

Regional Information Report No. 4K22-04

**South Alaska Peninsula Salmon Management
Strategy, 2022**

by

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and

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April 2022

Alaska Department of Fish and Game

Division of Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General	Mathematics, statistics
centimeter	cm	Alaska Administrative Code	<i>all standard mathematical signs, symbols and abbreviations</i>
deciliter	dL	all commonly accepted abbreviations	alternate hypothesis
gram	g	e.g., Mr., Mrs., AM, PM, etc.	base of natural logarithm
hectare	ha		catch per unit effort
kilogram	kg		coefficient of variation
kilometer	km		common test statistics
liter	L	all commonly accepted professional titles	(F, t, χ^2 , etc.)
meter	m	e.g., Dr., Ph.D., R.N., etc.	confidence interval
milliliter	mL	at	correlation coefficient
millimeter	mm	compass directions:	(multiple)
		east	R
		north	correlation coefficient
		south	(simple)
		west	covariance
		copyright	degree (angular)
		corporate suffixes:	degrees of freedom
		Company	expected value
mile	mi	Corporation	greater than
nautical mile	nmi	Incorporated	greater than or equal to
ounce	oz	Limited	harvest per unit effort
pound	lb	District of Columbia	less than
quart	qt	et alii (and others)	less than or equal to
yard	yd	et cetera (and so forth)	logarithm (natural)
		exempli gratia	logarithm (base 10)
		(for example)	log
Time and temperature	d	e.g.	\log_2 , etc.
day		Federal Information Code	'
degrees Celsius	°C	id est (that is)	not significant
degrees Fahrenheit	°F	i.e.	null hypothesis
degrees kelvin	K	latitude or longitude	percent
hour	h	monetary symbols	probability
minute	min	(U.S.)	probability of a type I error
second	s	months (tables and figures): first three letters	(rejection of the null hypothesis when true)
Physics and chemistry		AC	α
all atomic symbols		registered trademark	probability of a type II error
alternating current	A	trademark	(acceptance of the null hypothesis when false)
ampere	A	United States	β
calorie	cal	(adjective)	second (angular)
direct current	DC	United States of America (noun)	standard deviation
hertz	Hz	U.S.C.	standard error
horsepower	hp	U.S. state	variance
hydrogen ion activity (negative log of)	pH	use two-letter abbreviations (e.g., AK, WA)	population sample
parts per million	ppm		Var
parts per thousand	ppt, ‰		var
volts	V		
watts	W		

REGIONAL INFORMATION REPORT NO. 4K22-04

**SOUTH ALASKA PENINSULA SALMON MANAGEMENT STRATEGY,
2022**

by

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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 through June 28 and target sockeye salmon *Oncorhynchus nerka*. The June fisheries commence according to one schedule that combines all gear types. The post-June fishery may occur from July 6 through 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 from the remainder of the South Alaska Peninsula fisheries from June 1 through October 31. A sockeye salmon allocation exists between the Chignik Management Area (CMA) and the SEDM where 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 through July 25, excluding the Northwest Stepovak Section from July 1 through 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 2022.

Keywords: 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 through 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 through 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 through July 25 (June 1 through 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 through 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). During the 2022 season, inseason harvest reports and fishery announcements will be available at the 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 their daily salmon harvest/purchases by species (in both numbers of fish and pounds), statistical area, and number of deliveries by gear type to the ADF&G office in Sand Point or Cold Bay by 10:00 AM the day following the delivery. 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 E-mail: elisabeth.fox@alaska.gov	Fax: 907-383-2606
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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 (5 AAC 39.130(c)). Properly filled out fish tickets are essential to the management of these fisheries. 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
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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 on June 6 at 6:00 AM and close at 10:00

PM on June 8, a 64-hour fishing period for set gillnet gear only. Beginning at 6:00 AM 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 three 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 to the *South Unimak and Shumagin Islands June Salmon Management Plan* (5 AAC 09.365(g)) 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 55° 01.88' N. lat., 162°24.80' W. long., and Bold Cape at 55° 01.24' N. lat., 162° 16.40'W. long., 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 one of the vessels, or to allow a registered salmon fishing vessel to have aboard it no more than two legal limits of set gillnet fishing gear in the aggregate to transport gear during a closed fishing period, if the two permit holders are on board the vessel. Additional gear may be transported to another district under conditions specified by the department.

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. While these 55 index streams will be monitored to provide an escapement index, previously monitored streams will continue to be monitored to assess quality and spatial distribution of the runs.

The next scheduled regulatory meeting will be February 13–February 17, 2023.

2022 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 through 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 2022 June fishery will be as follows (Figure 7):

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

In addition to the scheduled fishing periods during the month of June, the harvest of sockeye salmon in the Western Alaska Salmon Stock Identification Program (WASSIP) described “Dolgoi Island area” 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 fishermen 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 the 191,000 fish. The department 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 (GPS; North American Datum of 1983).

POST-JUNE SALMON FISHERY

Immature Salmon 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 (5 AAC 09.366(i)). For the purpose of this management plan, “immature salmon, per set, are present” is defined as the number of Chinook *O. tshawytscha*, sockeye, coho, and chum salmon that are observed to be gilled in the seine web (5 AAC 09.366(i)). 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 (5 AAC 09.366(d)). The first post-June fishing period will be on July 6, pending the results from the immature salmon 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); 9).

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 Wednesday, July 6 until 3:00 PM Thursday, July 7	33 hours
6:00 AM Sunday, July 10 until 6:00 PM Monday, July 11	36 hours
6:00 AM Thursday, July 14 until 6:00 PM Friday, July 15	36 hours
6:00 AM Monday, July 18 until 6:00 PM Tuesday, July 19	36 hours
6:00 AM Friday, July 22 until 6:00 PM Saturday, July 23	36 hours
6:00 AM Tuesday, July 26 until 6:00 PM Wednesday, July 27	36 hours
6:00 AM Saturday, July 30 until 6:00 PM Sunday, July 31	36 hours

Under the current management plan, commercial salmon fishing is permitted to occur concurrently in both terminal and non-terminal 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 through July 21, terminal harvest areas are: Zachary Bay, Canoe Bay, Cold Bay, Thin Point, Morzhovoi Bay, 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 through July 31 time period include those areas specified for the July 6 through 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 in the event the harvest of sockeye salmon approaches 191,000 fish (Figures 8 and 9). The department will, to the extent practical, give 6 hours' notice of closure to all gear types.

Harvest Strategies after July

From August 1 through 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 through 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 (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 (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 et al. (2022).

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 beginning in mid-July through 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 three sockeye salmon SEGs in the South Alaska Peninsula: 15,000 to 20,000 fish at Orzinski Lake, 3,200 to 6,400 fish at Mortensens Lagoon, and 14,000 to 28,000 fish at Thin Point Lake (Schaberg et al. 2018). The 2022 pink salmon SEG range for the South Alaska Peninsula is 1,750,000 to 4,000,000 fish. The 2022 chum management objectives using the indexed total escapement method are 106,400 to 212,800 fish in the Southeastern District, 89,800 to 179,600 fish in the South Central District, and 133,400 to 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. SEGs were established for each district that utilize 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 et al. 2022) to estimate escapement (Schaberg et al. 2018). Using the Southeastern District's 26 index streams, the SEG is 62,500 to 151,900 fish. Using the South Central District's 10 index streams, the SEG is 68,900 to 99,200 fish. Using the Southwestern District's 19 index streams, the SEG is 86,900 to 159,500 fish.

SOUTHEASTERN DISTRICT MAINLAND SALMON FISHERY

Under the current *SEDM 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 through July 25, 80% of the sockeye salmon caught in the SEDM are considered to be 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 through August 31 (Figure 16, 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 through October 31, the fishery is managed for local pink, chum, and coho salmon stocks.
7. From July 26 through 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 to 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 annually since 1990 and plans to do so again in 2022.

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 *SEDM Salmon Management Plan*. The Stepovak Flats Section is closed to all commercial fishing from July 29 through October 31 to protect schooling chum salmon.

FORECAST AND ALLOCATION

SOUTH ALASKA PENINSULA PINK SALMON FORECAST

The 2022 South Alaska Peninsula harvest estimate is 1.42 million pink salmon, and the total run estimate is 3.17 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 2022 Chignik River forecast for the early-run harvest estimate is 239,000 sockeye salmon, and the late-run harvest estimate is 323,000 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, the department 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 through 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, the department 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 (5 AAC 09.360(g)).

