RC5 Report to the Alaska Board of Fisheries

DRAFT: Northern Southeast Outside Chum Salmon Stock Status and Action Plan, 2025

by

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December 2024

Alaska Department of Fish and Game **Divisions of Commercial Fisheries**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	′
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	″
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

REPORT TO THE ALASKA BOARD OF FISHERIES

DRAFT: NORTHERN SOUTHEAST OUTSIDE CHUM SALMON STOCK STATUS AND ACTION PLAN, 2025

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December 2024

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This document should be cited as follows:
Dupuis, A. W., T. M. Fish, A. M. Walloch, A. W. Piston, and T. A. Tydingco. 2024. DRAFT: Northern Southeast Outside Chum Salmon Stock Status and Action Plan, 2025. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, Douglas, Alaska.

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ABSTRACT

In response to guidelines established in the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222), the Alaska Department of Fish and Game recommended that the Northern Southeast Outside Subregion (NSEO) summer-run chum salmon (*Oncorhynchus keta*) stock be designated as a "stock of management concern." A "management concern" is defined as "a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of the sustainable escapement goal (SEG), biological escapement goal (BEG), optimal escapement goal (OEG), or other specified management objectives for the fishery." NSEO summer-run chum salmon escapements were below the lower bound of the current lower-bound sustainable escapement goal of 25,000 fish for 5 consecutive years, 2019–2024. NSEO summer-run chum salmon are harvested primarily in commercial net fisheries, along the outer coast of Baranof and Chichagof Islands. This action plan report provides stock assessment information and presents a plan for reducing the harvest of NSEO summer-run chum salmon in commercial, personal use, and sport fisheries.

Key words: chum salmon, *Oncorhynchus keta*, Northern Southeast Outside Subregion, lower-bound sustainable escapement goal, Southeast Alaska, stock of concern, sustainable salmon fisheries policy, Alaska Board of Fisheries, action plan

INTRODUCTION

The *Policy for Management of Sustainable Salmon Fisheries* (5 AAC 39.222) directs the Alaska Department of Fish and Game (department) to provide the Alaska Board of Fisheries (board) with reports on the status of salmon stocks and identify any salmon stocks that present a concern related to yield, management, or conservation during regularly scheduled board meetings. In October 2024, the department recommended that the board designate the Northern Southeast Outside Subregion (NSEO) summer-run chum salmon (*Oncorhynchus keta*) stock as a "stock of management concern" at the January 2025 regulatory meeting for the Southeast Alaska and Yakutat Management Area. This recommendation was based on guidelines established in the sustainable salmon fisheries policy, which describes a management concern as "a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds" of the established escapement goal whether it be a sustainable escapement goal (SEG), biological escapement goal (BEG), or optimal escapement goal (OEG), or other specified management objective. Chronic inability is further defined as the "continuing or anticipated inability to meet escapement thresholds over a 4 to 5-year period, which is approximately the generation time of most salmon species." NSEO summer-run salmon escapements were below the lower-bound SEG of 25,000 fish for the past 5 consecutive years, 2019–2024.

This action plan provides the department's assessment of NSEO summer-run chum salmon as a stock of management concern, summarizes historical assessments of annual run sizes, and describes the existing regulations and emergency order (EO) authority that the department follows to manage the run. The plan outlines potential management actions for commercial, sport, and subsistence fisheries, as well as ongoing research projects for this stock. Criteria that must be met for future removal of the stock of concern designation are also outlined. The action plan will be presented to the board and public as a draft for review at the 2025 Alaska Board of Fisheries meeting on Southeast and Yakutat Finfish and Shellfish. Immediately following the meeting, the department will produce a final report with descriptions of management measures and other recommendations from the board related to the NSEO summer-run chum salmon stock of concern. The final action plan will be published in the Alaska Department of Fish and Game Regional Informational Report series in 2025.

STOCK ASSESSMENT BACKGROUND

The NSEO includes primarily summer-run chum salmon index streams on the outside waters of Chichagof and Baranof Islands in northern Southeast Alaska. Peak escapement survey data were available for 9 index streams since 1982 (Figures 1 and 2). The current lower-bound SEG is 25,000 chum salmon counted on peak aerial and foot surveys to these 9 index streams, combined (Piston and Heinl 2014). Recent escapements fell below the current lower-bound SEG in 5 consecutive years from 2020 to 2024 (Figure 3). Total chum salmon harvests were relatively low in this subregion until the onset of hatchery runs in the early 1980s and greatly increased since the 1990s due to increased hatchery production (Figure 4).

ESCAPEMENT

NSEO summer-run chum salmon escapements are tracked with an index based on peak aerial and foot survey counts. Although uncertainty is inherent in chum salmon escapement indices due to the challenges of species identification, especially during aerial surveys, approximately 23% of chum salmon surveys in the NSEO were foot surveys since 1982, which provides additional confidence in the counts. The presence of a foot survey crew in the Sitka management area allows for consistent ground truthing of aerial survey estimates and the option to obtain peak counts on foot at many chum salmon index streams in this subregion. In addition, most of the chum salmon index streams in this subregion are surveyed multiple times throughout the season, which provides additional support to the conclusion that the low chum salmon escapement indices in recent years reflects a true decline in abundance. The annual peak survey counts provide an escapement index that is a relative measure of escapement, useful for year-to-year comparisons and tracking of trends over time. Escapement indices were below the lower-bound SEG of 25,000 index fish in the past 5 consecutive years, 2020–2024 (Figure 3; Appendix A1).

HATCHERY CHUM SALMON STRAYING

From 2008 to 2010 chum salmon otoliths were collected at wild stock index streams throughout Southeast Alaska to document the presence of hatchery strays (Piston and Heinl 2012a). Sample sizes greater than 50 fish were obtained from a total of 33 index streams, including 5 streams from the NSEO. Regionwide, the proportion of hatchery fish was greater than 5% in 21 of 33 index streams examined, and the highest proportions were found in streams located within 50 km of hatchery release sites. Significant year-to-year variation in the proportion of hatchery fish observed was documented in 4 of 9 streams that were repeatedly sampled. The overall proportion of hatchery strays in the NSEO was less than 2% in all 3 years of the study. From 2013 to 2015, another large-scale sampling effort was undertaken to determine the extent and annual variability of hatchery summer-run chum salmon straying in Southeast Alaska (Josephson et al 2021). This study also found low proportions of hatchery fish in the NSEO, and estimated proportions were less than 2% in all 3 years (Josephson et al. 2021).

In 2018 and 2019, large numbers of hatchery chum salmon from the first returns to the new Crawfish Inlet release site entered adjacent West Crawfish Inlet (Figure 1), where they overlap in run timing with and outnumber wild chum salmon (Piston and Heinl 2020). Additional sampling was conducted from 2018 through 2022 at West Crawfish NE Arm Head, West Crawfish North Arm NE, Whale Bay Great Arm Head, and Kalinin Cove (Piston and Fish 2024). High proportions of stray hatchery chum salmon were detected at the 2 streams sampled in West Crawfish Inlet (one non-index stream), as well as from a late August sample at Whale Bay Great Arm Head in 2019

(Piston and Fish 2024). The number of strays at the West Crawfish Inlet NE Arm Head index stream would have accounted for nearly the entire subregion escapement goal in 2019 (approximately 20,000 fish; Piston and Heinl 2020), and a substantial portion of the escapement goal in 2020 and 2021 (Piston and Fish 2024). Based on the high proportions and numbers of stray hatchery fish, the decision was made to remove West Crawfish Inlet NE Arm Head as an index stream from the NSEO.

