Pink Salmon Stock Status and Escapement Goals in Southeast Alaska through 2023

by

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and

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Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figures or figure captions.

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	$(F, t, \chi^2, \text{etc.})$
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

SPECIAL PUBLICATION NO. 24-16

PINK SALMON STOCK STATUS AND ESCAPEMENT GOALS IN SOUTHEAST ALASKA THROUGH 2023

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

During the 1990s and 2000s, pink salmon were harvested in Southeast Alaska at the highest levels since record keeping began in the late 19th century. Since 2006, the average annual harvest has declined, largely due to poor even-year returns to the Northern Southeast Inside Subregion of Southeast Alaska, but also due to recent declines in odd-year returns. Even-year pink salmon harvests averaged only 18 million fish per year since 2006, primarily due to very low harvests in the Northern Southeast Inside Subregion, which averaged only 2.2 million fish per year during that time. Odd-year harvests to the Northern Southeast Inside Subregion remained strong through 2017 (odd-year mean = 20.5 million; 2007 to 2017), but dropped to approximately 2 million in 2019, which was the lowest odd-year harvest since the late 1970s, before increasing to 8 million in 2021 and 11 million in 2023. Odd-year harvests in Southeast Alaska rebounded strongly in 2021 (49 million) and 2023 (48 million). Even-year harvests in the Southern Southeast Subregion quickly rebounded after a very low harvest of 3.3 million fish in 2006. From 2014 to 2023, the average harvest of 18.9 million in the Southern Southeast Subregion was below the average harvest of 27.5 million from 1985 to 2013. Pink salmon escapement indices have been consistently within or above escapement goals in the Southern Southeast and Northern Southeast Outside Subregions, but below the escapement goal in the Northern Southeast Inside Subregion in 4 of the past 5 even years and in 2 of the past 5 years overall. We reviewed pink salmon escapement goals and recommend no changes. At this time, no pink salmon stocks in Southeast Alaska meet the criteria for stocks of concern as defined by the State of Alaska's *Policy for Management of Sustainable Salmon Fisheries* (5 AAC 39.222).

Keywords: escapement goals, escapement index, *Oncorhynchus gorbuscha,* pink salmon, Southeast Alaska, stock status

INTRODUCTION

Wild pink salmon (*Oncorhynchus gorbuscha*) spawn in approximately 2,500 short, coastal streams in Southeast Alaska (Zadina et al. 2004), and support a large and valuable commercial fishing industry (Clark et al. 2006). By numbers of fish, pink salmon accounted for an average 64% of all the salmon harvested in Southeast Alaska from 2014 to 2023. An average of 28 million pink salmon per year were harvested in the commercial fishery in Southeast Alaska over this same period, with a range of 8 million (2018 and 2020) to 49 million (2021) fish (Figure 1). The exvessel value of the commercial pink salmon harvest averaged $27 million a year, and ranged between $6 and $48 million, making pink salmon the most valuable species after chum salmon (*O. keta*) in Southeast Alaska fisheries. The majority of pink salmon harvested in Southeast Alaska commercial fisheries over the past 10 years have been taken by purse seine gear (94%), with smaller portions harvested in drift gillnet (5%), troll, and set gillnet (Yakutat area only) fisheries. Small numbers of pink salmon have been harvested in subsistence, personal use, and sport fisheries. Nearly all of the pink salmon harvested in Southeast Alaska are of wild origin; hatchery-produced pink salmon have contributed an average of only 5% of the total annual harvest, and 2% of the common property harvest since the mid-1990s (Figure 1).

Pink salmon stocks in Southeast Alaska are managed through extensive inseason monitoring of harvests, fishing effort, and developing escapements (Van Alen 2000; Zadina et al. 2004). Because pink salmon production is broadly dispersed in Southeast Alaska, inseason assessment of escapements has been based on aerial observation. Prior to making decisions about commercial fishery openings, experienced fishery managers fly over many miles of pink salmon spawning habitat, adjacent estuaries, and nearby marine waters to assess whether adequate numbers of salmon are present and whether the timing of the escapement is consistent with previous patterns. Although fishery managers fly these surveys to assess inseason abundance and make management decisions, a numerical summary of their visual impressions of salmon abundance is retained as one of the most important indicators of salmon abundance and management success. The peak

annual aerial survey counts to a set of 702 streams in the region are used to generate an annual escapement measure, or "index" of abundance, upon which pink salmon escapement goals are based. Escapement goals have been established for aggregates of pink salmon runs in 3 broad subregions in Southeast Alaska: Southern Southeast Subregion, Northern Southeast Inside Subregion, and Northern Southeast Outside Subregion (Table 1, Appendices A2–A4; Zadina et al. 2004; Heinl and Piston 2009).

In 2000 and 2001, the Alaska Board of Fisheries (BOF) adopted the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223) into regulation to ensure the state's salmon stocks would be conserved, managed, and developed using the sustained yield principle. These policies require Alaska Department of Fish & Game (ADF&G) to report on salmon stock status to the BOF on a regular basis and to document existing salmon escapement goals, establish goals for stocks for which escapement can be reliably measured, and perform an analysis when these goals are created or modified. In order to meet the requirements of these policies, Zadina et al. (2004) produced ADF&G's first report on stock status and escapement goals of pink salmon for the Southeast Alaska and Yakutat region. The report was subsequently updated by Heinl and Geiger (2005), Heinl et al. (2008), and Piston and Heinl (2011, 2014, 2018, and 2020). This report represents an update concerning the status of pink salmon in the region through 2023.
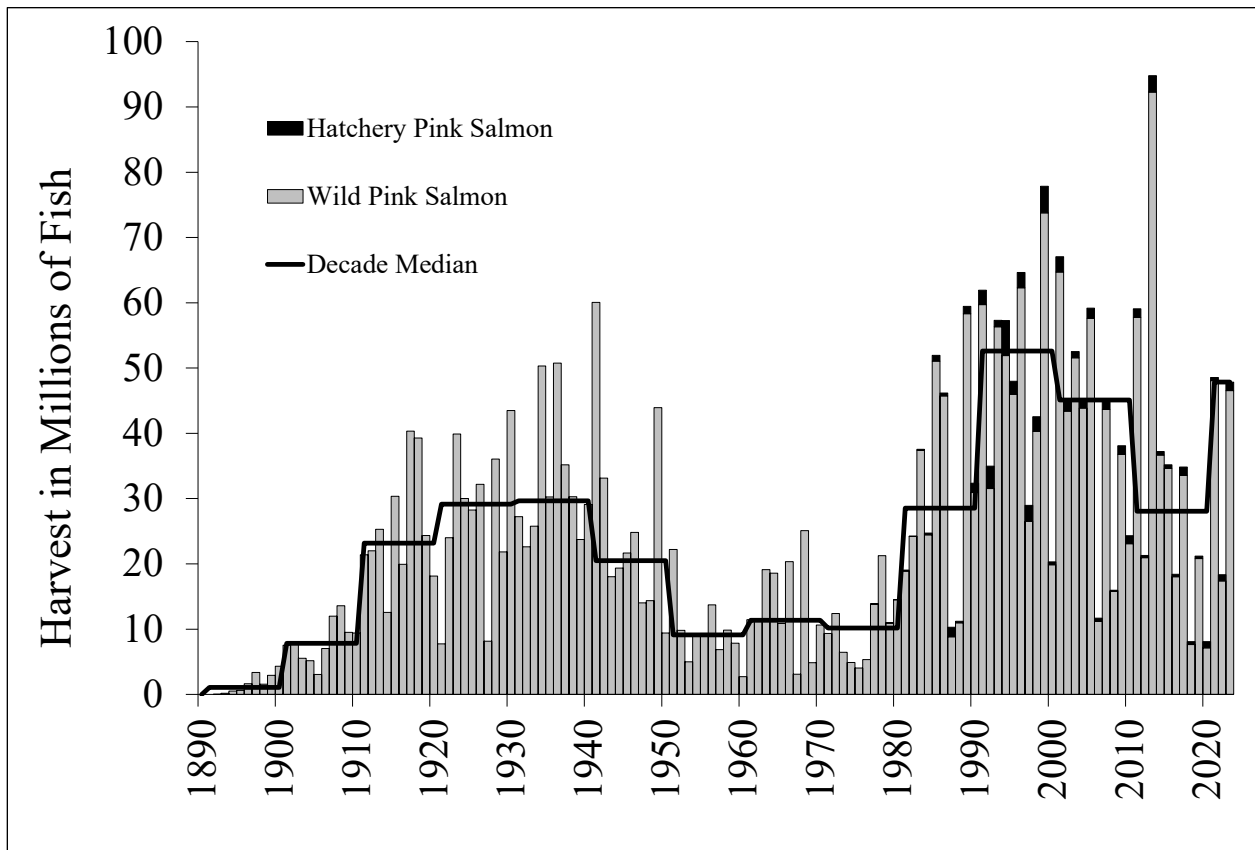
Figure 1.–Annual harvest of wild and hatchery-produced pink salmon in Southeast Alaska and median harvest by decade, 1890–2023. Data prior to 1960 are from Byerly et al. (1999).

2

Table 1.–Summary of escapement goals for Southeast Alaska pink salmon stocks.

| Subregion | Enumeration method | Current escapement goal | | | Recommended action |
		Range	Type[a]	Year established	
Southern Southeast	Peak aerial surveys	3.0–8.0 million	BEG	2009	No change
Northern Southeast Inside	Peak aerial surveys	2.5–6.0 million	BEG	2009	No change
Northern Southeast Outside	Peak aerial surveys	0.75–2.5 million	BEG	2009	No change

[a] BEG = biological escapement goal.

DEFINITION OF PINK SALMON STOCKS

The Southeast Alaska/Yakutat Management Area, Region 1, includes waters from Cape Suckling south to Dixon Entrance and is divided into 2 salmon net registration areas: Southeastern Alaska and Yakutat. The Southeastern Alaska area extends from Dixon Entrance north to Cape Fairweather and the Yakutat area extends from Cape Fairweather west to Cape Suckling. The vast majority of the pink salmon harvest in the region takes place in mixed stock fisheries in the waters surrounding the Alexander Archipelago, from Dixon Entrance north to Cross Sound, Icy Strait, and Lynn Canal—what is referred to throughout the rest of this report as "Southeast Alaska."

YAKUTAT AREA

Yakutat area pink salmon runs are spatially segregated from the rest of Southeast Alaska and are harvested primarily in terminal, inriver set gillnet fisheries (Clark et al. 2006). During the 10-year period 2014–2023, an average 34,200 pink salmon were harvested in Yakutat area commercial fisheries, of which 99% were harvested in the Situk-Ahrnklin (81%) and Yakutat Bay (18%) set gillnet fisheries. Escapement goals were established in 1995 for Humpy Creek and the Situk River, the 2 streams with the largest populations of pink salmon in the Yakutat area (Clark 1995). The Humpy Creek escapement goal was eliminated in 2006 due to lack of fishing effort on the stock and subsequent lack of assessment (Woods 2003; Heinl and Geiger 2005). The Situk River escapement goal was modified in 2012 (Piston and Heinl 2011), then eliminated in 2018 due to lack of reliable escapement information and very low harvest rates (Heinl et al. 2017; Piston and Heinl 2018). Management options for maximizing the harvest of Yakutat area pink salmon are limited, particularly in the Situk-Ahrnklin fishery, due to overlap in run timing and management considerations for more valuable sockeye and coho salmon, and pink salmon are often harvested incidentally to those species (Clark 1995; Woods 2007).

SOUTHEAST ALASKA AREA

Southeast Alaska pink salmon harvest statistics and escapement indices have commonly been divided into areas that reflect fisheries management divisions (management areas, districts, and stock groups), as well as biological divisions (subregions). Because Southeast Alaska pink salmon are largely harvested in mixed stock fisheries, often some distance from spawning areas, it is not possible to allocate harvests of pink salmon to stock group of origin at any finer scale than subregion. Therefore, Southeast Alaska pink salmon escapement goals have been established at the subregion level (Zadina et al. 2004). These subregional goals were further divided into "management targets" for the 15 management districts and 46 stock groups where pink salmon are monitored to assess the spatial distribution of the pink salmon escapement across Southeast Alaska (Zadina et al. 2004). These management targets are not considered to be escapement goals under the definition of the *Statewide Salmon Escapement Goal Policy* (5 AAC 39.223).

3

Management Areas

There are 4 management areas in Southeast Alaska (Juneau, Ketchikan, Petersburg, and Sitka; Appendix A1), which are further divided into 15 management districts (Districts 101–115; Appendices A2–A4). ADF&G fishery managers are responsible for managing the fisheries and monitoring pink salmon escapements in each of their respective management areas and the districts or portions of the districts within their areas.

Subregions

Marine tagging studies have repeatedly demonstrated that Southeast Alaska pink salmon stocks are strongly segregated into southern and northern areas or subregions (Rich 1927; Rich and Suomela 1929; Rich and Morton 1930; Nakatani et al. 1975; Hoffman 1983), and the commercial fisheries in each subregion generally target pink salmon stocks that ultimately spawn in that subregion. The Southern Southeast Subregion is composed of pink salmon stocks from Sumner Strait and south (Districts 101–108), whereas the Northern Southeast Subregion is composed of pink salmon stocks north of Sumner Strait (Districts 109–115). In 1998, the northern area was further divided into Northern Southeast Inside and Northern Southeast Outside Subregions, because marine tagging studies also showed that pink salmon spawning on the outer coast of Chichagof and Baranof Islands generally do not enter inside waters (Nakatani et al. 1975; Alexandersdottir 1987). The Northern Southeast Outside Subregion includes all waters of District 113 (excluding Peril Straits and Hoonah Sound Subdistricts 113-51 through 113-59, which are considered part of the Northern Southeast Inside Subregion). Currently, there are 366 index streams in the Southern Southeast Subregion, 295 index streams in the Northern Southeast Inside Subregion, and 41 index streams in the Northern Southeast Outside Subregion.

Stock Groups

Southeast Alaska has also been divided into 53 smaller "stock groups" contained within the district boundaries (Zadina et al. 2004; Appendices A2–A4). Each stock group represents a collection of streams that support pink salmon runs, with similar migration routes and run timing are managed as a unit, and are assumed to share similar productivity and exploitation rates (Van Alen 2000). Seven of these pink salmon stock groups have not been consistently monitored for spawning escapements: Annette Island and Suemez-Dall (Ketchikan area); southwest Baranof, west Kruzof, and west Yakobi (Sitka area); and Dundas Bay and Glacier Bay (Juneau area). The Annette Island stock group is managed exclusively by the Metlakatla Indian Community (where the state of Alaska has no jurisdiction). The other stock groups are located in areas where directed fisheries do not occur or are in remote areas where it would be cost prohibitive to conduct surveys on a regular basis. The remaining 46 stock groups, representing 12 fishing districts, are actively managed and monitored for escapements (Appendices A2–A4).

STOCK ASSESSMENT AND ESCAPEMENT GOALS

HARVEST

Salmon landings from individual commercial fishers are recorded on fish tickets. The information recorded on the tickets includes the vessel name, Commercial Fisheries Entry Commission permit number, total weight of the harvest by species, and date and area of harvest. Catch in units of total weight are converted into units of fish numbers by the processors, based on their individual methods of determining the average weight of fish. Fish tickets are legal documents and serve as

the basis of payment by the processors to fishers. State regulations require fish tickets to be delivered to ADF&G within 7 days of a landing. Information from these tickets is entered into the ADF&G Fish Ticket Database System, and the total weight and the estimated total number of commercially harvested salmon is available in electronic format to biologists in various time and spatial summaries for all years since 1960 (Appendix B1). Estimates of the annual harvest of pink salmon prior to statehood were taken from Byerly et al. (1999).

ESCAPEMENT MONITORING AND GOALS

The status of pink salmon stocks in Southeast Alaska was judged primarily by performance in meeting established escapement goals. Formal escapement goals are currently maintained for 3 pink salmon subregions in the Southeast region (Table 1; Piston and Heinl 2011). The Southeast region goals are currently classified as biological escapement goals. The classification is defined in the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) under Section (f) as follows:

> "(3) 'biological escapement goal' or '(BEG)' means the escapement that provides the greatest potential for maximum sustained yield…".

ADF&G has maintained an annual index of the pink salmon escapement in Southeast Alaska based on peak aerial survey counts collected since statehood. Pink salmon runs have not exhibited persistent trends of odd- or even-year dominance over most of the historical data set (Figure 2), and for simplicity, escapement indices of both broodlines were combined (Van Alen 2000; Zadina et al. 2004). The methods used to calculate the index have changed over time as knowledge of the region's pink salmon grew from research programs designed to improve pink salmon management (e.g., Durley and Seibel 1972; Jones and Dangel 1983; Hofmeister et al. 1993; Hofmeister 1998; Zadina et al. 2004; Heinl and Geiger 2005). In instances when major changes were implemented, the entire index was recalculated to ensure it was comparable over all years in the series.

