Regional Information Report No. 1J25-17

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

by

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June 2025

Alaska Department of Fish and Game **Division 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

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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 in policy 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, optimal escapement goal, or other specified management objectives for the fishery." NSEO summer-run chum salmon escapements were below the lower bound of the current lower-bound SEG 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 fisheries.

Keywords: 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. At the October 2024 board work session, the department recommended and the board adopted the Northern Southeast Outside Subregion (NSEO) summer-run chum salmon *Oncorhynchus keta* stock as a *stock of management concern*. 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." This definition refers to the bounds of the established escapement goal, whether it be a sustainable escapement goal (SEG), biological escapement goal, optimal escapement goal, 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 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 was presented to the board and public as a draft for review at the 2025 Southeast and Yakutat Finfish and Shellfish board meeting. Immediately following the meeting, the department updated this report with descriptions of management measures and other recommendations from the board related to the NSEO summer-run chum salmon stock of concern.

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 are

available for 9 index streams, dating back to 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. Harvests have 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 reflect 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 2008–2010 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 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 index streams, 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 in a late August sample from 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 largely caught in traditional purse seine fisheries (Figure 2). These seine fisheries are primarily managed 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. *In prep*). 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 (Table 1). Over the same time, an average of 642,000 chum salmon of mixed hatchery and wild origin were harvested outside of hatchery terminal areas (Table 1), 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—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 over the past 10 years, 2014–2023. Subsistence fishing is open all season, and the daily bag and possession limit is 50 chum salmon per person with no annual limit (5 AAC 01.745[g][4]). Fishery participants are required to obtain a subsistence and personal use fishing permit issued by the department 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[1]. 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; because the concentration of effort is near Sitka, harvests are likely primarily hatchery origin given proximity to a greater concentration of enhanced stocks compared to wild stocks.

[1] 2014–2023; Alaska Sport Fishing Survey database [Intranet]. 1996–2023. Anchorage, AK: Alaska Department of Fish & Game, Division of Sport Fish (cited October 30, 2024; available from https://intra.dsf.dfg.alaska.local/swhs_est/)

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 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 of the 8 index streams in the subregion was based on the 25th percentile of the escapement index from 1982 to 2016. This SEG was recommended as a baseline for summer-run chum salmon in this subregion (Piston and Heinl 2017) and avoided the need to lower the goal during a period of poor escapements

ESCAPEMENT GOAL FINDING

The department reviewed salmon escapement goals prior to the 2025 Southeast and Yakutat board meeting and 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. This revision followed 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 2). The stock was also below the revised lower-bound SEG of 19,500—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 their impact 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 Deep Inlet and Crawfish Inlet THAs. Although the areas specified above are designated purse seine fishing areas, specific open areas and fishing times are established in season by EO (Figure 2).

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. *In prep*). 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 approximately 89% (3.2 million fish) of the annual average salmon harvest in traditional commercial purse seine fisheries in NSEO waters (Sections 13-A and 13-B). This figure is followed by chum salmon at approximately 10% (0.4 million fish), sockeye salmon at approximately <1% (17,000 fish), and coho salmon *O. kisutch* at approximately <1% (10,000 fish; Table 3).

The difference in run timing between pink and summer-run chum salmon and the interannual variability in pink salmon abundance results in time and area restrictions for the directed pink salmon fishery, offering 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 (Figure 2). When necessary, 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 (Figure 2). 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 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 differential is largely due to the relatively low abundance of pink salmon found in fishery areas south of Sitka Sound and resultant scarce 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 board, 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 Chinook salmon during the winter and spring seasons, October 11–April 30 and May 1– 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 (5 AAC 29.114). However, under the Chinook salmon action plans and supplementary actions for conservation of Southeast Alaska and Transboundary River (TBR) Chinook salmon stocks, initial hatchery chum salmon fishery openings have been delayed until June 15 since 2018.

Chum salmon have primarily been harvested incidentally in the summer troll fishery. 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 of July 1–September 20, trollers mainly target coho salmon, with short king salmon retention periods occurring in early July and mid-August. 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 (SW) 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

Until 2024, no management actions were taken specifically to limit harvest of NSEO summer-run chum salmon in commercial fisheries. 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).

