Regional Operational Plan CF.1J.2019.06

Operational Plan: Southeast Alaska Chum Salmon Escapement Index Surveys 2019–2021

by

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And

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May 2019

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

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 figure 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, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

REGIONAL OPERATIONAL PLAN CF.1J.2019.06

SOUTHEAST ALASKA CHUM SALMON ESCAPEMENT INDEX SURVEYS 2019–2021

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Alaska Department of Fish and Game
Division

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Signature Page

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Approval

Title	Name	Signature	Date
Project leader	Andrew W. Piston		4/25/2019
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PURPOSE

The primary purpose of this project is to provide estimates of relative chum salmon abundance for inseason management and to provide an annual index of chum salmon abundance for the region. Aerial surveys will be conducted by area management biologists and their assistants at 87 summer-run and 7 fall-run chum salmon index streams throughout Southeast Alaska. Foot surveys will be conducted by research and management staff as time and funding allow.

Key words: aerial survey, Chilkat River, Cholmondeley Sound, chum salmon, escapement index, Excursion Inlet, *Oncorhynchus keta*, Port Camden, Security Bay, Southeast Alaska

OBJECTIVES

1. Obtain peak aerial or foot survey counts of chum salmon escapement at 87 summer-run and 7 fall-run chum salmon index streams throughout Southeast Alaska.
2. For each stream surveyed, obtain a count at the mouth of the creek, the intertidal section, and the main stream.
3. Survey each index stream multiple times, as funding and staff time allow, to obtain a true peak count.
4. Designate peak counts in the ADF&G Southeast Alaska Integrated Fisheries Database (IFDB) for each index stream.
5. Review and edit all survey data entered into IFDB and ensure that all surveys are correctly coded.
6. Impute a missing value for each index stream that does not have a suitable peak survey observation for a given year.
7. Conduct final review of index and calculate escapement indices on each of the designated spatial scales.

BACKGROUND

There are more than 1,200 streams and rivers in Southeast Alaska for which the Alaska Department of Fish and Game (ADF&G) has at least one record of a chum salmon spawning count since 1960, and counts of 1,000 or more chum salmon were obtained at approximately 450 of those streams prior to 1985 (Piston and Heinl 2014). Long time series of escapement information are not available, however, for the vast majority of those streams. Summer-run chum salmon are most easily observed early in the season when there are few pink salmon present. It is often not possible to estimate numbers of chum salmon in streams that have substantial populations of pink salmon, and recent high pink salmon abundance may have masked chum salmon escapements in many areas (Van Alen 2000). Of the chum salmon populations that have been consistently monitored, most have been monitored through aerial surveys, though some have been monitored annually by foot surveys.

Chum salmon populations in Southeast Alaska are generally divided into two runs based on migration timing: summer-run fish peak during the period mid-July to mid-August and fall-run fish peak in September or later. Allozyme studies by Kondzela et al. (1994), Phelps et al. (1994), and Wilmot et al. (1994) suggested that run-timing is an isolating mechanism for chum salmon populations: “reproductive isolation between summer-run and fall-run chum salmon is an important component of the genetic diversity of this species” (Phelps et al. 1994). Marine tagging experiments conducted in the 1900s (e.g., Rich 1926; Rich and Suomela 1929; and Rich and Morton 1930) demonstrated that Southeast Alaska chum salmon populations are also mostly

segregated into northern and southern components: northern fish migrated to inside waters via the entrances to Icy and Chatham straits, while southern fish migrated to spawning areas through the entrance to Sumner Strait and Dixon Entrance. Genetic studies of Southeast Alaska and northern British Columbia chum salmon by Kondzela et al. (1994) also supported this separation of northern and southern components.

