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Chinook Salmon Sport Harvest Genetic Stock and Biological Compositions in Cook Inlet Salt Waters, 2014–2018

by

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and

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December 2021

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

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

FISHERY MANUSCRIPT NO. 21-04

CHINOOK SALMON SPORT HARVEST GENETIC STOCK AND BIOLOGICAL COMPOSITIONS IN COOK INLET SALT WATERS, 2014–2018

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ABSTRACT

Information about stock-specific harvest of Chinook salmon in Cook Inlet saltwater sport fisheries is needed to understand the decline in productivity of Cook Inlet stocks. From 2014 through 2018, mixed stock genetic analysis was used to determine the stock composition of Chinook salmon harvest samples from Cook Inlet saltwater sport fisheries. Four genetic reporting groups were selected to represent Cook Inlet and non-Cook Inlet stocks: *Outside Cook Inlet, Northern Cook Inlet, Kenai,* and *Southern Kenai Peninsula.* Genetic reporting group stock composition and harvests were estimated annually for the following fisheries: the Upper Cook Inlet summer early and late fisheries, the Lower Cook Inlet summer fishery, and the winter fishery. The *Outside Cook Inlet* reporting group composed most of the harvest in all fisheries and all years (70.1–99.8%). The contribution of Cook Inlet Chinook salmon stocks was greatest in the Upper Cook Inlet fisheries (3.5–29.9%) and lowest in the winter fisheries (0.02%). Mixed stock analysis for immature and mature Chinook salmon revealed that almost all immature fish (97.6–99.2%), and a large portion of mature fish (40–81%) harvested in Cook Inlet are from nonlocal stocks. Biological data collected from Chinook salmon harvests in these fisheries indicate that older, larger, and more mature Chinook salmon are harvested in the Upper Cook Inlet summer fisheries. Coded wire tags were used to quantify known origin Chinook salmon harvests, but very few Cook Inlet tags (2) were recovered over the 5-year study. This project provides valuable stock-specific harvest information that can be used by managers to adaptively regulate Cook Inlet saltwater sport fisheries.

Keywords: Chinook salmon, Cook Inlet, *Oncorhynchus tshawytscha*, single nucleotide polymorphism, SNP, mixed stock analysis, MSA, coded wire tag, CWT, maturity

INTRODUCTION

Cook Inlet salt waters support a diversity of year-round Chinook salmon sport fisheries that occur in the Lower Cook Inlet Management Area (LCIMA; Figure 1) of the Alaska Department of Fish and Game (ADF&G) Division of Sport Fish. These sport fisheries are primarily prosecuted by boat-based trolling in nearshore waters throughout Kachemak Bay and in Cook Inlet along the Kenai Peninsula from Anchor Point north to the Ninilchik area. Additionally, in the lower part of LCIMA, Chinook salmon are harvested in stocked terminal fisheries in Kachemak Bay at the Nick Dudiak Fishing Lagoon on the Homer spit, in Seldovia, and historically at Halibut Cove Lagoon. These fisheries harvest a mixture of stocks including local returning and nonlocal (feeder) Chinook salmon. Feeder Chinook salmon are harvested year-round whereas stocked and wild Chinook salmon are harvested April through August.

For management, LCIMA is divided into Upper Cook Inlet (UCI) and Lower Cook Inlet (LCI) fisheries (Figure 1), and Chinook salmon are managed in 3 fisheries: the UCI summer fishery (including early and late fisheries), the LCI summer fishery, and the winter fishery (including both UCI and LCI). The UCI fishery generally occurs during summer months along the Kenai Peninsula primarily within 1 mile of shore from Bluff Point north to the Ninilchik area (Figure 1). The LCI fishery occurs throughout the eastern nearshore waters of Cook Inlet south of Bluff Point to the tip of Homer Spit and from Bear Cove on the south side of Kachemak Bay to Point Adam and in offshore locations near the mouth of Kachemak Bay. During the winter months, the Chinook salmon fishery occurs largely in LCI and primarily in eastern Cook Inlet south of the Anchor Point light to the Homer Spit and along the south side of Kachemak Bay (Figure 1).

Cook Inlet saltwater sport fisheries became popular in the late 1980s and early 1990s, and harvests of Chinook salmon increased with the growth of guided sport fishing and tourism industries (McKinley 1999; Begich 2007). Due to its greater interception of Cook Inlet stocks, the UCI summer sport fishery has more regulatory complexity than most of the other saltwater sport fisheries in LCIMA and has a management plan (*Upper Cook Inlet Summer Salt Water King Salmon Management Plan* [Alaska Administrative Code 5 AAC 58.055]) and a guideline harvest level (GHL) of 7,500 Chinook salmon (Booz et al. 2019).

