Fishery Data Series No. 16-43

Migratory Timing and Abundance Estimates for Sockeye Salmon in Upper Cook Inlet, Alaska, 2014

by

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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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TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDICES (Continued)

Appendix **Page**

ABSTRACT

Two offshore test fisheries (OTF) operated during the 2014 Upper Cook Inlet (UCI) commercial salmon fishing season. In 2014, the southern OTF was conducted from 1 July through 1 August and captured 3,366 sockeye salmon *Oncorhynchus nerka* representing 2,505 catch per unit of effort (CPUE) index points. The midpoint of the 2014 sockeye salmon run at the southern OTF occurred on 16 July. Two formal inseason estimates of the 2014 run size were made on 21 and 23 July; the 23 July analysis predicted a total run to UCI of 5.8 to 9.1 million sockeye salmon. The best-fit total run estimate deviated from the actual total run of 5.28 million fish by 72%. Two inseason estimates were made for the Kenai River sockeye salmon run on 21 and 23 July; the 23 July analysis predicted a total run to the Kenai River ranging between 2.67 and 5.65 million fish. The best-fit Kenai River total run estimate from this analysis (5.65 million fish) differed from the actual total run of 3.28 million fish by 72%. 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. The northern OTF stations were modified in 2014 to consist of 2 transects running across UCI from the Blanchard Line to the north end of Kalgin Island and from the south end of Kalgin Island back to the Kenai Peninsula. In 2014, the northern OTF operated from July 1 through July 30 and captured 2,362 sockeye salmon. In 2014, the MSA sampling for both OTF projects was expanded to include all coho salmon *O. kisutch* captured to estimate 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 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 are used to help 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 fishing 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; Dupuis et al. 2015).

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. In 2014, this vessel fished 8 stations along 2 transects running from Kalifornsky Beach to the northern tip of Kalgin Island (Stations 2–5; north Kalgin transect) and from the southern tip of Kalgin Island to Clam Gulch Beach (Stations 8–11; Figure 2). This differed from previous years in that Stations 1, 6, and 7 were omitted (Dupuis and Willette 2014) and a second transect was added (Stations 8, 9, 10, and 11). The modification to the northern OTF was made because it was believed that, due to the lack of fish encountered at the omitted stations (Dupuis et al. 2015), ADF&G could more efficiently gather spatial and temporal information by adding the second transect. Stations 2–5 are referred to as the north Kalgin transect and Stations 8–11 are referred to as the south Kalgin transect. This project was funded through capital improvement project (CIP) monies provided by the Alaska Legislature. This report presents the results of the 2014 northern and southern offshore test fishing projects, as well as current and historic genetic stock identification information collected from the test fisheries.

OBJECTIVES

The objectives of the southern OTF project were as follows:

1. Develop an inseason estimate of the 2014 UCI sockeye salmon total run,
2. Develop an inseason estimate for the 2014 Kenai River sockeye salmon total run, and
3. Estimate the spatial and temporal distribution of various sockeye salmon and coho *O. kisutch* salmon 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 current southern OTF 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 northern OTF sampled fish passing through the Central District by fishing 8 geographically fixed stations on 2 transect lines (Figure 2). The drift gillnet vessel F/V *Ryan J* 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 vessels F/V *Lady Alyce* and F/V *Americanus* were contracted by ADF&G to fish 8 stations along the 2 northern OTF transects on a daily schedule similar to the fishing pattern of the southern OTF. Sampling for both vessels started on 1 July; the southern OTF project concluded on 1 August and the northern OTF concluded on 30 July.

The following physical and chemical measurements 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.

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

Tide stage was classified as 1 (high slack), 2 (low slack), 3 (flooding), or 4 (ebbing) by observing the movement of the vessel and drifting the gillnet. 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 (°C), salinity (ppt), chlorophyll *a* (mg/m^{-3}), oxygen (% saturation) and phytosynthetically active radiation (PAR, % surface maximum) throughout the water column. The CTD was lowered to within about 3 m of the bottom and retrieved at 1 m/sec. In this report, cross-sections of monthly mean parameter distributions along the south Kalgin and north Kalgin transects 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 (mid-eye to tail fork) to the nearest mm.

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

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

Mean fishing time (MFT) was:

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

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, because it was during the time it was being retrieved. MFT was therefore 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:

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

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

$$CCPUE_d = \sum_{i=1}^{d} CPUE_i \; , \qquad (4)$$

Where day (d) was 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 2014, 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 ADF&G staff in Soldotna.

For sockeye salmon captured in the northern OTF, consecutive daily samples from all stations were combined to form 5 temporal mixtures with a sample size goal of 400 individuals. Samples were also combined across all test fishery days by station to form 11 additional mixtures. For sockeye salmon captured in the southern OTF, fish were randomly selected in proportion to CPUE at each station to form a single mixture to represent the entire season for all stations. The target sample size within strata was set at 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 24 sockeye salmon SNP markers (3 mitochondrial and 21 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 2014 offshore test fishery samples.

Statistical Analysis

Barclay et al. (2010a) methods for data retrieval and quality control established a threshold of 80% of all markers that could be scored per individual 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 2014 offshore test fishery 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 (proof test). 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 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), 2 additional populations in the West reporting group (Harriet Creek and Packers Lake late run), and a subset of 24 SNP markers to test for MSA performance and analyze the samples collected in the southern OTF and northern OTF for 2014. Methods for testing baseline performance with the reduced 24 SNP baseline follow methods reported in Barclay and Habicht (2012).

The stock composition of all test fishery mixtures was estimated using the BAYES protocol (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 (Barclay et al. 2010a; Table 1). For the analysis of southern OTF, the informative prior was defined as the previous year's offshore test fishery all season mixture posterior distribution.

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 fishing data, as described in Mundy (1979):

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

Where $Y_{yr,d}$ was 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 on day (d), 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 Mundy (1979):

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

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 was estimated cumulative catchability as of day (d), and r_d was 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 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 passage to date included estimated passage into all monitored systems (Susitna, Kenai, and Kasilof rivers, and Fish Creek) and unmonitored systems, which are assumed to be 15% of the passage 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 fishing transect line into UCI, was:

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

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

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

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.

The last day of test fishing typically occurs on 30 July each year, which means the “tail-end” of the sockeye salmon run is not assessed by the project. In 2014, the southern OTF project ended on 1 August, but escapement monitoring continued through 7 August in the Kasilof River, 14 August in the Kenai River, 11 September at Fish Creek and into the mid-August at Judd, Chelatna, and Larson lakes. In addition, commercial fishing also continued into September.

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 $CCPUE_f^h$ was 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 $CCPUE_t^r$ was 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 Alaska Board of Fisheries. 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*). Total Susitna River sockeye escapement (E_S) was estimated by expanding the sum of weir counts at Chelatna (E_C) and Judd (E_J) lakes by a factor of 2.3 and the Larson lake weir count (E_L) by a factor of 1.9; i.e.,

$$E_S = ((E_C + E_J) \cdot 2.3) + (E_L \cdot 1.9)\,. \tag{15}$$

The expansion factor for Chelatna and Judd lakes was estimated from mark–recapture studies conducted in 2007–2012 (Yanusz et al. 2007, 2011a, 2011b; Willette et al. 2016) and the expansion factor for Larson Lake was estimated from mark-recapture studies conducted in 2006–2008 (Yanusz et al. 2007, 2011a, 2011b).

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* posttest-fishery adjustment.

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

PROJECTING THE KENAI RIVER RUN

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 *CCPUED* curves from the top 5 best fits of previous year's test fishery data were used to project the *CCPUEF* for 2014, 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 (TRK_d) was 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 was 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 (PK_d) by reviewing previous years' data for runs of similar timing. The total Kenai River run (TRK_f) was estimated from

$$TRK_f = ((TR_f - r_d) \cdot PK_d) + TRK_d . \qquad (16)$$

RESULTS AND DISCUSSION

TEST FISHING

In 2014, the southern OTF boat fished all of the possible 192 gillnet sets (i.e., 6 possible sets per day for 32 days; Table 2). A total of 3,366 sockeye salmon were captured during the 2014 test fishery, as well as 848 pink salmon *O. gorbuscha*, 579 chum salmon *O. keta*, 752 coho salmon and 4 Chinook salmon *O. tshawytscha* (Tables 2–4; Appendices A1–A13). Sockeye salmon daily catches ranged from 10 fish on 27 July to 368 fish on 7 July. The sockeye salmon *CCPUEF* for the 2014 project was 2,505, with daily CPUE values ranging from 8 to 240 (Table 2). Linear regression of historic data showed that the 1992–2014 annual test fishery unadjusted *CCPUEF* and the total annual run of sockeye salmon to UCI (Figure 4) were significantly (α = 0.05) correlated (P = 0.024 and r^2 = 0.22), with 78% of the variation unexplained. Because so much of the variation remains unexplained, the southern OTF *CCPUEF* by itself may not be a reliable predictor of the total annual sockeye salmon run.

In 2014, mechanical difficulties prevented the northern OTF boat from fishing 37 of the possible 240 stations. A total of 2,362 sockeye salmon were estimated to have been captured during the 2014 northern offshore test fishery, as well as 1,027 pink salmon, 584 chum salmon, 399 coho salmon, and 3 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 (from days where all stations were fished) ranged from 19 fish on 2 July to 240 fish on 22 July. The total sockeye salmon CPUE for the 2014 project was 1,782; daily CPUE values from days when all stations were fished ranged from 15 to 159 (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 2 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 is also considered to help predict UCI run timing (Willette et al. 2010).

The first formal abundance estimate of the 2014 UCI sockeye salmon run occurred on 21 July, using commercial, sport and personal use harvests, escapement, and test fishery data through 21 July (Table 5). The 2014 test fishery *CCPUED* curve was mathematically compared to run curves from 1979 through 2012 (no estimate was made for 2013), and estimates are ranked from best to worst based on *MSE*. The passage rate was estimated to be 1,825 based on a run of 3.62 million fish through 21 July (includes residual fish abundance in the district). The 2014 test fishery *CCPUED* curve most closely tracked the 2006 run, estimating a *CCPUEF* of 5,210 index points. Given a passage rate of 1,825, the total run estimate was 9.51 million fish. As cautioned earlier, the first best fit (lowest *MSE*) on approximately 20 July often turns out not to be the best fit at the end of July, so the top 5 fits were considered, which included run timing curves from 1994, 2005, 1983, and 1997 (in order of best fit). Using these data, total run estimates ranged from 7.14 to 5.00 million sockeye salmon. The best fits included runs from on time to 9 days late.

The second formal estimate of the total run of sockeye salmon to UCI in 2014 occurred on 23 July (Table 5). At that time, the run to date was estimated at 3.83 million fish, with a *CCPUED* of 2,159. The passage rate was therefore estimated to be 1,776 fish per CPUE point. The *CCPUED* curve continued to most closely track the 2006 run, and projected a *CCPUEF* of 5,126 and a total run of 9.10 million fish. The top 5 best fits tracked runs that were on time to 9 days late and projected a total run to UCI ranging from 9.10 to 4.86 million fish.

The total sockeye salmon run to UCI in 2014 (postseason data) was estimated at approximately 5.28 million fish, including commercial, sport, and personal use harvests, as well as escapement to all systems (Table 6; Shields and Dupuis 2015). Therefore, the first best fit total run estimates from the 2 formal inseason projections of the 2014 run were approximately 80% and 72% higher, respectively, than the actual run size. However, because the top 5 best fits from each analysis were given careful consideration inseason, the range in error from these projections are highlighted here. Based on data through 21 July, the difference between the projected total run to UCI and the actual value ranged from 5% to 80%. Using the test fishery data through 23 July, the error ranged from 8% to 72%.

Using the 21 July total UCI run estimate, the total Kenai River sockeye salmon run was projected to range between 2.83 and 5.98 million fish (Table 7). Assuming 1.66 million Kenai River sockeye salmon had returned to date, that meant 1.17 to 4.33 million fish remained in the run. The preseason forecast for the Kenai River had projected a total run of 3.8 million fish, requiring commercial fisheries management to follow guidelines for a run of 2.3 to 4.6 million sockeye salmon. Three of the 5 best-fit estimates from the 21 July assessment projected a Kenai River run between 2.3 and 4.6

million fish; the remaining estimates projected a run above 4.6 million fish. The 21 July assessment indicated to staff that the appropriate commercial fishery management approach would be to continue to follow the guidelines for a run to the Kenai River of between 2.3 and 4.6 million fish. A few days later (on 23 July), the Kenai River run assessment was updated. The top 5 best fits tracked runs that were classified from on time to 9 days late. The total Kenai River run was projected to range between 2.67 and 5.65 million fish (Table 7). Approximately 1.80 million sockeye salmon had already been accounted for in the run to date, which left 0.87 to 3.85 million Kenai River fish remaining in the 2014 run. The estimate on 23 July corroborated the decision to manage the commercial fishery based on a Kenai River sockeye salmon run of between 2.3 and 4.6 million fish. Using postseason data, the 2014 sockeye salmon run to the Kenai River was estimated to be approximately 3.28 million fish (Shields and Dupuis 2015).

OTF ERROR

OTF run forecast errors are largely a function of errors in estimating *CCPUEF*, which result from the algorithm that fits the current year's cumulative *CPUE* to run timing curves from earlier years. Early in the season, the curve fitting algorithm tends to estimate that the current year's run timing curve best fits curves from previous years with later run timings resulting in over estimates of *CCPUEF*. Thus, forecast errors for total run, *CCPUEF* and run timing tend to be positive early in the season, decreasing significantly as the season progresses (Figure 5). After approximately 23 July, run forecast errors tend to stabilize within plus or minus 20%. Mean absolute percent errors (MAPE) average 40% from 19 July to 23 July, 9% from 24 July to 26 July and 7% from 27 July to 31 July (1996–2014). Prior to 24 July, the model tends to over forecast small runs and more accurately forecast large runs; whereas, forecast errors from 24 July to 26 July are weakly positively related to run size, and forecast errors from 27 July to 31 July are not related to run size (Figure 6). Prior to 24 July, forecast MAPE is also a function of actual run timing (Table 6; Figure 7). MAPE is 34% for early runs and 15% for on-time or late runs. Forecast errors are also a function of actual run size.

In 2014, the first best-fit estimates for both 21 July and 23 July were the least accurate. For both estimates, the model chose the 2006 sockeye salmon run as the best fit. The 2006 run was unusually late and there was little confidence among management staff that a run with the characteristics of 2006 would be realized in 2014. This highlights the importance of considering the top 5 best-fit estimators as the remaining 4 produced more reasonable estimates of the total run.

RUN TIMING

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 8). Beginning in 2002, the total run method was used to make postseason adjustments to all previous years' *CCPUEF* statistics (Shields 2003).

For the 2014 season, the test fishery *CCPUEF* of 2,505 was adjusted to 2,769 based on the number of fish that were commercially harvested and escaped after the test fishery ceased (Table 8). Therefore, this method estimated that approximately 7% of the sockeye salmon run occurred after the test fishery terminated (Appendix A14). Historical *a* and *b* coefficients calculated using total run-adjusted *CCPUEF* values are now used for all inseason run projections.

A nonlinear mathematical model (Mundy 1979) was fit to the *CCPUED* proportions of the 2014 sockeye salmon run to UCI. Using the total run-adjusted *CCPUEF*, this analysis suggested that 7% of the run had passed the OTF transect line prior to the start of test fishing on 1 July, and that the run was approximately 94% complete at project termination on 1 August (Appendix A14). Therefore, the mathematical model suggests the 2014 test fishery covered approximately 87% of the run. The test fishery passage rate for the season can be calculated by dividing the total number available to capture by the test fishery by the unadjusted *CCPUEF*. In 2014, the estimated final passage rate was approximately 1,665.

The midpoint of the 2014 UCI sockeye salmon run, or the day on which approximately 50% of the total run had entered UCI at the test fishery transect, occurred on day 23.1, or 16 July, which was 1 day late compared to the historical mean date of 15 July (Table 9).

ENVIRONMENTAL VARIABLES

In 2014, surface water temperatures measured along the southern OTF transect ranged from 6.7°C to 13.1°C and averaged 10.9°C for the year (Appendices A15–A16). These water temperature data were slightly higher than the 1992–2013 average surface water temperature of 10.3°C (Appendix A17). Air temperatures ranged from 9°C to 18°C and averaged 12.8°C. Wind velocity averaged 6 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 2014 seasonal average salinity of 31.4 ppt was slightly higher than the 1992–2013 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 2014 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 2004–2013, the average secchi disk depth was 8.0 m at Station 4 and decreased to 3.1 m at Station 8. Finally, Station 4 was the shallowest station, averaging 24.9 fathoms (149 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 in 2014 indicated a surface layer of relatively turbid, warm, low salinity water along the eastern side of Kalgin Island (Figures 8 and 9). This layer was evident along both the north and south Kalgin transects (Figure 2), but temperatures were warmer and salinities lower in this layer along the north Kalgin transect. A core of relatively low temperature, high salinity water was evident along both transects near the center of the inlet below about 10 m depth. Oxygen saturation and chlorophyll *a* levels were generally higher near this core of cooler water at depth. Monthly mean temperatures were slightly warmer and salinities higher throughout the water column along the north transect east of Kalgin Island in 2014 (Figure 8) compared with 2013 (Dupuis et al. 2015). In our study, Stations 5 and 8 were located near the west rip, Stations 3, 4, 9, and10 were located near the mid-channel rip, and Stations 2 and11 were located near the east rip as described by Burbank (1977), but the locations of these features moved daily in response to tides and winds. Monthly mean sockeye, pink and chum salmon CPUE (Appendix B) were generally highest near the mid-channel rip (Stations 3, 4, 9, and10), whereas monthly mean coho salmon CPUE was highest near the west rip (Stations 5 and 8).

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, whereas 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.

Although 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 Executive Summary Appendix C).

Genetic Stock Identification Tissue Sampling and Analyses

For the 2014 southern OTF, tissues suitable for genetic analysis were sampled from 2,472 sockeye salmon; of the 2,472 samples collected, 400 were analyzed (Table 10). For the 2014 northern OTF, tissues suitable for genetic analysis were sampled from 2,218 sockeye salmon; of the 2,218 samples collected, 2,000 of them were analyzed (Table 11).

A total of 2,400 sockeye salmon were genotyped from the 2014 offshore test fishery collections. Failure rates for the southern and northern OTF collections were 1.45% and 1.77% and discrepancy rates were 0.78% and 0.72%, respectively. Assuming equal error rates in the original and the quality-control analyses, estimated error rates in the samples is half of the discrepancy rate (0.39% and 0.36%).

Data retrieval and quality control results for the baseline collections are reported in Barclay and Habicht (2012). Based upon the 80% marker rule, 1.38% 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.

In the 8 reporting group proof tests used to test the baseline for MSA performance with a reduced marker set, all reporting groups were highly identifiable. Mean point estimate for correct assignment for each reporting group was ≥95% (range: 95–99%). Credibility intervals of correct assignments for all reporting groups ranged within 6% of the point estimates and lower intervals never dropped below 90%.

Genetic information has been collected and analyzed from the southern OTF since 2006 (Table 10; Appendix D1). 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% of the total CPUE from 2006 to 2014 (Table 10; Appendix D1). Spatial data were collected from the southern OTF from 2010 to 2012 (Appendix D2). 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.

