

Fishery Management Report No. 09-19

Kodiak Management Area Harvest Strategy for the 2009 Commercial Salmon Fishery

by

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and

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Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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

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COMMERCIAL SALMON FISHERY**

by

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ABSTRACT

The Alaska Department of Fish and Game will manage the commercial salmon fisheries in the Kodiak Management Area (KMA) to promote maximum production potential for future KMA salmon returns by achieving salmon escapement goals and providing opportunity to harvest salmon in excess of those goals. In addition, the department will attempt to provide for orderly fisheries while maximizing harvest opportunities on the highest quality salmon. The department will adhere to the biological and allocative requirements of the management plans adopted by the Alaska Board of Fisheries for the KMA. Management of the fisheries follows a general chronology based on the run timing of four commercially targeted salmon species: sockeye *Oncorhynchus nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta* salmon.

The 2009 preseason forecasts project a harvest of approximately 1,502,000 sockeye, 421,500 coho, 22,100,000 pink, and 623,000 chum salmon. Additionally, about 20,000 Chinook salmon *O. tshawytscha* could be harvested incidentally in fisheries targeting other salmon species. All fishing periods are established by emergency order. The initial sockeye salmon commercial test fishing period for the westside of Kodiak Island is scheduled for June 9. A June 9 fishery opening is also planned for the Duck Bay Section and the Foul Bay and Waterfall Bay Special Harvest Areas. The initial commercial test fishing period in the Alitak District may occur on June 9, which would be announced no later than June 5. The actual opening date for the Alitak District will be determined based on inseason indicators of run strength. Beginning July 6, weekly fishing periods targeting pink salmon will be 105 hours (4½ days) per week for Kodiak Archipelago sections and 57 hours (2½ days) per week for Mainland District sections north of Cape Aklek.

Key Words: Alaska Department of Fish and Game, Kodiak, Afognak, Alaska Peninsula, Karluk, Ayakulik, Frazer, Upper Station, Alitak, Cape Igvak, North Shelikof, commercial fishery, salmon, management plan, purse seine, set gillnet, KMA, Chinook salmon, *Oncorhynchus tshawytscha*, sockeye salmon, *O. nerka*, coho salmon, *O. kisutch*, pink salmon, *O. gorbuscha*, chum salmon, *O. keta*

INTRODUCTION

The Kodiak Management Area (KMA; Figure 1) 2009 commercial salmon fishery harvest strategy emphasizes three criteria:

- (1) Promote maximum production potential for future KMA salmon returns by ensuring salmon escapements of sufficient magnitude and distribution.
- (2) Provide for orderly fisheries while maximizing harvest opportunities on the highest quality salmon.
- (3) Adhere to the biological and allocative requirements of all management plans adopted by the Alaska Board of Fisheries (BOF) for the KMA salmon fishery.

There are 10 salmon management plans that direct Alaska Department of Fish and Game (ADF&G) management activities for specific portions and time periods of the KMA (Table 1). Within the KMA there are 7 districts which are further broken down into sections and statistical areas (Figures 3-9). All salmon fishing districts within the KMA are managed by regulatory plans for the entire season. Proper implementation of these plans requires a major effort in communication between ADF&G and industry personnel.

Salmon run timing within the KMA follows a general chronology by species (Figure 2). Commercial fisheries management is based on the run timing of four targeted salmon species: sockeye *Oncorhynchus nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum salmon *O. keta*. Commercial salmon fisheries are structured around the seasonal abundance of salmon. Inseason adjustment in areas open to fishing and fishing time are dictated by escapement goals (Honnold et al. 2007).

The KMA salmon fisheries are managed with data that are compiled and evaluated daily. Data used to make fishery management decisions include escapement information from weir counts and/or aerial, boat, and foot surveys, and harvest trends (total catch and fishery performance).

Management of major sockeye salmon runs is escapement based, and utilizes daily escapement information from up to seven salmon counting weirs (Appendices A1–A11). Due to inadequate funding, weirs for smaller sockeye salmon systems are no longer deployed. Management of these systems relies on aerial survey data. Aerial survey escapement counts are not available until sockeye salmon begin to move into the spawning streams. A more conservative management approach may include increasing closed water areas and reducing fishing time. These management actions will likely occur for systems that have the potential to be over harvested or have shown signs of overharvest in previous years.

In 2009, a weir will be established in the Saltery Lake system in order measure the inseason cumulative escapement. Management will strive to achieve an escapement goal of 15,000 to 30,000 fish as measured at the weir. This represents a change from the aerial survey based escapement goal of 20,000 to 50,000 fish as recommended by ADF&G during the most recent escapement goal review in 2007 (Honnold et al. 2007) which was used prior to 2008 when weir data was not available. This will allow for a more precise and timely measure of escapement to this system but will not significantly change the management harvest strategy for this stock.

The length of the initial fishing periods for pink salmon are determined pre-season based on the magnitude of the pink salmon forecast. Adjustments in weekly fishing time and areas open to fishing will occur as the actual run strength becomes apparent through assessment of harvest and escapement estimates.

Initially, chum and coho salmon are incidentally harvested in sockeye or pink salmon directed fisheries. Terminal or near-terminal fisheries targeting chum or coho salmon will be managed based on an assessment of actual run strength and current harvest information.

Commercial fisheries are not currently directed toward surplus Chinook salmon *O. tshawytscha*. Incidental harvests of Chinook salmon occur during fisheries that are directed toward sockeye and pink salmon.

HARVEST PROJECTIONS

Based on pre-season projections, a total of approximately 20,000 Chinook, 1,502,492 sockeye, 421,000 coho, 22,100,000 pink, and 623,000 chum salmon could be available for harvest throughout the KMA in 2009 (Table 2).

Of this total, the Kodiak Regional Aquaculture Association (KRAA) has forecasted the harvest of salmon returning to the Kitoi Bay Hatchery to be approximately 66,000 sockeye, 10,000,000 pink, 118,000 chum, and 148,000 coho salmon (Table 2). KRAA will conduct a cost recovery fishery in the Inner and Outer Kitoi Bay sections. The desired cost recovery harvest is similar to the 2008 season with an anticipated harvest of 7 million pounds of pink salmon (approximately 1.87 million salmon). Additional enhanced salmon production, from projects conducted by KRAA and ADF&G, should contribute about 233,200 sockeye salmon to the common property fisheries (e.g., Spiridon Lake, Hidden Lake, etc.; Table 2).

FISHING PERIODS

All fishing periods will be established by emergency order (EO).

ADVANCE NOTICE

For the initial sockeye salmon fisheries from June 9 through June 14, there will be at least 42 hours advance notice. All subsequent fishing periods will have at least 18 hours advance notice. For the opening of the Cape Igvak Section (Figure 3) fishery, there will be at least 24 hours advance notice. For the openings in the Inner or Outer Akalura, Inner or Outer Upper Station, or Dog Salmon Flats sections (Figure 4), there will be at least 24 hours advance notice. For adjustments to closed waters (increase or decrease), there will be at least 18 hours advance notice.

For extension of a previously announced fishing period, or for in-period closure of an announced fishing period, there will be at least three hours advance notice.

FISHERY OPENING TIMES

Most fishing periods through August 15 open at NOON and close at 9:00 PM. Beginning on August 16, most fishing periods will close at 6:00 PM instead of 9:00 PM.

There are several exceptions to this opening/closure schedule:

Cape Igvak fisheries open at 12:01 AM and close at 12:01 AM from June 5 through July 25. The 12:01 AM opening and closure time allows for more orderly fisheries due to the possibility of relatively short notice given for extensions of fishing periods.

Except for the initial commercial test fishing period (June 5 - June 13), Cape Alitak, Alitak Bay, Moser Bay, and Olga Bay section (Figure 4) fisheries will begin and end at different times through September 15, as follows:

In the Olga Bay Section, fishing periods open at 6:00 AM and shall close at 9:00 AM the following day¹. In the Moser Bay Section, fishing periods open at NOON and shall close at 3:00 PM the following day¹. In the Alitak Bay Section, fishing periods open at 6:00 PM and shall close at 9:00 PM the following day¹. In the Cape Alitak Section, fishing periods open at 6:00 AM the day following the openings of the Olga Bay, Moser Bay, and Alitak Bay sections, and shall close at 9:00 AM the following day¹ (5 AAC 18.361).

The Humpy-Deadman Section opens and closes at the same time as the Cape Alitak Section through July 15. From July 16 through August 15, fishing periods open at NOON and close at 9:00 PM. Beginning on August 16, most fishing periods will close at 6:00 PM, instead of 9:00 PM.

Inner Ayakulik Section (Figure 5) fisheries usually begin at approximately low tide. These will be daylight openings, and fishing begins when ADF&G personnel, located on the bluff northeast of the Ayakulik River mouth, launch a flare. When such openings occur, the opening time for the Outer Ayakulik Section may be adjusted to coincide with the Inner Ayakulik Section.

The Inner Kitoi Bay Section (Figure 6) common property fisheries will usually begin between NOON and 12:30 PM, when a flare is launched by hatchery staff within inner Kitoi Bay.

¹ Extensions are possible; any extension to fishing time will be in 24-hour increments.

TIMING AND LENGTH OF INITIAL FISHING PERIODS

Sockeye Salmon

The first commercial salmon fishing period will begin on Tuesday June 9, 2009.

June 9 Commercial Fisheries

Commercial salmon fishing will begin at NOON Tuesday June 9, 2009, in the following management areas:

The Central and North Cape sections of the Northwest Kodiak District, and the Outer Karluk Section of the Southwest Kodiak District (Figures 5 and 7).

For these sections, a 33-hour commercial test fishing period will be conducted from NOON Tuesday June 9 through 9:00 PM Wednesday June 10. An extension of this period will depend on escapement buildups in Karluk Lagoon. The commercial catch from this period will be used to assess the strength of the sockeye salmon run to the Karluk system, with consideration of the Ayakulik, Frazer (Dog Salmon), and Upper Station sockeye salmon runs (5 AAC 18.362).

Anton Larsen, Sharatin Bay, Terror Bay, Inner Uganik Bay, Spiridon Bay, Zachar Bay, Kizhuyak, and Uyak Bay sections of the Northwest Kodiak District (Figure 7).

These sections will open at NOON Tuesday June 9, for a 33-hour commercial test fishing period. Management of these sections is based on local chum or sockeye salmon runs. Openings in these sections must open concurrently with fishing periods in the Central and North Cape sections (5 AAC 18.362).

The Foul Bay and Waterfall Bay Special Harvest Areas and Duck Bay Section of the Afognak District (Figure 6)

These fisheries will open at NOON Tuesday June 9, and will remain open until further notice (5 AAC 18.365).

June 9 Commercial Fisheries

Commercial salmon fishing is expected to begin June 9, 2009, in the following management areas:

Cape Alitak, Humpy-Deadman, Alitak Bay, Moser Bay, and Olga Bay sections of the Alitak District (Figure 4).

It is anticipated these fisheries will open at NOON Tuesday June 9 as a commercial test fishing period, depending on early indications of sockeye salmon run strength to Frazer and Upper Station. If a commercial test fishing period were allowed on June 9, it would be announced no later than June 5, and would be no more than 33 hours in length, with no extension to fishing time. All sections would open and close concurrently, from NOON Tuesday June 9 through 9:00 PM Wednesday June 10 (5 AAC 18.361).

Izhut Bay, Inner Kitoi Bay, and Outer Kitoi Bay sections.

These fisheries may open at NOON Tuesday June 9. Most openings will remain open until further notice. The fishery for the Kitoi Bay Hatchery early chum salmon runs may extend through late June (5 AAC 18.365).

Cape Igvak Section of the Mainland District (Figure 3).

Chignik sockeye salmon are considered, by regulation, the principal stock harvested in the Cape Igvak Section from June 1 to July 25. The timing of initial commercial fisheries in the Cape Igvak Section depends on the evaluation of the Chignik sockeye salmon run strength. The first Cape Igvak fishery may occur beginning June 9. Fishing periods in the Cape Igvak Section will be in 24-hour increments, beginning at 12:01 AM (5 AAC 18.360).

June 14 to June 21 Commercial Fisheries

Commercial fisheries in the following management units may also occur on or after June 14, if escapement objectives are met or exceeded.

The Central and North Cape sections of the Northwest Kodiak District, and the Outer Karluk Section of the Southwest Kodiak District (Figure 5 and 7).

For these sections, a 33-hour commercial test fishing period will occur from NOON Sunday June 14 through 9:00 PM Monday June 15. An extension of this period will depend on escapement buildups in Karluk Lagoon. The commercial catch from this period will be used to assess the strength of the sockeye salmon run to the Karluk system, with consideration of the Ayakulik, Frazer (Dog Salmon), and Upper Station sockeye salmon runs (5 AAC 18.362).

Anton Larsen, Sharatin Bay, Terror Bay, Inner Uganik Bay, Spiridon Bay, Zachar Bay, Kizhuyak and Uyak Bay sections of the Northwest Kodiak District (Figure 7).

These sections may open at NOON Sunday June 14 as a 33-hour commercial test fishing period (5 AAC 18.362).

Southwest Afognak, Perenosa Bay, Pauls Bay, and Northwest Afognak sections of the Afognak District (Figure 5) Eastside Kodiak District (Figure 8) Big River and Outer Kukak Bay sections of the Mainland District (Figure 3).

Commercial salmon fishing will open at NOON Sunday, June 14 for a 33-hour fishing period. This initial fishing period targets early-run sockeye salmon bound for Pauls, Portage, Thorsheim, Long Lagoon, Saltery, Ocean Beach, Swikshak, and/or Kafia systems. A second fishing period for minor sockeye salmon systems should occur on Sunday, June 21 (5 AAC 18.362; 5 AAC 18.367; 5 AAC 18.368; 5 AAC 18.369).

Spiridon Bay Special Harvest Area (Telrod Cove; Figure 7).

The initial commercial salmon fishing period targeting enhanced sockeye salmon returning to Telrod Cove is not expected to occur prior to Sunday, June 21. The actual starting date will depend on the salmon buildups in Telrod Cove and ADF&G's ability to monitor the commercial fisheries (5 AAC 18.366).

Inner and Outer Ayakulik sections of the Southwest Kodiak District (Figure 5) and the Southeast Afognak Section of the Afognak District (Figure 6).

The initial fishing period in the Inner and Outer Ayakulik sections and the Southeast Afognak Section is solely dependent on sockeye salmon escapement to the Ayakulik (Red) or Afognak (Litnik) systems, respectively (5 AAC 18.362).

Additional fishing time from mid June to early July will be based on sockeye salmon run strength as determined by salmon escapements counts, salmon buildups, and fishery performance. In order to maintain sockeye salmon escapements within established goal ranges, commercial fishing may be extended or curtailed.