In the early 2000s, ADF&G developed a standardized program to estimate an annual index of spawning chum salmon abundance based primarily on aerial survey counts (Heinl et al. 2004; Heinl 2005). The foundation of current escapement indices was established by Heinl et al. 2004, who reviewed the escapement survey database in 2002 and identified 82 streams (76 summer-run and 6 fall-run chum salmon streams) that had been surveyed in at least 75% of the 21 years 1982–2002, and had been surveyed in a consistent manner with regard to run timing. With a few modifications, this set of index streams was divided into aggregates of streams by area and run timing and used as the basis for the first chum salmon escapement goals in Southeast Alaska, which were established in 2009 (Eggers and Heinl 2008). Lower-bound sustainable escapement goals were developed for three broad regional aggregates of streams for summer-run chum salmon stocks, and sustainable escapement goal ranges were established for five additional fall-run chum salmon stocks. These indices provide a meaningful indicator of trends in the relative abundance of spawning chum salmon in Southeast Alaska. Escapement indices and goals for summer-run chum salmon in the Northern Southeast Inside and Southern Southeast subregions were modified in 2012 to extend the time series back to 1960 (Piston and Heinl 2011), and additional index streams were added to the Northern Southeast Outside and Southern Southeast indices in 2014 (Piston and Heinl 2014). The chum salmon index in Southeast Alaska now includes 87 summer-run and 7 fall-run streams.

STUDY AREA

Chum salmon index streams are widely dispersed throughout Southeast Alaska, from Portland Canal near the Canadian border in the south, to Lynn Canal, near Juneau, in the north—a distance of approximately 600 km (Figure 1). Southeast Alaska summer-run chum salmon index streams were grouped into three stock groups that comprise aggregates of index streams across broad subregions (Piston and Heinl 2014):

- The Southern Southeast Subregion includes 15 index streams located primarily on inner islands and the mainland from Sumner Strait south to Dixon Entrance (Districts 1–7; Figure 1; Appendix A);
- The Northern Southeast Inside Subregion includes 63 index streams located on inside waters north of Sumner Strait (Districts 8–12, 14–15, and District 13 subdistricts 51–59; Figure 1; Appendix A); and
- The Northern Southeast Outside Subregion includes nine index streams located on the outside waters of Chichagof and Baranof islands in northern Southeast Alaska (District 13, excluding Peril Straits and Hoonah Sound subdistricts 51–59; Figure 1; Appendix A).

Southeast Alaska fall-run chum salmon index streams were grouped into stocks that support, or have supported, terminal commercial fisheries in the past. These stocks include Cholmondeley Sound, Security Bay, Port Camden, Excursion Inlet, and the Chilkat River (Figure 1; Appendix A).