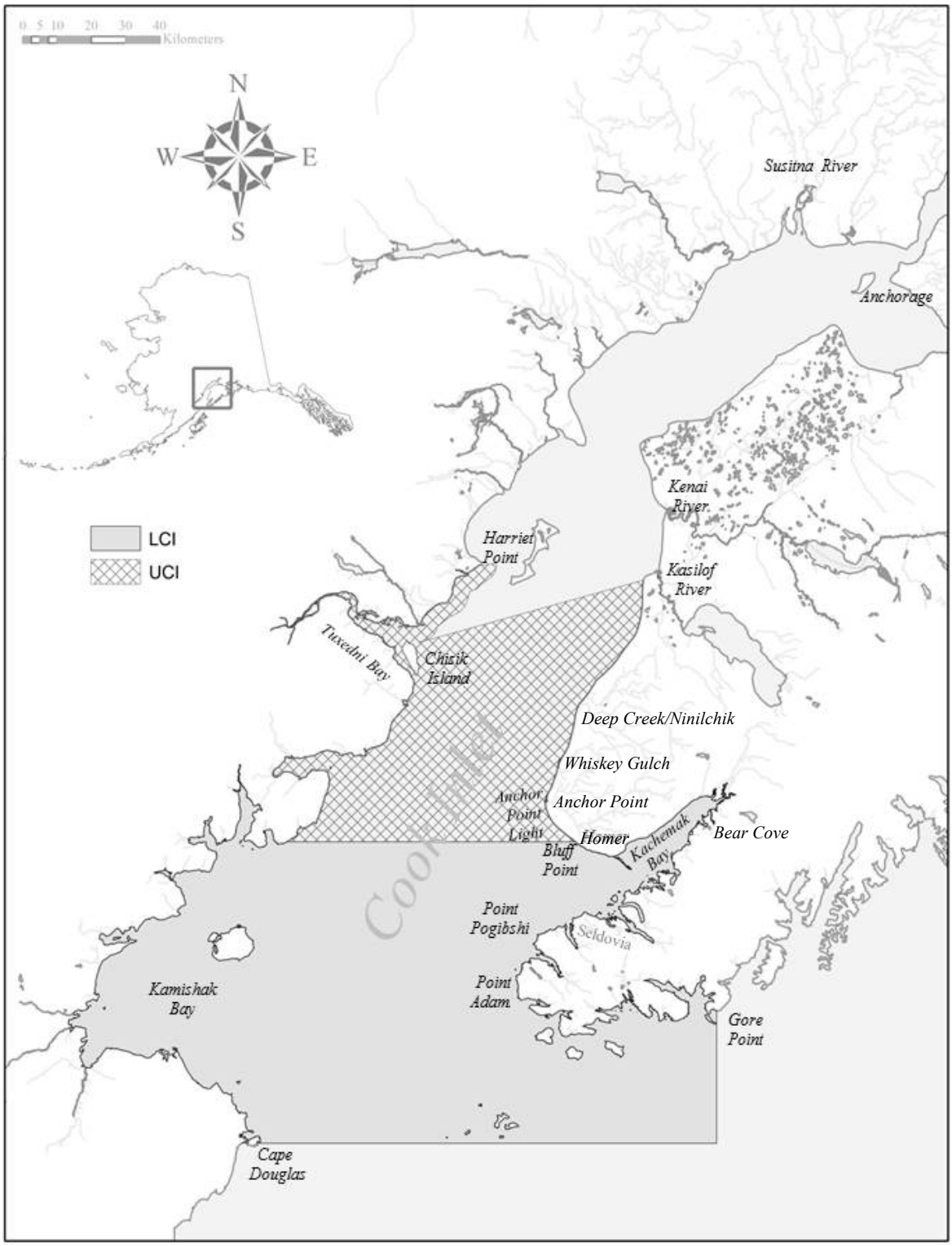

Figure 1.–Alaska Department of Fish and Game Division of Sport Fish Lower Cook Inlet Management Area (outlined) including Upper Cook Inlet (UCI) and Lower Cook Inlet (LCI) fisheries.

The first management plan specific to a summer fishery in UCI was implemented in 1996, when the Alaska Board of Fisheries (BOF) adopted the *Upper Cook Inlet Salt Water Early-run King Salmon Management Plan* from Bluff Point north to the mouth of the Ninilchik River. In 1999, the BOF adopted the *Kenai River Late-Run Chinook Salmon Management Plan*, closing sport fishing for Chinook salmon in salt waters north of the latitude of Bluff Point when the Kenai River late-run Chinook salmon inriver sport fishery is closed due to low runs. In 2016, the BOF adopted several ADF&G proposals simplifying the Cook Inlet Chinook salmon sport fisheries regulations and aligning them to the period of time when Cook Inlet stocks are known to be present in LCIMA (Barclay et al. 2016) to better manage those stocks. These changes included expanding the early-run management plan to include the late-run fishery (combining early- and late-run fisheries into the UCI summer fishery) and shortening the seasons for the LCI summer fishery and the new UCI summer fishery to include only months when Cook Inlet stocks are present (April through August; Booz et al. 2019). For the UCI summer fishery, the new *Upper Cook Inlet Summer Salt Water King Salmon Management Plan* resulted in elimination of the small nearshore special harvest areas, modifications to the regulations to include all waters specified in the management plan, extensions to the closure period for conservation zones, and additional restrictions to limit harvest of late-run Cook Inlet Chinook salmon stocks.

There are no management plans for the Lower Cook Inlet summer fishery, and it is regulated with a daily limit of 2 Chinook salmon of any size, which are included in the Cook Inlet annual limit of 5 Chinook salmon 20 inches or greater. However, the LCI winter fishery is managed according to the *Lower Cook Inlet Winter Salt Water King Salmon Sport Fishery Management Plan* (5 AAC 58.060), which was adopted by the BOF in 2002. The management plan specifies a GHL of 3,000 Chinook salmon for the saltwater area south of Bluff Point. In 2010, the BOF adopted a public proposal to change the northern boundary for the winter fishery to the Anchor Point Light, including a portion of the UCI management area. In 2016, the BOF adopted changes to expand the winter fishery to include the month of September and all Cook Inlet salt waters (Booz et al. 2019). To incorporate the month of September, the GHL was also expanded from 3,000 to 4,500 Chinook salmon.