The northern OTF project has been in operation since 2012, therefore the MSA data are limited. Temporal data from 2012 to 2014 shows that Kenai River sockeye salmon were the dominant stock throughout the month of July (Table 11; Appendix D3), which is similar to data collected at the southern OTF for these years. The 2012 MSA results showed that Kenai River sockeye salmon remained the dominant stock across the inlet from East to West (Stations 1–7). However, in 2013, Kenai River sockeye salmon were the dominant stock only at Stations 1–4, whereas Stations 5–7 were dominated by West, JCL, and SusYen stocks, combined. Although West, JCL, and SusYen made up a large proportion of the CCPUEI at Stations 5–7, the CPUE for West, JCL, and SusYen fish at these stations only accounted for 4% of the total CCPUEF at all stations in 2013 (Appendix D4). In 2014, Kenai River sockeye salmon were the dominant stock across both transects (north and south Kalgin transects; Table 12). On both transects, the proportion of West Cook Inlet stocks increased from East to West. The south Kalgin transect had a slightly higher proportion of Kasilof River sockeye salmon when compared to the north Kalgin transect and this proportion decreased from East to West.

In 2014, 756 coho salmon were sampled from the southern OTF project and 388 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. Because 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, 2014.

		Reporting group							
Test fishery	Date	Crescent	West	JCL	SusYen	Fish	KTNE	Kenai	Kasilof
Southern offshore test fishery (all stations)	July 1–30, 2014	0.01	0.10	0.05	0.05	0.00	0.02	0.71	0.05
Northern offshore test fishery (Station 2)	July 1–30, 2014	0.00	0.01	0.02	0.02	0.00	0.01	0.90	0.03
Northern offshore test fishery (Station 3)	July 1–30, 2014	0.00	0.05	0.06	0.03	0.00	0.03	0.80	0.02
Northern offshore test fishery (Station 4)	July 2–30, 2014	0.00	0.14	0.12	0.07	0.00	0.04	0.61	0.02
Northern offshore test fishery (Station 5)	July 2–30, 2014	0.00	0.26	0.27	0.23	0.00	0.02	0.20	0.01
Northern offshore test fishery (Station 8)	July 1–29, 2014	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 9)	July 1–30, 2014	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 10)	July 1–30, 2014	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (Station 11)	July 1–30, 2014	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Northern offshore test fishery (all stations)	July 1–7,2014	0.00	0.14	0.12	0.08	0.00	0.06	0.55	0.04
Northern offshore test fishery (all stations)	July 8–15, 2014	0.00	0.21	0.04	0.05	0.00	0.02	0.49	0.19
Northern offshore test fishery (all stations)	July 16–20, 2014	0.00	0.15	0.01	0.11	0.00	0.02	0.58	0.13
Northern offshore test fishery (all stations)	July 21–24, 2014	0.00	0.18	0.02	0.23	0.00	0.03	0.45	0.10
Northern offshore test fishery (all stations)	July 25–30, 2014	0.00	0.11	0.02	0.04	0.00	0.01	0.81	0.01

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 and cumulative catch, CPUE, and mean fish length, Upper Cook Inlet southern offshore test fishery project, 2014.

Date	number of stations	Mean fishing time (min)	Catch		CPUE		mean length (mm)
			Daily	Cum	Daily	Cum	
1 July	6	232.5	60	60	40	40	560
2 July	6	221.5	29	89	23	63	544
3 July	6	227.5	55	144	42	105	555
4 July	6	243.0	148	292	103	208	556
5 July	6	244.0	180	472	116	324	560
6 July	6	236.0	117	589	87	411	569
7 July	6	253.0	368	957	216	627	567
8 July	6	219.0	16	973	13	640	555
9 July	6	224.0	101	1,074	91	731	560
10 July	6	204.5	57	1,131	42	772	557
11 July	6	240.5	64	1,195	47	819	562
12 July	6	220.0	27	1,222	19	838	563
13 July	6	219.5	273	1,495	240	1,078	561
14 July	6	224.0	24	1,519	18	1,096	559
15 July	6	216.0	113	1,632	75	1,171	551
16 July	6	253.0	157	1,789	116	1,287	554
17 July	6	253.0	321	2,110	174	1,462	562
18 July	6	233.5	327	2,437	216	1,677	564
19 July	6	219.5	211	2,648	169	1,846	552
20 July	6	240.5	54	2,702	40	1,886	552
21 July	6	237.0	109	2,811	76	1,962	553
22 July	6	124.0	87	2,898	125	2,087	560
23 July	6	226.5	71	2,969	51	2,138	566
24 July	6	115.5	77	3,046	113	2,251	562
25 July	6	191.0	40	3,086	35	2,286	564
26 July	6	220.5	44	3,130	33	2,320	564
27 July	6	219.0	10	3,140	8	2,328	544
28 July	6	189.5	35	3,175	32	2,360	568
29 July	6	202.0	15	3,190	19	2,379	556
30 July	6	227.5	90	3,280	65	2,444	562
31 July	6	206.0	24	3,304	19	2,463	561
1 August	6	238.0	62	3,366	43	2,505	561

Table 3.–Estimated sockeye salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	6	40	0	1	10	3	60
2 July	0	17	0	0	2	10	29
3 July	30	0	8	7	6	4	55
4 July	12	12	10	80	18	16	148
5 July	13	9	127	21	2	8	180
6 July	1	14	48	21	16	17	117
7 July	0	240	97	12	17	2	368
8 July	0	8	1	4	2	1	16
9 July	21	30	30	9	10	1	101
10 July	1	0	47	0	2	7	57
11 July	0	34	0	3	9	18	64
12 July	27	0	0	0	0	0	27
13 July	88	86	0	98	1	0	273
14 July	0	15	0	0	1	8	24
15 July	3	2	80	1	1	26	113
16 July	6	38	22	48	32	11	157
17 July	39	250	1	3	6	22	321
18 July	5	21	135	113	20	33	327
19 July	1	28	63	60	58	1	211
20 July	3	2	11	3	27	8	54
21 July	1	28	3	8	62	7	109
22 July	15	1	21	21	12	17	87
23 July	8	0	31	9	23	0	71
24 July	3	45	5	14	2	8	77
25 July	13	1	0	21	3	2	40
26 July	1	0	0	0	12	31	44
27 July	0	0	1	2	5	2	10
28 July	0	27	0	4	4	0	35
29 July	0	0	1	4	0	10	15
30 July	0	0	8	32	20	30	90
31 July	0	3	1	10	2	8	24
1 August	0	35	7	11	2	7	62
Total	297	986	758	620	387	318	3,366
%	9%	29%	23%	18%	11%	9%	100%

Table 4.–Estimated sockeye salmon CPUE, by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	2	28	0	1	8	2	40
2 July	0	13	0	0	2	8	23
3 July	22	0	6	6	5	3	42
4 July	9	10	8	51	14	12	103
5 July	10	7	76	15	2	6	116
6 July	1	11	35	16	12	13	87
7 July	0	131	61	10	13	2	216
8 July	0	6	1	3	2	1	13
9 July	16	30	30	7	8	1	91
10 July	2	0	32	0	2	6	42
11 July	0	23	0	3	7	14	47
12 July	19	0	0	0	0	0	19
13 July	64	110	0	65	1	0	240
14 July	0	11	0	0	1	6	18
15 July	2	2	48	1	4	18	75
16 July	13	26	17	32	21	8	116
17 July	27	122	1	2	5	17	174
18 July	13	16	80	69	16	23	216
19 July	1	28	43	66	31	1	169
20 July	2	2	9	2	19	6	40
21 July	1	21	2	6	40	6	76
22 July	24	2	33	29	15	21	125
23 July	6	0	22	7	15	0	51
24 July	5	64	8	19	3	14	113
25 July	13	4	0	15	2	2	35
26 July	1	0	0	0	10	23	33
27 July	0	0	1	2	4	2	8
28 July	0	25	0	3	3	0	32
29 July	0	0	1	3	0	15	19
30 July	0	0	6	23	15	21	65
31 July	0	2	1	8	2	7	19
1 August	0	22	5	8	2	6	43
Total	253	715	524	469	283	262	2,505
%	10%	29%	21%	19%	11%	10%	100%

Table 5.–Total run estimates for sockeye salmon to Upper Cook Inlet, 2014.

Based on data through 7/21/2014	
Escapement	1,241,977
Cumulative catch (commercial, sport, & personal use)	2,218,000
Residual in district	158,085
Total run through 7/21/2014 =	3,618,062
2014 cumulative OTF CPUE through 7/21 =	1,983
Passage rate (total run/cumulative CPUE) through 7/21 =	1,825

Run estimates based on model results (fit of current year to past years)

	Mean sum	Estimated total CPUE				Estimated
Year	of squares	Current	Previous day	Difference	Timing	total run
2006	0.000403	5,210	5,264	-54	Late 9 days	9,505,669
1994	0.000603	3,914	3,937	-24	Late 4 days	7,140,993
2005	0.000713	4,155	4,163	-8	Late 7 days	7,581,692
1983	0.001059	2,742	2,738	4	On Time	5,002,285
1997	0.001076	3,187	3,178	9	Late 1 day	5,814,881
1987	0.001079	3,637	3,693	-56	Late 2 days	6,636,380
1998	0.001089	3,139	3,130	9	Late 3 days	5,727,704
2007	0.001093	3,608	3,663	-55	Late 4 days	6,583,614
2004	0.001200	3,156	3,187	-31	Late 2 days	5,759,050
1991	0.001196	3,124	3,161	-38	Late 2 days	5,699,369
1986	0.001378	2,694	2,682	12	Late 1 day	4,915,018
1995	0.001420	2,638	2,647	-9	On Time	4,812,898
2003	0.001459	2,476	2,470	5	Early 2 days	4,516,830
1982	0.001537	2,749	2,733	15	Late 2 days	5,015,039
1993	0.001608	2,540	2,524	16	Early 1 day	4,634,823
1996	0.001731	2,344	2,331	13	Early 2 days	4,276,921
1999	0.001989	3,357	3,433	-77	Late 3 days	6,124,195
2009	0.002014	2,256	2,237	19	Early 2 days	4,116,544
1985	0.002249	2,586	2,561	25	On Time	4,718,588
2012	0.002323	2,391	2,393	-3	Early 1 day	4,361,653
1988	0.002500	2,502	2,475	27	Early 2 days	4,565,637
1992	0.002631	3,254	3,335	-81	Late 2 days	5,936,942
2000	0.002686	2,143	2,124	19	Early 2 days	3,909,879
2002	0.002863	2,169	2,139	30	Early 1 days	3,956,770
1990	0.002892	3,844	3,990	-146	Late 3 days	7,013,256
2001	0.003171	2,152	2,120	32	Early 2 days	3,926,993
2011	0.003210	2,909	2,967	-58	Late 2 days	5,307,403
2010	0.004360	2,523	2,483	40	Early 1 day	4,602,657
1984	0.006757	2,062	2,017	45	Early 4 days	3,762,675
1989	0.007208	2,588	2,535	53	On Time	4,722,620
2008	0.011173	2,115	2,061	54	Early 4 days	3,859,595
1979	0.013071	1,840	1,786	54	Early 5 days	3,357,153
1981	0.035955	1,676	1,610	66	Early 9 days	3,057,874
1980	0.037480	1721.22	1654.35	67	Early 9 days	3,140,434

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Table 5.–Page 2 of 2.

Based on data through 7/23/2014						
Escapement						1,394,939
Cumulative catch (commercial, sport, & personal use)						2,355,000
Residual in district						84,583
Total run through 7/23/2014 =						3,834,522
2014 cumulative OTF CPUE through 7/23 =						2,159
Passage rate (total run/cumulative CPUE) through 7/23 =						1,776
Run estimates based on model results (fit of current year to past years)						
	Mean sum	Estimated total CPUE				Estimated
Year	of squares	Current	Previous day	Difference	Timing	total run
2006	0.000474	5,126	5,206	-80	Late 9 days	9,104,335
1994	0.000650	3,870	3,911	-41	Late 4 days	6,873,474
2005	0.000712	4,122	4,152	-30	Late 7 days	7,321,451
1983	0.001016	2,734	2,740	-5	On Time	4,856,523
1997	0.001030	3,178	3,184	-6	Late 1 day	5,645,131
1998	0.001041	3,132	3,137	-5	Late 3 days	5,561,975
1987	0.001273	3,571	3,635	-64	Late 2 days	6,341,863
2007	0.001284	3,543	3,606	-63	Late 4 days	6,292,897
1991	0.001286	3,059	3,093	-34	Late 2 days	5,432,873
1986	0.001291	2,713	2,707	6	Late 1 day	4,818,995
2004	0.001296	3,117	3,154	-38	Late 2 days	5,535,139
1995	0.001307	2,629	2,635	-6	On Time	4,668,420
2003	0.001363	2,492	2,486	6	Early 2 days	4,425,081
1982	0.001446	2,772	2,765	7	Late 2 days	4,923,463
1993	0.001558	2,570	2,559	12	Early 1 day	4,565,035
1996	0.001705	2,374	2,361	13	Early 2 days	4,216,927
2009	0.002106	2,298	2,279	18	Early 2 days	4,080,916
2012	0.002133	2,399	2,395	3	Early 1 day	4,259,907
1985	0.002214	2,628	2,612	17	On Time	4,667,923
1999	0.002388	3,229	3,292	-63	Late 3 days	5,735,639
1988	0.002512	2,550	2,530	20	Early 2 days	4,528,573
2000	0.002844	2,188	2,167	21	Early 2 days	3,886,756
1992	0.003073	3,125	3,187	-63	Late 2 days	5,549,507
2002	0.003235	2,228	2,201	27	Early 1 days	3,956,858
2011	0.003369	2,824	2,865	-40	Late 2 days	5,016,209
2001	0.003610	2,215	2,187	28	Early 2 days	3,934,106
1990	0.003880	3,604	3,719	-115	Late 3 days	6,401,326
2010	0.004410	2,589	2,561	28	Early 1 day	4,598,638
1989	0.007251	2,677	2,639	38	On Time	4,754,257
1984	0.007644	2,146	2,108	38	Early 4 days	3,811,593
2008	0.011959	2,212	2,168	44	Early 4 days	3,929,062
1979	0.015292	1,942	1,895	48	Early 5 days	3,449,472
1980	0.040477	1,845	1787	58	Early 9 days	3,277,353
1981	0.181900	1,799	1741	58	Early 9 days	3,194,979

Table 6.–Absolute percent error (APE) using the first best fit estimate of southern test fishery data, on or after July 20, to project the total annual UCI sockeye salmon run, 1988–2014.

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	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
2013	–	–	–	–
2014	5.28	9.10	71.7%	1 day late
			Mean APE	Median APE
		All runs	23%	13%
		On time +	15%	13%
		All early	34%	19%

Table 7.–Projected total Kenai River sockeye salmon run (millions) estimated from total southern offshore test fishery CPUE and age composition stock allocation, 2014.

Data through 21 July

		Est. total OTF CPUE				Estimated	Estimated	Estimated	Estimated		Estimated	Estimated
Year	MSS	Current	Prev. day	Timing	Passage rate	UCI Total run	UCI run to date[a]	UCI run remaining	Kenai run to date	Prop. Kenai	Kenai run remaining	total Kenai return
2006	0.00040	5,210	5,264	Late 9 days	1,825	9.51	3.33	6.18	1.657	70%	4.33	5.98
1994	0.00060	3,914	3,937	Late 4 days	1,825	7.14	3.33	3.82	1.657	70%	2.67	4.33
2005	0.00071	4,155	4,163	Late 7 days	1,825	7.58	3.33	4.26	1.657	70%	2.98	4.64
1983	0.00106	2,742	2,738	On Time	1,825	5.00	3.33	1.68	1.657	70%	1.17	2.83
1997	0.00108	3,187	3,178	Late 1 day	1,825	5.81	3.33	2.49	1.657	70%	1.74	3.40

Data through 23 July

		Est. total OTF CPUE				Estimated	Estimated	Estimated	Estimated		Estimated	Estimated
Year	MSS	Current	Prev. day	Timing	Passage rate	UCI Total run	UCI run to date[a]	UCI run remaining	Kenai run to date	Prop. Kenai	Kenai run remaining	total Kenai return
2006	0.00047	5,126	5,206	Late 9 days	1,776	9.10	3.61	5.50	1.80	70%	3.85	5.65
1994	0.00065	3,870	3,911	Late 4 days	1,776	6.87	3.61	3.26	1.80	70%	2.29	4.09
2005	0.00071	4,122	4,152	Late 7 days	1,776	7.32	3.61	3.71	1.80	70%	2.60	4.40
1983	0.00102	2,734	2,740	On Time	1,776	4.86	3.61	1.25	1.80	70%	0.87	2.67
1997	0.00103	3,178	3,184	Late 1 day	1,776	5.65	3.61	2.04	1.80	70%	1.43	3.23

Note: MSS is the mean sum of squares

[a] Does not include residual fish still resident in the Central District.

Table 8.–The final unadjusted CPUE and total-run adjusted CPUE for the southern offshore test fishery; the corresponding *a* and *b* are coefficients for the equations used to describe the run timing curves, 1979–2014.

Year	Final unadjusted OTF CPUE	Final Total-run adjusted OTF CPUE	Total-run adjusted *a*	Total-run adjusted *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
2013[a]	1,342	-	-	-
2014	2,505	2,769	-3.9579	0.1711

[a] No estimate for 2013 due to the high number of missed fishing days.

Table 9.–Mean date of the sockeye salmon run across the southern offshore test fishery transect, 1979–2014.

	Mean date[a]	
Year	Coded	Calendar
1979	16.7	10 Jul
1980	13.9	7 Jul
1981	13.9	7 Jul
1982	22.8	16 Jul
1983	22.7	16 Jul
1984	18.5	12 Jul
1985	21.9	15 Jul
1986	22.5	15 Jul
1987	26.0	19 Jul
1988	21.5	14 Jul
1989	21.8	15 Jul
1990	25.8	19 Jul
1991	24.1	17 Jul
1992	24.4	17 Jul
1993	21.7	15 Jul
1994	27.4	20 Jul
1995	22.2	15 Jul
1996	20.8	14 Jul
1997	24.7	18 Jul
1998	24.5	18 Jul
1999	24.7	18 Jul
2000	19.8	13 Jul
2001	19.5	13 Jul
2002	19.7	13 Jul
2003	21.5	14 Jul
2004	24.4	17 Jul
2005	28.5	22 Jul
2006	31.2	24 Jul
2007	25.9	19 Jul
2008	18.4	11 Jul
2009	20.3	13 Jul
2010	21.5	14 Jul
2011	24.1	17 Jul
2012	21.2	14 Jul
2013[b]	–	–
2014	23.1	16 Jul
Average	22.3	15 Jul

[a] Coded date 1 (June 24) represents the first day of the sockeye salmon run across the southern OTF transect.

[b] No estimate for 2013 due to the high number of missed fishing days.

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 temporally grouped mixtures (date ranges) of sockeye salmon captured in the southern offshore test fishery, 2014.

2014												
			Stock composition				Stock-specific CCPUE					
			Within date range					Within date range				Within year
Date		Reporting			90% CI					90% CI		
range	*n; n_{eff}*	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	Proportion
All	*n*=400	Crescent	0.04	0.02	0.02	0.08		111	44	46	189	0.04
	n_{eff}=396	West	0.11	0.03	0.07	0.17		287	73	177	414	0.11
		JCL	0.03	0.01	0.01	0.05		69	31	23	123	0.03
		SusYen	0.07	0.03	0.02	0.12		178	79	39	308	0.07
		Fish	0.00	0.00	0.00	0.00		0	3	0	0	0.00
		KTNE	0.02	0.01	0.01	0.04		49	23	18	90	0.02
		Kenai	0.68	0.04	0.61	0.75		1,711	109	1,532	1,891	0.68
		Kasilof	0.04	0.02	0.00	0.08		99	62	0	202	0.04
							$CCPUE_i$	2,505				
							$CCPUE_f$	2,505				

Note: 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. Original genetic stock composition estimates are multiplied by the CCPUE within date ranges and these estimates are divided by the total annual CCPUE (Total CCPUE) for the second set of within year proportions. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

Table 11.–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 ranges) of sockeye salmon captured in the northern offshore test fishery, 2014.