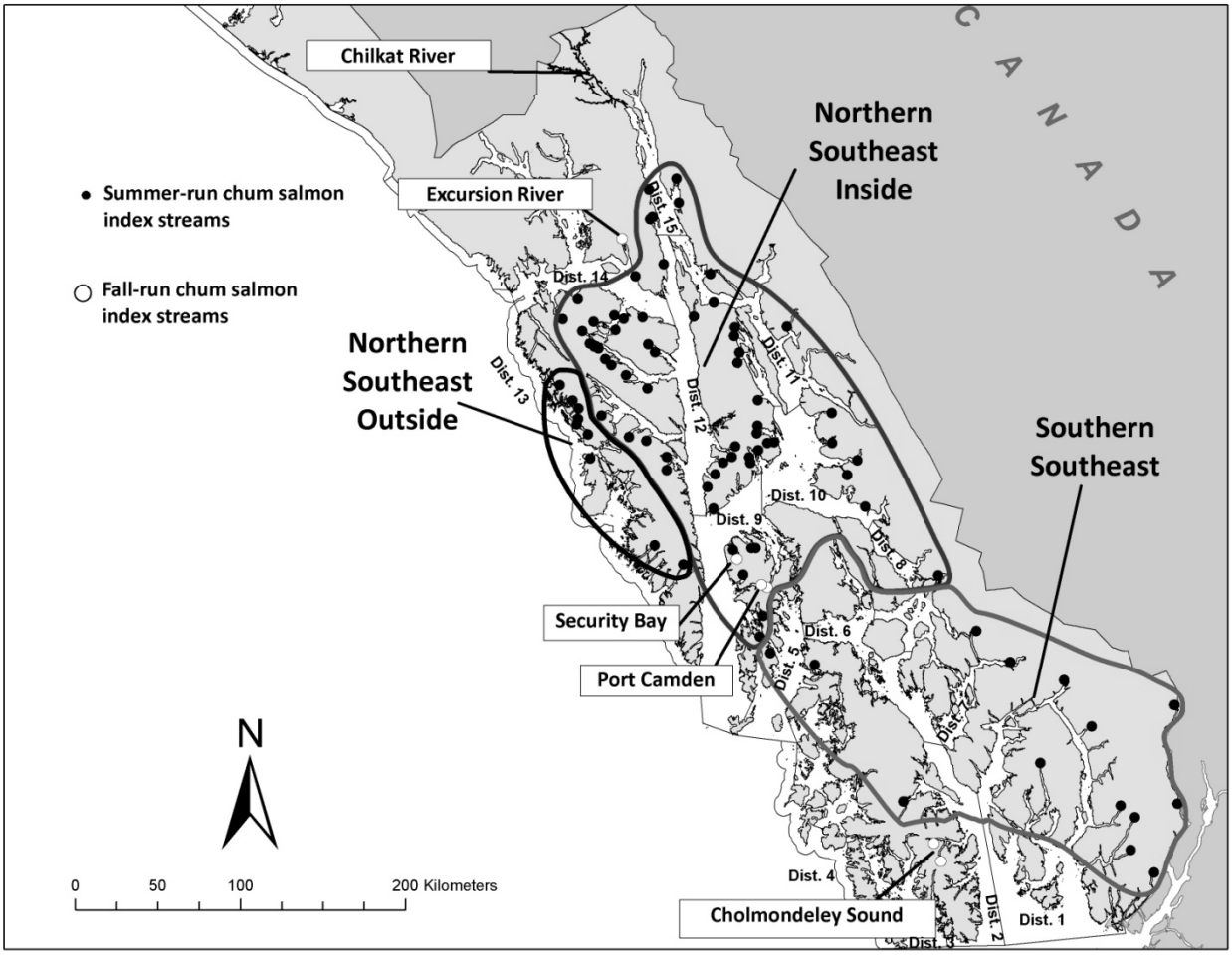

Figure 1.–Locations of ADF&G chum salmon index streams and summer-run chum salmon stock groups in Southeast Alaska. (The Chilkat River fall-run chum salmon stock is monitored through expanded fish wheel counts.)

METHODS

CONDUCTING AERIAL AND FOOT SURVEYS

Both aerial and foot surveys are used to count chum salmon. Summer-run chum salmon are often greatly outnumbered by pink salmon in the same stream, which creates difficulties for aerial observers who must pick out chum salmon amidst more numerous pink salmon. Although there is broad overlap in run timing of pink and summer-run chum salmon, chum salmon tend to spawn earlier in the season than pink salmon (Van Alen 2000), which tend to hold in deeper areas in the lower portions of the river prior to spawning later in the summer. In some areas this may allow for easier separation of the two species early in the season, particularly in years of low pink salmon abundance. Due to the challenges presented by species identification, foot surveys should be used to ground-truth aerial survey counts whenever staff availability and funding allow.

Aerial surveys will be conducted primarily in Piper Super Cub aircraft, which allow surveyors to fly at lower altitudes and slower speeds than other fixed-wing aircraft. When not available, a Cessna 185 or 206 aircraft may be used as needed, and in some cases chum salmon may be

counted during helicopter surveys. Surveys will be flown at altitudes of 100 to 200 meters and speeds of approximately 90 km/hour for surveys conducted in a Piper Super Cub [1]and approximately 110 km/hour for surveys conducted in a Cessna 185. Observers will wear polarized glasses to reduce glare off the water and optimize visibility while conducting surveys. Survey counts will be recorded on standardized escapement survey forms, along with survey conditions (visibility, water levels, weather, and tide stage) and other pertinent observations.