The current method of generating an annual pink salmon escapement index, and major changes to the index, were described in detail by Heinl and Piston (2009). The principal change was the complete removal of "bias adjustments" that were previously made in an attempt to adjust for differences in observer counting rates (Hofmeister 1998; Van Alen 2000). Although the method used seemed like a practical way to address the well-known problem of observer counting bias (Dangel and Jones 1988; Jones et al. 1998), a close examination indicated that the calibrations often induced significant error. The current pink salmon escapement index was modified to use only raw survey data. In addition, the annual calculation of the escapement index is now automated through the Region 1 Commercial Fisheries Database.
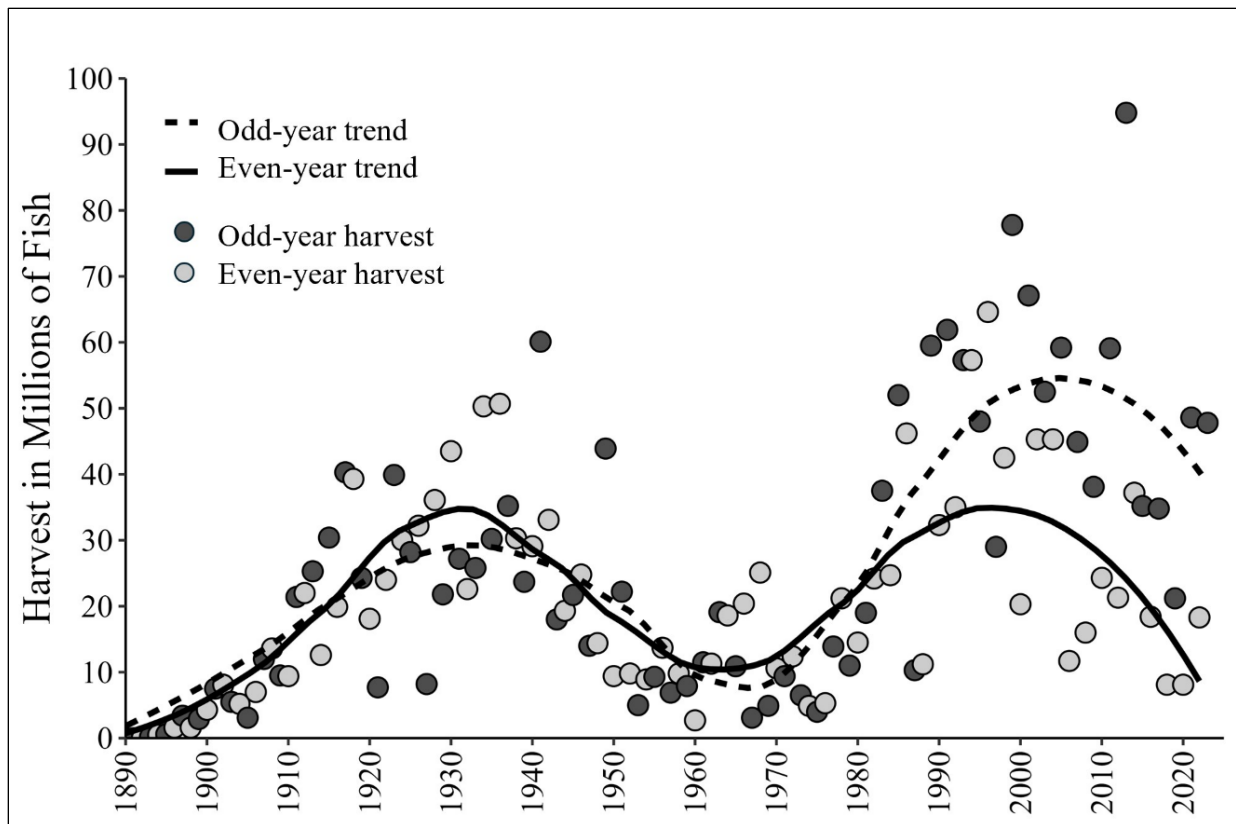
Figure 2.–Southeast Alaska commercial harvest of pink salmon in odd and even years, 1890–2023. Trend lines are 0.5 loess curves.

The pink salmon escapement index consists of the sum of peak annual aerial survey observations for 702 index streams across the region. While the index includes pink salmon runs of varying magnitudes (Table 2), the set of index streams does not necessarily match the distribution of streams (by run size) across the entire region, because the majority of the 2,500 pink salmon spawning streams are likely very small producers. Survey data were qualified (based on visibility, timing, and area surveyed) by the management biologists that conducted the surveys using the following codes: code 01, an incomplete survey—not useful for indexing abundance; code 02, a complete survey—potentially useful for indexing abundance; and code 03, the peak survey—useful for indexing abundance. Code 03 surveys identified the one and only peak survey for a stream each year. These codes were entered into the regional database to facilitate the identification of the peak survey observations for each index stream.

For several reasons, it was not possible to designate a peak survey count for every index stream every year, and missing values had to be imputed in order to maintain a complete set of comparable index counts. In some cases, a stream was not surveyed during the peak of the run, survey conditions were not conducive to obtaining a good count due to weather, or the stream was simply not surveyed. An iterative expectation-maximization algorithm (McLachlan and Krishnan 1997) was used to impute missing values as described by Heinl and Piston (2009). Missing values were imputed from the static table of historical data at the stock group level each year.

Table 2.–Distribution of pink salmon escapement index streams based on the 1960–2023 median escapement peak survey value by stream.

Median peak survey range	Number of streams
≤500	17
501–2,500	188
2,501–5,000	166
5,001–10,000	148
10,001–25,000	111
25,001–100,000	67
>100,000	5
Total number of streams	702

It is important to note that the Southeast Alaska pink salmon index does not provide an estimate of the total escapement, and its relationship with the total pink salmon escapement in Southeast Alaska is far from certain. An *escapement estimate* is a statistically reliable measure of escapement magnitude, i.e., the total number of fish in the escapement. An escapement estimate is approximately in the same units as the estimates of harvest, and harvest estimates and escapement estimates can logically be added together to produce an estimate of total run size. Alternatively, an *escapement index* is a relative measure of escapement that is useful for year-to-year comparisons.

In the past, ADF&G biologists commonly multiplied the escapement index by a factor of 2.5 to convert it to an estimate of total escapement (Geiger and Savikko 1991, pages 39–41). The 2.5 multiplier was originally intended to convert peak escapement counts to an estimate of what was actually present at the time of the survey (Dangel and Jones 1988; Hofmeister 1990; Jones et al. 1998). Thus, multiplying the index by 2.5 does not account for fish that were not present at the time of the peak survey count and does not account for the more than 1,800 streams that were not surveyed (Heinl and Geiger 2005). In addition, observer counting bias is a nonlinear function of abundance, and relative bias increases as abundance increases (Jones et al. 1998). There is no simple way to convert the current index series to an estimate of total escapement in Southeast Alaska. Moreover, escapement indices are clearly much less than total escapements (Hofmeister 1990; Van Alen 2000; Zadina et al. 2004).

The first pink salmon escapement goals for Southeast Alaska were set at 5 million for southern Southeast and 3 million for northern Southeast (Valentine et al. 1970). The goals were not the result of a formal statistical analysis; they were instead based on the observation that in southern Southeast, escapement indices of less than 4 million had produced fair to poor returns, escapement indices in excess of 4 million generally produced good returns, and a southern Southeast escapement index that exceeded 5 million (1966) resulted in the largest return in many years. The pattern of returns in northern Southeast was more variable than in southern Southeast and the index goal was set at 3 million. Escapement goals were adjusted upward in later years based on analyses of the catch and index of escapement (Durley and Seibel 1972; ADF&G 1981, pages 18–20). From 1991 to 2002, the index goals were set at 4.8 million for northern Southeast, and a range of 6–9 million for southern Southeast (Geiger and Savikko 1991, pages 39–41). Escapement goals were revised again in 2003 (Zadina et al. 2004) and 2009 (Heinl et al. 2008).

Salmon escapement goals have often been developed using Ricker stock–recruit analysis (Hilborn and Walters 1992; Quinn and Deriso 1999). However, the pink salmon index measures

available for Southeast Alaska represent an unknown fraction of the total escapement (a relative measure) rather than an estimate of the total number. Thus, a Ricker analysis is not possible without making some unproven and possibly ill-advised assumptions. Zadina et al. (2004) developed biological escapement goals for Southeast Alaska pink salmon based on the "tabular approach" described by Hilborn and Walters (1992); a yield analysis useful for setting escapement goals when the form of the stock-recruit relationship is not known. Heinl et al. (2008) updated the goals in 2009 using the same yield analysis. The current biological escapement goals for pink salmon in Southeast Alaska are 3.0 to 8.0 million index spawners in the Southern Southeast Subregion, 2.5 to 6.0 million index spawners in the Northern Southeast Inside Subregion, and 0.75 to 2.5 million index spawners in the Northern Southeast Outside Subregion (Table 1).

We have continued to update this yield analysis on a triannual basis in conjunction with the BOF regulatory cycle (Piston and Heinl 2011, 2014, 2018, 2020; Figures 3–5). The addition of 3 more years of data through 2023 did not result in substantial change from previous analyses, and no changes to escapement goals are warranted at this time. The overall patterns of yields at given escapement sizes have remained stable. The most notable changes since the 2009 escapement goal update (Heinl et al. 2008) occurred in the Northern Southeast Inside Subregion, where yields in the 3–5 million and 4–6 million escapement index intervals declined by approximately 50% for higher escapement magnitudes, and yields for escapement indices above 6 million increased noticeably. Slight shifts have occurred in the Southern Southeast and Northern Southeast Outside Subregions, but the overall patterns look very similar to those presented by Heinl et al. (2008).
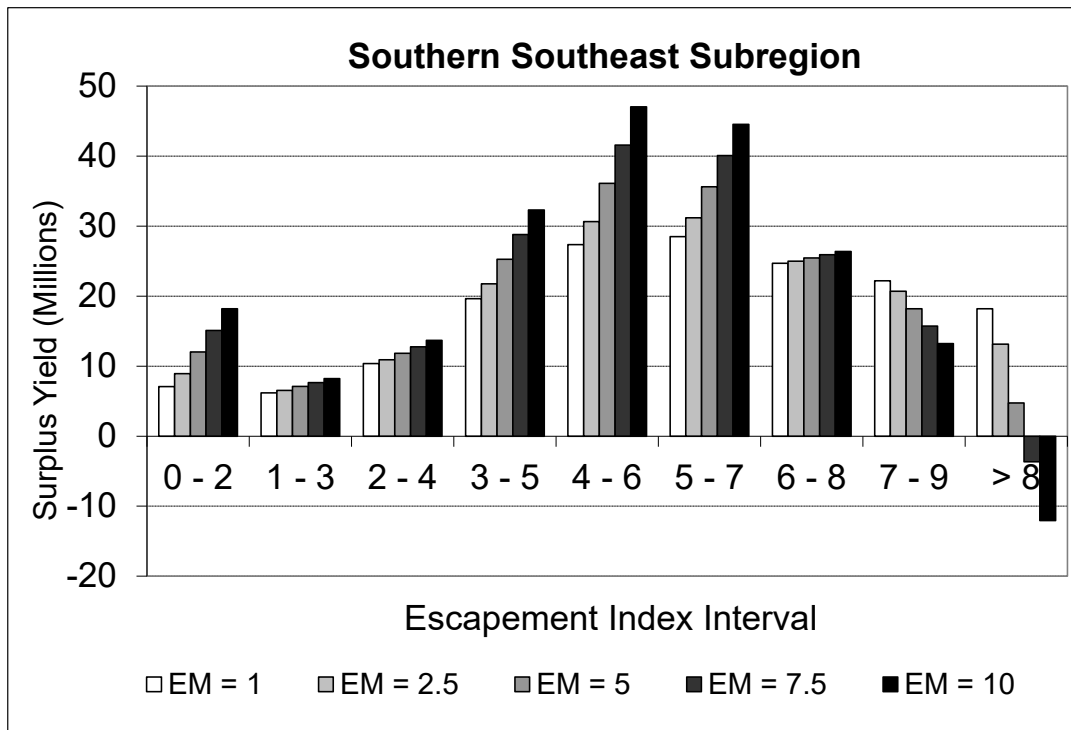
Figure 3.–Surplus (or potential) yield in 5 cases, as a function of index escapement, for the Southern Southeast Subregion of Southeast Alaska. The "EM" denotes the escapement magnitude, i.e., the escapement index multiplied by an expansion factor of 1.0, 2.5, 5.0, 7.5, and 10.0 to approximate the total escapement.

Northern Southeast Inside Subregion
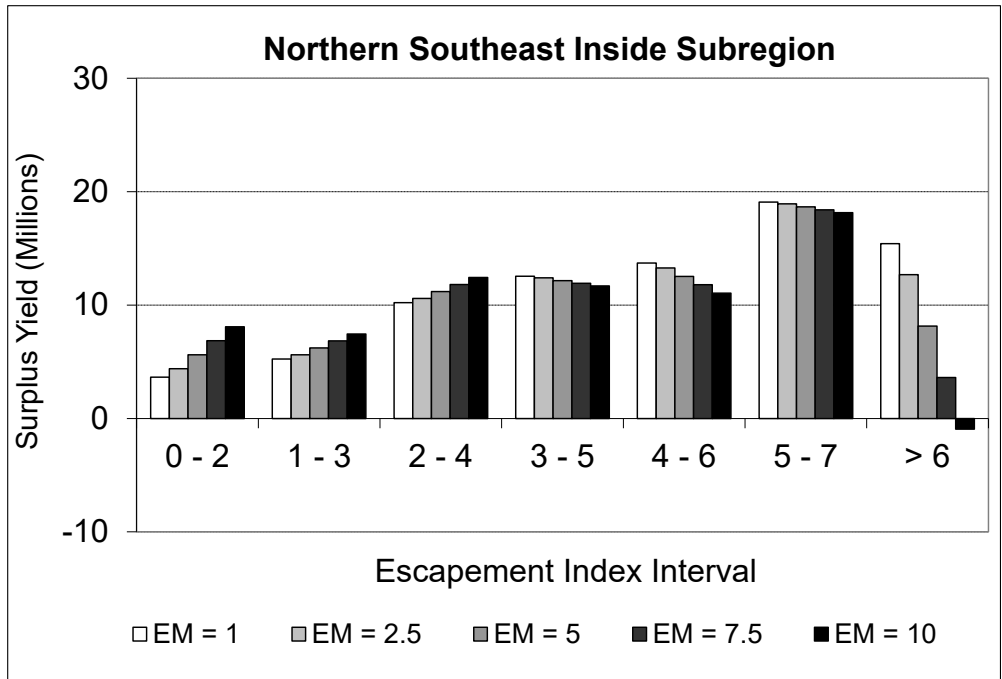
Figure 4.–Surplus (or potential) yield in 5 cases, as a function of index escapement, for the Northern Southeast Inside Subregion of Southeast Alaska. The "EM" denotes the escapement magnitude, i.e., the escapement index multiplied by an expansion factor of 1.0, 2.5, 5.0, 7.5, and 10.0 to approximate the total escapement.

Northern Southeast Outside Subregion
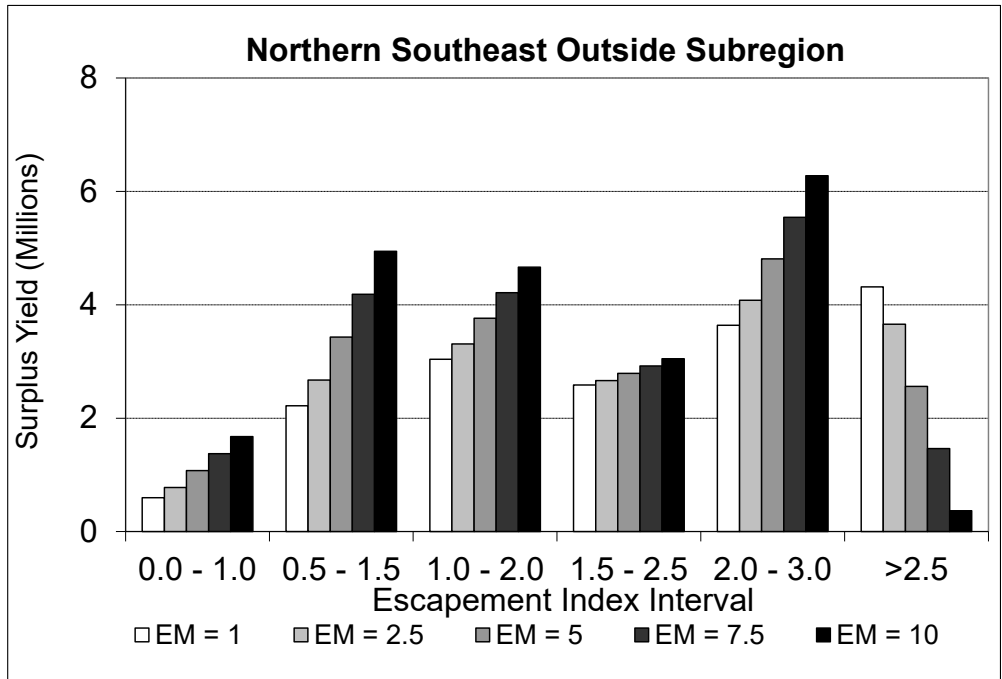
Figure 5.–Surplus (or potential) yield in 5 cases, as a function of index escapement, for the Northern Southeast Outside Subregion of Southeast Alaska. The "EM" denotes the escapement magnitude, i.e., the escapement index multiplied by an expansion factor of 1.0, 2.5, 5.0, 7.5, and 10.0 to approximate the total escapement.

STOCK STATUS

The annual harvest of pink salmon in Southeast Alaska has declined in recent years from a historical high average of 49 million fish per year in the 1990s, to an average of 28 million fish per year over the past 10 years, 2014–2023 (Figure 1, Appendix B1). This decline in overall harvest was due primarily to poor or below average harvests of even-year pink salmon runs since 2006, but odd-year pink salmon harvests have also been more variable in recent years (Figures 1 and 2). Pink salmon escapement goals were met annually over the past 10 years in the Southern Southeast and Northern Southeast Outside Subregions. Escapement indices to the Northern Southeast Inside Subregion were below the escapement goal in 5 of the past 10 years, but have been within or above goal in each of the past 3 years.

