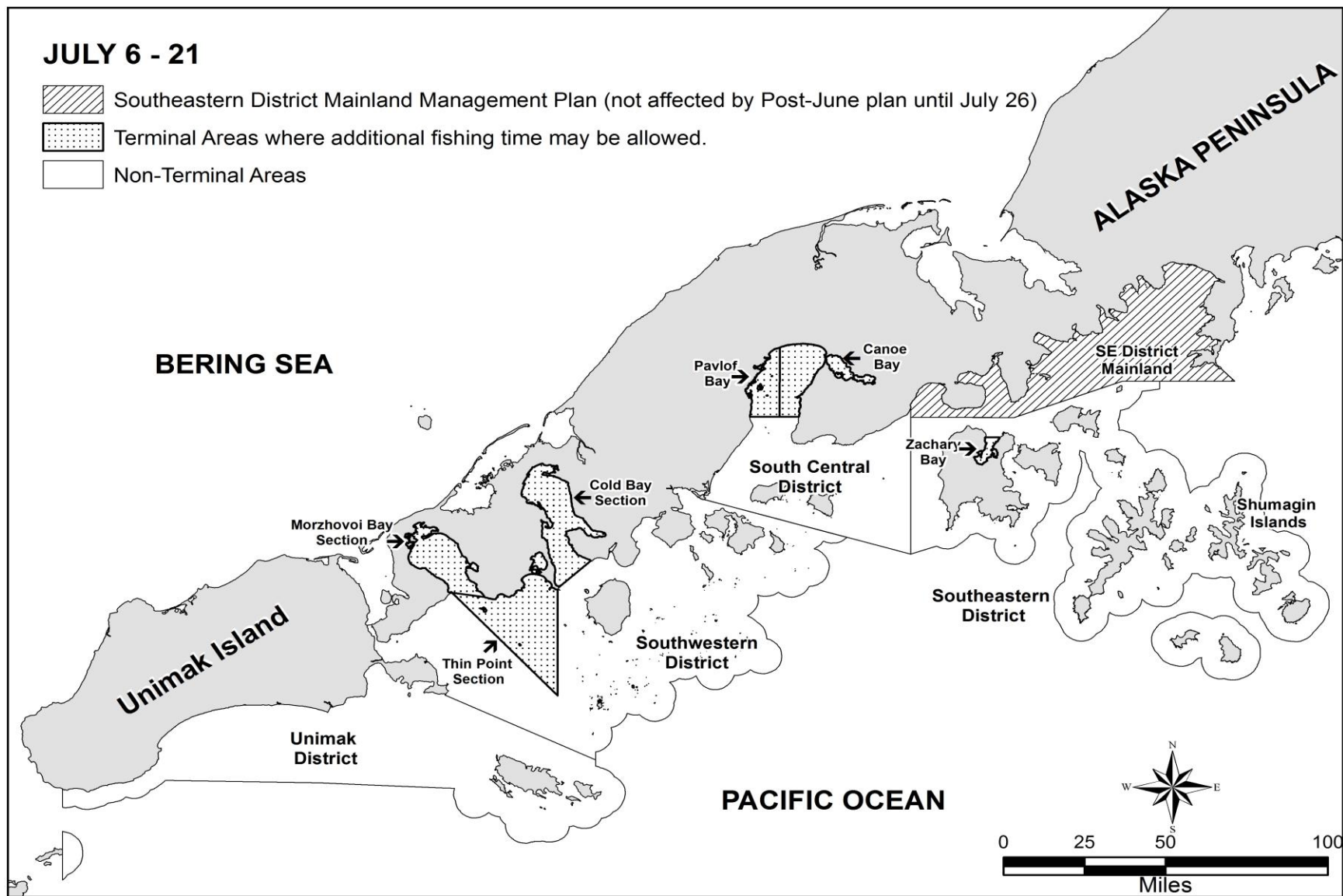


Figure 14.—South Alaska Peninsula post-June terminal fishing areas from July 6 to July 21.

