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Migratory Timing and Abundance Estimates for Sockeye Salmon in Upper Cook Inlet, Alaska, 2013

by

Aaron Dupuis,

Mark Willette,

and

Andy Barclay

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

Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

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by
Aaron Dupuis, Mark Willette,
Alaska Department of Fish and Game, Division of Commercial Fisheries, Soldotna

and
Andy Barclay
Alaska Department of Fish and Game, Division of Commercial Fisheries, Anchorage

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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Aaron Dupuis, Mark Willette,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
43961 Kalifornsky Beach Road, Suite B, Soldotna, AK 99669-8367, USA
and
Andy Barclay
Alaska Department of Fish and Game, Division of Commercial Fisheries,
333 Raspberry Rd., AK 99518-1565, USA

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ABSTRACT

During the 2013 Upper Cook Inlet (UCI) commercial salmon fishing season, 2 offshore test fisheries (OTF) were conducted using drift gillnets. The southern OTF originates on the east side of Cook Inlet near Anchor Point and has been operational since 1979. Its objective is to assess the size and timing of the sockeye salmon *Oncorhynchus nerka* run entering UCI, including the Kenai River, during the commercial salmon fishing season. In 2013, the southern OTF occurred from 1 July through 30 July and captured 2,020 sockeye salmon representing 1,342 catch per unit of effort index points. Due to adverse weather conditions and mechanical difficulties 1 or more stations were not fished during 8 days and no fishing occurred on 3 days. Most of the missed stations occurred near the traditional peak of the sockeye salmon run. Because of the timing and relatively high number of missed stations, no formal inseason estimates of the size and timing of the 2013 sockeye salmon run were made using OTF data. A mixed stock analysis using genetic data (MSA) was performed on samples collected during the test fishery, which showed similar stock compositions to previous years. A second UCI northern test fishery, which began in 2012, was continued in 2013 to assess the potential of spatial and temporal separation of Susitna River sockeye salmon migrating through Cook Inlet using MSA. The northern OTF is located in the northern area of the Central District with the transect running across UCI from the Blanchard Line to the Drift River. In 2013, the northern OTF operated from July 1 through July 30 and captured 3,333 sockeye salmon. In 2013, the MSA sampling for both OTF projects was expanded to include all coho salmon *O. kisutch* captured to identify spatial and temporal stock compositions of the harvest.

Key words: Pacific salmon *Oncorhynchus* spp., test fishery, migratory behavior, mixed stock analysis MSA, Upper Cook Inlet, Alaska.

INTRODUCTION

In 1979, the Alaska Department of Fish and Game (ADF&G) began an offshore test fishery (OTF) project (hereafter referred to as the southern OTF) near the southern boundary of the Upper Cook Inlet (UCI) salmon management area between Anchor Point and the Red River Delta (Figure 1). The current stations have been fished since 1992 (Tarbox 1994) and provide the most reliable estimates of inseason run size and timing. Station 6.5 was not fished prior to 1992; analyses concluded that the addition of Station 6.5 increased sampling power but did not alter estimates of run timing (Tarbox and King 1992). The project was designed to estimate the total sockeye salmon *Oncorhynchus nerka* run (including run timing) returning to UCI during the commercial salmon fishing season. These data have become extremely important to ADF&G staff, helping to adjust commercial fishing times and areas to most efficiently harvest surplus sockeye salmon or restrict fisheries that may overharvest specific stocks. In recent years, the Alaska Board of Fisheries (BOF) has assembled management plans requiring inseason abundance estimates of the annual sockeye salmon run to implement specific plan provisions. The southern OTF project has increasingly become one of the most important tools Upper Cook Inlet fishery managers utilize to make inseason fishery management decisions that comply with BOF management directives.

Test fishery results have been reported annually since 1979 (Waltemyer 1983a, 1983b, 1986a, 1986b; Hilsinger and Waltemyer 1987; Hilsinger 1988; Tarbox and Waltemyer 1989; Tarbox 1990–1991, 1994–1998a, 1998b, 1999; Tarbox and King 1992; Shields 2000, 2001, 2003; Shields and Willette 2004, 2005, 2007, 2008, 2009a, 2009b, 2010, 2011; Shields et al. 2013; Dupuis and Willette 2014).

In 2012, a second test fishery project (hereafter referred to as northern OTF) was added. This project collected tissue samples from sockeye salmon for genetic stock identification in order to assess the spatial and temporal separation of Susitna River sockeye salmon as they migrate through Cook Inlet. This vessel fished 7 stations along a transect running from the Kenai

Peninsula near the Blanchard Line across the northern tip of Kalgin Island to near the mouth of Drift River (Figure 2). This project was funded through capital improvement project (CIP) monies provided by the Alaska Legislature and is expected to run for a minimum of 5 years (2012–2016). This report presents the results of the 2013 northern and southern OTF projects, as well as current and historic genetic stock identification information.

OBJECTIVES

The objectives of the southern OTF project were as follows:

1. develop an inseason estimate of the 2013 UCI sockeye salmon total run,
2. develop an inseason estimate for the 2013 Kenai River sockeye salmon total run, and
3. estimate the spatial and temporal distribution of various sockeye salmon and coho salmon *O. kisutch* stocks entering UCI.

The objective of the northern OTF project was as follows:

1. estimate the spatial and temporal distribution of Susitna River drainage sockeye and northern UCI coho salmon stocks passing through the Central District.

METHODS

TEST FISHING

The southern OTF sampled salmon returning to UCI by fishing 6 geographically fixed stations, which were numbered consecutively from east to west (Figure 1); the northern OTF sampled fish passing through the Central District by fishing 7 geographically fixed stations, which were also numbered consecutively from east to west (Figure 2). The drift gillnet vessel F/V *Point Adams* sampled all 6 stations of the southern OTF transect daily, traveling east to west on odd-numbered days and west to east on even-numbered days. The drift gillnet vessel F/V *Lady Alyce* was contracted by ADF&G to fish 7 stations along the northern OTF transect on a daily schedule similar to the fishing pattern of the southern transect. Sampling for both vessels started on 1 July and continued through 30 July.

The following physical and chemical readings were taken at the start of each gillnet set at each station for both OTF transects: air temperature, water temperature and salinity (at 1 m below the surface), wind velocity and direction, tide stage, water depth, and water clarity. Air and water temperatures (°C) and salinity (ppt) were measured using an YSI[1] Model 30 conductivity/salinity/temperature meter (YSI Inc.; Yellow Springs, OH). Wind speed was measured in knots and direction was recorded as 0 (no wind), 1 (north), 2 (northeast), 3 (east), 4 (southeast), 5 (south), 6 (southwest), 7 (west), or 8 (northwest) using a pocket weather tracker. Tide stage was classified as 1 (high slack), 2 (low slack), 3 (flooding), or 4 (ebbing) by observing the movement of the vessel while drifting with the gill net. Water depth was measured in fathoms (fm) using an echo sounder, and water clarity was measured in meters (m) using a 17.5 cm secchi disk, following methods described by Koenings et al. (1987).

A conductivity temperature depth profiler (CTD) was also deployed at each station each day along the northern OTF transect. The CTD measured temperature in degrees Celsius (°C),

[1] Product names used in this report are included for scientific completeness, but do not constitute a product endorsement.

salinity (ppt), chlorophyll *a* (mg/m^{-3}), oxygen (percent saturation), and phytosynthetically active radiation (PAR; percent surface maximum) throughout the water column. The CTD was lowered to within 3 m of the bottom and retrieved at 1 m sec^{-1}. In this report, cross-sections of monthly mean parameter distributions along the transect are presented. A more detailed description of these data and their relationship to salmon distribution will be published at a later date.

Both OTF vessels fished 366 m (1,200 ft or 200 fathoms) of multi-filament drift gillnet with a mesh size of 13 cm (5 1/8 inches). The net was 45 meshes deep and constructed of double knot Super Crystal shade number 1, with filament size 53/S6F. At each station, all salmon captured in the drift gillnet were identified by species and enumerated. Sockeye salmon captured at the southern OTF ($n \leq 50$ at each station) were measured for length (mideye to tail fork) to the nearest millimeter.

For each species of salmon, the number of fish captured at each station (*s*) on each day (*i*) was expressed as a catch per unit effort (CPUE) statistic, or index point, and standardized to the number of fish caught in 100 fathoms of gear in 1 hour of fishing time:

$$CPUE_{s,i} = \frac{100\,fm \;\times\; 60\,\text{min} \;\times\; number\ of\ fish}{fm\ of\ gear \;\times\; MFT} \quad . \tag{1}$$

Mean fishing time (*MFT*) was

$$MFT = (C - B) + \frac{(\text{B} - \text{A}) + (\text{D} - \text{C})}{2} \quad , \tag{2}$$

where *A* = time net deployment started,

B = time net fully deployed,

C = time net retrieval started, and

D = time net fully retrieved.

Once deployed at a station, the drift gillnets fished 30 minutes before retrieval was started. However, the net was capable of capturing fish prior to being fully deployed, as it was during the time it was being retrieved. Therefore *MFT* was adjusted by summing the total time it took to set and retrieve the net, then dividing this time in half, and adding it to the time when the entire net was deployed and fished (Equation 2).

Daily $CPUE_i$ data were summed for all *m* stations (typically 6) as follows:

$$CPUE_i = \sum_{s=1}^{m} CPUE_{s,i} \quad . \tag{3}$$

Cumulative $CPUE_i$ ($CCPUE_d$) was given by

$$CCPUE_d = \sum_{i=1}^{d} CPUE_i \; , \tag{4}$$

where *d* is the date of the estimate.

GENETIC STOCK IDENTIFICATION SAMPLING AND ANALYSES

Tissue Sampling

Sockeye salmon captured at each station on the southern OTF ($n \leq 50$) and the northern OTF ($n \leq 75$) had the left axillary process removed for genetic analysis (Habicht et al. 2007). Additionally, in 2013, all coho salmon captured at both OTF transects had the left axillary process removed for future genetic analysis. Once removed, the axillary process from individual fish was then placed in ethanol in a single well in a 48 deep-well plate. For data continuity, sockeye salmon tissue samples from the southern OTF were paired with corresponding length information. These data were collated and archived by Commercial Fisheries staff at the ADF&G office in Soldotna.

For sockeye salmon, consecutive daily samples from all stations were combined to form temporal mixtures with a sample size goal of 400 individuals. Samples were also combined across all test fishery days by station to form 6 additional mixtures. The target sample size within each stratum was 400 fish to provide point estimates that are within 5% of the true stock composition 90% of the time (Thompson 1987).

Laboratory Analysis

Genomic DNA was extracted following the methods of Barclay and Habicht (2012) using DNeasy® 96 Tissue Kits by QIAGEN® (Valencia, CA). All baseline and commercial fishery samples were screened for 96 sockeye salmon SNP markers (3 mitochondrial and 93 nuclear DNA) following the methods of Barclay and Habicht (2012).

Genotyping failure rate calculations and quality control measures follow those reported in Barclay et al. (2010a), where they report results for a representative set of baseline collections. Briefly, 8% of all individuals were re-extracted and genotyped from all collections. Here we report on the failure rates and quality control measures for the 2012 and 2013 OTF samples.

Statistical Analysis

Methods for data retrieval and quality control are reported in Barclay et al. (2010a). In that report, a threshold of 80% of all markers that could be scored per individual was established and all individuals that did not meet this threshold were excluded from MSA. This rule (referred to as the "80% rule") was used to filter samples with poor quality DNA and missing data from analyses to decrease errors and reduce estimate variances. In addition to this quality control measure, genotypes were screened for duplicated fish. Duplicate genotypes can occur as a result of sampling or extracting the same individual twice and were defined as pairs of individuals sharing the same alleles in ≥95% loci screened. The individual with the most missing genotypic data from each duplicate pair was removed from further analyses. If both individuals had the same amount of genotypic data, the first individual was removed from further analysis. We applied both of these quality control measures to the 2012 and 2013 OTF mixture individuals. Baseline development methods are reported in Barclay and Habicht (2012) and included tests for Hardy-Weinberg equilibrium and linkage disequilibrium, methods for pooling collections into populations, testing for temporal stability, and visualizing population structure.

The current sockeye salmon baseline in Cook Inlet contains 69 populations representing 10,001 fish screened for 96 SNP loci (Barclay and Habicht 2012). Populations were assigned into reporting groups (stocks) and tested for MSA performance. The following 8 reporting groups

(Figure 3) met or exceeded the MSA performance metrics: 1) the largest producer of sockeye salmon on the west side (Crescent River; *Crescent*), 2) the remaining West Cook Inlet producers (*West*), 3) the lakes monitored by weirs in the Susitna/Yentna rivers (Judd/Chelatna/Larson lakes) with the addition of the Mama Bear and Papa Bear lakes and Talkeetna Sloughs population (*JCL*), 4) the remaining producers in the Susitna/Yentna rivers (*SusYen*), 5) the only major creek monitored with a weir in the Knik/Turnagain/Northeast Cook Inlet area (Fish Creek; *Fish*), 6) the remaining Knik/Turnagain/Northeast Cook Inlet producers (*KTNE*), 7) the composite of all populations within the Kenai River (*Kenai*), and 8) the composite of all populations within the Kasilof River (*Kasilof*). Hereafter, when the terms *Crescent*, *West*, *JCL*, *SusYen*, *Fish*, *KTNE*, *Kenai*, and *Kasilof* are used as nouns, they refer to reporting groups. Here we use the baseline as reported in Barclay and Habicht (2012) with 2 additional populations in the West reporting group (Harriet Creek and Packers Lake late run) to analyze the samples collected in the southern OTF and northern OTF for both 2012 and 2013.

The stock composition of all test fishery mixtures was estimated using the BAYES protocol as reported in Barclay and Habicht (2012) for the baseline evaluation tests except for defining the informative Dirichlet priors. Informative Dirichlet priors were defined using a similar "step-wise" prior protocol as reported in Barclay et al. (2010a), except that for the first time stratum within the 2012 southern OTF and northern OTF, the prior parameters were the posterior means from the first time stratum of the southern OTF from 2011 (Table 1). For the analysis of 2013 southern OTF, the informative prior was defined as the average of the previous year's OTF by station posterior distributions weighted by CPUE. For the 2012 northern OTF, the prior parameters were equal for all reporting groups with the prior for each reporting group divided equally among populations within that reporting group (flat prior; Barclay et al. 2010b; Barclay and Habicht 2012).

The within- and among-chain convergence of these estimates were assessed using the Raftery-Lewis (within-chain) and Gelman-Rubin (among-chain) shrink factor. These compare variation of estimates among iterations within a chain (Raftery and Lewis 1996) and within a chain to the total variation among chains (Gelman and Rubin 1992). If a shrink factor for any stock group estimate was greater than 1.2 and Raftery-Lewis estimate suggested a chain had not converged to stable estimates, we reanalyzed the mixture with 80,000-iteration chains following the same protocol. If the chains still failed to converge, we did not report the estimates.

Stock-specific cumulative *CPUE* ($CCPUE_s$) was estimated for each stratum by summing the daily $CPUE_i$ within each stratum and multiplying by the genetic stock proportions. The 90% credibility intervals on the $CCPUE_s$ were estimated by multiplying the genetic stock proportion 90% credibility intervals by the CCPUE for a given stratum.

Weighted stock-compositions were estimated by dividing the $CCPUE_s$ in each stratum by the final $CCPUE_d$ at the end of the season (*CCPUEF*).

DESCRIBING THE SALMON MIGRATION AND PROJECTING TOTAL RUN

For the southern OTF, the sockeye salmon run was described for each of the previous years based on the respective test fishery data, as described in Mundy (1979):

$$Y_{yr,d} = 1 \big/ (1 + e^{-(\mathrm{a} + \mathrm{bd})}) \ , \tag{5}$$

where $Y_{yr,d}$ is the modeled cumulative proportion of $CCPUE_{yr,f}$ (f = final day of season) for year (yr) as of day (d) and a and b are model parameters.

Variables without the subscript yr refer to the current year's estimate. To determine which of the previous run timing curves most closely fit the current year's data, and to estimate total run for the entire season (TR_f), a projection of the current year's $CCPUE_d$ at the end of the season ($CCPUEF$) was estimated as per Waltemyer (1983a):

$$CCPUEF = \frac{\sum_{d=0}^{D} CCPUE_d^{\;2}}{\sum_{d=0}^{d} Y_{yr,d} \cdot CCPUE_d} . \tag{6}$$

This model assumes that the modeled cumulative proportions ($Y_{yr,d}$) for previous year (yr) are the same as for the current year (Mundy 1979). To test this assumption, inseason Y_d was estimated as

$$Y_d = \frac{CCPUE_d}{CCPUEF} , \tag{7}$$

and mean squared error (MSE) between Y_d and $Y_{yr,d}$ was estimated as

$$MSE = \frac{\sum_{d=0}^{D} \left(Y_{yr,d} - Y_d\right)^2}{d+1} . \tag{8}$$

Years were ranked from lowest MSE (best model) to highest (worst), and the best fit years were used to estimate $CCPUEF$ for the current year. Catchability, or the fraction of the available population taken by a defined unit of fishing effort, was estimated as

$$q_d = \frac{CCPUE_d}{r_d} , \tag{9}$$

where q_d is estimated cumulative catchability as of day (d), and r_d is the cumulative total run as of day (d).

The cumulative total run on day (d) was the sum of all estimates for commercial, recreational, and personal use harvests to date, total escapement to date, and the number of residual (i.e., residing) sockeye salmon in the district. The commercial harvest was estimated inseason from mandatory catch reports that were called or faxed into the ADF&G office. Personal use and recreational harvests were estimated inseason by examining catch statistics from previous years' fisheries on similar sized runs. Total escapement to date included estimated escapements into all monitored systems (Susitna, Kenai, and Kasilof rivers, and Fish Creek) and unmonitored systems, which are assumed to be 15% of the escapement into monitored systems (Tobias and Willette 2003). The number of residual fish in the district was estimated by assuming exploitation rates of 70% in setnet fisheries, 35–40% in districtwide driftnet fisheries (based on the number of boats that fished), and 25% in reduced district driftnet fisheries (Mundy et al. 1993). For example, if the drift gillnet fleet harvested 500,000 sockeye salmon on an inlet-wide fishing period, the number of sockeye salmon originally in the district would be 1,250,000 (500,000/0.40 = 1,250,000), where the number remaining, or the residual, is 750,000 (1,250,000–500,000 = 750,000).

Passage rate (PR_d), as of day (d), is the expansion factor used to convert CPUE into estimated numbers of salmon passing the test fishery transect line into UCI, was

$$PR_d = 1/q_d \, . \tag{10}$$

Total run at the end of the season (TR_f) was

$$TR_f = PR_d \cdot CCPUEF. \tag{11}$$

The midpoint of the run (M), defined as the day that approximately 50% of the total run has passed the southern OTF transect, was

$$M = a/b \, , \tag{12}$$

where a and b are model parameters.

Because the test fishery does not encompass the entire sockeye salmon run, the total *CCPUEF* for the test fishery is estimated postseason using 2 methods (Equations 13 and 14):

$$CCPUE_f^h = CCPUEF \cdot \frac{H_t}{H_L} \, , \tag{13}$$

where $CCPUE_f^h$ is the total estimated *CCPUEF* for the season, based on harvest,

H_t = total commercial harvest for the season,

H_L = total commercial harvest through final day of test fishery (f+2), and

L = number of days (lag time) it took salmon to travel from test fishery to commercial harvest areas (2 days, Mundy et al. 1993).

$$CCPUE_t^r = CCPUEF \cdot \frac{E_t + H_t}{E_L + H_L} \, , \tag{14}$$

where $CCPUE_t^r$ is the total estimated *CCPUEF* for the season, based upon total run,

E_t = total escapement for the season,

H_t = total commercial harvest for the season,

E_L = total UCI escapement through the final day of the test fishery, summed from 6 different streams,

H_L = total UCI commercial harvest through the final day of the test fishery, and

L = number of days (lag time) it took salmon to travel from the test fishery to spawning streams or commercial harvest areas.

The total run adjustment to *CCPUEF* (Equation 14) has replaced adjustments based on harvest alone (Equation 13), primarily due to changes to commercial fishing management plans made by the BOF. Management plans now provide less fishing time in August than in the past; therefore, adjustments based on harvest alone would not have accurately reflected the additional fish that entered the district after the test fishery ceased. The total run to date on the last day of the test fishery was the sum of all commercial harvest data and escapement. Escapement estimates were derived by summing passage from 2 sockeye salmon sonar enumeration sites (Kenai and Kasilof rivers) and adding to that an expansion of the cumulative weir counts at Chelatna, Judd, and Larson lakes to reflect the total Susitna River sockeye salmon escapement, plus the weir count at Fish Creek, and an estimate of escapement to all unmonitored systems through day (*d*). An estimate of escapement to all non-monitored systems in UCI is considered to be 15% of the monitored runs (Tobias and Willette 2003). Lag times are the approximate time for fish to migrate from the test fishery transect to a particular destination. As suggested by Mundy et al. (1993), lag times must be considered when estimating the total run passing the test fishery transect on day (*d*). A lag time of up to 2 days was assumed for fish harvested in the commercial fishery. We estimated lag times between the test fishery and escapement projects as follows: Kasilof and Kenai rivers, 4 days; Fish Creek, 7 days (Mundy et al. 1993); and Susitna River weirs, 14 days. The number of sockeye salmon harvested in sport and personal use fisheries after test fishing has ceased that have not been estimated in the escapement are assumed to be insignificant and therefore are not utilized in the *CCPUEF* post test fishery adjustment.

Adjusted estimates of *CCPUEF* ($CCPUE_t^h$ and $CCPUE_t^r$) were used for postseason estimates of TR_f.

RESULTS AND DISCUSSION

TEST FISHING

In 2013, rough seas and mechanical difficulties prevented the southern OTF boat from fishing 40 out of the possible 180 gillnet sets (i.e., 6 possible sets per day for 30 days; Table 2). A total of 2,020 sockeye salmon were captured during the 2013 test fishery, as well as 53 pink salmon *O. gorbuscha*, 302 chum salmon *O. keta*, 800 coho salmon, and 4 Chinook salmon *O. tshawytscha* (Tables 2–3; Appendices A1–A13). Sockeye salmon daily catches (from days where all stations were fished) ranged from 5 fish on 28 July to 298 fish on 16 July. The total sockeye salmon *CCPUEF* for the 2013 project was 1,342, with daily CPUE values (from days where all stations were fished) ranging from 4 to 183 (Table 2). Analysis of variance (ANOVA) of historical data showed that the 1992–2012 annual test fishery unadjusted *CCPUEF* and the total annual run of sockeye salmon to UCI (Figure 4) were not significantly ($\alpha = 0.05$) correlated ($P = 0.056$ and $r^2 = 0.18$), with 82% of the variation unexplained. This indicates that the southern OTF *CCPUEF* by itself would not be a reliable predictor of the total annual sockeye salmon run. As expected, the distribution of sockeye salmon catches along the test fishery transect was similar to the distribution of CPUE values (Tables 3 and 4) because fishing occurs at fixed intervals at each station. Catch and CPUE numbers were not interpolated for days with missing stations because the unusually high number of missed stations prevented these data from being used for estimates of total run size and timing.

In 2013, mechanical difficulties prevented the northern OTF boat from fishing 4 of the possible 210 stations on 1 July. A total of 3,333 sockeye salmon were estimated to have been captured during the 2013 northern OTF, as well as 122 pink salmon, 632 chum salmon, 484 coho salmon, and 4 Chinook salmon (Appendices B1–B15). Catch and CPUE numbers were not interpolated for days with missing stations because this project was designed to gather genetic information on sockeye salmon and was not intended to estimate run size or timing. Sockeye salmon daily catches ranged from 1 fish on 1 July to 1,063 fish on 15 July. The total sockeye salmon CPUE for the 2013 project was 2,580 with daily CPUE values ranging from 1 to 807 (Appendix B1).