Southern Southeast Subregion

The harvest of pink salmon in the Southern Southeast Subregion averaged 19 million fish per year over the past decade, 2014–2023 (Figure 6), which was down from an average harvest of 31 million fish in the 1990s, but the same as the 1960 to 2023 average of 19 million fish. Harvests have been highly variable over the past decade and have ranged from a low of 5.4 million in 2018 to 38.1 million in 2021. The Southern Southeast Subregion biological escapement goal of 3.0 to 8.0 million index spawners was met annually since 1974 (Figure 6, Appendix B2). Pink salmon escapements appear to have been well distributed over the Southern Southeast Subregion. With only 3 exceptions, management targets for districts in the Southern Southeast Subregion (Districts 1–8) were met or exceeded over the past decade (Table 3, Appendix B3). Management targets for the 18 pink salmon stock groups in the Southern Southeast Subregion were met or exceeded 93% of the time over the past decade (Table 4, Appendices B5 and B7).
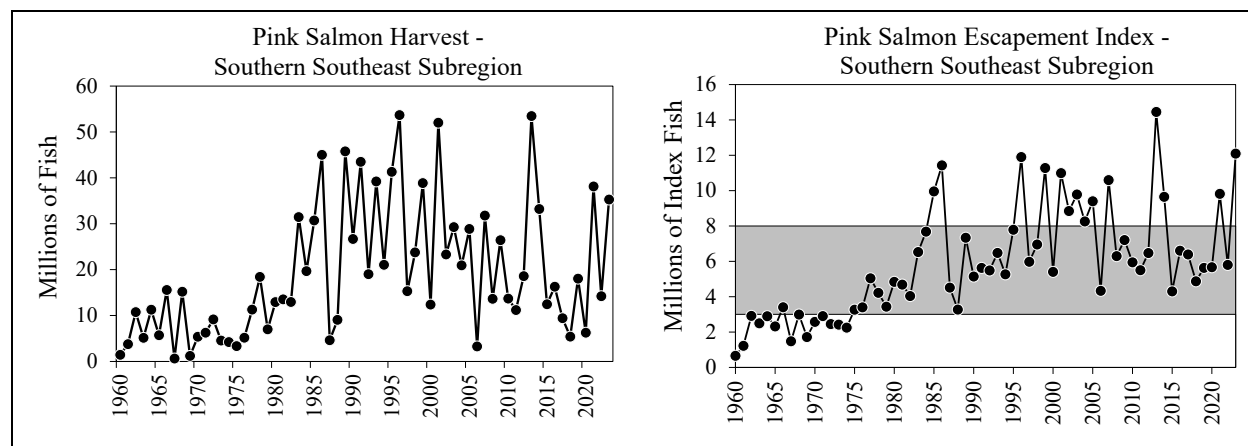
Figure 6.–Annual pink salmon harvest and escapement index for the Southern Southeast Subregion, 1960–2023. The shaded area shows the escapement goal range of 3.0 to 8.0 million index spawners.

Northern Southeast Inside Subregion

Pink salmon runs to the Northern Southeast Inside Subregion developed an extreme odd-even cycle starting in 2008, with some very high odd-year harvests, including the all-time record harvest of 40.6 million fish in 2011, and very low even-year harvests (Figure 7, Appendix B1). In 2019, however, an abundance of the odd-year run abruptly dropped to a very low level, similar to the low abundance observed in recent even years, before rebounding in 2021 and 2023 (Figure 7). The

harvest of pink salmon in the Northern Southeast Inside Subregion averaged 6.0 million fish per year from 2014 to 2023 (Figure 7), which was well below the average harvest of 17.7 million fish from 1991 to 2005 when runs were in a period of high productivity, and below the average harvest of 8.8 million fish since 1960. Even-year harvests have averaged only 1.8 million fish since 2008, and harvests were less than 1.2 million fish in 4 of the past 5 even years.

The Northern Southeast Inside Subregion biological escapement goal of 2.5 to 6.0 million index spawners was met or exceeded in the past 3 years, following a period of poor even-year runs beginning in 2008 (Figure 7, Appendix B2). Escapement indices were below the goal in 6 of 8 even years, 2008 to 2022. Management targets for districts in the subregion (Districts 109–112, 113 inside, and 114–115) were met or exceeded in all cases in odd years from 1997 to 2017, but escapements were below management targets in 6 of 7 districts in 2019 before rebounding in 2021 and 2023 (Appendix B3). The escapement index of 7.4 million fish in 2023 was the second highest index since 1960. Escapement indices during recent even years have been very poor and were below district management targets 75% of the time since 2008 (Table 3). Similarly, escapement indices during recent even years were below management targets for the 21 pink salmon stock groups in the Northern Southeast Inside Subregion 67% of the time since 2008 (Table 4, Appendices B4–B6).
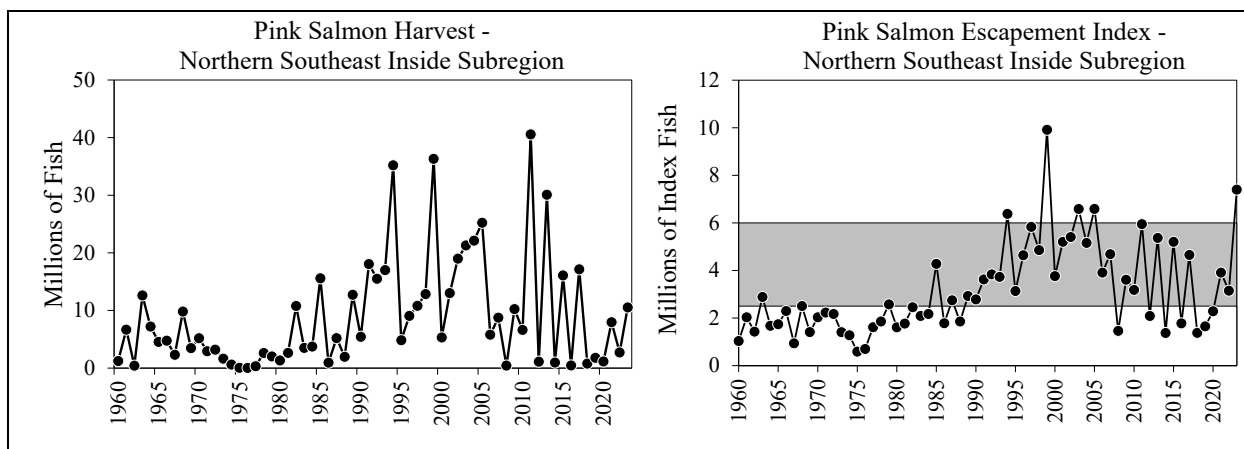
Figure 7.–Annual pink salmon harvest and escapement index for the Northern Southeast Inside Subregion, 1960–2023. The shaded area shows the escapement goal range of 2.5 to 6.0 million index spawners.

Northern Southeast Outside Subregion

The harvest of pink salmon in the Northern Southeast Outside Subregion averaged 2.9 million fish per year over the past decade, 2014–2023 (Figure 8, Appendix B1), which was below the average harvest of 4.1 million fish in the prior 10-year period (2004–2013), but above the average of 1.9 million since 1960. The Northern Outside Subregion biological escapement goal of 0.75 to 2.5 million index spawners has been met or exceeded annually since 1994. The escapement index averaged 2.1 million over the past 10 years (2014–2023; Figure 8, Appendix B2). Given the large increase in pink salmon abundance in the Northern Southeast Outside Subregion since the early 1990s, it is no surprise that management targets for District 13 (outside subdistricts) were met annually over the past decade (Table 3). Management targets for the 7 pink salmon stock groups within the subregion were met or exceeded 87% of the time over the past decade (Table 4, Appendix B6).
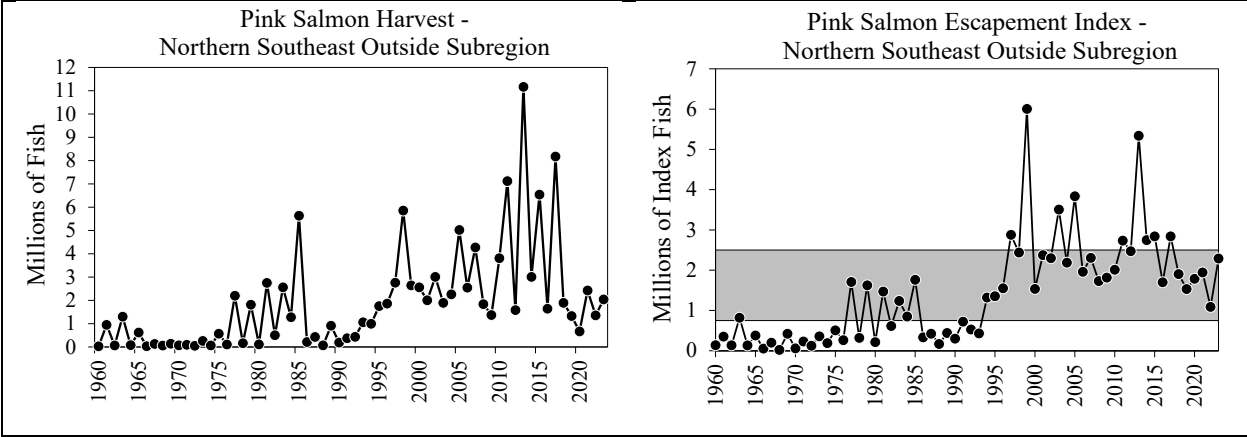
Figure 8.–Annual pink salmon harvest and escapement index for the Northern Southeast Outside Subregion, 1960–2023. The shaded area shows the escapement goal range of 0.75 million to 2.5 million index spawners.

Table 3.–Southeast Alaska pink salmon escapement target ranges by district (in millions), 2014–2023. Symbols indicate when the escapement index for each district was above (+), below (-), or within (✓) the management target range.

Subregion	District	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Lower management target	Upper management target
SSE[a]	101	+	✓	+	✓	✓	✓	✓	+	✓	+	1.02	2.71
SSE	102	+	✓	+	+	-	✓	✓	+	✓	+	0.29	0.77
SSE	103	+	✓	✓	✓	✓	✓	✓	+	✓	+	0.95	2.54
SSE	105	✓	✓	-	✓	✓	✓	✓	✓	✓	+	0.25	0.66
SSE	106	✓	✓	✓	✓	✓	✓	✓	✓	✓	+	0.21	0.57
SSE	107	✓	✓	✓	✓	✓	✓	✓	✓	✓	+	0.26	0.69
SSE	108	-	✓	✓	+	✓	+	✓	+	✓	+	0.02	0.06
NSEI[b]	109	✓	✓	-	✓	-	✓	✓	✓	✓	✓	0.65	1.56
NSEI	110	-	✓	-	✓	-	-	-	✓	✓	+	0.59	1.41
NSEI	111	-	✓	-	✓	-	-	-	✓	-	+	0.25	0.60
NSEI	112	-	✓	-	✓	-	-	-	✓	✓	+	0.52	1.24
NSEI	113	-	+	✓	+	-	-	✓	✓	✓	✓	0.32	0.78
NSEI	114	-	+	-	+	-	-	-	+	✓	+	0.14	0.34
NSEI	115	-	+	-	+	-	-	-	✓	-	-	0.03	0.07
NSEO[c]	113	+	+	✓	+	✓	✓	✓	✓	✓	✓	0.75	2.50

[a] SSE = Southern Southeast Subregion.

[b] NSEI = Northern Southeast Inside Subregion.

[c] NSEO = Northern Southeast Outside Subregion.

13

Table 4.–Southeast Alaska pink salmon escapement target ranges by stock group (in millions), 2014–2023. Symbols indicate when the escapement index for each stock group was above (+), below (-), or within (✓) the management target range.

Subregion	District	Stock group	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Lower management target	Upper management target
SSE[a]	101	E Behm Pink	+	✓	+	✓	✓	✓	✓	+	✓	+	0.67	1.77
SSE	101	Portland Pink	+	✓	+	+	+	✓	+	+	+	+	0.10	0.28
SSE	101	W Behm Pink	+	-	+	✓	✓	✓	✓	+	✓	✓	0.25	0.66
SSE	102	Kasaan Pink	+	✓	+	✓	-	✓	✓	+	✓	+	0.24	0.64
SSE	102	Moira Pink	✓	✓	✓	+	-	✓	✓	+	✓	+	0.05	0.13
SSE	103	E Dall Pink	+	✓	✓	✓	✓	✓	✓	✓	✓	+	0.13	0.36
SSE	103	Hetta Pink	+	✓	✓	+	-	✓	✓	+	✓	+	0.30	0.79
SSE	103	Klawock Pink	+	✓	✓	✓	✓	✓	✓	✓	✓	+	0.42	1.11
SSE	103	Sea Otter Sound Pink	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	0.10	0.28
SSE	105	Affleck Canal Pink	✓	✓	-	✓	-	✓	✓	✓	✓	+	0.14	0.38
SSE	105	Shipley Bay Pink	-	✓	-	✓	✓	✓	✓	✓	✓	+	0.11	0.28
SSE	106	Burnett Pink	+	✓	✓	✓	✓	✓	✓	✓	✓	+	0.05	0.14
SSE	106	Ratz Harbor Pink	+	✓	✓	✓	✓	+	✓	+	✓	✓	0.04	0.12
SSE	106	Totem Bay Pink	-	-	✓	✓	✓	✓	✓	✓	✓	+	0.05	0.13
SSE	106	Whale Pass Pink	✓	✓	✓	✓	✓	✓	✓	+	✓	+	0.07	0.18
SSE	107	Anan Pink	✓	✓	✓	✓	✓	✓	-	✓	✓	+	0.21	0.57
SSE	107	Union Bay Pink	+	✓	✓	✓	✓	✓	✓	+	✓	+	0.05	0.12
SSE	108	Stikine Pink	-	✓	✓	+	✓	+	✓	+	✓	+	0.02	0.06
NSEI[b]	109	E Baranof Pink	-	✓	✓	✓	-	-	-	✓	-	✓	0.09	0.21
NSEI	109	Eliza Harbor Pink	-	✓	-	✓	-	-	-	✓	✓	+	0.14	0.33
NSEI	109	Saginaw Bay Pink	✓	+	✓	✓	✓	✓	✓	✓	✓	+	0.14	0.33
NSEI	109	SE Baranof Pink	✓	✓	✓	+	-	✓	-	-	-	✓	0.07	0.16
NSEI	109	Tebenkof Pink	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	0.22	0.53
NSEI	110	Farragut Bay Pink	✓	+	✓	+	-	-	-	+	✓	+	0.02	0.04
NSEI	110	Houghton Pink	-	✓	-	-	-	-	-	✓	-	✓	0.37	0.87
NSEI	110	Portage Bay Pink	-	✓	✓	+	✓	-	✓	✓	✓	+	0.03	0.08
NSEI	110	Pybus/Gambier Pink	-	+	-	✓	-	-	✓	+	✓	+	0.17	0.41

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14

Table 4.–Page 2 of 2.

Subregion	District	Stock group	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Lower management target	Upper management target
NSEI	111	Seymour Canal Pink	-	✓	-	-	-	-	-	-	-	+	0.15	0.37
NSEI	111	Stephens Pink	-	✓	-	✓	-	-	-	✓	-	+	0.10	0.23
NSEI	112	Freshwater Bay Pink	-	-	-	-	-	-	-	✓	✓	+	0.07	0.16
NSEI	112	Kelp Bay Pink	-	✓	✓	✓	-	✓	✓	✓	-	+	0.07	0.16
NSEI	112	Lower Lynn Canal Pink	-	+	-	✓	-	-	-	✓	-	+	0.03	0.06
NSEI	112	SW Admiralty Pink	-	+	-	+	-	-	-	+	✓	+	0.10	0.24
NSEI	112	Tenakee Pink	-	✓	-	✓	-	-	-	✓	✓	+	0.21	0.49
NSEI	112	W Admiralty Pink	-	-	-	-	-	-	-	-	-	✓	0.05	0.12
NSEI	113	Hoonah Sound Pink	-	+	✓	+	-	-	✓	✓	✓	✓	0.32	0.78
NSEO[c]	113	Lisianski Pink	✓	+	✓	+	✓	+	✓	+	-	+	0.08	0.27
NSEO	113	Portlock Pink	+	+	+	+	+	+	+	+	+	+	0.04	0.13
NSEO	113	Salisbury Sound Pink	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	0.19	0.63
NSEO	113	Sitka Sound Pink	+	✓	✓	✓	✓	-	✓	-	✓	✓	0.21	0.70
NSEO	113	Slocum Arm Pink	+	✓	✓	✓	+	✓	✓	✓	✓	✓	0.16	0.52
NSEO	113	W Crawfish Pink	+	+	✓	✓	✓	-	✓	-	-	-	0.03	0.10
NSEO	113	Whale Bay Pink	+	+	✓	✓	✓	✓	✓	✓	-	✓	0.04	0.15
NSEI	114	Homeshore Pink	-	+	-	-	-	-	-	-	✓	✓	0.03	0.07
NSEI	114	N Chichagof Pink	-	+	-	+	-	-	-	+	✓	+	0.11	0.27
NSEI	115	Upper Lynn Canal Pink	-	+	-	+	-	-	-	✓	-	-	0.03	0.07

[a] SSE = Southern Southeast Subregion

[b] NSEI = Northern Southeast Inside Subregion

[c] NSEO = Northern Southeast Outside Subregion

DISCUSSION

During the 1990s and 2000s, pink salmon were harvested in Southeast Alaska at the highest levels since record keeping began in the late 19th century. Since 2006, however, the average annual harvest has declined, largely due to poor even-year runs to the Northern Southeast Inside Subregion, but also due to a general decline in odd-year runs in other areas of Southeast Alaska. The 2013 pink salmon harvest of 95 million fish was the largest on record and was more than 15 million fish greater than in any other year since commercial fisheries began in Alaska (Figure 1). Odd-year harvests since that time have averaged only 38 million fish, which is well below the average of 54 million fish in odd years from 1985 to 2013, but the harvests of 49 million fish in 2021 and 48 million in 2023 rebounded to historically high levels (Appendix B). Annual pink salmon escapement indices have been consistently within or above escapement goal ranges in the Southern Southeast Subregion since the mid-1970s, and in the Northern Southeast Outside Subregion since the mid-1990s. Even-year escapements to the Northern Southeast Inside Subregion have been poor since 2008, and escapement indices were below the escapement goal in 6 of 8 even years since 2008. We reviewed pink salmon escapement goals by incorporating data through 2023 and recommend no changes. In addition, no stocks of pink salmon currently meet the criteria for stocks of concern as defined by the sustainable salmon fisheries policy.