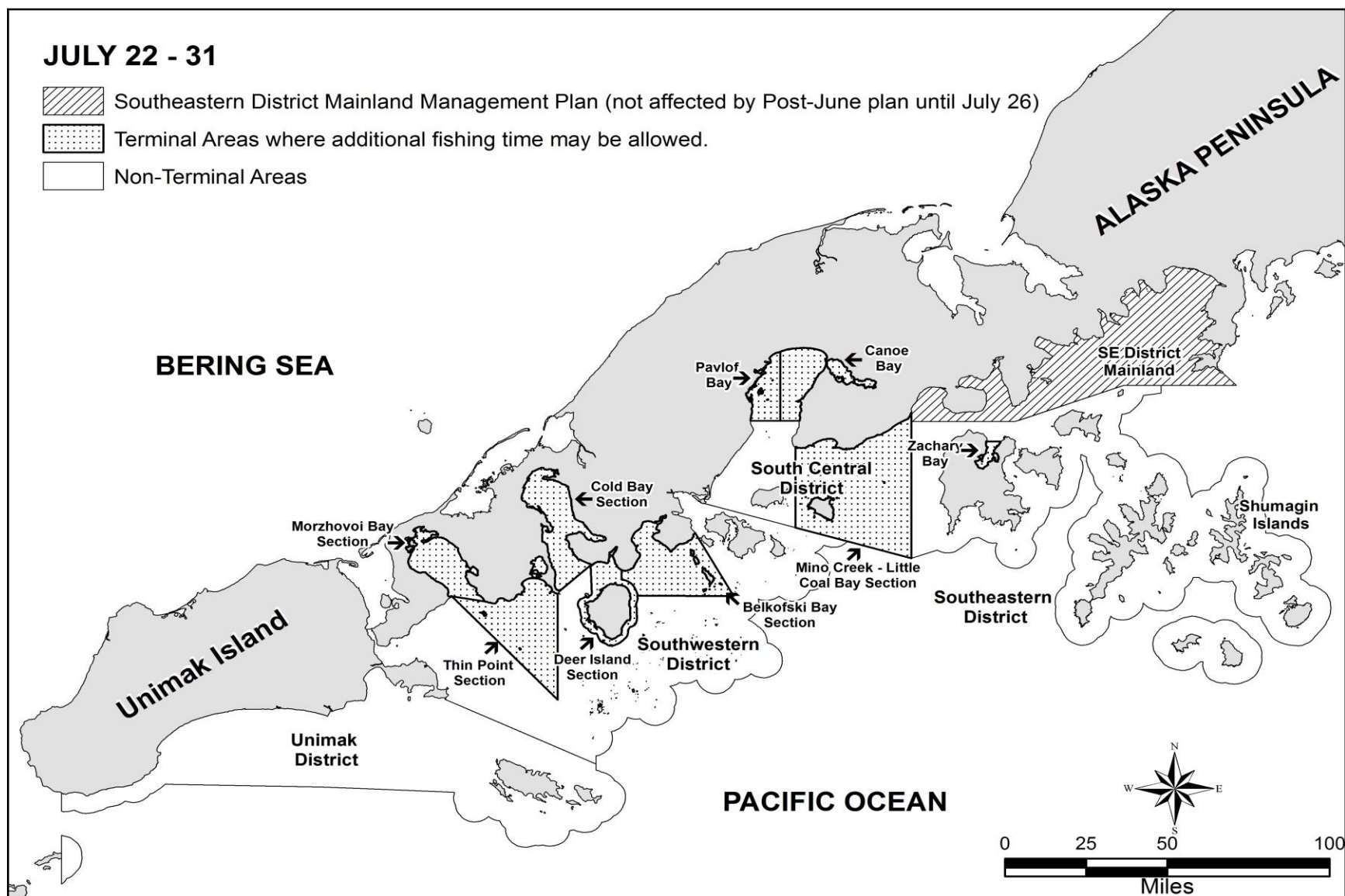


Figure 15.—South Alaska Peninsula post-June terminal fishing areas from July 22 to July 31.