Fish counts for each stream survey will be divided into four categories: mouth, intertidal, stream live, and stream dead. Mouth counts normally consist of fish in saltwater that are in close proximity to the stream being surveyed, intertidal counts include fish in the area between the low tide and approximate high tide marks, and stream live counts normally include all fish above the high tide mark. Observers will determine what constitutes a mouth count or intertidal count based on their own experience at each index stream. The distinction between mouth and intertidal counts may not always be clear when the tide has partially or completely covered the intertidal area, and because schools of fish can move in and out of the stream with the tide. In addition, fish may congregate in the mouth of a stream and ultimately spawn in another stream, particularly where streams are in close proximity or where smaller streams are located within the vicinity of larger streams. In cases where this is suspected, observers should add comments when entering data into IFDB and consider this information while coding surveys. Survey data will be entered into IFDB as time and staff availability allow during the season.

TIMING OF SURVEYS

Ideally, stream surveys should be conducted until the peak of abundance has passed to ensure that peak survey counts represent a true peak and not just a cessation of surveys once an adequate number of fish are determined to be present. Capturing the peak of abundance will ensure that escapement indices, and the escapement goals created from index counts, accurately reflect trends in chum salmon abundance. This may prove more difficult to achieve for fall-run chum salmon, because they spawn in September and October and may not reach peak abundance until well after marine fisheries are completed. In some locations, it may only be possible to conduct one round of surveys due to budget constraints and limited staff time, in which case every effort should be made to ensure those surveys line up with historic peak run timing.

Southern Southeast Subregion Summer-Run

The majority (11 of 15 streams) of summer-run chum salmon index streams in the Southern Southeast Subregion are located on the mainland from Sumner Strait south to Portland Canal (Figure 1). Peak survey counts typically occur in late July or early August at these mainland systems, but can occur into mid-August. Surveys conducted in late July typically include a higher proportion of fish counted in the mouth and intertidal areas compared to surveys conducted in mid-August, which are primarily composed of live and dead fish in the stream. The run timing of chum salmon in the Carroll River (Revillagigedo Island) is similar to the mainland systems, and peak counts typically occur in early August. Run timing is later in the remaining three index streams, located on Prince of Wales (Harris River and Calder Creek) and Kuiu (P Beauclerc S Arm E) islands, where peak chum salmon abundance typically occurs from mid- to late August.

[1] Product names appearing in this operations plan are included for completeness and are not indicative of a an endorsement by the Alaska Department of Fish and Game

Northern Southeast Inside Subregion Summer-Run

The Northern Southeast Inside Subregion index includes 63 summer-run chum salmon streams located on the inside waters of Southeast Alaska north of Sumner Strait.

District 8

North Arm Creek, Stikine River, is the only index stream in District 8. Chum salmon abundance typically peaks in early to mid-August.

District 9

There are seven index streams in District 9: six are located along the northern and western shore of Kuiu Island and one (Tyee Head East) is located on the southern shore of Admiralty Island. Peak survey counts can occur as early as mid- to late July, when most fish are in the mouth and intertidal sections of the creeks, and peak spawning abundance generally occurs in mid-August.

District 10

There are 12 index streams in District 10: five are located along the mainland from Thomas Bay north to Windham Bay and seven are located along the southeastern shore of Admiralty Island. Chum salmon abundance in the mainland streams generally peaks from late July to early August. Run-timing is slightly later in the Admiralty Island streams, and chum salmon abundance peaks from early to mid-August.

District 11

There are eight index streams in District 11: seven are located along the northeastern shore of Admiralty Island and one (Prospect Creek) is located on the adjacent mainland. Chum salmon abundance in all of these streams generally peaks from early to mid-August.

District 12

There are 19 index streams in District 12: two are located along the northeastern shore of Baranof Island, 10 are located on the eastern shore of Chichagof Island, six are located along the western shore of Admiralty Island, and one is located on the mainland in southern Lynn Canal. Tenakee Inlet, Chichagof Island, contains one of the largest concentrations of summer-run chum salmon streams in Southeast Alaska. Peak survey counts at Tenakee Inlet streams can occur as early as mid-July, when most fish are in the mouth and intertidal sections of the creeks, and peak spawning abundance generally occurs in late July and early August. Chum salmon abundance at other District 12 index streams typically peaks from early to mid-August.