HARVEST

Commercial Fisheries

Summer-run chum salmon in the NSEO are primarily caught in traditional purse seine fisheries (Figure 2), which are managed primarily on pink salmon abundance but occasionally, specific bays or inlets may be open to target summer-run chum salmon when there is an observed high abundance of summer-run chum salmon returning to a specific system (Thynes et al. 2021). Total chum salmon harvests in the NSEO were relatively low until the onset of hatchery runs in the early 1980s and greatly increased since the 1990s due to increased hatchery production (Piston and Fish 2024). An average of 78% of the total chum salmon harvest in this subregion (2014–2023) now occurs in terminal hatchery areas where the stock composition is almost entirely hatchery fish. Over the same time, an average of 642,000 chum salmon of mixed hatchery and wild origin were harvested outside of hatchery terminal areas, but the proportions of wild and hatchery fish in specific fisheries is unknown. The proportion of hatchery fish is likely very high in traditional fisheries near Sitka Sound and Crawfish Inlet, where hatchery release sites are located. From 1960 to 1980, an average of only 47,000 chum salmon were harvested per year in the NSEO. Harvest increased dramatically to an average of 2.3 million fish annually since the mid-1990s, when the hatchery program was fully implemented, which is further indication that most of the chum salmon harvested in this subregion are hatchery fish.

Subsistence Fishery

NSEO chum salmon are primarily harvested incidentally in subsistence fisheries targeting sockeye salmon. Less than 300 chum salmon were harvested in subsistence fisheries in the NSEO Subregion over the past 10 years, 2014–2023. Subsistence fishing is open all season, and the daily possession limit is 50 chum salmon per person with no annual limit (5 AAC 01.745[g][4]). Fishery participants are required to obtain an Alaska Department of Fish and Game (ADF&G) Subsistence and Personal Use Fishing permit prior to fishing, and to return their permit with a detailed daily harvest record, even if they did not fish. Since 2000, participants have been required to report harvest from the previous year before they are issued a new permit.

Sport Fisheries

Chum salmon are not a primary target of the sport fishery in NSEO but are intercepted and harvested in low numbers in marine salmon fisheries. The Alaska Statewide Sport Fish Harvest Survey is designed to estimate sport fishing effort and harvest by location (Smith et al. 2024). In the greater Sitka area, the 10-year average annual sport harvest of chum salmon is approximately 10 fish in freshwater and 2,400 fish in salt water (2014–2023; Alaska Sport Fishing Survey database [Intranet]. 1996–2023. Anchorage, AK: ADF&G, Division of Sport Fish (cited October 30, 2024; available from https://intra.dsf.dfg.alaska.local/swhs_est/). The contribution of wild NSEO summer-run chum salmon within the sport harvest is unknown, but likely accounts for a very small fraction of the total NSEO chum salmon harvest, due to the concentration of effort near

Sitka where harvests are likely primarily hatchery origin given proximity to a greater concentration of enhanced stocks compared to wild stocks.

ESCAPEMENT GOAL EVALUATION

The *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223), adopted by the board in 2001, established the formal process for setting escapement goals. The department is required to report on salmon stock status and escapement goals to the board on a regular basis, document and review existing salmon escapement goals, establish goals for stocks for which escapement can be reliably measured, and prepare scientific analyses with supporting data when goals are created, modified, or recommended for elimination.

ESCAPEMENT GOAL HISTORY

Sustainable escapement goals were initially established for Southeast Alaska chum salmon in 2009 (Eggers and Heinl 2008). The goals for aggregate summer-run stocks were based on survey data from the early 1980s to 2007. Lower-bound SEGs were established for summer-run chum salmon, rather than ranges, because summer-run fish are harvested in mixed stock commercial fisheries and their escapements cannot be managed to fall within a range. In 2014, the escapement goals for Southern Southeast Subregion and NSEO summer-run chum salmon were adjusted to account for the addition of new index streams to those stock groups (Piston and Heinl 2014).

Piston and Heinl (2017) reviewed all Southeast Alaska percentile-based chum salmon escapement goals with respect to recommendations of Clark et al. (2014) and incorporated escapement index data through 2016 in the analysis. Although Southeast Alaska chum salmon stocks would best fit the Tier 1 percentile range (20th–60th percentiles; Table 2), as there is high measurement error and high contrast (>8) in available escapement data, harvest rates on wild chum salmon are poorly known. Harvest rates, however, are assumed to be moderate and possibly exceed 0.40 in many cases, particularly for summer-run fish. As a result, Piston and Heinl (2017) recommend escapement goals for Southeast Alaska chum salmon be based on the 25th to 75th percentiles of historical escapement index counts—a precautionary approach recommended by Clark et al. (2014). Updated stock assessment information through 2016 resulted in no change to the NSEO summer-run chum salmon escapement goal. It was also recommended that Southeast Alaska percentile-based chum salmon escapement goals remain unchanged into the future until indices are modified or stock assessment improves to a point where more rigorous methods can be used to set goals (Piston and Heinl 2017; Heinl et al. 2017). Piston and Heinl (2020) did not modify escapement indices or goals in their review of chum salmon stock status and escapement goals through 2019.

Piston and Fish (2024) recalculated the escapement index with the removal of the West Crawfish NE Arm Head index stream (Figure 1), which was removed due to recent high proportions of stray hatchery fish from the nearby Crawfish Inlet release site in the escapement (yearly range = 59–80% since 2018). In addition, in all recent years, numbers of presumed hatchery fish ranging from 1,500 to 20,000 fish were observed milling at the mouth of the creek in August making standard index counts of wild chum salmon impossible to obtain. The revised lower-bound SEG of 19,500 chum salmon counted on peak surveys to the 8 index streams in the subregion was based on the 25th percentile of the escapement index from 1982 to 2016, which was recommended as a baseline for summer-run chum salmon in this subregion (Piston and Heinl 2017), and to avoid simply lowering the goal during a period of poor escapements.

ESCAPEMENT GOAL FINDING

The department has reviewed salmon escapement goals prior to the 2025 Southeast and Yakutat board meeting and has modified the NSEO summer-run chum salmon escapement goal from 25,000 fish counted at peak surveys to 9 index streams, to a goal of 19,500 fish counted at a revised 8 index streams following the removal of West Crawfish NE Arm Head from the escapement index due to high proportions and numbers of stray hatchery chum salmon from the nearby Crawfish Inlet release site (Piston and Fish 2024). Escapements were below the revised escapement goal in 4 of the past 5 years (Figure 5).

STOCK OF CONCERN RECOMMENDATION

NSEO summer-run chum salmon escapements were below the current lower-bound SEG of 25,000 fish in 5 consecutive years from 2020 through 2024 (Table 1). The stock was also below the revised lower-bound SEG of 19,500, that was based on the modified escapement index, in 4 of the past 5 years. As a result, in October 2024, the department recommended the board designate the NSEO summer-run chum salmon run as a stock of management concern.

OUTLOOK

No forecasts are made for NSEO summer-run chum salmon. Habitat in the region is largely pristine and the strength of future returns will likely be driven by environmental conditions and the impact that has on freshwater and marine survival.

HABITAT ASSESSMENT

The streams of the NSEO flow into bays and inlets that open directly into the Pacific Ocean. Eight of the 9 current index streams are located in designated Wilderness Areas: South Baranof Wilderness and West Chichagof-Yakobi Wilderness. The habitat is considered pristine and there are no habitat related concerns identified for this stock.

FISHERY MANAGEMENT OVERVIEW AND BACKGROUND

COMMERCIAL FISHERIES

All commercial salmon fisheries conducted in the NSEO (District 113) harvest mixed stocks of salmon, except in the most terminal harvest locations. Chum salmon are harvested by purse seine, troll, and gillnet fisheries that occur in this area. However, the gillnet fishery is restricted to the boundaries of the Deep Inlet Terminal Harvest Area (THA).