Following a period of persistently poor even-year runs to the Northern Southeast Inside Subregion, escapements to that subregion improved significantly in 2022. The escapement index of 3.1 million fish was the first even-year escapement to reach the lower bound of the escapement goal range since 2010. Fishery managers implemented severe restrictions on the traditional purse seine fishery in the Northern Southeast Inside Subregion in response to poor pink salmon runs in 2008, 2010, 2012, 2014, 2016, 2018, and 2019 (Piston and Heinl 2020), but were able to offer more opportunity for harvest in 2022. Although escapements to much of the mainland area of the subregion were still below management targets in 2022, pink salmon runs rebounded strongly in areas like eastern Chichagof Island and southern Admiralty Island, which allowed for expanded openings in those areas over most recent even years. There had been little or no harvests of pink salmon since 2006 along the entrance and within Tenakee Inlet on eastern Chichagof Island, but in 2022 just over 1 million pink salmon were harvested in this area (District 112; Subdistricts 12, 13, 41–48, and 50), and the escapement index to the Tenakee stock group was above the midpoint of the management target. District 112 accounted for 69% of the Northern Southeast Inside Subregion harvest of 2.7 million pink salmon in 2022.

In 2023, the overall escapement index to Southeast Alaska was the third highest since 1960, and the upper bound management targets were exceeded in 30 of 46 stock groups in the region. The combination of very large escapements throughout the region and low water levels in the second half of August and early September led to numerous prespawn die-offs in the region. Most of the mortality events were relatively small and, in most cases, it was observed that there were still large numbers of live fish remaining in creeks or off the mouth of creeks. Aerial surveyors noted several large mortality events, and we documented a major mortality event at 108 Creek, in the Whale Pass stock group, along the northeastern side of Prince of Wales Island while preparing to conduct a mark–recapture aerial surveyor training study. There was less than 0.15 inches of precipitation at Klawock, Alaska, 60 km to the south of 108 Creek from 19 August to 3 September 2023 (National Oceanic and Atmospheric Administration National Weather Service [NOAA][1]). Water

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[1]   https://www.weather.gov/wrh/Climate?wfo=ajk (accessed May 2024).

levels were extremely low, making it difficult for pink salmon to access or survive in much of the shallow spawning habitat in the creek. Die-offs happen periodically due to high densities of fish, low water, and high temperatures, which can cause hypoxia or stranding (von Biela et al. 2022; Sergeant et al. 2017), but in most cases, these die-offs are not well documented in Southeast Alaska.

On 3 September 2023, we began setting up a temporary weir at the bottom end of an approximately 2 km stretch of upper 108 Creek as part of a planned mark–recapture study that would allow aerial observers to fly surveys over a known quantity of fish. All dead fish observed near the weir site were prespawn and most of the nearby live fish were sluggish and pale. A foot survey documented a large die-off that had likely been ongoing for several days to a week, based on the variable condition of the carcasses (Figures 9 and 10). We obtained a foot survey estimate of approximately 55,000 dead pink salmon (all prespawn) in the 2 km study area and noted dead juvenile coho salmon and Dolly Varden during the survey. We estimated approximately 88,000 live pink salmon remained in the creek, but they were highly concentrated in pools and in turbulent water near riffles and the barrier falls at the top end of the study area (Figure 11). We flew a Remotely Piloted Aerial System (drone) survey of the study area and created an orthomosaic image of the reach (Figures 12 and 13). Analysis of the imagery produced estimates of 43,150 dead and 76,350 live pink salmon (likely biased low due to difficulty counting dense schools of fish in some areas), which largely confirmed the approximate magnitude of our foot survey estimates. The mark–recapture study was canceled due to the condition of the fish and the risk of creating additional stress, so we were unable to get a precise estimate of live fish in the study area to compare to visual counts. Despite the large number of dead pink salmon, live fish were still numerous when rains returned on 4 September, and it is unclear if the die-offs will have any impact on future returns.

Figure 9.–Prespawn pink salmon mortality event at 108 Creek, Prince of Wales Island, on 3 September 2023, showing fish that primarily died within the week.

Figure 10.–Prespawn pink salmon mortality event at 108 Creek, Prince of Wales Island, on 3 September 2023; carcasses captured by woody debris span the wetted width of the creek.

Figure 11.–Prespawn pink salmon congregated in a shallow but well-oxygenated stretch of stream below a waterfall at 108 Creek, Prince of Wales Island, on 3 September 2023.
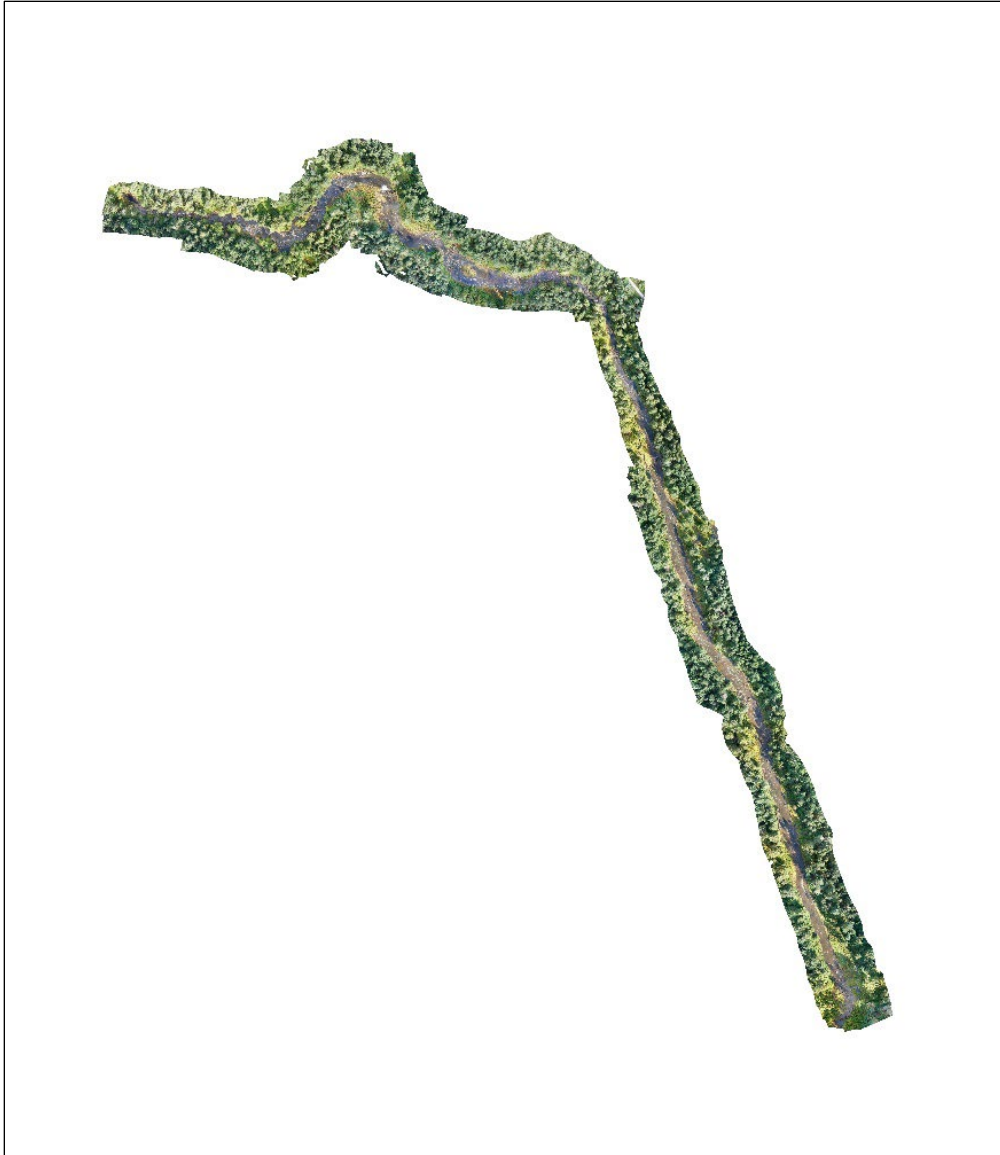
Figure 12.–Low-resolution orthomosaic image of upper 108 Creek, showing the approximately 2 km stretch where a large pink salmon die-off was observed on 3 September 2023. The high-resolution imagery allowed for detailed counting of live and dead fish through this entire reach.

Figure 13.–High-resolution imagery of upper 108 Creek on 3 September 2023, showing a stretch of approximately 20 m where more than 300 pink salmon prespawn mortalities were counted; each dead fish was manually annotated on the orthomosaic and appear on the image above as the red dots.

The large run of pink salmon in 2023 was not predicted, and the joint NOAA and ADF&G preseason harvest forecast of 19 million pink salmon (Donnellan and Munro 2023, pages 43–47) was approximately 40% of the harvest of 48 million fish. Over the last 20 years (2004–2023), the Southeast Alaska pink salmon harvest forecast point estimate was only more than one categorical range (poor, weak, moderate, strong, and excellent) away from the final harvest in 3 cases (Figure 14; pages 47–50 in Donnellan and Munro 2024). The first case in 2006, aligned with a major decline in even-year pink salmon abundance in Southeast Alaska. In 2006, the regionwide harvest of 11.7 million pink salmon was only 27% of the average of the previous 5 even years (43.6 million). The large over forecast in this year was thought to be related to drought conditions, high stream temperatures during the parent year, and poor marine survival (Wertheimer et al 2010). In 2021, odd-year pink salmon runs rebounded strongly from a low parent year run in 2019, but the forecast did not account for the magnitude of improvement over the parent year. Similarly, in 2023, the forecast failed to account for the strong pink salmon runs throughout the north Pacific Ocean, likely due in part to exceptionally high marine survival. Aside from these 3 years, the Southeast Alaska pink salmon forecasts provided by NOAA and ADF&G have provided an accurate assessment of the general run strength for the upcoming year. Pink salmon runs are notoriously difficult to forecast (Adkison 2002; Haeseker et al. 2005), because survival rates vary tremendously (Pyper et al. 2001; Willette et al. 2001) in response to myriad potential factors in the freshwater, early marine, and offshore environments (see Wickett 1958; Heard 1991; Willette et al. 2001; Moss et al. 2005).
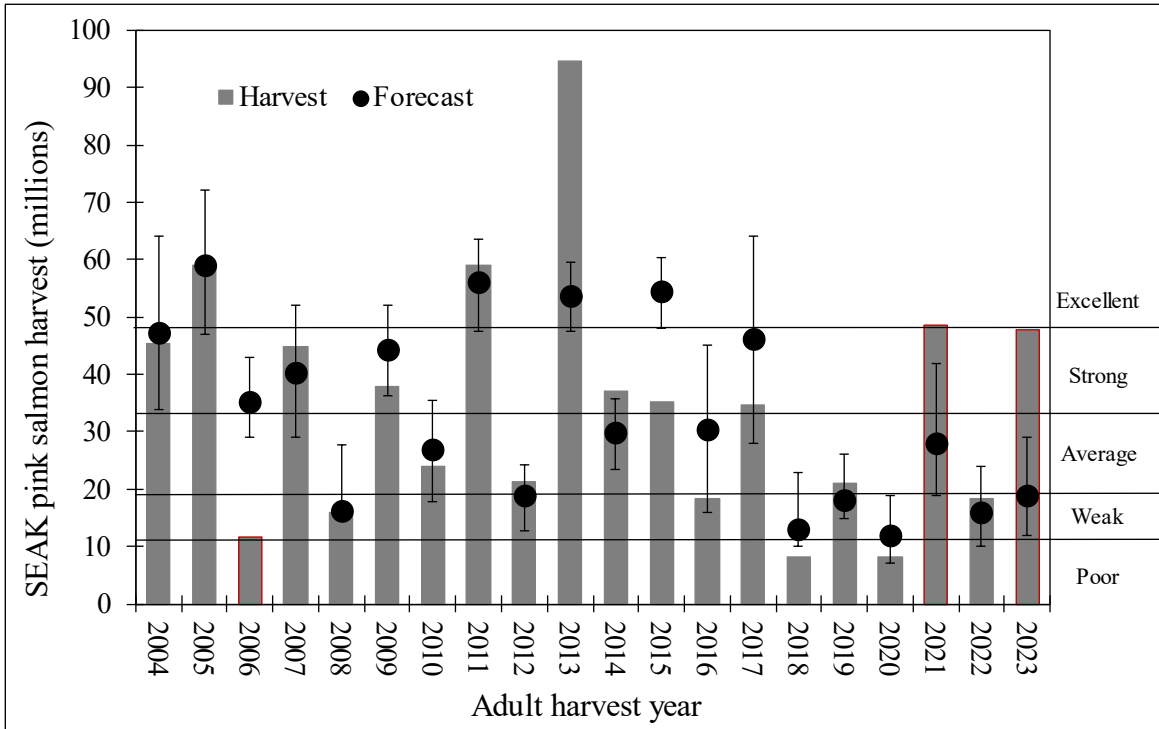
Figure 14.–Pink salmon preseason forecasts compared to the annual SEAK pink salmon harvest 2004–2024. The error bars represent either 80% confidence or 80% prediction intervals of the forecast, depending on the modeling method used, the horizontal dashed lines divide the categorical ranges of run strength based on the 2024 forecast. Bars outlined in red indicate years where the preseason harvest forecast was more than 1 harvest category away from the final harvest.

ACKNOWLEDGMENTS

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APPENDIX A:
ADF&G SALMON MANAGEMENT AREA AND STOCK
GROUP MAPS IN SOUTHEAST ALASKA

Appendix A1.–ADF&G salmon management areas in Southeast Alaska.
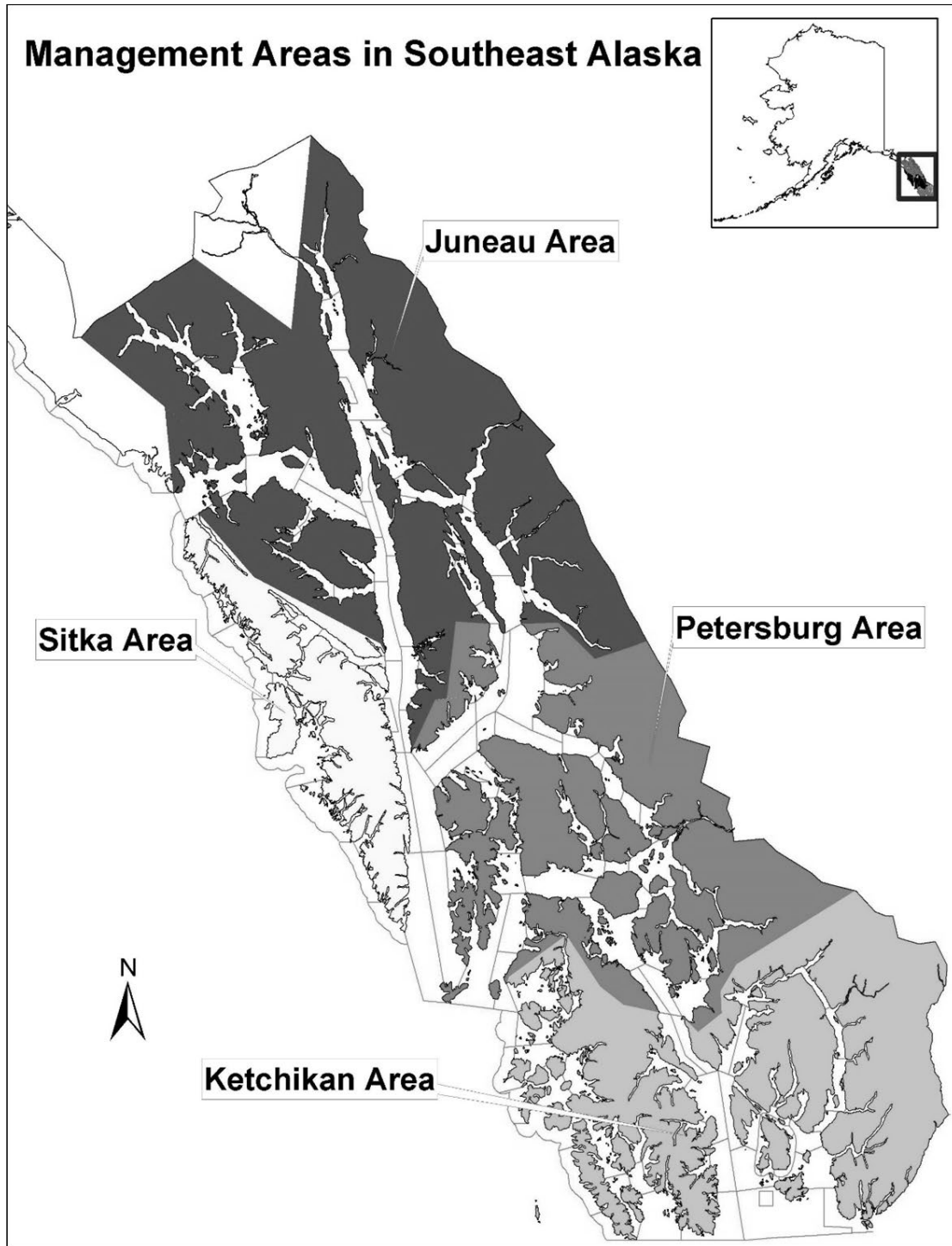
Appendix A2.–Southern Southeast Subregion pink salmon escapement stock groups, management districts (3-digit numbers), and index streams (black circles). Dotted areas indicate areas with no index streams or escapement targets.
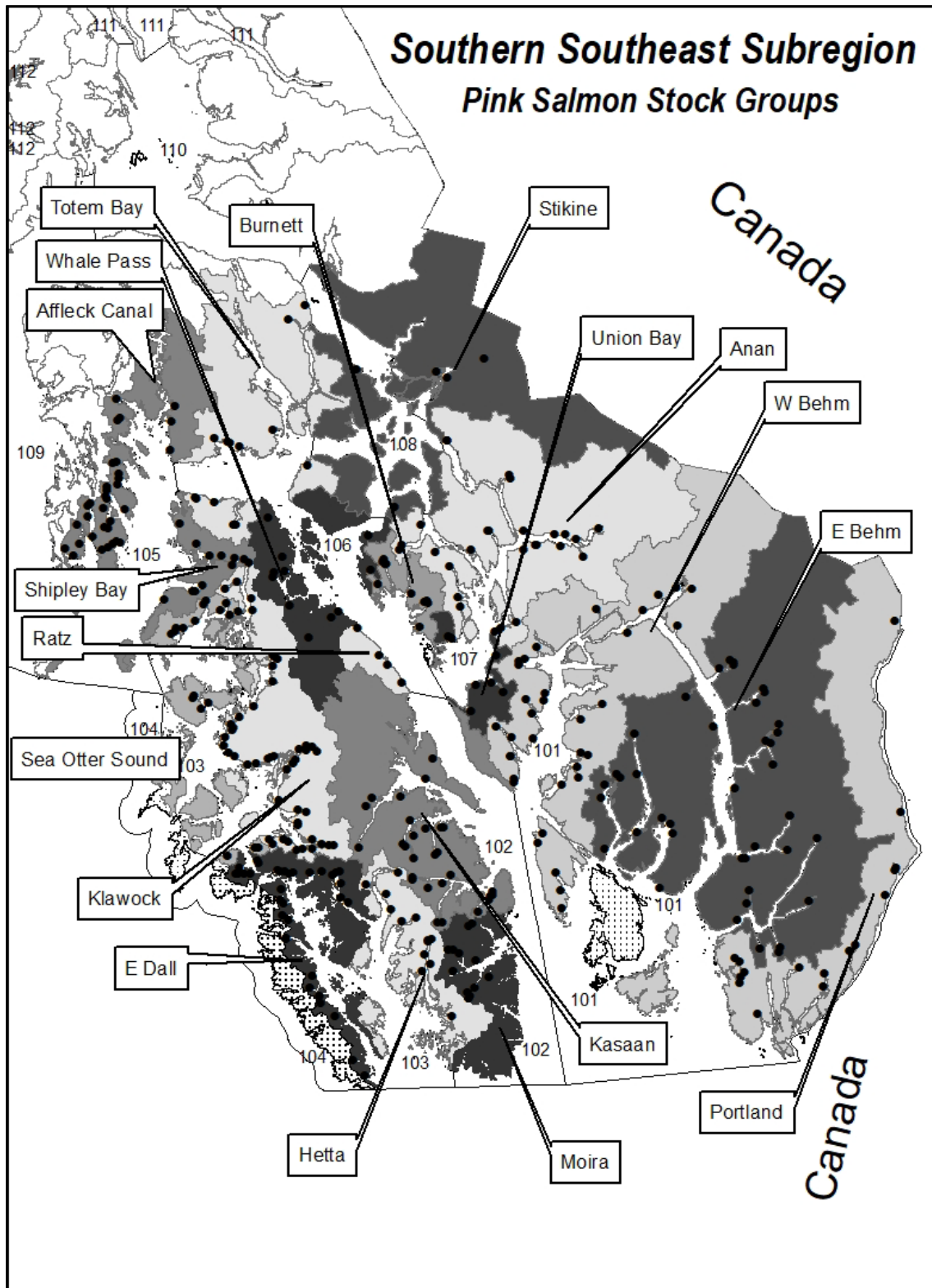
Appendix A3.–Northern Southeast Inside Subregion pink salmon escapement stock groups, management districts (3-digit numbers), and index streams (black circles). Dotted areas indicate areas with no index streams or escapement targets.