In addition to the management plans, the UCI fisheries have been restricted by preseason and inseason emergency orders (EO) in years (since 2009) with below-average production of Cook Inlet stocks (Booz et al. 2019). The LCI summer fishery has not been restricted by EO in unison with the UCI summer fishery because the harvest is assumed to be primarily composed of nonlocal feeder Chinook salmon (Barclay et al. 2019). For the same reason, the winter fishery also has not been restricted by EO.

Harvest, catch, and effort for Cook Inlet saltwater Chinook salmon sport fisheries is estimated through the Statewide Harvest Survey [SWHS]).[1] The SWHS is a mail survey that is used to estimate annual sport fishing harvest, catch, and effort (in angler-days) by location and user group (private or charter). The SWHS is not designed to estimate directed effort towards individual species. In Cook Inlet salt waters, Chinook salmon harvest has been estimated by fishery, and the SWHS has been modified when regulatory changes occurred to these fisheries. Since 2002, the largest Chinook salmon harvests in LCIMA have almost always occurred in the LCI summer fishery and the smallest harvests have occurred in the UCI late summer fishery. LCIMA Chinook salmon harvest has been above average during the years of this study (2014 through 2018; Table 1).

[1] Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish Available from: http://www.adfg.alaska.gov/sf/sportfishingsurvey/.

Table 1.–Statewide Harvest Survey (SWHS) estimates of Chinook salmon sport harvest in Lower Cook Inlet Management Area (LCIMA) salt waters by fishery, 1972–2018.

	Lower Cook Inlet Management Area[a]										
	Upper Cook Inlet summer[b]						Lower Cook Inlet summer		Winter		LCIMA
	Early		Late		Summer total						
Year	Harvest	SE	Harvest	SE	Harvest	SE	Harvest	SE	Harvest	SE	Total
2002	3,368	363	427	99	3,795	376	3,387	346	1,423	232	11,838
2003	4,042	376	200	58	4,242	381	3,931	404	1,767	285	14,828
2004	3,880	357	1,539	210	5,419	414	5,692	522	2,012	355	17,737
2005	3,746	383	1,040	173	4,786	420	6,816	832	2,863	484	18,850
2006	5,035	516	898	135	5,933	533	5,878	660	1,486	305	16,368
2007	4,015	406	797	189	4,829	448	3,555	402	1,951	306	12,556
2008	2,137	233	517	97	2,654	253	2,956	367	1,666	458	8,562
2009	1,415	186	256	65	1,671	197	2,196	333	1,640	319	6,546
2010	1,753	301	558	124	2,311	325	4,236	474	2,559	580	10,134
2011	2,201	277	853	201	3,054	342	3,514	396	1,990	404	9,284
2012	955	184	453	170	1,408	250	3,331	391	2,079	336	6,890
2013	2,027	304	510	139	2,537	334	5,810	612	2,411	422	11,022
2014	1,554	288	985	228	2,539	367	5,059	548	3,173	648	11,989
2015	2,658	405	1,528	405	4,186	514	8,066	790	5,179	867	19,515
2016	2,430	361	1,333	246	3,763	437	9,868	760	5,106	857	20,005
2017	1,999	315	1,157	64	3,156	610	8,687	700	4,518	787	17,438
2018	1,885	267	1,092	129	2,977	588	6,818	679	7,844	1,094	17,639
Averages											
2002–2013	2,881	324	671	138	3,553	356	4,275	478	1,987	374	12,051
2014–2018	2,105	327	1,219	214	3,324	503	7,700	695	5,164	851	17,317

Source: Mills (1991–1994); Howe et al. (1995, 1996); Alaska Sport Fishing Survey database [Internet]. 1996–present. Alaska Department of Fish and Game, Division of Sport Fish (cited September 22, 2019). Available from: http://www.adfg.alaska.gov/sf/sportfishingsurvey/.

[a] Fishery-specific harvest estimates do not include shore-based harvest, LCIMA total harvest estimate does include shore-based harvest.

[b] Starting in 2017, the SWHS no longer estimates the harvest in Upper Cook Inlet by fishery. For 2017 and 2018, harvest estimates were calculated by using the 2014–2016 harvest proportions.

Stock compositions and biological data were assessed from 1996 to 2002 for the UCI early summer saltwater sport fishery via sampling and interviews at landing sites (Begich 2007). The stock compositions were assessed through coded wire tag (CWT) recoveries of adult Chinook salmon that were tagged as juveniles from select Cook Inlet wild and hatchery stocks. This method was used to estimate harvest rates for Cook Inlet Chinook salmon stocks; however, because relatively few stocks were tagged, most of the harvest was still of unknown origin. Maturity was also assessed for UCI early and late summer fisheries during these years, and these Chinook salmon harvests were composed of primarily mature fish, which were assumed to be Cook Inlet stocks (Begich 2007).

Genetic mixed stock analysis (MSA) has been used for Cook Inlet commercial salmon fisheries since the 1990s when it was first implemented to estimate the stock composition of the sockeye salmon commercial harvest (Seeb et al. 2000; Habicht et al. 2007). With the development of comprehensive genetic baselines for Upper Cook Inlet Chinook salmon (Appendix A1; Barclay et al. 2012; Barclay and Habicht 2015), this method has more recently been used to estimate the stock composition of Chinook salmon harvested in the Upper Subdistrict Commercial set gillnet fishery (Eskelin et al. 2013; Eskelin and Barclay 2018) and in Cook Inlet saltwater sport fisheries (Barclay et al. 2016).