2014												
			Stock composition				Stock-specific CCPUE					
			Within date range				Within date range					Within year
Date range	n; n_{eff}	Reporting group	Proportion	SD	90% CI 5%	90% CI 95%		Estimate	SD	90% CI 5%	90% CI 95%	Proportion
7/1–7	n=431	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=423	West	0.21	0.04	0.14	0.27		78	15	53	102	0.04
		JCL	0.04	0.01	0.03	0.07		17	5	10	25	0.01
		SusYen	0.05	0.03	0.01	0.10		18	11	3	37	0.01
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.02	0.01	0.00	0.05		9	5	2	19	0.00
		Kenai	0.49	0.04	0.42	0.55		183	15	159	208	0.10
		Kasilof	0.19	0.03	0.14	0.24		71	11	54	89	0.04
							$CCPUE_i$	376				
7/8–15	n=420	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=415	West	0.15	0.03	0.11	0.21		57	11	41	78	0.03
		JCL	0.01	0.01	0.00	0.02		2	3	0	8	0.00
		SusYen	0.11	0.03	0.06	0.17		43	13	24	66	0.02
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.02	0.01	0.00	0.04		6	4	1	14	0.00
		Kenai	0.58	0.04	0.51	0.65		217	16	190	243	0.12
		Kasilof	0.13	0.03	0.09	0.18		50	10	34	67	0.03
							$CCPUE_i$	375				
7/16–20	n=417	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=408	West	0.18	0.03	0.14	0.22		63	9	48	79	0.04
		JCL	0.02	0.01	0.01	0.04		7	4	2	15	0.00
		SusYen	0.23	0.04	0.16	0.29		79	14	56	102	0.04
		Fish	0.00	0.01	0.00	0.02		1	3	0	8	0.00
		KTNE	0.03	0.02	0.01	0.06		9	6	3	21	0.01
		Kenai	0.45	0.04	0.38	0.52		156	15	132	180	0.09
		Kasilof	0.10	0.02	0.06	0.14		35	9	21	49	0.02
							$CCPUE_i$	350				
7/21–24	n=431	Crescent	0.00	0.00	0.00	0.00		0	1	0	0	0.00
	n_{eff}=421	West	0.11	0.02	0.07	0.14		44	9	31	59	0.02
		JCL	0.02	0.01	0.00	0.03		7	4	2	14	0.00
		SusYen	0.04	0.02	0.02	0.07		18	7	8	31	0.01
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.01	0.01	0.00	0.03		6	3	1	12	0.00
		Kenai	0.81	0.03	0.76	0.86		335	12	315	354	0.19
		Kasilof	0.01	0.01	0.00	0.03		3	5	0	14	0.00
							$CCPUE_i$	414				

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Table 11.–Page 2 of 2.

2014													
			Stock composition				Stock-specific CCPUE						
			Within date range				Within date range						Within year
Date		Reporting			90% CI					90% CI			
range	$n; n_{eff}$	group	Proportion	SD	5%	95%		Estimate	SD	5%		95%	Proportion
7/25–30	n=301	Crescent	0.00	0.00	0.00	0.00		0	0	0		0	0.00
	n_{eff}=296	West	0.14	0.03	0.09	0.20		38	8	25		53	0.02
		JCL	0.00	0.00	0.00	0.01		0	1	0		3	0.00
		SusYen	0.07	0.03	0.03	0.11		17	7	7		30	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	1	0		0	0.00
		Kenai	0.79	0.04	0.73	0.85		212	10	195		227	0.12
		Kasilof	0.00	0.00	0.00	0.00		0	1	0		0	0.00
							$CCPUE_i$	268					
							$CCPUE_f$	1,782					

Note: 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. Original genetic stock composition estimates are multiplied by the CCPUE within date ranges and these estimates are divided by the total annual CCPUE (Total CCPUE) for the second set of within year proportions. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

Table 12.–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 (Stations) of sockeye salmon captured in the northern offshore test fishery, 2014.

			Stock composition				Stock-specific CCPUE					
			Within station				Within station					Within year
		Reporting			90% CI					90% CI		
Station	*n*; n_{eff}	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	Proportion
2	*n*=214	Crescent	0.00	0.01	0.00	0.00		0	1	0	0	0.00
	n_{eff}=211	West	0.01	0.02	0.00	0.05		2	4	0	10	0.00
		JCL	0.00	0.01	0.00	0.02		1	1	0	4	0.00
		SusYen	0.08	0.03	0.04	0.14		15	6	7	25	0.01
		Fish	0.02	0.02	0.00	0.06		4	4	0	11	0.00
		KTNE	0.04	0.03	0.01	0.09		7	5	2	17	0.00
		Kenai	0.77	0.05	0.69	0.84		143	9	128	156	0.08
		Kasilof	0.08	0.03	0.03	0.13		15	6	6	25	0.01
							$CCPUE_i$	186				
3	*n*=544	Crescent	0.00	0.00	0.00	0.00		0	1	0	0	0.00
	n_{eff}=531	West	0.09	0.02	0.06	0.12		45	11	29	64	0.03
		JCL	0.01	0.01	0.00	0.03		6	5	0	16	0.00
		SusYen	0.08	0.02	0.04	0.12		41	12	23	61	0.02
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.05	0.02	0.02	0.07		24	8	12	39	0.01
		Kenai	0.68	0.04	0.62	0.74		352	18	322	382	0.20
		Kasilof	0.09	0.02	0.06	0.13		49	11	31	69	0.03
							$CCPUE_i$	518				
4	*n*=257	Crescent	0.00	0.00	0.00	0.00		0	1	0	0	0.00
	n_{eff}=252	West	0.13	0.03	0.09	0.18		31	7	20	43	0.02
		JCL	0.03	0.02	0.01	0.06		7	4	2	14	0.00
		SusYen	0.11	0.04	0.05	0.18		25	10	11	44	0.01
		Fish	0.00	0.00	0.00	0.00		0	1	0	0	0.00
		KTNE	0.02	0.02	0.00	0.06		5	5	0	14	0.00
		Kenai	0.64	0.05	0.56	0.72		152	11	133	170	0.09
		Kasilof	0.07	0.03	0.03	0.11		17	6	8	27	0.01
							$CCPUE_i$	237				
5	*n*=122	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=114	West	0.46	0.06	0.35	0.56		43	6	33	53	0.02
		JCL	0.06	0.03	0.02	0.12		6	3	2	12	0.00
		SusYen	0.09	0.05	0.00	0.18		9	5	0	17	0.00
		Fish	0.00	0.00	0.00	0.00		0	0	0	0	0.00
		KTNE	0.00	0.01	0.00	0.00		0	1	0	0	0.00
		Kenai	0.38	0.06	0.28	0.49		36	6	27	46	0.02
		Kasilof	0.01	0.02	0.00	0.04		0	2	0	4	0.00
							$CCPUE_i$	95				

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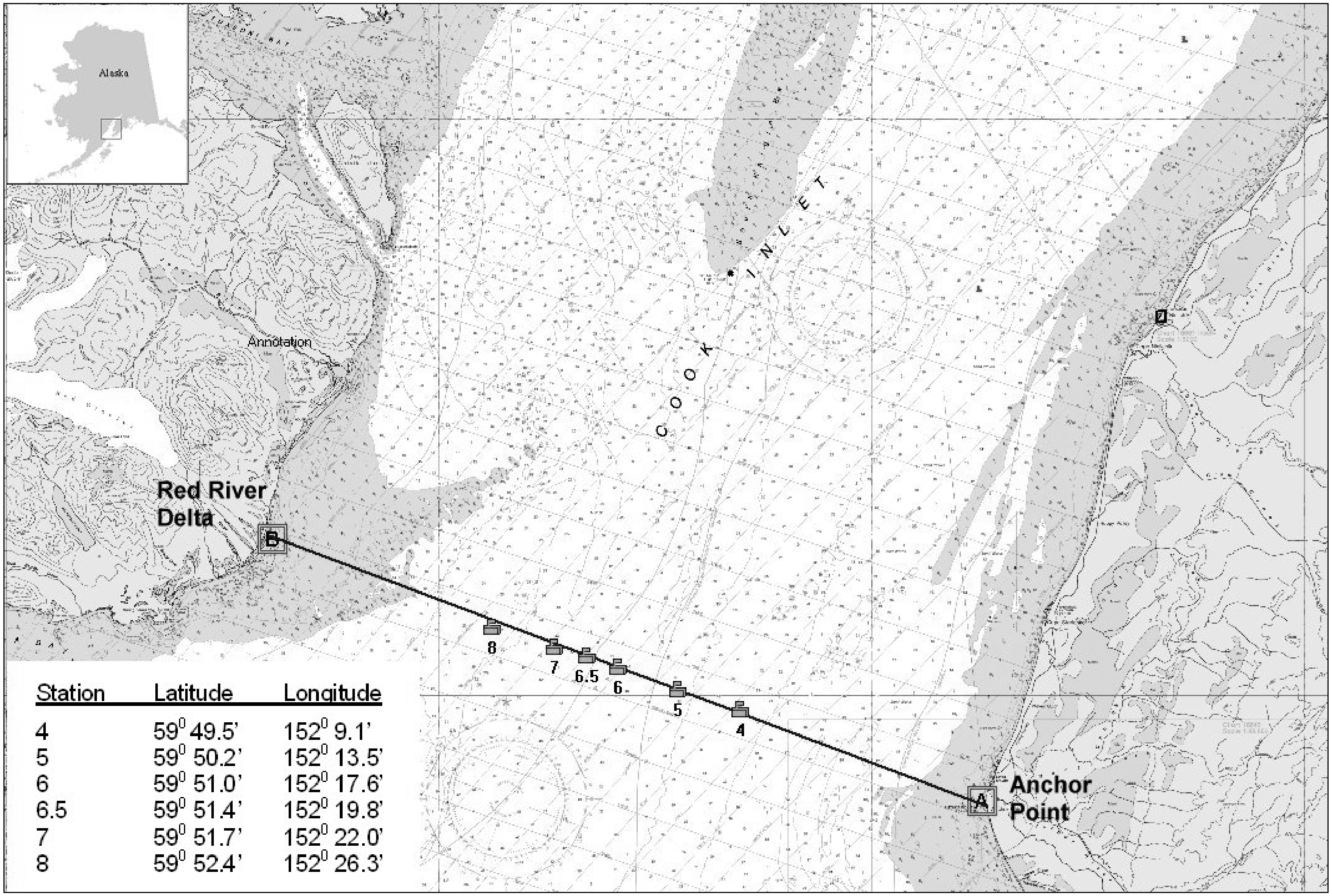
Table 12.–Page 2 of 2.

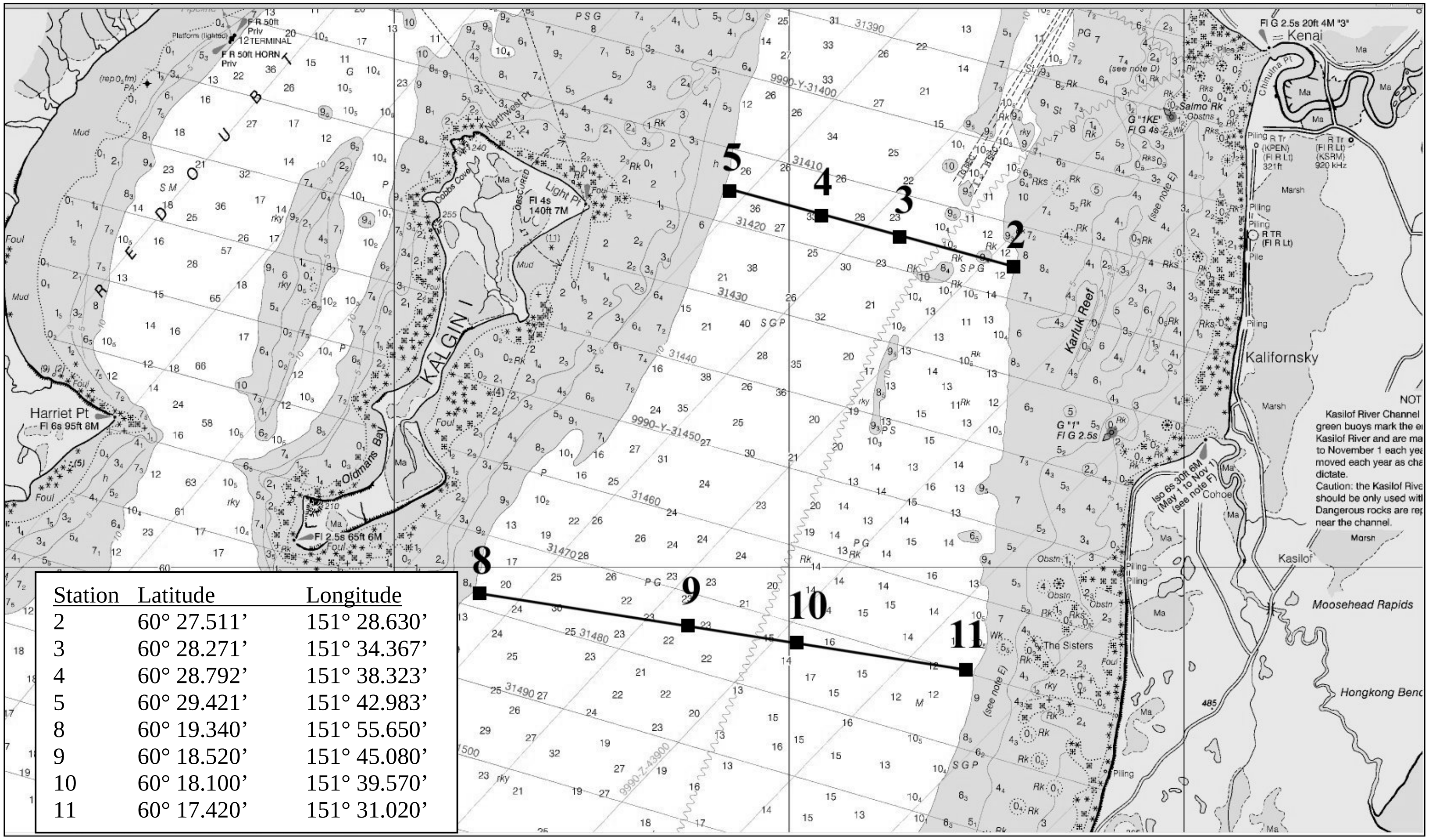
			Stock composition				Stock-specific CCPUE					
			Within station					Within station				Within year
		Reporting			90% CI					90% CI		
Station	*n; n_{eff}*	group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	Proportion
8	*n*=72	Crescent	0.00	0.01	0.00	0.02		0	1	0	2	0.00
	n_{eff}=71	West	0.26	0.07	0.15	0.38		16	4	10	24	0.01
		JCL	0.04	0.03	0.00	0.09		3	2	0	6	0.00
		SusYen	0.06	0.06	0.00	0.18		4	4	0	12	0.00
		Fish	0.00	0.01	0.00	0.01		0	0	0	1	0.00
		KTNE	0.04	0.03	0.00	0.09		2	2	0	6	0.00
		Kenai	0.59	0.09	0.44	0.72		38	5	28	46	0.02
		Kasilof	0.01	0.02	0.00	0.04		0	1	0	3	0.00
							$CCPUE_i$	64				
9	*n*=423	Crescent	0.00	0.00	0.00	0.01		0	1	0	2	0.00
	n_{eff}=420	West	0.17	0.02	0.13	0.21		60	9	46	75	0.03
		JCL	0.02	0.01	0.01	0.04		9	4	3	16	0.00
		SusYen	0.14	0.03	0.09	0.19		49	11	32	67	0.03
		Fish	0.00	0.00	0.00	0.00		0	1	0	1	0.00
		KTNE	0.02	0.01	0.01	0.04		7	3	3	13	0.00
		Kenai	0.59	0.04	0.52	0.64		211	13	189	233	0.12
		Kasilof	0.07	0.02	0.04	0.10		24	7	13	37	0.01
							$CCPUE_i$	361				
10	*n*=233	Crescent	0.00	0.00	0.00	0.01		0	1	0	1	0.00
	n_{eff}=230	West	0.10	0.03	0.06	0.15		21	6	12	31	0.01
		JCL	0.05	0.02	0.02	0.08		10	4	4	16	0.01
		SusYen	0.13	0.04	0.06	0.20		26	9	13	41	0.01
		Fish	0.03	0.02	0.00	0.06		5	3	0	12	0.00
		KTNE	0.01	0.01	0.00	0.03		1	3	0	7	0.00
		Kenai	0.57	0.05	0.49	0.66		117	11	100	134	0.07
		Kasilof	0.12	0.03	0.07	0.17		24	7	13	36	0.01
							$CCPUE_i$	204				
11	*n*=135	Crescent	0.00	0.01	0.00	0.02		0	1	0	3	0.00
	n_{eff}=134	West	0.01	0.02	0.00	0.05		1	2	0	6	0.00
		JCL	0.01	0.02	0.00	0.05		1	2	0	6	0.00
		SusYen	0.06	0.07	0.00	0.21		7	9	0	25	0.00
		Fish	0.00	0.00	0.00	0.01		0	0	0	1	0.00
		KTNE	0.03	0.02	0.01	0.06		3	2	1	7	0.00
		Kenai	0.69	0.08	0.55	0.81		80	9	64	93	0.04
		Kasilof	0.19	0.05	0.12	0.27		22	5	14	31	0.01
							$CCPUE_i$	116				
							$CCPUE_f$	1,782				

Note: 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. Stock-specific CCPUE is derived using non-interpolated CCPUE values.



Station	Latitude	Longitude
4	59^0 49.5’	152^0 9.1’
5	59^0 50.2’	152^0 13.5’
6	59^0 51.0’	152^0 17.6’
6.5	59^0 51.4’	152^0 19.8’
7	59^0 51.7’	152^0 22.0’
8	59^0 52.4’	152^0 26.3’

Figure 1.–Location of the southern offshore test fishery transect and fishing stations in Cook Inlet, Alaska, 2014.



Station	Latitude	Longitude
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’
8	60° 19.340’	151° 55.650’
9	60° 18.520’	151° 45.080’
10	60° 18.100’	151° 39.570’
11	60° 17.420’	151° 31.020’

Figure 2.–Location of the northern offshore test fishery transects and fishing stations in Upper Cook Inlet, Alaska, 2014.