Hatchery cost-recovery and common property purse seine openings are used as needed 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 Inlet head stream. Boundaries for 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 SW 32, and implemented area restrictions specifically aimed at protecting NSEO summer-run chum salmon through SW 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 the harvest of NSEO summer-run salmon in the sport fishery.

PAST SUBSISTENCE FISHERY MANAGEMENT MEASURES

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

MANAGEMENT ACTION PLAN 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. These measures target fisheries that operate in close proximity to chum salmon index streams and during the time wild chum salmon are most prevalent. 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 ACTIONS

A draft action plan was presented to the Alaska Board of Fisheries at the 2025 Southeast Alaska and Yakutat Finfish and Shellfish meeting in Ketchikan. The draft plan contained options for management actions in each fishery—commercial, sport, and subsistence—as well as options to address hatchery straying. The following actions are the board adopted actions.

Action 1: Commercial Fisheries

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

Specific action to implement the objective: Use EO authority to manage commercial fisheries based on overall salmon abundance. Management actions taken to reduce the harvest of NSEO summer-run chum salmon will be implemented during SWs 27–34 in the District 113 purse seine fishery and may 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 salmon abundance, harvests levels, 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 of index streams (i.e., salmon do not travel through extensive corridors to reach natal 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 will 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 will 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 will continue in West Crawfish Inlet to help mitigate straying of hatchery-produced chum salmon. Boundaries for these fisheries will be chosen to conserve the wild summer-run chum salmon returning to West Crawfish Inlet.

Action 2: Subsistence Fishery

Objective: Maintain subsistence opportunity in the NSEO.

Specific action to implement the objective: None.

Action 3: Sport Fishery

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

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 will use EO authority to reduce sport harvest of NSEO summer-run chum salmon by implementing restrictions or closures in season in certain areas as needed.

Action 4: Crawfish Inlet Hatchery Releases

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

The draft action plan listed 3 options for the hatchery chum salmon release site at Crawfish Inlet: no changes to permitted release, a commissioner enacted reduction in the permitted release size, and prohibiting the release of hatchery chum salmon at Crawfish Inlet. The board adopted the status quo option which resulted in no board recommend changes to permitted releases. The recommendation was made with the understanding the commissioner intended to take actions as described in Record Copy 90. These actions included intention to reduce the allowed chum salmon egg take by 25%, from 30 million eggs to 22.5 million eggs, on the fish transport permit under the Sawmill Creek hatchery private non-profit permit. The reduction will take place starting with the fall 2025 egg take, for fry release in late spring 2026. The 7.5 million egg take reduction may be added to the Sawmill Creek hatchery permit for release at Deep Inlet, or to the Medvejie Creek hatchery permit for release at Bear Cove, pending review and approval of a plan that demonstrates that increase releases at those locations will not impact stocks of concern. The commissioner also directed the Joint Southeast Regional Planning Team (JRPT) to review and report their findings and recommendations on chum salmon release strategies, numbers, and locations. The

commissioner will provide an update at the 2025 October work session and report the JRPT findings and recommendations to the board when available.

CONDITIONS FOR REDUCING MANAGEMENT RESTRICTIONS OR DELISTING STOCK OF CONCERN

The department will emphasize meeting condition one below before considering the other listed conditions.

1) If the revised lower-bound SEG (19,500 fish counted at 8 index streams) 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 revised 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 of commercial fisheries), and escapement goal review will be updated in a report to the board at the 2028 Southeast and Yakutat meeting.