Northern Southeast Inside Subregion
Pink Salmon Stock Groups

Canada

Upper Lynn Canal

W Admiralty

Lower Lynn Canal

Homeshore

Stephens

N Chichagof

Seymour Canal

SW Admiralty

Freshwater Bay

Pybus/Gambier

Tenakee

Houghton

Farragut Bay

Hoonah Sound

Kelp Bay

E Baranof

Eliza Harbor

Saginaw Bay

Portage Bay

SE Baranof

Tebenkof

115

114

112

113

111

110

113

109

105

106

108

107

101

103
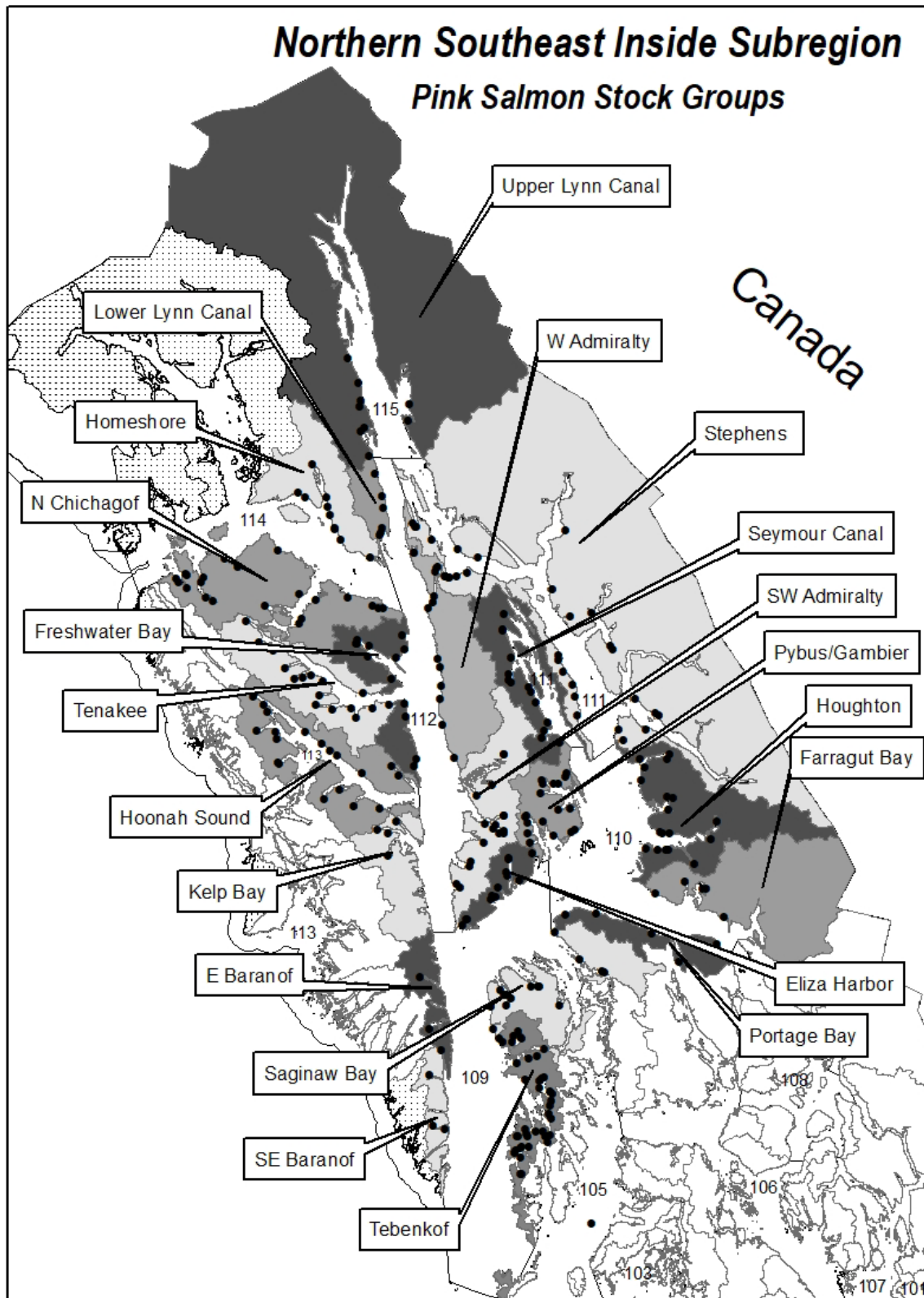
Appendix A4.–Northern Southeast Outside Subregion pink salmon escapement stock groups, management districts (3-digit numbers), and index streams (black circles) Dotted areas indicate areas with no index streams or escapement targets.

Northern Southeast Outside Subregion

Pink Salmon Stock Groups
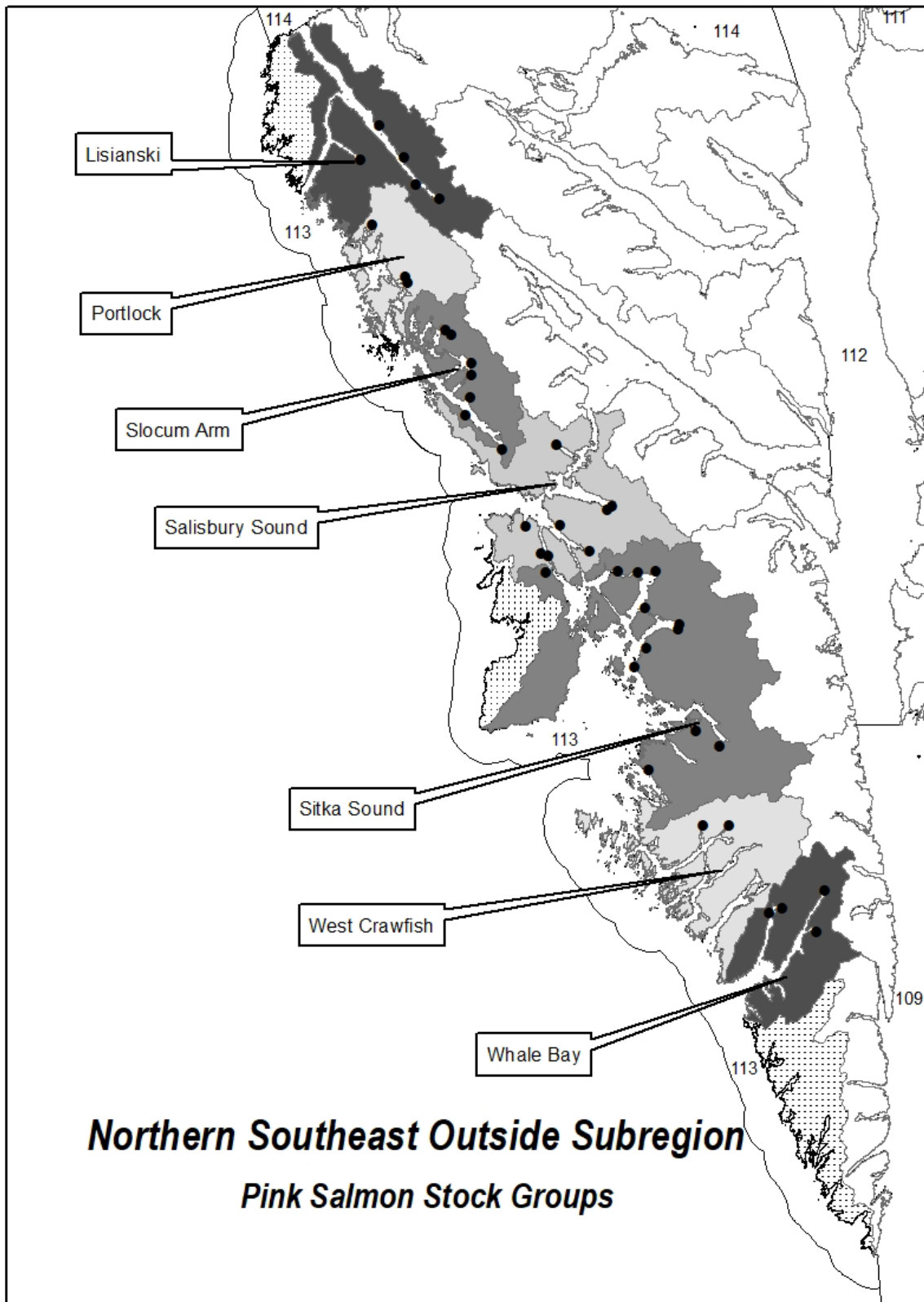
APPENDIX B:
PINK SALMON ESCAPEMENT AND HARVEST IN SOUTHEAST ALASKA

Appendix B1.–Southeast Alaska pink salmon harvest in numbers of fish by subregion, 1960–2023.

Year	Southern Southeast	Northern Southeast Inside	Northern Southeast Outside	Total Southeast	Yakutat Area
1960	1,439,666	1,234,374	25,195	2,699,235	12,911
1961	3,771,200	6,675,666	948,824	11,395,690	63,608
1962	10,740,428	424,435	64,864	11,229,727	26,063
1963	5,136,144	12,601,389	1,299,712	19,037,245	78,697
1964	11,257,947	7,206,628	75,646	18,540,221	40,038
1965	5,710,458	4,545,683	618,554	10,874,695	4,402
1966	15,561,555	4,758,856	29,101	20,349,512	1,405
1967	641,540	2,308,414	126,857	3,076,811	32,532
1968	15,193,876	9,821,918	59,760	25,075,554	2,317
1969	1,199,140	3,471,523	137,346	4,808,268	64,117
1970	5,370,759	5,176,532	67,955	10,615,246	3,777
1971	6,259,244	2,923,266	91,746	9,274,256	80,977
1972	9,152,645	3,187,714	49,734	12,390,093	3,026
1973	4,558,505	1,624,533	258,759	6,441,797	17,078
1974	4,220,805	601,734	62,221	4,884,760	4,277
1975	3,332,982	50,933	565,808	3,949,723	80,305
1976	5,161,936	38,033	105,641	5,305,610	28,549
1977	11,298,253	330,103	2,198,176	13,826,532	78,306
1978	18,424,978	2,619,929	161,987	21,206,894	36,484
1979	6,989,781	2,020,284	1,812,074	10,822,139	153,802
1980	12,924,273	1,322,635	109,642	14,356,550	143,865
1981	13,524,934	2,627,473	2,748,168	18,900,575	137,633
1982	12,961,072	10,768,872	502,612	24,232,556	12,267
1983	31,461,882	3,501,144	2,556,585	37,519,611	26,304
1984	19,676,515	3,733,277	1,274,806	24,684,598	21,158
1985	30,712,155	15,590,447	5,631,050	51,933,652	25,669
1986	45,019,457	931,285	212,319	46,163,061	9,216
1987	4,631,329	5,206,285	428,801	10,266,415	14,007
1988	9,054,789	1,964,105	66,605	11,085,499	121,663
1989	45,763,480	12,725,119	910,881	59,399,480	60,723
1990	26,683,252	5,438,631	187,888	32,309,771	32,231
1991	43,497,275	18,049,335	374,552	61,921,162	5,177
1992	19,009,576	15,499,994	432,711	34,942,281	21,027
1993	39,218,951	17,009,607	1,057,305	57,285,863	13,487
1994	21,060,265	35,205,066	995,836	57,261,167	13,710
1995	41,315,465	4,840,459	1,754,562	47,910,486	55,020
1996	53,676,323	9,063,248	1,858,221	64,597,792	31,922
1997	15,298,105	10,824,815	2,757,750	28,880,670	94,554
1998	23,748,765	12,846,432	5,853,552	42,448,749	86,653
1999	38,857,000	36,317,770	2,643,335	77,818,105	30,179
2000	12,376,777	5,315,004	2,557,196	20,248,977	64,449
2001	52,011,540	13,008,041	2,004,072	67,023,653	32,338
2002	23,319,261	18,989,224	3,006,916	45,315,401	15,606
2003	29,277,547	21,297,303	1,891,885	52,466,735	48,897

-continued-

Year	Southern Southeast	Northern Southeast Inside	Northern Southeast Outside	Total Southeast	Yakutat Area
2004	20,924,256	22,125,523	2,259,965	45,309,744	23,268
2005	28,864,281	25,236,181	5,021,025	59,121,487	60,755
2006	3,267,182	5,795,700	2,543,618	11,606,500	88,911
2007	31,776,856	8,746,171	4,273,371	44,796,398	88,342
2008	13,638,249	432,582	1,838,093	15,908,924	65,427
2009	26,425,304	10,229,169	1,369,884	38,024,357	77,073
2010	13,695,021	6,542,958	3,796,398	24,034,377	161,710
2011	11,190,373	40,557,510	7,117,571	58,865,454	205,992
2012	18,586,213	1,110,820	1,574,067	21,271,100	27,408
2013	53,463,227	30,088,571	11,162,060	94,713,858	67,528
2014	33,213,584	949,841	3,009,327	37,172,752	20,768
2015	12,468,441	16,082,708	6,541,419	35,092,568	68,858
2016	16,269,948	462,365	1,641,887	18,374,200	21,898
2017	9,415,126	17,144,998	8,174,244	34,734,368	92,232
2018	5,398,004	776,990	1,892,706	8,067,700	30,055
2019	18,038,549	1,778,044	1,325,317	21,141,910	33,054
2020	6,250,765	1,146,283	665,941	8,062,989	14,667
2021	38,137,729	7,967,226	2,423,237	48,528,192	28,126
2022	14,221,379	2,720,666	1,357,113	18,299,158	22,800
2023	35,269,916	10,519,784	2,039,181	47,828,881	9,637

Appendix B2.–Southeast Alaska pink salmon escapement indices and biological escapement goal (BEG) ranges by subregion (in millions of index fish), 1960–2023.