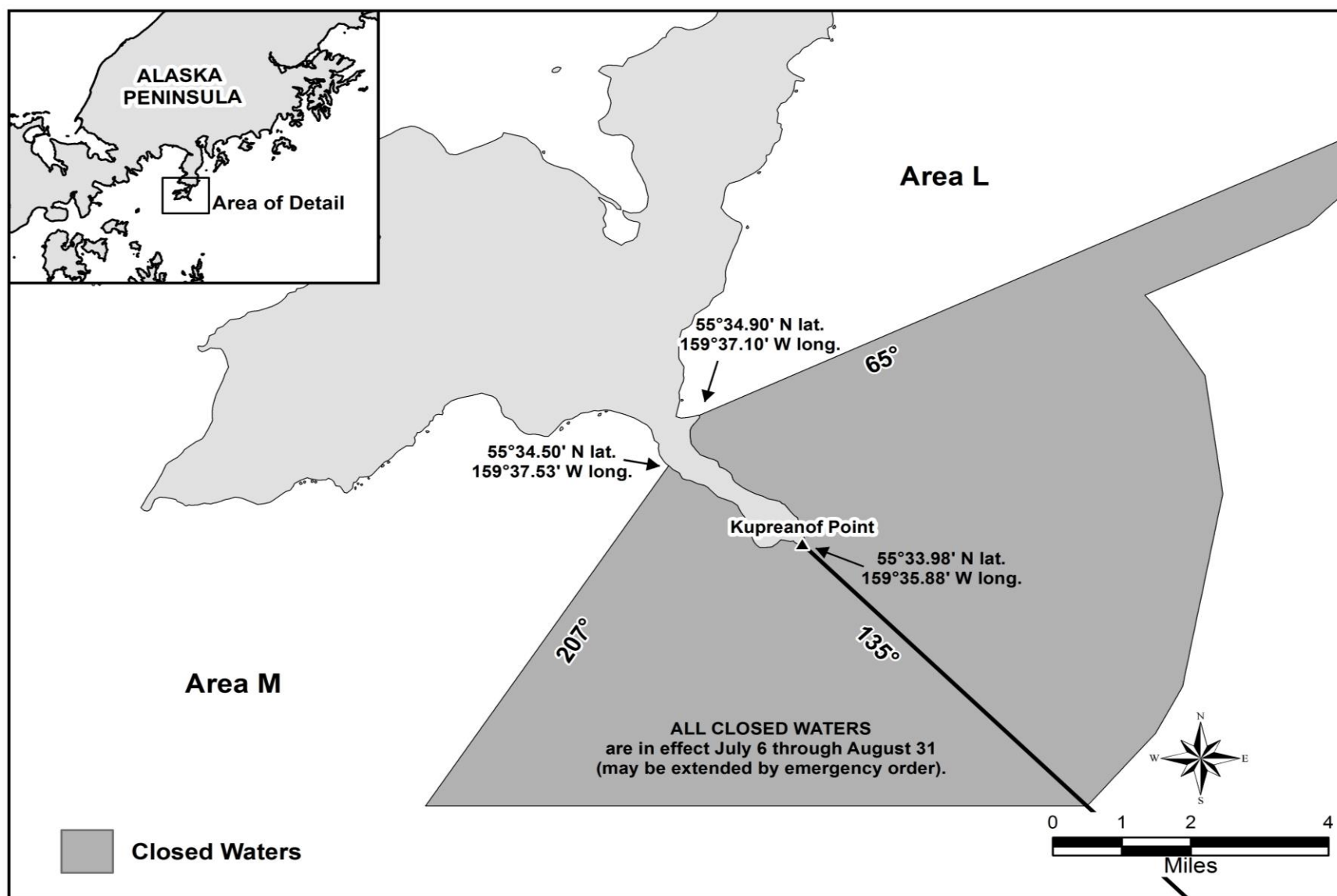


Figure 16.—Map of Kupreanof Point area closed waters.