REFERENCES CITED

- Fox, E. K. C., T. D. Lawson, and R. L. Renick. 2022. South Alaska Peninsula salmon annual management report 2021 and 2020 subsistence fisheries in the Alaska Peninsula, Aleutian Islands, and Atka-Amlia Islands management areas. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 4K22-01, 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

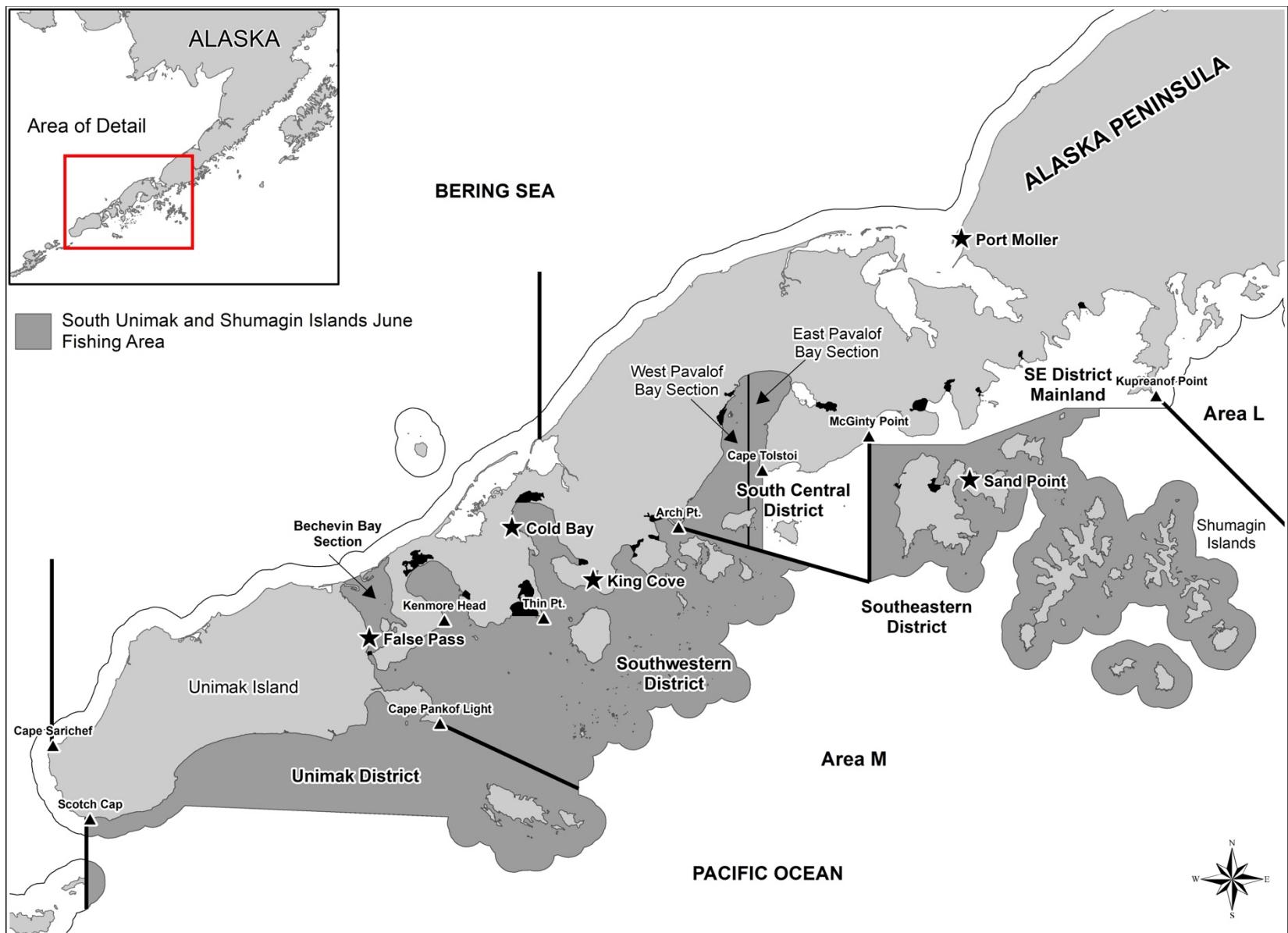


Figure 1.—Map of the South Alaska Peninsula Management Area and the locations of the South Unimak and Shumagin Islands June fisheries.

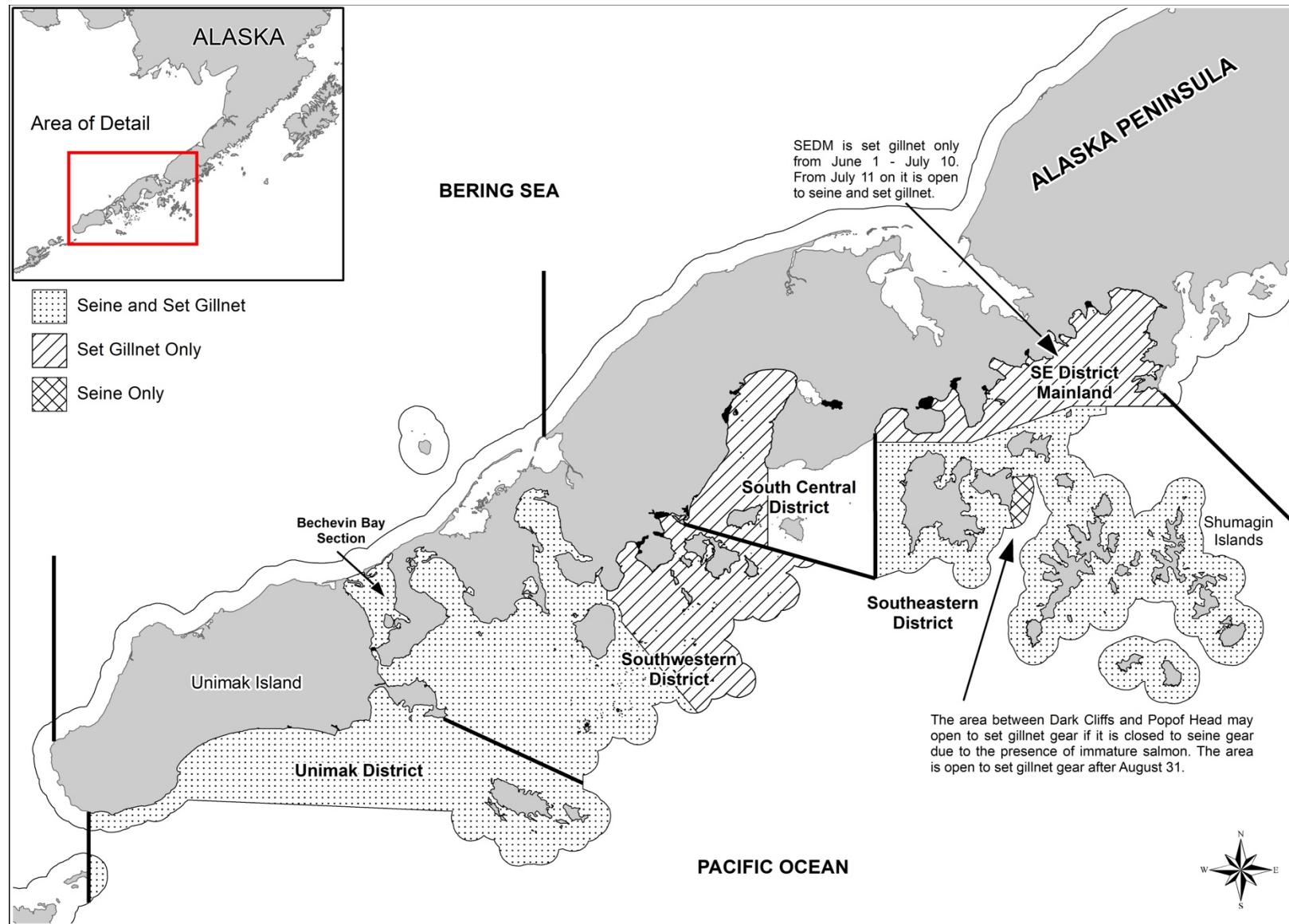


Figure 2.—Map depicting the locations of June South Alaska Peninsula fisheries for purse seine and set gillnet gear.