In general, pink salmon run timing to the NSEO is later than summer-run chum salmon. Peak chum salmon survey counts typically occur from late July to mid-August. By early August, a substantial proportion of most summer-run chum salmon runs are either in the creeks or staged near the mouth of creeks inside regulatory closed waters. Pink salmon peak counts typically occur in late August or early September and there are often still large numbers of fish counted in the mouth and intertidal stream sections at that time. The difference in run timing between summer-run chum salmon and pink salmon in the NSEO helps ensure that a portion of the chum salmon run is subject to little harvest pressure.

Purse Seine Fisheries

Regulations allow commercial purse seine fishing in northern Southeast Alaska in District 113 along the outer coasts of Baranof and Chichagof Islands (Sections 13-A and 13-B). Salmon returning to these areas enter directly from the ocean and do not pass through major inside migration corridors (i.e., Icy Strait and Chatham Strait). Purse seine fishing is also allowed in the Deep Inlet THA and Crawfish Inlet THA. Although the areas specified above are designated purse seine fishing areas, specific open areas and fishing times are established in season by EO.

Commercial purse seine fisheries in the NSEO are managed primarily to harvest pink salmon, but occasionally, specific bays or inlets may be opened to target summer-run chum salmon when there is an observed high abundance of summer-run chum salmon returning to a specific system (Thynes et al. 2021). Inseason management of the purse seine fishery is based on assessments of pink salmon escapement levels, harvest levels, and fishing effort. From 2005–2024, pink salmon accounted for 89% (3.4 million fish) of the annual average salmon harvest in traditional commercial purse seine fisheries in NSEO waters (Sections 13-A and 13-B), followed by chum salmon at 10% (0.4 million fish), sockeye salmon at <1% (17,000 fish), and coho salmon (*O. kisutch*) at <1% (10,000 fish).

The difference in run timing between pink and summer-run chum salmon and the inter-annual variability in pink salmon abundance results in many of the time and area restrictions placed on the directed pink salmon fishery providing significant protection to summer-run chum salmon. For example, commercial purse seine fisheries targeting pink salmon in southern District 113, south of Sitka Sound, are rarely opened before August; due to poor pink salmon production in this area Whale Bay has not been opened since 2021 and West Crawfish Inlet was not opened for pink salmon fishing from 2018 to 2023. North of Sitka Sound, commercial purse seine openings often begin in mid-July, especially in years of high pink salmon abundance. Whereas these pink salmon fisheries can start in mid-July, generally these openings are structured with limited time and area until the pink salmon run fully develops in August. The early season area restrictions limit fishing to the outer portions of bays and inlets far from where chum salmon index streams are located.

Purse seine openings along the outer coast of District 113 are typically more terminal, focused in individual bays and inlets rather than along migration corridors. This management approach allows for targeted actions to increase escapements at poorly performing summer-run chum salmon streams and minimizing potential impacts to pink salmon fisheries. Harvest rates on wild chum salmon in the NSEO Subregion likely vary widely among streams, with some receiving little or no harvest pressure and others receiving more harvest pressure depending on local wild pink and chum salmon runs and associated openings. Broad management actions to reduce summer-run chum salmon harvests are likely to have more impact on summer-run chum salmon index streams in northern District 113 than in the southern portion of District 113. This is largely due to the relatively low abundance of pink salmon found in fishery areas south of Sitka Sound and resultant few fishing opportunities.

DRIFT GILLNET FISHERIES

There are no traditional drift gillnet fisheries in the NSEO. Drift gillnetting in District 113 is confined to the Deep Inlet THA by regulation.

TROLL FISHERIES

The commercial troll fishery in NSEO is managed according to regulations promulgated by the Alaska Board of Fisheries (BOF), the North Pacific Fishery Management Council, the National Marine Fisheries Service, and the U.S./Canada Pacific Salmon Commission. Specified fishery openings located in the waters of NSEO along the outer coast of Baranof and Chichagof Islands (Sections 13-A and 13-B) are provided for within winter, spring, and summer troll fishery management plans.

The troll fishery primarily targets king salmon during the winter and spring seasons, October 11 through April 30 and May 1 through June 30, although current spring troll fisheries in Cross Sound, Icy Strait, Homeshore, Northern Chatham Strait, and Keku Strait are managed to target early run hatchery-produced chum salmon under provisions of the District 9, 10, 12, and 14 Enhanced Chum Salmon Troll Fisheries Management Plan. However, under the king salmon action plans and supplementary actions for conservation of Southeast Alaska and Transboundary River (TBR) king salmon stocks, initial hatchery chum salmon fishery openings have been delayed until June 15 since 2018.

Historically, chum salmon were harvested incidentally in the summer troll fishery and no directed fisheries occurred until the District 114 Cross Sound pink and chum salmon fishery opened from 1988–2008 as an indicator of pink and chum salmon abundance for inside waters. During the summer season, July 1 through September 20, trollers mainly target coho salmon, with typically short king salmon retention periods occurring in early July and mid-August. Within the traditional troll fisheries in waters of District 113, chum salmon are primarily harvested incidentally. However, directed fisheries that target hatchery-produced chum salmon in the NSEO do occur but are prosecuted in the more terminal waters of Sitka Sound and West Crawfish Inlet, and within the Deep Inlet and Crawfish Inlet THAs. Since 2018, when directed fisheries in West Crawfish Inlet and the Crawfish Inlet THA began, on average, the Sitka Sound/Deep Inlet and the West/Crawfish Inlet fisheries have occurred during statistical weeks 31–37 (Aug 1–Sept 14). These NSEO directed chum salmon fishery locations are immediately adjacent to hatchery release sites operated by the Northern Southeast Aquaculture Association.

SPORT FISHERIES

The regionwide bag limit for chum salmon over 16 inches is 6 fish, 12 in possession.

PAST COMMERCIAL FISHERY MANAGEMENT MEASURES

No management actions were taken specifically to limit harvest of NSEO summer-run salmon in the commercial fisheries until 2024. Prior to this, restrictive actions taken during the directed pink salmon fishery have benefited chum salmon in this subregion and were believed to be sufficient. For fishery areas north of Sitka Sound past management actions include delaying openings, reducing the duration of openings (e.g., allowing only one 15-hour fishing period per week), and restricting area to prevent fishing near terminal areas. For fishery areas south of Sitka Sound there have been no purse seine openings in Whale Bay from 2022–2024 and West Crawfish Inlet was not opened to directed pink salmon fisheries from 2018–2023. It should be noted that when West Crawfish Inlet was opened to target pink salmon in 2024, area restrictions were in place to prevent fishing near the chum salmon index stream and openings only occurred after the majority of the wild summer-run chum salmon had entered the stream as indicated by foot and aerial surveys.

As needed hatchery cost-recovery and common property purse seine openings are used in West Crawfish Inlet to help mitigate straying of hatchery-produced chum salmon into the streams of West Crawfish Inlet. These fisheries typically occur after the peak of the wild summer-run chum salmon enter the West Crawfish head stream. Boundaries for the both the hatchery cost-recovery and common property purse seine fisheries are intended to conserve the tail end of the wild summer-run chum salmon and wild pink salmon runs returning to West Crawfish Inlet.

In 2024, the department restricted time in the Khaz Bay and Portlock Harbor pink salmon fisheries through statistical week 32 and area restrictions specifically aimed at protecting NSEO summer-run chum salmon in these areas remained in place through statistical week 34. No management actions have been taken in the summer troll fishery and in hatchery THA fisheries in the NSEO.