District 13

Three index streams located in Peril Strait are the only District 13 streams included in the Northern Southeast Inside Subregion. Chum salmon abundance in these streams typically peaks in late July or early August.

District 14

There are eight index streams in District 14: seven are located along the northern shore of Chichagof Island and one (Homeshore Creek) is located on the mainland. The earliest timed summer-run chum salmon index streams in District 14 are located inside Port Fredrick, where peak counts typically occur in late July or early August. Chum salmon abundance at other District 14 index streams typically peaks in mid-August.

District 15

There are five index streams in District 15. Chum salmon abundance in these streams generally peaks from early to mid-August.

Northern Southeast Outside Subregion Summer-Run

Peak abundance of spawning fish in the nine streams of the Northern Southeast Outside Subregion can occur from early August to early September. At West Crawfish NE Arm Head, Whale Bay Great Arm Head, and Black River, peak counts typically occur in early August, with the majority of the fish spawning by mid-August. The peak abundance of summer-run chum salmon at the remaining six index streams typically occurs from mid- to late August.

Cholmondeley Sound Fall-Run

Cholmondeley Sound is located along the southeastern shore of Prince of Wales Island (District 2). The escapement index is based on the combined peak aerial survey counts at Disappearance and Lagoon creeks (Figure 1; Appendix A). Peak counts typically occur from mid-September to early October and often include large numbers of fish in the mouth and intertidal sections of the streams. The peak of spawning abundance in the streams occurs from late September to mid-October. To ensure a mid-October peak is not missed, Cholmondeley Sound streams should be surveyed to at least early October. In 2009, the peak abundance at Disappearance Creek occurred during the second week of October and over 16,000 fish were counted off the mouth of the creek during a 5 October aerial survey just prior to a major movement of fish through a weir that was in operation at the time (Piston and Heinl 2010).

Security Bay Fall-Run

Security Bay is located on the northwestern tip of Kuiu Island (District 9). The escapement index is based on the peak aerial survey count at Salt Chuck Creek, the primary chum salmon producing stream in the bay (Figure 1; Appendix A). Peak counts typically occur in late September, and the peak of spawning activity occurs from late September to early October. Peak counts obtained in mid-September consist almost entirely of fish staging at the mouth and intertidal areas of the creek.

Port Camden Fall-Run

Port Camden is located on northeastern Kuiu Island (District 9). The escapement index is based on the combined peak aerial survey counts at Port Camden South Head Creek and Port Camden West Head Creek, the two primary fall-run chum salmon streams in Port Camden (Figure 1; Appendix A). Both streams are relatively short in terms of spawning habitat and West Head Creek has an intertidal spawning channel that was constructed by the USDA Forest Service in 1989. Chum salmon runs in West Head creek average slightly smaller, and run timing is about 10–14 days later, than chum salmon runs in South Head creek (Eggers and Heinl 2008). Peak counts typically occur from early to mid-September in South Head Creek and from mid- to late September in West Head Creek.

Excursion River Fall-Run

Excursion Inlet is located along the northern shore of Icy Strait (District 14). The escapement index is based on the peak aerial survey count at the Excursion River, the primary fall-run chum salmon system in Excursion Inlet (Figure 1; Appendix A). During the 1960s and 1970s, most

peak survey counts occurred from early to late October. In recent decades, however, surveys have not been conducted past mid- or late September in most years, which may be too early to capture the true peak of abundance. Effort should be made, even in years with no directed fishery, to conduct at least one survey in early or mid-October to ensure that surveys capture the peak of abundance.