		Southern Southeast	Northern Southeast Inside	Northern Southeast Outside
	BEG lower range	3.00	2.50	0.75
	BEG upper range	8.00	6.00	2.50
Year				
1960		0.66	1.03	0.14
1961		1.22	2.03	0.35
1962		2.91	1.43	0.13
1963		2.50	2.89	0.82
1964		2.90	1.67	0.13
1965		2.32	1.74	0.38
1966		3.40	2.29	0.05
1967		1.48	0.94	0.20
1968		2.99	2.51	0.02
1969		1.72	1.41	0.42
1970		2.57	2.03	0.06
1971		2.90	2.23	0.23
1972		2.45	2.17	0.12
1973		2.42	1.41	0.36
1974		2.25	1.28	0.19
1975		3.26	0.59	0.50
1976		3.39	0.70	0.26
1977		5.04	1.61	1.71
1978		4.22	1.86	0.32
1979		3.43	2.58	1.62
1980		4.84	1.61	0.21
1981		4.68	1.77	1.47
1982		4.04	2.45	0.61
1983		6.52	2.08	1.24
1984		7.67	2.17	0.85
1985		9.95	4.28	1.76
1986		11.42	1.78	0.33
1987		4.51	2.75	0.42
1988		3.27	1.85	0.17
1989		7.33	2.93	0.44
1990		5.14	2.79	0.30
1991		5.63	3.62	0.72
1992		5.49	3.84	0.53
1993		6.47	3.73	0.43
1994		5.27	6.38	1.32
1995		7.79	3.13	1.35
1996		11.90	4.64	1.55
1997		5.97	5.83	2.88
1998		6.95	4.86	2.44
1999		11.28	9.92	6.00
2000		5.40	3.76	1.53
2001		10.99	5.21	2.37

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Appendix B2.–Page 2 of 2.

Year	Southern Southeast	Northern Southeast Inside	Northern Southeast Outside
BEG lower range	3.00	2.50	0.75
BEG upper range	8.00	6.00	2.50
2002	8.85	5.41	2.30
2003	9.78	6.58	3.51
2004	8.26	5.16	2.19
2005	9.40	6.59	3.84
2006	4.33	3.91	1.96
2007	10.59	4.68	2.31
2008	6.29	1.46	1.73
2009	7.20	3.61	1.82
2010	5.94	3.18	2.01
2011	5.50	5.95	2.73
2012	6.47	2.09	2.47
2013	14.45	5.37	5.34
2014	9.65	1.37	2.75
2015	4.30	5.21	2.84
2016	6.60	1.78	1.70
2017	6.39	4.65	2.84
2018	4.87	1.37	1.90
2019	5.63	1.65	1.53
2020	5.66	2.29	1.79
2021	9.81	3.91	1.94
2022	5.80	3.15	1.09
2023	12.09	7.40	2.29

Appendix B3.–Pink salmon escapement index series and management target ranges by district (in millions of index fish), 1960–2023.

												Inside			Outside
	101	102	103	105	106	107	108	109	110	111	112	113	114	115	113
Lower	1.02	0.29	0.95	0.25	0.21	0.26	0.02	0.65	0.59	0.25	0.52	0.32	0.14	0.03	0.75
Upper	2.71	0.77	2.54	0.66	0.57	0.69	0.06	1.56	1.41	0.60	1.24	0.78	0.34	0.07	2.50
1960	0.24	0.06	0.18	0.08	0.04	0.05	0.00	0.22	0.21	0.22	0.23	0.09	0.05	0.01	0.14
1961	0.31	0.10	0.37	0.13	0.16	0.11	0.04	0.49	0.40	0.24	0.53	0.22	0.14	0.03	0.35
1962	0.79	0.21	0.73	0.41	0.31	0.45	0.01	0.40	0.39	0.15	0.29	0.09	0.09	0.02	0.13
1963	0.73	0.23	0.77	0.24	0.20	0.28	0.04	0.51	0.41	0.32	0.82	0.37	0.43	0.03	0.82
1964	0.77	0.28	0.73	0.36	0.38	0.34	0.04	0.52	0.40	0.13	0.33	0.16	0.12	0.02	0.13
1965	0.39	0.18	0.80	0.45	0.29	0.20	0.01	0.60	0.25	0.12	0.34	0.22	0.19	0.02	0.38
1966	0.98	0.35	0.92	0.39	0.33	0.41	0.03	0.59	0.44	0.38	0.53	0.22	0.11	0.03	0.05
1967	0.43	0.14	0.47	0.22	0.11	0.09	0.01	0.23	0.18	0.08	0.20	0.10	0.14	0.01	0.20
1968	0.92	0.26	0.80	0.39	0.35	0.21	0.05	0.70	0.64	0.35	0.45	0.24	0.09	0.03	0.02
1969	0.49	0.23	0.51	0.15	0.12	0.20	0.01	0.31	0.28	0.08	0.35	0.17	0.20	0.02	0.42
1970	0.87	0.18	0.80	0.21	0.18	0.30	0.04	0.41	0.57	0.30	0.46	0.18	0.09	0.02	0.06
1971	0.71	0.36	0.88	0.29	0.27	0.36	0.03	0.45	0.61	0.22	0.49	0.14	0.28	0.03	0.23
1972	0.86	0.19	0.63	0.20	0.19	0.36	0.02	0.39	0.59	0.43	0.40	0.25	0.09	0.03	0.12
1973	0.73	0.24	0.66	0.25	0.31	0.20	0.02	0.27	0.24	0.18	0.41	0.08	0.21	0.02	0.36
1974	0.82	0.21	0.61	0.14	0.22	0.24	0.01	0.22	0.29	0.27	0.26	0.17	0.06	0.02	0.19
1975	0.99	0.44	0.93	0.22	0.32	0.34	0.01	0.14	0.08	0.08	0.17	0.05	0.07	0.01	0.50
1976	1.06	0.38	1.01	0.14	0.44	0.36	0.02	0.17	0.14	0.06	0.17	0.11	0.04	0.01	0.26
1977	1.87	0.45	1.23	0.27	0.31	0.89	0.03	0.39	0.28	0.14	0.39	0.22	0.18	0.02	1.71
1978	1.59	0.38	1.33	0.27	0.24	0.40	0.01	0.38	0.35	0.10	0.51	0.40	0.09	0.02	0.32
1979	0.73	0.41	1.22	0.31	0.29	0.41	0.06	0.68	0.68	0.23	0.50	0.30	0.13	0.04	1.62
1980	1.80	0.46	1.62	0.24	0.33	0.36	0.04	0.36	0.43	0.10	0.39	0.23	0.09	0.02	0.21
1981	1.51	0.33	1.89	0.38	0.30	0.24	0.03	0.37	0.39	0.13	0.46	0.25	0.15	0.02	1.47
1982	1.39	0.28	1.40	0.24	0.31	0.36	0.06	0.65	0.57	0.23	0.52	0.33	0.12	0.03	0.61
1983	2.20	0.79	2.14	0.48	0.44	0.41	0.05	0.49	0.32	0.25	0.50	0.35	0.15	0.03	1.24
1984	3.16	0.72	2.54	0.46	0.33	0.42	0.04	0.57	0.37	0.27	0.42	0.39	0.13	0.02	0.85
1985	3.20	0.79	3.66	0.67	0.82	0.77	0.05	0.99	0.92	0.42	0.90	0.42	0.48	0.15	1.76
1986	4.03	0.95	4.46	0.65	0.72	0.56	0.06	0.64	0.25	0.11	0.52	0.20	0.07	0.02	0.33
1987	1.83	0.38	1.57	0.17	0.22	0.30	0.05	0.51	0.96	0.44	0.36	0.30	0.11	0.06	0.42
1988	1.14	0.38	1.07	0.19	0.21	0.26	0.02	0.52	0.41	0.15	0.44	0.22	0.09	0.03	0.17
1989	2.39	0.57	2.50	0.45	0.52	0.83	0.08	0.71	0.97	0.22	0.55	0.32	0.14	0.03	0.44
1990	1.59	0.47	1.77	0.41	0.47	0.38	0.06	0.62	1.03	0.15	0.46	0.33	0.13	0.06	0.30
1991	1.42	0.51	1.97	0.63	0.41	0.58	0.11	1.04	1.02	0.15	0.84	0.43	0.12	0.02	0.72
1992	2.63	0.71	1.23	0.14	0.19	0.53	0.06	0.90	1.07	0.42	0.85	0.43	0.14	0.04	0.53
1993	1.77	0.61	2.42	0.58	0.56	0.49	0.04	0.76	0.61	0.15	1.21	0.57	0.41	0.03	0.43
1994	1.58	0.34	1.78	0.39	0.64	0.51	0.04	1.43	1.28	0.96	1.61	0.62	0.39	0.10	1.32
1995	3.10	0.50	2.63	0.53	0.60	0.39	0.03	0.80	0.34	0.21	1.05	0.17	0.54	0.03	1.35
1996	4.23	1.58	4.27	0.66	0.59	0.55	0.03	1.68	0.47	0.79	1.18	0.34	0.13	0.05	1.55
1997	2.00	0.67	1.59	0.61	0.52	0.54	0.04	1.13	0.75	0.78	2.05	0.32	0.75	0.06	2.88
1998	2.44	0.82	2.19	0.40	0.56	0.51	0.04	1.19	0.85	0.70	1.37	0.52	0.17	0.06	2.44

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38

Appendix B3.–Page 2 of 2.

							Management district					Inside			Outside
	101	102	103	105	106	107	108	109	110	111	112	113	114	115	113
							Management target								
Lower	1.02	0.29	0.95	0.25	0.21	0.26	0.02	0.65	0.59	0.25	0.52	0.32	0.14	0.03	0.75
Upper	2.71	0.77	2.54	0.66	0.57	0.69	0.06	1.56	1.41	0.60	1.24	0.78	0.34	0.07	2.50
1999	2.58	1.23	3.30	1.70	1.56	0.83	0.07	2.73	1.89	0.77	2.38	0.88	1.11	0.15	6.00
2000	1.73	0.89	1.70	0.33	0.30	0.43	0.01	0.90	0.89	0.31	0.91	0.60	0.11	0.05	1.53
2001	3.71	1.15	3.14	1.05	1.01	0.81	0.12	1.14	1.08	0.44	1.24	0.52	0.74	0.05	2.37
2002	3.03	1.25	2.69	0.68	0.57	0.58	0.04	1.43	1.30	0.47	1.37	0.53	0.27	0.04	2.30
2003	3.17	1.13	2.67	0.97	0.89	0.79	0.15	1.12	1.73	0.52	1.50	1.27	0.39	0.05	3.51
2004	2.48	0.64	3.30	0.64	0.58	0.56	0.06	1.28	1.28	0.46	1.28	0.54	0.27	0.05	2.19
2005	2.89	1.22	2.63	1.03	0.71	0.80	0.11	1.75	1.11	0.44	1.97	0.71	0.52	0.08	3.84
2006	1.36	0.63	1.33	0.24	0.34	0.37	0.05	1.09	0.78	0.34	0.94	0.46	0.24	0.07	1.96
2007	3.98	1.42	3.48	0.45	0.54	0.67	0.05	1.04	0.84	0.40	1.19	0.79	0.38	0.06	2.31
2008	2.13	0.94	1.98	0.26	0.38	0.59	0.01	0.53	0.35	0.17	0.23	0.09	0.06	0.03	1.73
2009	2.66	1.06	2.32	0.38	0.32	0.43	0.03	0.84	0.60	0.28	0.91	0.59	0.26	0.13	1.82
2010	2.35	0.71	1.58	0.35	0.43	0.46	0.06	0.96	0.93	0.43	0.46	0.26	0.12	0.03	2.01
2011	2.08	0.80	1.51	0.58	0.30	0.20	0.03	1.29	0.94	0.51	1.21	0.76	0.54	0.69	2.73
2012	2.90	0.83	1.72	0.29	0.28	0.42	0.02	0.55	0.52	0.23	0.46	0.07	0.18	0.07	2.47
2013	5.07	2.59	4.56	0.96	0.63	0.56	0.08	1.70	0.88	0.32	1.14	0.76	0.48	0.09	5.34
2014	4.42	1.29	2.72	0.30	0.47	0.43	0.01	0.67	0.33	0.08	0.17	0.09	0.02	0.00	2.75
2015	1.18	0.69	1.35	0.45	0.28	0.32	0.04	1.26	0.95	0.43	1.02	0.86	0.42	0.25	2.84
2016	3.34	0.87	1.56	0.19	0.31	0.29	0.03	0.58	0.43	0.08	0.26	0.40	0.03	0.00	1.70
2017	1.98	0.88	2.18	0.50	0.27	0.51	0.08	1.45	0.64	0.29	1.05	0.79	0.36	0.08	2.84
2018	2.04	0.25	1.42	0.28	0.33	0.53	0.02	0.59	0.24	0.07	0.18	0.24	0.04	0.00	1.90
2019	2.24	0.67	1.49	0.33	0.43	0.36	0.10	0.68	0.28	0.09	0.32	0.20	0.05	0.02	1.53
2020	2.10	0.59	1.85	0.39	0.40	0.30	0.04	0.67	0.52	0.14	0.42	0.44	0.10	0.01	1.79
2021	4.17	1.52	2.57	0.41	0.50	0.55	0.09	1.15	0.92	0.27	0.85	0.32	0.35	0.06	1.94
2022	2.36	0.54	1.58	0.40	0.39	0.48	0.03	0.83	0.69	0.20	0.83	0.39	0.21	0.00	1.09
2023	3.86	2.04	3.42	0.92	0.69	1.08	0.08	1.54	1.48	0.71	2.36	0.65	0.64	0.03	2.29

Appendix B4.–Escapement index series and management targets for pink salmon stock groups in the Juneau management area, 1960–2023.

Stock group	Seymour Canal	Stephens	Freshwater Bay	Lower Lynn Canal	SW Admiralty	Tenakee	W Admiralty	Homeshore	N Chichagof	Upper Lynn Canal
Management area	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	11	11	12	12	12	12	12	14	14	15
No. of streams	14	29	12	6	17	18	14	10	21	9
Lower target	160,000	100,000	70,000	30,000	100,000	210,000	50,000	30,000	110,000	30,000
Upper target	400,000	230,000	160,000	60,000	240,000	490,000	120,000	70,000	270,000	70,000
1960	171,765	45,667	33,763	9,146	52,872	92,288	15,522	11,426	43,449	12,891
1961	175,834	59,951	75,653	25,273	79,602	250,062	40,581	17,537	121,907	25,466
1962	108,247	45,792	26,986	13,033	66,878	122,743	23,506	20,335	68,845	17,886
1963	237,438	78,591	109,378	32,095	77,161	469,132	50,789	37,220	395,823	30,187
1964	58,757	72,316	56,460	24,062	67,643	99,006	30,561	30,018	88,476	20,980
1965	66,586	52,553	51,251	18,393	48,888	136,257	34,784	25,012	165,715	21,800
1966	306,758	68,644	76,573	32,072	95,698	222,165	43,113	20,784	84,812	28,775
1967	51,297	28,880	23,915	20,751	30,116	41,389	54,187	12,245	123,912	11,747
1968	271,178	83,548	56,948	19,101	95,154	176,318	42,071	23,638	67,466	28,984
1969	30,526	46,634	45,959	23,605	88,779	88,836	75,014	44,032	151,402	15,089
1970	231,371	69,288	90,612	22,569	103,040	164,477	54,908	27,752	62,225	21,322
1971	151,956	72,872	69,283	36,839	116,324	164,114	62,733	31,986	252,049	27,927
1972	341,271	93,274	55,382	19,224	98,623	152,761	29,081	31,156	54,911	27,188
1973	115,726	67,418	61,019	29,622	42,781	171,862	66,152	23,095	185,720	17,616
1974	219,297	50,543	59,948	8,886	26,965	124,428	17,035	11,470	44,280	15,924
1975	34,477	41,441	34,785	8,167	17,882	51,993	37,741	6,920	59,861	7,360
1976	33,185	25,555	30,548	12,010	20,274	85,848	8,227	7,296	37,376	8,779
1977	84,527	57,474	93,992	37,563	62,117	111,780	37,856	17,836	158,508	20,221
1978	61,970	41,257	82,384	23,703	55,952	270,031	37,775	16,533	71,397	23,251
1979	136,748	96,100	105,542	54,000	100,123	93,454	70,201	30,203	104,357	42,372
1980	51,246	46,577	34,732	29,021	107,356	154,428	27,973	29,238	60,027	17,932
1981	32,010	93,747	28,778	20,355	63,592	147,372	54,464	30,920	114,945	16,072
1982	127,057	102,899	51,223	23,427	108,896	206,995	32,784	23,420	94,601	27,268
1983	124,168	120,901	31,419	34,936	116,876	226,370	34,027	22,958	131,138	33,923
1984	171,998	94,918	51,992	11,034	81,767	160,281	29,679	36,426	98,182	23,365
1985	234,224	185,127	109,931	43,857	195,400	319,575	108,800	153,557	325,508	151,395
1986	68,449	36,839	50,887	17,072	88,537	303,433	20,488	16,435	49,569	16,626
1987	197,405	241,854	41,250	14,950	85,397	95,514	49,600	21,698	87,321	60,421
1988	48,834	99,917	56,440	18,100	53,290	220,748	18,802	31,772	58,281	25,531
1989	130,207	92,574	67,525	30,379	128,714	150,508	64,400	27,825	108,249	28,036
1990	51,489	99,608	56,320	17,989	180,467	148,184	28,914	39,122	89,521	58,371