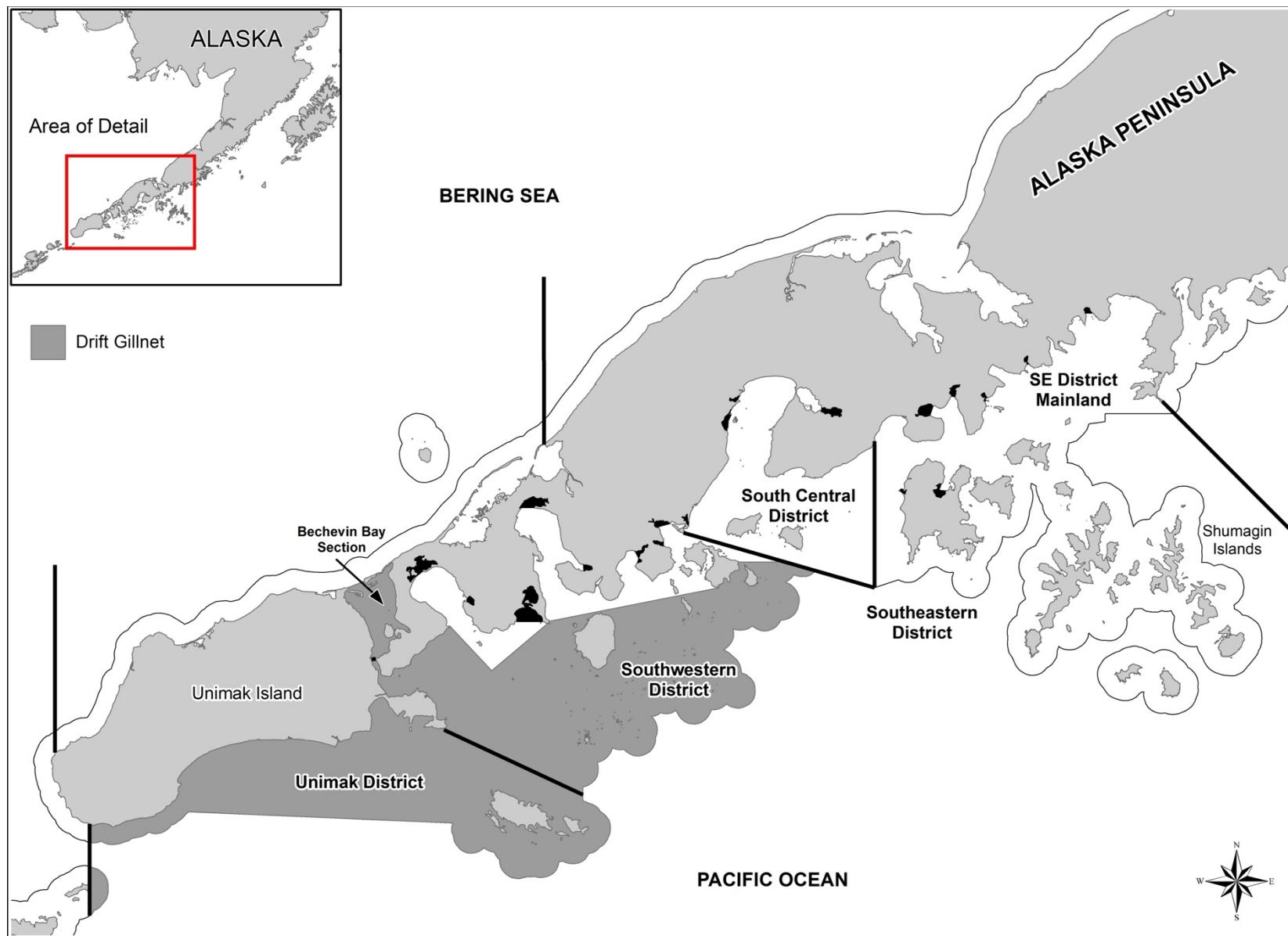


Figure 3.—Map depicting the locations of June South Alaska Peninsula fishery for drift gillnet gear.

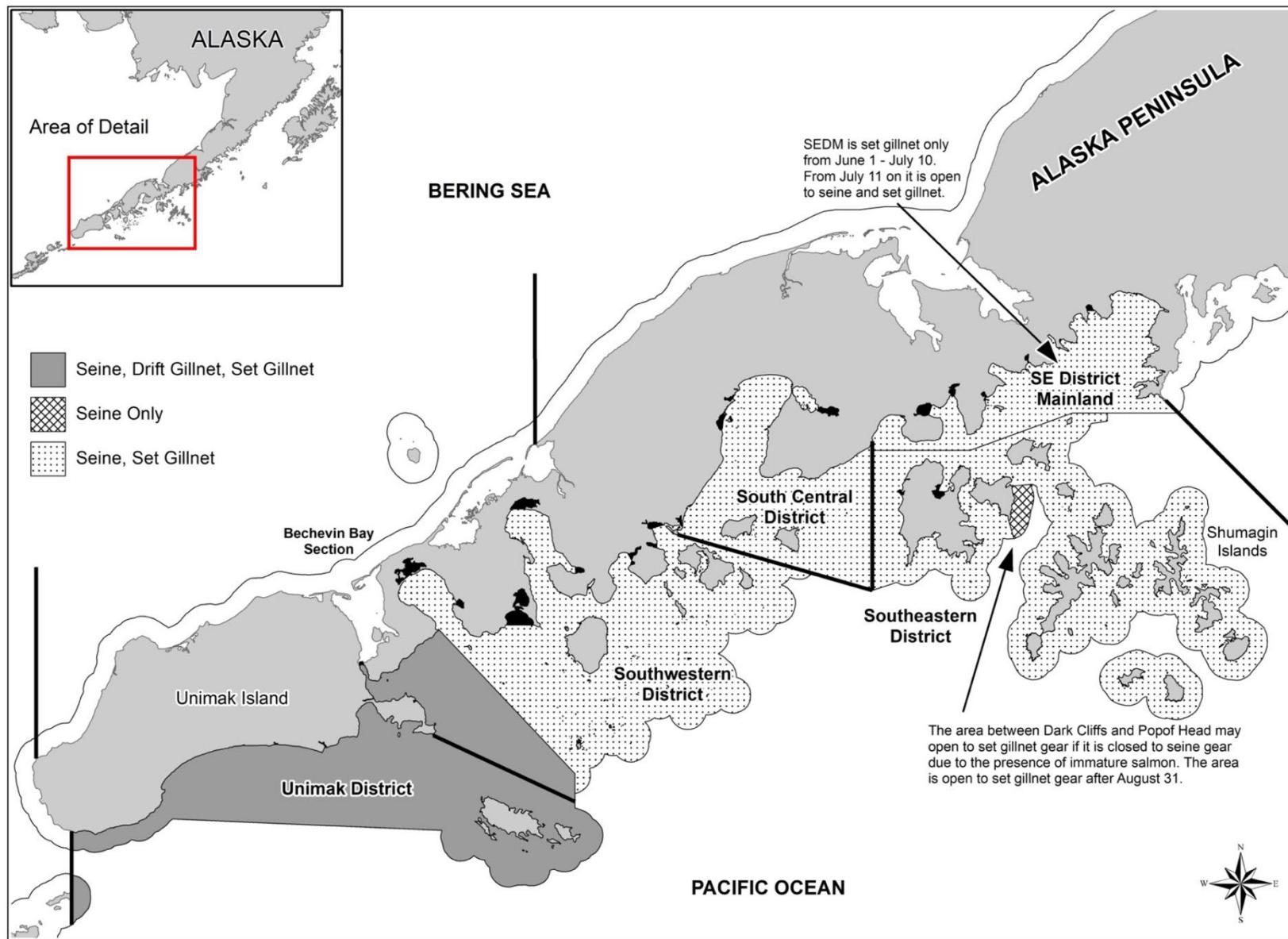


Figure 4.—Map depicting the locations of post-June South Alaska Peninsula fisheries and permitted gear types.

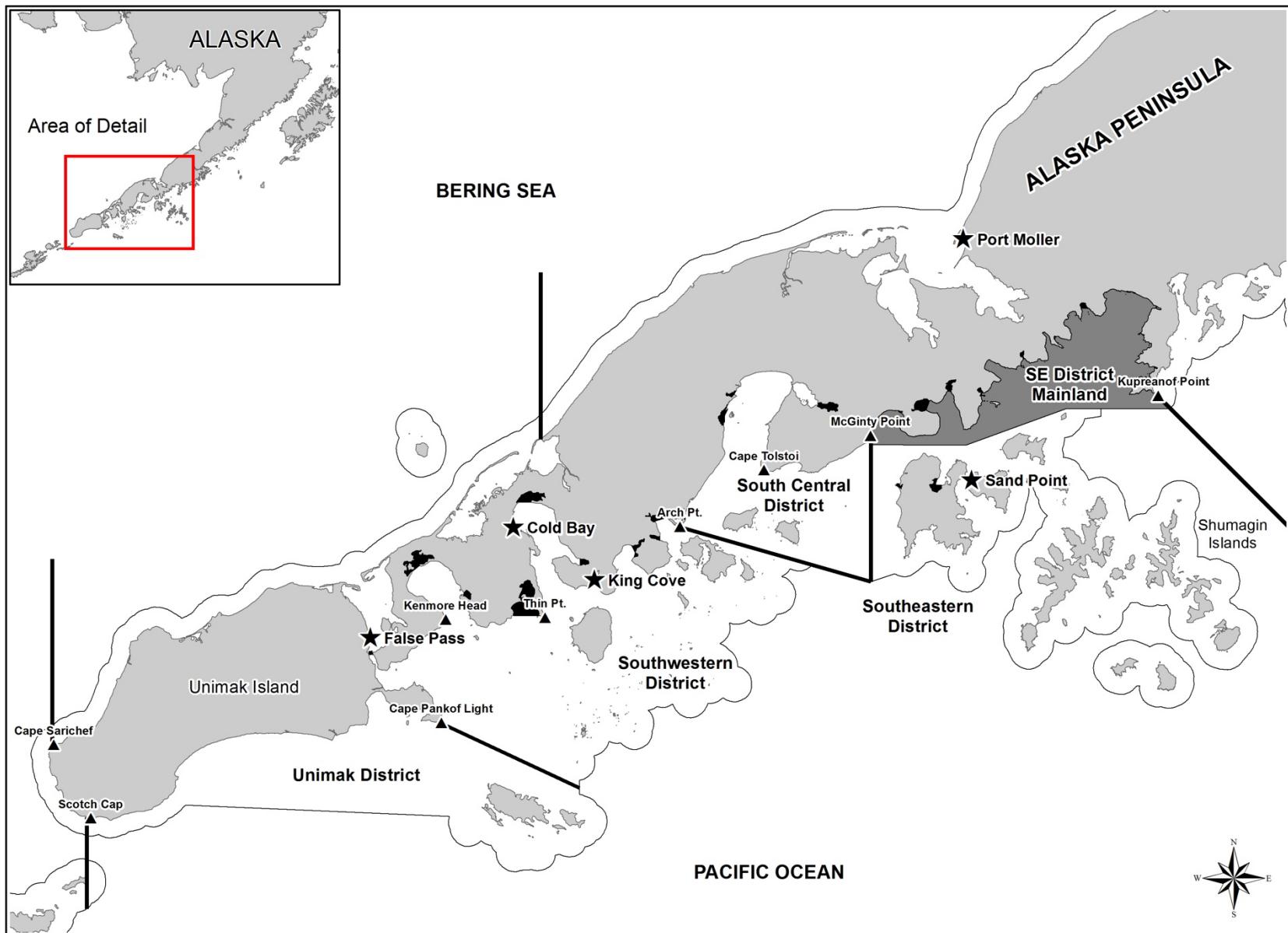


Figure 5.—Map of the South Alaska Peninsula Management Area with the Southeastern District Mainland defined.