A research plan was developed by the ADF&G Chinook Salmon Research Initiative (CSRI) in 2013 to identify information needed to understand declines of Chinook salmon across Alaska (ADF&G Chinook Salmon Research Team 2013). The plan focused on 12 indicator stocks, including the 2 largest producers of Chinook salmon within Cook Inlet: the Susitna and Kenai Rivers. In this plan, the lack of stock-specific harvest estimates for Chinook salmon in the salt waters of Cook Inlet was identified as an information gap. Several projects were recommended to fill this gap, including a project to estimate the stock-specific harvest of Chinook salmon in Cook Inlet saltwater sport fisheries.

In 2013, the State of Alaska funded a 3-year MSA study of Chinook salmon harvested in the Cook Inlet saltwater sport fishery with the primary goal of estimating the stock-specific harvests of Kenai River and Susitna River Chinook salmon. The initial results of the study were reported to the BOF at the 2016 LCI finfish BOF meeting prior to project completion (Barclay et al. 2016). The report included results from genetic baseline evaluation tests for MSA and select mixed stock analysis results using genetic and coded-wire-tag data (gcMSA) from Chinook salmon harvested in the Cook Inlet saltwater sport fishery from January 2014 to June 2016. Adequate samples were available to report stock composition estimates for the UCI (referred to as Central Cook Inlet [CCI] in Barclay et al. 2016) early fishery (2014–2016), the LCI summer fisheries (2014 and 2015), and the winter fishery (2014 and 2015) for 4 reporting groups: (1) *Outside CI* (populations outside of Cook Inlet); (2) *West/Susitna* (Western Cook Inlet, Yentna River, and Susitna River populations); (3) *CI Other* (Cook Inlet populations from Turnagain Arm, Knik Arm, Kasilof River, and southern coastal Kenai Peninsula); and (4) *Kenai* (Kenai River populations). Results of the baseline tests indicated adequate genetic variation to distinguish among the 4 reporting groups. The *Outside CI* reporting group dominated all mixture samples and the proportion of Cook Inlet Chinook salmon stocks was highest in the UCI early fishery. Although the MSA results reported in Barclay et al. (2016) were an important first glimpse into the stock composition of fisheries in the LCIMA, the composition of the UCI late fishery was still unknown, and stock-specific harvest estimates were not included in the report. Also, the 2014–2016 analysis did not include stock composition

estimates for southern Kenai Peninsula streams, which might have relatively high exploitation rates given their proximity to the fishery.

Funding from a Pacific States Marine Fisheries Commission (PSMFC) grant continued the study through 2017, and in fall of 2019, the results from the 2017 fishery were reported along with updated 2014–2016 results (Barclay et al. 2019). The report included genetic baseline evaluation tests for a new set of MSA reporting groups, stock composition estimates, and stock-specific harvest estimates for all analyzed Cook Inlet saltwater sport fisheries from 2014 to 2017. The new set of reporting groups used in Barclay et al. (2019) were as follows:

1) *Outside CI* (Populations outside of Cook Inlet)
2) *Northern CI* (Western Cook Inlet, Yentna River, Susitna River, Knik Arm, and Turnagain Arm populations)
3) *Kenai* (Kenai River populations)
4) *S. Kenai Pen.* (Kenai Peninsula populations south of the Kenai River)

Here we report genetic stock composition and stock-specific harvest estimates for the 2018 Cook Inlet saltwater sport fishery using the new reporting groups and biological compositions (age, sex, maturity) from all 5 years of this study (2014–2018). For context, this report also includes estimates for all analyzed Cook Inlet saltwater sport fisheries from 2014 to 2017 originally reported in Barclay et al. (2019). Results from this study will inform management of the Cook Inlet saltwater sport fisheries and allow for maximizing sport fishing opportunity while minimizing the harvest of Cook Inlet Chinook salmon. This information can also be used by managers to help regulate individual fisheries according to the proportion of local stocks present.

OBJECTIVES

PRIMARY OBJECTIVES

1) Estimate the proportion of Chinook salmon harvested by reporting group for each fishery such that the estimated proportions are within 10% of the true values 90% of the time.
2) Estimate the harvest of Chinook salmon by reporting group for each fishery such that the estimates are within 40% of the true value 90% of the time.
3) Estimate the age, sex, length, and maturity compositions of the Chinook salmon harvest for each fishery such that the estimated percentages are within 10% of the true values 95% of the time.
4) Estimate the combined proportion of Chinook salmon harvest that received a coded wire tag (CWT) and originated from Ninilchik River, Crooked Creek, or Deception Creek such that the estimate is within 10% of the true value 90% of the time.

SECONDARY OBJECTIVES

1) Collect genetic tissue and biological samples from 25% of the Chinook salmon harvest for each fishery.
2) Examine 25% of the Chinook salmon harvest for each fishery for adipose fin clips.
3) Estimate the proportion of mature and immature Chinook salmon (defined below) in the harvest by reporting group for the UCI and LCI summer fisheries such that the estimated proportions are within 10% of the true values 90% of the time.

METHODS

STUDY DESIGN

Interviews of saltwater sport anglers and sampling for genetic and biological data occurred daily at the major exit points of the LCIMA saltwater sport fisheries, including the Homer small boat harbor, Anchor Point tractor launch, Deep Creek tractor launch, and Whiskey Gulch beach during the summer months (April through August) from 2014 through 2018 (Figure 1). From 2014 through 2017, the winter fishery was also sampled by ADF&G staff, but less frequently as time allowed, and during 1-day fishing derbies held in March and October. Volunteer anglers were also provided sampling kits to collect genetic samples and biological information during the winter fishery, except in 2018, when the winter fishery was not sampled.

Interviews were conducted with as many returning vessels as possible to identify the number of anglers, number of Chinook salmon harvested, statistical harvest location (Figures 2 and 3), and user group (private or charter). For interviews, the sampling unit was a vessel trip, beginning when the vessel left the dock and ending when the vessel returned to the dock. When surveying charter vessels, the skipper or crew, rather than clients, were interviewed to obtain more accurate data. Survey data were recorded on either an Allegro CX field computer or a paper form.