INSEASON ABUNDANCE ESTIMATES

Tarbox and Waltemyer (1989) provided detail about the assumptions used in the curve fitting procedures to estimate the *CCPUEF* statistic during the season. One of the major assumptions is that 24 June represents the first day of the sockeye salmon run to UCI. Variability in actual runs can therefore result in an average or early run being misclassified as late, especially during the first couple weeks of the test fishery program. For this reason, 20 July was chosen as the earliest date that inseason formal estimates of each year's total run size and run timing should be made. By then, there are enough data points in the current year's run timing curve to provide a more accurate estimate of the *CCPUEF*. In addition, Tarbox and King (1992) and later OTF annual reports demonstrated that the initial first choice (best fit) estimate of the *CCPUEF* statistic and total run made around mid-July was often not the best fit estimate later in July. Therefore, when making formal inseason estimates of the total run, the top 5 or 6 best fits are evaluated. Careful consideration is given to years whose fits reveal the least day to day change in the predicted *CCPUEF*. These years are identified as potentially being the final best fit at the end of the season, especially if the *MSE* (Equation 8), also referred to as the mean sum of squares, statistic is also improving. Salmon run timing information from other areas of the state are also considered to help predict UCI run timing (Willette et al. 2010). Due to the unusually high number and timing of missed stations, no formal inseason estimate of abundance was made in 2013 using southern OTF data. In most years, inseason abundance estimates are possible even with several missed stations; missing data are simply interpolated to make this possible. However, in 2013, the majority of missed stations occurred near the midpoint of the UCI sockeye return (15 July). CPUE data from this time period are critical, and it was determined that if an inseason estimate of abundance were to be made using the available data, the results would be unreliable. The total sockeye salmon run to UCI in 2013 (postseason data) was estimated at approximately 5.8 million fish, including commercial, sport, and personal use harvests, as well as escapement to all systems (Shields and Dupuis 2013).

KENAI RIVER RUN ESTIMATE

In addition to making inseason estimates of the total size of the annual sockeye salmon run, UCI commercial fishery management plans require ADF&G to make an inseason estimate of the number of Kenai River sockeye salmon in the run. Various management actions in both sport and commercial fisheries are tied to the total abundance of Kenai River sockeye salmon, which is characterized by 3 different size ranges: less than 2.3 million fish, between 2.3 and 4.6 million fish, and greater than 4.6 million fish (Shields and Dupuis 2012). As previously described, the $CCPUE_d$ curves from the top 5 best fits of previous year's test fishery data were used to project the *CCPUEF* for 2012, which was then used to estimate the UCI total run. The Kenai River component of the run was determined in part from a weighted age-composition allocation method to estimate the stock composition of the commercial harvest (Tobias and Tarbox 1999). This method (Bernard 1983) allocates the commercial harvest to various stocks by comparing the age composition of the escapement in the major river systems of UCI to the age composition of sockeye salmon harvested commercially (Tobias and Willette 2004). Three important assumptions of the weighted age-composition method are that 1) the age compositions of fish escaping into the various river systems are representative of the age composition in the commercial harvest; 2) the commercial harvest in specific areas is composed of nearby stocks; and 3) exploitation rates are equal among stocks within age classes. The Kenai River run to date is estimated by summing 1) the commercial harvest of Kenai River stocks; 2) the estimated (using DIDSON) passage of sockeye salmon in the Kenai

River; and 3) an estimate of sport and personal use harvest below the river mile 19 sonar site. Finally, the remainder of the run that will be Kenai River origin is projected by subtracting the run to date from the total run estimate and then applying an estimate of the proportion of the run remaining that will be Kenai River by reviewing previous years' data for runs of similar timing. Due to the reasons described in the previous section, no inseason estimates of the 2013 Kenai River sockeye salmon run were made using southern OTF data. Using postseason data, the 2013 sockeye salmon run to the Kenai River was estimated to be approximately 3.5 million fish (Shields and Dupuis 2013).

OFFSHORE TEST FISHERY ERROR

The absolute percent error (APE) between actual total run and *CCPUE*-predicted total run in the 20 July estimate (or shortly thereafter) has been >30% only for runs 1 or more days early (Table 5; Figure 5). For all early runs, the mean APE is 34% (median = 19%), whereas for runs on time or late, the 20 July mean APE is only 11% (median = 7%). As stated earlier, the 20 July first best fit estimator has proven over time to not always be the best fit of the data just a few days later; this was the case in 2011. In 2012, the first best fit estimate was the most accurate; the total sockeye salmon run estimate to UCI using catch, escapement, and test fishery data through 23 July produced a first best fit estimate that was approximately 1.8% more than the actual run.

RUN TIMING

The last day of the test fishery typically occurs on 30 July each year, which means the "tail end" of the sockeye salmon run is not assessed by the project. In 2013, the southern OTF project ended on 30 July, but escapement monitoring continued through 7 August in the Kasilof River, 7 August in the Kenai River, 5 September at Fish Creek, and into the mid-August at Judd, Chelatna, and Larson lakes. In addition, commercial fishing also continued into September. Therefore, to estimate the proportion of the run that occurred after the test fishery ceased, 2 methods were used to adjust the *CCPUEF* statistic to reflect what it would have been had the project continued through the end of the sockeye salmon run.

The first method used the number of fish harvested commercially after the test fishery ended (Equation 13), whereas the second method enumerated both escapement and commercial catch (total run) after the test fishery terminated (Equation 14). The sport and personal use harvest of sockeye salmon occurring after the test fishery was assumed to be minimal because the major personal use fisheries are either closed or slowing down at this point, and sport fisheries begin to target coho salmon; therefore these were not considered. Although differences between annual inseason and postseason (adjusted by either harvest or total run) *CCPUEF* statistics were often relatively minor, they affected calculations of the *a* and *b* coefficients in the equations used to describe historical run timing curves (Equation 5), which in turn had an effect on estimates of subsequent *CCPUEF* values (Table 6). Beginning in 2002, the total run method was used to make postseason adjustments to all previous years' *CCPUEF* statistics (Shields 2003).

No estimate of run timing relative to the historic mean date of 15 July was made in 2013 using southern OTF data. Results and discussion for determining the total run adjusted *CCPUEF* and estimating run timing for the 2012 sockeye salmon run can be found in Dupuis and Willette (2014).

ENVIRONMENTAL VARIABLES

In 2013, surface water temperatures measured along the southern OTF transect ranged from 7.8°C to 12.5°C and averaged 10.1°C for the year (Appendices A14 and A15). These water temperature data were slightly higher than the 1992–2012 average surface water temperature of 10.2°C (Appendix A16). Air temperatures ranged from 8° to 19°C and averaged 11°C, or the 6th coldest average air temperature since the test fishery began in 1979. Wind velocity averaged 5.5 knots for the month. Wind direction was variable, but in general, winds originated out of the south, the predominate wind orientation in UCI during July. The 2013 seasonal average salinity of 31.0 ppt was slightly higher than the 1992–2012 average of 29.6 ppt. Koenings et al. (1987) describe a secchi disk as a black and white circular plate that is used to easily estimate the degree of visibility in natural waters. Secchi disk readings in 2013 were similar to the averages from all previous years. In general, water clarity along the test fishery transect decreases as you travel from east to west, as a result of numerous glacial watersheds draining into the west side of Cook Inlet. From 2003 to 2012, the average secchi disk depth was 7.9 m at Station 4 and decreased to 3.1 m at Station 8. Finally, Station 4 was the shallowest station, averaging 25.6 fathoms (154 feet) in depth. Changes in depth are a result of different stages of tide as well as minor differences in set location from day to day.

Monthly mean distributions of temperature and salinity along the northern OTF transect indicated a surface layer of relatively turbid (low light penetration), warm, low salinity water along the eastern side of Kalgin Island and relatively less turbid, cool, high salinity water along the western side of the island (Figure 6). Chlorophyll fluorescence levels were highest in a cool, high salinity bottom layer west of Kalgin Island. Oxygen saturation levels below 10 m were lower along the west than east side of the island. These data indicate a warm, low salinity surface layer flowing out of the northern inlet along the east side of Kalgin Island causing entrainment of cool, high salinity bottom water along the west side of the island as previously described by Burbank (1974, 1977). Thus in our study, Station 5 was located near the west rip, Station 4 near the mid-channel rip, and Station 2 near the east rip as described by Burbank (1977). For all species, salmon catches (Appendix B) were highest near and just east of the mid-channel rip (Stations 3 and 4) and lowest in the cool, high salinity water west of Kalgin Island (Stations 6 and 7).

Water temperatures are believed by many to play a significant role in the timing of salmon runs (Burgner 1980), so these data have been closely monitored. In general, warmer water temperatures are thought to result in early runs, but cooler temperatures produce later runs. For example, in Bristol Bay, Burgner (1980) reported that the arrival dates of sockeye salmon were early during years when water temperatures were warmer than average. In a later Bristol Bay study, Ruggerone (1997) found that the change in temperature from winter to spring was a better predictor of run timing than water temperature alone. However, water temperature data alone may or may not be an accurate predictive tool for gauging the run timing of UCI salmon stocks. The 2005 UCI sockeye salmon run was the second latest run ever observed, yet surface water temperatures along the test fishery transect were the warmest ever measured. Conversely, the 2008 run was 4 days early, yet surface water temperatures were much cooler than average. Therefore, it appears that factors other than just water temperature probably play a role in determining salmon run timing in UCI. Pearcy (1992) summarized some of the factors that affect the coastal migration of returning adult salmon and found that prior to entering estuaries adult salmon probably rely on cues that are different from those used in the open ocean phases of their migration.

While salinity, water temperature, currents, and bathymetry are all believed to play a role in migration, another dynamic to consider that could affect run timing to UCI is the stock composition of the run. When classifying total sockeye salmon run timing in UCI, the magnitude of the Kenai River run should be considered. Because Kenai River sockeye salmon return to UCI later and in larger numbers than any other stock, UCI runs classified as late tend to include large Kenai River runs. For example, from 1979 to 2012, the average Kenai River annual run (DIDSON-based) for years where the UCI return was classified as early (n = 13), was 2.7 million fish, yet for UCI runs classified as on time or late (n = 21), the Kenai River run averaged 4.3 million fish. A combination of these factors (water temperature, salinity, currents, bathymetry, and stock composition of the run) probably affects fish migration and ultimately classifying the run timing as early or late.

To better understand and predict sockeye salmon migrations into UCI, ADF&G conducted a companion study on the test fishery vessel from 2002 to 2005. Using side-looking sonar, fish distribution in the water column was measured in relation to various oceanographic data, such as water temperature, salinity, tide stage, and water clarity. This study also examined various methods for improving the OTF inseason run forecasts (Willette et al. 2010).

GENETIC STOCK IDENTIFICATION TISSUE SAMPLING AND ANALYSES

For the 2012 and 2013 southern OTF, tissues suitable for genetic analysis were sampled and analyzed from 1,976 and 400 sockeye salmon, respectively (Table 7). For the 2012 and 2013 northern OTF, tissues suitable for genetic analysis were sampled and analyzed from 2,854 and 1,952 sockeye salmon, respectively (Table 8).

A total of 7,182 sockeye salmon were genotyped from the 2012 and 2013 OTF collections. Failure rates among collections ranged from 0.01% to 2.10%. Discrepancy rates were uniformly low and ranged from 0.00% to 0.17%. Assuming equal error rates in the original and the quality-control analyses, estimated error rates in the samples is half of the discrepancy rate (0.00–0.09%).

Data retrieval and quality control results for the baseline collections are reported in Barclay and Habicht (2012). Based upon the 80% marker rule, 1.93% of individuals were removed from test fishery collections before stock composition estimates were calculated. Based on the 95%-of-loci criterion for detecting duplicate individuals, no samples were removed from collections.

Genetic information has been collected and analyzed from the southern OTF since 2006 (Table 7; Appendix C1). The temporal data from 2006 through 2009 revealed similar findings (i.e., during the third and fourth weeks in July, Kenai River sockeye salmon were the dominant stock entering Cook Inlet, whereas during the first part of the month, Kasilof River sockeye salmon stocks were equally or more abundant than Kenai River stocks). However, data from 2010 to 2013 show that Kenai River sockeye salmon were the dominant stock throughout the month of July. The difference in stock composition between these time periods is probably the result of relatively strong sockeye salmon runs to the Kenai River from 2010 to 2013. The mixed stock analyses also showed that Susitna River sockeye salmon stocks (labeled as JCL and SusYen) comprised an average of 9% the total CPUE from 2006 to 2013 (Table 7; Appendix C1). Spatial data were collected from the southern OTF from 2010 to 2012. These data show that the proportion of Kenai River sockeye salmon decreases from east to west (Station 4 to Station 8) and the proportion of West Cook Inlet stocks increases; the proportion of the remaining stocks stayed relatively stable (Table 9).

The northern OTF project has only been in operation since 2012, therefore the MSA data are limited. Temporal data from 2012 and 2013 show that Kenai River sockeye salmon were the dominant stock throughout the month of July, which is similar to data collected at the southern OTF for these years. In general, MSA results also showed that Kenai River sockeye salmon remained the dominant stock across the inlet from east to west (Station 1 to Station 7); however, Station 5 showed an increase in West Cook Inlet stocks during both years (Table 10).

In 2013, 752 coho salmon were sampled from the southern OTF project and 495 coho salmon were sampled from the northern OTF project. Results from the MSA of coho salmon were unavailable at the time this report was published.

The efficacy of using MSA in combination with the test fishery for inseason management of the UCI commercial fishery remains unclear. Although it could be useful to know when specific stocks are entering the Central District, inter- and intra-annual variability in migration routes through the district would make adjusting commercial fishing periods to increase or decrease stock-specific exploitation problematic. The UCI test fisheries continue to provide fishery managers with very important data about sockeye salmon stock composition, abundance, and run timing. Since commercial, sport, and personal use fishery management plans depend on inseason sockeye salmon run estimates, the UCI test fishery project remains one of the most essential tools available for their management.

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TABLES AND FIGURES

Table 1.–Predetermined priors based on the best available information for the first stratum within each Upper Cook Inlet test fishery in 2012 and 2013.

		Reporting group							
Test fishery	Date	Crescent	West	JCL	SusYen	Fish	KTNE	Kenai	Kasilof
Southern offshore test fishery (Station 4)	July 1–30, 2012	0.00	0.11	0.02	0.03	0.02	0.00	0.76	0.04
Southern offshore test fishery (Station 5)	July 1–30, 2012	0.00	0.13	0.03	0.07	0.02	0.02	0.66	0.06
Southern offshore test fishery (Station 6)	July 1–29, 2012	0.02	0.16	0.01	0.05	0.01	0.02	0.68	0.04
Southern offshore test fishery (Station 6.5)	July 1–28, 2012	0.01	0.18	0.03	0.04	0.01	0.02	0.69	0.03
Southern offshore test fishery (Station 7)	July 1–29, 2012	0.03	0.18	0.02	0.04	0.02	0.00	0.67	0.04
Southern offshore test fishery (Station 8)	July 1–26, 2012	0.11	0.20	0.01	0.05	0.01	0.00	0.61	0.01
Southern offshore test fishery (all stations)	July 1–6, 2012	0.04	0.22	0.03	0.08	0.03	0.02	0.48	0.08
Southern offshore test fishery (all stations)	July 1–30, 2013	0.01	0.09	0.03	0.03	0.00	0.01	0.78	0.03
Northern offshore test fishery (Stations 1 and 2)	July 1–30, 2012	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 3)	July 1–30, 2012	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 4)	July 1–30, 2012	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 5)	July 1–29, 2012	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Stations 6 and 7)	July 3–29, 2012	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (all stations)	July 1–13, 2012	0.04	0.22	0.03	0.08	0.03	0.02	0.48	0.08
Northern offshore test fishery (Stations 1 and 2)	July 1–30, 2013	0.00	0.04	0.01	0.01	0.01	0.02	0.83	0.08
Northern offshore test fishery (Station 3)	July 1–29, 2013	0.00	0.06	0.02	0.05	0.00	0.02	0.82	0.02
Northern offshore test fishery (Station 4)	July 1–29, 2013	0.00	0.07	0.05	0.05	0.02	0.02	0.76	0.04
Northern offshore test fishery (Station 5)	July 1–30, 2013	0.00	0.24	0.08	0.06	0.02	0.02	0.55	0.03
Northern offshore test fishery (Stations 6 and 7)	July 1–30, 2013	0.01	0.20	0.02	0.00	0.00	0.01	0.72	0.03
Northern offshore test fishery (all stations)	July 1–13, 2013	0.00	0.13	0.04	0.04	0.01	0.03	0.70	0.05

Note: All priors for subsequent strata are based upon the posterior distribution (i.e., stock composition estimates) of preceding strata from the same district, subdistrict, section, subsection, or test fishery. Priors for a given stratum may not sum to 1 due to rounding error.

Table 2.–Summary of sockeye salmon fishing effort, daily, cumulative catch, catch per unit effort (CPUE), and mean fish length for the Upper Cook Inlet southern offshore test fishery project, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE		Mean length (mm)
			Daily	Cum	Daily	Cum	
1 July	6	245.5	66	66	48	48	575
2 July	6	224.0	60	126	47	95	565
3 July	6	234.0	97	223	72	166	566
4 July	4[a]	158.5	97	320	60	226	570
5 July	6	229.0	129	449	90	316	571
6 July	6	224.5	66	515	49	364	563
7 July	6	220.5	145	660	121	486	566
8 July	4[a]	174.0	9	669	6	492	558
9 July	6	260.0	165	834	105	597	572
10 July	6	235.0	15	849	11	607	553
11 July	6	258.5	187	1,036	114	721	566
12 July	6	248.5	149	1,185	88	809	579
13 July	3[a]	121.5	23	1,208	17	826	555
14 July	0[a]	0.0	–	1,208	–	826	–
15 July	6	242.5	25	1,233	19	845	555
16 July	6	268.0	298	1,531	183	1,029	578
17 July	1[a]	31.5	13	1,544	12	1,041	578
18 July	0[a]	0.0	–	1,544	–	1,041	–
19 July	0[a]	0.0	–	1,544	–	1,041	–
20 July	3[a]	140.5	32	1,576	20	1,061	574
21 July	6	227.0	15	1,591	12	1,072	584
22 July	6	266.0	108	1,699	64	1,136	565
23 July	6	244.5	17	1,716	12	1,148	562
24 July	6	247.0	169	1,885	107	1,255	575
25 July	5[a]	232.5	73	1,958	42	1,298	562
26 July	6	237.0	7	1,965	5	1,303	572
27 July	6	244.0	29	1,994	20	1,323	572
28 July	6	232.0	5	1,999	4	1,327	563
29 July	4[a]	167.5	16	2,015	11	1,338	564
30 July	2[a]	76.0	5	2,020	4	1,342	563

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Table 3.–Estimated sockeye salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2013.

Date	Station number						Total
	4	5	6	6.5	7	8	
1 July	14	2	38	5	4	3	66
2 July	7	28	12	1	9	3	60
3 July	8	7	13	21	47	1	97
4 July[a]	1	0	11	85	–	–	97
5 July	2	2	0	34	90	1	129
6 July	0	0	50	2	12	2	66
7 July	0	1	4	105	34	1	145
8 July[a]	3	–	–	4	2	0	9
9 July	0	103	0	62	0	0	165
10 July	1	14	0	0	0	0	15
11 July	0	63	2	120	2	0	187
12 July	1	3	16	0	1	128	149
13 July[a]	4	0	19	–	–	–	23
14 July[a]	–	–	–	–	–	–	–
15 July	0	3	2	19	1	0	25
16 July	2	16	74	94	102	10	298
17 July[a]	–	–	13	–	–	–	13
18 July[a]	–	–	–	–	–	–	–
19 July[a]	–	–	–	–	–	–	–
20 July[a]	0	16	16	–	–	–	32
21 July	9	0	0	5	1	0	15
22 July	1	0	5	81	21	0	108
23 July	1	1	5	8	0	2	17
24 July	0	125	36	1	7	0	169
25 July[a]	0	22	11	2	38	–	73
26 July	2	0	0	0	1	4	7
27 July	0	5	4	16	2	2	29
28 July	0	0	2	1	0	2	5
29 July[a]	0	0	6	10	–	–	16
30 July[a]	3	2	–	–	–	–	5
Total	59	413	339	676	374	159	2,020
%	3%	20%	17%	33%	19%	8%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Table 4.–Estimated sockeye salmon catch per unit effort by date and station, Upper Cook Inlet southern offshore test fishery project, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	10	2	27	3	3	2	48
2 July	6	21	9	1	7	2	47
3 July	7	6	10	16	33	1	72
4 July[a]	1	0	7	52	–	–	60
5 July	2	2	0	26	59	1	90
6 July	0	0	36	2	9	2	49
7 July	0	1	3	91	25	1	121
8 July[a]	2	–	–	3	1	0	6
9 July	0	62	0	43	0	0	105
10 July	1	10	0	0	0	0	11
11 July	0	39	1	72	1	0	114
12 July	1	2	7	0	1	77	88
13 July[a]	3	0	14	–	–	–	17
14 July[a]	–	–	–	–	–	–	0
15 July	0	2	1	14	1	0	19
16 July	2	13	48	56	58	7	183
17 July[a]	–	–	12	–	–	–	12
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	0	11	9	–	–	–	20
21 July	7	0	0	4	1	0	12
22 July	1	0	3	47	13	0	64
23 July	1	1	4	6	0	2	12
24 July	0	78	24	1	5	0	107
25 July[a]	0	15	7	1	19	–	42
26 July	2	0	0	0	1	3	5
27 July	0	4	3	10	2	2	20
28 July	0	0	2	1	0	2	4
29 July[a]	0	0	5	6	–	–	11
30 July[a]	2	2	–	–	–	–	4
Total	46	268	233	454	240	101	1,342
%	3%	20%	17%	34%	18%	7%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Table 5.–Absolute percent error (APE) using the first best fit estimate of southern test fish data on or after July 20 to project the total annual Upper Cook Inlet sockeye salmon run 1988–2012.

Year	Actual run (millions)	July 23 estimate	APE	Run timing
1988	8.52	11.30	32.6%	1 day early
1990	5.00	4.90	1.9%	4 day late
1991	3.66	3.90	6.5%	2 day late
1992	10.90	11.40	4.5%	2 day late
1993	6.48	6.40	1.2%	on time
1994	5.51	5.30	3.8%	5 day late
1995	4.51	4.50	0.2%	on time
1996	5.63	8.50	51.0%	1 day early
1997	6.41	6.00	6.4%	3 day late
1998	3.00	3.40	13.3%	3 day late
1999	4.57	5.20	13.7%	3 day late
2000	2.94	3.20	8.8%	2 day early
2001	3.53	6.20	75.4%	2 day early
2002	4.84	5.50	13.6%	2 day early
2003	6.29	6.79	8.0%	1 day early
2004	7.92	8.94	12.8%	2 day late
2005	7.92	9.17	15.8%	7 day late
2006	4.96	3.60	27.5%	9 day late
2007	5.44	4.65	14.6%	4 day late
2008	4.13	5.17	25.3%	4 day early
2009	4.29	9.11	112.5%	2 day early
2010[a]	5.26	4.69	10.8%	1 day early
2011	8.60	11.56	34.4%	2 day late
2012	6.61	6.73	1.8%	1 day early

Run timing	Mean APE	Median APE
All runs	21%	13%
On time +	11%	7%
All early	34%	19%

[a] Total run estimated by summing harvest and escapement throughout Upper Cook Inlet. In the Kenai and Kasilof rivers, escapements were converted to Bendix-equivalent units.