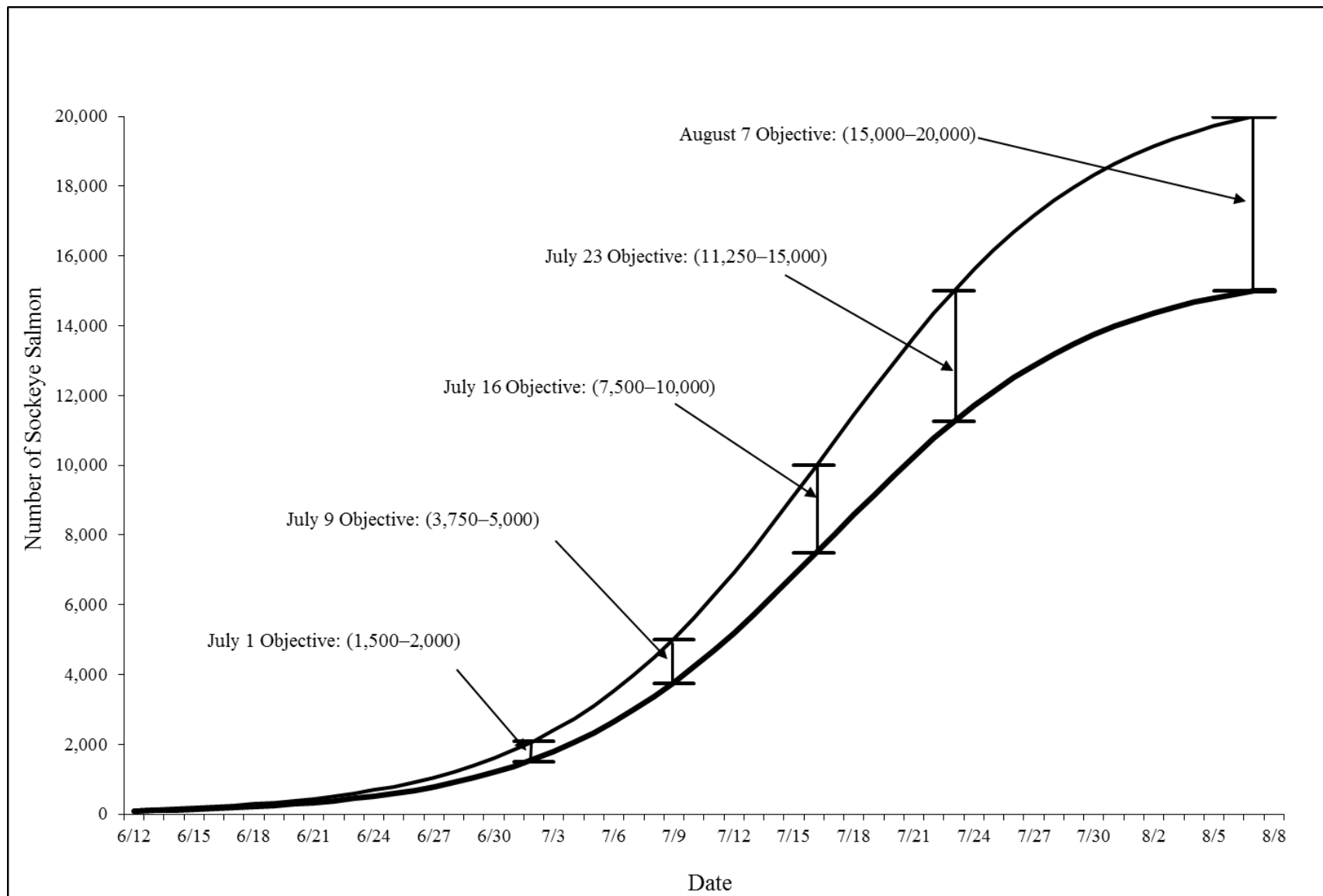


Figure 17.—Orzinski Lake interim sockeye salmon escapement objectives by date. Interim escapement objectives are general guidelines for inseason management and are subject to adjustment based on run timing of sockeye salmon returns in a given year.