Interview data and genetic and biological samples were stratified geographically and temporally into 5 fisheries as illustrated in Table 2: UCI early, UCI late, UCI summer, LCI summer, and winter (including both UCI and LCI areas). The UCI summer fishery represented the UCI early and UCI late fisheries combined. In all fisheries, genetic samples were assigned an origin variable denoting whether the stock of the fish was known (through CWT recovery) or unknown (all other genetic samples).

Estimates of Chinook salmon harvest for UCI early, UCI late, LCI summer, and winter fisheries for 2014–2016 were obtained from the SWHS. After 2017, the SWHS no longer estimated harvest for UCI early and UCI late fisheries but did estimate harvest for UCI summer (UCI early and UCI late combined). In 2017 and 2018, UCI early and UCI late harvests were estimated by multiplying the proportion of each fishery's average harvest from 2014 through 2016 with the UCI summer harvest estimates.

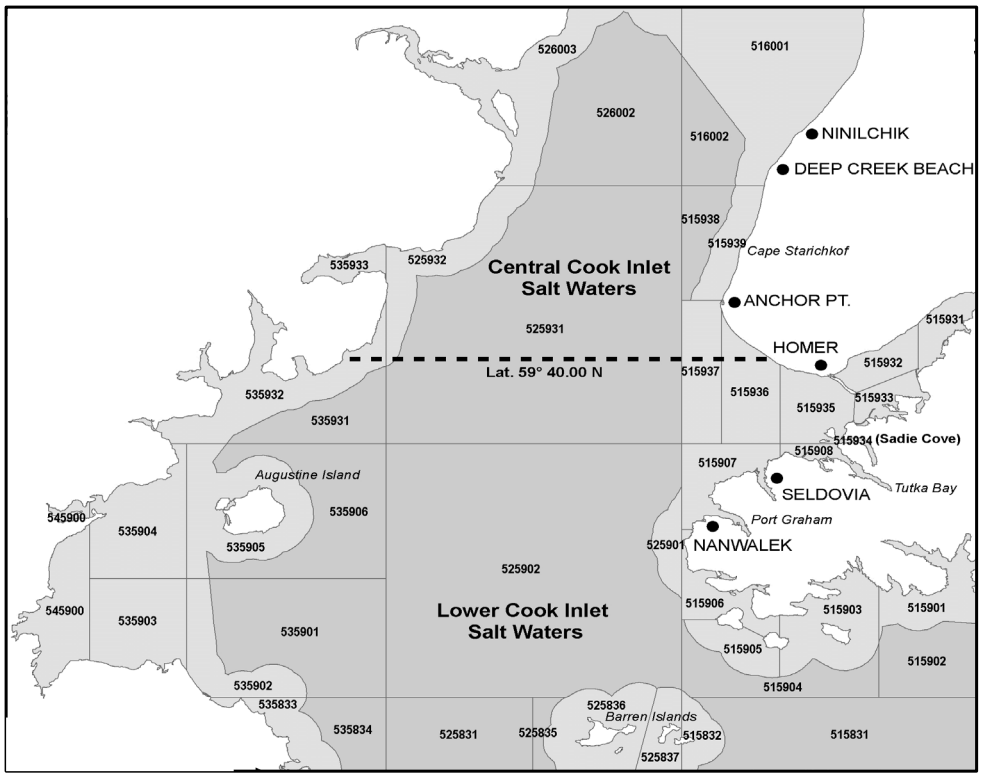

Figure 2.–ADF&G Lower Cook Inlet Management Area statistical areas used in 2014.