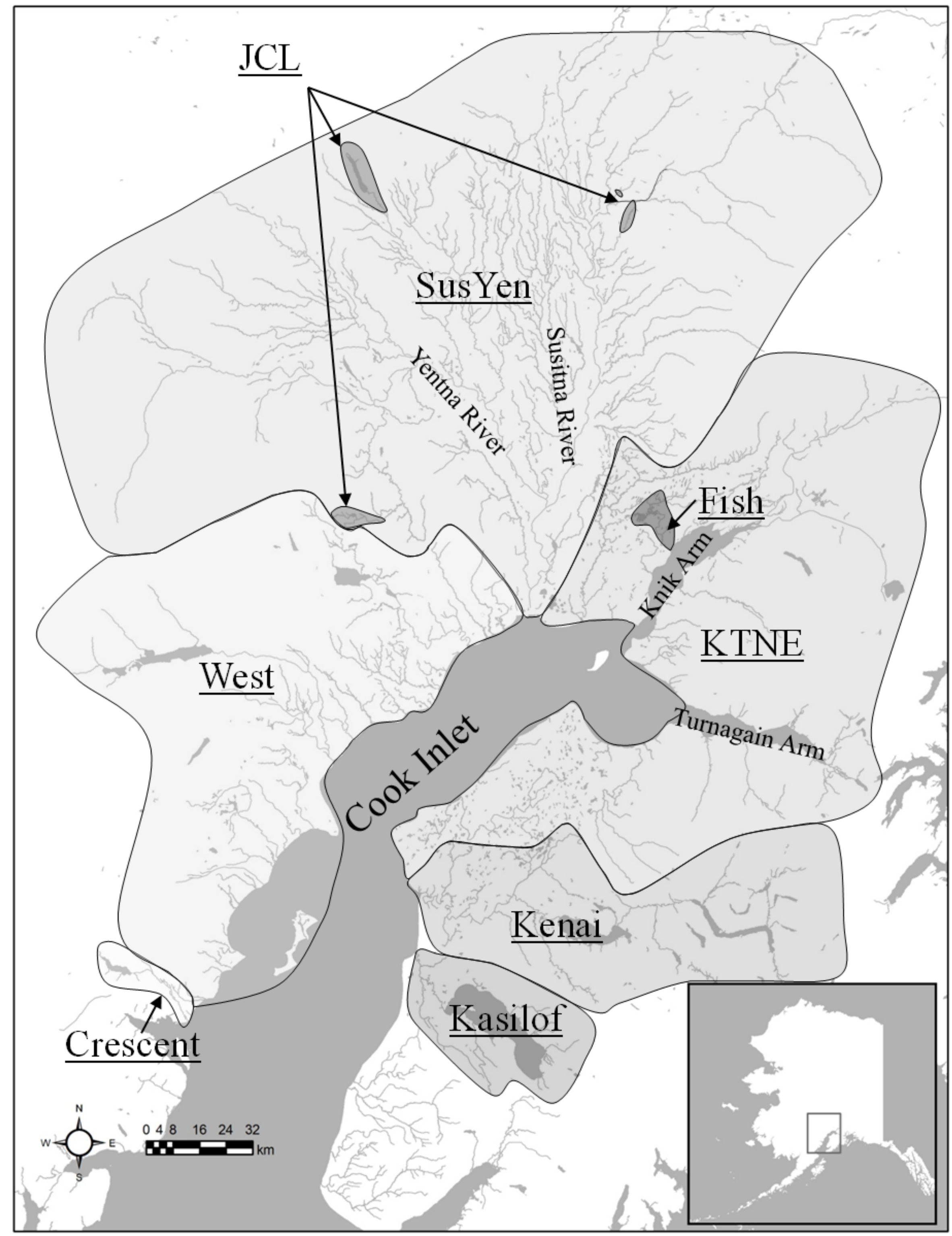


Figure 3.– Map of Upper Cook Inlet showing reporting group areas for mixed stock analysis using genetic markers for sockeye salmon.

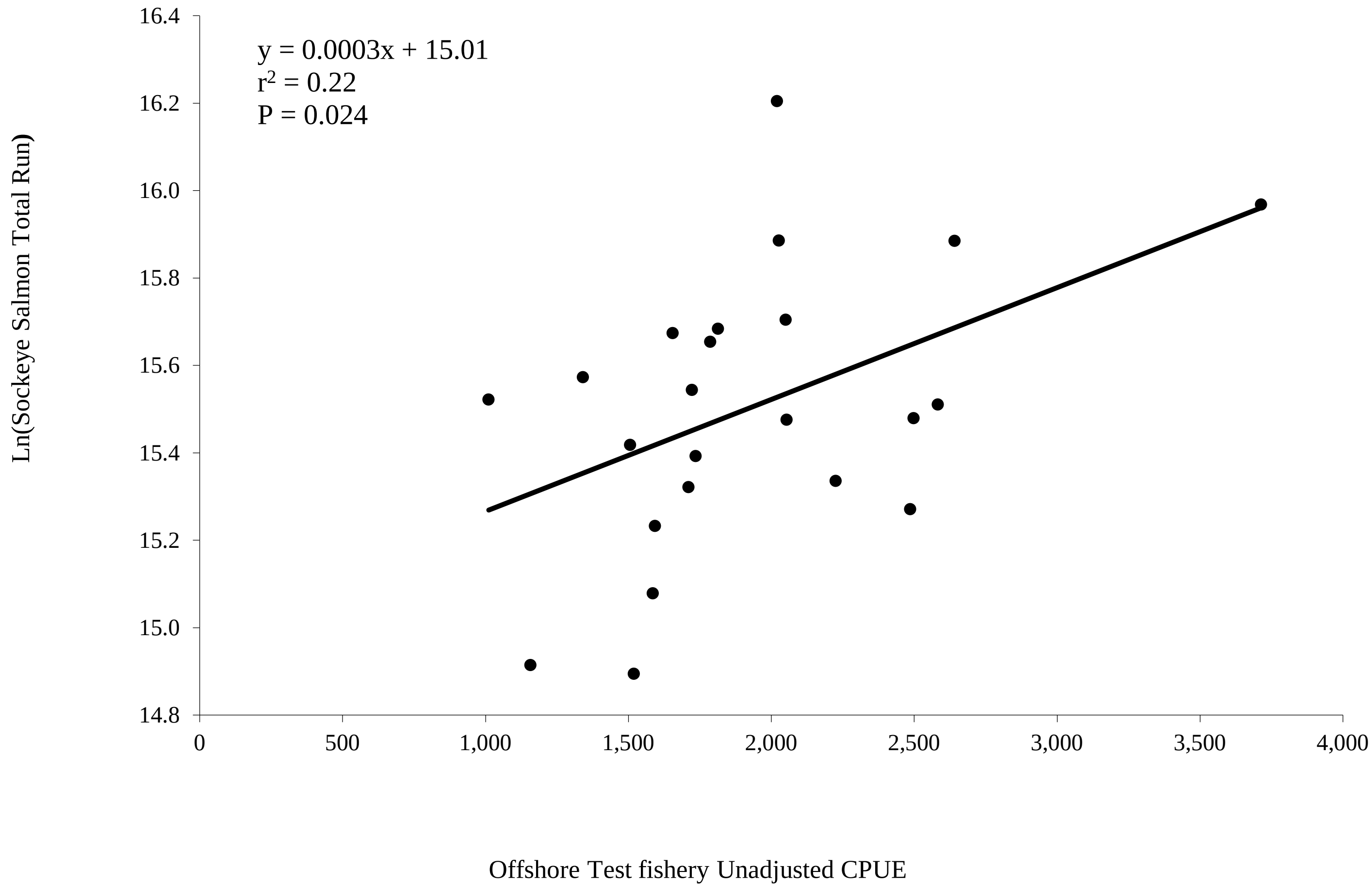


Figure 4.–Linear regression of the relationship between southern offshore test fishery unadjusted cumulative CPUE and Upper Cook Inlet logged sockeye salmon total annual run, 1992–2014.

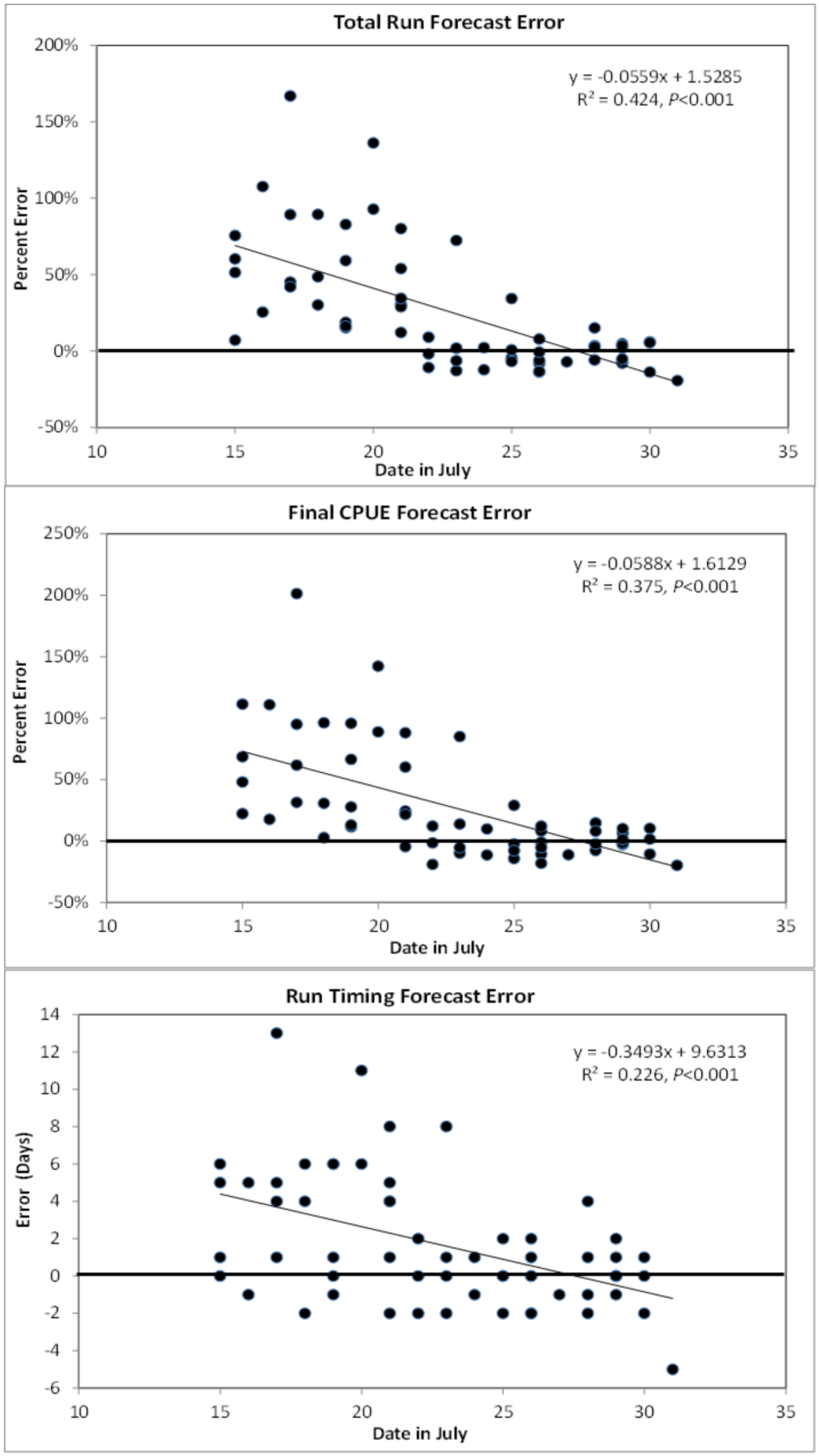


Figure 5.–Relationships between run forecast, final CPUE forecast and run timing forecast errors and date in July when the forecasts were generated.

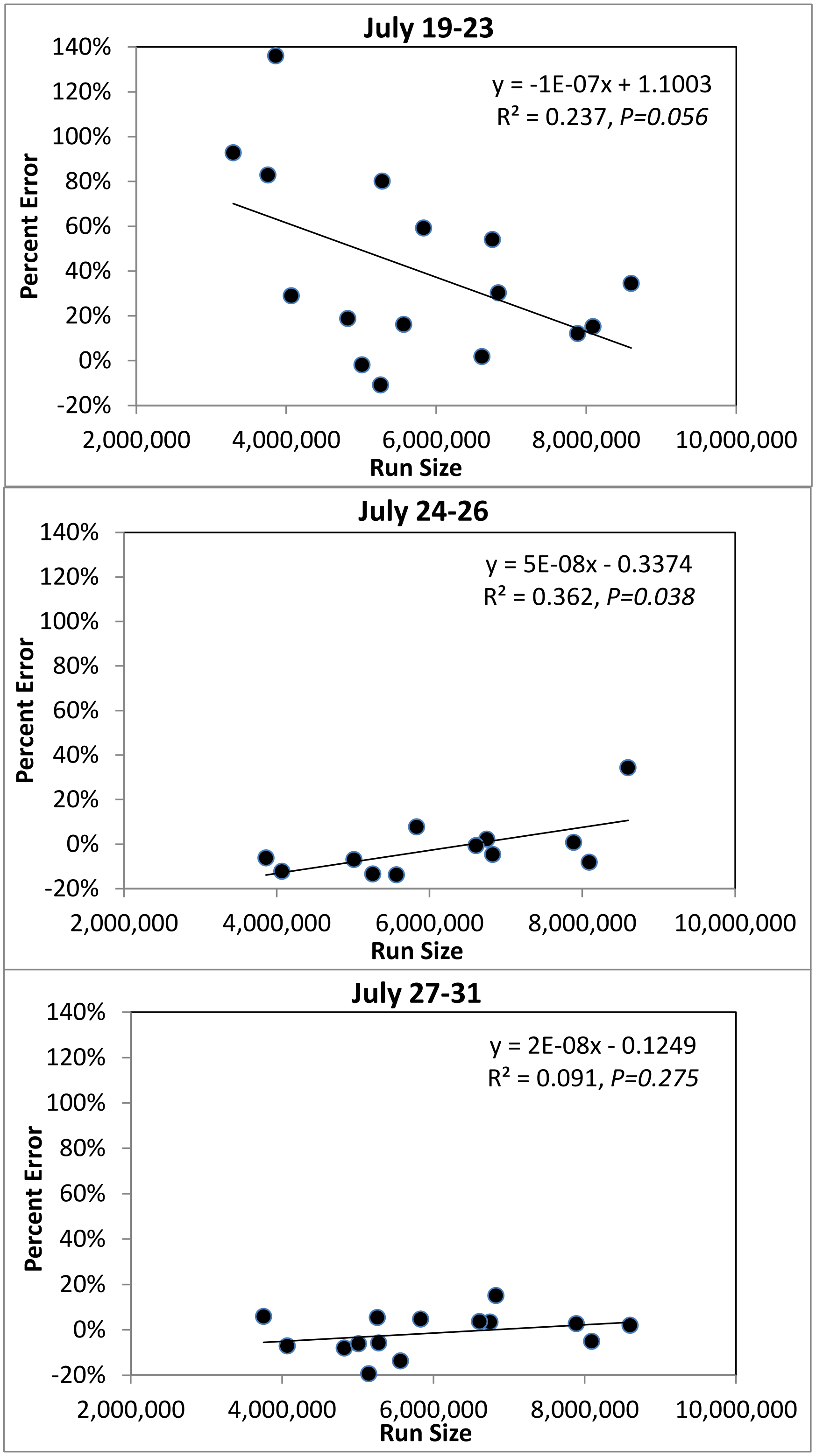


Figure 6.–Relationships between run forecast errors and actual run size for 3 date periods in July when the forecasts were generated (1996–2014).

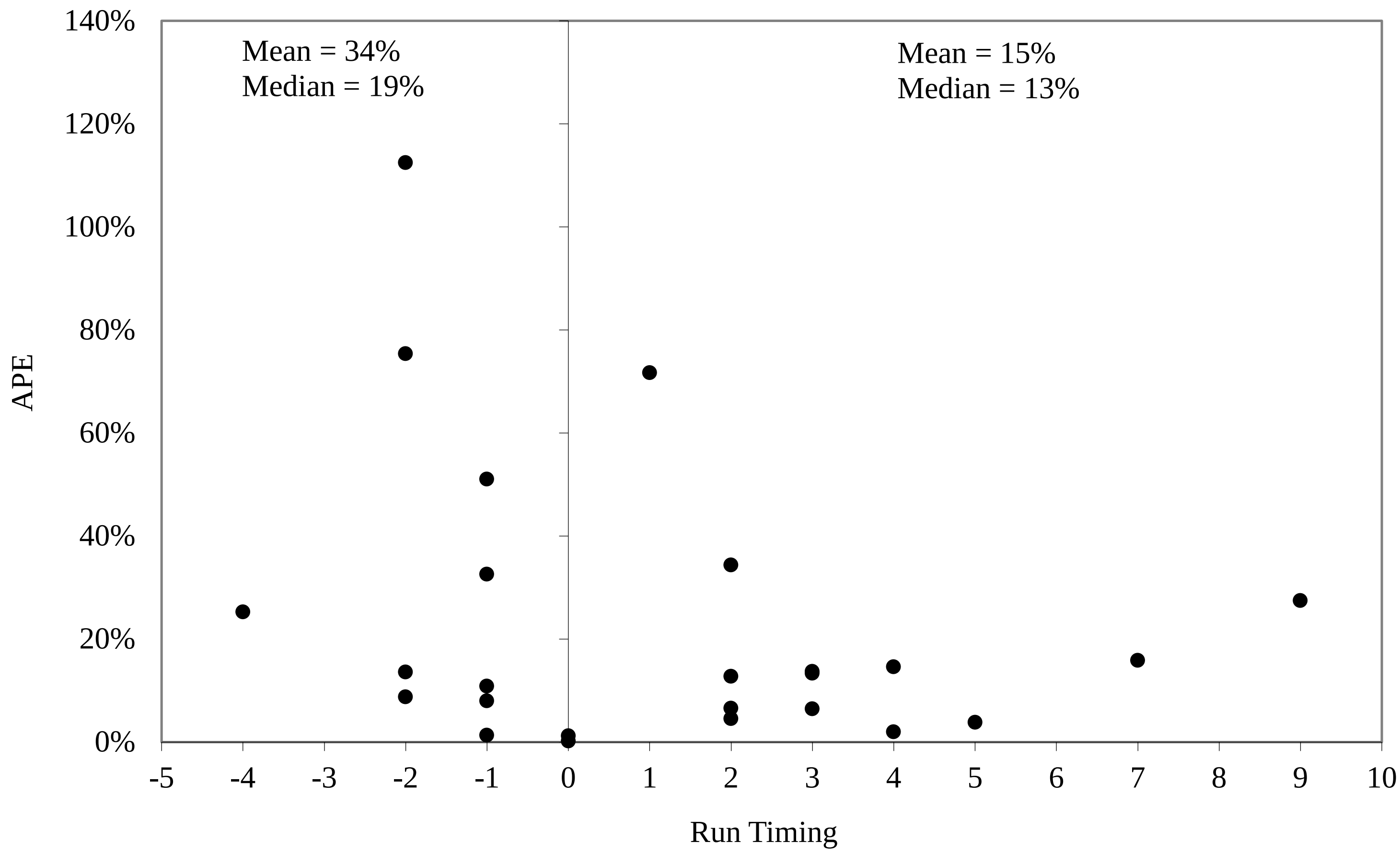


Figure 7.–Absolute percentage error (APE) in forecasting the total sockeye salmon run to Upper Cook Inlet using the 20 July best fit estimate, 1988–2014.