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.
- Hatchery stray monitoring — Northern Southeast Regional Aquaculture Association (NSRAA), with guidance from the department, will continue conducting more detailed surveying and sampling of the West Crawfish NE Arm Head stream to determine the proportion of hatchery chum salmon in the creek. NSRAA will conduct these surveys during the primary summer-run chum salmon spawning period, from early August to early September. These data will enable the department to produce an index of wild summer-run chum salmon abundance during this period. Foot survey counts and otolith collections will take place over a 5-week period beginning in early August and efforts will be distributed across 3 stream reaches to assess the distribution of stray hatchery chum salmon.
- Juvenile chum salmon migration study — NSRAA will continue a project they developed to study juvenile chum salmon migration routes as they leave the Crawfish Inlet release site and move out toward the open ocean in an effort to better understand the straying of adult hatchery chum salmon. Juvenile chum salmon will be captured by beach seine at various locations in Crawfish and West Crawfish Inlets for several weeks following the release of hatchery fry in May. Otoliths will be collected to determine the origin of sampled chum salmon fry and to track movement of hatchery fish out of the inlet. Water samples will be collected at up to 7 streams within Crawfish Inlet, West Crawfish Inlet, Walker Channel, Lodge Island, and the Four Corners–Cedar Pass area to gather data on freshwater sources that fry may encounter within the migration corridor. Samples will be analyzed for 11 standard water quality metrics such as pH, alkalinity, dissolved solids, phosphorus, magnesium, etc.

FUTURE RESEARCH PROJECTS

- Acoustic Radiotelemetry Tagging —NSRAA is interested in implementing an acoustic telemetry study to investigate the nearshore homing pattern of adult chum salmon returning

to Crawfish and West Crawfish Inlets should funding become available. Troll-caught chum salmon would be tagged at the entrance to the 2 inlets and tracked using stationary and mobile antennas to evaluate the residency time and transient migration patterns in the West Crawfish corridor.

- Integrated Multitrophic Aquaculture — NSRAA plans to collaborate with other research organizations such as the Sitka Sound Science Center, University of Alaska Southeast, and National Oceanic and Atmospheric Administration to explore methods of improving chum salmon homing accuracy. This research would include testing the feasibility of utilizing a macroalgae (kelp) derived compound for improved imprinting.

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TABLES

Table 1.–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

-continued-

Table 1.–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 1.–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

Table 2.–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

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Table 2.–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

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Table 2.–Page 3 of 4.

District	113	113	113	113	
Management area	Sitka	Sitka	Sitka	Sitka	
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	
Survey type	Aerial	Aerial	Foot	Aerial	
Run type	Summer	Summer	Summer	Summer	
Stream no.	113-32-005	113-72-005	113-73-003	113-81-011	Northern Southeast
Stream name	W Crawfish	Sister Lake	Lake Stream	Black	Outside Subregion
	NE Arm Head	SE Head	Ford Arm	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 2.–Page 4 of 4.

District	113	113	113	113	
Management area	Sitka	Sitka	Sitka	Sitka	
Subregion	NSE Outside	NSE Outside	NSE Outside	NSE Outside	
Survey type	Aerial	Aerial	Foot	Aerial	
Run type	Summer	Summer	Summer	Summer	
Stream no.	113-32-005	113-72-005	113-73-003	113-81-011	Northern Southeast
Stream name	W Crawfish	Sister Lake	Lake Stream	Black	Outside Subregion
	NE Arm Head	SE Head	Ford Arm	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 3.–Salmon harvest in the Section 13-A and 13-B traditional (state managed) purse seine fishery, 2005–2024.

Year	Chinook	Sockeye	Coho	Pink	Chum
2005	685	6,450	5,781	4,714,527	326,584
2006	170	12,520	4,864	2,223,964	417,181
2007	270	13,805	10,724	4,049,357	211,134
2008	55	1,246	4,888	1,554,806	192,361
2009	270	4,152	4,090	1,307,725	93,246
2010	43	9,240	4,115	3,549,852	353,282
2011	324	16,801	22,462	6,880,931	195,573
2012	236	8,480	3,409	1,329,912	134,639
2013	608	17,684	27,545	10,625,494	878,548
2014	242	6,008	13,026	2,699,899	158,859
2015	155	16,836	14,378	5,809,961	278,992
2016	75	2,944	5,657	1,346,473	116,423
2017	379	21,637	21,132	7,924,926	466,539
2018	0	18,131	9,982	1,553,873	241,506
2019	171	36,650	12,324	1,083,004	1,097,926
2020	63	862	4,432	346,911	467,666
2021	25	6,488	5,385	2,085,621	137,717
2022	68	4,531	1,975	553,144	143,949
2023	202	17,190	3,868	1,580,332	605,579
2024	286	112,396	11,979	2,156,963	976,486
Average	216	16,703	9,601	3,168,884	374,710