PAST SPORT FISHERY MANAGEMENT MEASURES

No management actions have been taken to limit harvest of NSEO summer-run salmon in the sport fishery.

PAST SUBSISTENCE FISHERY MANAGEMENT MEASURES

No management actions have been taken to limit harvest of NSEO summer-run chum salmon in the subsistence fishery.

MANAGEMENT ACTION PLAN OPTIONS FOR ADDRESSING STOCK OF CONCERN

ACTION PLAN GOAL

The action plan goal is to rebuild the NSEO summer chum salmon run to levels that consistently achieve the lower-bound SEG. The plan includes measures to reduce commercial harvests of wild NSEO summer-run chum salmon in the commercial purse seine fisheries in closest proximity to chum salmon index streams and during the time wild chum salmon are most prevalent in those fisheries. The plan provides flexibility with respect to information (e.g., harvest distribution and timing) used in managing fisheries to conserve NSEO summer-run chum salmon.

ACTION PLAN ALTERNATIVES

Action #1: Commercial Fisheries

Objective: Reduce commercial harvest of wild NSEO summer-run chum salmon.

Option A. Status quo.

Specific Action to Implement the Objective: Use EO authority to manage commercial fisheries based on overall salmon abundance. Management actions to reduce harvest of NSEO summer-run chum salmon would be implemented during statistical weeks 27–34 in the District 113 purse seine fishery and could include time and area restrictions. Specific actions will depend on inseason assessments of the run strength of summer-run chum salmon returning to individual NSEO index streams, general observations of chum and pink salmon abundance and harvests and expected or realized levels of fishing effort. The reason for maintaining this flexibility is due to the wide geographic distribution and the coastal nature (i.e., salmon do not travel through extensive corridors to reach natal streams) of index streams within the NSEO (Figure 1). For example, management actions taken to protect chum salmon in Khaz Bay or Portlock Harbor would not

benefit chum salmon returning to Whale Bay. If restrictions were applied to all areas without regard to local observations of summer-run chum salmon abundance, directed pink salmon fisheries could be unnecessarily restricted in some areas.

Actions would be focused on chum salmon streams in Khaz Bay/Slocum Arm/Anna and Sisters Lakes, Portlock Harbor, Salisbury Sound, and purse seine areas south of Sitka. Restrictions would not be implemented in the Sitka Sound area due to the high number of hatchery-produced chum salmon in the area and the absence of NSEO summer-run chum salmon index streams.

As needed hatchery cost-recovery and common property purse seine openings would continue in West Crawfish Inlet to help mitigate straying of hatchery-produced chum salmon. Boundaries for these fisheries would be chosen to conserve the wild summer-run chum salmon returning to West Crawfish Inlet.

Benefits: This option would allow commercial net fisheries to be managed based on historical fishing patterns for pink salmon and would provide the department with the flexibility to maintain fishing opportunity if the NSEO summer chum salmon run is strong or rebuilds prior to the next board meeting. As a result, there may be less economic loss than with management actions that are set regardless of inseason summer-run chum salmon abundance.

Detriments: If high commercial harvest rates on NSEO summer-run chum salmon are the major factor contributing to recent poor escapements, escapements may not improve if prescriptive management measures are not implemented.

Action #2: Subsistence Fishery

Objective: Maintain subsistence opportunity in the Northern Southeast Outside Subregion.

Option A. Status quo.

Specific Action to Implement the Objective: N/A

Benefits: This option would allow the minimal subsistence harvest of chum salmon to continue.

Detriments: None

Action #3: Sport Fishery

Objective: Reduce sport harvest of NSEO summer-run salmon.

Option A. Status quo

Specific Action to Implement the Objective: No restrictions are being considered at this time because sport chum salmon harvest is very low; however, the department could use EO authority to reduce sport harvest of NSEO summer-run chum salmon by implementing restrictions or closures in season in specific areas as needed.

Benefits: This option would provide the department with the flexibility to maintain sport fishing opportunity and restrict as necessary.

Detriments: Restrictions will likely not decrease harvest of NSEO summer-run chum salmon by any measurable amount because the sport harvest is already very low.

Action #4: Crawfish Inlet Hatchery Releases

Objective: Reduce straying of hatchery-produced chum salmon and incidental harvest of wild summer-run chum salmon.

Option A. Status quo.

Specific Action to Implement the Objective: There would be no changes to permitted hatchery releases of chum salmon fry at the Crawfish Inlet release site. The department would continue to rely on as needed hatchery cost-recovery harvest and purse seine harvest to mitigate chum salmon straying to streams in West Crawfish Inlet. Commercial fisheries would follow the recommendations described in Action #1.

Benefits: There would be minimal disruptions to current common property and hatchery cost-recovery fisheries in West Crawfish Inlet and Crawfish Inlet.

Detriments: Current levels of hatchery straying and incidental harvest of wild summer-run chum salmon would be continued.

Option B. Reduce the permitted maximum release of chum salmon at the Crawfish Inlet release site.

Specific Action to Implement the Objective: Commissioner reduces the maximum permitted chum salmon fry released. Commercial fisheries would follow the recommendations described in Action #1.

Benefits: By reducing the number of chum salmon released at Crawfish Inlet, the return from each brood year would be reduced. However, due to fluctuations in marine survival, the exact reduction in fish returning in a given year would be unknown. Although reduced, existing common property fisheries would continue to have opportunity to harvest hatchery-produced chum salmon near the Crawfish Inlet release site. Incidental harvest of wild summer-run chum salmon may be reduced by an unknown extent.

Detriments: Hatchery-produced chum salmon would continue to stray into the streams of West Crawfish Inlet. Hatchery cost-recovery and common property purse seine fisheries would continue to be needed to mitigate straying of hatchery-produced chum salmon. Although the harvest rate may be reduced, the fisheries targeting hatchery-produced chum salmon in West Crawfish Inlet would continue to incidentally harvest summer-run chum salmon. Hatchery-produced chum salmon returning to Crawfish Inlet provides opportunity for common property purse seine and troll fisheries in some years. The reduction of hatchery-produced chum salmon in this area would reduce the exvessel value of the purse seine and troll fisheries by an unknown amount. This exvessel value reduction will have implications related to the *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* (5 AAC 33.364), as the purse seine fleet is within their allocation range and the troll fleet is below their allocation range. Additionally, since 2018, NSRAA has relied on the Crawfish Inlet release site to conduct cost-recovery operations. If chum production at this site ceases, NSRAA would likely shift cost-recovery operations to other release sites located throughout northern Southeast Alaska, reducing opportunity for common property harvest at those sites.

Option C. Prohibit the release of chum salmon fry at the Crawfish Inlet Release site.

Specific Action to Implement the Objective: Commissioner prohibits the release of chum salmon fry in Crawfish Inlet. Commercial fisheries would follow the recommendations described in Action #1.

Benefits: By ending chum salmon releases at Crawfish Inlet, the risk of hatchery-produced chum salmon straying into the streams of West Crawfish Inlet would be reduced to levels observed prior to when hatchery-produced chum salmon began returning to Crawfish Inlet. The incidental harvest of summer-run chum salmon in the fisheries that targeted hatchery-produced chum salmon in Crawfish Inlet would be eliminated. The West Crawfish chum salmon index stream could be used again to give an indication of wild chum salmon runs in the area.

Detriments: Hatchery-produced chum salmon returning to Crawfish Inlet provides opportunity for common property purse seine and troll fisheries in some years. The elimination of hatchery-produced chum salmon in this area would reduce the exvessel value of the purse seine and troll fisheries by an unknown amount. This exvessel value reduction will have implications relative to the *Southeastern Alaska Area Enhanced Salmon Allocation Management Plan* (5 AAC 33.364), as the purse seine fleet is within their allocation range and the troll fleet is below their allocation range. Additionally, since 2018, NSRAA has relied on the Crawfish Inlet release site to conduct cost-recovery operations. If chum production at this site ceases, NSRAA would likely shift cost-recovery operations to other release sites located throughout northern Southeast Alaska, reducing opportunity for common property harvest at those sites.