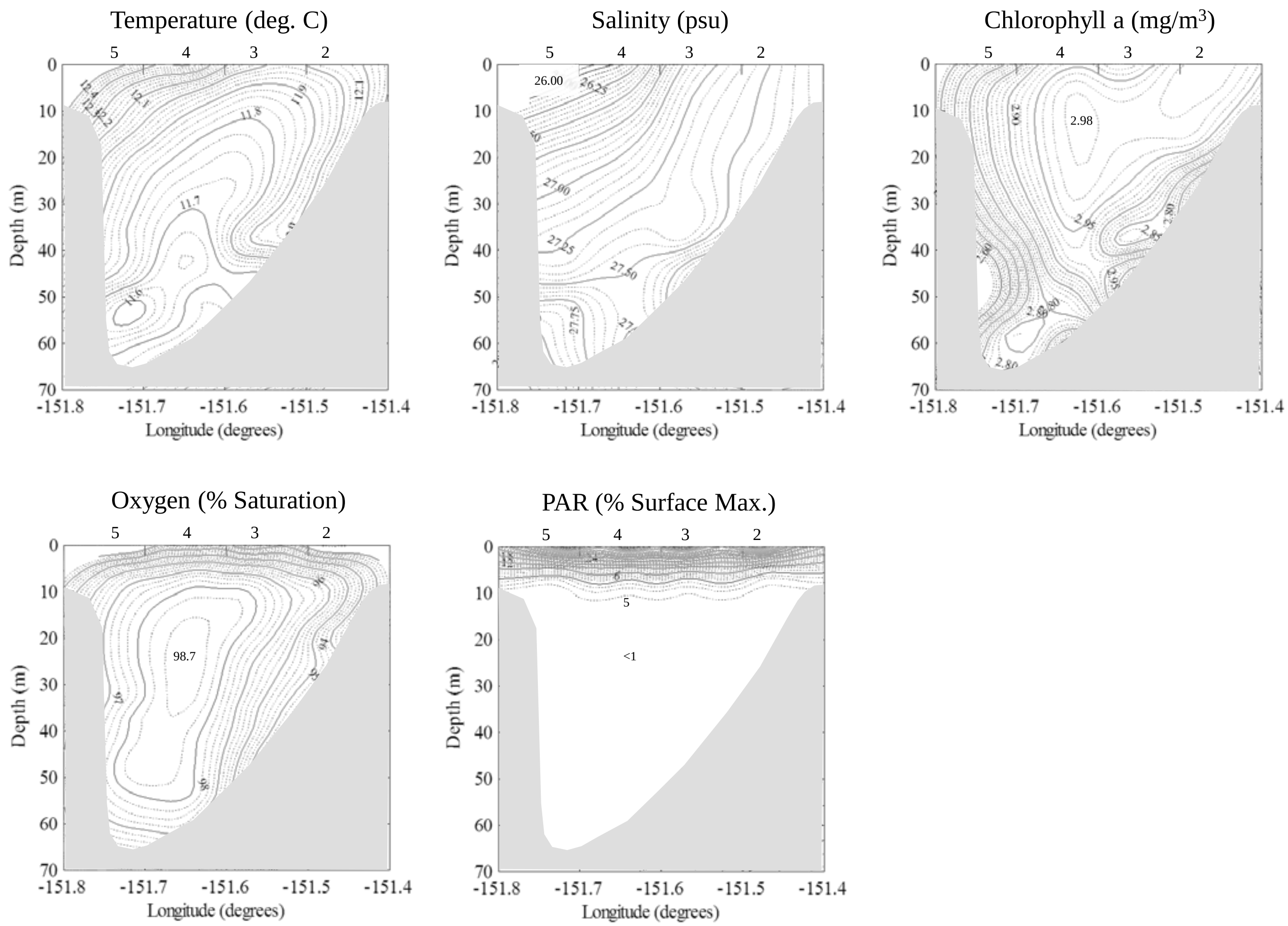


Figure 8.–Monthly mean distributions of temperature (deg. C), salinity (ppt), chlorophyll *a* (mg/m^3), oxygen (% saturation), and photosynthetically active radiation (PAR, % surface max) along the north Kalgin transect (Stations 2–5) of the northern OTF in 2014.

Note: The solid grey areas indicate the bottom. Numbers across the top of each panel indicate stations along the transect.

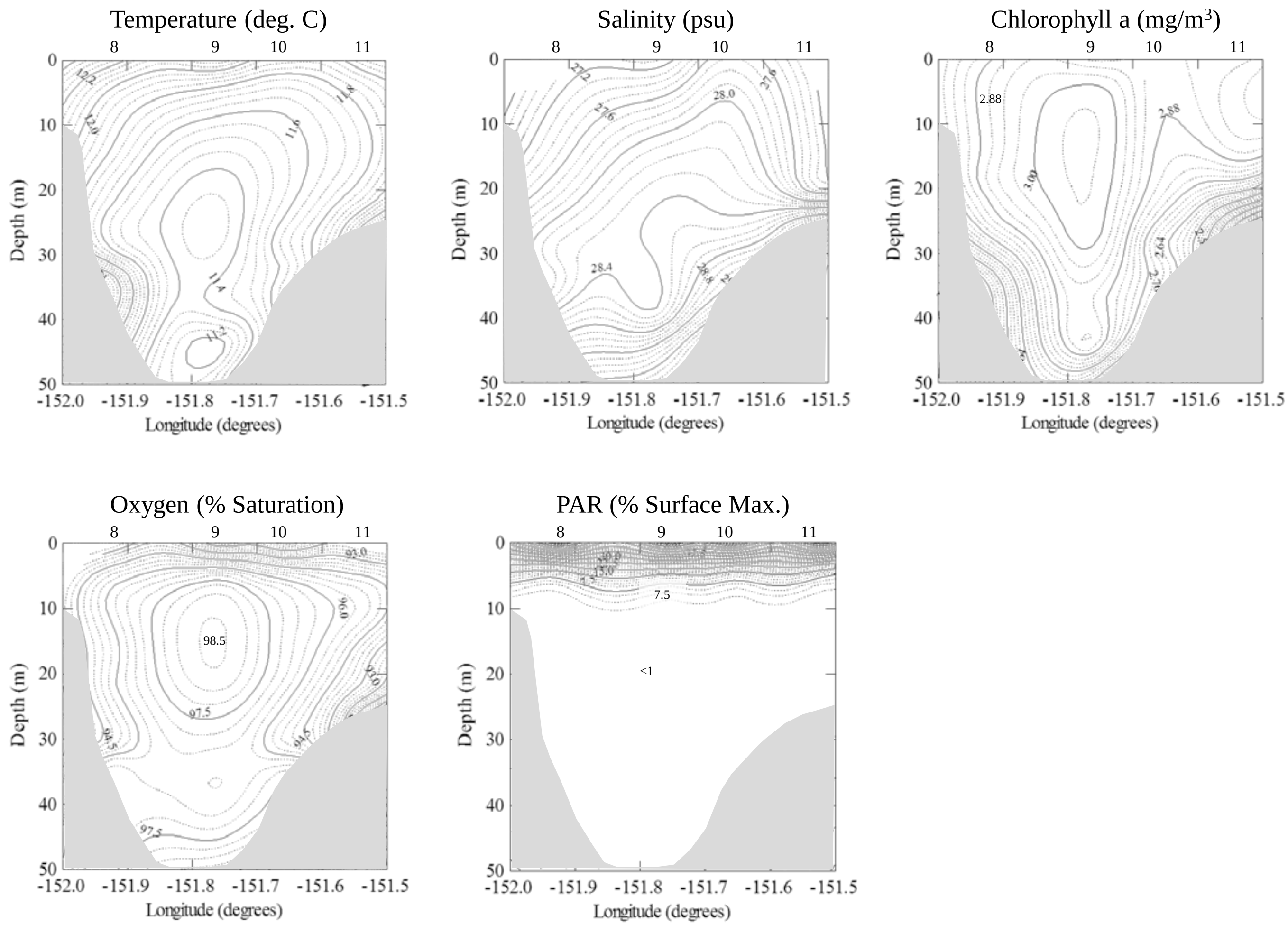


Figure 9.–Monthly mean distributions of temperature (deg. C), salinity (ppt), chlorophyll *a* (mg/m^3), oxygen (% saturation), and photosynthetically active radiation (PAR, % surface max) along the south Kalgin transect (Stations 8–11) of the northern OTF in 2014.

Note: The solid grey areas indicate the bottom. Numbers across the top of each panel indicate stations along the transect.

APPENDIX A: SOUTHERN OFFSHORE TEST FISHERY 2014 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 project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	232.5	0	0	0	0
2 July	6	221.5	0	0	0	0
3 July	6	227.5	0	0	0	0
4 July	6	243.0	2	2	2	2
5 July	6	244.0	1	3	1	2
6 July	6	236.0	9	12	7	9
7 July	6	253.0	5	17	3	12
8 July	6	219.0	1	18	1	13
9 July	6	224.0	12	30	10	23
10 July	6	204.5	4	34	3	26
11 July	6	240.5	19	53	14	39
12 July	6	220.0	20	73	14	54
13 July	6	219.5	65	138	67	120
14 July	6	224.0	32	170	24	144
15 July	6	216.0	62	232	42	187
16 July	6	253.0	52	284	36	223
17 July	6	253.0	64	348	37	260
18 July	6	233.5	55	403	52	312
19 July	6	219.5	17	420	17	329
20 July	6	240.5	27	447	17	345
21 July	6	237.0	18	465	13	359
22 July	6	124.0	32	497	48	407
23 July	6	226.5	18	515	16	423
24 July	6	115.5	21	536	31	454
25 July	6	191.0	13	549	16	470
26 July	6	220.5	14	563	11	481
27 July	6	219.0	2	565	2	482
28 July	6	189.5	9	574	8	491
29 July	6	202.0	24	598	23	514
30 July	6	227.5	63	661	50	564
31 July	6	206.0	43	704	33	597
1 August	6	238.0	144	848	97	694

Appendix A2.–Estimated pink salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	0	0	0
4 July	1	0	1	0	0	0	2
5 July	0	0	1	0	0	0	1
6 July	1	0	0	3	2	3	9
7 July	0	2	2	0	1	0	5
8 July	0	0	0	1	0	0	1
9 July	0	2	2	3	4	1	12
10 July	0	0	0	0	2	2	4
11 July	2	11	0	2	4	0	19
12 July	20	0	0	0	0	0	20
13 July	12	37	1	14	0	1	65
14 July	3	28	0	0	0	1	32
15 July	0	1	51	1	1	8	62
16 July	8	18	3	14	7	2	52
17 July	18	38	4	1	0	3	64
18 July	8	13	6	15	8	5	55
19 July	5	4	3	3	2	0	17
20 July	3	10	6	0	5	3	27
21 July	4	3	2	2	7	0	18
22 July	11	4	1	12	3	1	32
23 July	3	8	4	0	3	0	18
24 July	4	11	1	4	1	0	21
25 July	5	3	1	3	1	0	13
26 July	13	0	1	0	0	0	14
27 July	0	0	0	1	0	1	2
28 July	0	8	0	1	0	0	9
29 July	0	15	1	1	1	6	24
30 July	0	9	26	10	12	6	63
31 July	0	34	1	4	1	3	43
1 August	1	91	34	16	1	1	144
Total	122	350	152	111	66	47	848
%	14%	41%	18%	13%	8%	6%	100%

Appendix A3.–Estimated pink salmon CPUE by date and station, Upper Cook Inlet southern offshore test fishery project 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	0	0	0
4 July	1	0	1	0	0	0	2
5 July	0	0	1	0	0	0	1
6 July	1	0	0	2	2	2	7
7 July	0	1	1	0	1	0	3
8 July	0	0	0	1	0	0	1
9 July	0	2	2	2	3	1	10
10 July	0	0	0	0	2	2	3
11 July	1	7	0	2	3	0	14
12 July	14	0	0	0	0	0	14
13 July	9	47	1	9	0	1	67
14 July	3	21	0	0	0	1	24
15 July	0	1	30	1	4	6	42
16 July	6	12	2	9	5	2	36
17 July	12	19	3	1	0	2	37
18 July	20	10	4	9	6	4	52
19 July	6	4	2	3	1	0	17
20 July	2	8	1	0	4	2	17
21 July	3	2	2	2	5	0	13
22 July	18	7	2	17	4	1	48
23 July	2	9	3	0	2	0	16
24 July	7	16	2	5	2	0	31
25 July	5	7	1	2	1	0	16
26 July	10	0	1	0	0	0	11
27 July	0	0	0	1	0	1	2
28 July	0	8	0	1	0	0	8
29 July	0	12	1	1	1	9	23
30 July	0	10	19	7	9	4	50
31 July	0	26	1	3	1	2	33
1 August	1	58	25	12	1	1	97
Total	122	285	102	90	55	40	694
Percent	18%	41%	15%	13%	8%	6%	100%

Appendix A4.–Summary of chum salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet southern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	232.5	4	4	3	3
2 July	6	221.5	1	5	1	4
3 July	6	227.5	9	14	7	11
4 July	6	243.0	10	24	7	17
5 July	6	244.0	30	54	20	37
6 July	6	236.0	8	62	6	43
7 July	6	253.0	15	77	9	52
8 July	6	219.0	1	78	1	53
9 July	6	224.0	13	91	11	64
10 July	6	204.5	10	101	7	71
11 July	6	240.5	13	114	9	80
12 July	6	220.0	13	127	9	89
13 July	6	219.5	45	172	49	139
14 July	6	224.0	5	177	4	143
15 July	6	216.0	48	225	29	171
16 July	6	253.0	48	273	23	194
17 July	6	253.0	45	318	23	217
18 July	6	233.5	29	347	28	245
19 July	6	219.5	22	369	18	263
20 July	6	240.5	5	374	4	267
21 July	6	237.0	9	383	7	273
22 July	6	124.0	29	412	41	314
23 July	6	226.5	10	422	7	322
24 July	6	115.5	16	438	24	346
25 July	6	191.0	9	447	9	355
26 July	6	220.5	8	455	6	361
27 July	6	219.0	8	463	6	368
28 July	6	189.5	28	491	26	394
29 July	6	202.0	9	500	7	401
30 July	6	227.5	23	523	17	418
31 July	6	206.0	8	531	6	424
1 August	6	238.0	48	579	33	457

Appendix A5.–Estimated chum salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	1	3	0	0	0	0	4
2 July	0	0	0	0	0	1	1
3 July	4	2	2	1	0	0	9
4 July	1	0	1	7	0	1	10
5 July	1	1	18	10	0	0	30
6 July	1	1	2	1	1	2	8
7 July	0	10	1	1	0	3	15
8 July	0	0	0	1	0	0	1
9 July	3	1	4	2	3	0	13
10 July	0	3	7	0	0	0	10
11 July	0	13	0	0	0	0	13
12 July	13	0	0	0	0	0	13
13 July	7	30	4	3	0	1	45
14 July	1	3	0	0	1	0	5
15 July	0	0	47	0	0	1	48
16 July	3	13	2	11	19	0	48
17 July	1	40	1	2	0	1	45
18 July	5	7	8	7	2	0	29
19 July	1	5	10	2	3	1	22
20 July	0	0	1	1	1	2	5
21 July	0	1	2	1	4	1	9
22 July	3	1	3	12	9	1	29
23 July	1	0	2	4	3	0	10
24 July	0	4	5	5	2	0	16
25 July	1	1	0	7	0	0	9
26 July	3	0	1	0	1	3	8
27 July	0	0	1	1	5	1	8
28 July	0	28	0	0	0	0	28
29 July	0	1	1	6	1	0	9
30 July	0	0	4	9	5	5	23
31 July	0	2	2	3	0	1	8
1 August	0	24	10	8	3	3	48
Total	50	194	139	105	63	28	579
Percent	9%	34%	24%	18%	11%	5%	100%

Appendix A6.–Estimated chum salmon CPUE by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	1	2	0	0	0	0	3
2 July	0	0	0	0	0	1	1
3 July	3	2	2	1	0	0	7
4 July	1	0	1	5	0	1	7
5 July	1	1	11	7	0	0	20
6 July	1	1	1	1	1	2	6
7 July	0	6	1	1	0	2	9
8 July	0	0	0	1	0	0	1
9 July	2	1	4	2	2	0	11
10 July	0	2	5	0	0	0	7
11 July	0	9	0	0	0	0	9
12 July	9	0	0	0	0	0	9
13 July	5	38	3	2	0	1	49
14 July	1	2	0	0	1	0	4
15 July	0	0	28	0	0	1	29
16 July	2	9	2	7	3	0	23
17 July	1	20	1	2	0	1	23
18 July	13	5	5	4	2	0	28
19 July	1	5	7	2	2	1	18
20 July	0	0	1	1	1	2	4
21 July	0	1	2	1	3	1	7
22 July	5	2	5	17	12	1	41
23 July	1	0	1	3	2	0	7
24 July	0	6	8	7	3	0	24
25 July	1	4	0	5	0	0	9
26 July	2	0	1	0	1	2	6
27 July	0	0	1	1	4	1	6
28 July	0	26	0	0	0	0	26
29 July	0	1	1	5	1	0	7
30 July	0	0	3	6	4	4	17
31 July	0	2	2	2	0	1	6
1 August	0	15	7	6	3	2	33
Total	50	157	100	87	42	22	457
Percent	11%	34%	22%	19%	9%	5%	100%

Appendix A7.–Summary of coho salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet southern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	232.5	0	0	0	0
2 July	6	221.5	0	0	0	0
3 July	6	227.5	1	1	1	1
4 July	6	243.0	6	7	4	5
5 July	6	244.0	14	21	10	15
6 July	6	236.0	8	29	6	21
7 July	6	253.0	4	33	3	23
8 July	6	219.0	2	35	2	25
9 July	6	224.0	5	40	4	29
10 July	6	204.5	2	42	2	30
11 July	6	240.5	1	43	1	31
12 July	6	220.0	1	44	1	32
13 July	6	219.5	8	52	10	41
14 July	6	224.0	0	52	0	41
15 July	6	216.0	10	62	6	48
16 July	6	253.0	47	109	32	80
17 July	6	253.0	29	138	18	98
18 July	6	233.5	37	175	53	151
19 July	6	219.5	17	192	13	164
20 July	6	240.5	32	224	24	188
21 July	6	237.0	27	251	18	206
22 July	6	124.0	28	279	37	242
23 July	6	226.5	109	388	76	319
24 July	6	115.5	57	445	84	402
25 July	6	191.0	30	475	25	428
26 July	6	220.5	13	488	10	438
27 July	6	219.0	37	525	30	467
28 July	6	189.5	38	563	36	503
29 July	6	202.0	32	595	38	541
30 July	6	227.5	99	694	72	613
31 July	6	206.0	19	713	15	627
1 August	6	238.0	39	752	28	655

Appendix A8.–Estimated coho salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1
4 July	0	0	1	4	1	0	6
5 July	1	0	4	8	0	1	14
6 July	1	2	0	2	2	1	8
7 July	0	2	1	1	0	0	4
8 July	0	0	1	0	1	0	2
9 July	0	3	0	1	1	0	5
10 July	0	1	1	0	0	0	2
11 July	0	0	1	0	0	0	1
12 July	0	0	0	0	0	1	1
13 July	0	7	0	1	0	0	8
14 July	0	0	0	0	0	0	0
15 July	0	0	8	1	0	1	10
16 July	0	1	6	16	22	2	47
17 July	2	15	7	1	1	3	29
18 July	0	8	8	13	4	4	37
19 July	0	2	11	2	2	0	17
20 July	1	14	4	0	12	1	32
21 July	0	1	0	1	24	1	27
22 July	0	0	1	4	21	2	28
23 July	0	1	10	26	72	0	109
24 July	0	4	13	28	11	1	57
25 July	3	1	1	22	2	1	30
26 July	0	0	0	1	7	5	13
27 July	0	0	10	23	4	0	37
28 July	0	38	0	0	0	0	38
29 July	0	1	0	10	3	18	32
30 July	0	0	41	33	18	7	99
31 July	0	3	12	4	0	0	19
1 August	0	10	5	22	1	1	39
Total	8	114	146	224	210	50	752
Percent	1%	15%	19%	30%	28%	7%	100%

Appendix A9.–Estimated coho salmon CPUE by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1
4 July	0	0	1	3	1	0	4
5 July	1	0	2	6	0	1	10
6 July	1	2	0	2	2	1	6
7 July	0	1	1	1	0	0	3
8 July	0	0	1	0	1	0	2
9 July	0	2	0	1	1	0	4
10 July	0	1	1	0	0	0	2
11 July	0	0	1	0	0	0	1
12 July	0	0	0	0	0	1	1
13 July	0	9	0	1	0	0	10
14 July	0	0	0	0	0	0	0
15 July	0	0	5	1	0	1	6
16 July	0	1	5	11	15	2	32
17 July	1	7	6	1	1	2	18
18 July	0	6	5	8	32	3	53
19 July	0	2	7	2	1	0	13
20 July	1	11	3	0	9	1	24
21 July	0	1	0	1	16	1	18
22 July	0	0	2	6	27	3	37
23 July	0	1	7	20	48	0	76
24 July	0	6	21	37	18	2	84
25 July	3	4	1	16	2	1	25
26 July	0	0	0	1	6	4	10
27 July	0	0	8	18	3	0	30
28 July	0	36	0	0	0	0	36
29 July	0	1	0	8	3	27	38
30 July	0	0	30	23	14	5	72
31 July	0	2	9	3	0	0	15
1 August	0	6	4	17	1	1	28
Total	7	98	117	183	198	53	655
Percent	1%	15%	18%	28%	30%	8%	100%