Table 6.–A comparison of models used to make postseason adjustments to the southern offshore test fishery final catch per unit effort, 1979–2012.

	Final	Total run	Total run adjusted	
Year	OTF CPUE	adjusted	*a*	*b*
1979	602	664	-3.3380	0.2004
1980	740	777	-2.2403	0.1612
1981	364	387	-2.5243	0.1819
1982	651	786	-3.7156	0.1633
1983	2,464	2,474	-4.2732	0.1884
1984	1,331	1,341	-3.4018	0.1834
1985	1,422	1,563	-3.5633	0.1626
1986	1,653	1,714	-3.8642	0.1719
1987	1,404	1,428	-4.6385	0.1785
1988	1,131	1,169	-3.5655	0.1662
1989	619	692	-2.7031	0.1238
1990	1,358	1,426	-5.7085	0.2211
1991	1,574	1,740	-4.6331	0.1919
1992	2,021	2,195	-5.4043	0.2217
1993	1,815	1,913	-3.9018	0.1797
1994	1,012	1,199	-3.9757	0.1453
1995	1,712	1,850	-4.6219	0.2078
1996	1,723	1,796	-4.4605	0.2144
1997	1,656	1,826	-3.7000	0.1496
1998	1,158	1,313	-3.7142	0.1515
1999	2,226	2,419	-5.1500	0.2081
2000	1,520	1,565	-4.9141	0.2480
2001	1,586	1,630	-3.9823	0.2041
2002	1,736	1,825	-4.0642	0.2068
2003	1,787	1,848	-4.4402	0.2068
2004	2,028	2,345	-4.6374	0.1903
2005	2,643	3,191	-3.7152	0.1302
2006	1,507	1,969	-4.0762	0.1308
2007	2,584	2,924	-4.6427	0.1793
2008	1,594	1,675	-2.8021	0.1521
2009	2,487	2,616	-4.4130	0.2173
2010	2,055	2,266	-3.1347	0.1459
2011	3,715	3,835	-5.5481	0.2304
2012	2,052	2,141	-5.0793	0.2399

Table 7.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for temporally grouped mixtures (date range) of sockeye salmon captured in the southern offshore test fishery for 2012 and 2013.

2012												
			Stock composition				Stock-specific *CCPUE*					
			Within date range				Within date range					Within
Date		Reporting			90% CI					90% CI		year
range	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
7/1–6	n = 385	Crescent	0.03	0.01	0.01	0.04		8	3	4	13	0.00
	n_{eff} = 381	West	0.18	0.02	0.15	0.22		57	7	46	68	0.03
		JCL	0.03	0.01	0.02	0.05		10	3	6	16	0.01
		SusYen	0.04	0.01	0.02	0.06		11	4	6	17	0.01
		Fish	0.01	0.00	0.00	0.01		2	1	0	4	0.00
		KTNE	0.01	0.00	0.00	0.01		2	1	0	5	0.00
		Kenai	0.62	0.03	0.58	0.66		190	8	177	203	0.10
		Kasilof	0.09	0.02	0.06	0.11		26	5	19	34	0.01
							$CCPUE_i$	306				
7/7–11	n = 386	Crescent	0.03	0.01	0.01	0.04		9	3	5	15	0.00
	n_{eff} = 378	West	0.12	0.02	0.09	0.16		42	7	32	54	0.02
		JCL	0.03	0.01	0.02	0.05		10	3	6	16	0.01
		SusYen	0.04	0.01	0.02	0.06		13	4	7	20	0.01
		Fish	0.01	0.00	0.00	0.01		2	1	0	4	0.00
		KTNE	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		Kenai	0.73	0.02	0.69	0.77		249	8	235	262	0.13
		Kasilof	0.05	0.01	0.03	0.07		15	4	9	23	0.01
							$CCPUE_i$	342				
7/12–16	n = 391	Crescent	0.01	0.01	0.00	0.02		5	3	1	10	0.00
	n_{eff} = 384	West	0.08	0.01	0.06	0.10		34	6	25	44	0.02
		JCL	0.03	0.01	0.02	0.05		13	4	7	20	0.01
		SusYen	0.05	0.01	0.03	0.07		20	5	12	30	0.01
		Fish	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		KTNE	0.01	0.00	0.00	0.01		2	2	0	6	0.00
		Kenai	0.79	0.02	0.75	0.83		335	9	319	350	0.17
		Kasilof	0.03	0.01	0.02	0.05		13	4	7	21	0.01
							$CCPUE_i$	423				
7/17–19	n = 356	Crescent	0.00	0.00	0.00	0.01		2	2	0	5	0.00
	n_{eff} = 354	West	0.05	0.01	0.03	0.07		21	5	13	30	0.01
		JCL	0.05	0.01	0.03	0.07		20	5	12	28	0.01
		SusYen	0.02	0.01	0.00	0.03		6	4	1	13	0.00
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.01	0.01	0.00	0.03		6	3	2	11	0.00
		Kenai	0.84	0.02	0.80	0.87		349	9	334	363	0.18
		Kasilof	0.03	0.01	0.02	0.05		13	4	7	21	0.01
							$CCPUE_i$	417				
7/20–30	n = 470	Crescent	0.01	0.00	0.00	0.02		4	2	1	8	0.00
	n_{eff} = 461	West	0.06	0.01	0.04	0.08		27	5	19	37	0.01
		JCL	0.02	0.01	0.01	0.04		10	3	6	16	0.01
		SusYen	0.03	0.01	0.01	0.05		14	6	5	23	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.02		4	3	1	9	0.00
		Kenai	0.87	0.02	0.84	0.90		396	8	382	408	0.20
		Kasilof	0.00	0.00	0.00	0.01		1	1	0	4	0.00
							$CCPUE_i$	455				
							$CCPUE_f$	1,944				

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2013													
			Stock composition				Stock-specific *CCPUE*						
			Within date range					Within date range				Within	
Date		Reporting			90% CI					90% CI		year	
range	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion	
7/1–30	n = 400	Crescent	0.01	0.01	0.00	0.03		18	9	6	34	0.01	
	n_{eff} = 393	West	0.10	0.02	0.07	0.13		136	23	101	175	0.10	
		JCL	0.05	0.01	0.03	0.07		63	15	41	89	0.05	
		SusYen	0.05	0.01	0.03	0.08		72	19	44	105	0.05	
		Fish	0.00	0.00	0.00	0.01		3	3	0	10	0.00	
		KTNE	0.02	0.01	0.01	0.04		31	12	14	52	0.02	
		Kenai	0.71	0.02	0.67	0.75		953	33	898	1,006	0.71	
		Kasilof	0.05	0.01	0.03	0.07		66	15	42	93	0.05	
							$CCPUE_f$	1,342					

Note: CCPUE is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% credibility intervals may not include the point estimate for the very low *CCPUE* estimates because fewer than 5% of iterations had values above zero.

Table 8.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for temporally grouped mixtures (date range) of sockeye salmon captured in the northern offshore test fishery for 2012 and 2013.

			Stock composition				Stock-specific *CCPUE*					
			Within date range					Within date range				Within
Date		Reporting			90% CI					90% CI		year
range	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
					2012							
7/1–13	n = 403	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff} = 400	West	0.13	0.02	0.11	0.16		89	12	71	110	0.02
		JCL	0.04	0.01	0.02	0.05		24	7	14	36	0.01
		SusYen	0.04	0.01	0.02	0.06		26	7	15	39	0.01
		Fish	0.01	0.00	0.00	0.02		7	3	2	13	0.00
		KTNE	0.03	0.01	0.02	0.05		20	7	10	31	0.01
		Kenai	0.70	0.02	0.66	0.74		464	16	437	490	0.13
		Kasilof	0.05	0.01	0.04	0.08		36	8	24	50	0.01
							$CCPUE_i$	666				
7/14–16	N = 545	Crescent	0.00	0.00	0.00	0.01		2	2	0	5	0.00
	n_{eff} = 542	West	0.09	0.01	0.07	0.11		72	10	56	88	0.02
		JCL	0.08	0.01	0.06	0.10		61	9	47	77	0.02
		SusYen	0.07	0.01	0.05	0.10		58	10	43	75	0.02
		Fish	0.03	0.01	0.02	0.04		22	6	14	32	0.01
		KTNE	0.01	0.00	0.00	0.02		8	4	3	14	0.00
		Kenai	0.65	0.02	0.61	0.68		507	17	480	534	0.14
		Kasilof	0.07	0.01	0.05	0.09		52	9	38	67	0.01
							$CCPUE_i$	781				
7/17–19	n=529	Crescent	0.00	0.00	0.00	0.00		0	2	0	4	0.00
	n_{eff}=524	West	0.12	0.01	0.10	0.15		97	12	78	118	0.03
		JCL	0.05	0.01	0.04	0.07		42	8	30	56	0.01
		SusYen	0.03	0.01	0.02	0.05		27	8	14	42	0.01
		Fish	0.01	0.00	0.00	0.02		9	4	4	17	0.00
		KTNE	0.03	0.01	0.02	0.05		27	7	17	39	0.01
		Kenai	0.71	0.02	0.67	0.74		567	17	538	594	0.15
		Kasilof	0.04	0.01	0.03	0.06		34	8	22	47	0.01
							$CCPUE_i$	804				
7/20–22	n = 483	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff} = 480	West	0.06	0.01	0.04	0.08		43	10	29	60	0.01
		JCL	0.01	0.01	0.01	0.02		9	4	4	17	0.00
		SusYen	0.02	0.01	0.01	0.04		17	6	8	27	0.00
		Fish	0.00	0.00	0.00	0.01		2	2	0	5	0.00
		KTNE	0.01	0.01	0.00	0.02		9	4	3	17	0.00
		Kenai	0.86	0.02	0.83	0.89		645	13	623	666	0.17
		Kasilof	0.03	0.01	0.02	0.05		23	7	13	34	0.01
							$CCPUE_i$	748				
7/23–25	n = 537	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff} = 528	West	0.09	0.01	0.07	0.11		40	6	31	50	0.01
		JCL	0.03	0.01	0.02	0.04		13	3	8	19	0.00
		SusYen	0.03	0.01	0.02	0.05		14	4	8	21	0.00
		Fish	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		KTNE	0.02	0.01	0.01	0.03		8	3	4	14	0.00
		Kenai	0.82	0.02	0.79	0.85		357	8	344	370	0.10
		Kasilof	0.01	0.00	0.00	0.02		4	2	1	8	0.00
							$CCPUE_i$	438				

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Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	90% CI 95%	Stock-specific *CCPUE*: Within date range:	Estimate	SD	90% CI 5%	90% CI 95%	Within year proportion
						2012						
7/26–30	$n = 357$	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	$n_{eff} = 356$	West	0.04	0.01	0.02	0.05		9	3	5	14	0.00
		JCL	0.02	0.01	0.01	0.04		5	2	3	9	0.00
		SusYen	0.02	0.01	0.01	0.04		6	2	2	11	0.00
		Fish	0.00	0.00	0.00	0.01		1	1	0	2	0.00
		KTNE	0.01	0.00	0.00	0.02		2	1	0	4	0.00
		Kenai	0.88	0.02	0.85	0.91		231	5	223	238	0.06
		Kasilof	0.02	0.01	0.01	0.04		6	2	3	11	0.00
							$CCPUE_i$	261				
							$CCPUE_f$	3,696				
						2013						
7/1–13	$n = 435$	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	$n_{eff} = 421$	West	0.14	0.02	0.12	0.18		48	6	39	59	0.02
		JCL	0.13	0.02	0.10	0.15		42	6	33	51	0.02
		SusYen	0.08	0.02	0.05	0.11		27	5	18	36	0.01
		Fish	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		KTNE	0.06	0.01	0.04	0.08		19	5	12	27	0.01
		Kenai	0.55	0.03	0.51	0.60		186	9	172	200	0.07
		Kasilof	0.04	0.01	0.02	0.06		13	3	7	19	0.00
							$CCPUE_i$	335				
7/14–15	$n = 652$	Crescent	0.00	0.00	0.00	0.00		0	1	0	0	0.00
	$n_{eff} = 630$	West	0.12	0.01	0.10	0.15		177	21	143	213	0.07
		JCL	0.09	0.01	0.07	0.11		129	17	102	157	0.05
		SusYen	0.07	0.01	0.05	0.09		98	17	72	127	0.04
		Fish	0.00	0.00	0.00	0.01		4	3	0	10	0.00
		KTNE	0.03	0.01	0.01	0.04		37	11	21	57	0.01
		Kenai	0.67	0.02	0.64	0.70		963	29	915	1010	0.37
		Kasilof	0.02	0.01	0.01	0.03		31	9	17	47	0.01
							$CCPUE_i$	1,438				
7/16–18	$n = 527$	Crescent	0.00	0.00	0.00	0.01		1	2	0	4	0.00
	$n_{eff} = 522$	West	0.05	0.01	0.04	0.07		27	6	18	37	0.01
		JCL	0.05	0.01	0.03	0.06		22	5	15	30	0.01
		SusYen	0.01	0.01	0.00	0.03		7	4	2	14	0.00
		Fish	0.00	0.00	0.00	0.01		2	1	0	5	0.00
		KTNE	0.01	0.00	0.00	0.02		4	2	1	8	0.00
		Kenai	0.85	0.02	0.82	0.88		420	8	406	433	0.16
		Kasilof	0.02	0.01	0.01	0.03		11	3	6	17	0.00
							$CCPUE_i$	493				

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Table 8.–Page 3 of 3.

Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	95%		Stock-specific *CCPUE*: Within date range: Estimate	SD	90% CI 5%	95%	Within year proportion
						2013						
7/19–30	n = 483	Crescent	0.00	0.00	0.00	0.00		0	0	0	1	0.00
	n_{eff} = 480	West	0.10	0.02	0.07	0.12		31	5	23	39	0.01
		JCL	0.08	0.01	0.06	0.11		26	5	19	34	0.01
		SusYen	0.03	0.01	0.01	0.05		10	4	4	16	0.00
		Fish	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		KTNE	0.02	0.01	0.01	0.04		7	3	3	12	0.00
		Kenai	0.75	0.02	0.71	0.79		235	7	223	247	0.09
		Kasilof	0.01	0.01	0.00	0.02		3	2	1	7	0.00
							$CCPUE_i$	313				
							$CCPUE_f$	2,580				

Note: *CCPUE* is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% CI may not include the point estimate for the very low *CCPUE* estimates because fewer than 5% of iterations had values above zero.

Table 9.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for spatially grouped mixtures (station) of sockeye salmon captured in the southern OTF in 2012.

			Stock composition					Stock-specific *CCPUE*				
			Within station					Within station				Within
		Reporting			90% CI					90% CI		year
Station	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
4	n = 196	Crescent	0.00	0.01	0.00	0.02		0	1	0	2	0.00
	n_{eff} = 189	West	0.08	0.02	0.04	0.12		12	4	7	18	0.01
		JCL	0.03	0.01	0.01	0.05		4	2	2	8	0.00
		SusYen	0.03	0.02	0.01	0.06		4	2	1	9	0.00
		Fish	0.01	0.01	0.00	0.02		1	1	0	3	0.00
		KTNE	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		Kenai	0.83	0.03	0.78	0.88		131	5	123	139	0.07
		Kasilof	0.03	0.01	0.01	0.05		4	2	1	8	0.00
							CCPUE$_i$	157				
5	n = 347	Crescent	0.00	0.00	0.00	0.01		0	1	0	2	0.00
	n_{eff} = 340	West	0.08	0.02	0.06	0.11		24	5	17	33	0.01
		JCL	0.02	0.01	0.01	0.03		5	2	2	9	0.00
		SusYen	0.02	0.01	0.01	0.03		5	2	2	10	0.00
		Fish	0.01	0.00	0.00	0.02		2	1	0	5	0.00
		KTNE	0.01	0.01	0.00	0.03		4	2	1	8	0.00
		Kenai	0.83	0.02	0.79	0.87		246	6	235	256	0.13
		Kasilof	0.03	0.01	0.01	0.05		9	3	4	14	0.00
							CCPUE$_i$	296				
6	n = 468	Crescent	0.01	0.00	0.00	0.02		4	3	1	9	0.00
	n_{eff} = 464	West	0.11	0.02	0.08	0.13		57	8	44	71	0.03
		JCL	0.04	0.01	0.02	0.05		21	5	13	29	0.01
		SusYen	0.06	0.01	0.04	0.08		33	7	22	46	0.02
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.02		3	4	0	11	0.00
		Kenai	0.74	0.02	0.71	0.78		398	12	379	417	0.20
		Kasilof	0.04	0.01	0.02	0.05		20	5	12	29	0.01
							CCPUE$_i$	537				
6.5	n = 417	Crescent	0.01	0.01	0.00	0.02		5	3	2	10	0.00
	n_{eff} = 410	West	0.12	0.02	0.09	0.15		49	8	37	62	0.03
		JCL	0.04	0.01	0.02	0.06		16	4	10	23	0.01
		SusYen	0.03	0.01	0.01	0.04		11	4	5	18	0.01
		Fish	0.00	0.00	0.00	0.01		1	2	0	4	0.00
		KTNE	0.01	0.01	0.00	0.03		4	3	0	11	0.00
		Kenai	0.76	0.02	0.72	0.80		320	10	304	335	0.16
		Kasilof	0.03	0.01	0.02	0.05		13	4	7	20	0.01
							CCPUE$_i$	419				
7	n = 372	Crescent	0.01	0.01	0.00	0.03		5	3	1	10	0.00
	n_{eff} = 371	West	0.09	0.02	0.06	0.12		36	6	26	47	0.02
		JCL	0.02	0.01	0.01	0.04		9	3	4	15	0.00
		SusYen	0.03	0.01	0.01	0.04		10	4	5	17	0.01
		Fish	0.00	0.00	0.00	0.01		1	1	0	4	0.00
		KTNE	0.00	0.00	0.00	0.01		1	1	0	4	0.00
		Kenai	0.80	0.02	0.76	0.83		319	9	305	334	0.16
		Kasilof	0.04	0.01	0.03	0.06		17	5	10	26	0.01
							CCPUE$_i$	400				

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Table 9.–Page 2 of 2.

			Stock composition				Stock-specific *CCPUE*					
			Within station					Within station				Within
		Reporting			90% CI					90% CI		year
Station	$n; n_{eff}$	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
8	n=168	Crescent	0.09	0.02	0.05	0.13		12	3	7	17	0.01
	n_{eff}=165	West	0.15	0.03	0.10	0.20		20	4	14	27	0.01
		JCL	0.04	0.02	0.01	0.06		5	2	2	9	0.00
		SusYen	0.01	0.01	0.00	0.03		1	1	0	4	0.00
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.03		2	1	0	4	0.00
		Kenai	0.63	0.04	0.57	0.70		85	5	76	94	0.04
		Kasilof	0.07	0.02	0.04	0.11		10	3	5	15	0.00
							$CCPUE_i$	134				
							$CCPUE_f$	1,944				

Note: *CCPUE* is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% CI may not include the point estimate for the very low *CCPUE* estimates because fewer than 5% of iterations had values above zero.

Table 10.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for spatially grouped mixtures (station) of sockeye salmon captured in the northern offshore test fishery in 2012 and 2013.

			Stock composition				Stock-specific *CCPUE*					
			Within station				Within station					Within
		Reporting			90% CI					90% CI		year
Station	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
						2012						
1&2	n = 459	Crescent	0.00	0.00	0.00	0.01		1	1	0	4	0.00
	n_{eff}= 453	West	0.04	0.01	0.02	0.06		16	4	10	23	0.00
		JCL	0.01	0.01	0.00	0.02		5	2	2	8	0.00
		SusYen	0.01	0.01	0.01	0.03		6	3	2	10	0.00
		Fish	0.01	0.00	0.00	0.01		2	2	0	5	0.00
		KTNE	0.02	0.01	0.01	0.03		6	3	3	11	0.00
		Kenai	0.83	0.02	0.80	0.86		330	8	317	342	0.09
		Kasilof	0.08	0.01	0.06	0.11		33	6	24	43	0.01
							$CCPUE_i$	399				
3	n = 797	Crescent	0.00	0.00	0.00	0.00		0	1	0	1	0.00
	n_{eff}= 791	West	0.06	0.01	0.05	0.08		75	10	58	92	0.02
		JCL	0.02	0.01	0.02	0.03		27	6	18	39	0.01
		SusYen	0.05	0.01	0.03	0.06		56	10	40	74	0.02
		Fish	0.00	0.00	0.00	0.01		5	3	2	11	0.00
		KTNE	0.02	0.01	0.01	0.03		24	7	15	36	0.01
		Kenai	0.82	0.01	0.79	0.84		944	17	915	971	0.26
		Kasilof	0.02	0.01	0.01	0.03		25	7	15	37	0.01
							$CCPUE_i$	1156				
4	n = 1,109	Crescent	0.00	0.00	0.00	0.00		0	1	0	1	0.00
	n_{eff}= 1,098	West	0.07	0.01	0.05	0.08		104	12	85	124	0.03
		JCL	0.05	0.01	0.04	0.07		85	11	68	104	0.02
		SusYen	0.05	0.01	0.04	0.06		74	12	56	94	0.02
		Fish	0.02	0.00	0.01	0.02		25	6	16	36	0.01
		KTNE	0.02	0.00	0.01	0.03		30	7	19	42	0.01
		Kenai	0.76	0.01	0.74	0.78		1179	21	1144	1213	0.32
		Kasilof	0.04	0.01	0.03	0.05		56	10	41	73	0.02
							$CCPUE_i$	1554				
5	n = 338	Crescent	0.00	0.00	0.00	0.00		0	1	0	1	0.00
	n_{eff}= 337	West	0.24	0.02	0.20	0.28		89	9	75	104	0.02
		JCL	0.08	0.02	0.06	0.11		31	6	22	41	0.01
		SusYen	0.06	0.01	0.04	0.08		22	5	14	32	0.01
		Fish	0.02	0.01	0.01	0.03		6	3	2	10	0.00
		KTNE	0.02	0.01	0.01	0.04		9	4	3	15	0.00
		Kenai	0.55	0.03	0.51	0.60		207	11	190	224	0.06
		Kasilof	0.03	0.01	0.01	0.05		11	4	5	17	0.00
							$CCPUE_i$	375				
6&7	n = 151	Crescent	0.01	0.01	0.00	0.02		1	2	0	5	0.00
	n_{eff}= 151	West	0.20	0.04	0.15	0.27		43	8	32	56	0.01
		JCL	0.02	0.01	0.00	0.04		3	2	1	8	0.00
		SusYen	0.00	0.01	0.00	0.01		0	1	0	2	0.00
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.01	0.01	0.00	0.04		3	3	0	8	0.00
		Kenai	0.72	0.04	0.66	0.79		154	8	140	167	0.04
		Kasilof	0.03	0.02	0.01	0.06		7	3	2	14	0.00
							$CCPUE_i$	212				
							$CCPUE_f$	3696				

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Table 10.–Page 2 of 2.