CODING SURVEY COUNTS AND DESIGNATION OF PEAK SURVEYS

Survey data entered into IFDB will be qualified based on visibility, timing, and area surveyed by the management biologists who conducted the surveys through the designation of "usage codes." All surveys must be given a usage code so that the quality of each survey is identified for future users of the survey data. Usage Code 01 indicates a survey that is not useful for indexing abundance or comparing to other surveys of the same stream; surveys that take place when conditions are poor for counting, or which only cover a small portion of the stream or survey area (i.e., do not include all the fish known to be present), or which are in some other way not useful for comparing to other counts. Usage code 02 indicates a survey that is comparable to other surveys of the same stream and is potentially useful for indexing abundance; surveys that take place under normal conditions and represent a good complete count. Usage Code 03 is used to designate a single survey for each stream as the one and only peak or maximum survey count for the year. It is very important that only one survey for each stream in a given year is designated with a code 03. In the event that no survey in a given year is deemed a good peak count, surveys for that stream will be coded with 02 or 01 and a peak survey count will be imputed (see below).

After all survey data are entered into IFDB and coding is completed, the entire data set will be reviewed by research biologists to ensure that each stream has only one survey coded as the peak count and that the selection of peak surveys for each stream makes sense in terms of run timing. Any errors or recommended code changes will be reviewed in consultation with the management biologists familiar with the surveys or the area prior to making any modifications to the database.

IMPUTING MISSING VALUES

For several reasons, it is not possible to designate a peak survey for every index stream in every year. In some cases a stream will not be surveyed during the peak of the run, or a survey during the peak of the run may not be useful due to weather or it was an incomplete survey—or the stream was simply not surveyed at all. If a particular index stream is not assigned a peak escapement count for a given year, a value will be imputed from existing data. It will be assumed that the expected count for a given stream in a given year was equal to the sum of all counts for that stream, times the sum of all the counts in a given year for all the streams in the unit of interest, divided by the sum of all counts over all years for all the streams in the unit of interest (stock group). Data will be arranged in a matrix, and the missing value will be calculated as the row total times the column total divided by the grand total. An iterative EM algorithm (McLachlan and Krishnan 1997) will be used to calculate missing values, because there is typically more than one missing value for each unit of interest, and the sums change as missing values are filled in at each iteration. This method is based on an assumed multiplicative relation between yearly count and unit count, with no interaction.

DATA REVIEW AND INDEX CALCULATION

Once all data entry is completed, data are reviewed, and missing values are imputed, research biologists will calculate index values for all chum salmon stock groups.

SCHEDULE AND DELIVERABLES

Aerial surveys will be conducted from late June through late October. Data entry will occur from early July through October and coding surveys and editing data will take place in October and November. Information derived from this project will be used in a stock status report on chum salmon in the form of an ADF&G Special Publication that will be produced at 3-year intervals preceding Alaska Board of Fisheries meetings.

RESPONSIBILITIES

All Southeast Alaska Area management biologists and their assistants will be responsible for conducting aerial and foot surveys throughout the summer, reviewing and entering data into IFDB, and coding surveys after data entry is complete.

Andrew W. Piston, Fishery Biologist IV, will review all data entry and compile chum salmon escapement indices at the end of the season. He will also act as lead author on chum salmon stock status reports that will be produced prior to each Alaska Board of Fisheries meeting.

Steven C. Heinl, Regional Research Coordinator, will assist with project operational planning and will coauthor the chum salmon stock status report.

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APPENDIX A:
SOUTHEAST ALASKA CHUM SALMON INDEX STREAMS

Appendix A.–Southeast Alaska Chum Salmon Index Streams.