FIGURES

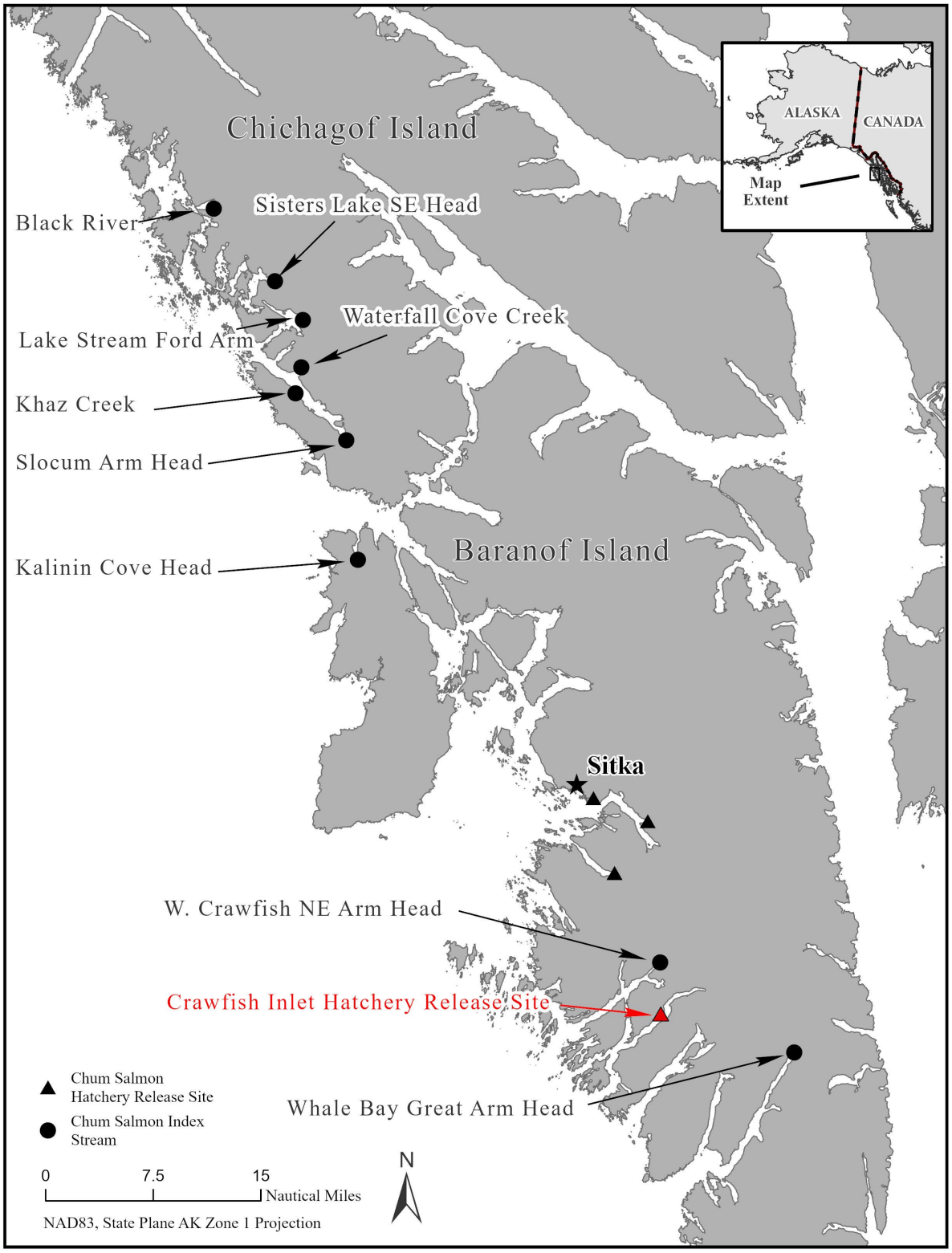

Figure 1.–Northern Southeast Outside Subregion chum salmon index streams and hatchery chum salmon release sites in Southeast Alaska.