CONDITIONS FOR REDUCING MANAGEMENT RESTRICTIONS OR DELISTING STOCK OF CONCERN

1) If the revised lower-bound SEG is met or exceeded in 3 consecutive years or is met in 4 out of 6 consecutive years, the department may recommend removing the stock of concern designation for NSEO summer-run chum salmon at the first Southeast and Yakutat board meeting after this condition is met.
2) Management measures could be relaxed in specific areas or during specific time periods if updated escapement data indicate areas and/or times where and/or when restrictions are no longer needed to ensure the lower-bound SEG is met.
3) In the event the revised lower-bound SEG is exceeded by more than 4,000 fish (approximately 20%) in 2 consecutive years, management restrictions may be relaxed or set aside.

Stock status, action plan performance (including distribution and timing in commercial fisheries), and escapement goal review will be updated in a report to the board at the 2028 Southeast and Yakutat meeting.

2025 ALASKA BOARD OF FISHERIES REGULATORY PROPOSALS AFFECTING NSEO SUMMER-RUN CHUM SALMON

The following proposals before the board at the 2025 Southeast and Yakutat BOF meeting potentially affect commercial fisheries in which NSEO summer-run chum salmon are harvested.

- Proposal 156: Reduce permitted capacity of pink and chum salmon in Southeast Alaska by 25%.
- Proposal 167: Increase the legal length of purse seine by 50 fathoms.

RESEARCH PLAN

PREVIOUS RESEARCH PROJECTS

- Hatchery chum salmon straying studies — From 2008 through 2015, studies were conducted to evaluate the distribution and proportions of hatchery chum salmon in wild stock streams in Southeast Alaska (Piston and Heinl 2012a; Piston and Heinl 2012b; Josephson et al. 2021). Results from these studies, conducted prior to the first returns from the Crawfish Inlet release site, showed very low proportions of stray hatchery chum salmon in NSEO index streams. Additional sampling conducted since 2018 has shown high proportions and numbers of stray hatchery fish in West Crawfish Inlet wild stock systems in multiple years (Piston and Fish 2024).

CURRENT RESEARCH PROJECTS

- Escapement surveys — Aerial and foot surveys are conducted annually at chum salmon index streams throughout the summer. The presence of a foot survey crew in the Sitka management area allows for consistent ground truthing of aerial survey estimates and the option to obtain peak counts on foot at many chum salmon index streams in this subregion. In addition, chum salmon index streams in this subregion are surveyed multiple times throughout the season, which improves confidence that the escapement index is tracking trends in wild chum salmon abundance.

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TABLES

Table 1.–Peak escapement index series for 9 Northern Southeast Outside Subregion summer-run chum salmon index streams, 1982–2023.

District	113	113	113	113	113
Management area	Sitka	Sitka	Sitka	Sitka	Sitka
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	NSE Outside
Survey type	Aerial	Aerial or foot	Aerial or foot	Aerial or foot	Aerial or foot
Run type	Summer	Summer	Summer	Summer	Summer
Stream no.	113-22-015	113-62-009	113-73-006	113-73-010	113-73-012
Stream name	Whale Bay Great Arm Head	Kalinin Cove Head	Waterfall Cove Creek	Slocum Arm Head	Khaz Creek
1982	3,900	1,200	**384**	500	1,000
1983	2,500	**1,271**	**741**	**1,587**	**966**
1984	1,500	4,000	1,000	6,000	3,000
1985	2,000	12,000	500	5,000	6,000
1986	5,500	2,550	1,000	3,000	3,200
1987	4,000	4,000	**729**	2,000	1,300
1988	6,500	1,000	4,200	4,000	1,000
1989	1,300	60	**518**	**1,108**	500
1990	4,000	**1,777**	2,000	1,000	2,000
1991	**8,809**	6,000	**1,473**	**3,152**	1,500
1992	4,000	**1,800**	5,000	**2,247**	2,000
1993	**3,677**	**1,054**	500	**1,316**	1,500
1994	3,400	**910**	1,000	**1,136**	600
1995	7,550	685	1,000	3,000	4,000
1996	4,200	800	150	6,000	700
1997	7,000	1,604	3,000	1,000	1,500
1998	1,300	1,600	1,310	1,775	1,135
1999	5,000	250	438	1,000	500
2000	27,000	1,088	1,000	3,900	2,000
2001	18,300	1,270	1,100	4,000	1,000
2002	1,000	968	590	2,000	808
2003	12,800	1,510	4,000	1,680	3,500
2004	11,800	233	1,130	2,000	3,000
2005	23,800	1,110	740	2,360	910
2006	24,000	**3,326**	780	5,000	182
2007	8,340	1,630	520	4,865	930
2008	4,200	5,140	550	3,400	730
2009	3,000	2,000	215	275	57
2010	2,420	580	1,000	**1,733**	281
2011	8,550	1,190	210	500	230

-continued-

Table 1.–Page 2 of 4.

District	113	113	113	113	113
Management area	Sitka	Sitka	Sitka	Sitka	Sitka
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	NSE Outside
Survey type	Aerial	Aerial or foot	Aerial or foot	Aerial or foot	Aerial or foot
Run type	Summer	Summer	Summer	Summer	Summer
Stream no.	113-22-015	113-62-009	113-73-006	113-73-010	113-73-012
Stream name	Whale Bay Great Arm Head	Kalinin Cove Head	Waterfall Cove Creek	Slocum Arm Head	Khaz Creek
2012	3,700	**1,907**	850	4,000	3,000
2013	2,230	1,000	990	1,800	900
2014	1,510	1,500	1,000	2,090	1,265
2015	6,730	1,250	**783**	1,250	1,200
2016	1,200	180	3,000	360	2,480
2017	4,200	100	430	1,290	2,150
2018	3,300	1,570	210	2,480	1,100
2019	7,100	5,000	1,000	3,090	1,000
2020	1,800	200	1,500	**1,031**	**656**
2021	1,300	682	500	655	85
2022	4,200	851	240	2,330	400
2023	505	900	291	544	200

-continued-

Table 1.–Page 3 of 4.

District	113	113	113	113	
Management area	Sitka	Sitka	Sitka	Sitka	
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	Northern
Survey type	Aerial	Aerial	Foot	Aerial	Southeast
Run type	Summer	Summer	Summer	Summer	Outside
Stream no.	113-32-005	113-72-005	113-73-003	113-81-011	Subregion
Stream name	W Crawfish NE Arm Head	Sister Lake SE Head	Lake Stream Ford Arm	Black River	index total
1982	1,933	3,000	**645**	500	13,062
1983	1,224	**4,911**	2,000	10,000	25,200
1984	30,000	25,000	1,000	17,000	88,500
1985	2,500	11,000	450	15,000	54,450
1986	18,000	3,500	400	3,000	40,150
1987	4,100	3,000	651	5,000	24,780
1988	3,500	5,000	1,033	3,000	29,233
1989	500	4,000	1,610	8,000	17,595
1990	3,000	18,000	959	2,500	35,236
1991	**9,678**	17,000	1,456	1,000	50,069
1992	1,000	18,000	1,140	500	35,687
1993	2,000	5,000	1,559	**4,291**	20,897
1994	3,000	4,000	3,000	1,000	18,046
1995	5,000	4,450	1,416	300	27,401
1996	10,500	12,650	1,271	1,000	37,271
1997	6,000	10,000	2,955	10,000	43,059
1998	7,000	5,750	2,631	2,400	24,901
1999	7,800	1,200	1,697	9,000	26,885
2000	33,000	4,041	844	31,000	103,873
2001	9,177	1,910	5,900	23,000	65,657
2002	3,450	6,550	1,927	6,000	23,293
2003	2,300	2,000	1,770	6,000	35,560
2004	6,000	22,300	1,560	37,150	85,173
2005	32,370	11,270	540	8,700	81,800
2006	8,680	8,000	4,055	11,920	65,943
2007	12,300	6,530	1,280	5,602	41,997
2008	4,300	14,900	8,475	14,500	56,195
2009	3,500	3,000	820	4,200	17,067
2010	8,170	5,240	595	7,500	27,519
2011	4,350	3,000	1,730	5,000	24,760

-continued-

Table 1.–Page 4 of 4.