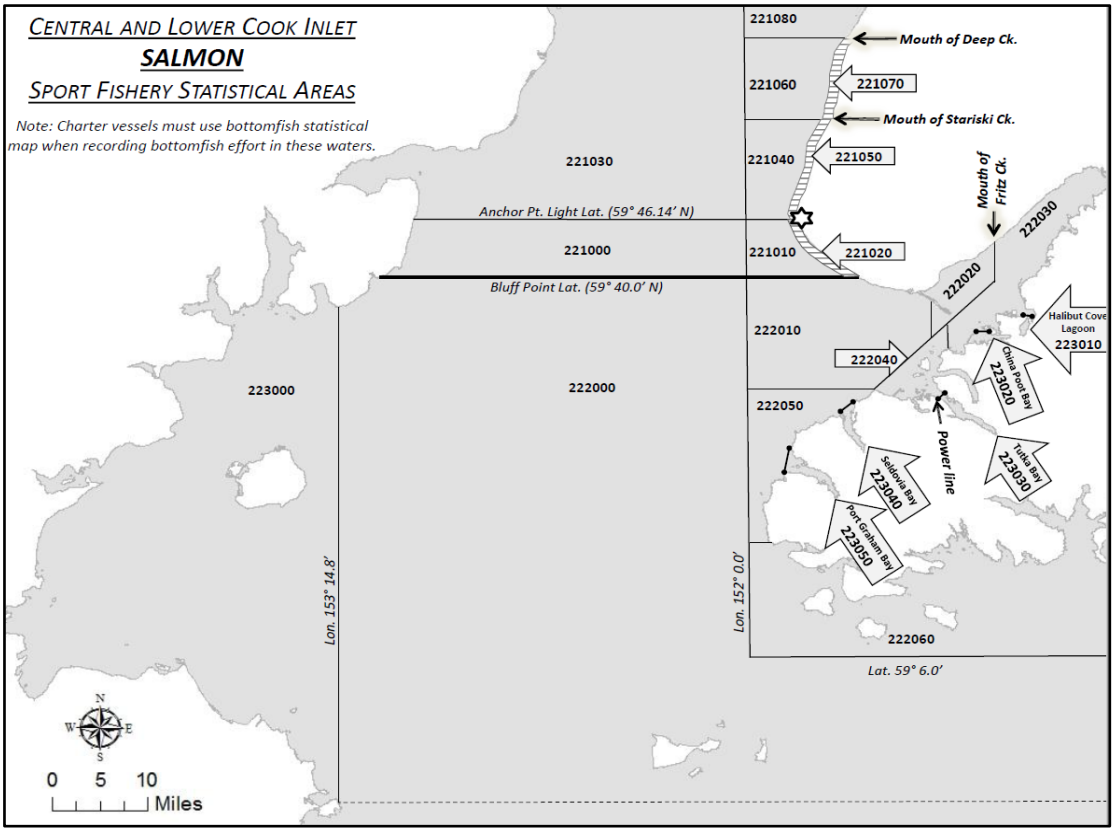

Figure 3.–ADF&G Lower Cook Inlet Management Area statistical areas used in 2015–2018.

Table 2.–Description of Cook Inlet saltwater Chinook salmon sport fisheries in the Lower Cook Inlet Management Area, 2014–2018.

	Area		Dates		GHL[a]	
Fishery	2014–2016	2017–2018	2014–2016[b]	2017–2018	2014–2016	2017–2018
Upper Cook Inlet early	Bluff Point to the mouth of the Ninilchik River	–	1 Apr–30 Jun	–	8,000	–
Upper Cook Inlet late	Bluff Point to the mouth of the Ninilchik River	–	1–31 Jul	–	None	–
Upper Cook Inlet summer	–	Bluff Point to 1 mile north of the Ninilchik River	–	1 Apr–31 Aug	–	8,000
Lower Cook Inlet summer	South of Bluff Point	South of Bluff Point	1 Apr–30 Sep	1 Apr–31 Aug	None	None
Winter	Entire management area south of Anchor Point Light	All of Cook Inlet	1 Jan–31 Mar 1 Oct–31 Dec	1 Jan–31 Mar 1 Sep–31 Dec	3,000	4,500

Note: An en dash means not applicable.

[a] GHL means guideline harvest level.

[b] Dates of the Upper Cook Inlet early and late fisheries differed between those defined in regulation and those the Statewide Harvest Survey (SWHS) used to estimate the harvest. In regulation, the early fishery was 1 April through 30 June with the early-run management plan (5 AAC 58.055). For the late-run fishery, there was no specific management plan but the fishery was included into the Kenai River late-run king salmon management plan, which was 1–31 July. In the SWHS, Chinook salmon harvest in Upper Cook Inlet (north of Bluff Point) was estimated 1 January through 24 June and 25 June through 31 December.

Genetic and Biological Sampling

Harvested Chinook salmon were sampled or examined for genetic tissue; age, sex, and length (ASL); maturity; and for the presence or absence of an adipose fin. Not all biological data were collected for every fish due to angler considerations and sampling time constraints. User group (charter, private) and harvest location were also collected for each fish. No biological data were collected in the absence of harvest location (statistical area).

Genetic tissue samples were collected primarily from axillary processes. If the axillary process was missing, a 1.33 cm section of the caudal fin was collected. Samples were preserved either in individually labeled plastic vials with 95% ethanol (2014–2017) and (or) stapled onto numbered Whatman (GE Healthcare Life Sciences) paper cards (2015–2018). Vials and alcohol were issued to anglers, and cards were used by ADF&G samplers. Vial numbers and (or) Whatman paper card and grid numbers were recorded on data sheets. Card samples were placed into numbered grid locations, after which cards were placed in an airtight case with desiccant beads for 24 to 48 hours to preserve samples. Genetic tissues were sent to the ADF&G Gene Conservation Laboratory for long-term storage and genetic analysis.

To estimate the annual ocean-age composition of the Chinook salmon harvest for each fishery, 3 scales were removed from the preferred area of each fish and placed on an adhesive-coated gum card (Clutter and Whitesel 1956). Acetate impressions were made of each gum card, and scales were aged using a microfiche reader (Koo 1962). After all scales were aged, between-reader precision tests revealed significant differences in age assessment throughout the project. To rectify this discrepancy, a single trained age reader re-aged a subsample of scales for each fishery and year. To minimize bias, the subsample of scales was systematically selected within each fishery and year such that there were sufficient sample sizes from each based on a multinomial age distribution (Thompson 1987).

Mid eye to tail fork (METF) length was measured and recorded to the nearest millimeter.

Sex and maturity were determined by internal examination of the gonads. From 2014 to 2017, maturity was assessed in 2 categories (immature and mature) for males and females, and in 2018, maturity was assessed in 2 categories for males (immature and mature) and 3 categories for females (immature, intermediate, and mature). Mature males were identified by full, large, soft milt sacs that spanned the length of the abdominal cavity. Immature males were identified by small, tight, ribbon-like milt sacs. Maturity for females was assessed by measuring 5 eggs in the skein with calipers. From 2014 to 2017, immature females were defined as having a 5-egg size of 20 mm or less and mature females were defined as having a 5-egg size greater than 20 mm. In 2018, the methods used by Begich (2007) were adopted and immature females were defined as having a 5-egg size less than 10 mm, intermediate females had a 5-egg size between 10 and 20 mm, and mature females had a 5-egg size of 21 mm or greater. Age, sex, length, and maturity data were entered onto paper datasheets during collection and entered electronically at the end of the sampling day for archiving at the Homer ADF&G office.