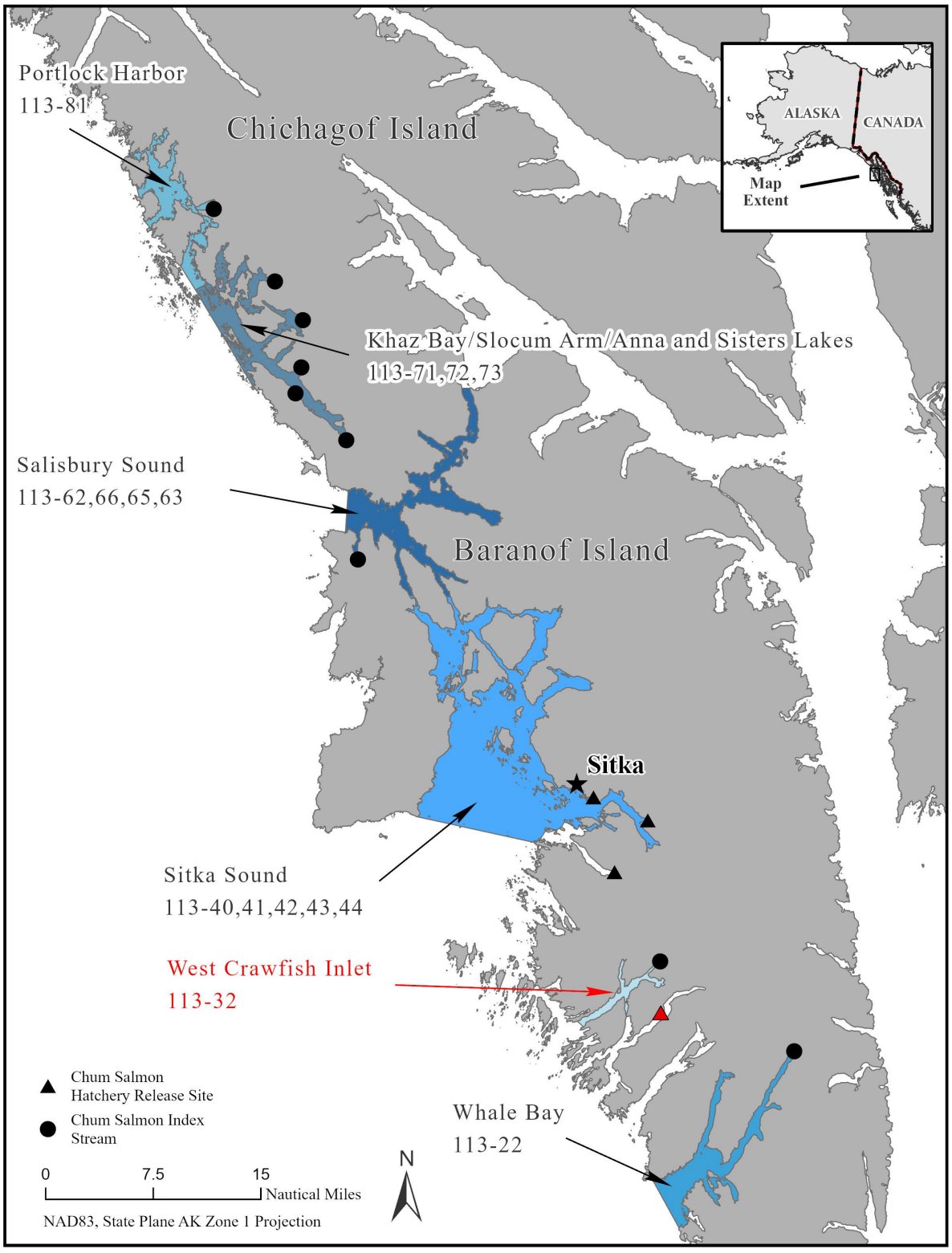

Figure 2.–Northern Southeast Outside Subregion chum salmon index streams, hatchery chum salmon release sites, and traditional pink salmon purse seine fishing areas in Southeast Alaska.