APPENDIX A. 2020 SALMON FORECASTS

**Forecast Area: Alaska Peninsula, South Alaska Peninsula Aggregate
Species: Pink Salmon**

Preliminary forecast of the 2020 run

Total production	Forecast estimate (millions)	Forecast range (millions)
Total run estimate ^a	2.20	0–7.8
Escapement goal ^b	1.75	1.75–4.0
Post-June harvest estimate	0.45	0–3.8

^a Post-June harvest and escapement.

^b The escapement estimate is the minimum of the aggregate goal range (1.75–4.0 million) in 2020.

The 2020 South Alaska Peninsula predicted pink salmon harvest is expected to be in the *poor* category with a point estimate of 450,000 fish (fewer than 2.0 million fish). Harvest categories were calculated from the 20th, 40th, 60th, and 80th percentiles of historical post-June commercial harvest on the South Alaska Peninsula from 1980 to 2019.

South Peninsula harvest category	Range (millions)	Percentile
Poor	Less than 2.0	Less than 20th
Weak	2.0 to 4.2	20th to 40th
Average	4.2 to 6.7	40th to 60th
Strong	6.7 to 9.3	60th to 80th
Excellent	Greater than 9.3	80th to 100th

Forecast Methods: The 2020 South Alaska Peninsula pink salmon harvest forecast is derived from a total run forecast minus the minimum (1.75 million fish) of the combined even- and odd-year South Alaska Peninsula escapement goal range. The total run was forecasted with a simple exponential smoothing model fit to even-year South Alaska Peninsula pink salmon returns from 1964 through 2018.

Forecast Discussion: June harvest of pink salmon has been omitted from the South Alaska Peninsula aggregate pink salmon forecast due to the variability of pink salmon harvest that occurs during the June fishery, and the origin of these fish are unknown. The 5-year even-year average harvest of pink salmon in June is 726,000 fish.

The 2020 South Alaska Peninsula pink salmon post-June harvest (450,000 fish) is predicted to be poor due to the low return that occurred in 2018. The pink salmon escapement estimate of 732,000 fish was below the minimum escapement goal of 1.75 million fish and below the 5-year even-year average of 867,000 fish. The weather during the 2018 season was exceptionally poor for aerial surveys, and many streams were surveyed only once during the season. Due to overall reduced survey time, the peak of the run may not have been captured; however, the total run in 2018 was still estimated to be low.

The pink salmon that returned in 2018 had ample rainfall to facilitate escapement and provide adequate spawning habitat; however, ocean conditions encountered by the fish returning in 2020 are unknown. This year's forecasting model does not take into consideration environmental factors. Changing ocean conditions and recent years' average temperatures have been outside the

-continued-

ranges in the historical dataset; therefore, the predictive power has been diminished for formerly used forecasting methods that used environmental data.

The 2020 forecast utilizes a simple exponential smoothing model, which is a time series forecasting method without additional parameters to account for underlying trends. Models that accounted for underlying trends did not improve the forecast so were not used. Accounting for uncertainty in changing environmental conditions and the model, confidence in the forecast is fair.

Forecast by Cassandra Whiteside, Alaska Peninsula–Aleutian Islands Assistant Area Management Biologist; and Sarah Power, Biometrician, Juneau.

Forecast Area: Chignik
Species: Sockeye Salmon

Preliminary Forecast of the 2020 Run

Total production		Forecast estimate (thousands)	Forecast range (thousands)
Early run (Black Lake)	Total Run Estimate	501	226–1,110
	Escapement Goal ^a	400	350–450
	Harvest Estimate	101	
Late run (Chignik Lake)	Total Run Estimate	795	281–1,482
	Escapement Goal ^a	310	220–400
	Harvest Estimate	485	
Total Chignik System	Total Run Estimate	1,296	507–2,591
	Harvest Estimate ^b	586	
	Chignik Area	586	
	SEDM Area	0	
	Cape Igvak Section	0	

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

^a Harvest represents the midpoint of the escapement goal. An inriver run goal of 20,000 sockeye salmon is added to the lower bound of the late-run escapement goal.