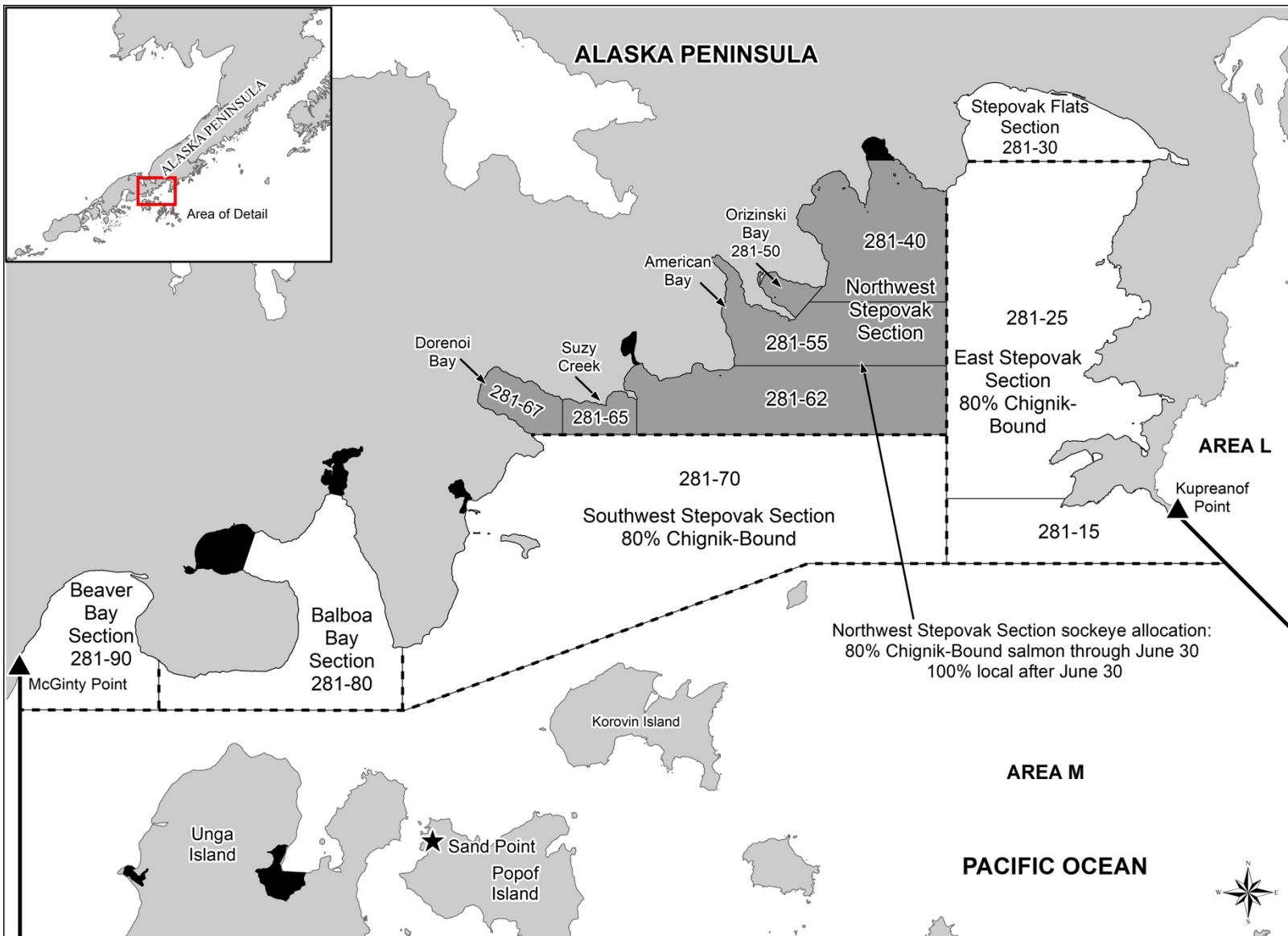


Figure 6.—Map of the Southeastern District Mainland from Kupreanof Point to McGinty Point with the commercial salmon fishery Sections defined.

June 2022 All Gear Types Schedule

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4
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.						
5	6	7	8	9	10	11
Open 64 hours <u>(Set Gillnet Gear Only)</u>						
12	13	14	15	16	17	18
Open 88 hours						
19	20	21	22	23	24	25
Open 88 hours						
26	27	28	29	30		
Open 88 hours						

Figure 7.—All gear types fishing periods in the South Unimak and Shumagin Islands June fisheries, 2022.

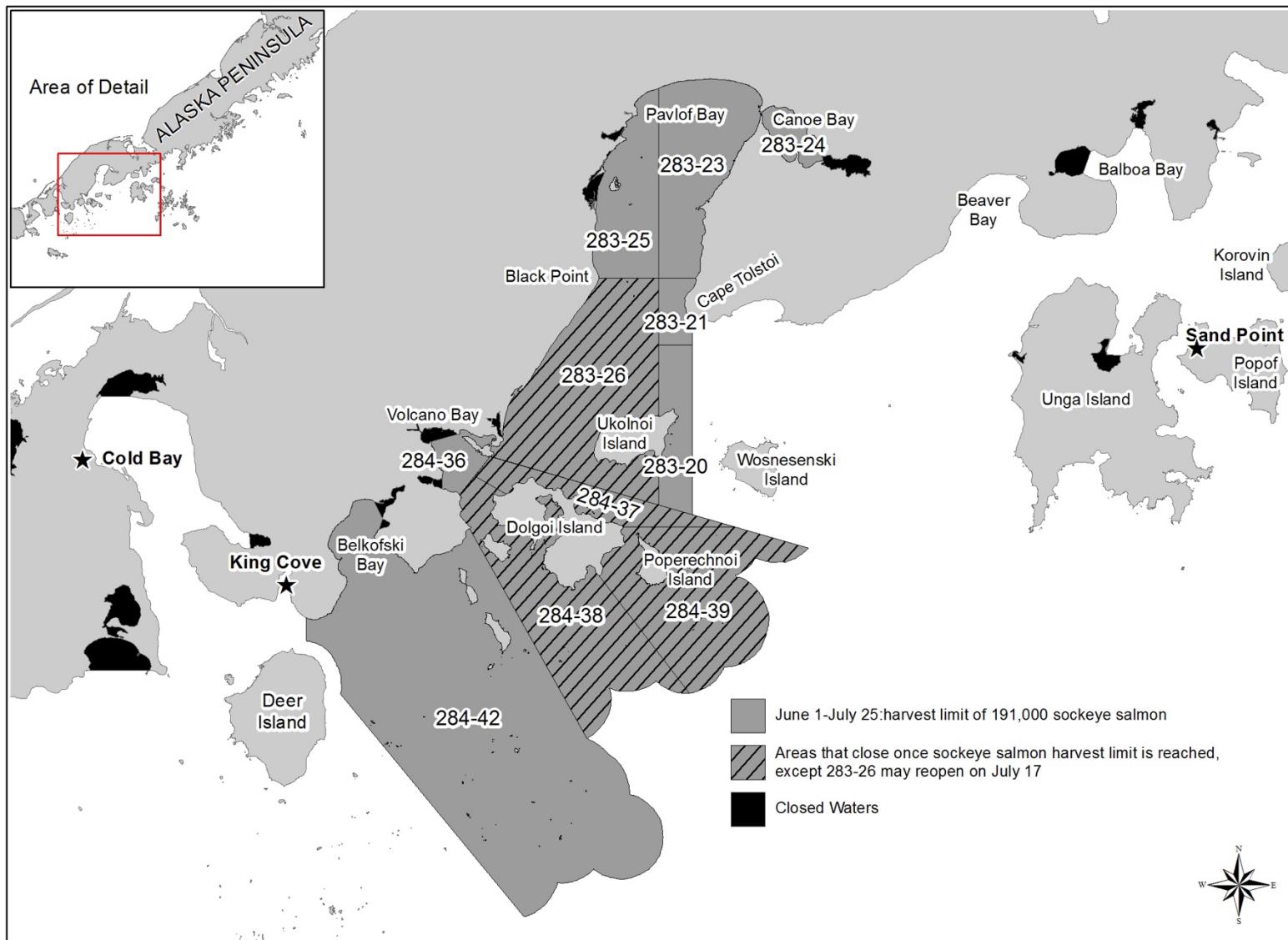


Figure 8.—Map depicting the statistical areas (283-20 through 283-26 and 284-36 through 284-42) that contribute to the “Dolgoi Island area” sockeye salmon harvest for the June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.