Appendix A10.–Summary of Chinook salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet southern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	6	232.5	1	1	1	1
2 July	6	221.5	0	1	0	1
3 July	6	227.5	1	2	1	2
4 July	6	243.0	1	3	1	2
5 July	6	244.0	0	3	0	2
6 July	6	236.0	0	3	0	2
7 July	6	253.0	0	3	0	2
8 July	6	219.0	0	3	0	2
9 July	6	224.0	0	3	0	2
10 July	6	204.5	0	3	0	2
11 July	6	240.5	0	3	0	2
12 July	6	220.0	0	3	0	2
13 July	6	219.5	0	3	0	2
14 July	6	224.0	0	3	0	2
15 July	6	216.0	0	3	0	2
16 July	6	253.0	0	3	0	2
17 July	6	253.0	0	3	0	2
18 July	6	233.5	1	4	1	3
19 July	6	219.5	0	4	0	3
20 July	6	240.5	0	4	0	3
21 July	6	237.0	0	4	0	3
22 July	6	124.0	0	4	0	3
23 July	6	226.5	0	4	0	3
24 July	6	115.5	0	4	0	3
25 July	6	191.0	0	4	0	3
26 July	6	220.5	0	4	0	3
27 July	6	219.0	0	4	0	3
28 July	6	189.5	0	4	0	3
29 July	6	202.0	0	4	0	3
30 July	6	227.5	0	4	0	3
31 July	6	206.0	0	4	0	3
1 August	6	238.0	0	4	0	3

Appendix A11.–Estimated Chinook salmon catch by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	1	0	0	0	0	1
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1
4 July	0	0	0	0	1	0	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	0	0	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	0	0	0	0	0	0	0
14 July	0	0	0	0	0	0	0
15 July	0	0	0	0	0	0	0
16 July	0	0	0	0	0	0	0
17 July	0	0	0	0	0	0	0
18 July	0	0	1	0	0	0	1
19 July	0	0	0	0	0	0	0
20 July	0	0	0	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	0	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	0	0	0	0	0	0	0
30 July	0	0	0	0	0	0	0
31 July	0	0	0	0	0	0	0
1 August	0	0	0	0	0	0	0
Total	0	1	1	0	2	0	4
Percent	0%	25%	25%	0%	50%	0%	100%

Appendix A12.–Estimated Chinook salmon CPUE by date and station, Upper Cook Inlet southern offshore test fishery project, 2014.

	Station number						
Date	4	5	6	6.5	7	8	Total
1 July	0	1	0	0	0	0	1
2 July	0	0	0	0	0	0	0
3 July	0	0	0	0	1	0	1
4 July	0	0	0	0	1	0	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	0	0	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	0	0	0	0	0	0	0
14 July	0	0	0	0	0	0	0
15 July	0	0	0	0	0	0	0
16 July	0	0	0	0	0	0	0
17 July	0	0	0	0	0	0	0
18 July	0	0	1	0	0	0	1
19 July	0	0	0	0	0	0	0
20 July	0	0	0	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	0	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	0	0	0	0	0	0	0
30 July	0	0	0	0	0	0	0
31 July	0	0	0	0	0	0	0
1 August	0	0	0	0	0	0	0
Total	0	1	1	0	2	0	3
Percent	0%	24%	21%	0%	55%	0%	100%

Appendix A13.–Final cumulative catch and CPUE values by year for pink salmon, chum salmon, coho salmon, and Chinook salmon from the Upper Cook Inlet southern offshore test fishery project, 1992–2014.

	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
2013	53	36	302	197	800	495	4	3
1992–2013 Avg	352	249	684	462	741	507	6	4
2014	848	694	579	457	752	655	4	3

Appendix 14.–Entry pattern of sockeye salmon into Upper Cook Inlet, Alaska, 2014, estimated from daily CPUE measured at the latitude of Anchor Point.

Day	Date	Input y	Estimated y	Residual	Change in input Y	Change in estimated Y
8	1 Jul	0.0145	0.0699	-0.0554		
9	2 Jul	0.0228	0.0818	-0.0590	0.0083	0.0120
10	3 Jul	0.0379	0.0956	-0.0578	0.0151	0.0138
11	4 Jul	0.0750	0.1115	-0.0365	0.0372	0.0159
12	5 Jul	0.1170	0.1296	-0.0126	0.0420	0.0181
13	6 Jul	0.1485	0.1501	-0.0017	0.0315	0.0206
14	7 Jul	0.2264	0.1733	0.0531	0.0779	0.0232
15	8 Jul	0.2311	0.1992	0.0319	0.0047	0.0259
16	9 Jul	0.2639	0.2279	0.0359	0.0328	0.0287
17	10 Jul	0.2790	0.2594	0.0195	0.0151	0.0315
18	11 Jul	0.2958	0.2936	0.0022	0.0168	0.0342
19	12 Jul	0.3028	0.3303	-0.0276	0.0070	0.0367
20	13 Jul	0.3893	0.3692	0.0201	0.0865	0.0389
21	14 Jul	0.3958	0.4099	-0.0140	0.0065	0.0407
22	15 Jul	0.4229	0.4518	-0.0289	0.0270	0.0419
23	16 Jul	0.4649	0.4944	-0.0295	0.0420	0.0426
24	17 Jul	0.5279	0.5371	-0.0093	0.0630	0.0427
25	18 Jul	0.6057	0.5793	0.0264	0.0779	0.0422
26	19 Jul	0.6667	0.6203	0.0464	0.0610	0.0410
27	20 Jul	0.6813	0.6597	0.0215	0.0146	0.0394
28	21 Jul	0.7086	0.6970	0.0115	0.0273	0.0373
29	22 Jul	0.7538	0.7319	0.0218	0.0452	0.0349
30	23 Jul	0.7721	0.7641	0.0080	0.0184	0.0322
31	24 Jul	0.8130	0.7936	0.0195	0.0409	0.0294
32	25 Jul	0.8257	0.8202	0.0055	0.0127	0.0266
33	26 Jul	0.8378	0.8441	-0.0063	0.0121	0.0239
34	27 Jul	0.8407	0.8653	-0.0246	0.0029	0.0212
35	28 Jul	0.8522	0.8840	-0.0318	0.0115	0.0187
36	29 Jul	0.8590	0.9004	-0.0414	0.0068	0.0164
37	30 Jul	0.8825	0.9148	-0.0323	0.0235	0.0143
38	31 Jul	0.8893	0.9272	-0.0379	0.0068	0.0124
39	1 Aug	0.9048	0.9379	-0.0331	0.0155	0.0107

Appendix A15.–Chemical and physical observations made in Upper Cook Inlet, Alaska, during the 2014 southern offshore test fishery project.

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	14	9.0	6	southwest	ebb	31.3	24.2	5.5
	5	13	10.5	9	southwest	ebb	29.6	37.0	2.5
	6	12	10.6	10	southwest	low	29.4	46.9	2.0
	6.5	12	10.4	9	southwest	flood	29.6	44.0	2.5
	7	9	10.5	8	southwest	flood	29.6	47.2	2.5
	8	13	10.3	6	southwest	flood	30.0	28.2	2.5
2 Jul	8	12	9.9	1	south	flood	29.8	32.8	3.0
	7	14	9.8	1	south	high	29.8	46.4	3.0
	6.5	16	9.9	1	south	high	29.8	45.3	3.0
	6	15	9.9	1	south	ebb	30.0	49.4	3.5
	5	16	10.1	1	northwest	ebb	30.5	34.0	7.5
	4	18	8.9	0	northwest	ebb	31.5	22.4	10.0
3 Jul	4	12	8.9	5	southeast	flood	31.3	27.2	6.0
	5	11	9.0	3	southeast	flood	30.9	38.7	6.0
	6	11	10.8	5	southeast	flood	30.6	49.0	5.0
	6.5	13	10.6	5	southeast	ebb	29.1	44.7	3.5
	7	15	10.8	4	southeast	ebb	29.1	46.7	4.0
	8	14	10.3	3	southeast	ebb	29.7	28.6	4.0
4 Jul	8	12	10.4	3	southwest	ebb	29.3	32.1	4.0
	7	11	10.4	6	southwest	flood	29.1	46.5	4.0
	6.5	11	10.6	6	southwest	flood	29.1	44.7	4.0
	6	12	10.7	3	south	flood	29.1	51.0	4.0
	5	14	9.6	3	south	flood	31.1	35.6	10.0
	4	17	9.0	2	south	flood	31.4	24.8	13.5
5 Jul	4	10	9.2	8	south	flood	33.9	27.0	7.5
	5	10	9.3	7	south	flood	33.9	49.7	7.5
	6	16	11.2	13	south	flood	31.3	48.0	3.0
	6.5	12	10.7	14	south	ebb	31.4	44.0	2.5
	7	12	10.7	11	south	ebb	31.7	46.0	2.5
	8	12	10.9	15	south	ebb	31.7	27.0	4.0
6 Jul	8	12	10.8	7	southwest	low	31.0	31.5	3.0
	7	12	11.1	6	southwest	flood	30.8	46.1	3.5
	6.5	13	11.1	6	southwest	flood	30.7	44.4	3.5
	6	13	11.2	6	southwest	flood	30.8	50.8	4.0
	5	17	10.3	2	southwest	flood	32.8	35.5	5.0
	4	13	10.2	6	southwest	high	33.3	24.8	6.0

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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)
7 Jul	4	12	10.7	4	northeast	ebb	32.1	26.4	5.0
	5	13	11.2	4	north	ebb	31.3	43.6	4.5
	6	11	6.7	1	north	high	31.1	47.1	3.5
	6.5	12	11.3	9	north	flood	30.8	44.8	3.0
	7	12	11.7	8	north	flood	30.3	47.5	4.0
	8	13	11.5	9	north	flood	30.5	28.1	4.0
8 Jul	8	13	11.5	5	southwest	ebb	30.9	31.8	4.0
	7	12	11.3	4	southwest	ebb	30.6	44.2	4.0
	6.5	12	11.3	5	southwest	ebb	30.2	42.6	4.0
	6	12	10.6	4	south	ebb	32.1	48.9	5.0
	5	13	9.8	5	south	flood	33.5	36.2	8.0
	4	14	9.4	2	south	flood	33.7	25.2	12.0
9 Jul	4	11	9.4	5	southeast	flood	33.7	26.6	8.5
	5	13	9.3	1	southeast	flood	33.6	38.6	8.0
	6	12	9.6	3	north	flood	33.6	49.6	7.0
	6.5	13	11.6	3	northeast	flood	27.6	43.4	4.0
	7	13	11.9	3	east	high	29.6	27.6	4.0
	8	13	11.6	1	northeast	ebb	30.3	28.5	4.0
10 Jul	8	12	11.5	5	north	ebb	30.3	30.8	4.0
	7	12	11.4	8	north	ebb	30.4	45.0	3.5
	6.5	11	11.4	11	north	ebb	30.1	41.4	3.0
	6	11	11.0	12	northeast	ebb	30.7	49.8	4.0
	5	11	9.5	16	north	flood	33.6	38.0	6.0
	4	11	9.4	10	north	flood	33.8	26.1	8.0
11 Jul	4	12	9.8	5	northeast	flood	33.7	26.8	7.0
	5	12	9.4	4	north	flood	33.7	42.1	8.0
	6	13	9.3	1	north	flood	33.5	49.2	8.0
	6.5	17	9.8	0	north	high	32.8	45.0	5.5
	7	17	7.3	2	north	ebb	32.0	47.3	3.5
	8	17	10.3	11	north	ebb	31.8	27.9	3.5
12 Jul	8	12	10.5	7	southeast	ebb	31.4	32.3	3.0
	7	12	10.7	3	southeast	ebb	30.7	44.9	2.5
	6.5	13	10.6	3	southeast	ebb	31.2	44.1	3.0
	6	12	10.4	1	southeast	ebb	31.5	46.6	4.0
	5	12	9.7	4	northeast	ebb	33.4	32.9	6.0
	4	12	9.9	6	north	flood	33.5	24.0	6.0

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Appendix A15.–Page 3 of 6.

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	14	9.9	5	north	flood	33.4	24.6	5.0
	5	13	10.3	3	north	flood	32.3	26.1	2.5
	6	16	10.0	2	north	flood	32.7	48.7	3.0
	6.5	17	10.3	2	north	flood	32.6	45.4	3.5
	7	16	10.7	2	east	flood	33.0	45.6	4.0
	8	14	10.2	3	southwest	flood	32.3	29.7	3.0
14 Jul	8	12	10.6	6	southwest	flood	31.0	33.8	2.5
	7	12	10.3	5	southwest	flood	32.2	47.6	4.0
	6.5	13	9.9	1	southwest	flood	33.0	46.0	6.5
	6	12	9.6	4	southwest	high	33.2	50.8	6.0
	5	14	9.6	1	southwest	ebb	33.2	34.4	9.0
	4	12	9.5	2	south	ebb	33.7	24.2	12.0
15 Jul	4	12	9.8	10	south	ebb	33.5	23.9	7.5
	5	12	10.4	7	south	ebb	32.8	37.1	3.5
	6	12	10.7	5	south	ebb	32.2	46.5	2.5
	6.5	12	10.8	5	south	flood	32.0	41.5	1.5
	7	13	10.9	3	south	flood	32.0	46.7	1.5
	8	15	7.9	3	southeast	flood	29.5	49.0	1.5
16 Jul	8	11	10.9	8	southeast	flood	31.4	32.5	2.5
	7	11	10.4	9	southeast	flood	32.4	48.0	3.5
	6.5	11	10.1	7	southeast	flood	32.9	44.9	4.0
	6	11	9.9	7	southeast	high	33.1	50.5	5.5
	5	11	9.7	10	south	ebb	33.3	34.0	5.0
	4	11	9.8	8	south	ebb	33.6	23.5	10.0
17 Jul	4	11	9.9	11	southwest	ebb	33.6	26.5	9.0
	5	11	10.9	10	south	ebb	32.3	36.2	3.5
	6	12	11.2	9	south	ebb	31.7	44.2	2.5
	6.5	12	11.1	13	southwest	ebb	31.7	42.1	2.5
	7	12	11.2	11	southwest	ebb	31.7	46.1	2.5
	8	12	11.3	8	southwest	flood	31.4	28.3	2.0
18 Jul	8	11	11.1	10	southwest	flood	31.5	32.4	2.0
	7	12	11.2	8	southwest	flood	31.4	45.8	2.0
	6.5	11	10.7	7	southwest	flood	32.2	44.5	3.5
	6	11	10.8	7	southwest	flood	32.2	51.0	3.5
	5	11	10.2	9	south	ebb	33.1	33.8	8.0
	4	11	10.2	11	south	ebb	33.2	22.0	10.0

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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)
19 Jul	4	12	10.5	10	southwest	flood	32.9	27.0	6.4
	5	12	11.1	7	southwest	flood	32.2	38.6	3.5
	6	13	11.3	10	southwest	high	31.7	49.5	5.0
	6.5	13	11.3	10	southwest	ebb	31.7	44.5	3.0
	7	13	11.5	10	southwest	ebb	31.6	46.0	4.0
	8	15	11.3	7	southwest	ebb	30.7	36.0	3.5
20 Jul	8	13	12.3	5	southeast	flood	30.0	32.7	2.5
	7	15	12.7	3	southeast	flood	30.1	46.0	3.0
	6.5	15	12.5	5	southeast	high	30.0	24.4	2.5
	6	14	12.8	5	southeast	ebb	30.0	49.3	3.5
	5	15	12.7	2	southeast	ebb	30.9	33.3	3.0
	4	18	12.4	0	southeast	ebb	31.5	25.2	5.0
21 Jul	4	11	11.5	6	southeast	ebb	31.9	25.2	5.5
	5	12	11.2	4	southeast	ebb	32.4	37.1	6.5
	6	13	11.4	3	east	flood	31.7	37.2	4.0
	6.5	13	11.9	5	east	flood	31.4	44.1	4.0
	7	14	12.1	4	southeast	flood	30.3	37.1	3.0
	8	14	12.9	3	east	flood	30.2	37.0	3.5
22 Jul	8	11	11.0	12	south	ebb	31.0	30.8	3.0
	7	11	11.9	15	southwest	ebb	30.6	44.2	3.0
	6.5	11	12.4	16	southwest	ebb	29.5	43.6	3.0
	6	11	12.3	15	southwest	low	30.5	49.1	3.0
	5	12	11.0	10	southwest	flood	32.4	36.6	4.5
	4	11	10.8	11	southwest	flood	32.7	24.9	5.5
23 Jul	4	12	11.5	3	south	ebb	31.3	24.1	6.0
	5	14	12.6	4	south	ebb	31.3	37.0	5.0
	6	13	13.0	8	south	flood	28.0	48.3	3.0
	6.5	15	13.1	1	south	flood	28.1	44.6	3.0
	7	15	12.6	3	southwest	flood	29.2	47.3	4.0
	8	15	12.2	3	southwest	flood	30.2	27.9	4.0
24 Jul	8	12	12.0	14	southwest	ebb	30.6	30.1	4.0
	7	12	12.0	16	south	ebb	30.5	46.2	3.0
	6.5	12	12.0	19	south	ebb	30.6	42.5	4.0
	6	12	11.8	19	southwest	ebb	30.7	47.5	4.0
	5	12	12.4	17	south	ebb	30.0	35.4	12.5
	4	12	10.9	13	southeast	ebb	33.4	23.4	8.0

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Appendix A15.–Page 5 of 6.

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	12	11.3	7	south	low	32.3	24.5	7.0
	5	13	12.0	6	south	low	30.3	50.2	12.5
	6	14	12.2	11	southwest	flood	30.1	49.3	5.0
	6.5	14	12.0	10	south	flood	30.6	24.0	5.0
	7	13	12.1	3	north	flood	30.8	47.8	5.0
	8	14	12.1	9	northwest	flood	31.1	31.0	5.0
26 Jul	8	13	12.2	1	northwest	ebb	30.1	32.5	4.0
	7	13	11.7	1	northwest	ebb	30.3	44.9	4.5
	6.5	13	12.1	0	-	ebb	30.0	42.9	4.0
	6	13	11.7	3	northeast	ebb	31.0	47.5	4.0
	5	13	11.9	3	north	ebb	30.9	35.8	8.0
	4	12	11.7	8	north	low	32.7	24.1	7.0
27 Jul	4	15	11.1	2	west	ebb	32.4	23.6	9.0
	5	15	11.0	1	northwest	ebb	32.5	36.3	12.0
	6	14	11.2	3	northwest	low	32.0	47.5	6.0
	6.5	13	11.4	6	northwest	low	31.9	33.9	6.0
	7	15	12.2	3	northwest	flood	31.2	45.2	4.5
	8	15	12.5	7	northwest	flood	30.6	30.9	5.0
28 Jul	8	13	11.8	4	southwest	ebb	31.1	29.7	5.0
	7	13	11.9	8	southwest	ebb	31.0	45.8	5.0
	6.5	13	12.0	8	south	ebb	30.9	42.9	4.0
	6	13	12.0	4	south	ebb	30.9	48.3	4.0
	5	12	10.8	6	southeast	flood	32.8	37.2	5.0
	4	11	11.1	6	southeast	flood	33.2	26.1	5.0
29 Jul	4	12	10.8	3	north	ebb	32.9	24.1	9.0
	5	12	11.0	8	north	ebb	32.9	35.7	9.5
	6	12	11.7	6	east	ebb	31.4	47.3	5.0
	6.5	13	11.8	6	northwest	ebb	31.2	32.5	5.0
	7	13	12.0	0	north	low	30.9	46.2	4.0
	8	14	12.2	5	north	low	30.8	29.5	2.5
30 Jul	8	14	11.8	3	southwest	flood	31.2	31.5	6.0
	7	14	12.4	6	southwest	flood	30.9	47.1	5.0
	6.5	13	12.1	5	southwest	ebb	31.2	44.6	5.0
	6	13	12.2	7	southwest	ebb	31.2	48.3	6.0
	5	12	11.0	6	southwest	ebb	33.1	36.2	9.0
	4	12	11.1	4	south	ebb	33.0	24.1	7.0

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Appendix A15.–Page 6 of 6.