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Stock group	Seymour Canal	Stephens	Freshwater Bay	Lower Lynn Canal	SW Admiralty	Tenakee	W Admiralty	Homeshore	N Chichagof	Upper Lynn Canal
Management area	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	11	11	12	12	12	12	12	14	14	15
No. of streams	14	29	12	6	17	18	14	10	21	9
Lower target	160,000	100,000	70,000	30,000	100,000	210,000	50,000	30,000	110,000	30,000
Upper target	400,000	230,000	160,000	60,000	240,000	490,000	120,000	70,000	270,000	70,000
1991	57,808	91,300	63,503	14,340	109,956	452,353	59,130	17,075	102,638	23,850
1992	151,559	263,450	130,021	45,092	140,380	441,969	51,237	47,219	93,571	36,437
1993	107,741	38,857	167,000	23,921	219,198	606,693	81,298	62,000	349,387	29,764
1994	279,911	685,088	295,085	83,141	280,793	690,006	140,094	111,684	275,945	97,223
1995	130,532	78,241	273,254	48,491	136,518	451,082	120,442	63,879	475,038	25,512
1996	341,087	450,337	159,350	19,689	320,067	545,400	57,297	38,586	87,792	45,189
1997	505,019	273,786	323,414	136,000	221,133	1,013,690	190,221	114,861	638,895	55,968
1998	329,328	368,204	152,400	24,793	536,444	516,807	33,214	39,134	129,210	60,801
1999	435,221	332,505	236,429	235,881	457,511	978,550	210,682	204,630	905,582	151,849
2000	193,250	116,960	80,305	24,800	275,488	409,550	30,914	33,087	80,247	47,777
2001	278,145	165,126	260,473	293,290	235,058	151,491	99,403	107,151	631,944	47,817
2002	248,468	223,620	187,157	59,069	233,394	764,495	63,269	46,674	218,805	38,739
2003	349,333	175,432	176,202	67,575	378,463	238,012	158,834	70,806	320,941	51,517
2004	307,516	156,722	192,167	50,209	380,773	392,849	181,912	81,111	185,978	49,947
2005	210,198	233,062	161,542	138,741	643,682	522,660	161,746	104,705	417,650	83,550
2006	178,631	165,369	141,124	86,909	212,737	284,166	171,088	48,532	187,813	69,015
2007	266,115	135,305	173,600	45,158	388,800	354,992	65,092	57,859	319,457	55,927
2008	107,827	59,788	61,896	4,947	21,200	48,450	19,741	30,352	33,081	25,393
2009	126,695	155,609	139,350	84,877	154,747	283,394	64,114	56,876	201,159	126,888
2010	306,000	120,405	91,667	32,909	70,995	82,107	97,200	39,079	75,972	28,914
2011	197,531	313,391	169,416	143,718	214,798	338,586	119,150	137,720	400,647	691,889
2012	142,093	89,817	55,558	31,280	76,660	183,117	93,907	44,024	140,118	71,394
2013	221,225	95,349	67,850	38,800	236,436	442,003	153,225	82,756	398,900	86,049
2014	51,470	28,273	20,080	1,786	33,343	102,820	5,225	4,216	16,640	2,436
2015	248,620	178,551	62,850	154,306	262,157	398,574	49,805	98,188	325,663	254,757
2016	63,030	13,751	36,061	4,493	39,755	99,865	8,905	1,600	25,852	4,029
2017	110,030	179,464	63,150	51,300	346,272	432,683	31,700	22,795	337,920	80,935
2018	50,325	21,530	31,100	8,600	37,684	45,739	23,450	12,300	30,932	4,665
2019	36,800	54,698	29,050	16,100	69,924	41,281	27,500	3,856	43,875	22,822
2020	100,800	36,350	66,465	15,070	44,113	158,575	18,041	25,500	70,141	7,104
2021	98,940	168,303	87,750	50,000	363,666	212,950	37,300	27,276	318,750	63,797
2022	149,100	48,750	103,500	27,149	226,338	391,700	29,100	32,752	172,908	646

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Appendix B4.–Page 3 of 3.

Stock group	Seymour Canal	Stephens	Freshwater Bay	Lower Lynn Canal	SW Admiralty	Tenakee	W Admiralty	Homeshore	N Chichagof	Upper Lynn Canal
Management area	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau	Juneau
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	11	11	12	12	12	12	12	14	14	15
No. of streams	14	29	12	6	17	18	14	10	21	9
Lower target	160,000	100,000	70,000	30,000	100,000	210,000	50,000	30,000	110,000	30,000
Upper target	400,000	230,000	160,000	60,000	240,000	490,000	120,000	70,000	270,000	70,000
2023	443,000	262,233	219,855	122,431	1,027,406	712,300	76,200	46,421	590,914	26,133

Note: NSEI = Northern Southeast Inside Subregion.

Appendix B5.–Escapement index series and management targets for pink salmon stock groups in the Petersburg management area, 1960–2023.

Stock group	Affleck Canal	Shipley Bay	Burnett	Ratz Harbor	Totem Bay	Whale Pass	Anan	Union Bay	Stikine
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	5	5	6	6	6	6	7	7	8
No. of streams	33	12	10	4	13	10	27	8	6
Lower target	140,000	110,000	50,000	40,000	50,000	70,000	210,000	50,000	20,000
Upper target	380,000	280,000	140,000	120,000	130,000	180,000	570,000	120,000	60,000
1960	56,874	22,310	11,550	11,093	13,166	6,429	42,794	7,955	4,087
1961	74,339	50,943	40,571	44,013	45,652	27,755	103,336	9,733	40,618
1962	315,377	97,339	42,737	40,793	87,067	138,456	405,147	46,603	11,009
1963	97,325	145,371	43,516	42,059	45,197	70,966	238,163	41,490	41,166
1964	241,853	115,376	178,169	48,812	60,893	88,234	299,409	45,390	37,150
1965	153,497	295,773	74,494	87,152	49,045	79,089	154,275	47,802	9,077
1966	231,652	155,599	60,480	57,336	71,513	144,414	337,890	68,023	27,104
1967	72,436	150,244	21,837	24,903	27,512	36,129	81,790	8,355	9,355
1968	184,459	207,042	122,870	50,333	98,850	82,573	183,423	26,442	49,493
1969	67,882	81,999	13,503	40,617	31,524	37,848	172,749	28,544	11,397
1970	129,948	75,689	42,015	31,198	53,612	53,908	266,527	29,447	38,702
1971	138,841	150,207	45,652	62,240	51,714	113,759	297,139	64,458	28,088
1972	151,062	48,888	50,854	44,876	45,620	47,925	318,011	44,942	17,595
1973	132,759	112,327	97,417	15,615	44,388	156,723	163,409	41,041	20,422
1974	98,977	41,438	50,581	37,318	35,629	95,447	202,365	37,747	9,157
1975	106,500	115,722	96,097	21,500	60,761	145,081	293,493	47,928	11,919
1976	96,352	39,023	138,003	60,817	40,803	201,678	261,615	93,602	19,184
1977	109,549	158,069	110,856	69,743	54,178	72,579	752,891	136,570	26,450
1978	165,405	104,074	44,248	70,400	50,147	72,002	326,129	70,541	8,154
1979	163,469	148,839	67,722	47,304	98,575	72,087	365,703	48,789	58,611
1980	156,218	78,975	66,601	77,412	75,422	112,301	281,714	79,778	35,080
1981	196,117	187,128	77,582	53,653	60,233	106,979	173,749	69,910	30,113
1982	127,583	115,259	65,220	86,300	85,091	72,089	293,009	67,500	59,058
1983	281,474	203,496	115,251	66,482	99,580	163,179	331,447	78,082	51,972
1984	286,050	171,794	65,811	16,300	83,180	166,773	348,254	68,997	37,607
1985	356,587	309,768	116,600	223,500	231,159	247,362	608,270	160,984	53,200
1986	445,786	206,313	132,775	196,900	143,793	244,710	371,920	183,950	59,410
1987	68,864	96,521	43,665	22,510	102,391	46,517	240,188	58,600	52,209
1988	157,710	34,861	47,711	70,000	55,841	37,856	163,871	94,600	15,513
1989	229,656	220,500	83,540	141,442	126,821	165,907	628,423	197,917	76,478
1990	320,857	88,806	115,300	71,300	85,607	194,488	236,062	142,004	56,136

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Stock group	Affleck Canal	Shipley Bay	Burnett	Ratz Harbor	Totem Bay	Whale Pass	Anan	Union Bay	Stikine
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	5	5	6	6	6	6	7	7	8
No. of streams	33	12	10	4	13	10	27	8	6
Lower target	140,000	110,000	50,000	40,000	50,000	70,000	210,000	50,000	20,000
Upper target	380,000	280,000	140,000	120,000	130,000	180,000	570,000	120,000	60,000
1991	249,688	375,693	121,845	67,700	124,099	96,027	457,152	125,847	114,009
1992	111,985	30,386	76,973	17,500	58,711	38,045	480,860	50,618	56,504
1993	278,371	296,693	67,650	119,500	283,415	93,105	402,151	89,273	35,864
1994	251,082	134,593	172,054	107,200	82,617	273,690	402,878	107,800	35,744
1995	256,297	277,912	58,250	191,700	133,828	217,765	263,085	129,691	26,186
1996	449,929	209,200	147,200	131,200	149,539	161,045	363,694	183,400	25,950
1997	319,271	290,546	128,366	70,462	132,101	188,081	485,466	57,990	44,185
1998	223,369	174,409	125,780	138,300	80,728	214,377	388,962	120,063	38,002
1999	821,107	874,712	387,587	391,000	469,386	316,310	632,197	198,069	66,598
2000	214,344	118,400	120,867	56,700	79,902	47,214	358,607	72,200	12,436
2001	578,079	476,567	263,219	178,800	271,757	295,729	610,633	196,732	118,313
2002	536,426	146,757	212,455	148,313	108,662	100,420	441,025	138,527	41,915
2003	396,633	578,350	203,072	247,200	154,436	282,876	631,599	158,721	154,196
2004	463,593	177,835	96,600	172,000	175,843	131,787	450,034	110,842	62,188
2005	564,872	467,966	162,221	132,800	134,719	278,036	633,828	168,548	110,330
2006	140,991	96,959	70,447	101,200	72,993	99,245	274,024	97,589	54,895
2007	231,447	220,266	161,032	137,950	70,771	166,498	535,219	131,031	50,525
2008	107,628	149,191	132,750	181,200	30,752	39,204	488,822	98,482	9,511
2009	188,558	190,990	88,327	86,300	44,075	103,505	355,772	72,826	29,498
2010	206,291	142,859	128,350	118,600	94,069	90,770	341,055	122,274	55,300
2011	347,775	230,003	38,349	88,000	84,676	89,684	127,211	71,112	34,500
2012	209,649	75,409	75,166	89,400	49,638	67,917	327,410	96,062	22,640
2013	554,918	409,800	175,193	192,400	127,479	135,987	417,989	138,984	79,840
2014	209,065	88,285	146,750	160,400	49,470	117,387	292,477	141,850	13,250
2015	329,978	118,838	69,531	63,750	49,737	94,771	240,028	76,568	38,400
2016	103,817	81,600	101,328	70,750	63,970	74,600	222,924	67,750	33,900
2017	259,502	236,084	51,569	56,500	87,668	72,043	406,898	99,300	79,683
2018	113,122	170,100	77,769	59,500	55,232	137,683	470,082	58,988	20,719
2019	167,350	163,424	93,113	146,000	50,004	143,189	289,167	73,077	102,284

-continued-

44

Stock group	Affleck Canal	Shipley Bay	Burnett	Ratz Harbor	Totem Bay	Whale Pass	Anan	Union Bay	Stikine
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	5	5	6	6	6	6	7	7	8
No. of streams	33	12	10	4	13	10	27	8	6
Lower target	140,000	110,000	50,000	40,000	50,000	70,000	210,000	50,000	20,000
Upper target	380,000	280,000	140,000	120,000	130,000	180,000	570,000	120,000	60,000
2020	208,612	181,404	85,599	102,000	72,845	139,016	207,699	87,803	36,597
2021	215,237	195,568	97,103	133,500	76,810	194,771	430,840	121,450	92,578
2022	230,230	172,977	118,566	54,000	96,529	124,956	386,390	93,179	34,295
2023	438,973	480,000	145,800	96,000	201,211	245,412	908,446	169,794	82,548

Stock group	Eliza Harbor	Saginaw Bay	Tebenkof	Farragut Bay	Houghton	Portage Bay	Pybus/Gambier
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	9	9	9	10	10	10	10
No. of streams	13	15	40	4	18	7	18
Lower target	140,000	140,000	220,000	20,000	370,000	30,000	170,000
Upper target	330,000	330,000	530,000	40,000	870,000	80,000	410,000
1960	37,686	45,222	64,577	6,412	142,821	10,361	52,604
1961	87,143	83,498	179,982	9,866	214,181	27,748	150,165
1962	65,524	68,831	169,362	10,789	248,942	19,099	107,408
1963	130,114	93,698	177,547	13,928	246,161	25,456	122,991
1964	130,205	167,256	168,131	10,435	238,958	24,179	123,588
1965	94,849	170,195	262,780	7,888	179,277	14,740	48,079
1966	222,341	77,901	205,947	14,313	290,413	23,276	110,342
1967	38,191	45,095	86,063	5,845	126,451	19,862	26,115
1968	190,289	148,048	246,557	15,613	374,995	45,784	199,651
1969	47,808	72,455	117,196	8,779	213,838	17,135	42,326
1970	116,656	56,065	150,250	10,859	357,635	19,918	183,554
1971	89,081	96,949	156,199	13,892	414,984	43,613	132,889
1972	79,569	96,861	128,378	13,260	363,255	16,789	193,726
1973	36,211	49,511	135,748	6,857	128,828	19,265	83,240
1974	34,534	77,033	67,888	7,921	134,928	11,797	133,389
1975	12,155	27,383	63,539	1,994	41,534	4,851	26,887
1976	21,210	23,620	104,222	4,367	76,676	6,921	56,470
1977	59,355	54,494	168,708	8,456	150,582	20,915	96,460
1978	61,587	42,203	162,282	7,383	186,702	23,408	132,854
1979	86,791	150,545	209,326	15,039	385,742	27,155	254,564
1980	77,840	65,830	106,231	7,154	274,751	21,847	128,740
1981	54,587	71,773	74,368	9,226	314,102	21,203	50,381
1982	68,021	155,405	163,756	24,850	389,728	35,016	124,143
1983	76,104	102,813	147,799	12,374	214,358	24,847	67,170
1984	99,318	118,641	163,848	7,420	249,966	33,710	82,669
1985	188,150	244,452	334,651	38,936	519,400	69,980	286,784
1986	87,711	209,523	245,681	12,891	129,221	23,111	80,384
1987	135,895	144,899	109,986	25,053	647,979	59,363	232,060
1988	80,639	64,914	191,074	6,100	266,705	34,728	103,272
1989	162,201	201,472	195,355	36,112	629,300	59,950	240,415
1990	199,513	106,801	175,353	21,915	709,385	53,430	246,617

46

Stock group	Eliza Harbor	Saginaw Bay	Tebenkof	Farragut Bay	Houghton	Portage Bay	Pybus/Gambier
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	9	9	9	10	10	10	10
No. of streams	13	15	40	4	18	7	18
Lower target	140,000	140,000	220,000	20,000	370,000	30,000	170,000
Upper target	330,000	330,000	530,000	40,000	870,000	80,000	410,000
1991	269,273	260,596	229,960	39,475	692,888	53,388	236,147
1992	329,419	114,273	290,736	20,236	685,602	53,300	313,829
1993	204,274	114,376	211,381	28,600	362,943	44,344	172,345
1994	248,100	279,874	462,549	29,600	803,512	55,218	393,281
1995	168,799	72,655	242,107	16,703	173,110	22,566	125,666
1996	305,900	276,951	539,271	20,865	213,789	27,444	209,761
1997	283,926	186,914	253,971	21,094	377,505	53,086	297,491
1998	227,784	206,352	259,364	17,602	446,203	34,506	347,010
1999	736,413	547,110	642,864	68,068	1,115,055	141,112	570,659
2000	196,205	243,604	241,250	22,903	468,280	30,859	363,813
2001	174,984	229,090	398,240	25,190	708,450	45,594	303,832
2002	193,956	493,594	521,082	29,351	824,900	52,472	397,157
2003	145,102	277,078	520,582	40,875	1,313,600	65,863	310,228
2004	275,600	309,440	353,626	55,166	640,250	88,684	497,400
2005	345,768	367,374	477,883	34,694	633,061	36,200	410,318
2006	200,538	199,393	230,596	24,363	438,999	24,000	291,285
2007	253,245	195,488	315,614	32,288	532,520	58,806	212,298
2008	69,812	62,114	285,998	10,077	215,379	18,844	103,791
2009	113,274	120,446	266,280	22,739	383,993	45,748	146,520
2010	134,184	237,455	382,213	37,603	458,200	68,573	368,800
2011	183,373	295,442	415,663	40,984	533,208	67,778	298,665
2012	97,100	115,945	237,334	23,968	250,042	42,850	204,750
2013	301,378	489,195	524,587	44,961	519,204	76,841	238,550
2014	101,006	130,470	272,366	23,100	151,675	16,513	141,380
2015	219,434	330,183	482,876	43,600	440,220	60,279	410,800
2016	73,850	138,425	195,749	25,848	238,500	41,225	120,960
2017	221,840	271,706	476,250	41,000	302,446	82,000	212,050
2018	35,850	235,737	298,194	17,834	150,171	36,882	37,379

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47

Stock group	Eliza Harbor	Saginaw Bay	Tebenkof	Farragut Bay	Houghton	Portage Bay	Pybus/Gambier
Management area	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg	Petersburg
Subregion	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI	NSEI
District	9	9	9	10	10	10	10
No. of streams	13	15	40	4	18	7	18
Lower target	140,000	140,000	220,000	20,000	370,000	30,000	170,000
Upper target	330,000	330,000	530,000	40,000	870,000	80,000	410,000
2019	90,018	176,021	226,332	2,697	157,016	26,811	97,969
2020	103,485	142,989	304,796	15,384	204,732	50,144	246,881
2021	247,062	296,987	441,395	54,500	393,900	41,000	425,788
2022	196,044	280,243	294,998	23,000	303,656	50,800	316,536
2023	481,253	335,441	453,243	109,067	553,000	101,200	715,137

Note: SSE = Southern Southeast Subregion; NSEI = Northern Southeast Inside Subregion.