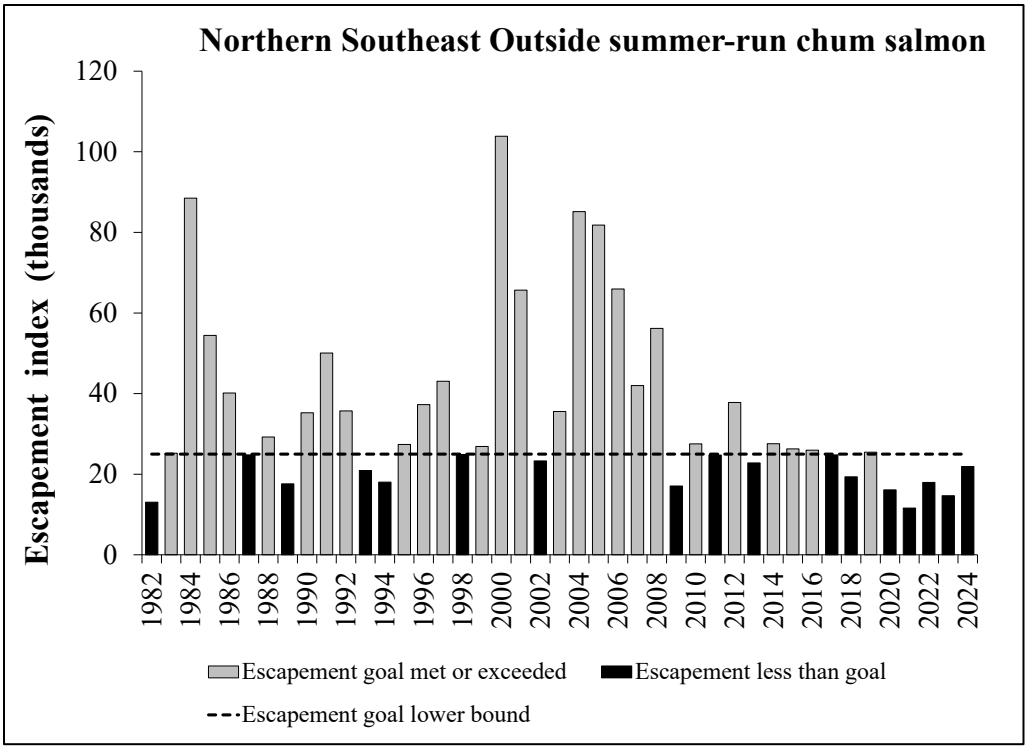

Figure 3.–Northern Southeast Outside Subregion chum salmon escapement index, 1982–2024, and lower-bound sustainable escapement goal of 25,000 index fish.