Directed commercial fisheries within the Inner Karluk Section are solely dependent on Karluk River sockeye salmon escapement, and are only expected to occur if it appears likely that either the early-run or late-run Karluk sockeye salmon escapement goal would be exceeded.

For most late-run sockeye salmon stocks, a portion of the harvestable surplus is taken during fishing periods targeting pink salmon. Consequently, a blended management strategy is needed to ensure that escapements for each species are achieved. Commercial fisheries targeting Upper Station late-run sockeye salmon may begin August 10 and fisheries targeting Karluk late-run sockeye salmon may begin August 16 (5 AAC 18.362).

Pink Salmon

In addition to the three management criteria identified in the introduction of this document, the KMA harvest strategy for pink salmon also utilizes

- a fixed opening date (July 6),
- pink salmon forecasts to set the length of the initial fishing periods, and
- coordination of multiple fisheries, whenever possible, to disperse the purse seine fleet.

The initial fishing periods will be 105 hours in length, excluding the Mainland District fisheries. From July 6 to July 25, fishing time for that portion of the Mainland District north of Cape Aklek will not exceed 57 hours per week (this does not include the Cape Igvak or Wide Bay sections, which are managed in accordance with the Cape Igvak Salmon Management Plan (5 AAC 18.360)). During the peak harvest period, from late July to mid August, fishing periods may be adjusted to match the actual strength of the pink salmon run.

The following schedule of pink salmon fishing periods for the 2009 season are provided for industry and ADF&G planning purposes. Changes to the following schedule should be expected if the perceived pink salmon run strength is weaker or stronger than forecasted. No extensions will occur during the first two periods. Extensions to later fishing periods may occur.

First Period: 105 hours - NOON Monday, July 6 through 9:00 PM Friday, July 10. Harvests during this initial period provide important data to assess early run strength of KMA pink and chum salmon stocks. There will be no extension in fishing time following this period. In the Mainland District north of Cape Aklek this period will be 57 hours, from NOON Monday July 6 through 9:00 PM Wednesday July 8.

Second Period: 105 hours - NOON Monday, July 13 through 9:00 PM Friday, July 17. During the second period, run strength for both pink and chum salmon will again be assessed from harvest data. There will be no extension in fishing time following this period. In the Mainland District north of Cape Aklek this period will be 57 hours, from NOON Monday, July 13 through 9:00 PM Wednesday, July 15.

Third Period: 105 hours - NOON Monday, July 20 through 9:00 PM Friday, July 24. The previous closures will likely allow an influx of pink and chum salmon into terminal closed areas, resulting in the build up of potential escapement. At this time, a combination of harvest and early escapement and/or buildup information should provide an indication of the actual run strength for major pink salmon stocks. If the pink salmon run is strong, extensions in fishing time may occur if escapements are sufficient within the systems. In the Mainland District north of Cape Aklek, this period will be 57 hours, from NOON Monday, July 20 through 9:00 PM Wednesday, July 22. In the Inner or Outer Kitoi Bay, Izhut Bay, or Duck Bay sections, fishery restrictions may occur to meet hatchery cost recovery needs.

Fourth Period: 105 hours - NOON Monday, July 27 through 9:00 PM Friday, July 31. During this period the total run strength should be evident by the end of the period. The pink salmon harvest has traditionally increased during this period. If the pink salmon run is strong, extensions in fishing time will occur. In the Inner or Outer Kitoi Bay, Izhut Bay, or Duck Bay sections, fishery restrictions may occur to meet hatchery cost recovery needs.

Subsequent fishing periods will likely follow the same weekly pattern through August, unless escapement information indicates that an extension or reduction of fishing time is necessary. Fishing time will be based on pink salmon returns to individual systems. Differential fishing time, by management unit, may occur as stronger production areas are targeted, while moderate or lower production areas are provided additional protection. There may be changes in closed water sanctuaries to increase escapement levels or to harvest surplus salmon.

From approximately August 1 through August 16, there will be cost recovery fisheries for the Kitoi Bay Hatchery. These cost recovery fisheries will primarily occur within the Inner Kitoi Bay Section, but may also expand into the Outer Kitoi Bay Section. There may be restricted fishing time in the Izhut Bay and Duck Bay sections during this time period, to allow fish to move into the Kitoi Bay sections for cost recovery and broodstock needs.

Chum Salmon

The supplemental Kitoi Bay Hatchery chum salmon run is projected to be weak this season (Table 2). Limited amounts of fishing time in the vicinity of the hatchery should be expected in June and early July.

With the exception of chum salmon returning to the Kitoi Bay Hatchery, a major portion of the 2009 chum salmon harvest will occur in non-terminal locations during directed sockeye and pink salmon fisheries. The initial fishing periods targeting chum salmon will begin on July 6, and will follow the same opening dates and times as those for pink salmon. System-specific chum salmon

fisheries that occur during the pink salmon fishery may result in some management units (such as the Kizhuyak Bay, Sturgeon, Spiridon Bay, Zachar Bay, Inner or Outer Kukak Bay, or Outer Ugak Bay sections) having more or less fishing time than those targeting primarily pink salmon stocks. Again, from July 6 to July 25, fishing time for that portion of the Mainland District north of Cape Aklek will not exceed 57 hours per week. Additional fishing time after July 25 for that portion of the Mainland District north of Dakavak Bay will depend on assessment of local chum salmon runs. Chum salmon run strength will be assessed primarily from aerial surveys and harvest data.

Coho Salmon

Initially, coho salmon harvests will occur in non-terminal locations during directed pink salmon fisheries. System-specific coho salmon fisheries may occur during the pink salmon fishery, and may result in some management units having more or less fishing time than those primarily targeting pink salmon stocks (such as the Pauls Bay, Perenosa Bay, Zachar Bay, or Inner Ayakulik sections). Coho salmon run strength will be assessed from weir escapements, aerial surveys, foot surveys, and harvest data.

A directed coho salmon fishery in the Pauls Bay Section will begin on August 1 while a directed coho salmon fishery in the Shuyak Island Section may begin on August 1. The supplemental Kitoi Bay Hatchery coho salmon runs have been successful over the past several years, and are projected to be strong again this season. Additional fishing time in the vicinity of the hatchery may occur in early September after pink salmon broodstock requirements are ensured. After September 10, coho salmon fishing may be allowed in the Settler Cove Special Harvest Area, if at least 500 coho salmon are available for harvest (statistical area 259-35; Figure 7).

INPERIOD CLOSURES

From July 6 through July 25 there are limits on the number of sockeye salmon that may be harvested in areas bordering the North Shelikof Strait (5 AAC 18.363). Purse seine permit holders operating in the North Shelikof Strait from July 6 to 25 are advised that inperiod closures of designated Seaward Zones will occur in the likely event the harvest of sockeye salmon approach these limits (Figure 6; 5 AAC 18.360). Since the plan went into effect in 1990, Seaward Zone closures have occurred every year except 1991, 2000 and 2008.

Seaward Zone closures, if required, will be announced on single side band radio (SSB) frequency 3.230 MHz, from the ADF&G office in Kodiak and on VHF 6 and SSB frequency 3.230 MHz from the *R/V K-Hi-C* on the fishing grounds. Inperiod Seaward Zone closure announcement times will be 8:30 AM, 10:00 AM, 2:00 PM, 5:00 PM, or 8:00 PM. There will be at least 3 hours advance notice given for Seaward Zone closures.

INSEASON FISHERY ANNOUNCEMENTS

After enough information has been collected to determine the fishing time needed to harvest surplus fish, a fishery announcement or News Release (NR) will be issued in the following manner:

- (1) A NR will be issued that details:
 - (a) the date, time, and number of the emergency order announcement,
 - (b) the length of the fishing period,
 - (c) the opening and closing times and dates of the fishing period,
 - (d) the areas opening to fishing,
 - (e) the areas closing to fishing,
 - (f) the location of closed water adjustments (if any), and
 - (g) a list of any previous NR information that is still pertinent.
- (2) The NR will be posted at the main entrance of the Kodiak ADF&G office at 211 Mission Road. Copies of the NR will be available outside the main entrance, in the Kodiak ADF&G office during regular office hours (Monday through Friday, 8:00 AM to 4:30 PM), and posted at the Region IV commercial salmon fishery web site at <http://www.cf.adfg.state.ak.us/region4/finfish/salmon/salmhom4.php>.
- (3) The NR will be recorded on a 24-hour recorded message phone (486-4559).
- (4) The NR will be made available to local radio stations (KVOK 560 AM, KRXX 101.1 FM and KMXT 100.1 FM).
- (5) The Kodiak ADF&G management staff will monitor SSB radio channel 3.230 MHz (call sign WON 32), and Matrix satellite phone dispatch number 7410, during regular office hours, and will reply to public and industry inquiries when available.
- (6) The NR will be distributed to all registered processors by fax, email, telephone, hand delivery, or through the ADF&G recorded message phone.
- (7) Copies of EOs, which detail specific regulation changes and justifications, will be available upon request.

NRs are generally very detailed and complicated. It is advised that tender operators and permit holders obtain a written copy, or use a tape recorder to document the exact wording of each announcement as it is broadcast.

ADF&G STAFF CONTACT NUMBERS

ADF&G Kodiak management staff is available to answer questions regarding commercial salmon fishery regulations, openings, closures, and harvests. Contact phone numbers and e-mail address are as follows:

General Information - 486-1830

Jeff Wadle - 486-1808
Area Management Biologist

After hours 539-1807

Matrix Dispatch - 7410

Joe Dinnocenzo - 486-1807.
Assistant Area Management Biologist

After Hours Cell Phone - 539-1807

Record-a-Phone - 486-4559

Geoff Spalinger - 486-1804
Assistant Area Management Biologist

Email -
dfg.dcf.kodiaksalmon@alaska.gov

Iris Caldentey - 486-1810
Fisheries Biologist

NOTABLE REGULATIONS AND CHANGES TO REGULATIONS MADE DURING THE 2008 BOARD OF FISHERIES MEETING

The Alaska Board of Fisheries (BOF) met in Kodiak during January 2008 to discuss Kodiak salmon fishery regulations. Changes were made that will be in effect for the 2009 commercial salmon fishery. A synopsis of several important regulations and regulation changes follows, but all participants in the Kodiak commercial salmon fishery are urged to make themselves aware of all applicable regulations. Copies of the KMA commercial salmon fishery regulations and the most recent Kodiak Area Salmon Statistical Chart are available at the Kodiak ADF&G office.

MULTIPLE SET NET PERMITS

During the 2008 BOF meeting for the KMA a new regulation (5 AAC 18.331 (j)) was adopted to allow a CFEC permit holder with two Kodiak set gillnet permits to fish with both permits. This permit holder may operate no more than four set gillnets, with no more than 300 fathoms of set gillnet in aggregate. No set gillnet may be more than 150 fathoms in length. Both of the permit holder's five digit CFEC permit serial numbers followed by the letter "D" to identify the gillnet as a dual permit set gillnet must be located on the identification buoy and site markers required by 5 AAC 39.280. At least one cork every 10 fathoms along the cork line must be plainly and legibly marked with both CFEC permit numbers of the permit holder. All identifiers must be displayed in a manner that is plainly visible and unobscured and have permanent symbols in a color that contrasts with the background. This regulation has a sunset clause and is only in effect until December 31, 2010.

INCREASE TO SHOREWARD ZONES

The shoreward zone of the Northwest Afognak Section of the Afognak District was increased and is now described as south and east of a line from one-half mile west of the northern entrance of Big Bay at 58° 33.85' N. lat., 152° 40.30' W. long., to one-half mile west of the western entrance of Blue Fox Bay at 58° 27.68' N. lat., 152° 43.65' W. long., to one-half mile west of Black Cape at 58° 24.50' N. lat., 152° 53.30' W. long., to one-half mile west of Cape Paramanof at 58° 18.33' N. lat., 153° 02.65' W. long (5 AAC 18.363(b)(3)(C); Figure 6).

CLOSED WATER AREAS

All freshwater streams and rivers of the KMA are closed to commercial salmon fishing. Additionally, adjacent to streams and rivers, all saltwater within 500 yards of the seaward extremities of the exposed tideland banks is closed to commercial salmon fishing, unless:

- (1) Alternatives are specifically listed in the regulation book (see 5 AAC 18.350. CLOSED WATERS); or
- (2) The stream number is circled on the most recent version of the salmon statistical chart, issued annually by ADF&G. For streams with circled numbers commercial salmon fishing is allowed to the stream terminus; or
- (3) Closed water areas are specifically reduced or increased inseason by EO at a particular stream or bay (announced by NR); or
- (4) Closed waters markers are in place. The intent is to maintain a 500-yard closed water area from the stream terminus, at all stages of the tide, unless the area is made larger or smaller by regulation or EO. If closed waters markers are in place, the closure line may be a straight line or may be an arc, as follows:
 - (a) The closure line is a straight line between two regulatory markers if specifically stated in regulation or EO, or if at all stages of the tide, the markers are farther than 500 yards from the seaward extremities of the exposed tideland banks of the salmon streams located inside the markers.
 - (b) The closed water line will be an arc if necessary to maintain the 500-yard distance from the seaward extremities of the exposed tideland banks of the salmon stream at any stage of the tide. Then, waters closed to salmon fishing will be a line arcing from the markers to a point 500 yards directly off the seaward extremities of the exposed tideland banks that designates the stream mouth. The actual shape of the closed water area will change as the tide ebbs and floods.

As stated in 5 AAC 18.350. CLOSED WATERS. (b). If the location of a regulatory marker is in conflict with the closed waters listed in this section, it is illegal to fish on the streamward side of that marker. There will be no inseason adjustments of closed water markers unless ADF&G personnel are available to remove the normal markers, install new markers, and subsequently reinstall the normal markers. There will be at least 18 hours advance notice prior to adjusting closed waters.

Closed Water Sanctuary for the 2009 Season

In addition to the closed water areas listed in the regulations (5 AAC 18.350), the following closed water sanctuary will be in effect for the 2009 season:

Ayakulik River Closed Water Sanctuary

Should commercial fishing be allowed in the Inner Ayakulik Section, ADF&G regulatory markers will be placed in such a manner as to better define the stream terminus of the Ayakulik River. One marker shall be placed on each side of the river mouth. Waters closed to salmon fishing will be a line arcing from the markers to a point 500 yards directly off the seaward extremities of the exposed tideland banks that designates the stream mouth. The intent of this closed water sanctuary is to prevent fishing gear from being set to completely block access to the river for migrating fish.

NEW STATISTICAL AREAS

There are several statistical area number changes to the KMA statistical chart. It is important that permit holders have the most recent statistical chart (March 2008) and take note of the new numerical designations for many of the inner bay statistical numbers.