District	113	113	113	113	
Management area	Sitka	Sitka	Sitka	Sitka	
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	Northern
Survey type	Aerial	Aerial	Foot	Aerial	Southeast
Run type	Summer	Summer	Summer	Summer	Outside
Stream no.	113-32-005	113-72-005	113-73-003	113-81-011	Subregion
Stream name	W Crawfish NE Arm Head	Sister Lake SE Head	Lake Stream Ford Arm	Black River	index total
2012	2,900	5,050	7,800	8,600	37,807
2013	4,200	8,300	1,320	2,070	22,810
2014	3,065	8,125	570	8,425	27,550
2015	6,970	4,090	**1,286**	2,725	26,285
2016	500	5,570	1,010	11,650	25,950
2017	1,310	3,470	2,230	9,600	24,780
2018	1,800	3,570	830	4,500	19,360
2019	300	270	410	7,300	25,470
2020	2,000	**3,138**	**786**	5,000	16,112
2021	610	**2,262**	120	5,400	11,614
2022	3,370	1,224	865	4,500	17,980
2023	438	1,320	1,450	9,000	14,648
				Median =	27,143
				Minimum =	11,614
				Maximum =	103,873
				Contrast =	8.9

Note: bold values were interpolated.

Table 2.–Northern Southeast Outside Subregion chum salmon harvest (state managed purse seine fisheries in District 113) by subdistrict, 2004–2024).

	Year						
Subdistrict	2004	2005	2006	2007	2008	2009	2010
113-13	2	–	2	–	3	–	6
113-22	41,412	523	22,106	4,527		–	–
113-32	49,935	10,773	47,425	13,778	1,926	–	–
113-35	–	–	2,220	–	–	–	–
113-38	–	–	–	–	–	–	–
113-40	96,316	74,742	57,265	55,088	77,720	12,496	47,941
113-41	394,298	153,561	174,909	2,502	45,653	54,872	156,008
113-42	–	1,236	1,512	202	3,430	–	1,571
113-43	–	625	7,176	550	6,207	–	24,235
113-44	15,585	6,906	7,262	3,574	21,165	–	7,804
113-61	–	–	–	–	–	–	–
113-62	31,892	54,184	26,334	71,784	3,440	8,478	1,462
113-63	–	2,166	–	1,174	–	129	–
113-64	–	–	357	–	–	–	–
113-65	–	–	972	–	–	–	–
113-66	1,542	594	1,046	1,396	–	322	–
113-71		282	1,247	1,184	–	–	–
113-72	325	2,280	5,527	7,048	3,088	1,803	19,687
113-73	28,897	13,384	59,161	28,016	27,431	6,501	81,333
113-81	5,889	–	–	5,551	–	–	8,204
113-95	–	4,923	2,660	14,045	2,298	8,138	522
113-96	–	–	–	–	–	–	2,331
113-97	–	405		715		507	2,178
113 Harvest	**666,093**	**326,584**	**417,181**	**211,134**	**192,361**	**93,246**	**353,282**

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Table 2.–Page 2 of 3.

Subdistrict	Year						
	2011	2012	2013	2014	2015	2016	2017
113-13	–	300	357	–	–	–	51
113-22	–	-	367	–	827	–	–
113-32	372	3,124	20,081	9,976	6,737		27,503
113-35	–	–	18,332	–	–	–	–
113-38	–	950	–	–	–	–	–
113-40	53,963	17,529	55,955	46,997	59,047	13,026	252,477
113-41	59,700	47,316	509,406	44,364	62,848	38,368	602
113-42	375	1,142	–	–	218	–	–
113-43	2,015	2,352	1,880	–	482	48	–
113-44	3,275	8,735	8,024	–	451	2,998	1,676
113-61	–	–	205	–	–	–	–
113-62	21,113	6,118	73,453	9,470	25,334	3,124	42,599
113-63	662	–	883	–	126	–	1,146
113-64	–	–	–	–	–	–	–
113-65	–	–	573	–	–	–	67
113-66	–	–	–	–	–	–	621
113-71	877	597	2,303	2,196	11,333	5,823	3,333
113-72	8,277	4,479	3,566	6,118	525	2,701	2,098
113-73	23,061	38,543	61,887	30,805	29,855	27,957	41,409
113-81	3,237	1,565	22,470	8,834	33,101	21,890	39,342
113-95	18,573	945	92,638	–	40,418	488	53,244
113-96	52	–	2,400	38	4,681	–	–
113-97	21	944	3,768	61	3,009	–	371
113 Harvest	**195,573**	**134,639**	**878,548**	**158,859**	**278,992**	**116,423**	**466,539**

-continued-

Table 2.–Page 3 of 3.

Subdistrict	Year						
	2018	2019	2020	2021	2022	2023	2024
113-13	–	–	–	–	–	–	–
113-22	181	66,301	631	–	–	–	–
113-32	44,296	706,771	413,049	94,222		415,861	306,114
113-35	–	–	–	25,174	–	–	–
113-38	–	–	–	–	1	–	–
113-40	32,916	–	2,351	–	11,494	10,090	124,913
113-41	103,526	219,332	42,935	288	112,033	133,926	518,432
113-42	–	–	–	–	–	–	155
113-43	263	–	–	–	–	–	2,041
113-44	301	–	1,003	–	–	650	6,511
113-61	–	–	–	–	–	–	–
113-62	15,858	27,841	3,260	5,149	5,104	14,875	–
113-63	–	–	–	–	–	–	–
113-64	–	–	–	–	–	–	–
113-65	–	–	–	–	–	–	–
113-66	–	–	–	–	–	–	–
113-71	5,344	7,602	85	1,134	4,570	380	478
113-72	2,266	1,642	–	–	–	–	–
113-73	27,643	33,928	4,077	6,836	10,747	14,713	10,631
113-81	8,912	9,808	85	2,642	–	4,032	125
113-95	–	24,322	190	2,272	–	10,426	250
113-96	–	–	–	–	–	–	535
113-97	–	379	–	–	–	626	6,301
113 Harvest	**241,506**	**1,097,926**	**467,666**	**137,717**	**143,949**	**605,579**	**976,486**