Station	n; n_{eff}	Reporting group	Stock composition: Within station: Proportion	SD	90% CI 5%	90% CI 95%	Stock-specific *CCPUE*	Within station: Estimate	SD	90% CI 5%	90% CI 95%	Within year proportion
						2013						
1&2	n = 604	Crescent	0.00	0.00	0.00	0.01		2	2	0	6	0.00
	n_{eff} = 583	West	0.04	0.01	0.02	0.06		27	7	17	39	0.01
		JCL	0.01	0.01	0.00	0.02		8	3	3	14	0.00
		SusYen	0.01	0.01	0.01	0.03		9	4	4	17	0.00
		Fish	0.01	0.00	0.00	0.01		4	3	1	9	0.00
		KTNE	0.02	0.01	0.01	0.03		10	4	4	18	0.00
		Kenai	0.83	0.02	0.80	0.86		553	13	531	573	0.21
		Kasilof	0.08	0.01	0.06	0.11		55	9	41	71	0.02
							$CCPUE_i$	668				
3	n = 621	Crescent	0.00	0.00	0.00	0.00		0	1	0	1	0.00
	n_{eff} = 613	West	0.06	0.01	0.05	0.08		71	10	56	89	0.03
		JCL	0.02	0.01	0.02	0.03		26	6	17	37	0.01
		SusYen	0.05	0.01	0.03	0.06		54	10	38	71	0.02
		Fish	0.00	0.00	0.00	0.01		5	3	2	10	0.00
		KTNE	0.02	0.01	0.01	0.03		23	6	14	34	0.01
		Kenai	0.82	0.01	0.79	0.84		905	16	878	931	0.35
		Kasilof	0.02	0.01	0.01	0.03		24	6	14	35	0.01
							$CCPUE_i$	1,108				
4	n = 495	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff} = 480	West	0.07	0.01	0.05	0.08		36	4	29	43	0.01
		JCL	0.05	0.01	0.04	0.07		29	4	23	36	0.01
		SusYen	0.05	0.01	0.04	0.06		25	4	19	32	0.01
		Fish	0.02	0.00	0.01	0.02		9	2	6	12	0.00
		KTNE	0.02	0.00	0.01	0.03		10	2	7	15	0.00
		Kenai	0.76	0.01	0.74	0.78		406	7	394	418	0.16
		Kasilof	0.04	0.01	0.03	0.05		19	3	14	25	0.01
							$CCPUE_i$	535				
5	n = 201	Crescent	0.00	0.00	0.00	0.00		0	0	0	1	0.00
	n_{eff} = 201	West	0.24	0.02	0.20	0.28		51	5	43	59	0.02
		JCL	0.08	0.02	0.06	0.11		18	3	13	23	0.01
		SusYen	0.06	0.01	0.04	0.08		12	3	8	18	0.00
		Fish	0.02	0.01	0.01	0.03		3	1	1	6	0.00
		KTNE	0.02	0.01	0.01	0.04		5	2	2	9	0.00
		Kenai	0.55	0.03	0.51	0.60		117	6	107	127	0.05
		Kasilof	0.03	0.01	0.01	0.05		6	2	3	10	0.00
							$CCPUE_i$	212				
6&7	n = 68	Crescent	0.01	0.01	0.00	0.02		0	0	0	1	0.00
	n_{eff} = 67	West	0.20	0.04	0.15	0.27		11	2	8	15	0.00
		JCL	0.02	0.01	0.00	0.04		1	1	0	2	0.00
		SusYen	0.00	0.01	0.00	0.01		0	0	0	1	0.00
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.04		1	1	0	2	0.00
		Kenai	0.72	0.04	0.66	0.79		41	2	37	44	0.02
		Kasilof	0.03	0.02	0.01	0.06		2	1	1	4	0.00
							$CCPUE_i$	56				
							$CCPUE_f$	2,580				

Note: *CCPUE* is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% CI may not include the point estimate for the very low *CCPUE* estimates because fewer than 5% of iterations had values above zero.

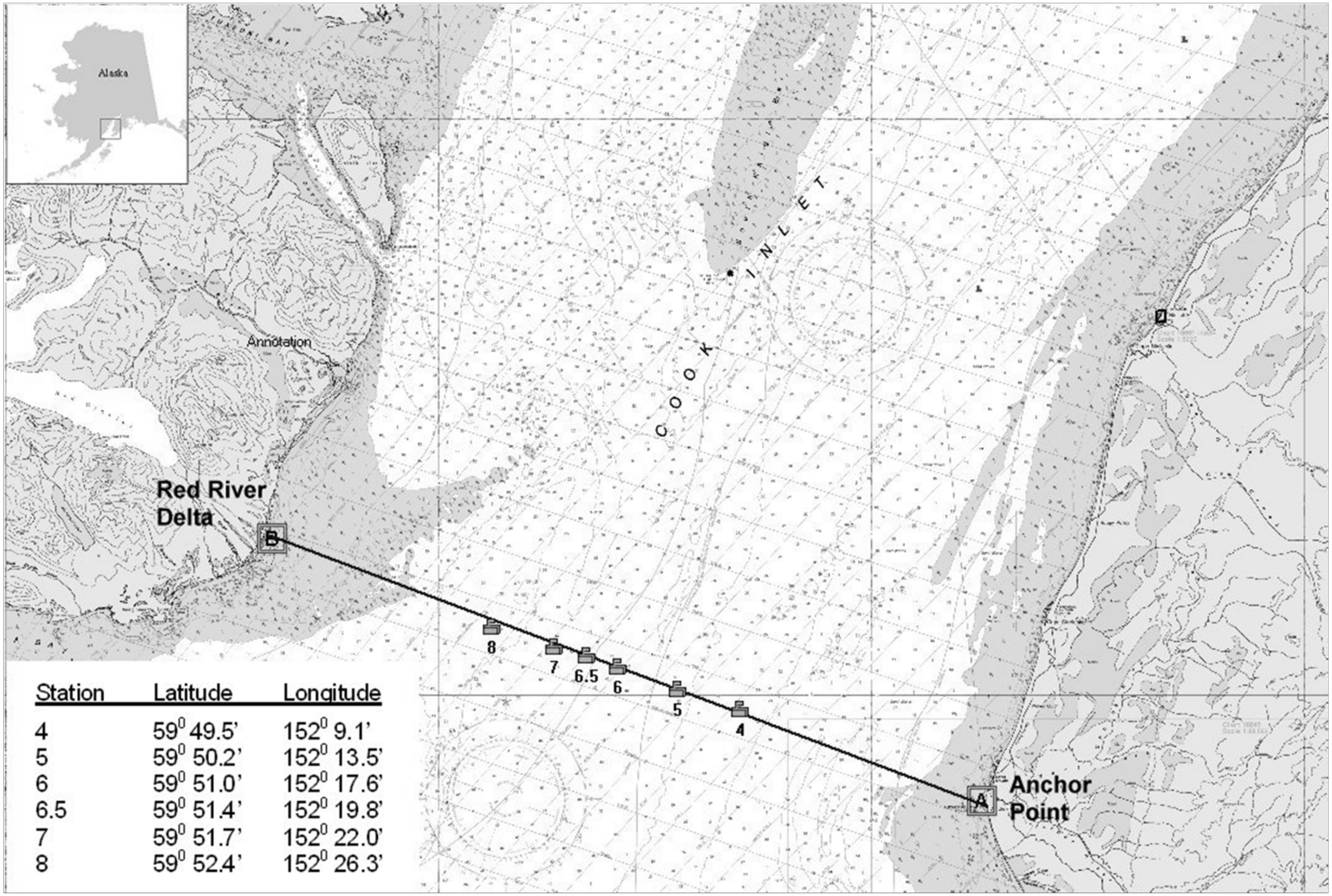
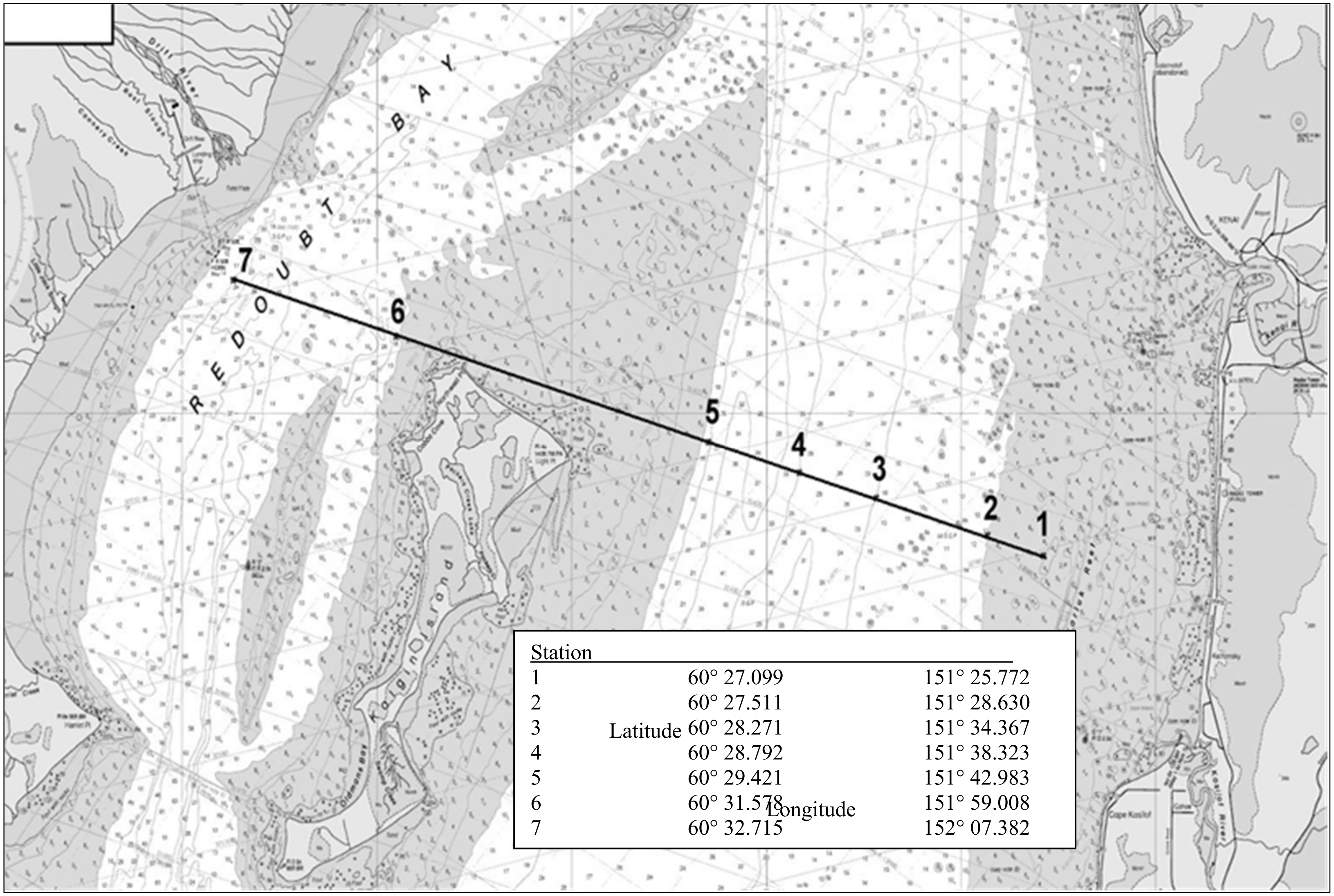


Figure 1.–Location of the southern offshore test fishery transect and fishing stations in Cook Inlet, Alaska, 2013.



Station	Latitude	Longitude
1	60° 27.099	151° 25.772
2	60° 27.511	151° 28.630
3	60° 28.271	151° 34.367
4	60° 28.792	151° 38.323
5	60° 29.421	151° 42.983
6	60° 31.578	151° 59.008
7	60° 32.715	152° 07.382

Figure 2.–Location of the northern offshore test fishery transect and fishing stations in Upper Cook Inlet, Alaska, 2013.

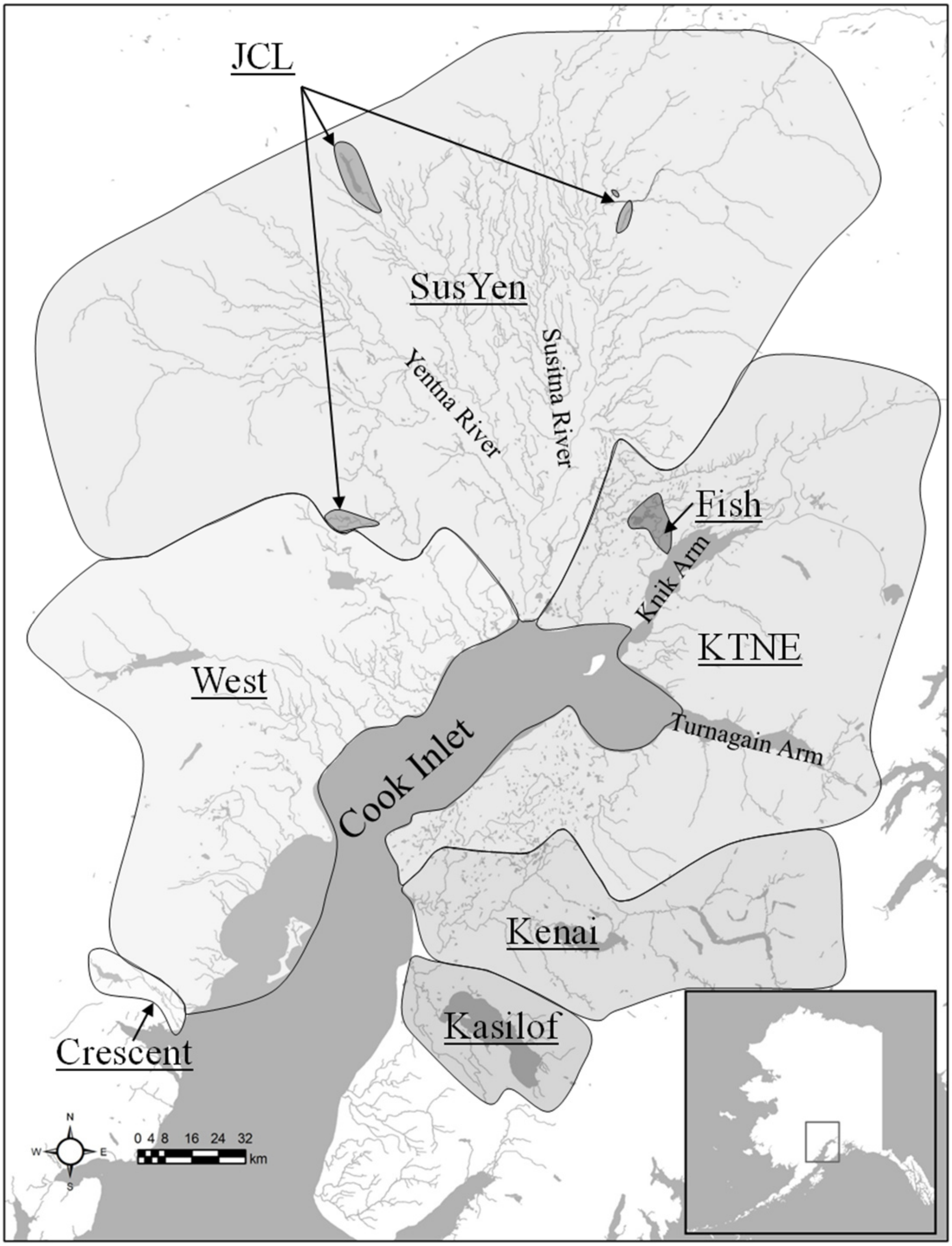


Figure 3.–Map of Upper Cook Inlet showing reporting group areas for mixed stock analysis using genetic markers for sockeye salmon.

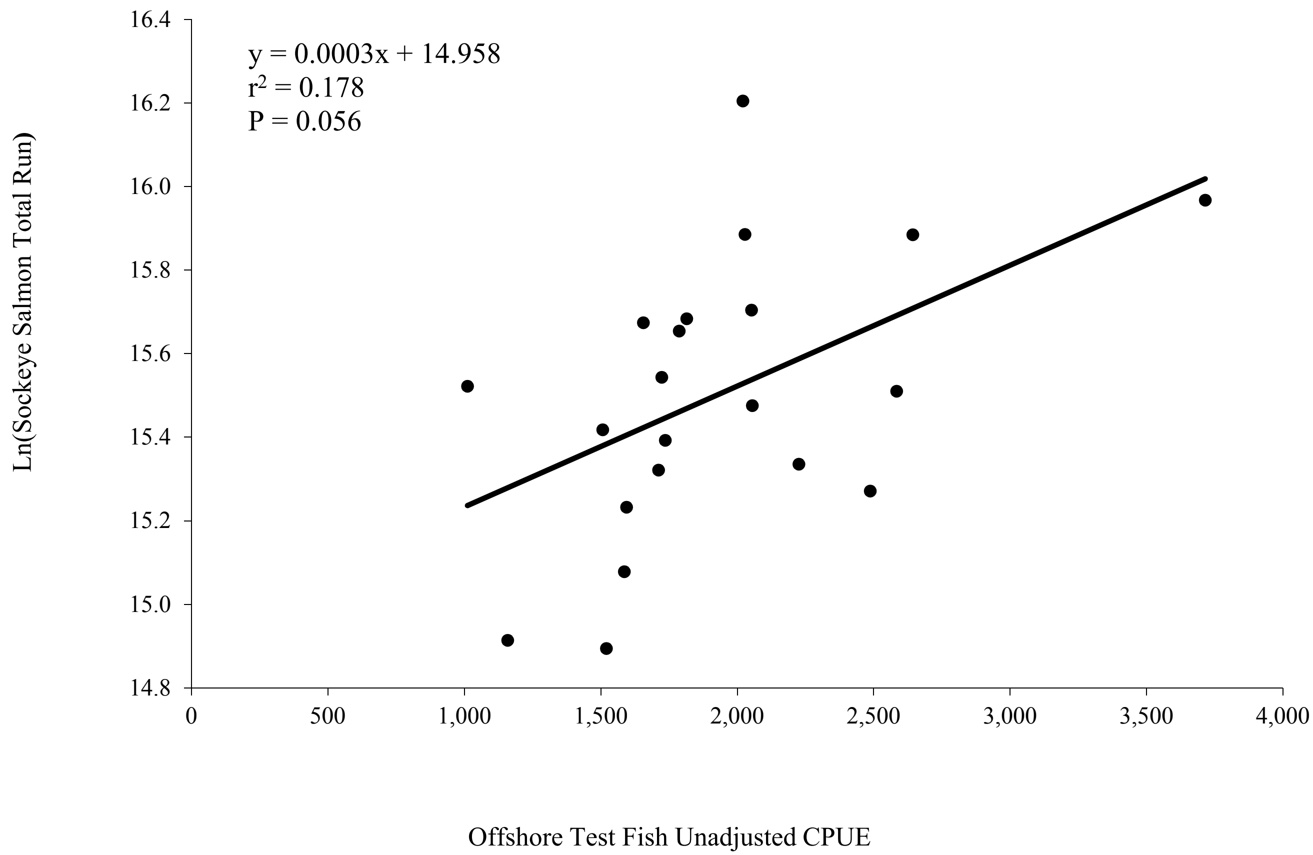


Figure 4.–Linear regression of the relationship between southern offshore test fishery unadjusted cumulative catch per unit effort (CPUE) and Upper Cook Inlet logged sockeye salmon total annual run, 1992–2012.

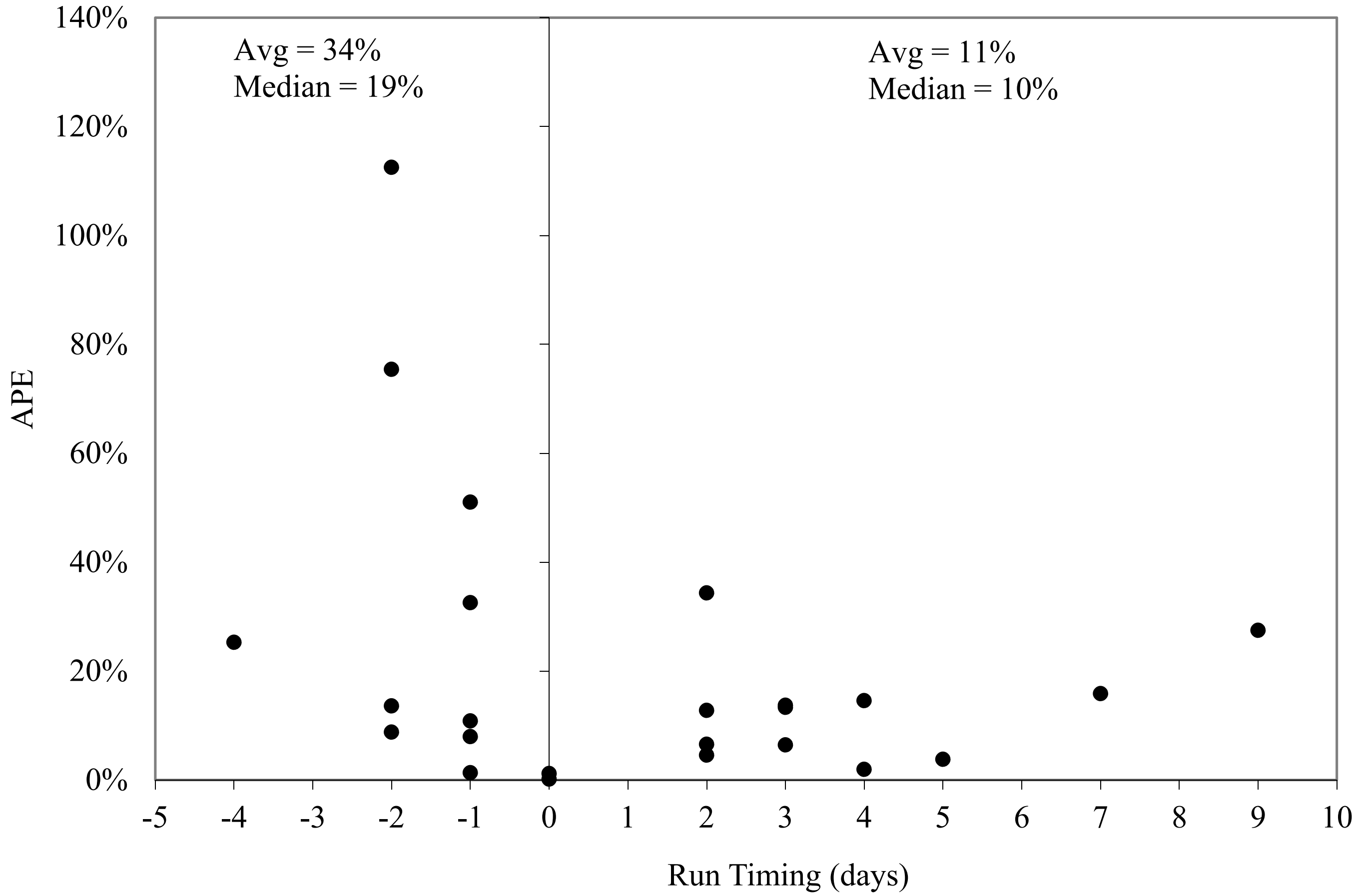


Figure 5.–Absolute percentage error (APE) in forecasting the total sockeye salmon run to Upper Cook Inlet using the 20 July best fit estimate, 1988–2012.