RELEASE OF LARGE CHINOOK (KING) SALMON BY PURSE SEINE FISHERMEN

ADF&G may require commercial fishermen to release large Chinook salmon (greater than 28 inches in length) from their catch. If ADF&G does require the release of Chinook salmon, any Chinook salmon greater than 28 inches would have to be released unharmed, immediately. This would apply only in the Inner Karluk, Outer Karluk, Inner Ayakulik, or Outer Ayakulik sections, and only if the department determines that the Karluk or Ayakulik Chinook salmon runs will not likely meet seasonal escapement goals (5 AAC 18.395). During the 2009 KMA salmon season, it is likely nonretention of Chinook salmon will be implemented for the first fishing period of both the Inner and Outer Karluk sections.

USE OF NET PENS

Floating net pens may be used in the KMA to hold live commercially caught salmon prior to processing. However, any fishermen that choose to use a net pen to hold live salmon must obtain a permit at the Kodiak ADF&G office (5 AAC 18.392). The permit will outline restrictions, conditions, and reporting requirements. It is the responsibility of the permit holder to obtain any additional licenses or permits that may be required. Any fishermen that wish to use a net pen should contact salmon management staff at the Kodiak Fish and Game office.

WASTE OF SALMON

Waste of salmon will not be tolerated and may result in fishing period closures (AS 16.05.831 and 5 AAC 93.310). Unless prohibited by law, salmon taken commercially may be used or sold as bait (5 AAC 93.350).

PERSONAL USE OF COMMERCIALY TAKEN SALMON (HOME PACK)

Commercial fishermen may keep salmon legally taken in their commercial gear during open commercial fishing periods for their own use (home pack). However, the number of fish harvested and kept for home pack must be reported on a fish ticket. These fish may not be sold or bartered (5 AAC 39.010).

At the time of delivery, record the number of each species of salmon caught but not sold in the lower right hand corner of the fish ticket, in the space designated for that purpose.

DIRECT MARKETING

There has been an increase in interest by Kodiak commercial salmon fishermen to market their own lawfully taken commercial catch (direct marketing). If fish are to be sold later, the commercial fishermen must be properly registered and licensed. There are several ways to legally market your own fish, but some require special registration and licensing. Registration and licensing ensures accurate reporting of harvests, which is essential for sound management of commercial fisheries.

Direct marketers are responsible for filing their own fish tickets with ADF&G and may be required to complete a Commercial Operators Annual Report. Direct marketers must also register with the ADF&G salmon management office in Kodiak.

FISH TRANSPORTERS

A fish transporter differs from a tender. A tender acts as the agent of a registered processor or buyer, and is the first point of sale of fish from the CFEC permit holder to a processor or buyer. A fish transporter is an agent of the CFEC permit holder(s), and is authorized to take legally harvested fish from one or more commercial salmon fisherman to a buyer or buyers. A fisherman or group of fishermen may hire a fish transporter, who may then legally take their fish to the first point of sale.

A Fish Transporter Permit is required, and must be in possession of the operator during the transport and sale of fish. The ADF&G Division of Commercial Fisheries in Juneau issues Fish Transporter Permits. All fish transporters who plan to transport salmon within the KMA must also be registered with the ADF&G Kodiak commercial salmon fishery management staff. The transporting vessel used must be licensed as a commercial fishing vessel and all people working aboard the vessel must have crewmember licenses.

Fish transporters are required to report their activities to ADF&G and to fill out a fish ticket for all fish taken aboard their vessel. The commercial fisherman who caught the salmon is required to provide the fish transporter with fish ticket information such as the CFEC permit number, the area of harvest, catch dates, and catcher vessel ADF&G number, and must sign the fish ticket. The number of fish by species and the weight of the fish by species must be estimated and recorded on the fish ticket. Final weights and fish counts will be verified upon delivery of the fish to the buyer or processor. The buyer or processor submits the finalized fish ticket to ADF&G. Additional information and Fish Transporter Permit applications are available from the ADF&G Kodiak staff.

FISH TICKETS / HARVEST REPORTS

It is the legal responsibility of commercial fishermen, tenders or transporters, and processors and buyers to ensure that all information on a fish ticket is complete and correct. Prior to completing and signing fish tickets, permit holders, tender operators, and/or processing personnel should make sure that the proper statistical area with the correct harvest information has been entered and the fish ticket is complete, legible, and accurate.

PROCESSORS / TENDERS

Management of the KMA commercial salmon fisheries requires timely, accurate harvest reporting. Without accurate information, a more conservative harvest strategy will be adopted and less fishing time will be allowed. Processors and buyers are required to accurately report catches daily to ADF&G (5 AAC 39.130). In order to process the harvest information and use it for management decisions, catch reports must include the estimated number of salmon harvested by species, for each gear type, from each major catch area (by statistical area, or by geographic area such as a bay, cape, or headland). ADF&G management staff will contact processors to arrange the daily reporting times and format. Daily reports can be made verbally, by fax, or by email. Email is the preferred method. Processors should obtain correct, up to date, information from tender operators prior to providing daily reports to ADF&G.

Each day, tender operators must provide their processing companies with an accurate count of deliveries and number of salmon delivered, by species and by catch area. Alternately, tender operators may report, the total number of pounds and the average weight by species, by catch area.

Statistical area numbers are used to record harvest location(s) on fish tickets. Tender operators should ensure that the location of the catch, rather than the location of the tender pick-up, is recorded on the fish ticket.

The correct harvest location and number of fish harvested by species must be recorded on each fish ticket. This information is extremely important in evaluating inseason harvests, stock contribution, and effort distribution. In order to provide maximum allowable fishing time, especially in areas such as the Cape Igvak Section and north Shelikof Strait, it is imperative that the correct statistical areas and numbers of fish by species are reported on the fish ticket at the time of delivery.

PURSE SEINE FISHERMEN

Purse seine fishermen should be certain that their fish tickets show the number of fish of each species, or the total weight and average by species for each delivery. Purse seine permit holders must, at a minimum, provide estimates of harvest by statistical area to tender operators. For example: "1/3 of my sockeye were from Cape Alitak (257-20) and 2/3 were from Outer Ayakulik (256-20). The rest of my fish were 1/2 and 1/2 from each of those two areas". The location of the tender where the fish were delivered should not be used as the harvest location.

SET GILLNET FISHERMEN

Set gillnet fishermen should make sure their fish tickets show the number of fish of each species, or the total and average weight by species for each delivery. Because of the fixed nature of set gillnet gear, each permit holder's reporting area (statistical area) is usually consistent between landings. In the event that a gillnet is moved into a new statistical area, fishermen should make sure that the tender operator is provided with that information.

REFERENCE CITED

Honnold S. G., M. J. Witteveen, M. B. Foster, I. Vining, and J. J. Hasbrouck. 2007. Review of salmon escapement goals for salmon stocks in the Kodiak Management Area, Alaska. Alaska Department of Fish and Game, Fishery Manuscript No. 07-10, Anchorage. <http://www.sf.adfg.state.ak.us/FedAidPDFs/sp07-10.pdf>

TABLES

Table 1.—Alaska Board of Fisheries approved fishery management plans for the Kodiak Management Area, 2009.

Management Plan	Year Initiated	Mgmt. Units Affected	Dates in Effect
Cape Igvak Salmon Management Plan (5 AAC 18.360)	1978	Cape Igvak Section Wide Bay Section	6/1 - 7/25
Alitak Bay District Salmon Management Plan (5 AAC 18.361)	1987	Alitak Bay District	6/1 - 10/31
Westside Kodiak Management Plan (5 AAC 18.362)	1990	NW Kodiak District SW Kodiak District SW Afognak Section	6/1 - 10/31
North Shelikof Strait Sockeye Salmon Management Plan (5 AAC 18.363)	1990	SW Afognak Section NW Afognak Section Shuyak Island Section Big River Section Hallo Bay Section Inner and Outer Kukak Bay sections Dakavak Bay Section	7/6 - 7/25
Crescent Lake Coho Salmon Management Plan (5 AAC 18.364)	1990	Special Harvest Area in the Central Section near Port Lions	7/15 - 10/31
Eastside Afognak Management Plan (5 AAC 18.365)	1993	Southeast Afognak Section Raspberry Strait Section Inner and Outer Kitoi Bay sections Duck Bay Section Izhut Bay Section	6/1 - 10/31
Spiridon Lake Sockeye Salmon Management Plan (5 AAC 18.366)	1993	Special Harvest Area in Spiridon Bay Section	6/1 - 10/31
Eastside Kodiak Salmon Management Plan (5 AAC 18.367)	1995	Eastside Kodiak District NE Kodiak District	6/14 - 10/31
North Afognak / Shuyak Island Salmon Management Plan (5 AAC 18.368)	1995	NE Afognak Section Perenosa Bay Section Pauls Bay Section Shuyak Island Section NW Afognak Section	6/1 - 10/31
Mainland District Salmon Management Plan (5 AAC 18.369)	1999	Mainland District	6/14 - 10/31

Table 2.—Actual versus projected 2008 commercial salmon harvest by species and fishery, and 2009 harvest projections for the Kodiak Management Area.

	Chinook	Sockeye	Coho	Pink	Chum	Total
Projected Harvest 2008 ^a	20,000	1,706,150	409,737	9,850,000	919,372	12,905,258
Actual Harvest 2008 ^a	17,176	1,819,116	300,779	8,788,476	908,030	11,833,577
Projected Harvest 2009	20,000	1,502,492	421,500	22,100,000	623,000	24,666,992

FISHERY	2008 Harvest		2009 Harvest
	Projection ^b	Actual ^c	Projection ^b
Early Sockeye Salmon Fisheries (6/1-7/15)			
Kitoi Bay Hatchery ^d	23,000	39,399	29,040
Cape Igvak ^e	108,000	0	82,667
Karluk ^f	251,000	221,116	154,000
Ayakulik ^g	85,500	0	19,360
Alitak District ^h	357,000	408,048	332,000
Minor Systems ⁱ	39,000	57,363	30,000
Minor Enhancement ^j	20,000	5,879	50,200
Spiridon ^k	109,368	116,593	89,670
Other	100,000	67,591	80,000
Subtotal	1,092,868	915,989	866,937
Late Sockeye Salmon Fisheries (7/16-10/31)			
Kitoi Bay Hatchery ^d	23,000	26,919	36,960
Cape Igvak ^e	60,150	0	35,625
Karluk ^f	191,000	352,410	202,000
Ayakulik ^g	85,500	49,740	24,640
Alitak District ^h	55,000	335,004	142,000
Minor Systems ⁱ	12,000	19,815	11,000
Spiridon ^k	116,632	39,388	93,330
Other	70,000	79,851	90,000
Subtotal	613,282	903,127	635,555
TOTAL SOCKEYE	1,706,150	1,819,116	1,502,492
Pink Salmon Fisheries			
Kitoi Bay Hatchery ^d	3,950,000	2,118,392	10,000,000
Afognak (Wild) ^l	400,000	939,579	600,000
Westside Kodiak ^m	3,800,000	3,067,936	4,100,000
Alitak ⁿ	700,000	712,242	1,200,000
Eastside/Northend Kodiak ^o	600,000	1,298,089	4,700,000
Mainland ^p	400,000	652,238	1,500,000
Subtotal	9,850,000	8,788,476	22,100,000
Chum Salmon Fisheries			
Kitoi Bay Hatchery ^d	215,000	93,025	118,000
Afognak (Wild) ^l	19,750	27,784	20,328
Westside Kodiak ^m	271,100	176,770	197,819
Alitak ⁿ	43,952	78,694	32,763
Eastside/Northend Kodiak ^o	201,300	317,947	149,703
Mainland ^p	168,270	213,810	104,387
Subtotal	919,372	908,030	623,000

-continued-

Table 2.–Page 2 of 2.

FISHERY	2008 Harvest		2009 Harvest
	Projection ^b	Actual ^c	Projection ^b
Coho Salmon Fisheries			
Kitoi Bay Hatchery ^d	161,000	120,366	148,000
Afognak (Wild) ^l	37,380	29,506	29,500
Westside Kodiak ^m	136,637	68,730	168,000
Alitak ⁿ	8,530	15,390	7,000
Eastside/Northend Kodiak ^o	48,241	43,576	50,800
Mainland ^p	17,950	23,211	18,200
Subtotal	409,737	300,779	421,500
GRAND TOTAL ^q	12,905,258	11,833,577	24,666,992

Note: Harvest projections presented in this table represent formal forecasts as well as projections based on past fishery performance.

^a In numbers of salmon. Does not include subsistence, sport, personal use, or ADF&G test fish harvests.

^b Projected harvests for enhanced and major sockeye systems are based on the formal forecasts for those individual stocks (total run minus escapement) and the projected harvest from minor sockeye systems and other salmon species are based on less formal escapement to return relationships, environmental factors, and interspecies competition. Kodiak natural chum - estimated using a modified Ricker spawner-recruit model fit to the KMA returns from 1993 to 2008. Adjustment of model estimate was calculated from the negative correlation between model residuals and estimated abundance of pink salmon fry (interspecies competition) during early marine life history.

^c Actual harvest is the number taken in a particular geographic area, not the catch assigned to an individual salmon stock.

^d From the Duck Bay, Izhut Bay, and Inner and Outer Kitoi Bay Sections only.

^e From the Cape Igvak Section. Early run is from the beginning of season through June 26. Late run is from July 8 through 25.

^f From the Southwest Afognak Section, Northwest Kodiak District (except for Spiridon and Settler Cove Special Harvest Areas), Inner and Outer Karluk Sections, plus 50% of Halibut Bay Section from June 21 through July 15 and 100% after July 31.

^g From the Outer and Inner Ayakulik Sections, plus 50% of Halibut Bay Section from June 21 through July 15 and 100% from July 16 through 31.

^h From the Alitak District.

ⁱ From minor systems at Inner and Outer Ugak Bay (Saltery), Buskin River, Perenos Bay (Portage), Northwest Afognak (Thorsheim & Long Lagoon), Big River (Swikshak), and Outer Kukak Bay (Kafli & Kuliuk) Sections.

^j From the Foul Bay, Waterfall Bay, and Settler Cove Special Harvest Areas.

^k From the Spiridon Bay Special Harvest Area (Telrod Cove).

^l From the Afognak District except for the Duck, Izhut, and Inner and Outer Kitoi Bay Sections.

^m From the Southwest Kodiak District (256- and 255-) and the Northwest Kodiak District (254- and 253-) except for the North Cape, Anton Larson, Sharatin, and Kizhuyak Section, and part of the Central Section (259-35 to 259-39).

ⁿ From the Alitak District.

^o From the Eastside Kodiak District (258-, and 259-40 to 259-42), Northeast Kodiak District (259-21 to 259-25), and the North Cape, Anton Larson, Sharatin, and Kizhuyak Sections, plus part of the Central Section (259-35 to 259-39).