FIGURES

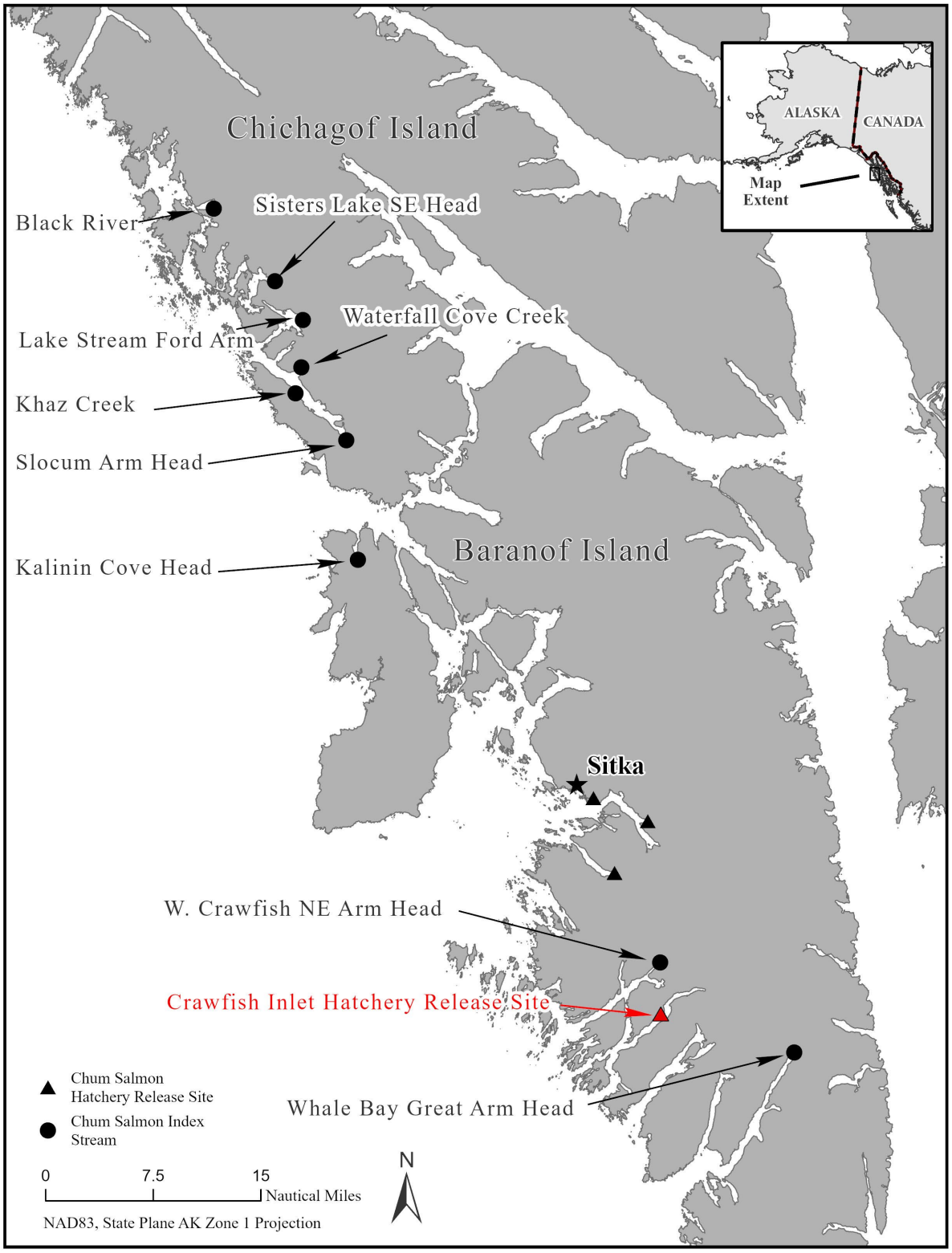

Figure 1.–Northern Southeast Outside Subregion chum salmon index streams and hatchery chum salmon release sites in Southeast Alaska.

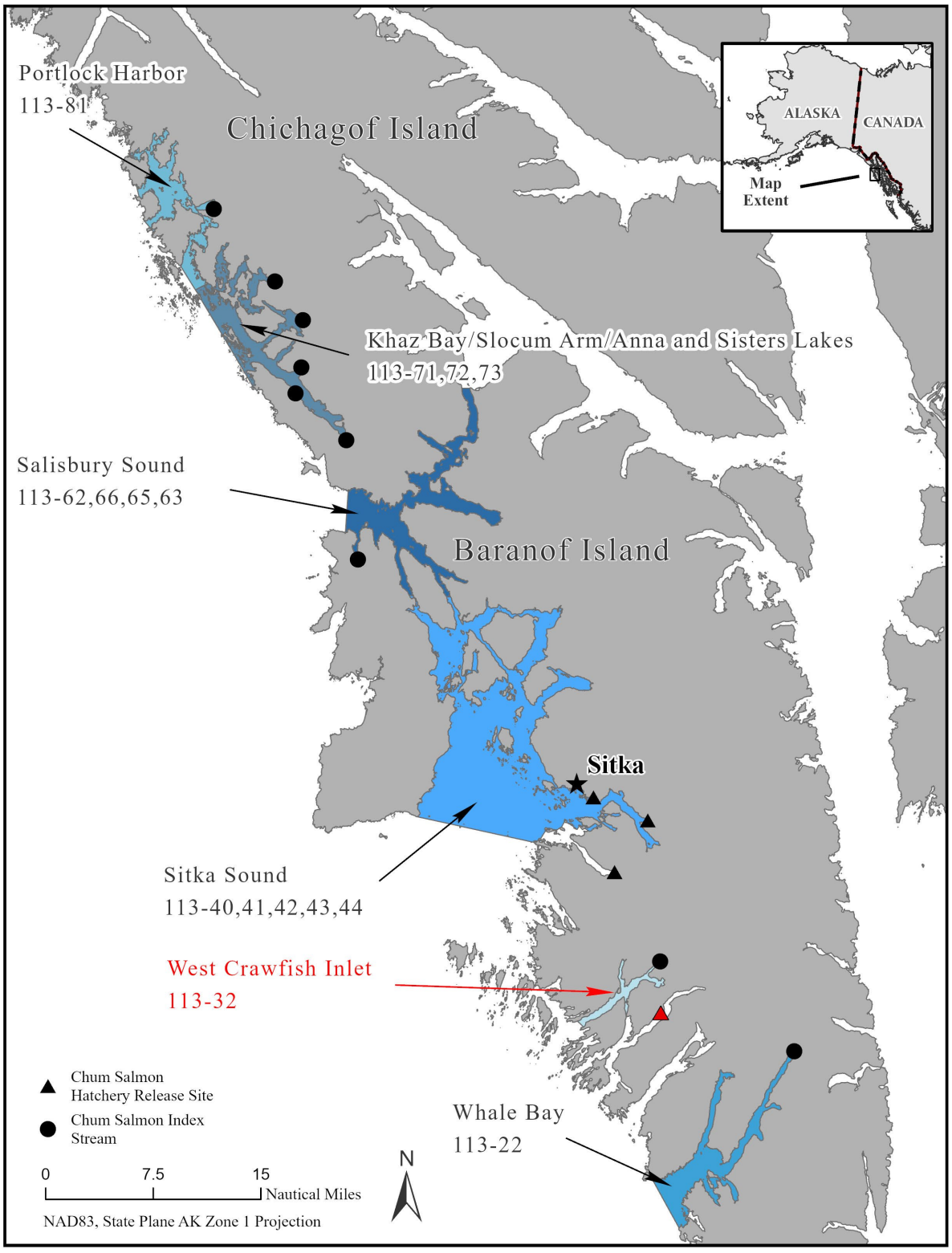

Figure 2.–Northern Southeast Outside Subregion chum salmon index streams, hatchery chum salmon release sites, and traditional pink salmon purse seine fishing areas in Southeast Alaska.