^b A harvestable surplus of Chignik River system sockeye salmon is forecast to be below 600,000 fish in the Chignik Area; therefore, as outlined in regulations 5 AAC 09.360 and 5 AAC 18.360, no commercial fisheries are anticipated in the Southeastern District Mainland and Cape Igvak during the regulatory timeframe thru July 25, thus the harvest of Chignik-bound sockeye salmon in those areas is expected to be zero.

Forecast Methods: Simple linear regressions models using age class relationships were used to forecast the 2020 early and late Chignik sockeye salmon runs. Each regression model was assessed with standard regression diagnostic procedures. Data were log transformed to address nonnormality or unequal variance. Prediction intervals (80%) for the regression estimates were calculated using the variances of the regression models. Age class returns not estimated with statistical models utilized pooled medians with data from 1995 to the present; median prediction intervals were calculated from the 10th and 90th percentiles of the data.

For the early run, prior year log-transformed age-.2 returns predicted log-transformed age-.3 returns using data from the 1995 outmigration year to the present. Prior year early-run age-.1 returns predicted log-transformed age-.2 returns (outmigration years 1998 to present). For the late run, prior year age-.2 returns predicted age-.3 returns using data from the 2000 outmigration year to the present. Prior year log-transformed age-.1 early- and late-run returns were combined to predict log-transformed late-run age-.2 returns (outmigration years 1988 to present).

The early- and late-run regression and median estimates were summed to estimate the total Chignik River sockeye salmon run for 2020. The combined early- and late-run 80% prediction interval was calculated by summing the lower and upper prediction bounds of the 2 runs.

-continued-

Forecast Discussion: The 2020 Chignik sockeye salmon early run is forecasted to be 501,000 fish, which is 790,000 fewer fish than the 10-year average run of 1.29 million and almost 140,000 fish more than the 2019 early run of 361,000. The early run is predicted to be composed of approximately 72% age-.3 and 27% age-.2 fish. The late run is forecasted to be 795,000 fish, which is approximately 216,000 fewer fish than the 10-year average run of 1.01 million fish and 165,000 fewer fish than the 2019 late run of 960,000 fish (Table 27). The 2020 late run is predicted to be composed of approximately 65% age-.3, 34% age-.2, and 1% age-.1 and age-.4 fish. The 2020 total Chignik sockeye salmon run is expected to be 1.30 million fish, which is approximately 1.01 million fewer fish than the 10-year average of 2.30 million fish, and roughly 25,000 fewer fish than the 2019 total run of 1.32 million fish.

The projected 2020 early-run total harvest estimate of 101,000 fish is based on achievement of the midpoint of the early-run escapement goal range. The projected late-run harvest estimate of 485,000 fish is based on achieving the midpoint (310,000 fish) of the late-run goal, which includes the inriver run goal of 20,000 fish added to the lower bound (200,000 fish) of the escapement goal. For 2020, it is projected that sockeye salmon harvests for both early and late runs in the Chignik Management Area will not exceed a 600,000 fish surplus beyond escapement goals and, by regulation, preclude commercial fisheries from harvesting Chignik-bound fish in the Cape Igvak Section of the KMA and in the SEDM of the Alaska Peninsula Management Area during the regulatory period through July 25.

The wide confidence intervals around the point estimate of the 2020 forecasts reflect the uncertainty inherent in the forecast models. Given the sibling relationships used for forecasting both runs and the poor 2019 age-.3 returns, the 2019 forecast may overestimate returns if environmental variables, which are unknown at this time, remain spurious. Due to the range of variation in the relationships used in these forecasts and their historical accuracy, our confidence in them is fair.

Forecast by Heather Finkle, Finfish Research Biologist, Westward Region.