^p From the Mainland District.

^q Includes the projected 2008 harvest of 20,000 Chinook salmon, the actual 2008 harvest of 17,176 Chinook salmon and a projected 2009 harvest of 20,000 Chinook salmon.

FIGURES

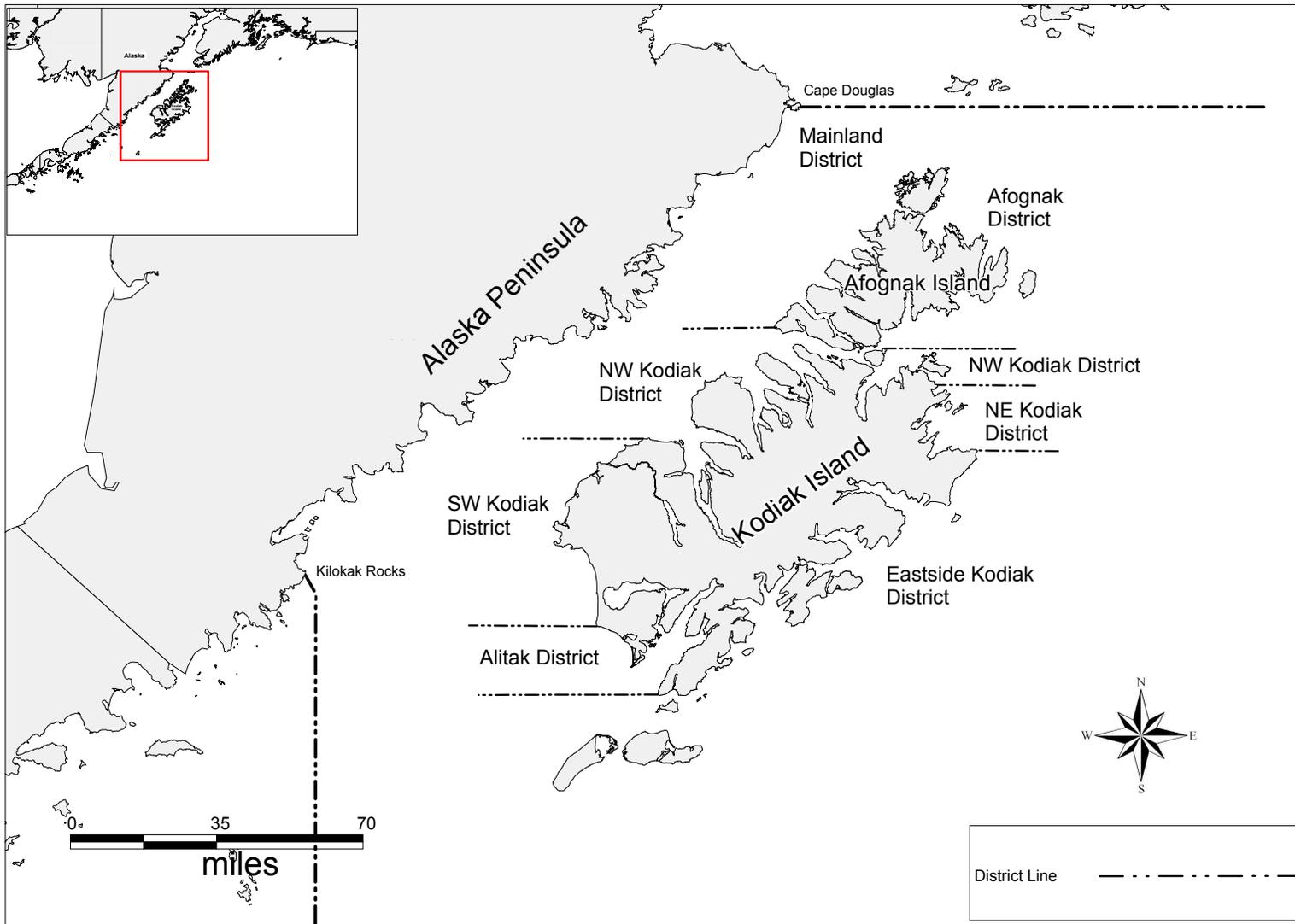


Figure 1.—Map of the Kodiak Management Area identifying commercial salmon fishing districts.

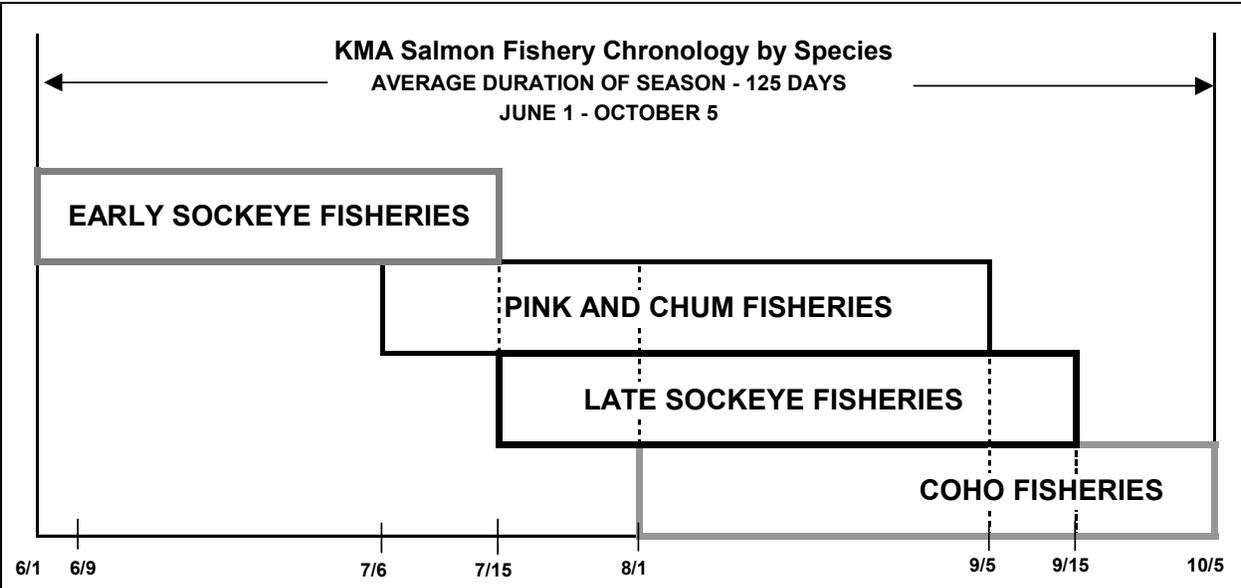


Figure 2.—Commercial salmon fishery chronology by species, for the Kodiak Management Area.

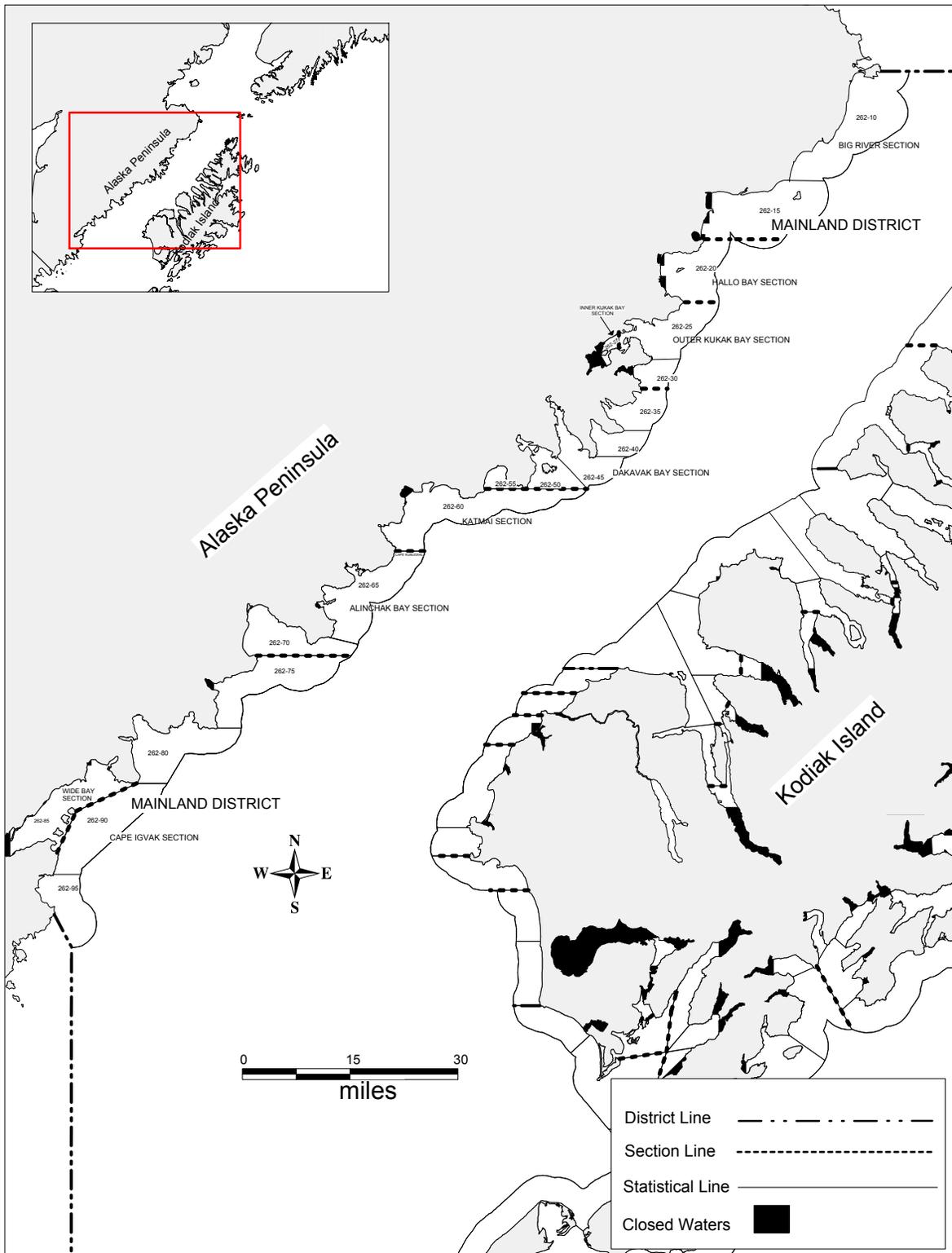


Figure 3.—Map of the Mainland District identifying commercial salmon fishing sections and statistical areas.

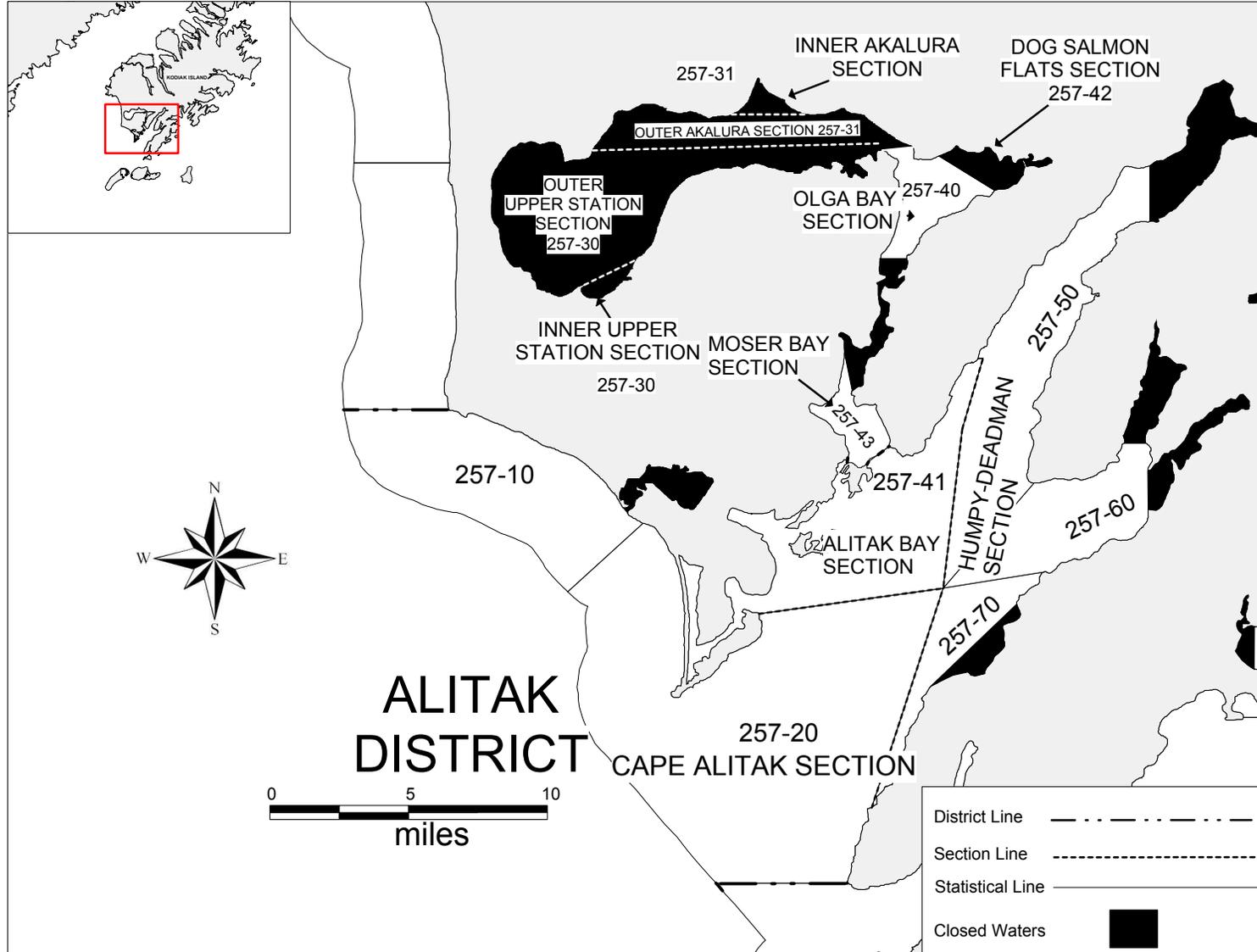


Figure 4.—Map of the Alitak District identifying commercial salmon fishing sections and statistical areas.