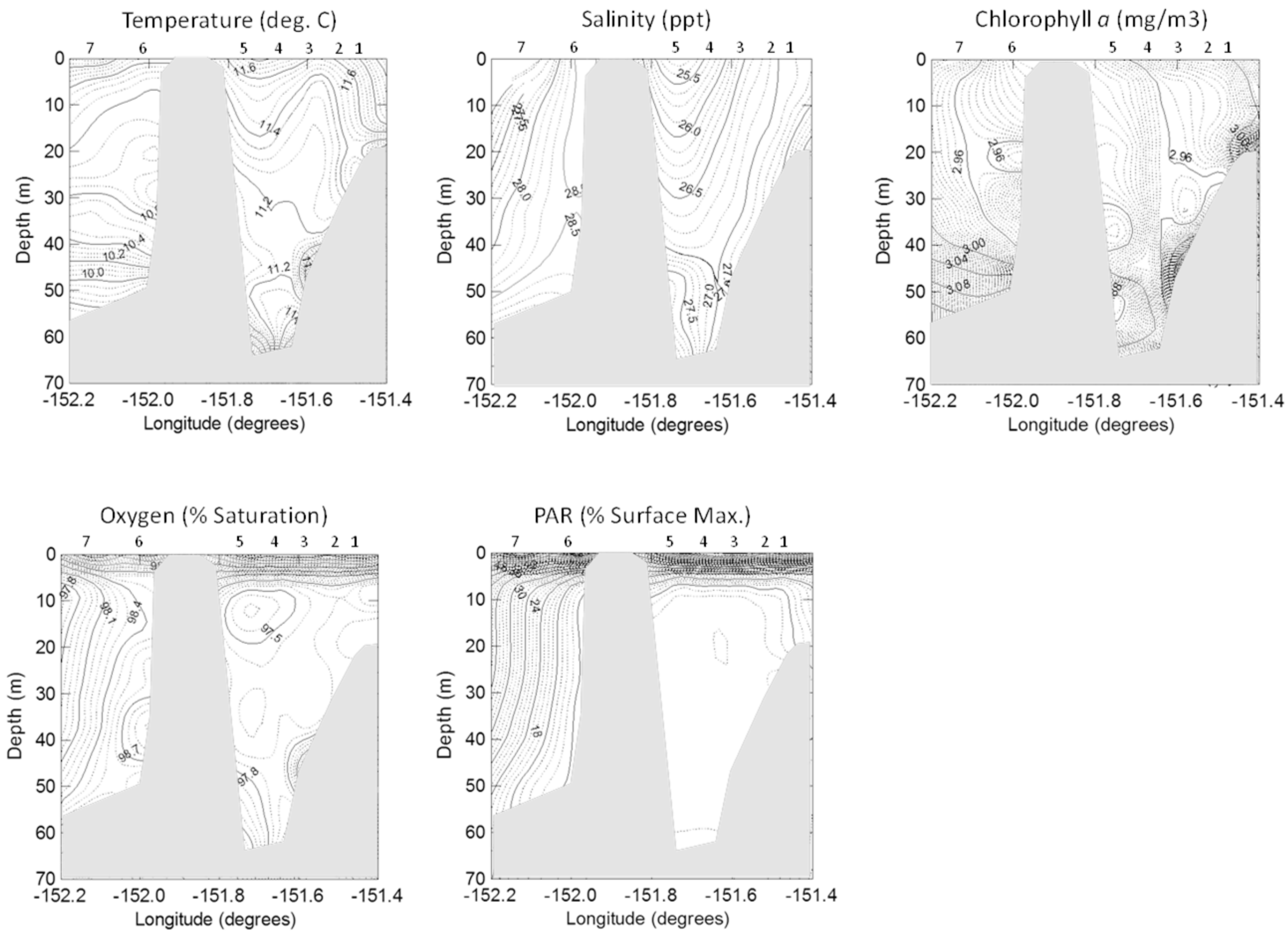


Figure 6.–Monthly mean distributions of temperature (degrees C), salinity (ppt), chlorophyll *a* (mg/m3), oxygen (percent saturation), and photsynthetically active radiation (PAR, percent surface max) along the northern OTF transect in 2013.

Note: The solid areas indicate the bottom or land, i.e. Kalgin Island. Numbers across the top of each panel indicate stations along the transect.

APPENDIX A: SOUTHERN OFFSHORE TEST FISHERY 2013 SEASON DATA

Appendix A1.–Summary of pink salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet southern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	245.5	0	0	0	0
2 July	6	224.0	2	2	2	2
3 July	6	234.0	2	4	2	3
4 July	4[a]	158.5	2	6	1	4
5 July	6	229.0	0	6	0	4
6 July	6	224.5	0	6	0	4
7 July	6	220.5	0	6	0	4
8 July	4[a]	174.0	1	7	1	5
9 July	6	260.0	0	7	0	5
10 July	6	235.0	1	8	1	6
11 July	6	258.5	1	9	1	6
12 July	6	248.5	0	9	0	6
13 July	3[a]	121.5	1	10	1	7
14 July	0[a]	0.0	–	10	–	7
15 July	6	242.5	2	12	1	9
16 July	6	268.0	1	13	1	9
17 July	1[a]	31.5	0	13	0	9
18 July	0[a]	0.0	–	13	–	9
19 July	0[a]	0.0	–	13	–	9
20 July	3[a]	140.5	3	16	2	11
21 July	6	227.0	0	16	0	11
22 July	6	266.0	8	24	5	16
23 July	6	244.5	5	29	4	19
24 July	6	247.0	8	37	5	24
25 July	5[a]	232.5	1	38	1	25
26 July	6	237.0	2	40	2	27
27 July	6	244.0	9	49	7	33
28 July	6	232.0	0	49	0	33
29 July	4[a]	167.5	3	52	2	36
30 July	2[a]	76.0	1	53	1	36

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A2.–Estimated pink salmon catch by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	2	0	0	0	0	0	2
3 July	0	1	0	0	1	0	2
4 July[a]	0	0	0	2	–	–	2
5 July	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0
8 July[a]	0	–	–	1	0	0	1
9 July	0	0	0	0	0	0	0
10 July	0	1	0	0	0	0	1
11 July	0	1	0	0	0	0	1
12 July	0	0	0	0	0	0	0
13 July[a]	1	0	0	–	–	–	1
14 July[a]	–	–	–	–	–	–	0
15 July	0	1	1	0	0	0	2
16 July	0	1	0	0	0	0	1
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	1	0	2	–	–	–	3
21 July	0	0	0	0	0	0	0
22 July	0	0	0	5	3	0	8
23 July	0	0	5	0	0	0	5
24 July	0	2	6	0	0	0	8
25 July[a]	1	0	0	0	0	–	1
26 July	0	2	0	0	0	0	2
27 July	0	1	4	4	0	0	9
28 July	0	0	0	0	0	0	0
29 July[a]	2	0	1	0	–	–	3
30 July[a]	1	0	–	–	–	–	1
Total	8	10	19	12	4	0	53
%	15%	19%	36%	23%	8%	0%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A3.–Estimated pink salmon catch per unit effort by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	2	0	0	0	0	0	2
3 July	0	1	0	0	1	0	2
4 July[a]	0	0	0	1	–	–	1
5 July	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0
8 July[a]	0	–	–	1	0	0	1
9 July	0	0	0	0	0	0	0
10 July	0	1	0	0	0	0	1
11 July	0	1	0	0	0	0	1
12 July	0	0	0	0	0	0	0
13 July[a]	1	0	0	–	–	–	1
14 July[a]	–	–	–	–	–	–	0
15 July	0	1	1	0	0	0	1
16 July	0	1	0	0	0	0	1
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	1	0	1	–	–	–	2
21 July	0	0	0	0	0	0	0
22 July	0	0	0	3	2	0	5
23 July	0	0	4	0	0	0	4
24 July	0	1	4	0	0	0	5
25 July[a]	1	0	0	0	0	–	1
26 July	0	2	0	0	0	0	2
27 July	0	1	3	3	0	0	7
28 July	0	0	0	0	0	0	0
29 July[a]	2	0	1	0	–	–	2
30 July[a]	1	0	–	–	–	–	1
Total	6	7	13	7	3	0	36
Percent	17%	20%	36%	20%	7%	0%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A4.–Summary of chum salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet southern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	245.5	4	4	3	3
2 July	6	224.0	4	8	3	6
3 July	6	234.0	10	18	8	13
4 July	4[a]	158.5	17	35	11	24
5 July	6	229.0	12	47	9	33
6 July	6	224.5	3	50	2	35
7 July	6	220.5	12	62	10	44
8 July	4[a]	174.0	7	69	5	49
9 July	6	260.0	10	79	7	56
10 July	6	235.0	14	93	10	65
11 July	6	258.5	8	101	5	70
12 July	6	248.5	2	103	2	72
13 July	3[a]	121.5	8	111	6	78
14 July	0[a]	0.0	–	111	–	78
15 July	6	242.5	6	117	4	82
16 July	6	268.0	41	158	20	103
17 July	1[a]	31.5	0	158	0	103
18 July	0[a]	0.0	–	158	–	103
19 July	0[a]	0.0	–	158	–	103
20 July	3[a]	140.5	18	176	12	114
21 July	6	227.0	2	178	2	116
22 July	6	266.0	12	190	7	123
23 July	6	244.5	2	192	1	124
24 July	6	247.0	36	228	23	148
25 July	5[a]	232.5	25	253	15	163
26 July	6	237.0	3	256	2	165
27 July	6	244.0	11	267	8	173
28 July	6	232.0	4	271	3	176
29 July	4[a]	167.5	29	300	19	195
30 July	2[a]	76.0	2	302	2	197

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A5.–Estimated chum salmon catch by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	1	2	1	0	4
2 July	0	1	2	0	1	0	4
3 July	3	1	2	3	1	0	10
4 July[a]	0	0	1	16	–	–	17
5 July	0	0	0	5	7	0	12
6 July	0	0	3	0	0	0	3
7 July	0	0	0	5	6	1	12
8 July[a]	0	–	–	5	2	0	7
9 July	0	5	0	4	1	0	10
10 July	0	14	0	0	0	0	14
11 July	0	5	2	1	0	0	8
12 July	0	0	1	0	1	0	2
13 July[a]	1	1	6	–	–	–	8
14 July[a]	–	–	–	–	–	–	0
15 July	0	0	3	3	0	0	6
16 July	0	3	6	10	20	2	41
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	1	11	6	–	–	–	18
21 July	1	0	0	0	1	0	2
22 July	0	0	2	7	3	0	12
23 July	0	0	2	0	0	0	2
24 July	0	9	27	0	0	0	36
25 July[a]	1	7	0	7	10	–	25
26 July	2	1	0	0	0	0	3
27 July	0	2	6	2	0	1	11
28 July	0	0	4	0	0	0	4
29 July[a]	0	0	9	20	–	–	29
30 July[a]	2	0	–	–	–	–	2
Total	11	60	83	90	54	4	302
Percent	4%	20%	27%	30%	18%	1%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A6.–Estimated chum salmon catch per unit effort by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	1	1	1	0	3
2 July	0	1	2	0	1	0	3
3 July	2	1	1	2	1	0	8
4 July[a]	0	0	1	10	–	–	11
5 July	0	0	0	4	5	0	9
6 July	0	0	2	0	0	0	2
7 July	0	0	0	4	4	1	10
8 July[a]	0	–	–	3	1	0	5
9 July	0	3	0	3	1	0	7
10 July	0	10	0	0	0	0	10
11 July	0	3	1	1	0	0	5
12 July	0	0	1	0	1	0	2
13 July[a]	1	1	4	–	–	–	6
14 July[a]	–	–	–	–	–	–	0
15 July	0	0	2	2	0	0	4
16 July	0	2	4	0	11	3	20
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	1	8	3	–	–	–	12
21 July	1	0	0	0	1	0	2
22 July	0	0	1	4	2	0	7
23 July	0	0	1	0	0	0	1
24 July	0	6	18	0	0	0	23
25 July[a]	1	5	0	5	5	–	15
26 July	2	1	0	0	0	0	2
27 July	0	2	5	1	0	1	8
28 July	0	0	3	0	0	0	3
29 July[a]	0	0	7	12	–	–	19
30 July[a]	2	0	–	–	–	–	2
Total	9	41	57	53	33	4	197
Percent	4%	21%	29%	27%	17%	2%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A7.–Summary of coho salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet southern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	245.5	2	2	1	1
2 July	6	224.0	2	4	2	3
3 July	6	234.0	11	15	8	11
4 July	4[a]	158.5	8	23	5	16
5 July	6	229.0	4	27	3	19
6 July	6	224.5	5	32	4	23
7 July	6	220.5	11	43	9	32
8 July	4[a]	174.0	5	48	3	35
9 July	6	260.0	12	60	8	43
10 July	6	235.0	19	79	13	56
11 July	6	258.5	18	97	12	68
12 July	6	248.5	1	98	1	69
13 July	3[a]	121.5	7	105	5	74
14 July	0[a]	0.0	–	105	–	74
15 July	6	242.5	9	114	7	81
16 July	6	268.0	85	199	55	136
17 July	1[a]	31.5	0	199	0	136
18 July	0[a]	0.0	–	199	–	136
19 July	0[a]	0.0	–	199	–	136
20 July	3[a]	140.5	40	239	24	160
21 July	6	227.0	21	260	15	175
22 July	6	266.0	122	382	76	251
23 July	6	244.5	8	390	6	257
24 July	6	247.0	72	462	47	304
25 July	5[a]	232.5	269	731	144	448
26 July	6	237.0	12	743	8	457
27 July	6	244.0	4	747	3	459
28 July	6	232.0	9	756	7	466
29 July	4[a]	167.5	44	800	29	495
30 July	2[a]	76.0	0	800	0	495

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A8.–Estimated coho salmon catch by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	2	0	0	0	2
2 July	0	1	0	0	1	0	2
3 July	0	1	0	4	6	0	11
4 July[a]	0	1	1	6	–	–	8
5 July	0	2	1	0	1	0	4
6 July	0	0	5	0	0	0	5
7 July	0	0	0	9	2	0	11
8 July[a]	0	–	–	4	1	0	5
9 July	0	9	0	3	0	0	12
10 July	0	19	0	0	0	0	19
11 July	2	3	8	5	0	0	18
12 July	0	0	0	0	0	1	1
13 July[a]	0	3	4	–	–	–	7
14 July[a]	–	–	–	–	–	–	0
15 July	1	1	0	5	1	1	9
16 July	0	28	22	5	23	7	85
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	5	13	22	–	–	–	40
21 July	2	0	14	0	5	0	21
22 July	0	1	56	21	44	0	122
23 July	0	2	3	1	0	2	8
24 July	0	22	50	0	0	0	72
25 July[a]	0	6	0	49	214	–	269
26 July	1	0	1	1	8	1	12
27 July	0	0	0	1	1	2	4
28 July	0	0	5	1	1	2	9
29 July[a]	0	0	16	28	–	–	44
30 July[a]	0	0	–	–	–	–	0
Total	11	112	210	143	308	16	800
Percent	1%	14%	26%	18%	39%	2%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A9.–Estimated coho salmon catch per unit effort by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	1	0	0	0	1
2 July	0	1	0	0	1	0	2
3 July	0	1	0	3	4	0	8
4 July[a]	0	1	1	4	–	–	5
5 July	0	2	1	0	1	0	3
6 July	0	0	4	0	0	0	4
7 July	0	0	0	8	1	0	9
8 July[a]	0	–	–	3	1	0	3
9 July	0	5	0	2	0	0	8
10 July	0	13	0	0	0	0	13
11 July	2	2	6	3	0	0	12
12 July	0	0	0	0	0	1	1
13 July[a]	0	2	3	–	–	–	5
14 July[a]	–	–	–	–	–	–	0
15 July	1	1	0	4	1	1	7
16 July	0	22	14	0	13	5	55
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	4	9	12	–	–	–	24
21 July	2	0	10	0	4	0	15
22 July	0	1	37	12	26	0	76
23 July	0	2	2	1	0	2	6
24 July	0	14	33	0	0	0	47
25 July[a]	0	4	0	33	107	–	144
26 July	1	0	1	1	6	1	8
27 July	0	0	0	1	1	2	3
28 July	0	0	4	1	1	2	7
29 July[a]	0	0	12	17	–	–	29
30 July[a]	0	0	–	–	–	–	0
Total	8	78	140	91	166	12	495
Percent	2%	16%	28%	18%	34%	2%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A10.–Summary of Chinook salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet southern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	245.5	1	1	1	1
2 July	6	224.0	1	2	1	1
3 July	6	234.0	0	2	0	1
4 July	4[a]	158.5	0	2	0	1
5 July	6	229.0	1	3	1	2
6 July	6	224.5	0	3	0	2
7 July	6	220.5	0	3	0	2
8 July	4[a]	174.0	0	3	0	2
9 July	6	260.0	0	3	0	2
10 July	6	235.0	0	3	0	2
11 July	6	258.5	0	3	0	2
12 July	6	248.5	0	3	0	2
13 July	3[a]	121.5	0	3	0	2
14 July	0[a]	0.0	–	3	–	2
15 July	6	242.5	0	3	0	2
16 July	6	268.0	1	4	1	3
17 July	1[a]	31.5	0	4	0	3
18 July	0[a]	0.0	–	4	–	3
19 July	0[a]	0.0	–	4	–	3
20 July	3[a]	140.5	0	4	0	3
21 July	6	227.0	0	4	0	3
22 July	6	266.0	0	4	0	3
23 July	6	244.5	0	4	0	3
24 July	6	247.0	0	4	0	3
25 July	5[a]	232.5	0	4	0	3
26 July	6	237.0	0	4	0	3
27 July	6	244.0	0	4	0	3
28 July	6	232.0	0	4	0	3
29 July	4[a]	167.5	0	4	0	3
30 July	2[a]	76.0	0	4	0	3

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A11.–Estimated Chinook salmon catch by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	1	1
2 July	0	1	0	0	0	0	1
3 July	0	0	0	0	0	0	0
4 July[a]	0	0	0	0	–	–	0
5 July	0	0	0	0	1	0	1
6 July	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0
8 July[a]	0	–	–	0	0	0	0
9 July	0	0	0	0	0	0	0
10 July	0	0	0	0	0	0	0
11 July	0	0	0	0	0	0	0
12 July	0	0	0	0	0	0	0
13 July[a]	0	0	0	–	–	–	0
14 July[a]	–	–	–	–	–	–	0
15 July	0	0	0	0	0	0	0
16 July	0	1	0	0	0	0	1
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	0	0	0	–	–	–	0
21 July	0	0	0	0	0	0	0
22 July	0	0	0	0	0	0	0
23 July	0	0	0	0	0	0	0
24 July	0	0	0	0	0	0	0
25 July[a]	0	0	0	0	0	–	0
26 July	0	0	0	0	0	0	0
27 July	0	0	0	0	0	0	0
28 July	0	0	0	0	0	0	0
29 July[a]	0	0	0	0	–	–	0
30 July[a]	0	0	–	–	–	–	0
Total	0	2	0	0	1	1	4
Percent	0%	50%	0%	0%	25%	25%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A12.–Estimated Chinook salmon CPUE by date and station, Upper Cook Inlet southern offshore test fishery, 2013.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	1	1
2 July	0	1	0	0	0	0	1
3 July	0	0	0	0	0	0	0
4 July[a]	0	0	0	0	–	–	0
5 July	0	0	0	0	1	0	1
6 July	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0
8 July[a]	0	–	–	0	0	0	0
9 July	0	0	0	0	0	0	0
10 July	0	0	0	0	0	0	0
11 July	0	0	0	0	0	0	0
12 July	0	0	0	0	0	0	0
13 July[a]	0	0	0	–	–	–	0
14 July[a]	–	–	–	–	–	–	0
15 July	0	0	0	0	0	0	0
16 July	0	1	0	0	0	0	1
17 July[a]	–	–	0	–	–	–	0
18 July[a]	–	–	–	–	–	–	0
19 July[a]	–	–	–	–	–	–	0
20 July[a]	0	0	0	–	–	–	0
21 July	0	0	0	0	0	0	0
22 July	0	0	0	0	0	0	0
23 July	0	0	0	0	0	0	0
24 July	0	0	0	0	0	0	0
25 July[a]	0	0	0	0	0	–	0
26 July	0	0	0	0	0	0	0
27 July	0	0	0	0	0	0	0
28 July	0	0	0	0	0	0	0
29 July[a]	0	0	0	0	–	–	0
30 July[a]	0	0	–	–	–	–	0
Total	0	2	0	0	1	1	3
Percent	0%	52%	0%	0%	24%	24%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix A13.–Final cumulative catch and catch per unit effort (CPUE) values by year for pink salmon, chum salmon, coho salmon, and Chinook salmon from the Upper Cook Inlet southern offshore test fishery, 1992–2013.

	Pink		Chum		Coho		Chinook	
Year	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1992	326	227	667	443	444	299	3	3
1993	53	45	205	153	325	258	5	4
1994	227	166	521	345	752	513	1	1
1995	155	97	1,129	687	941	595	3	2
1996	119	84	491	319	758	534	3	2
1997	203	158	420	306	502	375	4	3
1998	556	406	438	312	547	403	3	2
1999	31	23	451	331	404	307	7	6
2000	908	608	1,031	672	1,157	766	2	1
2001	283	229	933	655	1,209	838	11	8
2002	809	572	1,537	1,013	1,184	798	6	4
2003	182	126	1,000	713	506	368	13	10
2004	650	439	652	447	1,119	785	4	3
2005	186	150	448	300	546	344	8	6
2006	1,023	655	988	635	1,613	1,037	12	8
2007	348	247	398	265	692	482	5	4
2008	306	226	405	273	1,024	718	3	2
2009	701	526	454	303	512	361	11	8
2010	266	176	1,155	736	700	454	3	2
2011	90	64	768	532	374	264	7	5
2012	277	210	664	527	200	154	5	4
1992–2012 Avg	367	259	703	475	739	507	6	4
2013	53	36	302	197	800	495	4	3

Appendix A14.–Chemical and physical observations made in Upper Cook Inlet, Alaska, during the 2013 southern offshore test fishery.