STOCK GROUP	RUN TIMING	DISTRICT	SUBDISTRICT	ADF&G STREAM CODE	STREAM	AREA OFFICE
Southern Southeast	Summer-Run	101	11	101	Hidden Inlet	Ketchikan
Southern Southeast	Summer-Run	101	15	019	Tombstone River	Ketchikan
Southern Southeast	Summer-Run	101	15	085	Fish Creek	Ketchikan
Southern Southeast	Summer-Run	101	30	030	Keta River	Ketchikan
Southern Southeast	Summer-Run	101	30	060	Marten River	Ketchikan
Southern Southeast	Summer-Run	101	45	078	Carroll River	Ketchikan
Southern Southeast	Summer-Run	101	55	020	Wilson River	Ketchikan
Southern Southeast	Summer-Run	101	55	040	Blossom River	Ketchikan
Southern Southeast	Summer-Run	101	71	04K	King Creek	Ketchikan
Southern Southeast	Summer-Run	101	75	015	Eulachon River	Ketchikan
Southern Southeast	Summer-Run	102	60	082	Harris River	Ketchikan
Southern Southeast	Summer-Run	105	20	012	P Beauclerc S Arm E	Petersburg
Southern Southeast	Summer-Run	105	42	005	Calder Creek	Petersburg
Southern Southeast	Summer-Run	107	40	025	Oerns Creek	Petersburg
Southern Southeast	Summer-Run	107	40	049	Harding River	Petersburg
Northern Southeast Inside	Summer-Run	108	41	010	North Arm Creek	Petersburg
Northern Southeast Inside	Summer-Run	109	30	016	Tyee head East	Petersburg
Northern Southeast Inside	Summer-Run	109	44	037	Saginaw Bay S Head	Petersburg
Northern Southeast Inside	Summer-Run	109	44	039	Saginaw Creek	Petersburg
Northern Southeast Inside	Summer-Run	109	45	017	Lookout Point Cr Sec B	Petersburg
Northern Southeast Inside	Summer-Run	109	52	007	Rowan Creek	Petersburg
Northern Southeast Inside	Summer-Run	109	62	014	Sample Creek	Petersburg
Northern Southeast Inside	Summer-Run	109	62	024	Petrof Bay W Head	Petersburg
Northern Southeast Inside	Summer-Run	110	13	004	Dry Bay Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	22	004	Amber Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	22	012	Donkey Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	22	014	Cannery Cove	Petersburg
Northern Southeast Inside	Summer-Run	110	23	008	Johnston Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	23	010	Bowman Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	23	019	Snug Cove	Petersburg
Northern Southeast Inside	Summer-Run	110	23	040	East of Snug Cove	Petersburg
Northern Southeast Inside	Summer-Run	110	32	009	Chuck River	Petersburg

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STOCK GROUP	RUN TIMING	DISTRICT	SUBDISTRICT	ADF&G STREAM CODE	STREAM	AREA OFFICE
Northern Southeast Inside	Summer-Run	110	33	013	Laura's Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	34	006	Glen Creek	Petersburg
Northern Southeast Inside	Summer-Run	110	34	008	Sanborn Creek	Petersburg
Northern Southeast Inside	Summer-Run	111	13	010	Mole River	Juneau
Northern Southeast Inside	Summer-Run	111	15	024	Windfall Harbor W Side	Juneau
Northern Southeast Inside	Summer-Run	111	15	030	Pack Creek	Juneau
Northern Southeast Inside	Summer-Run	111	16	040	Swan Cove Creek	Juneau
Northern Southeast Inside	Summer-Run	111	17	010	King Salmon River	Juneau
Northern Southeast Inside	Summer-Run	111	33	010	Prospect Creek	Juneau
Northern Southeast Inside	Summer-Run	111	41	005	Admiralty Creek	Juneau
Northern Southeast Inside	Summer-Run	111	50	069	Fish Creek	Juneau
Northern Southeast Inside	Summer-Run	112	15	062	Robinson Creek	Juneau
Northern Southeast Inside	Summer-Run	112	19	010	Wilson River	Juneau
Northern Southeast Inside	Summer-Run	112	21	005	Clear River	Juneau
Northern Southeast Inside	Summer-Run	112	21	006	Ralphs Creek	Juneau
Northern Southeast Inside	Summer-Run	112	42	025	Kadashan Creek	Juneau
Northern Southeast Inside	Summer-Run	112	44	010	Saltery Bay Head	Juneau
Northern Southeast Inside	Summer-Run	112	46	009	Seal Bay Head	Juneau
Northern Southeast Inside	Summer-Run	112	47	010	Long Bay Head	Juneau
Northern Southeast Inside	Summer-Run	112	48	015	Big Goose Creek	Juneau
Northern Southeast Inside	Summer-Run	112	48	019	Little Goose Creek	Juneau
Northern Southeast Inside	Summer-Run	112	48	023	West Bay Head Creek	Juneau
Northern Southeast Inside	Summer-Run	112	48	035	Tenakee Inlet Head	Juneau
Northern Southeast Inside	Summer-Run	112	50	020	Kennel Creek	Juneau
Northern Southeast Inside	Summer-Run	112	50	030	Freshwater Creek	Juneau
Northern Southeast Inside	Summer-Run	112	65	024	Greens Creek	Juneau
Northern Southeast Inside	Summer-Run	112	72	011	Weir Creek N Arm Hood Bay	Juneau
Northern Southeast Inside	Summer-Run	112	73	024	Weir Creek S Arm Hood Bay	Juneau
Northern Southeast Inside	Summer-Run	112	80	028	Chaik Bay Creek	Juneau
Northern Southeast Inside	Summer-Run	112	90	014	Whitewater Creek	Juneau
Northern Southeast Inside	Summer-Run	113	53	003	Saook Bay West Head	Sitka
Northern Southeast Inside	Summer-Run	113	54	007	Rodman Creek	Sitka