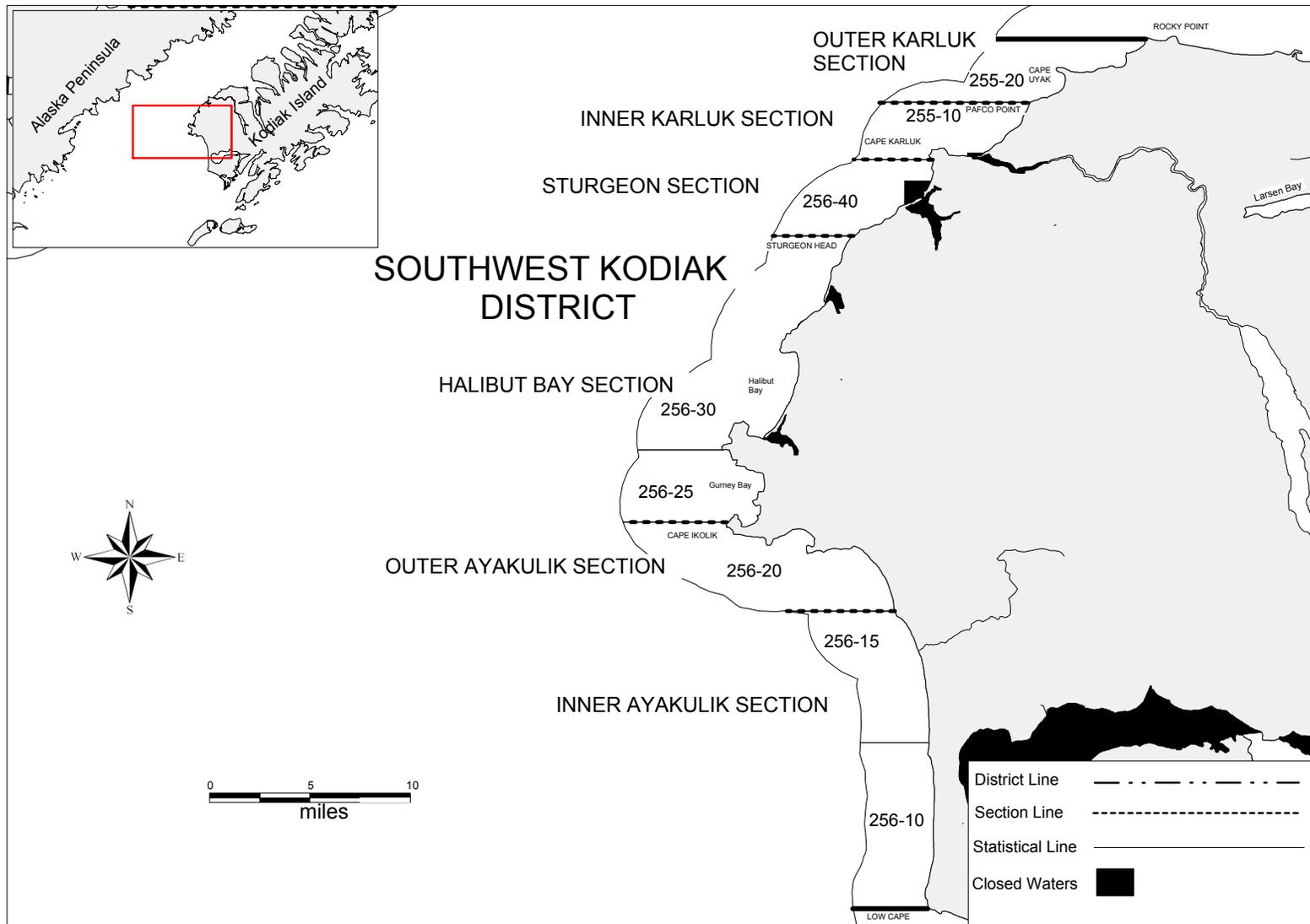


Figure 5.—Map of the Southwest Kodiak District identifying commercial salmon fishing sections and statistical areas.

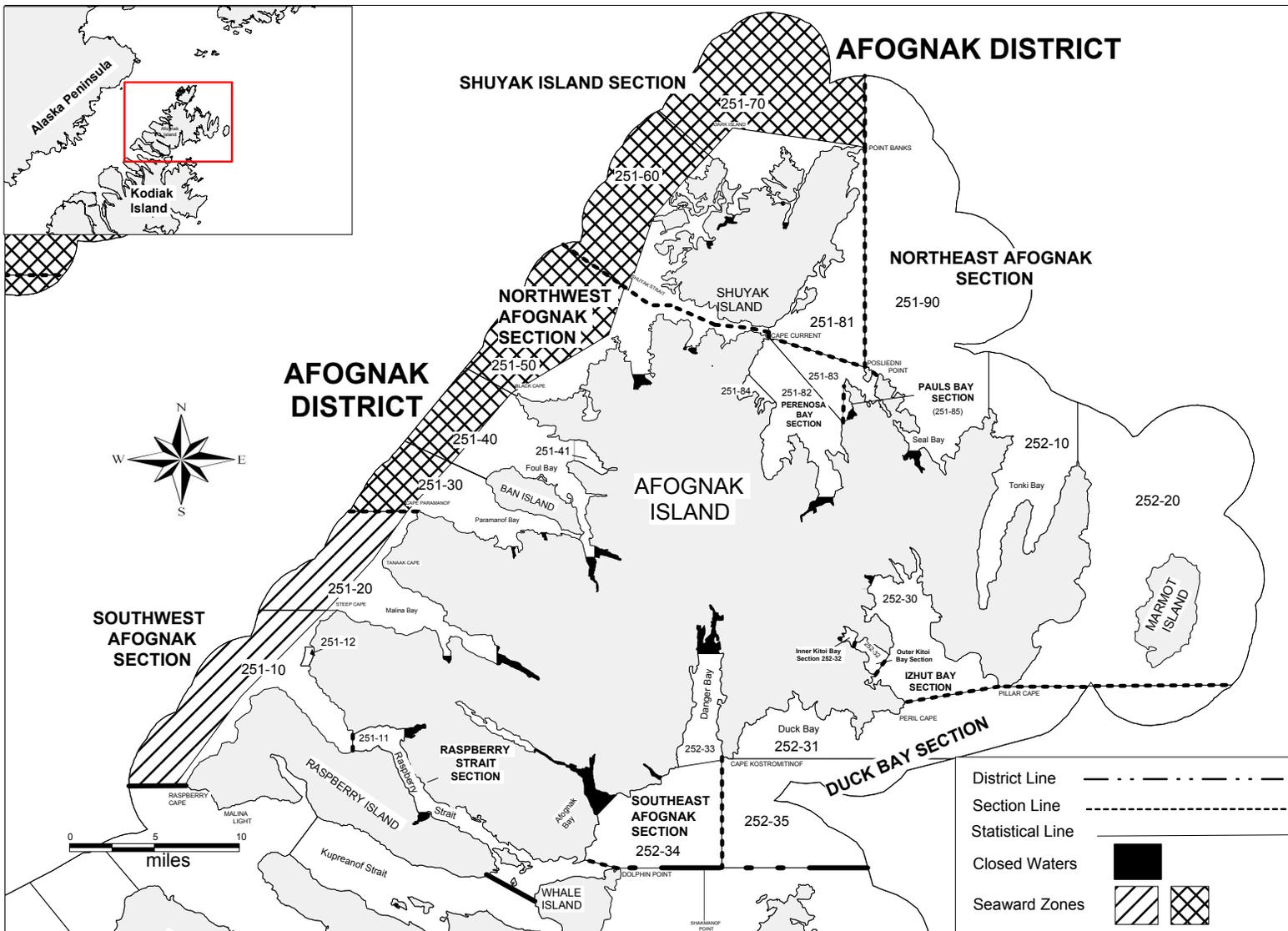


Figure 6.—Map of the Afognak District identifying commercial salmon fishing sections and statistical areas.

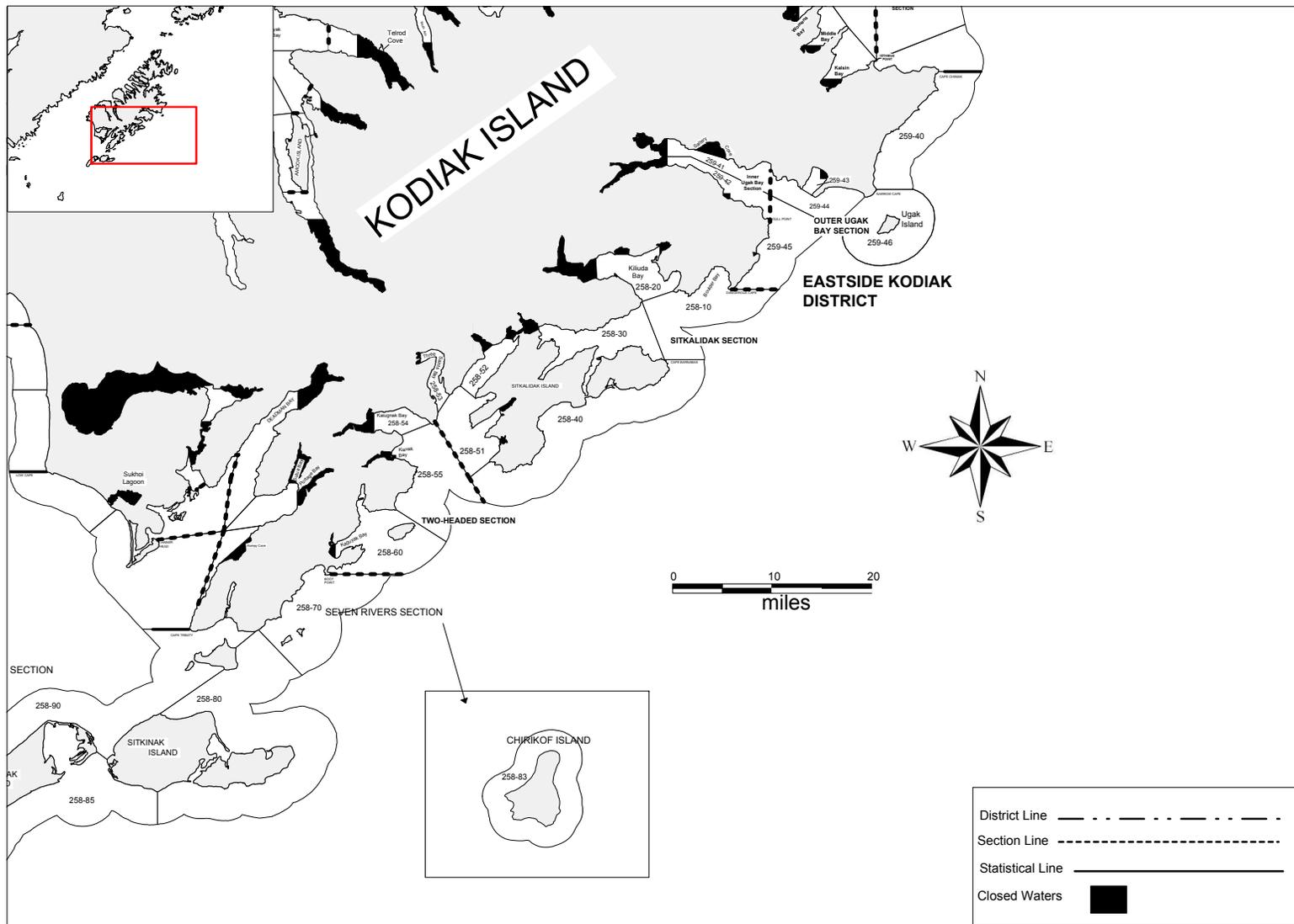


Figure 8.—Map of the Eastside Kodiak District identifying commercial salmon fishing sections and statistical areas.