Date	Sta	Air Temp (c)	Water Temp (c)	Wind Vel. (knots)	Wind Dir	Tide Stage	Salinity (ppt)	Water Depth (f)	Secchi (m)
1 Jul	4	13	8.4	4	northeast	flood	30.1	50.0	6.0
	5	10	8.4	7	northeast	flood	31.5	75.2	5.5
	6	10	8.6	9	northeast	flood	32.2	76.0	3.5
	6.5	10	9.3	15	east	high	30.9	80.7	4.5
	7	11	9.4	13	northeast	ebb	30.5	83.7	4.0
	8	10	9.2	13	east	ebb	30.5	51.7	3.5
2 Jul	8	9	9.4	9	southwest	ebb	30.0	51.7	3.0
	7	10	9.4	6	southwest	ebb	29.9	81.3	3.5
	6.5	9	9.4	6	southwest	low	30.8	77.8	3.0
	6	9	9.2	8	southeast	flood	30.9	85.3	3.5
	5	8	8.6	10	southwest	flood	31.3	67.9	4.0
	4	9	8.0	9	southwest	flood	30.4	45.3	7.0
3 Jul	4	10	9.4	9	south	flood	29.0	46.4	4.5
	5	10	10.0	6	southeast	flood	29.0	66.8	3.5
	6	10	10.2	6	southeast	flood	29.0	84.4	3.5
	6.5	12	10.3	4	southeast	flood	29.1	76.3	3.5
	7	10	10.1	4	southwest	flood	29.1	84.7	3.5
	8	11	9.9	7	southwest	flood	29.5	53.6	3.0
4 Jul	8	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	6.5	10	9.9	14	northwest	ebb	29.5	80.4	2.5
	6	10	10.1	10	northwest	flood	28.7	84.7	3.5
	5	10	9.5	4	northwest	ebb	29.9	66.4	3.5
	4	10	8.4	3	northwest	flood	30.2	44.0	7.0
5 Jul	4	10	8.6	1	southwest	ebb	30.1	44.3	2.0
	5	10	9.1	1	northeast	ebb	30.5	68.8	3.5
	6	11	9.7	2	northeast	flood	30.0	83.3	4.0
	6.5	11	9.7	2	southeast	flood	30.0	70.7	5.0
	7	11	10.3	4	south	flood	29.3	83.7	3.0
	8	11	9.8	5	south	flood	29.0	49.3	3.0
6 Jul	8	11	9.9	2	south	ebb	29.0	57.1	3.0
	7	11	9.6	3	south	ebb	29.7	80.0	3.0
	6.5	11	9.4	3	south	ebb	30.3	79.6	4.0
	6	10	9.2	5	southwest	ebb	30.6	80.7	3.5
	5	10	9.0	5	southwest	high	31.5	62.7	5.5
	4	10	8.5	4	southwest	high	30.4	43.6	6.0

-continued-

Date	Sta	Air Temp (c)	Water Temp (c)	Wind Vel. (knots)	Wind Dir	Tide Stage	Salinity (ppt)	Water Depth (f)	Secchi (m)
7 Jul	4	10	8.8	4	southwest	flood	30.3	43.3	9.5
	5	9	8.4	4	southwest	flood	31.9	90.0	8
	6	9	8.6	6	southwest	flood	32.5	86.7	7
	6.5	9	9.6	9	southwest	flood	30.3	79.6	3.5
	7	10	9.4	5	southwest	flood	30.3	85.5	3.5
	8	9	9.6	7	southwest	flood	29.8	53.3	3.5
8 Jul	8	10	9.2	9	south	ebb	29.8	58.5	2.5
	7	10	9.5	7	south	ebb	29.9	77.1	3.0
	6.5	9	9.4	11	southeast	ebb	30.1	81.8	3.0
	6	10	9.3	11	southeast	ebb	30.2	86.5	4.0
	5	9	8.4	9	east	ebb	31.8	56.3	6.0
	4	11	8.6	8	east	ebb	30.4	41.4	8.5
9 Jul	4	10	8.1	8	southeast	ebb	30.8	43.0	8.5
	5	10	9.5	5	south	ebb	30.1	64.2	4.0
	6	16	10.2	2	west	ebb	30.0	81.9	3.0
	6.5	11	10.1	3	southwest	flood	29.8	83.3	3.0
	7	11	10.8	3	southwest	flood	30.3	54.0	3.0
	8	12	11.0	5	south	flood	29.7	49.1	3.0
10 Jul	8	13	9.4	2	south	ebb	29.9	58.0	2.5
	7	11	9.5	4	south	ebb	30.2	77.0	3.0
	6.5	11	9.8	6	southeast	ebb	30.3	81.1	3.5
	6	10	9.7	8	southeast	ebb	30.2	87.6	2.5
	5	11	9.1	4	southeast	ebb	30.2	68.2	4.0
	4	13	8.7	3	southeast	high	30.5	44.2	9.0
11 Jul	4	11	8.4	4	northwest	ebb	30.5	42.6	9.0
	5	11	9.0	5	northwest	ebb	31.8	80.2	7.0
	6	12	9.2	4	northwest	flood	31.5	86.5	6.0
	6.5	13	10.7	5	northwest	flood	31.1	81.3	3.5
	7	13	9.4	3	northwest	flood	31.2	86.1	3.0
	8	12	10.6	4	northwest	flood	30.2	47.7	3.0
12 Jul	8	11	9.8	2	southeast	flood	29.9	69.7	3.5
	7	12	9.4	2	southeast	high	30.9	81.3	4.5
	6.5	12	9.4	2	southeast	flood	31.2	85.2	4
	6	13	9.6	3	south	ebb	30.8	88.7	4.5
	5	13	9.7	2	southeast	ebb	30.5	54.3	4.5
	4	12	8.5	2	southwest	ebb	30.6	40.9	12.5

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Date	Sta	Air Temp (c)	Water Temp (c)	Wind Vel. (knots)	Wind Dir	Tide Stage	Salinity (ppt)	Water Depth (f)	Secchi (m)
13 Jul	4	11	9	9	southwest	ebb	29.8	45.4	6.0
	5	11	10.6	10	southwest	flood	27.4	77.4	2.0
	6	11	10.1	12	southwest	flood	30.1	87.8	2.5
	6.5	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–
14 Jul	8	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	6.5	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–
	4	–	–	–	–	–	–	–	–
15 Jul	4	11	9.1	3	southwest	flood	30.2	43.6	8.0
	5	11	9.1	5	southwest	flood	28.9	64.0	3.0
	6	11	9.8	6	southwest	ebb	29.0	65.1	2.5
	6.5	11	9.8	4	southwest	ebb	30.1	76.3	2.5
	7	11	9.8	3	southwest	flood	29.7	85.1	3.0
	8	11	9.6	4	southwest	flood	29.4	46.4	2.5
16 Jul	8	12	11.0	0	southeast	flood	30.6	68.6	3.5
	7	11	11.0	2	southeast	flood	30.9	81.0	2.5
	6.5	11	10.8	2	southeast	flood	30.3	80.3	3.0
	6	14	11.2	1	southeast	high	31.2	92.0	3.5
	5	19	9.8	1	southeast	ebb	31.8	65.2	6.0
	4	17	9.8	2	southeast	ebb	29.8	45.6	10.0
17 Jul	4	11	9.8	15	south	flood	29.7	48.5	7.5
	5	11	9.7	8	south	flood	31.8	58.6	7.5
	6	12	9.9	16	south	flood	30.9	87.8	4.5
	6.5	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–
18 Jul	4	12	12.3	10	southeast	flood	33.0	33.0	8.0
	5	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–
	6.5	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–

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Appendix A14.–Page 4 of 5.

Date	Sta	Air Temp (c)	Water Temp (c)	Wind Vel. (knots)	Wind Dir	Tide Stage	Salinity (ppt)	Water Depth (f)	Secchi (m)
19 Jul	4	–	–	–	–	–	–	–	–
	5	–	–	–	–	–	–	–	–
	6	–	–	–	–	–	–	–	–
	6.5	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–
20 Jul	4	13	9.4	7	southwest	ebb	31.4	45.4	11.0
	5	13	10.1	10	southwest	low	30.9	76.6	5.5
	6	13	9.8	12	southwest	flood	31.3	86.2	4.0
	6.5	–	–	–	–	–	–	–	–
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–
21 Jul	8	16	11.2	6	east	high	30.0	54.7	1.0
	7	13	11.8	4	southeast	ebb	31.7	65.4	3.5
	6.5	14	10.2	2	north	ebb	32.3	82.7	4.0
	6	16	10.7	0	north	ebb	32.3	82.3	5.5
	5	12	11.2	3	north	flood	32.6	54.2	6.5
	4	12	9.9	2	north	flood	31.0	45.8	18.0
22 Jul	4	12	9.1	3	north	high	32.1	33.9	6.5
	5	12	10.3	2	northwest	flood	32.1	89.2	4.5
	6	14	10.7	1	west	flood	32.7	86.2	5.5
	6.5	13	11.1	2	southwest	flood	32.4	75.8	4.0
	7	13	11.5	3	southwest	flood	32.7	112.0	4.0
	8	12	11.6	4	southwest	flood	32.8	59.5	2.0
23 Jul	4	12	10.2	3	south	ebb	31.3	44.1	7.5
	5	12	10.4	2	southeast	ebb	32.2	72.8	6.0
	6	13	10.5	2	northwest	ebb	32.1	82.6	3.5
	6.5	12	11.1	2	northwest	low	32.7	77.4	3.5
	7	13	11.6	0	northwest	flood	32.9	84.9	3.5
	8	13	12.1	1	northwest	flood	32.8	57.1	3.5
24 Jul	8	11	11.4	3	southeast	ebb	32.7	56.9	3.5
	7	11	11.1	5	southeast	ebb	31.7	75.2	3.5
	6.5	12	11.0	4	southeast	ebb	31.8	81.7	3.5
	6	12	10.9	2	southeast	ebb	31.3	81.3	3.5
	5	12	10.8	2	northeast	flood	30.9	69.3	7.0
	4	15	10.3	1	north	flood	31.2	71.6	10.5

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Date	Sta	Air Temp (c)	Water Temp (c)	Wind Vel. (knots)	Wind Dir	Tide Stage	Salinity (ppt)	Water Depth (f)	Secchi (m)
25 Jul	4	11	10.2	7	southwest	ebb	31.7	43.6	5.5
	5	11	10.6	10	southwest	ebb	31.8	79.4	3.0
	6	12	11.1	10	south	ebb	32.1	83.8	3.0
	6.5	12	11.9	9	southwest	flood	32.7	75.0	3.0
	7	12	12.2	6	southwest	flood	32.8	62.9	1.5
	8	–	–	–	–	–	–	–	–
26 Jul	4	11	10.3	3	southwest	ebb	31.2	46.7	8.0
	5	12	10.6	6	southwest	ebb	31.7	65.8	5.0
	6	12	11.2	5	southwest	ebb	32.3	84.4	3.0
	6.5	12	11.8	5	southwest	ebb	32.8	74.1	2.0
	7	12	12.2	5	southwest	high	32.8	71.6	2.0
	8	13	12.4	5	southwest	flood	33.6	48.2	1.5
27 Jul	8	11	12.1	5	southwest	flood	32.8	63.4	3.0
	7	10	11.8	7	southwest	flood	32.6	83.8	4.0
	6.5	10	11.8	7	southeast	high	31.8	81.2	5.0
	6	10	7.8	6	southeast	ebb	31.4	89.3	4.5
	5	10	11.4	5	southeast	ebb	31.3	63.4	5.0
	4	11	10.9	3	southeast	ebb	31.2	41.4	8.0
28 Jul	4	12	9.8	1	southeast	ebb	32.4	50.7	11.5
	5	11	9.8	2	southeast	ebb	31.8	69.2	11.0
	6	13	11.4	13	southeast	ebb	32.6	81.2	3.5
	6.5	13	11.6	3	southeast	ebb	32.7	75.0	3.5
	7	13	11.6	3	southeast	ebb	32.7	79.1	2.0
	8	13	11.5	3	southeast	ebb	32.7	49.5	1.5
29 Jul	4	9	9.8	8	southwest	low	31.8	49.5	10.0
	5	9	9.9	8	southwest	ebb	32.4	65.4	8.0
	6	8	10.1	11	southwest	ebb	32.8	82.4	4.5
	6.5	11	10.7	9	southwest	ebb	32.8	81.2	2.5
	7	–	–	–	–	–	–	–	–
	8	–	–	–	–	–	–	–	–
30 Jul	8	–	–	–	–	–	–	–	–
	7	12	12.5	9	southeast	ebb	32.5	81.2	2.0
	6.5	12	12.3	10	southeast	ebb	31.9	87.2	4.0
	6	12	12.3	11	southeast	ebb	32.4	89.2	4.5
	5	11	10.9	10	southeast	flood	33.0	58.6	5.5
	4	11	9.6	9	southeast	flood	33.1	52.6	10.0
Averages		11	10.1	5.5	south	ebb	31.0	68.7	4.7
Min		8	7.8	0	na	na	27.4	33.0	1.0
Max		19	12.5	16	na	na	33.6	112.0	18.0

Appendix A15.–Yearly mean values of physical observations made during the conduct of the 2002–2013 southern offshore test fishery.

Sta	Year	Air temp (c)	Water temp (c)	Wind vel. (knots)	Wind dir	Salinity (ppt)	Water depth (f)	Secchi (m)
4	2002	12.6	9.5	12.6	S	31.4	23.6	8.1
	2003	14.1	10.6	12.0	S	31.2	23.4	8.3
	2004	10.7	9.6	7.1	E	31.3	23.8	7.9
	2005	12.9	10.9	6.2	S	31.0	24.5	7.4
	2006	11.1	9.9	6.0	SE	30.7	23.9	7.7
	2007	10.8	8.6	4.7	SE	31.2	23.9	8.1
	2008	11.0	9.3	8.0	SE	30.6	22.8	8.5
	2009	11.0	9.1	6.2	SE	33.3	24.4	7.3
	2010	10.7	9.6	5.9	S	31.2	24.1	7.6
	2011	10.8	8.8	3.7	S	31.5	23.9	7.7
	2012	10.8	8.9	4.8	SE	30.5	25.4	8.9
	2013	11.4	9.4	5.2	S	30.9	45.4	8.4
	Avg	11.5	9.5	6.9	SE	31.2	25.8	8.0
5	2002	12.8	9.7	13.9	S	30.9	35.8	6.3
	2003	14.0	11.0	13.3	SE	30.6	35.7	6.3
	2004	10.7	9.9	7.2	SE	30.7	34.7	7.1
	2005	13.1	11.1	5.9	S	30.6	36.3	6.5
	2006	11.1	10.2	7.6	S	30.2	35.4	5.6
	2007	10.8	8.7	4.6	S	30.9	35.4	7.2
	2008	10.4	8.8	6.7	SE	30.4	35.4	6.4
	2009	11.1	9.6	6.6	SE	32.4	35.9	5.8
	2010	11.0	9.5	5.5	SE	30.8	35.3	6.7
	2011	11.6	9.2	4.0	S	31.1	36.0	6.4
	2012	11.0	9.2	5.7	SE	30.1	36.8	7.2
	2013	11.0	9.8	5.4	S	31.1	68.5	5.4
	Avg	11.5	9.7	7.2	SE	30.8	38.4	6.4

Sta	Year	Air temp (c)	Water temp (c)	Wind vel. (knots)	Wind dir	Salinity (ppt)	Water depth (f)	Secchi (m)
6	2002	12.8	10.1	13.4	S	30.4	45.1	4.2
	2003	14.7	11.5	12.9	S	29.5	46.4	4.9
	2004	10.6	10.3	8.0	SE	30.1	46.6	4.6
	2005	12.8	11.6	8.0	S	29.4	45.8	4.7
	2006	12.8	11.6	8.0	S	29.8	45.8	4.7
	2007	11.0	9.5	6.0	S	30.0	47.2	4.8
	2008	10.4	9.3	6.2	S	29.5	47.3	5.0
	2009	11.5	10.2	6.0	SE	31.3	46.7	4.0
	2010	11.2	9.9	6.1	S	30.1	46.6	4.7
	2011	11.7	9.8	3.2	S	30.6	45.7	5.0
	2012	11.1	9.7	5.6	SE	29.2	48.2	5.1
	2013	11.6	10.0	6.7	S	31.1	84.2	3.9
	Avg	11.8	10.3	7.5	S	30.1	49.6	4.6
6.5	2002	12.6	10.4	13.7	S	30.0	42.6	3.3
	2003	14.4	11.7	14.9	S	29.1	41.3	4.1
	2004	10.7	10.8	10.1	SE	29.4	41.6	3.6
	2005	13.2	12.2	7.4	S	28.7	42.8	4.2
	2006	11.2	10.3	8.5	SE	29.7	41.6	3.4
	2007	11.1	9.7	6.2	S	29.8	42.9	4.3
	2008	10.4	9.6	6.3	S	29.2	42.3	4.4
	2009	11.8	10.4	6.4	S	31.0	42.5	3.7
	2010	11.2	10.1	6.2	S	29.7	41.7	3.7
	2011	11.3	10.2	4.5	S	29.9	42.5	4.2
	2012	11.3	9.9	4.5	SE	28.9	44.0	4.7
	2013	11.3	10.5	5.8	S	31.2	79.4	3.5
	Avg	11.7	10.5	7.9	S	29.7	45.4	3.9

-continued-

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Sta	Year	Air temp (c)	Water temp (c)	Wind vel. (knots)	Wind dir	Salinity (ppt)	Water depth (f)	Secchi (m)
7	2002	12.4	10.4	12.4	SE	29.9	44.0	2.8
	2003	14.3	11.6	13.0	S	29.0	44.3	3.6
	2004	10.6	11.0	9.7	SE	28.8	44.7	2.7
	2005	12.9	12.3	7.6	S	28.3	44.8	3.6
	2006	10.8	9.9	6.8	S	29.4	42.4	3.1
	2007	11.2	9.9	6.2	S	29.5	45.5	3.8
	2008	10.6	9.8	6.2	S	29.4	44.9	4.2
	2009	11.7	10.4	5.5	S	31.2	45.0	3.5
	2010	11.4	10.3	5.7	S	29.4	44.9	2.9
	2011	11.5	10.4	3.9	S	29.8	44.8	3.8
	2012	11.3	10.0	5.1	SE	28.8	46.4	3.8
	2013	11.4	10.6	4.6	S	31.1	79.8	3.1
	Avg	11.7	10.6	7.2	S	29.5	47.6	3.4

Sta	Year	Air temp (c)	Water temp (c)	Wind vel. (knots)	Wind dir	Salinity (ppt)	Water depth (f)	Secchi (m)
8	2002	12.1	10.3	11.8	SE	30.0	29.4	2.4
	2003	13.7	11.2	11.6	SE	28.1	28.9	3.1
	2004	10.8	11.0	9.1	SE	29.3	28.7	2.4
	2005	12.8	12.1	7.7	S	28.5	29.8	3.3
	2006	11.8	10.5	6.7	S	29.0	30.4	3.0
	2007	11.2	9.9	5.5	S	29.5	29.8	3.2
	2008	10.9	9.7	5.9	SW	29.2	29.9	3.7
	2009	11.6	10.5	5.9	S	31.2	29.6	3.4
	2010	11.7	10.2	5.2	SE	29.3	29.9	2.7
	2011	12.2	10.3	3.8	S	29.8	29.6	3.2
	2012	10.8	10.0	4.8	SE	28.6	30.4	3.2
	2013	17.7	10.5	4.8	S	30.7	55.2	2.8
	Avg	12.3	10.5	6.9	SE	29.4	31.8	3.0

Appendix A16.–Yearly mean values for selected chemical and physical variables collected during the southern offshore test fishery, 1979–2013.

Year	Air temp. (c)	Water temp. (c)	Wind vel. (knots)	Salinity (ppt)	Secchi (m)
1979	12.4	12.2	5.9	25.0	5.7
1980	12.4	10.0	8.2	24.8	4.2
1981	13.4	11.0	10.1	23.1	4.1
1982	12.0	8.5	9.0	20.3	5.0
1983	14.9	10.9	9.4	20.6	4.7
1984	13.5	10.8	9.1	–	5.3
1985	10.8	8.2	9.2	28.0	5.5
1986	10.6	9.1	8.2	–	5.4
1987	12.6	10.1	4.1	28.4	5.1
1988	14.2	9.1	8.9	30.2	4.7
1989	13.1	10.0	4.4	27.7	4.7
1990	12.3	11.4	8.5	21.3	4.6
1991	10.9	9.9	6.6	–	4.1
1992	12.0	11.1	5.4	28.4	4.3
1993	13.5	10.5	6.9	26.2	5.0
1994	13.0	10.0	9.3	29.0	6.0
1995	13.1	9.5	7.9	26.5	4.6
1996	12.6	10.0	9.1	30.8	4.7
1997	13.8	10.5	10.0	30.6	4.0
1998	12.5	10.3	8.3	30.0	5.4
1999	13.4	10.3	12.4	30.2	4.5
2000	13.5	10.5	12.2	30.1	5.2
2001	12.9	10.7	10.7	30.1	5.2
2002	12.5	10.1	13.0	30.4	4.5
2003	14.2	11.3	12.9	29.6	5.0
2004	10.7	10.4	8.5	30.0	4.7
2005	13.0	11.7	7.1	29.4	5.0
2006	11.3	10.3	7.2	28.4	4.6
2007	11.0	9.4	5.5	30.2	5.3
2008	10.5	9.3	6.3	29.7	5.3
2009	11.4	10.0	6.1	31.8	4.7
2010	11.2	9.9	5.8	30.1	4.7
2011	11.5	9.8	3.9	30.4	5.1
2012	11.0	9.6	5.1	29.4	5.5
1992-2012 Avg	12.3	10.2	8.3	29.6	4.9
2013	11.0	12.5	5.5	31.0	4.7

APPENDIX B: NORTHERN OFFSHORE TEST FISHERY 2014 SEASON DATA

Appendix B1.–Summary of sockeye salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet northern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	3[a]	117	1	1	1	1
2 July	7	238	3	4	4	5
3 July	7	256	29	33	23	28
4 July	7	255	14	47	12	39
5 July	7	254	7	54	6	45
6 July	7	256	4	58	3	48
7 July	7	254	6	64	5	53
8 July	7	251	53	117	39	92
9 July	7	266	72	189	52	144
10 July	7	264	41	230	32	176
11 July	7	270	170	400	107	283
12 July	7	250	3	403	3	286
13 July	7	279	83	486	50	335
14 July	7	278	648	1,134	631	967
15 July	7	265	1,063	2,197	807	1,774
16 July	7	282	330	2,527	217	1,990
17 July	7	273	217	2,744	161	2,151
18 July	7	281	158	2,902	116	2,267
19 July	7	268	68	2,970	50	2,317
20 July	7	269	147	3,117	92	2,409
21 July	7	253	14	3,131	11	2,420
22 July	7	256	19	3,150	15	2,435
23 July	7	251	20	3,170	16	2,451
24 July	7	251	21	3,191	17	2,469
25 July	7	260	64	3,255	48	2,516
26 July	7	264	19	3,274	15	2,531
27 July	7	252	23	3,297	19	2,550
28 July	7	244	13	3,310	11	2,561
29 July	7	249	10	3,320	8	2,569
30 July	7	232	13	3,333	11	2,580

[a] Not all stations fished due to weather.

Appendix B2.–Estimated sockeye salmon catch by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	1	0	0	–	–	–	–	1
2 July	0	0	3	0	0	0	0	3
3 July	1	4	0	7	16	1	0	29
4 July	2	0	8	2	0	0	2	14
5 July	0	2	0	4	1	0	0	7
6 July	1	0	2	0	0	0	1	4
7 July	2	0	0	2	0	1	1	6
8 July	3	5	35	6	4	0	0	53
9 July	1	2	59	9	1	0	0	72
10 July	6	21	9	1	3	1	0	41
11 July	0	4	21	144	0	0	1	170
12 July	0	1	1	1	0	0	0	3
13 July	8	4	5	53	13	0	0	83
14 July	25	118	388	46	60	8	3	648
15 July	71	174	257	312	247	1	1	1,063
16 July	78	33	181	31	0	2	5	330
17 July	21	33	125	21	16	0	1	217
18 July	33	25	35	53	1	1	10	158
19 July	2	20	28	8	6	2	2	68
20 July	2	4	127	10	1	2	1	147
21 July	5	6	1	1	0	1	0	14
22 July	0	0	14	5	0	0	0	19
23 July	0	3	10	6	0	1	0	20
24 July	1	3	6	6	1	2	2	21
25 July	5	6	15	36	0	1	1	64
26 July	2	0	7	4	1	3	2	19
27 July	6	2	2	11	2	0	0	23
28 July	1	2	4	1	1	1	3	13
29 July	2	0	2	1	2	1	2	10
30 July	0	2	0	7	1	0	3	13
Total	279	474	1,345	788	377	29	41	3,333
Percent	8%	14%	40%	24%	11%	1%	1%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B3.–Estimated sockeye salmon catch per unit effort by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	1	0	0	–	–	–	–	1
2 July	0	0	4	0	0	0	0	4
3 July	1	4	0	6	12	1	0	23
4 July	2	0	7	2	0	0	2	12
5 July	0	2	0	3	1	0	0	6
6 July	1	0	2	0	0	0	1	3
7 July	2	0	0	2	0	1	1	5
8 July	2	4	25	5	3	0	0	39
9 July	1	2	41	7	1	0	0	52
10 July	5	17	6	1	2	1	0	32
11 July	0	3	17	86	0	0	1	107
12 July	0	1	1	1	0	0	0	3
13 July	6	3	4	28	8	0	0	50
14 July	18	71	466	32	36	6	3	631
15 July	92	191	180	218	124	1	1	807
16 July	70	23	96	22	0	2	4	217
17 July	17	26	88	17	13	0	1	161
18 July	26	20	28	32	1	1	8	116
19 July	2	14	20	6	5	2	2	50
20 July	2	3	76	8	1	2	1	92
21 July	4	5	1	1	0	1	0	11
22 July	0	0	11	4	0	0	0	15
23 July	0	2	8	5	0	1	0	16
24 July	1	2	5	5	1	2	2	17
25 July	4	5	12	25	0	1	1	48
26 July	2	0	6	3	1	2	1	15
27 July	5	2	2	9	2	0	0	19
28 July	1	2	4	1	1	1	3	11
29 July	2	1	2	1	2	0	2	8
30 July	0	2	0	6	1	0	2	11
Total	264	404	1,109	535	212	23	33	2,580
Percent	10%	16%	43%	21%	8%	1%	1%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B4.–Summary of pink salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet northern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	3[a]	117	0	0	0	0
2 July	7	238	0	0	0	0
3 July	7	256	2	2	2	2
4 July	7	255	1	3	1	2
5 July	7	254	0	3	0	2
6 July	7	256	0	3	0	2
7 July	7	254	0	3	0	2
8 July	7	251	1	4	1	3
9 July	7	266	0	4	0	3
10 July	7	264	1	5	1	4
11 July	7	270	1	6	1	5
12 July	7	250	0	6	0	5
13 July	7	279	18	24	12	17
14 July	7	278	8	32	5	22
15 July	7	265	7	39	6	27
16 July	7	282	3	42	2	29
17 July	7	273	6	48	4	33
18 July	7	281	4	52	3	36
19 July	7	268	3	55	2	39
20 July	7	269	7	62	5	44
21 July	7	253	3	65	2	46
22 July	7	256	0	65	0	46
23 July	7	251	10	75	8	54
24 July	7	251	5	80	4	58
25 July	7	260	21	101	16	75
26 July	7	264	4	105	3	78
27 July	7	252	7	112	6	84
28 July	7	244	1	113	1	84
29 July	7	249	7	120	6	90
30 July	7	232	2	122	2	92

[a] Not all stations fished due to weather.