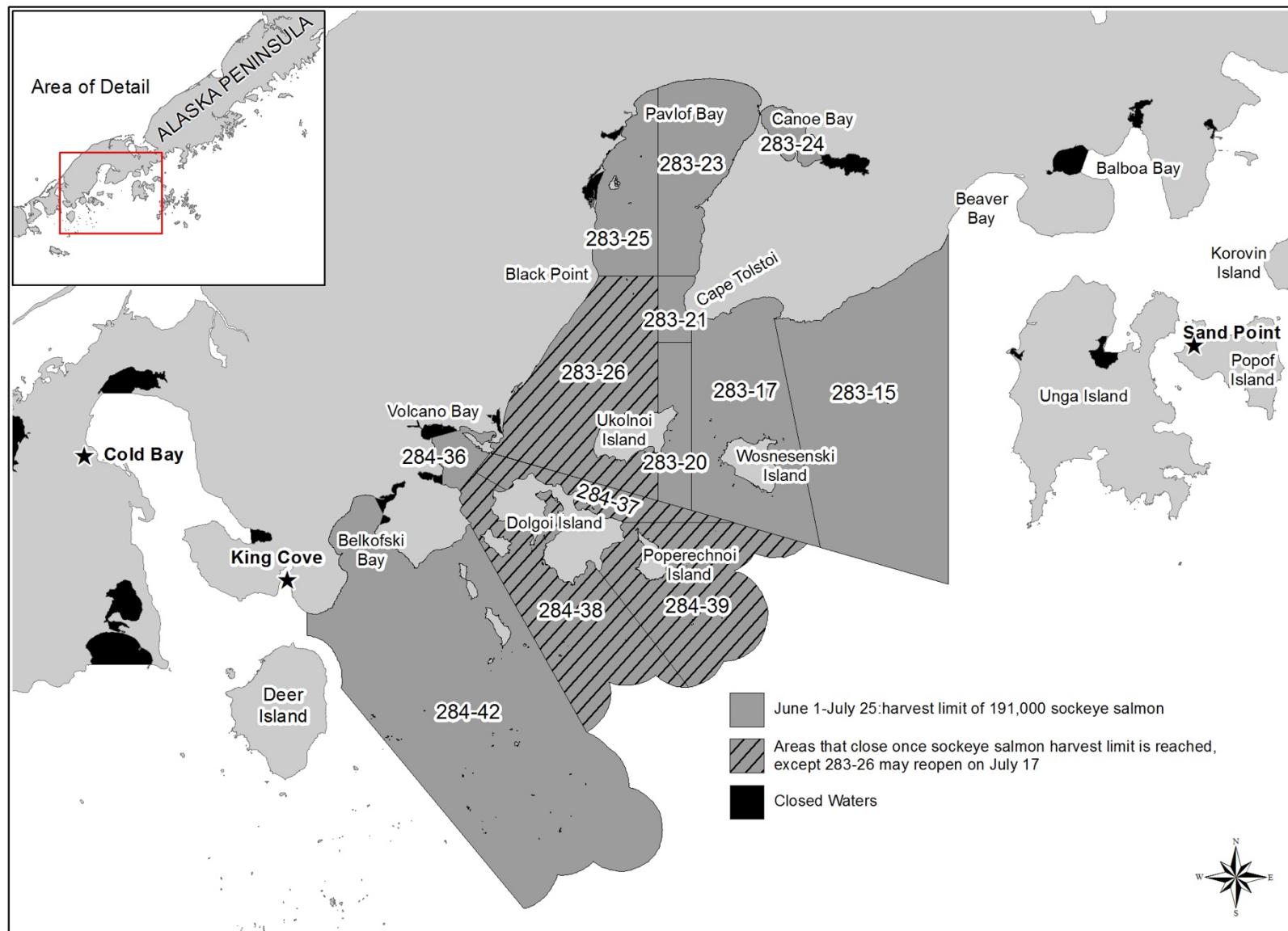


Figure 9.—Map depicting the statistical areas (283-15 through 283-26 and 284-36 through 284-42) that contribute to the “Dolgoi Island area” sockeye salmon harvest for the post-June Management Plan, and the areas that will close once 191,000 sockeye salmon have been harvested.

July 2022 All Gear Types Schedule						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
Note: All fishing periods start at 6:00 AM. All fishing periods are for all gear types.						
3	4	5	6	7	8	9
			6:00 AM 33 Hours 3:00 PM			
10	11	12	13	14	15	16
6:00 AM 36 Hours 6:00 PM				6:00 AM 36 hours 6:00 PM		
17	18	19	20	21	22	23
	6:00 AM 36 hours 6:00 PM				6:00 AM 36 hours 6:00 PM	
24	25	26	27	28	29	30
		6:00 AM 36 hours 6:00 PM				6:00 AM 36 Hours
31						
6:00 PM						

Figure 10.—All gear types fishing periods in the South Unimak and Shumagin Islands post-June fisheries, 2022.

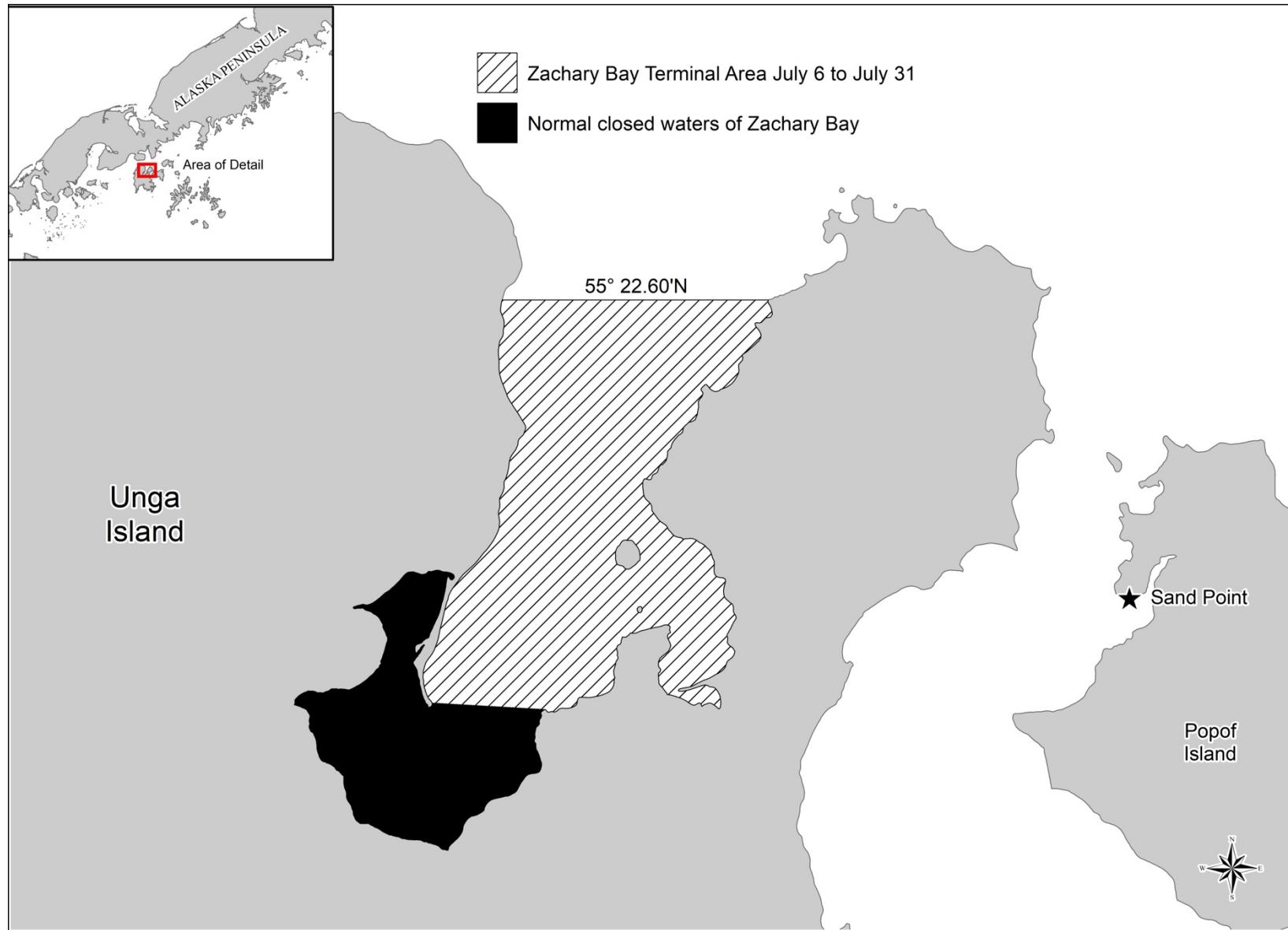


Figure 11.—Zachary Bay closed waters and post-June terminal fishing area.