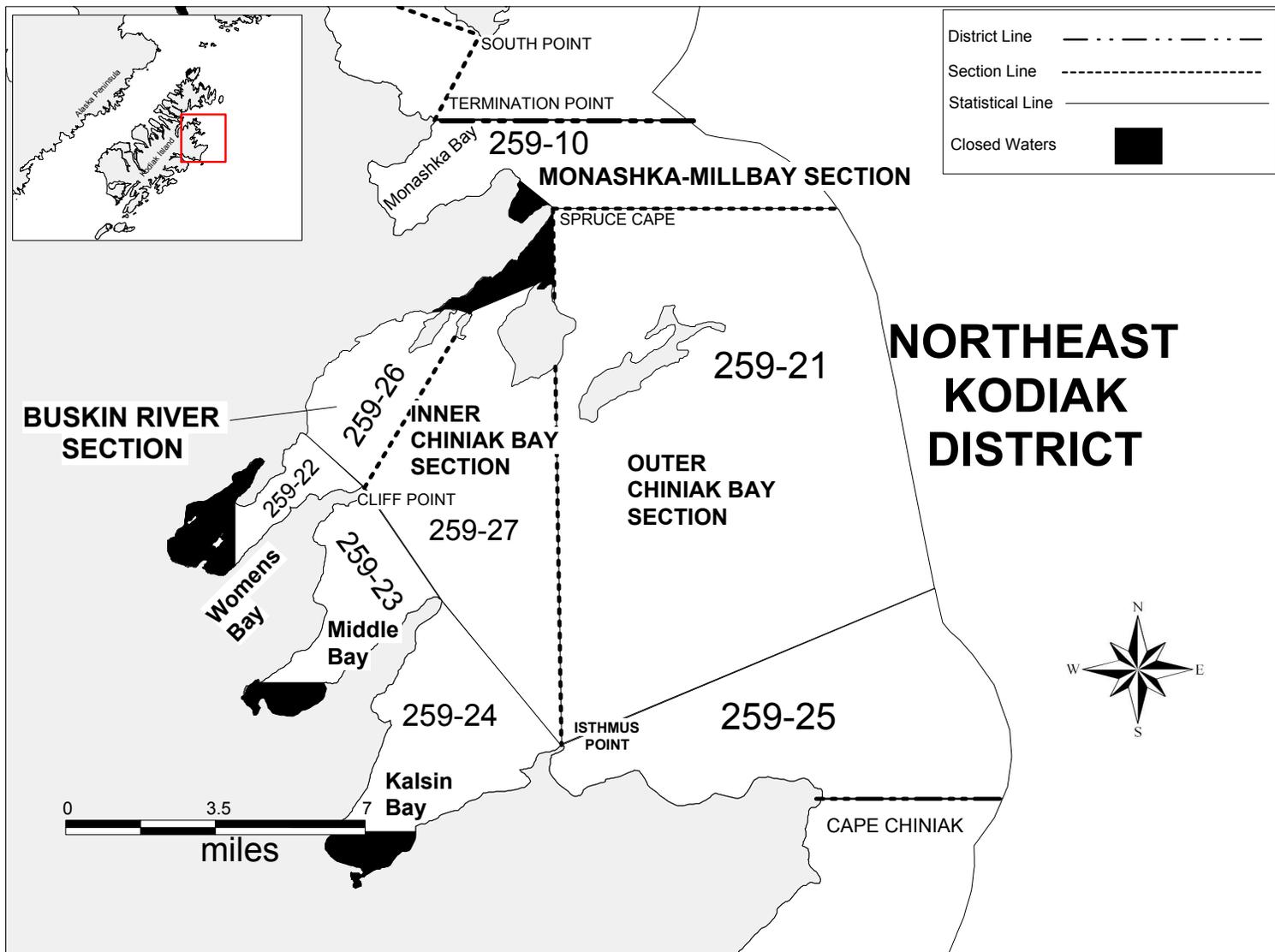
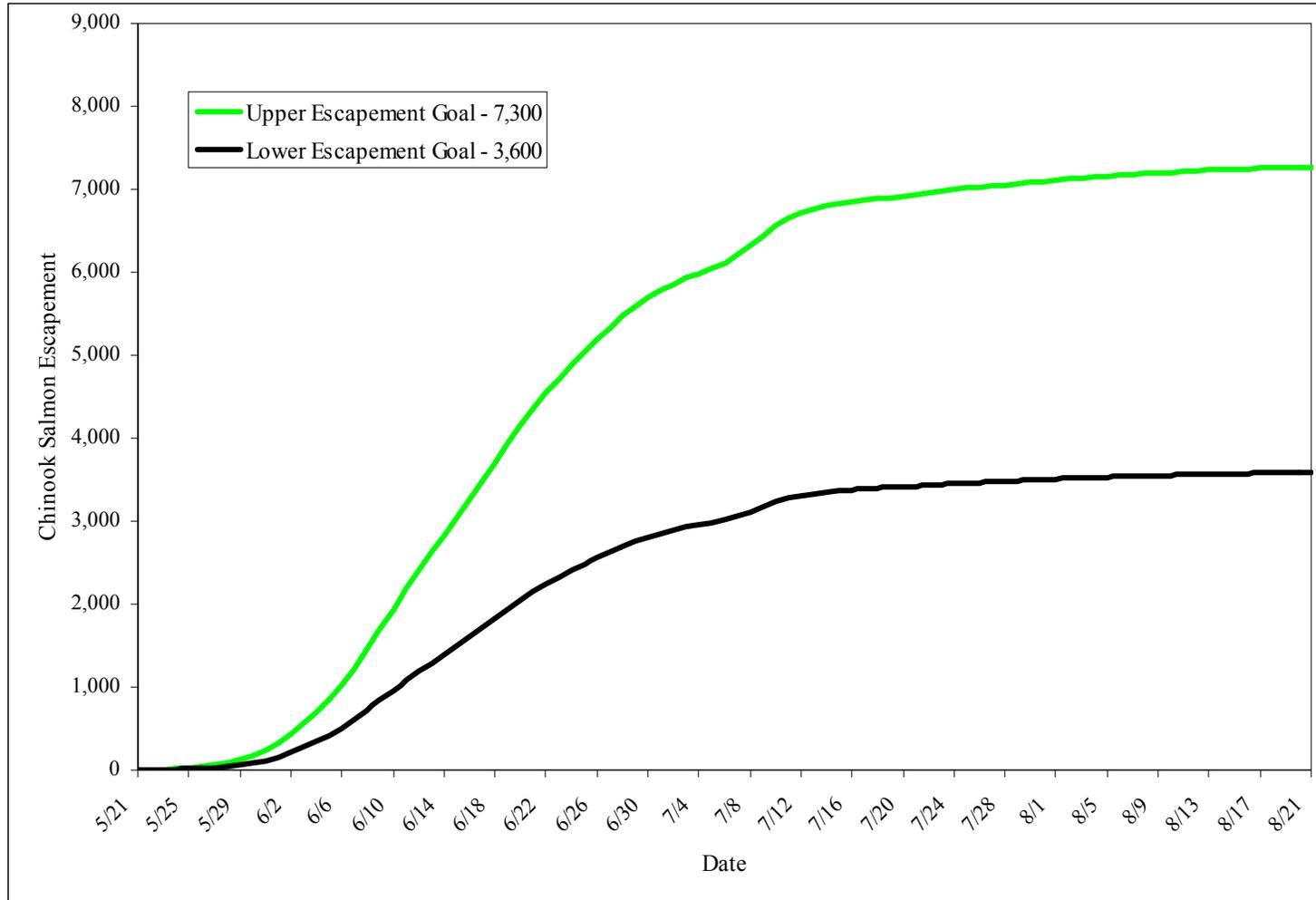


Figure 9.—Map of the Northeast Kodiak District identifying commercial salmon fishing sections and statistical areas.

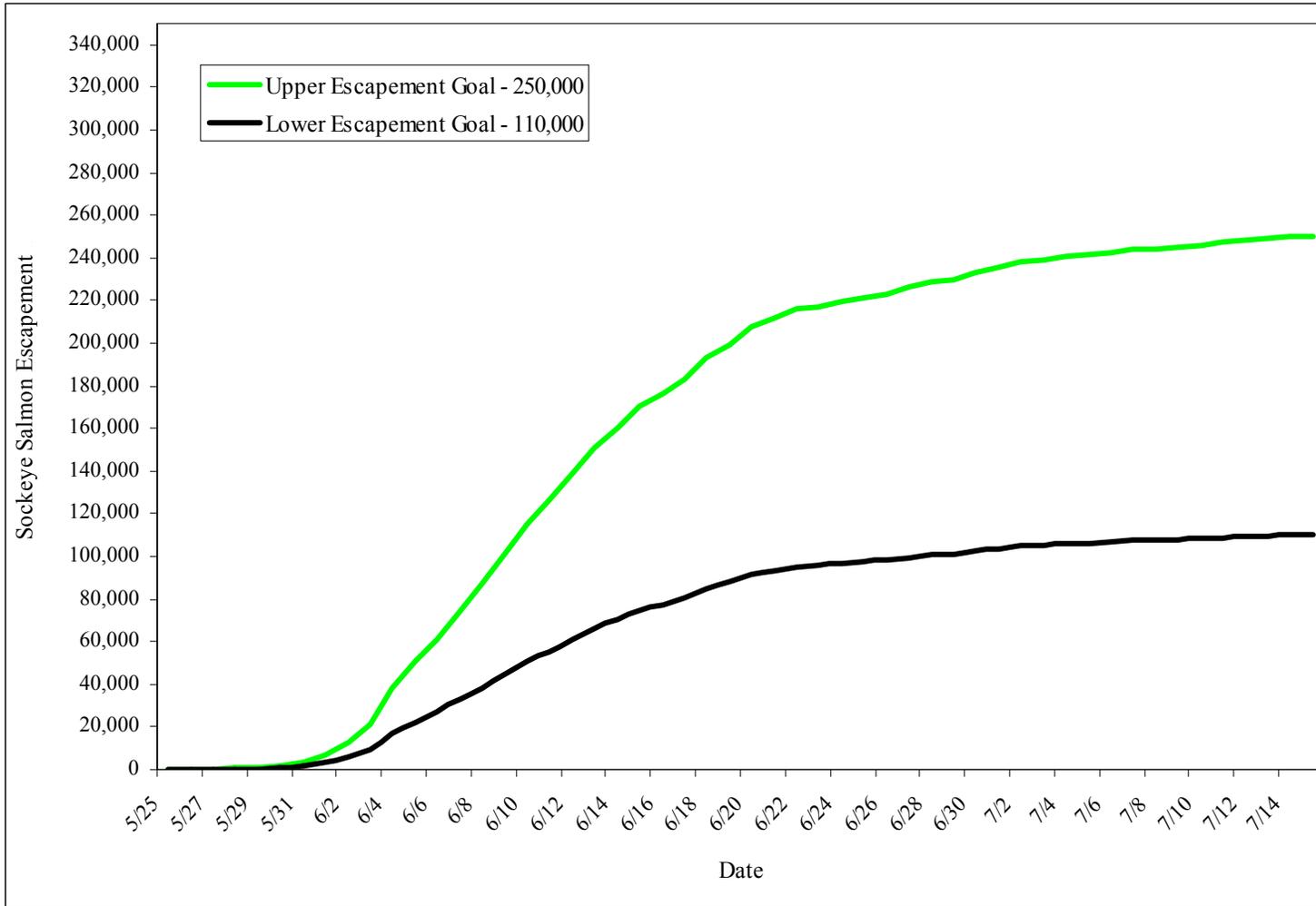
**APPENDIX A. CHARTS OF CURRENT ESCAPEMENT
GOALS FOR SELECT STREAMS AND SPECIES**

Appendix A1.—Average run timing based on lower and upper escapement goals for Chinook salmon into the Karluk system.



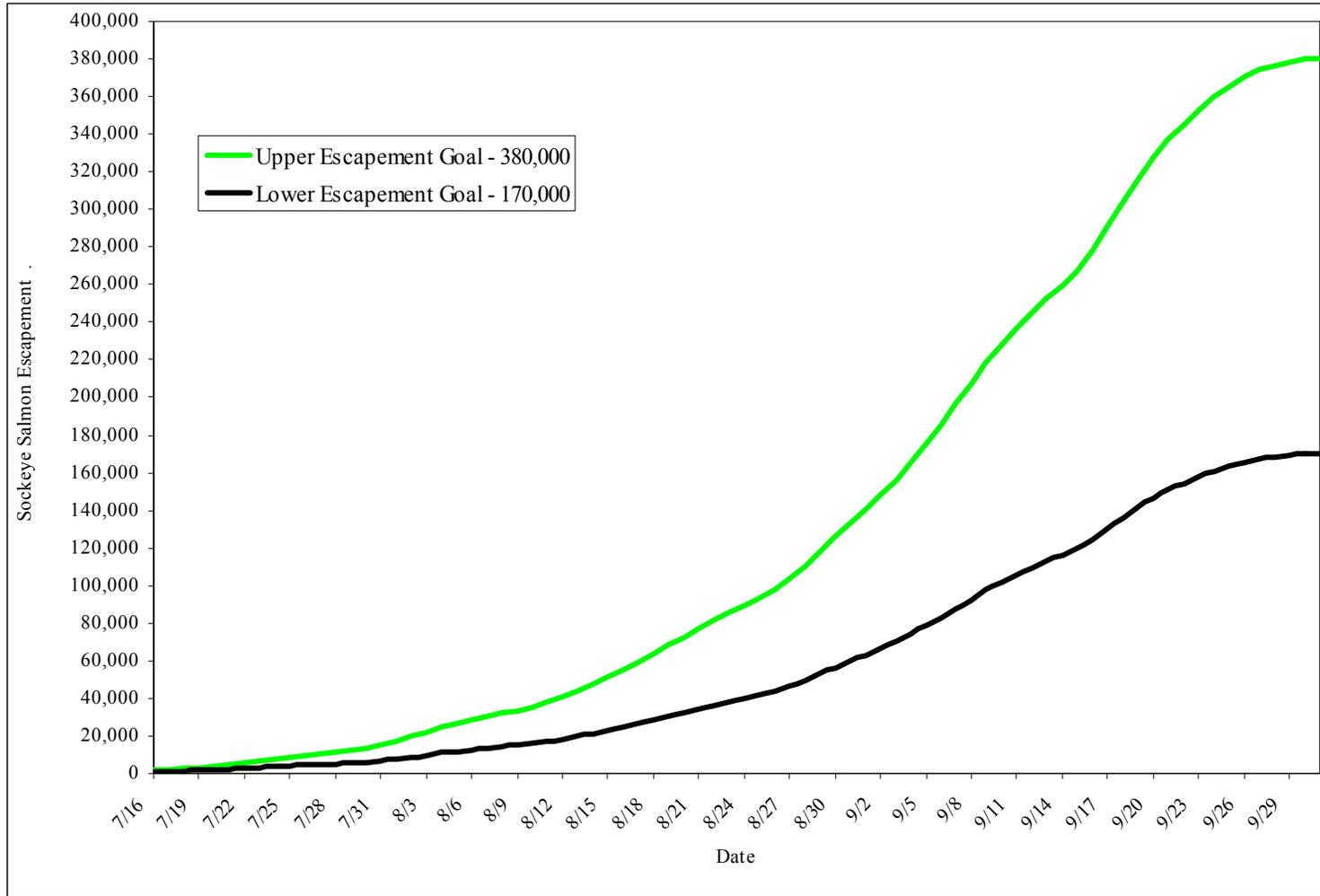
Note: These charts do not represent interim escapement goals.

Appendix A2.—Average run timing based on lower and upper escapement goals for early-run sockeye salmon into the Karluk system.



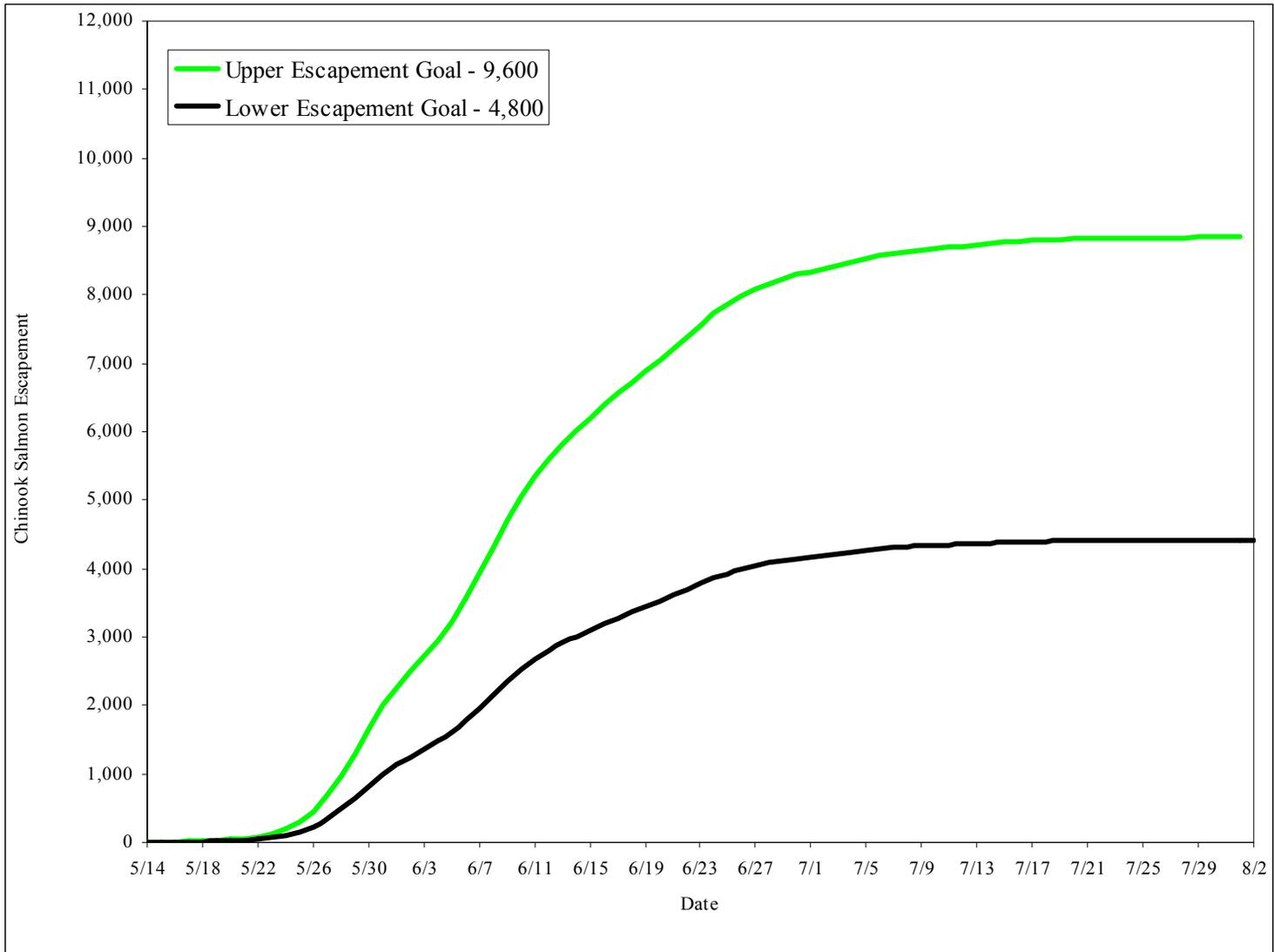
Note: These charts do not represent interim escapement goals.