Appendix B6.–Escapement index series and management targets for pink salmon stock groups in the Sitka management area, 1960–2023.

Stock group	E Baranof	SE Baranof	Kelp Bay	Hoonah Sound	Lisianski	Portlock	Salisbury Sound	Sitka Sound	Slocum Arm	W Crawfish	Whale Bay
Management area	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka
Subregion	NSEI	NSEI	NSEI	NSEI	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO
District	9	9	12	13	13	13	13	13	13	13	13
No. of streams	2	4	4	20	5	3	8	12	7	2	4
Upper target	90,000	70,000	70,000	320,000	80,000	40,000	190,000	210,000	160,000	30,000	40,000
Lower target	210,000	160,000	160,000	780,000	270,000	130,000	630,000	700,000	520,000	100,000	150,000
1960	39,848	28,250	29,122	87,516	10,839	17,600	15,772	30,494	45,964	3,528	13,485
1961	78,710	55,801	57,521	215,894	57,489	65,200	87,628	68,160	47,774	5,113	18,671
1962	55,279	39,191	40,398	88,296	10,018	22,800	18,776	23,885	45,031	3,237	10,105
1963	40,000	69,306	81,692	367,694	174,577	77,000	245,028	196,095	95,716	700	30,686
1964	7,312	45,971	47,387	162,628	34,895	11,500	19,465	13,735	40,898	1,100	9,928
1965	28,403	47,773	49,244	215,473	101,676	19,848	58,920	96,037	74,970	14,550	13,314
1966	18,171	63,052	64,995	223,815	7,124	3,779	9,007	15,732	10,451	1,995	3,926
1967	36,313	26,027	26,537	102,704	25,244	14,533	39,227	63,554	42,126	7,673	7,672
1968	58,460	59,354	59,802	242,877	3,848	1,684	5,129	4,470	3,831	796	1,000
1969	36,945	38,674	30,378	172,121	37,956	20,118	123,063	115,306	76,529	16,144	31,772
1970	30,000	52,712	21,846	182,444	4,979	3,855	14,528	10,275	17,854	2,228	4,387
1971	58,000	53,000	44,000	140,024	36,452	6,655	58,906	75,957	44,300	500	6,800
1972	27,996	54,064	45,564	247,442	7,271	7,189	16,317	17,850	61,338	4,700	7,858
1973	6,941	38,599	39,790	79,998	24,926	13,700	29,171	175,003	80,792	13,680	19,371
1974	6,755	31,344	26,217	165,557	16,942	11,779	17,594	56,334	64,089	7,218	14,203
1975	20,811	16,847	19,332	51,282	31,931	22,765	87,802	210,546	93,879	19,345	38,071
1976	2,200	17,423	8,327	110,183	12,476	15,382	29,800	68,611	110,440	10,017	14,416
1977	64,229	38,997	47,298	221,006	155,621	124,114	282,020	732,689	219,363	65,526	128,954
1978	33,000	84,000	35,600	402,247	28,662	13,415	79,682	82,941	76,982	12,193	23,995
1979	73,568	160,000	75,700	304,298	209,048	157,885	331,647	511,672	249,000	62,296	102,531
1980	28,200	79,500	35,656	225,422	23,643	10,747	46,546	45,039	48,055	8,135	29,925
1981	65,000	106,000	146,000	250,451	240,003	108,000	391,000	464,800	166,500	32,000	68,107
1982	114,000	153,000	98,000	330,259	38,666	31,485	220,746	161,929	95,500	33,911	30,151
1983	81,000	78,000	57,239	346,284	239,825	140,000	218,000	344,000	195,374	29,200	69,312
1984	101,000	83,000	84,000	387,063	58,777	20,500	178,000	315,946	104,000	106,000	66,000
1985	155,000	63,000	126,000	424,529	325,477	85,000	449,500	542,925	228,746	34,000	95,000
1986	68,100	24,731	35,600	196,647	46,579	14,000	41,128	117,217	72,355	16,818	23,000
1987	97,000	24,400	73,500	299,790	69,871	37,933	36,361	132,737	110,582	21,141	13,409
1988	157,566	26,556	68,000	222,759	29,819	7,743	26,874	40,121	42,576	6,430	13,432

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Stock group	E Baranof	SE Baranof	Kelp Bay	Hoonah Sound	Lisianski	Portlock	Salisbury Sound	Sitka Sound	Slocum Arm	W Crawfish	Whale Bay
Management area	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka
Subregion	NSEI	NSEI	NSEI	NSEI	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO
District	9	9	12	13	13	13	13	13	13	13	13
No. of streams	2	4	4	20	5	3	8	12	7	2	4
Upper target	90,000	70,000	70,000	320,000	80,000	40,000	190,000	210,000	160,000	30,000	40,000
Lower target	210,000	160,000	160,000	780,000	270,000	130,000	630,000	700,000	520,000	100,000	150,000
1989	119,022	31,200	107,000	315,901	95,000	54,000	36,903	47,064	172,192	6,922	29,248
1990	83,837	56,000	32,500	329,697	21,727	16,816	56,318	49,448	119,172	10,341	24,538
1991	200,014	78,500	140,000	430,679	53,893	25,000	175,300	101,747	289,676	27,680	48,336
1992	85,293	76,500	37,372	430,739	20,866	20,500	41,629	77,393	139,028	21,655	205,000
1993	107,000	122,500	111,000	565,562	81,422	20,637	184,800	33,240	74,342	16,439	17,675
1994	322,000	113,500	117,000	617,825	53,747	62,000	144,000	336,154	447,000	57,208	220,000
1995	126,000	186,000	23,889	173,807	162,197	87,000	404,175	292,979	280,917	34,671	90,000
1996	321,401	238,000	77,500	343,341	78,751	98,185	255,000	587,275	307,000	82,000	143,000
1997	270,000	132,500	161,177	323,509	540,000	290,000	271,282	1,045,375	563,000	80,969	85,300
1998	236,701	262,000	106,800	522,607	90,103	97,894	311,000	1,061,978	349,019	152,000	377,000
1999	553,694	251,000	258,896	882,218	946,000	390,058	1,472,500	1,624,076	1,190,500	129,363	251,674
2000	132,218	86,457	86,295	599,273	78,120	127,000	255,900	514,558	389,955	47,307	120,273
2001	197,192	136,340	202,298	516,090	652,000	160,000	176,201	639,470	568,000	24,000	153,193
2002	157,466	62,500	62,576	529,013	149,076	137,574	387,808	882,403	381,953	114,418	243,449
2003	123,800	53,600	476,500	1,269,956	287,000	318,000	476,000	1,447,610	717,000	64,000	196,000
2004	291,800	48,900	78,800	539,182	87,000	170,000	375,800	847,000	267,000	155,000	285,800
2005	370,115	185,000	338,000	714,000	539,000	274,000	535,000	1,474,000	496,000	185,000	332,196
2006	299,000	159,000	41,500	455,000	233,000	183,000	304,000	693,000	287,000	157,000	101,000
2007	149,000	128,000	157,564	787,500	459,000	235,000	302,000	667,000	345,000	128,000	170,000
2008	84,000	32,882	72,600	91,705	248,000	239,000	186,500	631,000	299,000	84,000	42,739
2009	194,087	144,000	186,000	590,789	343,000	212,000	235,000	689,000	239,000	40,000	59,080
2010	150,000	53,000	85,500	261,708	249,500	293,000	174,000	767,000	372,000	107,000	47,000
2011	212,909	186,000	225,000	762,000	397,000	461,000	340,000	929,467	378,000	88,000	140,718
2012	74,000	28,500	15,800	67,798	273,000	420,000	335,500	732,000	485,000	140,000	84,179
2013	200,000	187,000	204,000	760,000	789,000	871,000	501,000	1,413,000	806,000	470,000	487,000
2014	52,900	118,000	10,500	88,346	268,000	405,000	209,000	747,000	644,000	230,000	243,000
2015	102,000	125,000	97,000	862,008	494,000	568,000	361,000	573,000	459,000	178,000	207,000

-continued-

50

Appendix B6.–Page 3 of 3.

Stock group	E Baranof	SE Baranof	Kelp Bay	Hoonah Sound	Lisianski	Portlock	Salisbury Sound	Sitka Sound	Slocum Arm	W Crawfish	Whale Bay
Management area	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka	Sitka
Subregion	NSEI	NSEI	NSEI	NSEI	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO	NSEO
District	9	9	12	13	13	13	13	13	13	13	13
No. of streams	2	4	4	20	5	3	8	12	7	2	4
Upper target	90,000	70,000	70,000	320,000	80,000	40,000	190,000	210,000	160,000	30,000	40,000
Lower target	210,000	160,000	160,000	780,000	270,000	130,000	630,000	700,000	520,000	100,000	150,000
2016	103,000	71,000	73,000	398,727	221,000	253,000	215,000	381,000	513,000	52,000	65,237
2017	165,000	317,000	120,000	788,500	855,000	558,000	459,000	333,000	493,000	49,000	93,000
2018	17,150	7,200	36,617	235,400	200,000	358,000	293,200	240,500	676,200	30,200	104,400
2019	80,500	105,100	139,000	202,150	282,800	342,000	257,600	124,500	373,100	9,000	143,190
2020	66,000	49,000	117,000	442,432	118,000	197,000	408,000	515,663	395,500	63,000	88,000
2021	114,000	48,000	95,000	322,800	488,000	473,000	283,000	194,700	453,000	10,000	42,000
2022	26,000	32,000	50,000	394,100	63,000	142,000	188,000	406,500	238,000	22,000	29,000
2023	183,000	91,000	200,500	654,000	430,000	343,000	291,000	637,500	500,000	16,000	71,000

Note: NSEI = Northern Southeast Inside Subregion; NSEO = Northern Southeast Outside Subregion.

Appendix B7.–Escapement index series and management targets for pink salmon stock groups in the Ketchikan management area, 1960–2023.

Stock group	E Behm	Portland	W Behm	Kasaan	Moira	E Dall	Hetta	Klawock	Sea Otter Sound
Management area	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	1	1	1	2	2	3	3	3	3
No. of streams	41	16	34	28	12	32	15	47	18
Lower target	670,000	100,000	250,000	240,000	50,000	130,000	300,000	420,000	100,000
Upper target	1,770,000	280,000	660,000	640,000	130,000	360,000	790,000	1,110,000	280,000
1960	177,762	15,677	47,524	48,694	10,031	29,595	22,514	114,806	15,418
1961	190,729	44,518	79,186	82,099	15,787	41,190	77,649	223,948	28,660
1962	494,675	109,169	184,078	162,294	44,083	127,845	158,409	344,883	101,136
1963	415,782	150,249	167,517	179,102	49,914	83,866	241,314	377,034	65,623
1964	362,407	126,098	278,438	238,199	41,836	151,831	171,108	316,618	94,581
1965	190,649	123,325	71,566	142,112	34,359	117,830	155,231	396,870	133,524
1966	541,879	160,780	282,144	279,978	67,182	131,155	222,798	414,378	147,840
1967	274,793	55,330	102,635	120,129	21,111	65,940	126,628	230,205	48,313
1968	434,209	253,016	233,417	217,108	45,510	124,471	219,406	355,436	98,620
1969	291,218	75,133	123,124	207,180	26,164	73,417	111,051	267,493	56,138
1970	574,954	78,351	219,415	154,966	26,303	114,748	200,292	395,666	85,561
1971	426,284	86,675	192,388	309,370	50,992	94,095	256,895	443,449	87,721
1972	511,517	139,943	206,490	157,909	33,756	84,567	152,099	328,905	65,422
1973	493,350	92,631	145,144	170,175	68,941	98,027	145,135	316,629	105,086
1974	563,905	76,914	175,297	139,030	75,222	94,748	199,357	230,419	85,846
1975	677,986	122,204	185,297	345,515	98,941	127,590	298,404	342,434	166,169
1976	705,487	129,350	222,197	295,889	85,020	196,788	216,352	452,477	140,045
1977	1,050,919	283,948	534,872	370,922	80,294	200,353	279,569	568,795	179,246
1978	960,140	188,526	439,113	328,594	55,885	228,084	309,043	617,811	177,048
1979	328,634	40,758	361,852	366,742	45,532	175,154	258,256	630,763	155,592
1980	1,102,909	137,872	563,365	348,505	107,446	332,478	421,149	687,148	174,841
1981	916,630	206,445	386,107	253,952	72,403	292,054	435,151	977,223	185,718
1982	831,492	98,591	463,851	215,146	61,378	203,456	450,062	570,045	172,789
1983	1,512,445	227,730	454,986	682,319	111,334	252,267	504,541	1,133,029	253,631
1984	1,944,340	319,785	900,031	589,139	135,556	458,267	587,422	1,291,220	204,216
1985	1,635,238	436,835	1,126,743	644,636	145,200	563,605	777,601	1,980,094	337,400
1986	2,972,027	246,917	812,796	727,851	217,642	671,939	1,179,279	2,198,456	412,000
1987	1,193,959	294,478	343,920	302,747	77,344	159,787	546,813	793,468	65,484

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Stock group	E Behm	Portland	W Behm	Kasaan	Moira	E Dall	Hetta	Klawock	Sea Otter Sound
Management area	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	1	1	1	2	2	3	3	3	3
No. of streams	41	16	34	28	12	32	15	47	18
Lower target	670,000	100,000	250,000	240,000	50,000	130,000	300,000	420,000	100,000
Upper target	1,770,000	280,000	660,000	640,000	130,000	360,000	790,000	1,110,000	280,000
1988	881,041	102,629	157,873	244,388	138,592	223,809	387,521	374,067	82,582
1989	1,252,591	470,927	670,662	525,579	46,192	199,110	475,862	1,656,890	163,556
1990	955,415	93,081	539,208	387,781	80,443	274,125	493,803	772,110	234,031
1991	954,414	138,228	328,444	430,891	74,595	173,309	543,332	1,119,384	135,890
1992	1,789,005	123,521	714,492	594,910	110,210	234,098	313,004	484,713	200,144
1993	1,105,713	279,700	386,450	572,800	40,550	270,031	596,193	1,418,734	136,300
1994	1,197,482	134,109	247,384	268,078	74,997	249,976	489,543	780,511	257,286
1995	2,080,905	327,500	691,600	378,342	124,800	375,214	835,500	1,184,535	233,010
1996	3,126,352	263,783	837,221	1,440,395	144,483	738,609	1,518,661	1,558,227	451,221
1997	1,297,271	172,701	525,755	619,436	53,962	161,180	451,655	876,723	95,825
1998	1,446,994	320,292	669,793	706,035	116,904	281,482	503,160	1,231,699	171,668
1999	1,602,403	268,371	711,714	1,038,954	195,475	274,985	1,374,047	1,321,969	330,960
2000	1,187,349	186,759	355,116	818,729	73,930	231,491	889,726	428,055	150,552
2001	2,717,693	307,792	680,731	1,053,217	98,007	343,951	488,500	1,821,121	485,438
2002	1,996,170	412,327	621,950	1,149,593	101,561	439,418	998,994	987,733	262,986
2003	2,158,576	331,150	675,373	1,027,646	107,346	253,985	474,400	1,606,070	335,740
2004	1,462,810	423,550	592,932	588,519	49,672	584,072	644,590	1,722,373	346,700
2005	2,026,508	339,694	528,558	1,095,679	123,650	317,780	833,377	1,323,920	153,193
2006	1,037,370	76,379	243,303	519,826	108,756	141,772	530,522	514,772	146,516
2007	2,531,650	557,100	895,829	1,262,000	158,000	437,883	866,119	1,968,846	209,206
2008	1,373,134	54,850	700,899	733,500	211,400	251,221	849,949	758,068	123,808
2009	1,785,355	299,223	576,673	933,327	130,833	326,752	579,728	1,234,026	176,000
2010	1,626,270	262,013	466,569	602,492	106,000	234,650	480,430	683,946	180,833
2011	1,260,400	483,099	338,045	703,461	91,844	234,100	504,700	566,764	204,000
2012	1,825,824	474,322	611,455	766,900	60,410	262,750	746,544	514,000	193,946
2013	2,904,710	1,063,332	1,097,510	1,978,000	615,000	532,100	1,863,500	1,787,632	373,768
2014	2,829,611	690,215	895,307	1,174,507	118,000	399,388	929,364	1,152,250	238,000
2015	818,240	130,026	231,499	561,072	125,300	192,329	410,726	578,879	166,000
2016	2,184,218	435,509	723,576	812,000	59,500	257,628	553,800	646,993	105,250
2017	1,204,658	417,394	357,858	608,495	269,000	182,075	905,432	1,021,688	72,618
2018	1,073,570	529,456	438,944	200,733	47,000	241,823	284,450	742,315	146,850

-continued-

53

Stock group	E Behm	Portland	W Behm	Kasaan	Moira	E Dall	Hetta	Klawock	Sea Otter Sound
Management area	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan	Ketchikan
Subregion	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE
District	1	1	1	2	2	3	3	3	3
No. of streams	41	16	34	28	12	32	15	47	18
Lower target	670,000	100,000	250,000	240,000	50,000	130,000	300,000	420,000	100,000
Upper target	1,770,000	280,000	660,000	640,000	130,000	360,000	790,000	1,110,000	280,000
2019	1,548,790	220,016	469,600	587,154	82,396	217,097	501,000	640,908	134,200
2020	1,237,019	390,846	470,207	534,092	60,271	205,767	741,384	741,185	161,769
2021	2,833,390	537,835	799,751	1,374,384	141,000	241,351	1,094,000	996,985	235,284
2022	1,515,484	364,483	479,467	459,625	83,100	207,500	577,900	684,304	112,111
2023	2,670,470	716,426	473,084	1,865,868	174,400	381,161	1,663,750	1,187,819	190,100

Note: SSE = Southern Southeast Subregion.