Adipose Fin Clips and Coded Wire Tags

All sampled Chinook salmon were examined for the presence or absence of an adipose fin. With permission from the angler, the heads of all adipose-clipped fish were collected and sent to the ADF&G Mark, Tag, and Age Laboratory in Juneau to look for, extract, and decode coded wire

tags (CWTs) to determine release information. If collected heads could not be assigned to a fishery (i.e., missing harvest date or location data), they were not used in the CWT analysis.

Subsampling for Mixed Stock Analysis

Two types of MSA were conducted for this project. The first was to estimate the proportion by reporting group in each of the LCIMA fisheries each year. The second was to estimate the proportion of mature and immature fish by reporting group for the summer fisheries in Upper and Lower Cook Inlet for all years combined.

For the LCIMA fisheries MSA, both known origin (CWT) and unknown origin (non-CWT) Chinook salmon were included in the MSA, except in 2018, when only unknown origin samples were used because the MSA augmented with known origin fish required a more complex analysis but did not sufficiently improve the composition estimates when compared with an MSA that did not include known origin fish (Barclay 2019).

A random subsample (target 300 fish) was taken from the axillary clip samples collected from each fishery each year. This subsample was obtained by first stratifying the original axillary samples by user group origin and then subsampling in proportion to harvest by user group. Proportion of harvest by user group was estimated using final SWHS estimates when available. When final SWHS estimates were not available for a specific year or fishery, the average harvest by user group of the preceding 3 years was used as a proxy. This subsample was then genotyped for MSA. Known-origin samples were subsampled in same proportion as the unknown-origin samples. For example, if 60% of the unknown-origin samples within a fishery and user group were selected for genetic analysis, then 60% of the known-origin samples would also be selected for MSA.

The number of subsamples selected for MSA varied across fisheries and years. If fewer than 300 tissue samples were collected for a particular fishery in a given year, to make maximum use of resources allocated for genotyping, the number of missing subsamples from that fishery was allocated to the other fisheries in proportion to the SWHS harvest numbers for that year. For example, if 250 samples were taken from UCI early, the number 50 was apportioned among the other fisheries (UCI late, winter, and LCI summer) in proportion to harvest so that each could end up with more than 300 subsamples for genotyping.

For the maturity MSA to estimate the proportion of mature and immature fish by reporting group for the summer fisheries, genetic tissues from the UCI summer and LCI summer fisheries were subsampled in proportion to harvest of mature and immature fish from each fishery within each year. In general, more genetic tissue samples were selected from the UCI summer fishery than from the LCI summer fishery because the proportion of mature fish was higher in the UCI summer harvest. No distinction was made between samples of known origin vs. unknown-origin fish or between user group.

GENETIC LABORATORY METHODS

Assaying Genotypes

Genomic DNA was extracted from tissue samples using a NucleoSpin 96 Tissue Kit by Macherey-Nagel (Düren, Germany). DNA from the selected subsamples from 2018 was screened for 42 single nucleotide polymorphism (SNP) markers; however, to ensure that DNA concentrations

were high enough with the dry sampling method used to preserve the samples, a preamplification step was added before screening the DNA.

The preamplified DNA from the 2018 subsamples was genotyped using Fluidigm 192.24 Dynamic Array Integrated Fluidic Circuits (IFCs), which systematically combine up to 24 assays and 192 samples into 4,608 parallel reactions. The components were pressurized into the IFC using the IFC Controller RX (Fluidigm). Each reaction was conducted in a 9 nL volume chamber consisting of a mixture of 20X Fast GT Sample Loading Reagent (Fluidigm), 2X TaqMan GTXpress Master Mix (Applied Biosystems), Custom TaqMan SNP Genotyping Assay (Applied Biosystems), 2X Assay Loading Reagent (Fluidigm), 50X ROX Reference Dye (Invitrogen), and 60–400 ng/µl DNA. Thermal cycling was performed on a Fluidigm FC1 Cycler using a Fast PCR protocol as follows: an initial "Hot-Start" denaturation of 95ºC for 2 minutes followed by 40 cycles of denaturation at 95ºC for 2 seconds and annealing at 60ºC for 20 seconds, with a final "Cool-Down" at 25ºC for 10 seconds. The Dynamic Array IFCs were read on a Biomark or EP1 System (Fluidigm) after amplification and genotyped using Fluidigm SNP Genotyping Analysis software.

Assays that failed to amplify on the Fluidigm system were reanalyzed with the QuantStudio 12K Flex Real-Time PCR System (Life Technologies). Each reaction was performed in 384-well plates in a 5 µL volume consisting of 6–40 ng/µl of DNA, 2X TaqMan GTXpress Master Mix (Applied Biosystems), and Custom TaqMan SNP Genotyping Assay (Applied Biosystems). Thermal cycling was performed on a Dual 384-Well GeneAmp PCR System 9700 (Applied Biosystems) as follows: an initial "Hot-Start" denaturation of 95°C for 10 minutes followed by 40 cycles of denaturation at 92°C for 1 second and annealing at 60°C for 1 minute, with a final "Cool-Down" hold at 10°C. The plates were scanned on the system after amplification and genotyped using the Life Technologies QuantStudio 12K Flex Software.

Genotypes were imported and archived in the Gene Conservation Laboratory's Oracle database, LOKI.

The methods for assaying genotypes from the 2014–2017 samples generally followed those reported here for the 2018 samples except that the 2014 and 2015 samples were not preamplified and Fluidigm 96.96 Dynamic Array IFCs were used instead of Dynamic Array 192.24 IFCs. Method for genotyping the 2014–2017 samples are reported in detail in Barclay et al. (2019).