Appendix A3.—Average run timing based on lower and upper escapement goals for late-run sockeye salmon into the Karluk system.



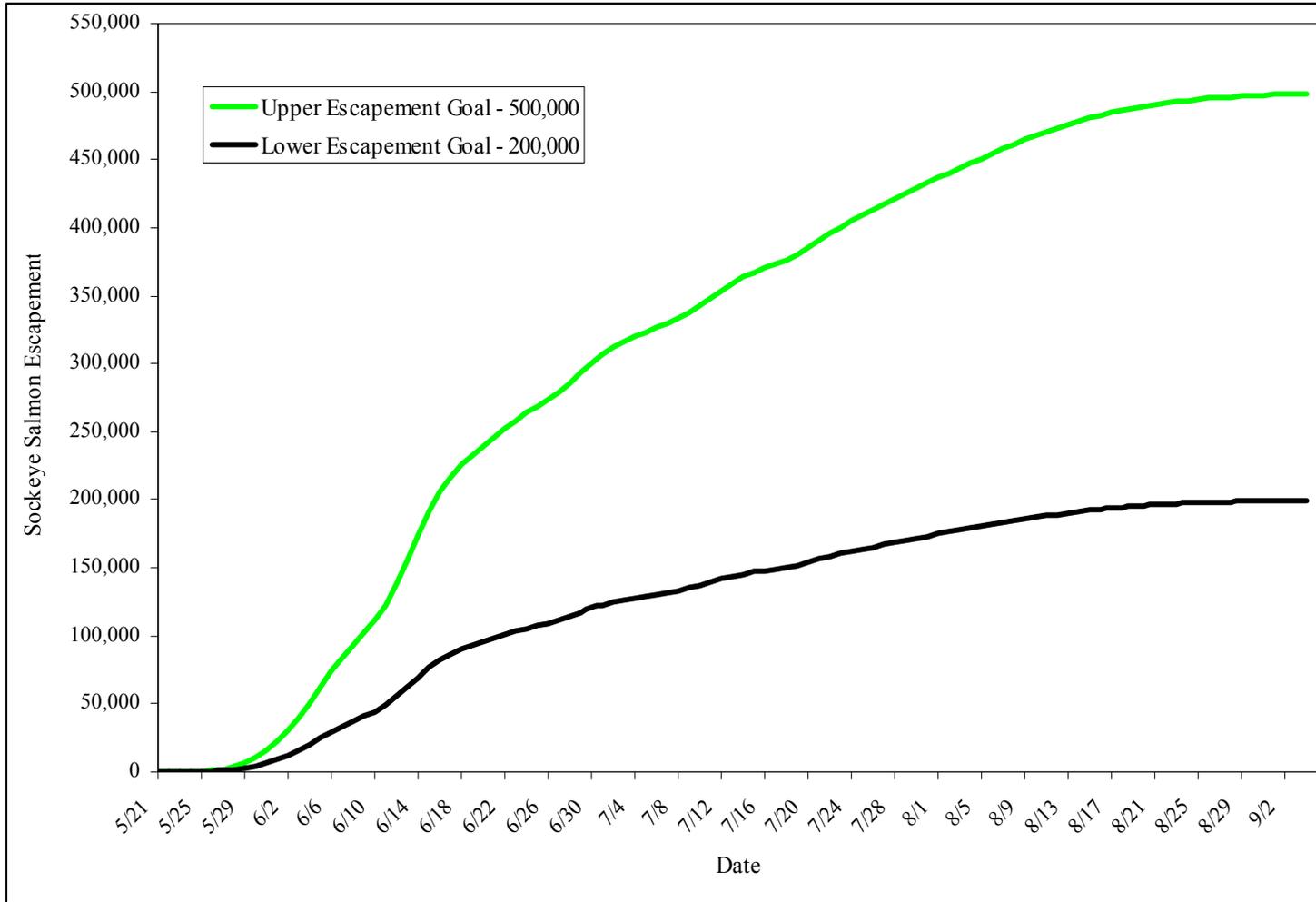
Note: These charts do not represent interim escapement goals.

Appendix A4.–Average run timing based on lower and upper escapement goals for Chinook salmon into the Ayakulik system.



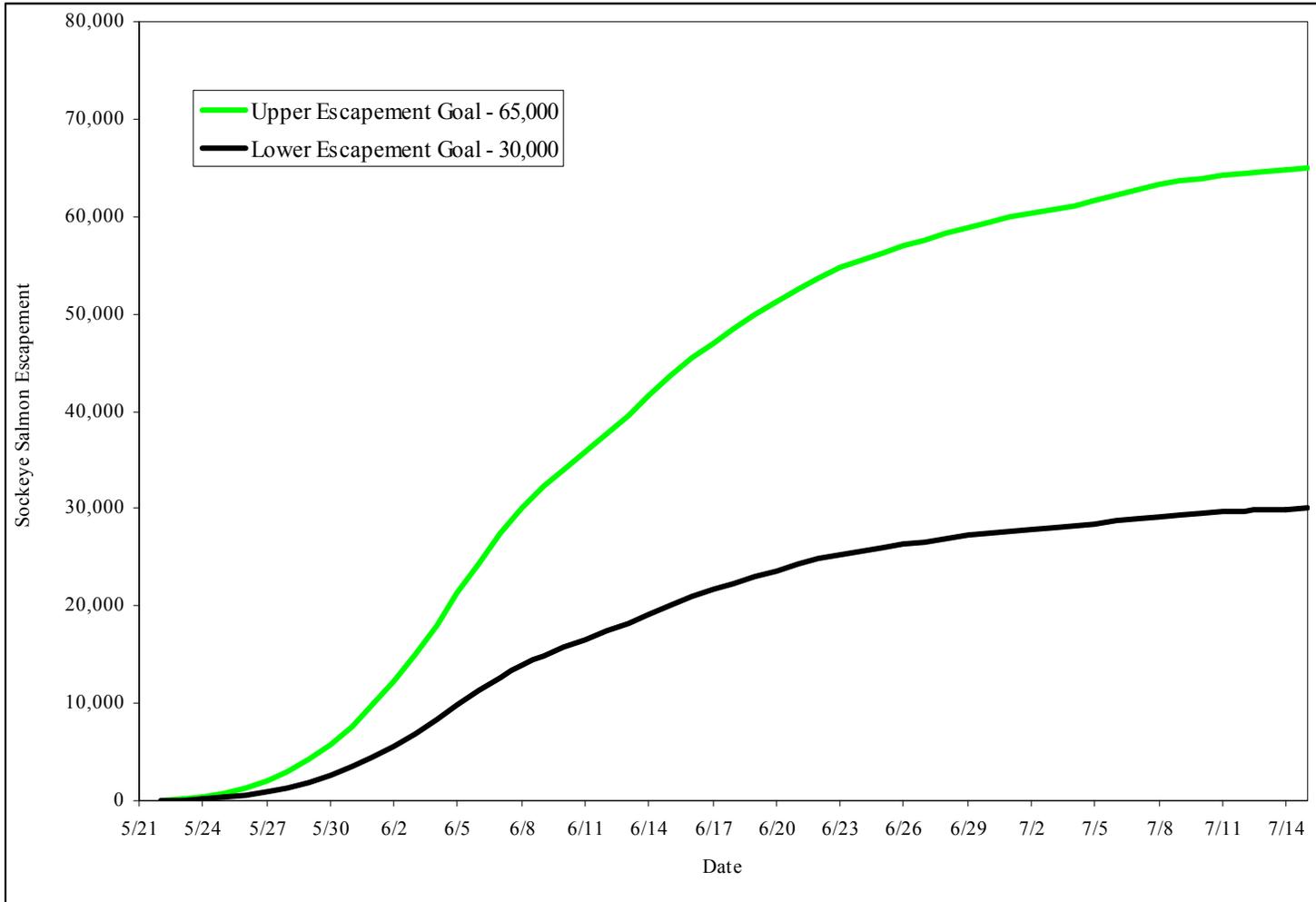
Note: These charts do not represent interim escapement goals.

Appendix A5.—Average run timing based on lower and upper escapement goals for sockeye salmon into the Ayakulik system.



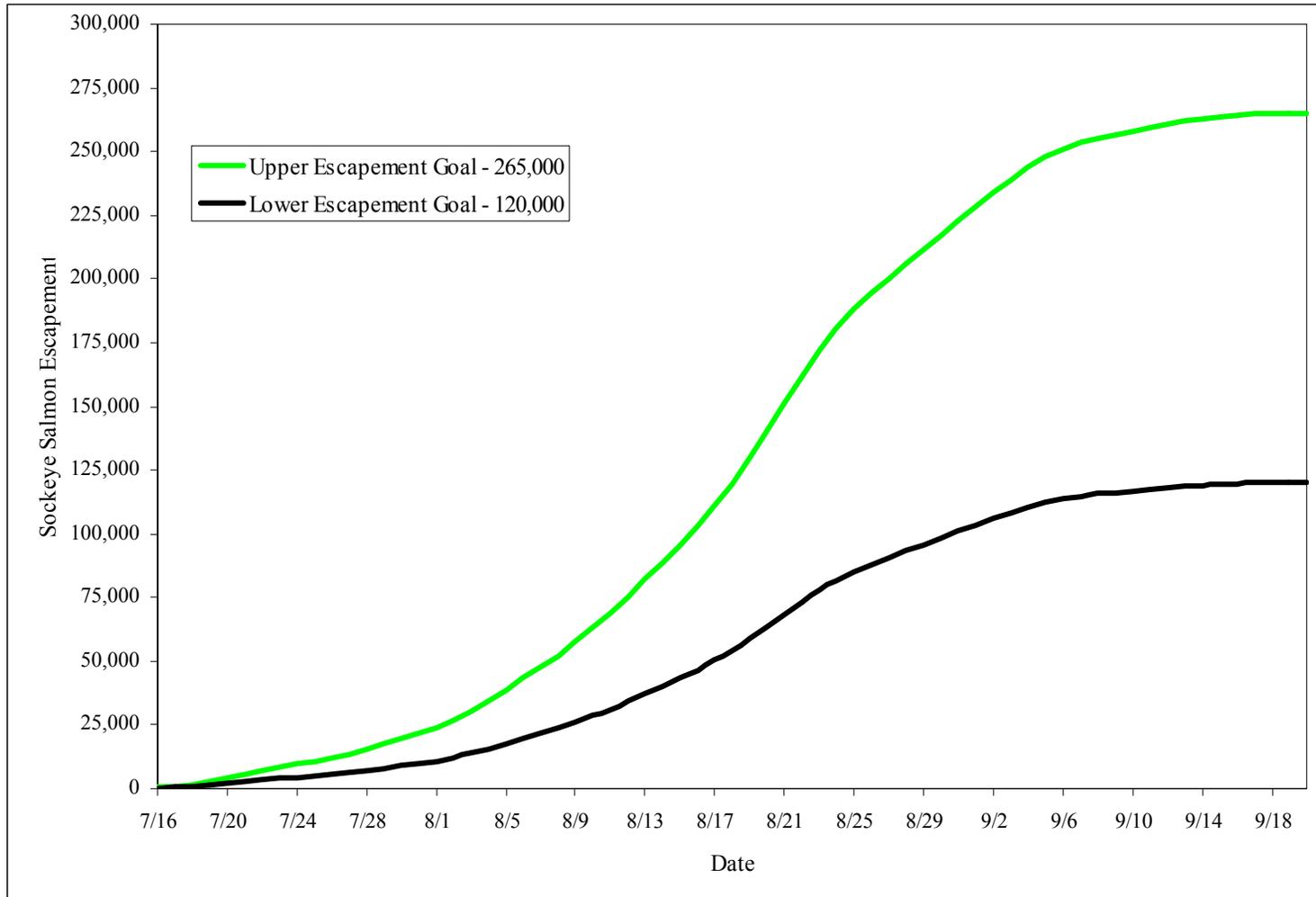
Note: These charts do not represent interim escapement goals.

Appendix A6.—Average run timing based on lower and upper escapement goals for early-run sockeye salmon into the Upper Station system.