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STOCK GROUP	RUN TIMING	DISTRICT	SUBDISTRICT	ADF&G STREAM CODE	STREAM	AREA OFFICE
Northern Southeast Inside	Summer-Run	113	56	003	Ushk Bay W End	Sitka
Northern Southeast Inside	Summer-Run	114	23	070	Mud Bay River	Juneau
Northern Southeast Inside	Summer-Run	114	25	010	Homeshore Creek	Juneau
Northern Southeast Inside	Summer-Run	114	27	030	Spasski Creek	Juneau
Northern Southeast Inside	Summer-Run	114	31	013	Game Creek	Juneau
Northern Southeast Inside	Summer-Run	114	32	004	Seagull Creek	Juneau
Northern Southeast Inside	Summer-Run	114	33	023	Neka Creek	Juneau
Northern Southeast Inside	Summer-Run	114	34	010	Humpback Creek	Juneau
Northern Southeast Inside	Summer-Run	114	40	035	Trail Creek	Juneau
Northern Southeast Inside	Summer-Run	115	10	042	St. James Bay NW Side	Juneau
Northern Southeast Inside	Summer-Run	115	10	046	St. James River	Juneau
Northern Southeast Inside	Summer-Run	115	10	080	Endicott River	Juneau
Northern Southeast Inside	Summer-Run	115	20	010	Berners River	Juneau
Northern Southeast Inside	Summer-Run	115	20	052	Sawmill Creek	Juneau
Northern Southeast Outside	Summer-Run	113	22	015	Whale Bay Great Arm Head	Sitka
Northern Southeast Outside	Summer-Run	113	62	009	Kalinin Cove Head	Sitka
Northern Southeast Outside	Summer-Run	113	73	006	Waterfall Cove Creek	Sitka
Northern Southeast Outside	Summer-Run	113	73	010	Slocum Arm Head	Sitka
Northern Southeast Outside	Summer-Run	113	73	012	Khaz Creek	Sitka
Northern Southeast Outside	Summer-Run	113	32	005	W Crawfish NE Arm Hd	Sitka
Northern Southeast Outside	Summer-Run	113	72	005	Sister Lake SE Head	Sitka
Northern Southeast Outside	Summer-Run	113	73	003	Lake Stream Ford Arm	Sitka
Northern Southeast Outside	Summer-Run	113	81	011	Black River	Sitka
Cholmondeley Sound	Fall-Run	102	40	043	Disappearance Creek	Ketchikan
Cholmondeley Sound	Fall-Run	102	40	060	Lagoon Creek	Ketchikan
Port Camden	Fall-Run	109	43	006	Port Camden S Head	Petersburg
Port Camden	Fall-Run	109	43	008	Port Camden W Head	Petersburg
Security Bay	Fall-Run	109	45	013	Salt Chuck Security	Petersburg
Excursion	Fall-Run	114	80	020	Excursion River	Juneau