Appendix B5.–Estimated pink salmon catch by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1	2
4 July	1	0	0	0	0	0	0	1
5 July	0	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	0	0	0	0	0	1
9 July	0	0	0	0	0	0	0	0
10 July	1	0	0	0	0	0	0	1
11 July	0	0	0	1	0	0	0	1
12 July	0	0	0	0	0	0	0	0
13 July	5	3	1	7	2	0	0	18
14 July	1	1	0	2	4	0	0	8
15 July	0	3	0	1	3	0	0	7
16 July	0	0	2	1	0	0	0	3
17 July	2	0	2	2	0	0	0	6
18 July	1	1	0	1	1	0	0	4
19 July	1	0	0	1	1	0	0	3
20 July	2	0	2	3	0	0	0	7
21 July	2	0	1	0	0	0	0	3
22 July	0	0	0	0	0	0	0	0
23 July	1	1	6	2	0	0	0	10
24 July	0	1	2	2	0	0	0	5
25 July	4	6	3	6	2	0	0	21
26 July	0	0	2	0	2	0	0	4
27 July	3	0	1	2	0	0	1	7
28 July	0	0	0	0	0	0	1	1
29 July	1	0	0	0	6	0	0	7
30 July	0	0	0	2	0	0	0	2
Total	26	16	22	33	22	0	3	122
Percent	21%	13%	18%	27%	18%	0%	2%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B6.–Estimated pink salmon catch per unit effort by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1	2
4 July	1	0	0	0	0	0	0	1
5 July	0	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	0	0	0	0	0	1
9 July	0	0	0	0	0	0	0	0
10 July	1	0	0	0	0	0	0	1
11 July	0	0	0	1	0	0	0	1
12 July	0	0	0	0	0	0	0	0
13 July	4	2	1	4	1	0	0	12
14 July	1	1	0	1	2	0	0	5
15 July	0	3	0	1	2	0	0	6
16 July	0	0	1	1	0	0	0	2
17 July	1	0	1	2	0	0	0	4
18 July	1	1	0	1	1	0	0	3
19 July	1	0	0	1	1	0	0	2
20 July	2	0	1	2	0	0	0	5
21 July	2	0	1	0	0	0	0	2
22 July	0	0	0	0	0	0	0	0
23 July	1	1	5	2	0	0	0	8
24 July	0	1	2	2	0	0	0	4
25 July	3	5	2	4	2	0	0	16
26 July	0	0	2	0	2	0	0	3
27 July	2	0	1	2	0	0	1	6
28 July	0	0	0	0	0	0	1	1
29 July	1	0	0	0	5	0	0	6
30 July	0	0	0	2	0	0	0	2
Total	21	14	17	23	16	0	3	92
Percent	22%	15%	18%	25%	17%	0%	3%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B7.–Summary of chum salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet northern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	3[a]	117	0	0	0	0
2 July	7	238	3	3	2	2
3 July	7	256	7	10	5	8
4 July	7	255	0	10	0	8
5 July	7	254	0	10	0	8
6 July	7	256	2	12	2	9
7 July	7	254	15	27	12	22
8 July	7	251	27	54	20	42
9 July	7	266	11	65	8	50
10 July	7	264	2	67	2	51
11 July	7	270	24	91	15	66
12 July	7	250	1	92	1	67
13 July	7	279	161	253	92	159
14 July	7	278	35	288	24	183
15 July	7	265	73	361	45	228
16 July	7	282	7	368	4	233
17 July	7	273	24	392	18	251
18 July	7	281	30	422	20	270
19 July	7	268	12	434	9	280
20 July	7	269	24	458	17	297
21 July	7	253	15	473	12	309
22 July	7	256	9	482	7	316
23 July	7	251	15	497	12	328
24 July	7	251	11	508	9	337
25 July	7	260	46	554	34	371
26 July	7	264	13	567	10	381
27 July	7	252	20	587	17	398
28 July	7	244	2	589	2	400
29 July	7	249	26	615	21	422
30 July	7	232	17	632	14	435

[a] Not all stations fished due to weather.

Appendix B8.–Estimated chum salmon catch by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	3	0	0	3
3 July	0	2	0	1	4	0	0	7
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	0	0	0	0
6 July	0	0	1	1	0	0	0	2
7 July	0	2	0	13	0	0	0	15
8 July	0	2	13	5	7	0	0	27
9 July	0	0	11	0	0	0	0	11
10 July	0	0	0	0	2	0	0	2
11 July	0	1	2	21	0	0	0	24
12 July	0	0	1	0	0	0	0	1
13 July	1	1	2	88	68	0	1	161
14 July	0	1	2	13	18	1	0	35
15 July	0	0	21	20	30	2	0	73
16 July	0	1	4	2	0	0	0	7
17 July	0	1	12	1	9	0	1	24
18 July	0	2	3	21	4	0	0	30
19 July	0	0	2	1	8	0	1	12
20 July	0	0	12	8	4	0	0	24
21 July	0	1	5	9	0	0	0	15
22 July	0	0	7	2	0	0	0	9
23 July	0	0	7	8	0	0	0	15
24 July	0	2	3	5	1	0	0	11
25 July	0	10	11	25	0	0	0	46
26 July	1	1	2	5	3	0	1	13
27 July	0	1	11	8	0	0	0	20
28 July	0	0	0	1	0	0	1	2
29 July	0	2	4	4	16	0	0	26
30 July	1	0	0	13	1	0	2	17
Total	3	30	136	275	178	3	7	632
Percent	0%	5%	22%	44%	28%	0%	1%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B9.–Estimated chum salmon catch per unit effort by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	2	0	0	2
3 July	0	2	0	1	3	0	0	5
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	0	0	0	0
6 July	0	0	1	1	0	0	0	2
7 July	0	2	0	10	0	0	0	12
8 July	0	2	9	4	6	0	0	20
9 July	0	0	8	0	0	0	0	8
10 July	0	0	0	0	2	0	0	2
11 July	0	1	2	13	0	0	0	15
12 July	0	0	1	0	0	0	0	1
13 July	1	1	2	48	41	0	1	92
14 July	0	1	2	9	11	1	0	24
15 July	0	0	15	14	15	2	0	45
16 July	0	1	2	1	0	0	0	4
17 July	0	1	8	1	7	0	1	18
18 July	0	2	2	13	3	0	0	20
19 July	0	0	1	1	6	0	1	9
20 July	0	0	7	6	3	0	0	17
21 July	0	1	4	7	0	0	0	12
22 July	0	0	6	2	0	0	0	7
23 July	0	0	6	6	0	0	0	12
24 July	0	2	2	4	1	0	0	9
25 July	0	8	9	18	0	0	0	34
26 July	1	1	2	4	2	0	1	10
27 July	0	1	10	6	0	0	0	17
28 July	0	0	0	1	0	0	1	2
29 July	0	2	3	4	13	0	0	21
30 July	1	0	0	10	1	0	2	14
Total	2	24	101	183	116	2	6	435
Percent	1%	6%	23%	42%	27%	1%	1%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B10.–Summary of coho salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet northern offshore test fishery, 2013.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	3[a]	117	0	0	0	0
2 July	7	238	2	2	2	2
3 July	7	256	0	2	0	2
4 July	7	255	0	2	0	2
5 July	7	254	1	3	1	2
6 July	7	256	0	3	0	2
7 July	7	254	0	3	0	2
8 July	7	251	11	14	9	11
9 July	7	266	6	20	5	16
10 July	7	264	0	20	0	16
11 July	7	270	4	24	3	18
12 July	7	250	1	25	1	19
13 July	7	279	73	98	43	62
14 July	7	278	33	131	23	85
15 July	7	265	84	215	49	133
16 July	7	282	11	226	7	141
17 July	7	273	4	230	3	144
18 July	7	281	19	249	13	157
19 July	7	268	8	257	6	163
20 July	7	269	16	273	12	175
21 July	7	253	3	276	2	177
22 July	7	256	6	282	5	182
23 July	7	251	9	291	8	189
24 July	7	251	11	302	9	198
25 July	7	260	27	329	20	218
26 July	7	264	91	420	68	286
27 July	7	252	25	445	21	307
28 July	7	244	9	454	8	315
29 July	7	249	11	465	9	324
30 July	7	232	19	484	15	339

[a] Not all stations fished due to weather.

Appendix B11.–Estimated coho salmon catch by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	0	2	0	2
3 July	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	1	0	0	1
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	3	4	2	1	0	11
9 July	0	1	1	0	2	0	2	6
10 July	0	0	0	0	0	0	0	0
11 July	0	0	0	3	1	0	0	4
12 July	0	1	0	0	0	0	0	1
13 July	0	0	2	31	38	0	2	73
14 July	1	1	1	7	16	5	2	33
15 July	1	0	12	13	55	1	2	84
16 July	0	0	4	3	0	1	3	11
17 July	0	0	2	1	1	0	0	4
18 July	0	0	5	10	0	1	3	19
19 July	0	1	2	0	0	2	3	8
20 July	1	0	5	5	1	4	0	16
21 July	0	0	1	0	0	1	1	3
22 July	0	0	5	0	0	1	0	6
23 July	3	1	0	3	1	1	0	9
24 July	0	0	1	5	1	1	3	11
25 July	1	2	1	19	2	1	1	27
26 July	0	1	4	4	13	15	54	91
27 July	0	4	4	6	3	3	5	25
28 July	0	0	1	1	3	1	3	9
29 July	0	1	0	0	8	1	1	11
30 July	0	0	0	6	4	0	9	19
Total	8	13	54	121	152	42	94	484
Percent	2%	3%	11%	25%	31%	9%	19%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B12.–Estimated coho salmon catch per unit effort by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	0	0	0	0	0	2	0	2
3 July	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	1	0	0	1
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	2	3	2	1	0	9
9 July	0	1	1	0	2	0	2	5
10 July	0	0	0	0	0	0	0	0
11 July	0	0	0	2	1	0	0	3
12 July	0	1	0	0	0	0	0	1
13 July	0	0	2	17	23	0	2	43
14 July	1	1	1	5	10	4	2	23
15 July	1	0	8	9	28	1	2	49
16 July	0	0	2	2	0	1	2	7
17 July	0	0	1	1	1	0	0	3
18 July	0	0	4	6	0	1	2	13
19 July	0	1	1	0	0	2	2	6
20 July	1	0	3	4	1	3	0	12
21 July	0	0	1	0	0	1	1	2
22 July	0	0	4	0	0	1	0	5
23 July	3	1	0	2	1	1	0	8
24 July	0	0	1	4	1	1	2	9
25 July	1	2	1	13	2	1	1	20
26 July	0	1	3	3	10	13	38	68
27 July	0	3	4	5	2	3	4	21
28 July	0	0	1	1	3	1	3	8
29 July	0	1	0	0	6	1	1	9
30 July	0	0	0	5	3	0	7	15
Total	7	10	40	82	95	35	70	339
Percent	2%	3%	12%	24%	28%	10%	21%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B13.–Summary of Chinook salmon fishing effort, daily and cumulative catch, and daily and cumulative catch per unit effort (CPUE), Upper Cook Inlet northern offshore test fishery, 2013.

Date	Number of stations	Mean fishing yime (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	3[a]	117	0	0	0	0
2 July	7	238	1	1	1	1
3 July	7	256	0	1	0	1
4 July	7	255	0	1	0	1
5 July	7	254	0	1	0	1
6 July	7	256	0	1	0	1
7 July	7	254	0	1	0	1
8 July	7	251	1	2	1	2
9 July	7	266	0	2	0	2
10 July	7	264	0	2	0	2
11 July	7	270	0	2	0	2
12 July	7	250	0	2	0	2
13 July	7	279	1	3	1	2
14 July	7	278	0	3	0	2
15 July	7	265	0	3	0	2
16 July	7	282	0	3	0	2
17 July	7	273	0	3	0	2
18 July	7	281	0	3	0	2
19 July	7	268	0	3	0	2
20 July	7	269	0	3	0	2
21 July	7	253	0	3	0	2
22 July	7	256	0	3	0	2
23 July	7	251	0	3	0	2
24 July	7	251	0	3	0	2
25 July	7	260	1	4	1	3
26 July	7	264	0	4	0	3
27 July	7	252	0	4	0	3
28 July	7	244	0	4	0	3
29 July	7	249	0	4	0	3
30 July	7	232	0	4	0	3

[a] Not all stations fished due to weather.

Appendix B14.–Estimated Chinook salmon catch by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	1	0	0	0	0	0	0	1
3 July	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	0	0	0	0	0	1
9 July	0	0	0	0	0	0	0	0
10 July	0	0	0	0	0	0	0	0
11 July	0	0	0	0	0	0	0	0
12 July	0	0	0	0	0	0	0	0
13 July	0	0	1	0	0	0	0	1
14 July	0	0	0	0	0	0	0	0
15 July	0	0	0	0	0	0	0	0
16 July	0	0	0	0	0	0	0	0
17 July	0	0	0	0	0	0	0	0
18 July	0	0	0	0	0	0	0	0
19 July	0	0	0	0	0	0	0	0
20 July	0	0	0	0	0	0	0	0
21 July	0	0	0	0	0	0	0	0
22 July	0	0	0	0	0	0	0	0
23 July	0	0	0	0	0	0	0	0
24 July	0	0	0	0	0	0	0	0
25 July	0	0	0	0	1	0	0	1
26 July	0	0	0	0	0	0	0	0
27 July	0	0	0	0	0	0	0	0
28 July	0	0	0	0	0	0	0	0
29 July	0	0	0	0	0	0	0	0
30 July	0	0	0	0	0	0	0	0
Total	2	0	1	0	1	0	0	4
Percent	50%	0%	25%	0%	25%	0%	0%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

Appendix B15.–Estimated Chinook salmon catch per unit effort by date and station, Upper Cook Inlet northern offshore test fishery, 2013.

	Station number							
Date	1	2	3	4	5	6	7	Total
1 July[a]	0	0	0	–	–	–	–	0
2 July	1	0	0	0	0	0	0	1
3 July	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	0	0	0
5 July	0	0	0	0	0	0	0	0
6 July	0	0	0	0	0	0	0	0
7 July	0	0	0	0	0	0	0	0
8 July	1	0	0	0	0	0	0	1
9 July	0	0	0	0	0	0	0	0
10 July	0	0	0	0	0	0	0	0
11 July	0	0	0	0	0	0	0	0
12 July	0	0	0	0	0	0	0	0
13 July	0	0	1	0	0	0	0	1
14 July	0	0	0	0	0	0	0	0
15 July	0	0	0	0	0	0	0	0
16 July	0	0	0	0	0	0	0	0
17 July	0	0	0	0	0	0	0	0
18 July	0	0	0	0	0	0	0	0
19 July	0	0	0	0	0	0	0	0
20 July	0	0	0	0	0	0	0	0
21 July	0	0	0	0	0	0	0	0
22 July	0	0	0	0	0	0	0	0
23 July	0	0	0	0	0	0	0	0
24 July	0	0	0	0	0	0	0	0
25 July	0	0	0	0	1	0	0	1
26 July	0	0	0	0	0	0	0	0
27 July	0	0	0	0	0	0	0	0
28 July	0	0	0	0	0	0	0	0
29 July	0	0	0	0	0	0	0	0
30 July	0	0	0	0	0	0	0	0
Total	2	0	1	0	1	0	0	3
Percent	50%	0%	25%	0%	25%	0%	0%	100%

Note: Dashes indicate days that were not fished.

[a] Not all stations fished due to weather.

APPENDIX C: HISTORIC GENETIC STOCK IDENTIFICATION DATA.

Appendix C1.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for temporally grouped mixtures (date range) of sockeye salmon captured in the southern offshore test fishery from 2006 to 2011.

			Stock composition				Stock-specific *CCPUE*					
			Within date range				Within date range					Within
Date		Reporting			90% CI					90% CI		year
range	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
						2006						
7/1–9	n=325	Crescent	0.04	0.01	0.02	0.06		11	3	5	16	0.01
	n_{eff}=325	West	0.06	0.02	0.03	0.09		16	5	8	24	0.01
		JCL	0.01	0.01	0.00	0.02		3	3	0	5	0.00
		SusYen	0.05	0.02	0.02	0.08		13	5	5	21	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.03	0.01	0.01	0.06		8	3	3	16	0.01
		Kenai	0.30	0.04	0.24	0.36		79	11	63	95	0.06
		Kasilof	0.51	0.04	0.45	0.57		134	11	119	150	0.11
							$CCPUE_i$	263				
7/10–16	n=266	Crescent	0.00	0.00	0.00	0.01		0	1	0	2	0.00
	n_{eff}=263	West	0.11	0.04	0.06	0.18		26	9	14	43	0.02
		JCL	0.06	0.02	0.03	0.09		14	4	8	22	0.01
		SusYen	0.11	0.04	0.04	0.18		27	10	10	43	0.02
		Fish	0.00	0.00	0.00	0.01		0	1	0	2	0.00
		KTNE	0.05	0.02	0.02	0.09		12	5	5	21	0.01
		Kenai	0.33	0.04	0.27	0.39		79	9	64	93	0.06
		Kasilof	0.33	0.04	0.27	0.39		78	9	64	93	0.06
							$CCPUE_i$	237				
7/17–23	n=401	Crescent	0.02	0.01	0.00	0.04		8	4	0	15	0.01
	n_{eff}=397	West	0.07	0.02	0.05	0.10		25	5	17	34	0.02
		JCL	0.05	0.02	0.03	0.08		16	5	9	26	0.01
		SusYen	0.07	0.02	0.04	0.11		25	7	13	37	0.02
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.02	0.01	0.01	0.03		6	3	2	11	0.00
		Kenai	0.60	0.03	0.55	0.66		209	11	191	227	0.16
		Kasilof	0.17	0.03	0.13	0.21		57	9	43	72	0.04
							$CCPUE_i$	346				
7/24–8/1	n=393	Crescent	0.00	0.00	0.00	0.01		0	2	0	3	0.00
	n_{eff}=391	West	0.07	0.02	0.04	0.11		32	9	17	47	0.03
		JCL	0.05	0.01	0.03	0.08		23	6	14	33	0.02
		SusYen	0.02	0.02	0.00	0.05		9	7	2	24	0.01
		Fish	0.00	0.00	0.00	0.00		0	1	0	0	0.00
		KTNE	0.03	0.02	0.01	0.06		13	7	4	26	0.01
		Kenai	0.70	0.03	0.65	0.75		301	13	280	322	0.24
		Kasilof	0.12	0.02	0.09	0.16		53	10	38	69	0.04
							$CCPUE_i$	431				
							$CCPUE_f$	1,277				

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Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	90% CI 95%		Stock-specific *CCPUE*: Within date range: Estimate	SD	90% CI 5%	90% CI 95%	Within year proportion
						2007						
7/1–9	n=374	Crescent	0.08	0.02	0.05	0.12		24	6	16	34	0.01
	n_{eff}=372	West	0.16	0.03	0.11	0.22		48	10	32	64	0.02
		JCL	0.03	0.01	0.02	0.05		9	3	5	14	0.00
		SusYen	0.03	0.01	0.01	0.05		8	3	4	14	0.00
		Fish	0.02	0.01	0.00	0.03		5	3	0	10	0.00
		KTNE	0.05	0.02	0.02	0.09		16	6	7	27	0.01
		Kenai	0.39	0.03	0.34	0.45		115	10	99	131	0.05
		Kasilof	0.23	0.03	0.19	0.28		68	9	54	83	0.03
							$CCPUE_i$	293				
7/10–13	n=444	Crescent	0.03	0.01	0.02	0.06		16	5	8	25	0.01
	n_{eff}=437	West	0.08	0.02	0.04	0.11		35	10	19	51	0.01
		JCL	0.05	0.01	0.03	0.07		21	5	13	30	0.01
		SusYen	0.10	0.02	0.07	0.14		46	10	31	63	0.02
		Fish	0.01	0.01	0.00	0.02		3	3	0	10	0.00
		KTNE	0.03	0.01	0.01	0.05		13	5	6	22	0.01
		Kenai	0.53	0.03	0.47	0.59		239	15	214	265	0.10
		Kasilof	0.17	0.03	0.13	0.22		78	13	57	99	0.03
							$CCPUE_i$	451				
7/14–18	n=404	Crescent	0.04	0.01	0.02	0.06		28	8	16	43	0.01
	n_{eff}=399	West	0.02	0.01	0.01	0.05		16	9	6	33	0.01
		JCL	0.07	0.02	0.05	0.10		48	12	31	69	0.02
		SusYen	0.11	0.03	0.06	0.15		72	19	41	103	0.03
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.03	0.01	0.01	0.05		19	7	9	31	0.01
		Kenai	0.61	0.03	0.56	0.66		409	21	373	443	0.16
		Kasilof	0.12	0.02	0.08	0.16		80	16	55	106	0.03
							$CCPUE_i$	672				
7/19–23	n=429	Crescent	0.05	0.01	0.04	0.08		29	7	18	41	0.01
	n_{eff}=427	West	0.02	0.01	0.01	0.04		13	6	6	23	0.01
		JCL	0.04	0.01	0.03	0.07		23	7	13	35	0.01
		SusYen	0.08	0.02	0.05	0.11		42	10	25	60	0.02
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.03	0.01	0.02	0.05		17	5	9	26	0.01
		Kenai	0.67	0.03	0.62	0.72		351	16	325	377	0.14
		Kasilof	0.10	0.02	0.06	0.13		50	12	32	70	0.02
							$CCPUE_i$	525				
7/24-8/2	n=429	Crescent	0.05	0.02	0.03	0.08		28	9	14	42	0.01
	n_{eff}=391	West	0.04	0.01	0.02	0.06		20	7	11	33	0.01
		JCL	0.05	0.01	0.03	0.08		29	7	19	41	0.01
		SusYen	0.06	0.02	0.03	0.09		32	10	18	49	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.02	0.01	0.00	0.04		11	7	1	24	0.00
		Kenai	0.69	0.03	0.64	0.74		376	16	349	402	0.15
		Kasilof	0.09	0.02	0.06	0.13		50	11	32	69	0.02
							$CCPUE_i$	546				
							$CCPUE_f$	1,961				