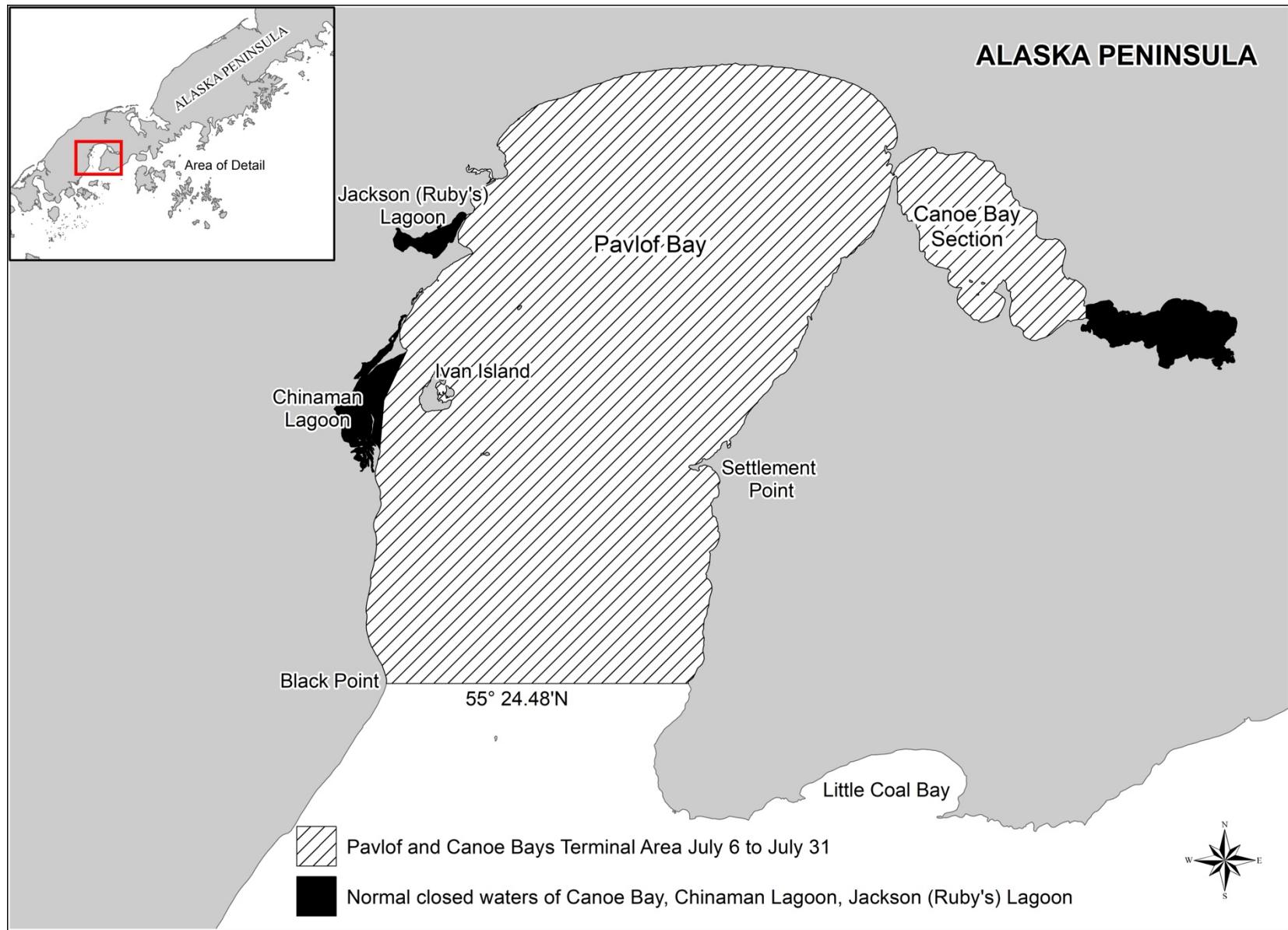


Figure 12.—Canoe Bay Section and Upper Pavlof Bay closed waters and post-June terminal fishing areas.

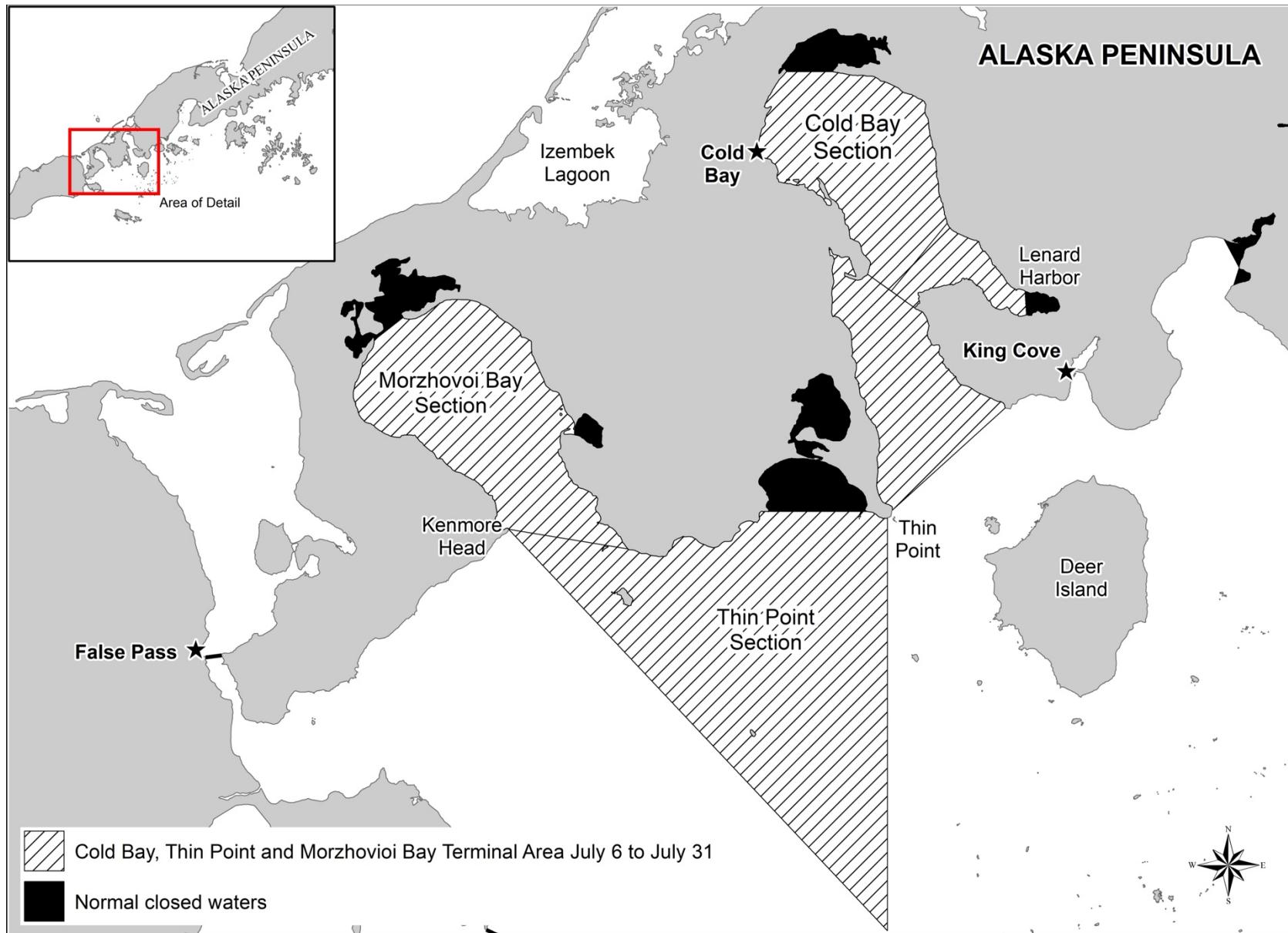


Figure 13.—Cold Bay, Thin Point, and Morzhovoi Bay Sections closed waters and post-June terminal fishing areas.

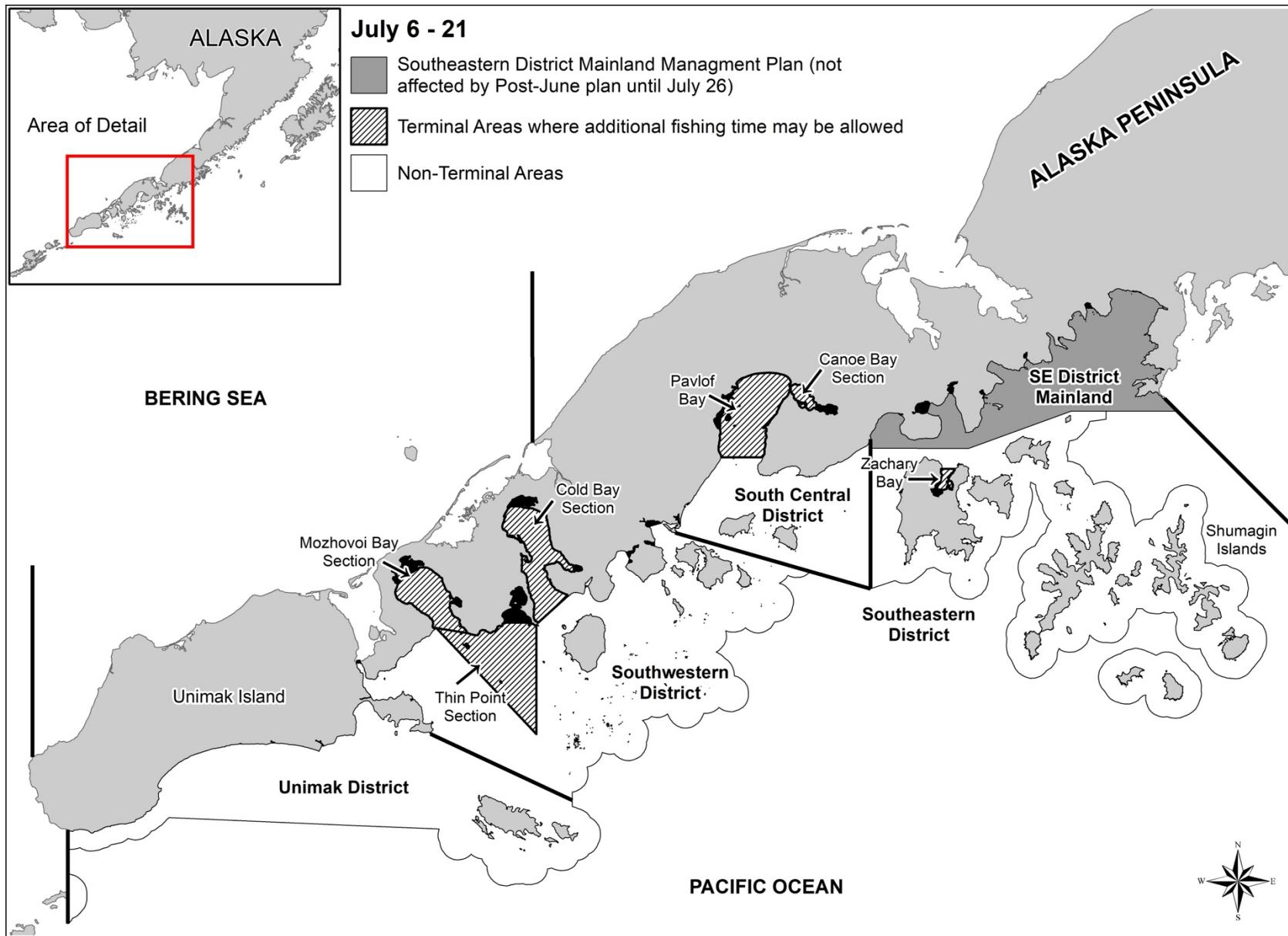


Figure 14.—South Alaska Peninsula post-June terminal fishing areas from July 6 through July 21.