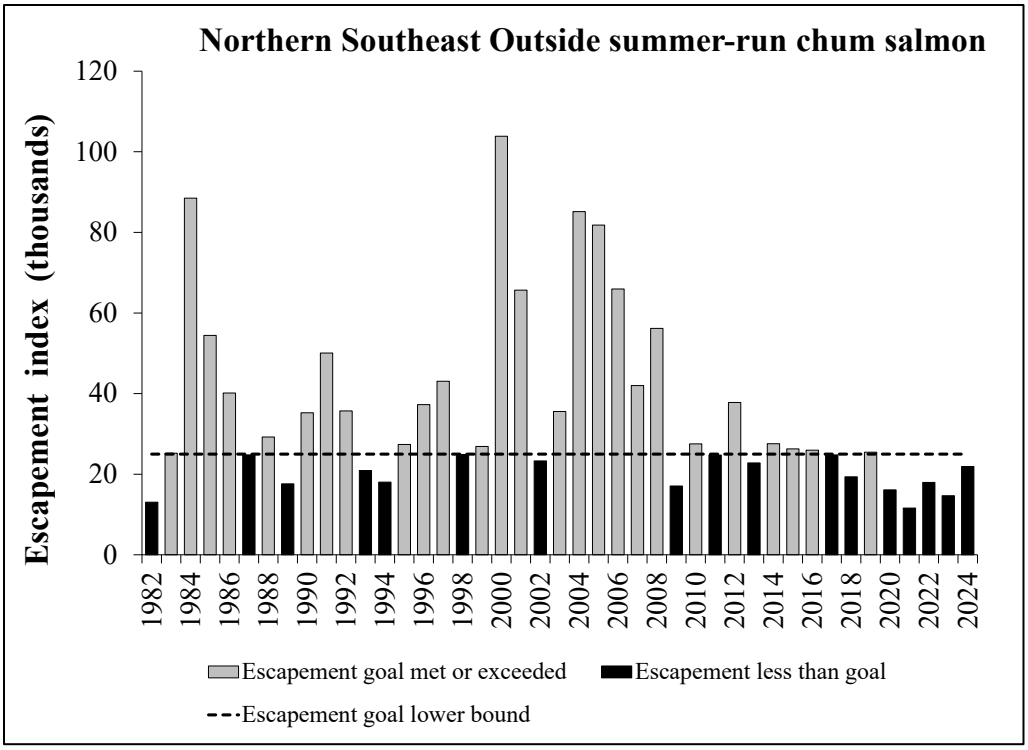

Figure 33.–Northern Southeast Outside Subregion chum salmon escapement index, 1982–2024, and lower-bound sustainable escapement goal of 25,000 index fish.

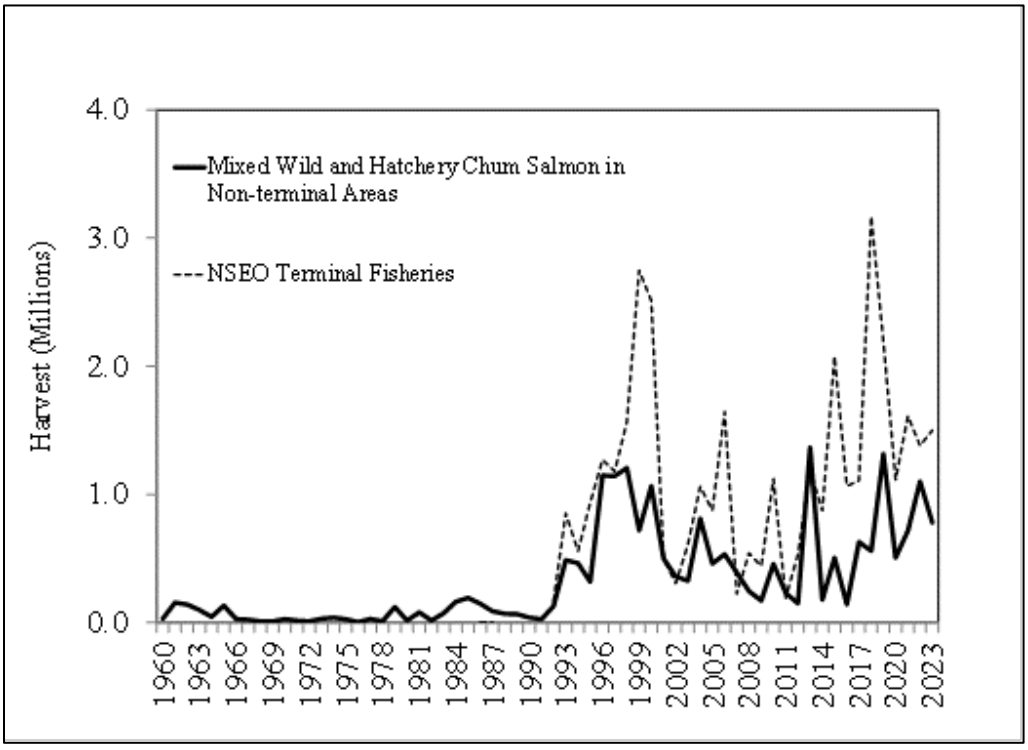

Figure 44.–Annual harvest of chum salmon in the Northern Southeast Outside Subregion, 1960–2023.

Note: Terminal harvests do not include hatchery cost recovery.

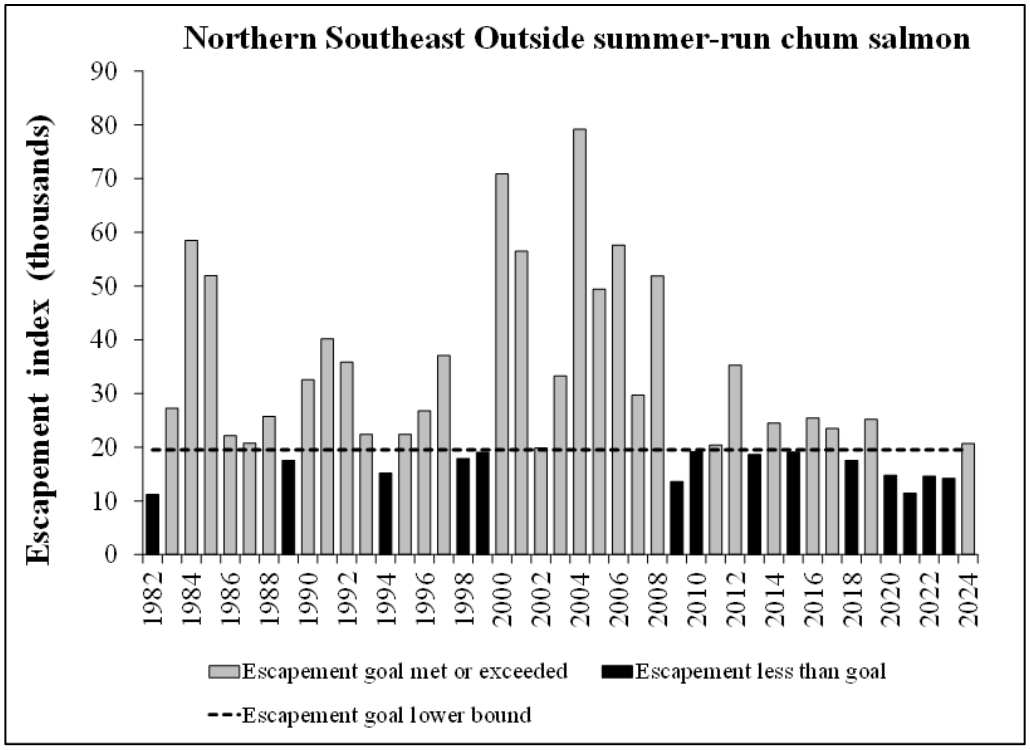

Figure 55.–Revised Northern Southeast Outside Subregion chum salmon escapement index, 1982–2024, and lower-bound sustainable escapement goal of 19,500 index fish.