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			Stock composition				Stock-specific *CCPUE*					
			Within date range					Within date range				Within
Date		Reporting			90% CI					90% CI		year
range	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
						2008						
7/1–7	n=422	Crescent	0.03	0.01	0.02	0.05		17	6	8	28	0.01
	n_{eff}=418	West	0.11	0.02	0.07	0.15		55	12	37	76	0.04
		JCL	0.05	0.01	0.04	0.08		28	6	18	39	0.02
		SusYen	0.04	0.02	0.02	0.08		23	10	8	40	0.01
		Fish	0.01	0.01	0.00	0.03		7	4	2	13	0.00
		KTNE	0.03	0.01	0.02	0.05		16	5	8	26	0.01
		Kenai	0.27	0.03	0.22	0.32		139	15	115	165	0.09
		Kasilof	0.45	0.03	0.40	0.50		236	16	209	262	0.15
							$CCPUE_i$	520				
7/8–12	n=465	Crescent	0.04	0.01	0.02	0.06		15	5	8	23	0.01
	n_{eff}=457	West	0.12	0.02	0.09	0.16		47	8	33	61	0.03
		JCL	0.07	0.01	0.05	0.10		29	6	20	38	0.02
		SusYen	0.10	0.02	0.07	0.14		41	7	29	53	0.03
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.02		2	3	0	8	0.00
		Kenai	0.43	0.03	0.39	0.48		167	11	149	186	0.11
		Kasilof	0.22	0.02	0.18	0.26		86	9	71	102	0.06
							$CCPUE_i$	387				
7/13–17	n=436	Crescent	0.05	0.01	0.03	0.07		17	4	10	24	0.01
	n_{eff}=429	West	0.13	0.02	0.09	0.16		42	7	31	55	0.03
		JCL	0.10	0.02	0.07	0.14		34	7	24	46	0.02
		SusYen	0.05	0.02	0.01	0.09		17	8	4	30	0.01
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.03	0.01	0.01	0.05		9	3	5	15	0.01
		Kenai	0.49	0.03	0.44	0.54		165	10	147	182	0.11
		Kasilof	0.15	0.02	0.11	0.19		49	8	37	62	0.03
							$CCPUE_i$	333				
7/18–31	n=438	Crescent	0.03	0.01	0.01	0.05		9	3	4	15	0.01
	n_{eff}=426	West	0.13	0.02	0.10	0.16		40	5	31	49	0.03
		JCL	0.06	0.01	0.04	0.08		19	4	13	27	0.01
		SusYen	0.04	0.01	0.02	0.06		13	4	7	20	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.02	0.01	0.01	0.03		5	2	2	9	0.00
		Kenai	0.58	0.03	0.54	0.63		184	9	169	199	0.12
		Kasilof	0.14	0.02	0.11	0.18		45	7	34	57	0.03
							$CCPUE_i$	315				
							$CCPUE_f$	1,555				

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Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	95%		Stock-specific *CCPUE*: Within date range: Estimate	SD	90% CI 5%	95%	Within year proportion
						2009						
7/1–5	n=401	Crescent	0.02	0.01	0.00	0.04		7	4	0	14	0.00
	n_{eff}=392	West	0.24	0.03	0.20	0.28		76	8	63	90	0.03
		JCL	0.02	0.01	0.01	0.04		8	3	3	13	0.00
		SusYen	0.00	0.00	0.00	0.01		1	2	0	4	0.00
		Fish	0.03	0.01	0.02	0.05		10	3	5	16	0.00
		KTNE	0.04	0.01	0.02	0.06		14	4	8	21	0.01
		Kenai	0.33	0.03	0.28	0.38		105	10	88	122	0.05
		Kasilof	0.31	0.03	0.26	0.36		98	10	81	115	0.04
							$CCPUE_i$	318				
7/6–9	n=445	Crescent	0.04	0.01	0.02	0.07		19	6	11	29	0.01
	n_{eff}=431	West	0.18	0.03	0.13	0.22		76	11	58	95	0.03
		JCL	0.03	0.02	0.00	0.06		13	7	2	25	0.01
		SusYen	0.09	0.03	0.05	0.14		39	12	20	60	0.02
		Fish	0.01	0.01	0.00	0.03		5	4	0	12	0.00
		KTNE	0.04	0.01	0.02	0.06		17	5	9	25	0.01
		Kenai	0.33	0.03	0.28	0.38		143	14	120	166	0.06
		Kasilof	0.28	0.03	0.23	0.33		122	13	101	143	0.06
							$CCPUE_i$	433				
7/10–13	n=407	Crescent	0.07	0.02	0.04	0.10		28	7	18	39	0.01
	n_{eff}=398	West	0.20	0.03	0.15	0.25		80	12	62	102	0.04
		JCL	0.05	0.02	0.03	0.08		20	6	11	31	0.01
		SusYen	0.09	0.03	0.04	0.14		36	11	18	55	0.02
		Fish	0.01	0.01	0.00	0.03		5	3	0	11	0.00
		KTNE	0.03	0.01	0.01	0.05		12	4	5	19	0.01
		Kenai	0.48	0.03	0.43	0.53		195	13	175	216	0.09
		Kasilof	0.07	0.02	0.04	0.10		29	8	17	42	0.01
							$CCPUE_i$	405				
7/14–16	n=406	Crescent	0.07	0.02	0.04	0.10		29	7	19	41	0.01
	n_{eff}=395	West	0.13	0.02	0.09	0.16		53	9	39	68	0.02
		JCL	0.03	0.01	0.01	0.05		12	4	6	19	0.01
		SusYen	0.06	0.02	0.04	0.09		27	7	16	39	0.01
		Fish	0.01	0.01	0.00	0.03		5	3	0	11	0.00
		KTNE	0.02	0.01	0.01	0.03		8	4	3	15	0.00
		Kenai	0.63	0.03	0.58	0.68		262	13	242	283	0.12
		Kasilof	0.05	0.02	0.03	0.08		23	7	12	34	0.01
							$CCPUE_i$	419				
7/17–22	n=406	Crescent	0.07	0.02	0.05	0.10		27	6	18	38	0.01
	n_{eff}=397	West	0.10	0.03	0.06	0.15		35	10	22	54	0.02
		JCL	0.02	0.01	0.01	0.04		8	4	2	16	0.00
		SusYen	0.07	0.03	0.02	0.11		24	9	9	39	0.01
		Fish	0.01	0.01	0.00	0.02		3	3	0	8	0.00
		KTNE	0.02	0.01	0.01	0.04		8	3	3	14	0.00
		Kenai	0.67	0.03	0.62	0.72		243	11	224	261	0.11
		Kasilof	0.04	0.02	0.01	0.07		15	7	5	27	0.01
							$CCPUE_i$	363				

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Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	95%		Stock-specific *CCPUE*: Within date range: Estimate	SD	90% CI 5%	95%	Within year proportion
7/23–30	n=402	Crescent	0.05	0.02	0.03	0.08		14	4	8	21	0.01
	n_{eff}=324	West	0.12	0.02	0.09	0.16		33	5	24	42	0.12
		JCL	0.04	0.01	0.02	0.06		10	3	4	16	0.04
		SusYen	0.02	0.01	0.01	0.05		6	3	2	13	0.02
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.03	0.01	0.01	0.05		8	3	3	14	0.03
		Kenai	0.72	0.03	0.67	0.77		191	8	178	204	0.72
		Kasilof	0.01	0.02	0.00	0.04		3	4	0	11	0.01
							$CCPUE_i$	266				
							$CCPUE_f$	2,204				
						2010						
7/1–4	n=358	Crescent	0.05	0.01	0.03	0.07		17	5	10	25	0.01
	n_{eff}=357	West	0.16	0.02	0.11	0.20		56	9	41	71	0.03
		JCL	0.03	0.01	0.01	0.04		9	3	5	15	0.01
		SusYen	0.03	0.01	0.01	0.06		12	5	5	20	0.01
		Fish	0.09	0.02	0.07	0.12		34	6	25	44	0.02
		KTNE	0.05	0.01	0.03	0.07		17	5	10	26	0.01
		Kenai	0.46	0.03	0.41	0.51		166	10	149	183	0.09
		Kasilof	0.14	0.02	0.11	0.17		49	7	38	61	0.03
							$CCPUE_i$	360				
7/5–10	n=464	Crescent	0.02	0.01	0.01	0.03		6	3	2	11	0.00
	n_{eff}=464	West	0.17	0.02	0.14	0.21		68	8	55	81	0.04
		JCL	0.04	0.01	0.02	0.05		15	4	9	21	0.01
		SusYen	0.05	0.01	0.03	0.07		19	5	11	27	0.01
		Fish	0.06	0.01	0.04	0.08		24	4	17	32	0.01
		KTNE	0.05	0.01	0.03	0.07		19	4	12	27	0.01
		Kenai	0.50	0.02	0.45	0.54		194	10	177	210	0.11
		Kasilof	0.12	0.02	0.09	0.15		46	6	36	57	0.02
							$CCPUE_i$	390				
7/11–16	n=448	Crescent	0.03	0.01	0.02	0.04		12	3	7	18	0.01
	n_{eff}=448	West	0.13	0.02	0.10	0.16		55	7	44	67	0.03
		JCL	0.03	0.01	0.02	0.04		12	3	7	18	0.01
		SusYen	0.04	0.01	0.02	0.05		15	4	8	23	0.01
		Fish	0.01	0.01	0.01	0.03		6	3	2	11	0.00
		KTNE	0.04	0.01	0.02	0.05		15	4	9	22	0.01
		Kenai	0.68	0.02	0.64	0.72		284	10	267	300	0.15
		Kasilof	0.05	0.01	0.03	0.07		21	5	14	29	0.01
							$CCPUE_i$	419				
7/17–23	n=390	Crescent	0.04	0.01	0.02	0.06		11	3	6	17	0.01
	n_{eff}=389	West	0.12	0.02	0.10	0.15		38	6	29	47	0.02
		JCL	0.05	0.01	0.03	0.07		16	4	10	22	0.01
		SusYen	0.03	0.01	0.02	0.05		11	3	6	17	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.03	0.01	0.01	0.04		8	3	4	13	0.00
		Kenai	0.71	0.02	0.67	0.75		218	7	205	230	0.12
		Kasilof	0.02	0.01	0.01	0.04		6	2	3	11	0.00
							$CCPUE_i$	308				

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Date range	n; n_{eff}	Reporting group	Stock composition: Within date range: Proportion	SD	90% CI 5%	95%		Stock-specific CCPUE: Within date range: Estimate	SD	90% CI 5%	95%	Within year proportion
7/24–29	n=426	Crescent	0.03	0.01	0.02	0.05		12	3	7	18	0.01
	n_{eff}=426	West	0.11	0.02	0.09	0.14		41	6	32	52	0.02
		JCL	0.02	0.01	0.01	0.03		7	2	3	11	0.00
		SusYen	0.02	0.01	0.01	0.03		6	3	3	11	0.00
		Fish	0.00	0.00	0.00	0.01		1	1	0	3	0.00
		KTNE	0.01	0.01	0.00	0.02		4	2	1	7	0.00
		Kenai	0.78	0.02	0.74	0.81		284	8	271	297	0.15
		Kasilof	0.03	0.01	0.01	0.04		10	3	5	15	0.01
							$CCPUE_i$	365				
							$CCPUE_f$	1,842				
						2011						
7/1–13	n=453	Crescent	0.04	0.01	0.03	0.06		47	12	29	69	0.01
	n_{eff}=449	West	0.22	0.02	0.19	0.26		249	24	211	289	0.07
		JCL	0.03	0.01	0.02	0.05		36	10	21	53	0.01
		SusYen	0.08	0.02	0.06	0.11		95	18	66	126	0.03
		Fish	0.03	0.01	0.02	0.05		36	9	22	52	0.01
		KTNE	0.02	0.01	0.01	0.04		27	10	13	45	0.01
		Kenai	0.48	0.02	0.44	0.52		544	28	498	590	0.15
		Kasilof	0.08	0.01	0.06	0.11		92	15	68	119	0.02
							$CCPUE_i$	1,126				
7/14–18	n=428	Crescent	0.03	0.01	0.02	0.04		32	10	18	50	0.01
	n_{eff}=423	West	0.13	0.02	0.10	0.16		148	19	117	180	0.04
		JCL	0.02	0.01	0.01	0.04		25	9	12	41	0.01
		SusYen	0.04	0.01	0.02	0.06		44	12	26	66	0.01
		Fish	0.02	0.01	0.01	0.03		22	8	11	36	0.01
		KTNE	0.02	0.01	0.01	0.04		24	9	10	40	0.01
		Kenai	0.72	0.02	0.68	0.76		830	26	786	872	0.22
		Kasilof	0.02	0.01	0.01	0.04		27	9	14	43	0.01
							$CCPUE_i$	1,152				
7/19–24	n=383	Crescent	0.02	0.01	0.01	0.03		15	6	7	26	0.00
	n_{eff}=382	West	0.15	0.02	0.12	0.18		120	15	96	146	0.03
		JCL	0.00	0.00	0.00	0.01		3	3	0	9	0.00
		SusYen	0.04	0.01	0.02	0.06		30	9	16	46	0.01
		Fish	0.00	0.00	0.00	0.01		3	3	0	8	0.00
		KTNE	0.01	0.01	0.00	0.02		7	4	1	15	0.00
		Kenai	0.76	0.02	0.72	0.80		609	19	577	639	0.16
		Kasilof	0.02	0.01	0.01	0.04		17	7	7	30	0.00
							$CCPUE_i$	803				
7/25–30	n=387	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=387	West	0.15	0.02	0.12	0.18		96	12	77	116	0.03
		JCL	0.02	0.01	0.01	0.03		10	4	4	18	0.00
		SusYen	0.04	0.01	0.02	0.06		27	7	16	40	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		Kenai	0.78	0.02	0.74	0.81		493	14	470	516	0.13
		Kasilof	0.01	0.01	0.00	0.03		8	4	3	16	0.00
							$CCPUE_i$	634				
							$CCPUE_f$	3,715				

Note: *CCPUE* is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% CI may not include the point estimate for the very low $CCPUE_i$ estimates because fewer than 5% of iterations had values above zero.

Appendix C2.–Reporting group stock composition estimates (proportion), standard deviations (SD), 90% credibility intervals (CI), sample size (n), and effective sample size (n_{eff}) for spatially grouped mixtures (station) of sockeye salmon captured in the southern offshore test fishery from 2010 and 2011.

			Stock composition				Stock-specific *CCPUE*					
			Within station				Within station					Within
		Reporting			90% CI					90% CI		year
Station	n; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	proportion
						2010						
4	n=222	Crescent	0.05	0.02	0.03	0.08		8	3	4	13	0.00
	n_{eff}=222	West	0.10	0.02	0.06	0.14		16	4	10	23	0.01
		JCL	0.04	0.01	0.02	0.06		6	2	3	10	0.00
		SusYen	0.04	0.02	0.02	0.07		7	3	3	12	0.00
		Fish	0.04	0.01	0.02	0.06		6	2	3	10	0.00
		KTNE	0.03	0.01	0.01	0.06		6	2	2	10	0.00
		Kenai	0.63	0.03	0.58	0.69		105	6	96	114	0.06
		Kasilof	0.07	0.02	0.04	0.10		11	3	7	17	0.01
							$CCPUE_i$	166				
5	n=296	Crescent	0.02	0.01	0.01	0.03		5	2	2	9	0.00
	n_{eff}=296	West	0.10	0.02	0.07	0.14		29	6	21	39	0.02
		JCL	0.02	0.01	0.01	0.03		5	2	2	10	0.00
		SusYen	0.04	0.01	0.02	0.06		11	4	5	17	0.01
		Fish	0.02	0.01	0.01	0.04		7	3	3	11	0.00
		KTNE	0.04	0.01	0.02	0.06		10	3	5	16	0.01
		Kenai	0.69	0.03	0.64	0.74		195	8	182	208	0.11
		Kasilof	0.07	0.02	0.05	0.10		21	4	14	29	0.01
							$CCPUE_i$	282				
6	n=487	Crescent	0.02	0.01	0.01	0.03		8	3	4	13	0.00
	n_{eff}=486	West	0.13	0.02	0.11	0.16		55	7	44	66	0.03
		JCL	0.04	0.01	0.03	0.06		17	4	11	24	0.01
		SusYen	0.04	0.01	0.02	0.06		17	4	10	24	0.01
		Fish	0.05	0.01	0.03	0.07		20	4	14	27	0.01
		KTNE	0.03	0.01	0.02	0.05		13	3	8	20	0.01
		Kenai	0.63	0.02	0.59	0.66		262	10	245	277	0.14
		Kasilof	0.06	0.01	0.04	0.08		26	5	18	35	0.01
							$CCPUE_i$	417				
6.5	n=528	Crescent	0.01	0.01	0.00	0.02		6	2	2	10	0.00
	n_{eff}=528	West	0.15	0.02	0.12	0.18		66	8	54	79	0.04
		JCL	0.04	0.01	0.03	0.06		20	4	13	27	0.01
		SusYen	0.04	0.01	0.02	0.05		16	4	10	23	0.01
		Fish	0.04	0.01	0.02	0.05		16	4	10	22	0.01
		KTNE	0.03	0.01	0.02	0.04		12	3	7	18	0.01
		Kenai	0.64	0.02	0.60	0.67		284	10	267	300	0.15
		Kasilof	0.06	0.01	0.04	0.08		27	5	19	35	0.01
							$CCPUE_i$	445				
7	n=381	Crescent	0.05	0.01	0.03	0.07		18	5	11	26	0.01
	n_{eff}=380	West	0.15	0.02	0.12	0.19		59	8	46	73	0.03
		JCL	0.02	0.01	0.01	0.04		9	3	4	14	0.00
		SusYen	0.04	0.01	0.02	0.05		14	4	8	21	0.01
		Fish	0.02	0.01	0.01	0.04		9	3	5	15	0.00
		KTNE	0.03	0.01	0.02	0.05		13	4	7	20	0.01
		Kenai	0.60	0.03	0.56	0.65		237	11	219	254	0.13
		Kasilof	0.08	0.02	0.06	0.11		33	6	24	43	0.02
							$CCPUE_i$	392				

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Appendix C2.–Page 2 of 3.

Station	n; n_{eff}	Reporting group	Stock composition: Within station: Proportion	SD	90% CI 5%	90% CI 95%		Stock-specific *CCPUE*: Within station: Estimate	SD	90% CI 5%	90% CI 95%	Within year proportion
						2010						
8	n=172	Crescent	0.09	0.02	0.05	0.13		12	3	7	18	0.01
	n_{eff}=172	West	0.15	0.03	0.10	0.21		21	5	14	29	0.01
		JCL	0.01	0.01	0.00	0.03		2	1	0	5	0.00
		SusYen	0.01	0.01	0.00	0.04		2	2	0	5	0.00
		Fish	0.03	0.01	0.01	0.06		4	2	2	8	0.00
		KTNE	0.05	0.02	0.02	0.09		8	3	3	13	0.00
		Kenai	0.58	0.04	0.52	0.65		81	6	72	90	0.04
		Kasilof	0.06	0.02	0.03	0.10		9	3	5	14	0.00
							$CCPUE_i$	139				
							$CCPUE_f$	1,842				
						2011						
4	n=130	Crescent	0.00	0.01	0.00	0.02		1	1	0	3	0.00
	n_{eff}=128	West	0.11	0.03	0.07	0.16		22	5	13	31	0.01
		JCL	0.02	0.01	0.01	0.05		5	3	1	9	0.00
		SusYen	0.03	0.02	0.01	0.07		7	4	2	14	0.00
		Fish	0.02	0.01	0.01	0.05		5	3	1	10	0.00
		KTNE	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		Kenai	0.76	0.04	0.69	0.82		148	8	135	160	0.04
		Kasilof	0.04	0.02	0.02	0.08		8	4	3	15	0.00
							$CCPUE_i$	194				
5	n=256	Crescent	0.00	0.00	0.00	0.00		0	1	0	2	0.00
	n_{eff}=253	West	0.13	0.02	0.10	0.17		87	14	65	111	0.02
		JCL	0.03	0.01	0.01	0.05		19	7	8	32	0.01
		SusYen	0.07	0.02	0.04	0.11		47	12	29	68	0.01
		Fish	0.02	0.01	0.01	0.04		15	6	6	26	0.00
		KTNE	0.02	0.01	0.01	0.04		15	7	6	28	0.00
		Kenai	0.66	0.03	0.61	0.71		430	20	396	462	0.12
		Kasilof	0.06	0.02	0.04	0.09		38	10	23	56	0.01
							$CCPUE_i$	651				
6	n=428	Crescent	0.02	0.01	0.01	0.03		16	8	6	30	0.00
	n_{eff}=425	West	0.16	0.02	0.13	0.19		161	19	131	193	0.04
		JCL	0.01	0.01	0.01	0.02		15	6	6	26	0.00
		SusYen	0.05	0.01	0.03	0.07		50	12	31	72	0.01
		Fish	0.01	0.01	0.00	0.02		12	5	5	22	0.00
		KTNE	0.02	0.01	0.01	0.04		25	9	11	41	0.01
		Kenai	0.68	0.02	0.64	0.72		702	25	661	742	0.19
		Kasilof	0.04	0.01	0.03	0.06		45	11	28	65	0.01
							$CCPUE_i$	1,026				
6.5	n=349	Crescent	0.01	0.01	0.00	0.03		11	5	4	21	0.00
	n_{eff}=348	West	0.18	0.02	0.15	0.22		142	17	116	171	0.04
		JCL	0.03	0.01	0.01	0.04		20	7	10	33	0.01
		SusYen	0.04	0.01	0.02	0.06		33	9	19	50	0.01
		Fish	0.01	0.00	0.00	0.01		5	3	1	11	0.00
		KTNE	0.02	0.01	0.01	0.03		14	6	5	25	0.00
		Kenai	0.69	0.03	0.65	0.73		544	20	510	577	0.15
		Kasilof	0.03	0.01	0.01	0.04		20	7	10	33	0.01
							$CCPUE_i$	790				

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Station	n; n_{eff}	Reporting group	Stock composition: Within station: Proportion	SD	90% CI 5%	95%	Stock-specific *CCPUE*: Within station	Estimate	SD	90% CI 5%	95%	Within year proportion
						2011						
7	n=343	Crescent	0.03	0.01	0.02	0.05		28	9	15	43	0.01
	n_{eff}=380	West	0.18	0.02	0.15	0.22		155	18	126	185	0.04
		JCL	0.02	0.01	0.01	0.03		16	7	7	29	0.00
		SusYen	0.04	0.01	0.02	0.07		37	11	20	57	0.01
		Fish	0.02	0.01	0.01	0.03		17	7	8	29	0.00
		KTNE	0.00	0.00	0.00	0.00		1	2	0	4	0.00
		Kenai	0.67	0.03	0.62	0.71		572	23	534	608	0.15
		Kasilof	0.04	0.01	0.02	0.05		30	9	17	47	0.01
							$CCPUE_i$	855				
8	n=145	Crescent	0.11	0.03	0.06	0.16		21	5	12	30	0.01
	n_{eff}=172	West	0.20	0.03	0.15	0.26		39	7	29	51	0.01
		JCL	0.01	0.01	0.00	0.02		1	1	0	4	0.00
		SusYen	0.05	0.02	0.02	0.09		10	4	4	17	0.00
		Fish	0.01	0.01	0.00	0.03		3	2	0	6	0.00
		KTNE	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		Kenai	0.61	0.04	0.54	0.68		118	8	104	132	0.03
		Kasilof	0.01	0.01	0.00	0.03		2	2	0	6	0.00
							$CCPUE_i$	194				
							$CCPUE_f$	3,710				

Note: *CCPUE* is cumulative catch per unit effort. Effective sample size (n_{eff}) is the number of samples successfully screened from each stratum after excluding individuals with <80% of all markers that could be scored. Proportions for a given mixture may not sum to 1 due to rounding error. The 90% CI may not include the point estimate for the very low *CCPUE* estimates because fewer than 5% of iterations had values above zero.