Date	Sta	Air temp (c)	Water temp (c)	Wind vel. (knots)	Wind dir	Tide stage	Salinity (ppt)	Water depth (f)	Secchi (m)
31 Jul	4	13	10.5	8	6	3	33.9	27.1	11.0
	5	13	12.0	7	6	3	31.8	36.3	5.0
	6	13	12.1	12	6	3	31.5	44.5	4.5
	6.5	14	12.0	11	6	3	31.7	42.2	7.0
	7	13	12.1	11	6	3	31.6	46.0	5.0
	8	13	12.1	9	6	2	31.4	28.8	3.5
1 Aug	8	15	12.4	10	6	4	31.4	33.0	4.0
	7	14	12.8	10	6	4	31.1	46.5	4.0
	6.5	13	12.9	8	6	1	31.0	45.1	5.0
	6	13	13.1	9	6	3	30.9	50.0	4.0
	5	12	11.8	9	6	3	32.6	34.3	6.0
	4	11	10.4	6	6	3	33.7	21.9	8.5
Averages		13	10.9	6	south	ebb	31.4	38.2	4.9
Min		9	6.7	0	-	-	27.6	22.0	1.5
Max		18	13.1	19	-	-	33.9	51.0	13.5

Appendix A16.–Yearly mean values of physical observations made during the conduct of the 2002–2014 southern offshore test fishery project.

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
	2014	12.5	10.3	6.0	SE	32.9	24.9	7.8
	Avg	11.6	9.6	6.8	SE	31.4	25.7	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
	2014	12.7	10.7	5.9	SE	32.2	37.0	6.6
	Avg	11.6	9.8	7.1	SE	30.9	38.3	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
	2014	12.7	11.0	6.5	S	31.3	48.2	4.3
	Avg	11.9	10.4	7.4	S	30.2	49.5	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
	2014	13.0	11.3	6.8	S	30.8	42.0	3.9
	Avg	11.8	10.5	7.8	S	29.8	45.2	3.9

-continued-

Appendix A16.–Page 2 of 2.

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
	2014	13.0	11.3	6.1	S	30.8	45.4	3.6
	Avg	11.8	10.6	7.1	S	29.6	47.4	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
	2014	13.2	11.3	6.3	S	30.8	31.5	3.5
	Avg	12.3	10.6	6.9	S	29.5	31.8	3.1

Appendix A17.–Yearly mean values for selected chemical and physical variables collected during the southern offshore test fishery project, 1979–2014.

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
2013	11.0	12.5	5.5	31.0	4.7
1992-2013 Avg	12.3	10.3	8.1	29.6	4.9
2014	12.8	10.9	6.1	31.4	4.9

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 CPUE, Upper Cook Inlet northern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	8	309	43	43	33	33
2 July	8	291	19	62	15	48
3 July	8	284	25	87	21	69
4 July	8	289	59	146	48	116
5 July	7[a]	275	150	296	97	213
6 July	8	318	175	471	115	327
7 July	8	276	56	527	49	376
8 July	8	274	72	599	57	433
9 July	8	282	124	723	104	537
10 July	0[a]	0	0	723	0	537
11 July	8	283	150	873	121	658
12 July	1[a]	30	14	887	14	672
13 July	1[a]	37	1	888	1	672
14 July	6[a]	210	52	940	45	718
15 July	8	317	36	976	33	751
16 July	8	287	88	1,064	72	822
17 July	8	309	99	1,163	76	899
18 July	7[a]	293	118	1,281	83	982
19 July	0[a]	0	0	1,281	0	982
20 July	8	325	174	1,455	120	1,101
21 July	8	341	135	1,590	88	1,189
22 July	8	318	240	1,830	159	1,347
23 July	7[a]	258	59	1,889	48	1,395
24 July	7[a]	242	136	2,025	120	1,515
25 July	8	301	55	2,080	52	1,567
26 July	8	339	49	2,129	36	1,603
27 July	8	295	21	2,150	17	1,619
28 July	7[a]	235	77	2,227	66	1,685
29 July	8	301	55	2,282	42	1,728
30 July	8	331	80	2,362	55	1,782

[a] Not all stations fished due to mechanical difficulties.

Appendix B2.–Estimated sockeye salmon catch by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	5	5	0	0	2	13	11	7	43
2 July	0	8	2	2	4	1	0	2	19
3 July	0	3	7	4	1	5	0	5	25
4 July	1	4	11	0	1	11	30	1	59
5 July[a]	–	108	8	0	4	6	23	1	150
6 July	40	87	13	0	0	29	5	1	175
7 July	1	10	10	2	4	27	0	2	56
8 July	0	25	3	1	0	41	2	0	72
9 July	5	9	17	12	0	59	22	0	124
10 July[a]	–	–	–	–	–	–	–	–	–
11 July	26	47	21	1	0	31	19	5	150
12 July[a]	14	–	–	–	–	–	–	–	14
13 July[a]	–	–	–	–	–	–	–	1	1
14 July[a]	7	22	6	3	3	11	–	–	52
15 July	14	13	2	0	0	5	2	0	36
16 July	18	22	3	2	1	9	6	27	88
17 July	14	45	10	2	1	16	10	1	99
18 July[a]	18	6	3	22	–	12	13	44	118
19 July[a]	–	–	–	–	–	–	–	–	–
20 July	4	55	52	2	11	3	43	4	174
21 July	4	33	53	8	5	18	7	7	135
22 July	3	166	7	5	2	39	10	8	240
23 July[a]	–	10	13	9	2	23	2	0	59
24 July[a]	–	7	20	22	18	61	5	3	136
25 July	7	16	6	13	1	2	8	2	55
26 July	10	3	10	7	1	13	0	5	49
27 July	0	5	9	2	4	0	0	1	21
28 July[a]	23	20	2	0	11	–	16	5	77
29 July	8	7	3	0	2	8	10	17	55
30 July	15	7	27	4	0	9	13	5	80
Total	237	743	318	123	78	452	257	154	2,362
Percent	10%	31%	13%	5%	3%	19%	11%	7%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B3.–Estimated sockeye salmon CPUE by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	2	4	0	0	2	10	9	6	33
2 July	0	6	2	2	3	1	0	2	15
3 July	0	3	6	3	1	4	0	4	21
4 July	1	4	9	0	1	9	24	1	48
5 July[a]	–	64	7	0	3	5	18	1	97
6 July	30	50	7	0	0	23	4	1	115
7 July	1	12	8	2	3	21	0	2	49
8 July	0	20	3	1	0	32	2	0	57
9 July	4	8	14	9	0	46	23	0	104
10 July[a]	–	–	–	–	–	–	–	–	–
11 July	21	37	17	1	0	25	15	4	121
12 July[a]	14	–	–	–	–	–	–	–	14
13 July[a]	–	–	–	–	–	–	–	1	1
14 July[a]	6	18	7	3	2	9	–	–	45
15 July	10	9	8	0	0	4	2	0	33
16 July	15	18	3	2	1	8	5	21	72
17 July	11	35	7	2	1	12	8	1	76
18 July[a]	14	4	3	12	–	9	9	32	83
19 July[a]	–	–	–	–	–	–	–	–	–
20 July	3	40	31	2	8	2	30	3	120
21 July	3	24	28	5	4	13	5	5	88
22 July	2	101	5	3	2	31	7	6	159
23 July[a]	–	9	10	7	2	17	2	0	48
24 July[a]	–	7	14	22	12	56	6	2	120
25 July	6	13	13	11	1	2	7	2	52
26 July	8	2	8	5	1	11	0	2	36
27 July	0	4	7	2	3	0	0	1	17
28 July[a]	18	15	3	0	14	–	12	4	66
29 July	7	6	2	0	2	7	8	12	42
30 July	11	5	15	3	0	7	9	4	55
Total	186	518	237	95	64	362	204	116	1,782
Percent	10%	29%	13%	5%	4%	20%	11%	6%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B4.–Summary of pink salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet northern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	8	309	0	0	0	0
2 July	8	291	0	0	0	0
3 July	8	284	1	1	1	1
4 July	8	289	1	2	1	2
5 July	7[a]	275	7	9	4	6
6 July	8	318	5	14	4	10
7 July	8	276	7	21	6	15
8 July	8	274	3	24	3	18
9 July	8	282	4	28	3	21
10 July	0[a]	0	0	28	0	21
11 July	8	283	40	68	32	53
12 July	1[a]	30	0	68	0	53
13 July	1[a]	37	3	71	3	55
14 July	6[a]	210	47	118	39	95
15 July	8	317	39	157	36	131
16 July	8	287	81	238	66	197
17 July	8	309	72	310	55	252
18 July	7[a]	293	74	384	52	304
19 July	0[a]	0	0	384	0	304
20 July	8	325	108	492	71	375
21 July	8	341	140	632	90	465
22 July	8	318	74	706	51	516
23 July	7[a]	258	27	733	22	538
24 July	7[a]	242	76	809	69	607
25 July	8	301	25	834	20	627
26 July	8	339	25	859	18	645
27 July	8	295	11	870	9	654
28 July	7[a]	235	57	927	49	703
29 July	8	301	24	951	27	729
30 July	8	331	76	1,027	55	785

[a] Not all stations fished due to mechanical difficulties.

Appendix B5.–Estimated pink salmon catch by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

Date	Station number 2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	0	0	1	0	0	1
4 July	0	0	1	0	0	0	0	0	1
5 July[a]	–	6	0	0	0	0	1	0	7
6 July	2	1	1	0	0	1	0	0	5
7 July	0	0	6	0	0	1	0	0	7
8 July	0	1	2	0	0	0	0	0	3
9 July	0	1	0	2	0	1	0	0	4
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	3	11	8	0	0	9	9	0	40
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	3	3
14 July[a]	4	12	7	2	18	4	–	–	47
15 July	15	8	2	1	1	5	7	0	39
16 July	12	29	5	6	1	7	6	15	81
17 July	15	22	12	1	3	15	3	1	72
18 July[a]	4	10	8	17	–	14	9	12	74
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	0	22	57	1	4	5	15	4	108
21 July	3	21	42	47	5	16	4	2	140
22 July	1	28	9	21	1	8	4	2	74
23 July[a]	–	8	5	2	0	8	2	2	27
24 July[a]	–	6	8	20	10	25	4	3	76
25 July	2	6	5	1	0	5	6	0	25
26 July	0	3	5	2	1	12	1	1	25
27 July	0	1	5	0	0	1	0	4	11
28 July[a]	3	3	3	2	4	–	16	26	57
29 July	1	5	0	0	0	2	6	10	24
30 July	8	5	2	0	0	5	21	35	76
Total	73	209	193	125	48	145	114	120	1,027
Percent	7%	20%	19%	12%	5%	14%	11%	12%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B6.–Estimated pink salmon CPUE by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	0	0	1	0	0	1
4 July	0	0	1	0	0	0	0	0	1
5 July[a]	–	4	0	0	0	0	1	0	4
6 July	2	1	1	0	0	1	0	0	4
7 July	0	0	5	0	0	1	0	0	6
8 July	0	1	2	0	0	0	0	0	3
9 July	0	1	0	1	0	1	0	0	3
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	2	9	7	0	0	7	7	0	32
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	3	3
14 July[a]	3	10	8	2	14	2	–	–	39
15 July	11	6	8	1	1	4	6	0	36
16 July	10	23	4	5	1	6	5	12	66
17 July	12	17	9	1	2	11	2	1	55
18 July[a]	3	7	7	9	–	11	7	9	52
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	0	16	34	1	3	4	11	3	71
21 July	3	15	22	30	4	11	3	2	90
22 July	1	17	7	15	1	6	3	2	51
23 July[a]	–	8	4	2	0	6	2	2	22
24 July[a]	–	6	6	20	7	23	5	2	69
25 July	2	5	4	1	0	4	5	0	20
26 July	0	2	3	2	1	10	1	0	18
27 July	0	1	4	0	0	1	0	3	9
28 July[a]	2	2	5	2	5	–	12	21	49
29 July	1	4	0	0	0	2	13	8	27
30 July	6	4	1	0	0	4	15	25	55
Total	57	157	140	90	38	115	96	92	785
Percent	7%	20%	18%	11%	5%	15%	12%	12%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B7.–Summary of chum salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet northern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	8	309	7	7	6	6
2 July	8	291	0	7	0	6
3 July	8	284	0	7	0	6
4 July	8	289	2	9	2	7
5 July	7[a]	275	3	12	2	9
6 July	8	318	7	19	5	14
7 July	8	276	2	21	2	17
8 July	8	274	1	22	1	17
9 July	8	282	8	30	7	24
10 July	0[a]	0	0	30	0	24
11 July	8	283	16	46	13	37
12 July	1[a]	30	0	46	0	37
13 July	1[a]	37	0	46	0	37
14 July	6[a]	210	11	57	9	46
15 July	8	317	16	73	16	61
16 July	8	287	20	93	17	78
17 July	8	309	21	114	16	94
18 July	7[a]	293	31	145	21	115
19 July	0[a]	0	0	145	0	115
20 July	8	325	53	198	34	149
21 July	8	341	60	258	37	185
22 July	8	318	18	276	13	198
23 July	7[a]	258	17	293	15	214
24 July	7[a]	242	52	345	44	257
25 July	8	301	21	366	16	274
26 July	8	339	22	388	16	289
27 July	8	295	42	430	31	321
28 July	7[a]	235	18	448	23	343
29 July	8	301	34	482	26	369
30 July	8	331	102	584	65	434

[a] Not all stations fished due to mechanical difficulties.

Appendix B8.–Estimated chum salmon catch by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	2	5	7
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	2	0	0	2
5 July[a]	–	3	0	0	0	0	0	0	3
6 July	0	1	2	0	0	3	1	0	7
7 July	0	2	0	0	0	0	0	0	2
8 July	0	1	0	0	0	0	0	0	1
9 July	0	2	5	0	0	1	0	0	8
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	0	5	1	0	0	10	0	0	16
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	0	0
14 July[a]	4	1	1	0	5	0	–	–	11
15 July	3	6	1	0	0	3	3	0	16
16 July	4	8	1	1	0	3	1	2	20
17 July	3	7	4	1	2	3	1	0	21
18 July[a]	0	4	2	11	–	7	4	3	31
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	1	7	35	2	6	0	2	0	53
21 July	0	8	30	13	1	6	2	0	60
22 July	0	3	1	9	2	2	1	0	18
23 July[a]	–	6	3	3	2	2	1	0	17
24 July[a]	–	1	8	16	15	8	3	1	52
25 July	1	5	4	5	0	1	5	0	21
26 July	0	9	6	5	1	0	0	1	22
27 July	2	4	26	6	3	0	1	0	42
28 July[a]	2	4	6	0	6	–	0	0	18
29 July	2	4	0	1	1	4	19	3	34
30 July	17	4	64	11	1	4	1	0	102
Total	39	95	200	84	45	59	47	15	584
Percent	7%	16%	34%	14%	8%	10%	8%	3%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B9.–Estimated chum salmon CPUE by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	2	4	6
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	0	0	0	0	0	0
4 July	0	0	0	0	0	2	0	0	2
5 July[a]	–	2	0	0	0	0	0	0	2
6 July	0	1	1	0	0	2	1	0	5
7 July	0	2	0	0	0	0	0	0	2
8 July	0	1	0	0	0	0	0	0	1
9 July	0	2	4	0	0	1	0	0	7
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	0	4	1	0	0	8	0	0	13
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	0	0
14 July[a]	3	1	1	0	4	0	–	–	9
15 July	2	4	4	0	0	3	3	0	16
16 July	3	6	1	1	0	3	1	2	17
17 July	2	5	3	1	2	2	1	0	16
18 July[a]	0	3	2	6	–	5	3	2	21
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	1	5	21	2	4	0	1	0	34
21 July	0	6	16	8	1	4	2	0	37
22 July	0	2	1	6	2	2	1	0	13
23 July[a]	–	6	2	2	2	2	1	0	15
24 July[a]	–	1	6	16	10	7	3	1	44
25 July	1	4	3	4	0	1	4	0	16
26 July	0	6	5	4	1	0	0	0	16
27 July	2	2	19	5	2	0	1	0	31
28 July[a]	2	3	10	0	8	–	0	0	23
29 July	2	3	0	1	1	2	14	2	26
30 July	13	3	37	9	1	3	1	0	65
Total	30	72	136	64	36	47	37	12	434
Percent	7%	17%	31%	15%	8%	11%	8%	3%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B10.–Summary of coho salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet northern offshore test fishery project, 2014.

Date	Number of stations	Mean fishing time (min)	Catch		CPUE	
			Daily	Cum	Daily	Cum
1 July	8	309	0	0	0	0
2 July	8	291	0	0	0	0
3 July	8	284	1	1	1	1
4 July	8	289	0	1	0	1
5 July	7[a]	275	1	2	1	1
6 July	8	318	2	4	2	3
7 July	8	276	0	4	0	3
8 July	8	274	0	4	0	3
9 July	8	282	2	6	2	5
10 July	0[a]	0	0	6	0	5
11 July	8	283	3	9	3	7
12 July	1[a]	30	0	9	0	7
13 July	1[a]	37	0	9	0	7
14 July	6[a]	210	1	10	1	8
15 July	8	317	0	10	0	8
16 July	8	287	14	24	8	16
17 July	8	309	5	29	4	20
18 July	7[a]	293	34	63	25	44
19 July	0[a]	0	0	63	0	44
20 July	8	325	29	92	19	63
21 July	8	341	58	150	37	101
22 July	8	318	13	163	9	110
23 July	7[a]	258	46	209	38	147
24 July	7[a]	242	70	279	60	207
25 July	8	301	15	294	12	219
26 July	8	339	20	314	15	234
27 July	8	295	6	320	5	238
28 July	7[a]	235	19	339	20	259
29 July	8	301	8	347	6	264
30 July	8	331	52	399	33	297

[a] Not all stations fished due to mechanical difficulties.