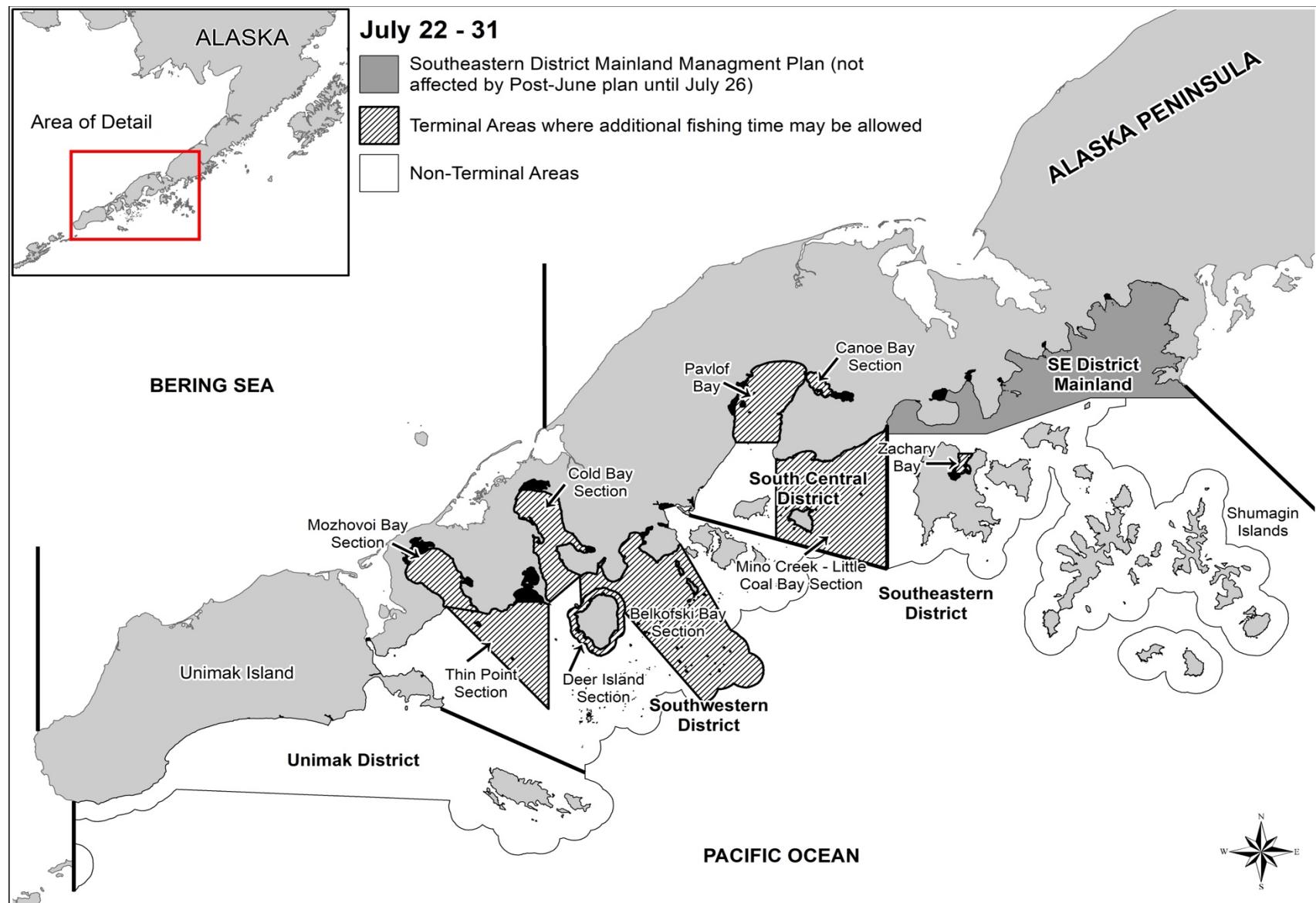


Figure 15.—South Alaska Peninsula post-June terminal fishing areas from July 22 through July 31.

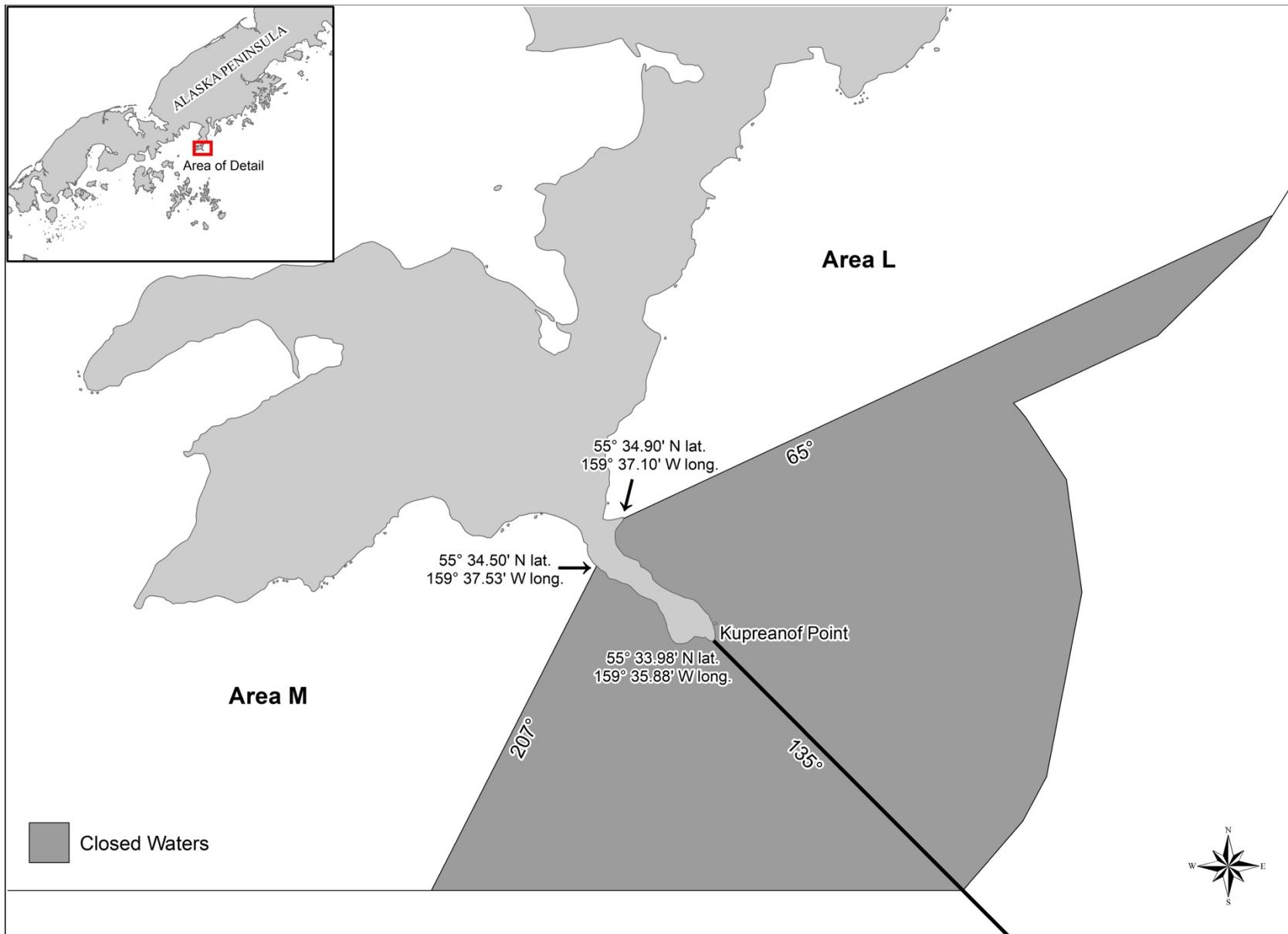


Figure 16.—Map of Kupreanof Point area closed waters.