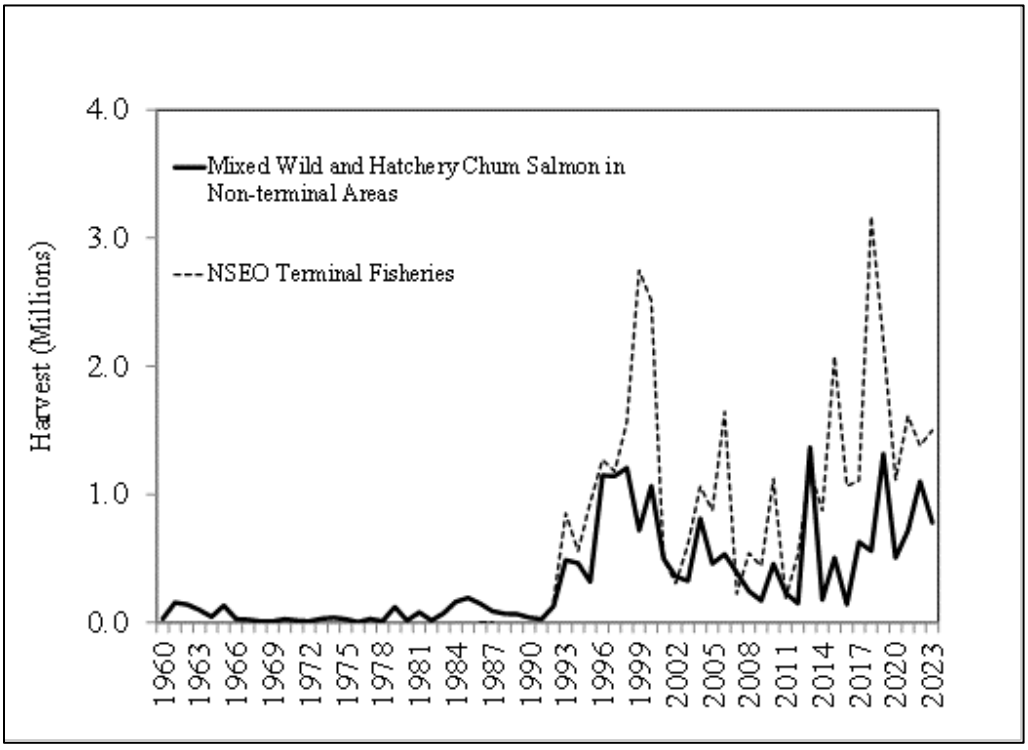

Figure 4.–Annual harvest of chum salmon in the Northern Southeast Outside Subregion, 1960–2023.
Note: Terminal harvests do not include hatchery cost recovery.

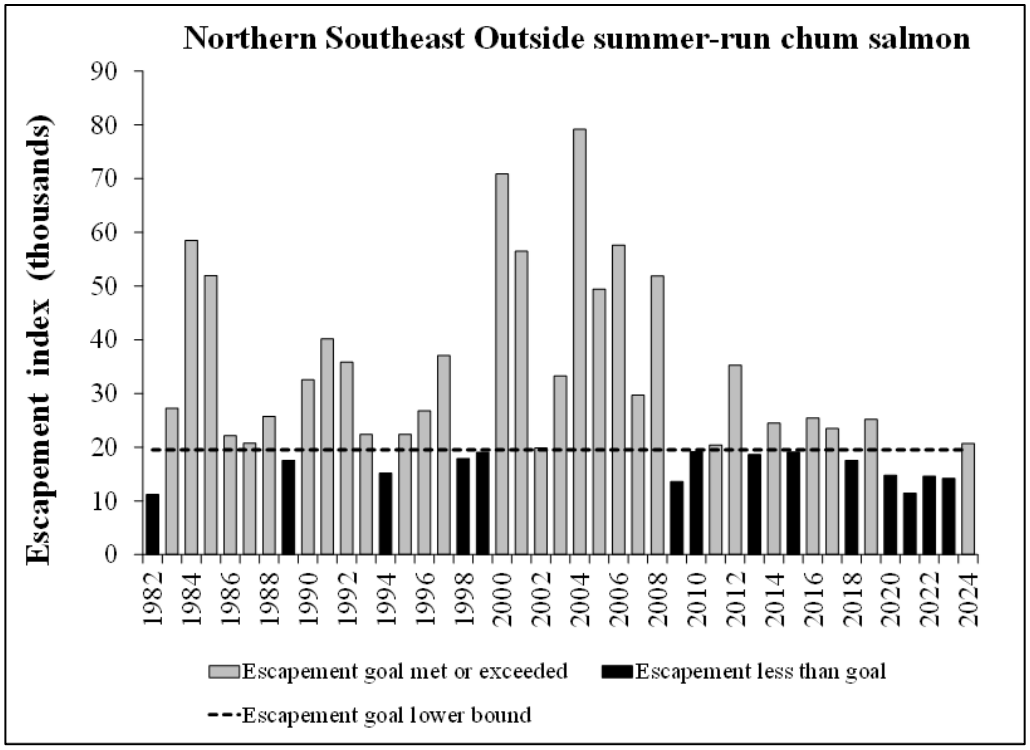

Figure 5.–Revised Northern Southeast Outside Subregion chum salmon escapement index, 1982–2024, and lower-bound sustainable escapement goal of 19,500 index fish.