Appendix B11.–Estimated coho salmon catch by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	1	0	0	0	0	1
4 July	0	0	0	0	0	0	0	0	0
5 July[a]	–	1	0	0	0	0	0	0	1
6 July	0	1	0	0	0	0	0	1	2
7 July	0	0	0	0	0	0	0	0	0
8 July	0	0	0	0	0	0	0	0	0
9 July	0	1	0	0	0	1	0	0	2
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	0	0	2	0	0	0	1	0	3
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	0	0
14 July[a]	0	0	0	0	1	0	–	–	1
15 July	0	0	0	0	0	0	0	0	0
16 July	8	0	2	1	0	1	1	1	14
17 July	0	3	0	1	0	0	1	0	5
18 July[a]	0	2	1	26	–	3	2	0	34
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	0	2	15	0	9	2	1	0	29
21 July	0	3	16	16	1	17	3	2	58
22 July	0	4	3	6	0	0	0	0	13
23 July[a]	–	7	10	9	14	6	0	0	46
24 July[a]	–	4	8	32	21	5	0	0	70
25 July	0	3	0	7	3	0	2	0	15
26 July	10	2	3	2	3	0	0	0	20
27 July	1	0	1	2	1	1	0	0	6
28 July[a]	3	3	0	2	11	–	0	0	19
29 July	0	1	0	2	0	4	1	0	8
30 July	5	1	37	0	4	5	0	0	52
Total	27	38	98	107	68	45	12	4	399
Percent	7%	10%	25%	27%	17%	11%	3%	1%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B12.–Estimated coho salmon CPUE by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	0	0	0
2 July	0	0	0	0	0	0	0	0	0
3 July	0	0	0	1	0	0	0	0	1
4 July	0	0	0	0	0	0	0	0	0
5 July[a]	–	1	0	0	0	0	0	0	1
6 July	0	1	0	0	0	0	0	1	2
7 July	0	0	0	0	0	0	0	0	0
8 July	0	0	0	0	0	0	0	0	0
9 July	0	1	0	0	0	1	0	0	2
10 July[a]	–	–	–	–	–	–	–	–	0
11 July	0	0	2	0	0	0	1	0	3
12 July[a]	0	–	–	–	–	–	–	–	0
13 July[a]	–	–	–	–	–	–	–	0	0
14 July[a]	0	0	0	0	1	0	–	–	1
15 July	0	0	0	0	0	0	0	0	0
16 July	3	0	2	1	0	1	1	1	8
17 July	0	2	0	1	0	0	1	0	4
18 July[a]	0	1	1	19	–	2	1	0	25
19 July[a]	–	–	–	–	–	–	–	–	0
20 July	0	2	9	0	6	2	1	0	19
21 July	0	2	8	10	1	12	2	2	37
22 July	0	2	2	4	0	0	0	0	9
23 July[a]	–	7	8	7	11	5	0	0	38
24 July[a]	–	4	6	32	14	5	0	0	60
25 July	0	2	0	5	2	0	2	0	12
26 July	8	1	2	2	2	0	0	0	15
27 July	1	0	1	2	1	1	0	0	5
28 July[a]	2	2	0	2	14	–	0	0	20
29 July	0	1	0	2	0	2	1	0	6
30 July	4	1	21	0	3	4	0	0	33
Total	17	30	62	86	56	34	9	3	297
Percent	6%	10%	21%	29%	19%	11%	3%	1%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B13.–Summary of Chinook salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet northern offshore test fishery project, 2014.

	Number	Mean fishing	Catch		CPUE	
Date	of stations	time (min)	Daily	Cum	Daily	Cum
1 July	8	309	0	0	0	0.0
2 July	8	291	0	0	0	0.0
3 July	8	284	0	0	0	0.0
4 July	8	289	0	0	0	0.0
5 July	7[a]	275	1	1	0.8	0.8
6 July	8	318	0	1	0	0.8
7 July	8	276	0	1	0	0.8
8 July	8	274	0	1	0	0.8
9 July	8	282	0	1	0	0.8
10 July	0[a]	0	0	1	0	0.8
11 July	8	283	0	1	0	0.8
12 July	1[a]	30	0	1	0	0.8
13 July	1[a]	37	0	1	0	0.8
14 July	6[a]	210	0	1	0	0.8
15 July	8	317	2	3	1.4	2.2
16 July	8	287	0	3	0	2.2
17 July	8	309	0	3	0	2.2
18 July	7[a]	293	0	3	0	2.2
19 July	0[a]	0	0	3	0	2.2
20 July	8	325	0	3	0	2.2
21 July	8	341	0	3	0	2.2
22 July	8	318	0	3	0	2.2
23 July	7[a]	258	0	3	0	2.2
24 July	7[a]	242	0	3	0	2.2
25 July	8	301	0	3	0	2.2
26 July	8	339	0	3	0	2.2
27 July	8	295	0	3	0	2.2
28 July	7[a]	235	0	3	0	2.2
29 July	8	301	0	3	0	2.2
30 July	8	331	0	3	0	2.2

[a] Not all stations fished due to mechanical difficulties.

Appendix B14.–Estimated Chinook salmon catch by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

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

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

Appendix B15.–Estimated Chinook salmon CPUE by date and station, Upper Cook Inlet northern offshore test fishery project, 2014.

	Station number								
Date	2	3	4	5	8	9	10	11	Total
1 July	0	0	0	0	0	0	0	0	0.0
2 July	0	0	0	0	0	0	0	0	0.0
3 July	0	0	0	0	0	0	0	0	0.0
4 July	0	0	0	0	0	0	0	0	0.0
5 July[a]	–	0	0	0	0	0.8	0	0	0.8
6 July	0	0	0	0	0	0	0	0	0.0
7 July	0	0	0	0	0	0	0	0	0.0
8 July	0	0	0	0	0	0	0	0	0.0
9 July	0	0	0	0	0	0	0	0	0.0
10 July[a]	–	–	–	–	–	–	–	–	0.0
11 July	0	0	0	0	0	0	0	0	0.0
12 July[a]	0	–	–	–	–	–	–	–	0.0
13 July[a]	–	–	–	–	–	–	–	0	0.0
14 July[a]	0	0	0	0	0	0	–	–	0.0
15 July	0.7	0.7	0	0	0	0	0	0	1.4
16 July	0	0	0	0	0	0	0	0	0.0
17 July	0	0	0	0	0	0	0	0	0.0
18 July[a]	0	0	0	0	–	0	0	0	0.0
19 July[a]	–	–	–	–	–	–	–	–	0.0
20 July	0	0	0	0	0	0	0	0	0.0
21 July	0	0	0	0	0	0	0	0	0.0
22 July	0	0	0	0	0	0	0	0	0.0
23 July[a]	–	0	0	0	0	0	0	0	0.0
24 July[a]	–	0	0	0	0	0	0	0	0.0
25 July	0	0	0	0	0	0	0	0	0.0
26 July	0	0	0	0	0	0	0	0	0.0
27 July	0	0	0	0	0	0	0	0	0.0
28 July[a]	0	0	0	0	0	–	0	0	0.0
29 July	0	0	0	0	0	0	0	0	0.0
30 July	0	0	0	0	0	0	0	0	0.0
Total	0.7	0.7	0.0	0.0	0.0	0.8	0.0	0.0	2.2
Percent	32%	32%	0%	0%	0%	36%	0%	0%	100%

Note: Dashes indicate a station that was not fished.

[a] Not all stations fished due to mechanical difficulties.

APPENDIX C: EXECUTIVE SUMMARY (MONITORING DYNAMICS OF THE ALASKA COASTAL CURRENT AND DEVELOPMENT OF APPLICATIONS FOR MANAGEMENT OF COOK INLET SALMON – A PILOT STUDY. EXXON VALDEZ OIL SPILL GULF ECOSYSTEM MONITORING AND RESEARCH PROJECT FINAL REPORT)

Appendix C1.–Executive summary Willette et al. (2010) (*Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon – a pilot study. Exxon Valdez Oil Spill Gulf Ecosystem Monitoring and Research Project Final Report*).

This project used a vessel of opportunity to collect physical oceanographic and fisheries data at 6 stations along a transect across lower Cook Inlet from Anchor Point (AP) to the Red River delta each day during July. Logistical support for the field sampling was provided in part by the Alaska Department of Fish and Game which has chartered a drift gillnet vessel annually to fish along this transect providing inseason projections of the size of sockeye salmon runs entering Cook Inlet. This project funded collection of physical oceanographic data on board the chartered vessel to help identify intrusions of the Alaska Coastal Current (ACC) into Cook Inlet and test 6 hypotheses regarding effects of changing oceanographic conditions on migratory behavior and catchability of sockeye salmon entering Cook Inlet. In 2003-2007, a conductivity-temperature-depth profiler was deployed at each station. In 2003-2005, current velocities were estimated along the transect using a towed acoustic Doppler current profiler, and salmon relative abundance and vertical distribution was estimated using towed fisheries acoustic equipment. Several statistical analyses of these data were conducted to test hypotheses, and retrospective analyses of salmon migratory behavior were conducted using historical salmon catch data, meteorological and ocean surface measurements taken along the AP transect, and sea surface temperature data from the northeast Pacific Ocean, 1982-2008. Finally, the knowledge obtained from these analyses was applied to develop applications to improve the accuracy of inseason sockeye salmon run forecasts needed for management of these stocks.

Vertical cross sections of physical parameters exhibited a typical pattern with a relatively warm, turbid, low salinity surface layer along the west side of the inlet consistent with the outflow of glacial melt water from the Susitna and other rivers flowing into the inlet. ACC water was not identified along the AP transect during July using T-S characteristics. In July, the ACC was relatively weak and tended to follow the 100-m isobath near the entrance to Cook Inlet. Seasonal and interannual changes in physical parameters along the AP transect were primarily driven by large-scale Gulf of Alaska (GOA) processes. Since 1996, mean July surface salinities declined -0.075 $year^{-1}$ at all stations, which is greater than the decline in surface salinities at station GAK1 (-0.011 $year^{-1}$) in the northern GOA. Tides were the dominant force affecting physical parameter distributions along the AP transect over short time scales. On the ebb tide, a warm low salinity surface layer (0-40 m) spread eastward decreasing the slope of the isohaline surfaces. On the flood tide, cold high salinity water at depth appeared to force the low salinity layer to the west increasing the slope of the isohaline surfaces. As a result, baroclinic currents were relatively weak on the ebb tide, while on the flood tide a southward flowing baroclinic jet formed in the center of the transect shifting to the west at the peak of the flood. Peak ebb-tide current velocities were centered over a deep seafloor channel between stations 6 & 7, while peak flood-tide velocities were centered to the east near station 5. Weaker flood-tide currents near station 7 were likely due to the effects of a southward flowing baroclinic jet that formed in this area during the flood tide.

Retrospective analyses of sockeye salmon catch per unit effort (CPUE) data supported the hypothesis that sockeye salmon used tidal currents to facilitate their northward migration into Cook Inlet, but they also aggregated along frontal boundaries. On the flood tide, CPUE was highest in the area of strongest salinity gradient rather than peak northward current. On the ebb tide, CPUE was relatively low in the area of strongest southward current, but the lowest CPUE was further west where salinities were lowest. Generally, it appeared that salmon moved deeper in the water column to avoid a low salinity layer ($<29^{o}/_{oo}$) on the west side and stronger southward currents throughout the area, thus making them less vulnerable to surface drift gillnets. Sockeye salmon residence times in the inlet ranged from 1-8 days with longer (shorter) residence times associated with cooler (warmer) ocean temperatures and weaker (stronger) salinity gradients. Sockeye salmon run timing appeared to be determined in part by density-dependent growth in the year prior to inshore migration. Warmer ocean temperatures in the northeast Pacific region likely reduced the area of available sockeye salmon rearing habitat leading to lower growth and delayed inshore migration the following year. Sockeye salmon run timing was further delayed by strong north winds over Cook Inlet in late July.

Application of this knowledge to improve inseason sockeye salmon run forecasts led to development of methods for (1) adjusting test fishery CPUE indices for gillnet catchability, and (2) estimating run-timing using ancillary oceanographic and fisheries data. However, adjusting test fishery CPUE indices for gillnet catchability did not reduce salmon run forecast errors. But, application of a sockeye salmon run-timing model using ancillary data reduced early (July 15-20) inseason salmon run forecast errors from 59.1% to 14.0%. Salmon run forecast errors were not substantially further reduced using actual run timing or passage rates (i.e. catchability). More accurate early season salmon run forecasts should improve our ability to achieve escapement goals and maintain high sustained yields from future runs.

APPENDIX D: HISTORIC GENETIC STOCK IDENTIFICATION DATA

Appendix D1.–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 ranges) of sockeye salmon captured in the southern OTF, 2006–2013.

			Stock composition				Stock-specific CCPUE					
			Within date range				Within date range					Within year
Date		Reporting			90% CI					90% CI		
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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			Stock composition				Stock-specific CCPUE					
			Within date range				Within date range					Within year
Date		Reporting			90% CI					90% CI		
Range	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	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
							CCPUEi	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
							CCPUEi	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
							CCPUEi	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
							CCPUEi	524				
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
							CCPUEi	545				
							CCPUEf	2,485				

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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
						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: Proportion	SD	90% CI 5%	95%		Stock-specific CCPUE: 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
							CCPUEi	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
							CCPUEi	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
							CCPUEi	404				
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
							CCPUEi	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
							CCPUEi	363				

Stock composition and stock-specific CCPUE proportions are within date range; the last column gives the proportion within year.

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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
						2009						
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	0.01
		JCL	0.04	0.01	0.02	0.06		10	3	4	16	0.00
		SusYen	0.02	0.01	0.01	0.05		6	3	2	13	0.00
		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	0.00
		Kenai	0.72	0.03	0.67	0.77		191	8	178	204	0.09
		Kasilof	0.01	0.02	0.00	0.04		3	4	0	11	0.00
							CCPUEi	266				
							CCPUEf	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
							CCPUEi	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
							CCPUEi	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
							CCPUEi	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
							CCPUEi	308				

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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
						2010						
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				

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2012												
			Stock composition				Stock-specific CCPUE					
			Within date range				Within date range					Within year
Date		Reporting			90% CI					90% CI		
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
							$CCPUE_i$	424				
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 year
Date		Reporting			90% CI					90% CI			
Range	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	5%	95%		Proportion
All	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
							$CCPUE_i$	1,342					
							$CCPUE_f$	1,342					

Note: 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. Original genetic stock composition estimates are multiplied by the CCPUE within date ranges and these estimates are divided by the total annual CCPUE (Total CCPUE) for the second set of within year proportions. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

Appendix D2.–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 (Stations) of sockeye salmon captured in the southern OTF, 2010–2013.

			Stock composition					Stock-specific CCPUE				
			Within station					Within station				Within year
		Reporting			90% CI					90% CI		
Station	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	0	1	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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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 0	1	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	6	14	32	0.01
		JCL	0.02	0.01	0.01	0.05		5	3	1	10	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		151	8	138	164	0.04
		Kasilof	0.04	0.02	0.02	0.08		9	4	3	16	0.00
							$CCPUE_i$	199				
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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			Stock composition				Stock-specific CCPUE					
			Within station				Within station					Within year
		Reporting			90% CI					90% CI		
Station	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	0	1	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				
							$CCPUE_f$	3,715				
						2012						
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
							$CCPUE_i$	158				
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				

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			Stock composition				Stock-specific CCPUE					
			Within station				Within station					Within year
		Reporting			90% CI					90% CI		
Station	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	Proportion
						2012						
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				
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: 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. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

Appendix D3.–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 ranges) of sockeye salmon captured in the northern OTF for 2012 and 2013.

			Stock composition					Stock-specific CCPUE				
			Within date range					Within date range				Within year
Date		Reporting			90% CI					90% CI		
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%	95%	Stock-specific CCPUE: Within date range	Estimate	SD	90% CI 0	1	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	1,010	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
							$CCPUE_i$	494				

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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
						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: 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. Original genetic stock composition estimates are multiplied by the CCPUE within date ranges and these estimates are divided by the total annual CCPUE (Total CCPUE) for the second set of within year proportions. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

Appendix D4.–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 (Stations) of sockeye salmon captured in the northern OTF in 2012 and 2013.

			Stock composition				Stock-specific CCPUE					
			Within station				Within station					Within year
		Reporting			90% CI					90% CI		
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
							$CCPUE_i$	1,156				
4	n=1,109	Crescent	0.00	0.00	0.00	0.00		0	1	0	1	0.00
	n_{eff}=1098	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		1,179	21	1,144	1,213	0.32
		Kasilof	0.04	0.01	0.03	0.05		56	10	41	73	0.02
							$CCPUE_i$	1,554				
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				

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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
						2012						
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				
							$CCPUE_f$	3,696				
						2013[a]						
1&2	n=604	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=583	West	0.01	0.00	0.00	0.02		7	3	3	12	0.01
		JCL	0.02	0.01	0.01	0.03		14	4	8	21	0.00
		SusYen	0.02	0.01	0.01	0.03		10	4	4	17	0.00
		Fish	0.00	0.00	0.00	0.01		2	2	0	6	0.00
		KTNE	0.01	0.01	0.01	0.02		10	4	4	17	0.00
		Kenai	0.90	0.01	0.88	0.92		604	9	589	618	0.21
		Kasilof	0.03	0.01	0.02	0.05		21	5	13	31	0.02
							$CCPUE_i$	668				
3	n=621	Crescent	0.00	0.00	0.00	0.00		0	1	0	0	0.00
	n_{eff}=613	West	0.05	0.01	0.04	0.07		60	12	43	80	0.03
		JCL	0.06	0.01	0.05	0.08		69	11	52	88	0.01
		SusYen	0.03	0.01	0.02	0.04		32	9	18	48	0.02
		Fish	0.00	0.00	0.00	0.01		2	2	0	6	0.00
		KTNE	0.03	0.01	0.02	0.04		29	8	17	43	0.01
		Kenai	0.80	0.02	0.77	0.83		890	19	858	920	0.35
		Kasilof	0.02	0.01	0.01	0.04		27	8	15	41	0.01
							$CCPUE_i$	1,109				
4	n=495	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=480	West	0.14	0.02	0.11	0.17		75	9	60	91	0.01
		JCL	0.12	0.01	0.09	0.14		62	8	49	75	0.01
		SusYen	0.07	0.01	0.04	0.09		35	8	22	49	0.01
		Fish	0.00	0.00	0.00	0.01		1	1	0	4	0.00
		KTNE	0.04	0.01	0.03	0.06		23	6	15	33	0.00
		Kenai	0.62	0.02	0.58	0.65		329	13	308	349	0.16
		Kasilof	0.02	0.01	0.01	0.03		10	4	5	17	0.01
							$CCPUE_i$	535				
5	n=201	Crescent	0.00	0.00	0.00	0.00		0	0	0	0	0.00
	n_{eff}=201	West	0.26	0.03	0.21	0.32		55	7	44	67	0.02
		JCL	0.27	0.03	0.22	0.32		57	7	46	69	0.01
		SusYen	0.23	0.03	0.18	0.29		49	7	38	61	0.00
		Fish	0.00	0.01	0.00	0.02		1	1	0	4	0.00
		KTNE	0.02	0.01	0.00	0.05		5	3	1	10	0.00
		Kenai	0.20	0.03	0.15	0.25		42	6	32	53	0.05
		Kasilof	0.01	0.01	0.00	0.03		2	2	0	5	0.00
							$CCPUE_i$	212				

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			Stock composition				Stock-specific CCPUE					
			Within station				Within station					Within year
		Reporting			90% CI					90% CI		
Station	n; n_{eff}	Group	Proportion	SD	5%	95%		Estimate	SD	5%	95%	Proportion
						2013[a]						
6&7	n=68	Crescent	0.06	0.03	0.01	0.13		3	2	1	7	0.00
	n_{eff}=67	West	0.57	0.07	0.47	0.68		32	4	26	38	0.00
		JCL	0.00	0.01	0.00	0.02		0	0	0	1	0.00
		SusYen	0.07	0.03	0.02	0.13		4	2	1	7	0.00
		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	0.29	0.06	0.20	0.39		16	3	11	22	0.02
		Kasilof	0.00	0.01	0.00	0.01		0	0	0	0	0.00
							$CCPUE_i$	56				
							$CCPUE_f$	2,580				

Note: 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. Stock-specific CCPUE is derived using non-interpolated CCPUE values.

[a] Stock composition estimates for 2013 underwent a major revision from data originally published in Dupuis et al. (2015).