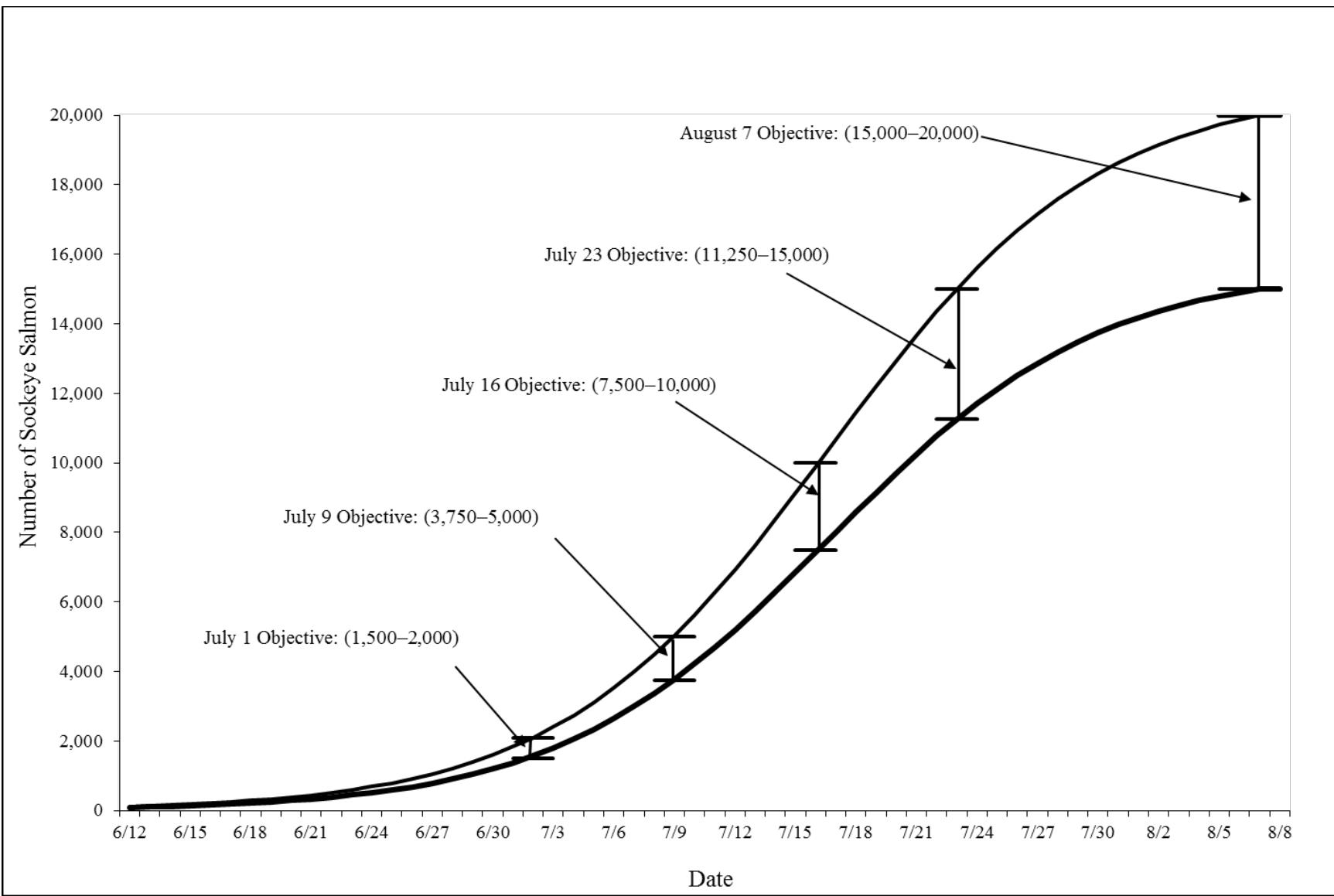


Figure 17.—Orzinski Lake interim sockeye salmon escapement objectives by date. Interim escapement objectives are general guidelines for inseason management and are subject to adjustment based on run timing of sockeye salmon returns in a given year.

APPENDIX A. 2022 SALMON FORECASTS

Appendix A1. 2022 South Alaska Peninsula pink salmon forecast.

Forecast Area: Alaska Peninsula, South Alaska Peninsula Aggregate

Species: Pink Salmon

Preliminary forecast of the 2022 run

Total Production	Forecast Estimate	Forecast Range (millions)
Total Run Estimate ^a	3.17	0.5–9.9
Escapement Goal ^b	1.75	1.75–4.0
Post-June Harvest Estimate	1.42	0–5.9

^a Post-June harvest and escapement.

^b The escapement estimate is the minimum of the aggregate goal range (1.75–4.0 million) in 2022.

The 2022 South Alaska Peninsula predicted pink salmon harvest is expected to be in the *Poor* category with a point estimate of 1.42 (less than 1.9) 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 1982 to 2021.

S. Pen Harvest Category	Range (millions)	Percentile
<i>Poor</i>	Less than 1.9	Less than 20 th
<i>Weak</i>	1.9 to 4.0	20 th to 40 th
<i>Average</i>	4.0 to 7.0	40 th to 60 th
<i>Strong</i>	7.0 to 9.9	60 th to 80 th
<i>Excellent</i>	Greater than 9.9	80 th to 100 th

Forecast Methods

The 2022 South Alaska Peninsula pink salmon harvest forecast is derived from a total run forecast minus the lower end (1.75 million fish) of the annual South Alaska Peninsula escapement goal range. The forecasted total run was fit with a damped Holt model and even-year South Alaska Peninsula pink salmon returns from 1964 through 2020. The damped Holt time series model takes trends into account but limits their effects.

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 approximately 1.0 million fish, with a range of 0.18–2.51 million fish.

The estimated 2022 South Alaska Peninsula pink salmon harvest (1.42 million fish) is predicted to be weak. However, 2020 escapement for pink salmon was the highest observed for an even-year since 2008. Additionally, 2020 had favorable environmental conditions for freshwater spawning. Conversely, there have not been consecutive increases in even-year runs in over 40 years. Although forecasts of pink salmon returns to the South Alaska Peninsula have only been published since 2011, odd-year forecasts of pink salmon on the South Alaska Peninsula have been more accurate than even years. Due to this, confidence in the forecast is fair.

Tyler Lawson, Alaska Peninsula–Aleutian Islands Asst. Area Management Biologist

Heather Finkle, Region IV Finfish Research Biologist

Appendix A2. 2022 Chignik Management Area sockeye salmon forecast.

Forecast Area: Chignik

Species: Sockeye Salmon

Preliminary Forecast of the 2022 Run

Total Production		Forecast Estimate (thousands)	Forecast Range (thousands)
Early Run (Black Lake)	Total Run Estimate	639	278–1,469
	Escapement Goal ^a	400	350–450
	Harvest Estimate	239	
Late Run (Chignik Lake)	Total Run Estimate	633	267–1,195
	Escapement Goal ^a	310	220–400
	Harvest Estimate	323	
Total Chignik System	Total Run Estimate	1,272	545–2,664
	Harvest Estimate ^b	562	
	Chignik Area	562	
	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 were forecasted in the Southeastern District Mainland and Cape Igvak during the regulatory timeframe thru July 25 and July 5 respectively, 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 2022 early- and late-Chignik sockeye salmon runs. Each regression model was assessed with standard regression diagnostic procedures. Data were log transformed to address non-normality 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 ocean-age-2 returns predicted log transformed ocean-age-3 returns using data from the 1995 outmigration year to the present. Prior year early-run ocean-age-1 returns predicted log transformed ocean-age-2 returns (outmigration years 1998 to present). For the late run, prior year ocean-age-2 returns predicted ocean-age-3 returns using data from the 2007 outmigration year to the present.

The early- and late-run regression and median estimates were summed to estimate the total Chignik River sockeye salmon run for 2022. The combined early- and late-run 80% prediction interval was calculated by summing the lower and upper prediction bounds of the two runs.

Forecast Discussion

The 2022 Chignik sockeye salmon early run is forecasted to be 639,000 fish, which is 266,000 fish less than the 10-year average run of 905,000 fish and almost 394,000 fish more than the 2021 early run of 244,000 fish. The early run is predicted to be composed of approximately 76% ocean-age-3 and 23% ocean-age-2 fish. The late run is forecasted to be 633,000 fish, which is approximately 277,000 fish less than the 10-year average run of 910,000 fish and 118,000 fish more than the 2021 late run of 515,000 fish. The 2022 late run is predicted to be composed of approximately 80% ocean-age-3 and 18% ocean-age-2 fish. The 2022 total Chignik sockeye salmon run is expected to be 1,272,000 fish, which is approximately 543,000 fish less than the 10-year average of 1.82 million and roughly 512,000 fish more than the 2021 total run of 760,000 fish.

The projected 2022 early-run total harvest estimate of 239,000 fish is based on achievement of the mid-point of the early-run escapement goal range. The projected late-run harvest estimate of 323,000 fish is based on achieving the mid-point (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 2022, sockeye salmon harvests for both early and late runs in the Chignik Management Area were forecasted to not exceed a 600,000 fish surplus beyond escapement goals and if realized, by regulation, may preclude commercial fisheries from harvesting Chignik-bound fish in the Cape Igvak Section of the Kodiak Management Area during the regulatory period thru July 5 and in the Southeastern District Mainland of the Alaska Peninsula Management Area during the regulatory period thru July 25.

The wide confidence intervals around the point estimate of the 2022 forecasts reflect the uncertainty inherent in the forecast models. Given the sibling relationships used for forecasting both runs and the poor 2021 ocean-age 3 returns, the 2022 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 these predictions is fair.

Heather Finkle, Finfish Research Biologist, Westward Region