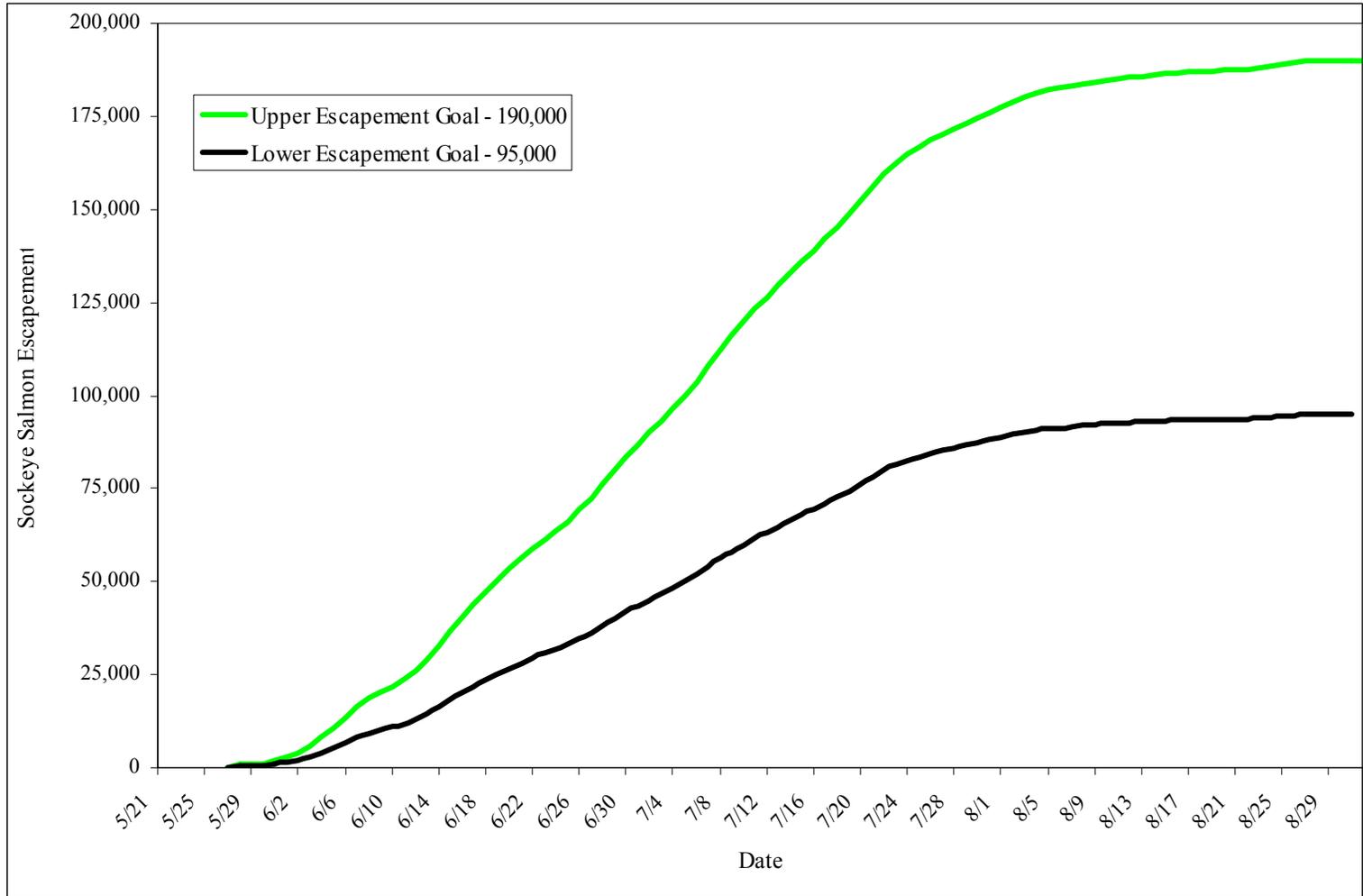
Note: These charts do not represent interim escapement goals.

Appendix A7.—Average run timing based on lower and upper escapement goals for late-run sockeye salmon into the Upper Station system.



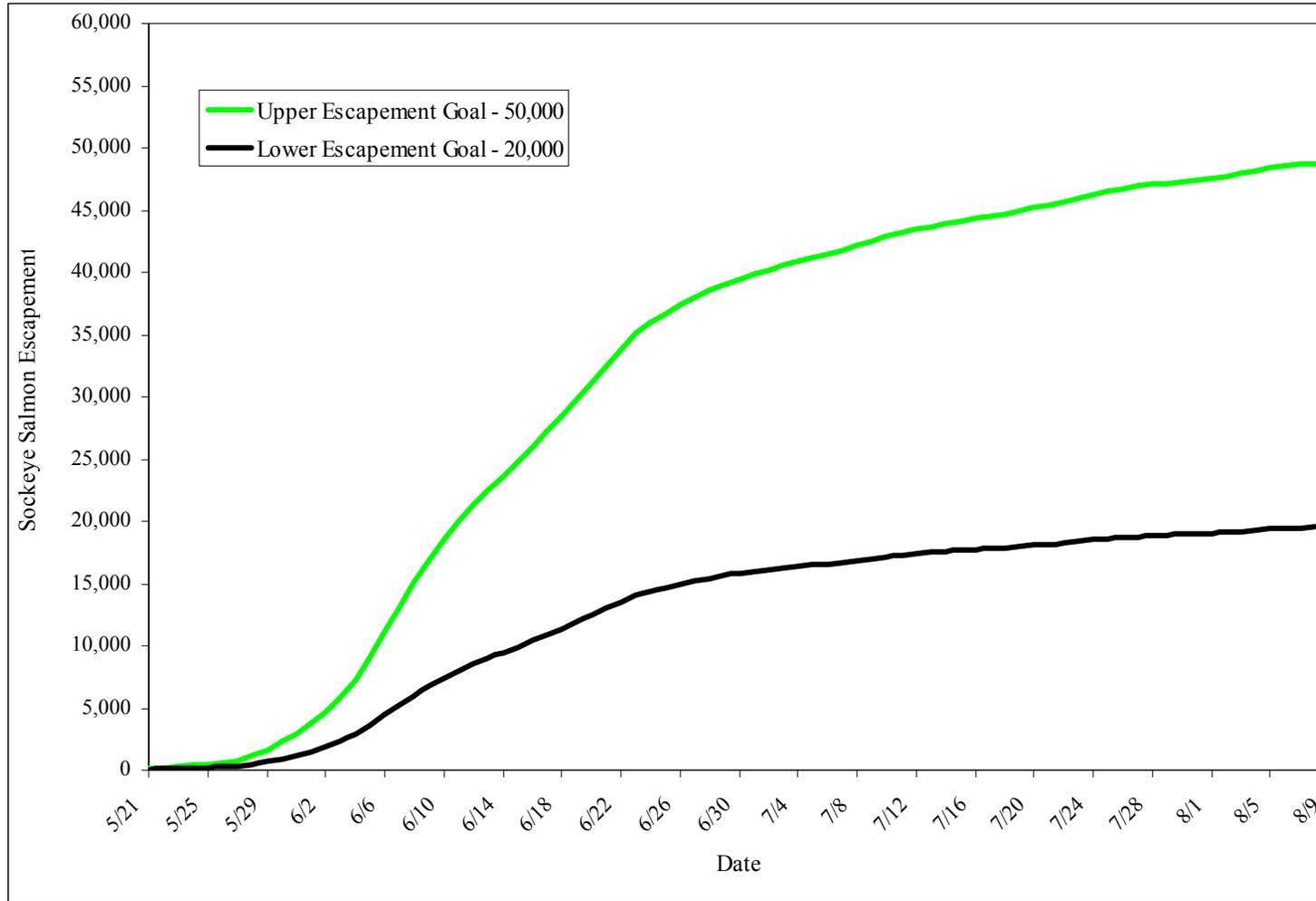
Note: These charts do not represent interim escapement goals.

Appendix A8.—Average run timing based on lower and upper escapement goals for sockeye salmon into the Frazer system through the Dog Salmon River weir.



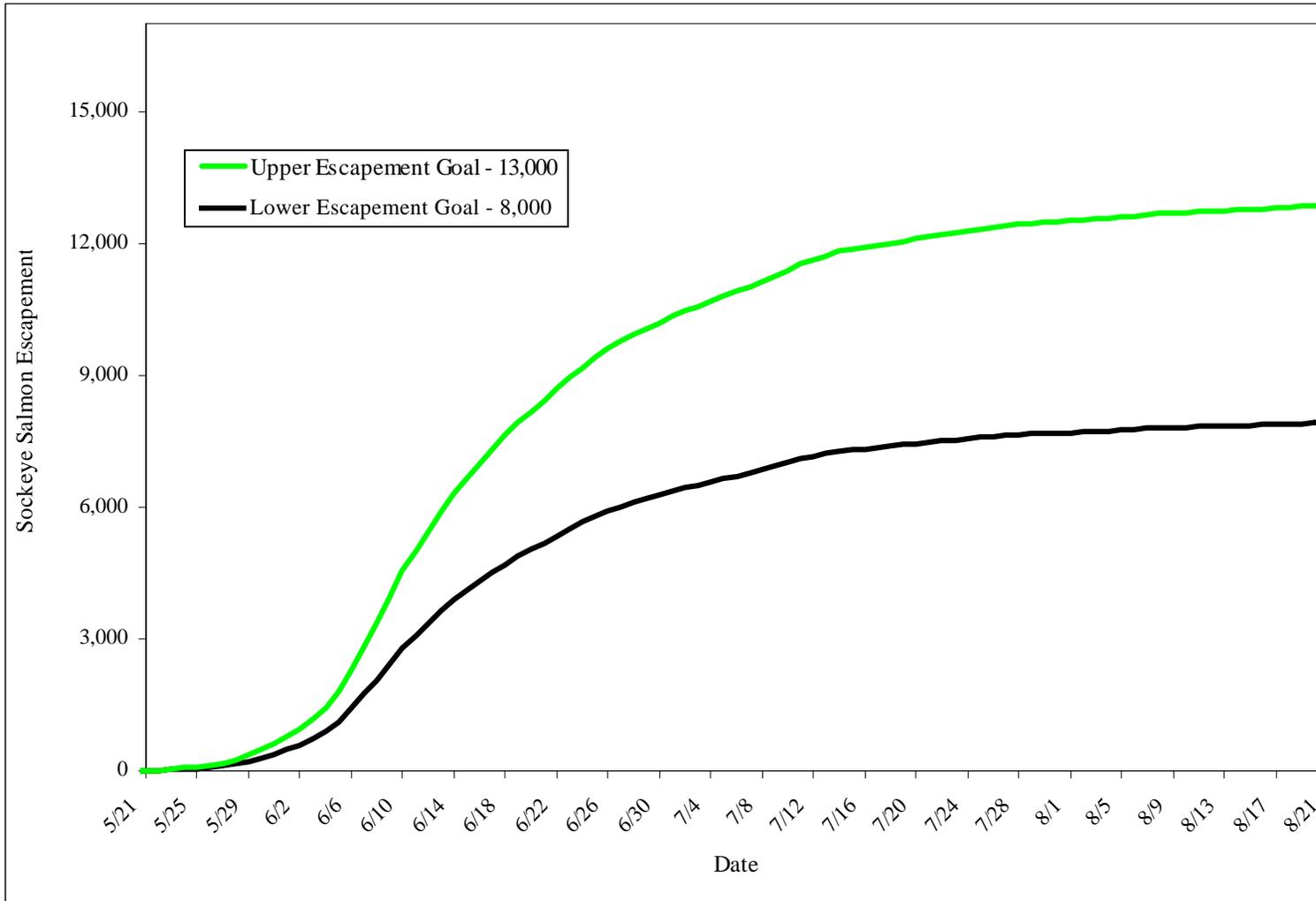
Note: These charts do not represent interim escapement goals.

Appendix A9.—Average run timing based on lower and upper escapement goals for sockeye salmon into the Litnik system.



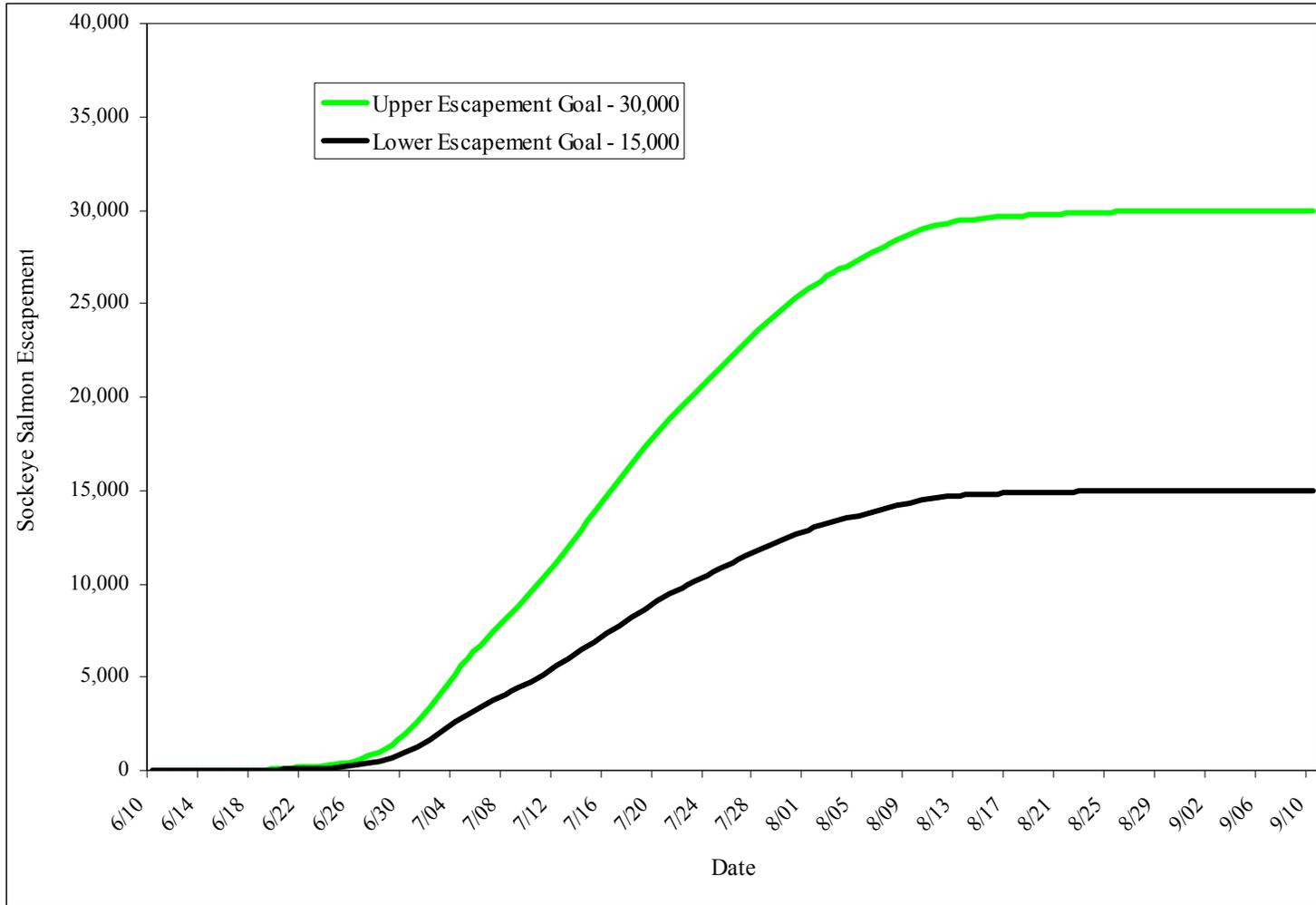
Note: These charts do not represent interim escapement goals.

Appendix A10.—Average run timing based on lower and upper escapement goals for sockeye salmon into the Buskin system.



Note: These charts do not represent interim escapement goals.

Appendix A11.—Average run timing based on lower and upper escapement goals for sockeye salmon into the SALTERY system.



Note: These charts do not represent interim escapement goals.