Laboratory Failure Rates and Quality Control

The overall failure rate was calculated by dividing the number of failed single-locus genotypes by the number of assayed single-locus genotypes. An individual genotype was considered a failure when a locus for a fish could not be satisfactorily genotyped.

Quality control (QC) measures were used to identify laboratory errors and to determine the reproducibility of genotypes. In this process, 8 of every 96 fish (1 row per 96-well plate) were reanalyzed for all markers by staff not involved with the original analysis. Laboratory errors found during the QC process were corrected, and genotypes were corrected in the database. Inconsistencies not attributable to laboratory error were recorded, but original genotype scores were retained in the database.

DATA ANALYSIS

Genetic Baseline

The genetic baseline used in this analysis included nearly 7,800 samples collected from Chinook salmon spawning locations throughout Cook Inlet. The baseline consisted of 42 genetic markers and 55 Cook Inlet and 156 outside of Cook Inlet populations (211 populations total) (Appendix A1; Barclay et al. 2019).

Reporting Groups

The 4 reporting groups chosen for this study were as follows:

1) *Outside CI* (populations outside of Cook Inlet)
2) *Northern CI* (Western Cook Inlet, Yentna River, Susitna River, Knik Arm, and Turnagain Arm populations)
3) *Kenai* (Kenai River populations)
4) *S. Kenai Pen.* (Kenai Peninsula populations south of the Kenai River)

These reporting group were all tested and found to be sufficiently identifiable. The methods and results for these tests were reported in Barclay et al. (2019).

Genetic Data Retrieval and Quality Control

Genotypes from LOKI were retrieved and imported into *R* with the *RJDBC* package.[2,3] All subsequent analyses were performed in *R*, unless otherwise noted.

Prior to statistical analysis, 2 analyses were performed to confirm the quality of the data. First, the 80% rule (missing data at 20% or more of loci; Dann et al. 2009) was used to identify individuals missing substantial genotypic data. These individuals were removed from further analyses because the inclusion of individuals with poor quality DNA can introduce genotyping errors and reduce the accuracy of the MSA.

The final QC analysis identified individuals with duplicate genotypes and removed them from further analyses. 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% of screened loci. The sample with the most missing genotypic data from each duplicate pair was removed from further analyses. If both samples had the same amount of genotypic data, the first sample was removed from further analyses.

Mixed Stock Analysis

The stock compositions of the Cook Inlet saltwater sport fishery samples selected for MSA (mixtures) for the geographically and temporally stratified samples from 2018 and the maturity-stratified samples from 2014 through 2018 were estimated using the *R* package *rubias* (Moran and Anderson 2019). The *rubias* package is a Bayesian approach to the conditional genetic stock identification model based upon computationally efficient C code implemented in *R*. It uses cross-validation and simulation to quantify and correct for biases in reporting group estimates. Each

[2] R Core Team. 2019. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.

[3] Urbanek, S. 2018. RJDBC: Provides Access to Databases Through the JDBC Interface. R package version 0.2-7.1. https://cran.r-project.org/package=RJDBC.

mixture was analyzed for 1 Markov chain Monte Carlo (MCMC) chain with 25,000 iterations and the first 5,000 iterations were discarded to remove the influence of starting values. The output was thinned to include every 10th iteration. The prior parameters for each reporting group were defined to be equal (i.e., a flat prior). Within each reporting group, the population prior parameters were divided equally among the populations within that reporting group. After discarding the first 5,000 iterations and thinning the output, the posterior distribution contained 2,000 iterations. Stock proportion estimates and the 90% credibility intervals (CI)[4] for mixtures were calculated by taking the mean and 5% and 95% quantiles of the posterior distribution from the single chain output.

The stock compositions of the Cook Inlet saltwater sport fishery samples selected for MSA for the geographically and temporally stratified samples from 2014 through 2017 were estimated using the program *BAYES* (Pella and Masuda 2001). Individuals of known origin, identified through CWT recovery, were also included in the MSA of the 2014–2017 samples. Known-origin sample information was not included in the MSA for the 2018 samples because the inclusion of these data for the 2014–2017 MSAs had very little effect on the estimates, and for the 2018 samples, including these samples would have added unnecessary complexity to the analysis. MSA methods for estimating stock compositions of the 2014–2017 mixtures are detailed in Barclay et al. (2019).

Stock Specific Harvest Estimates

Estimates of stock-specific harvest were derived by applying the stock composition proportions p_i to the fishery harvest H following the methods of Habicht et al. (2012):

$$H_i = Hp_i \tag{1}$$

The estimate and distribution of stock-specific harvest H_i for each reporting group (i) were obtained by Monte Carlo simulation. Independent realizations of the reporting group-specific harvest $H_i^{(k)}$ of each fishery (k) were drawn randomly from the joint distribution of the harvest $H^{(k)}$ and stock composition $p_i^{(k)}$ for each fishery (with a total of K observations for each fishery):

$$H_i^{(k)} = H^{(k)}p_i^{(k)} \tag{2}$$

Descriptive statistics were estimated directly from the K realizations of $H_i^{(k)}$ with the mean used as the estimate of stock-specific harvest $\widehat{H}_i$ and the 5th and 95th quantiles determining the bounds of the 90% CI.

Generation of posterior stock-specific catch distributions required an estimate of the distribution of each component. The distributions of the stock compositions $p_i^{(k)}$ were the Bayesian posterior distributions of stock proportions from output of the MSA described above. The harvest $H^{(k)}$ from each fishery was assumed to be approximated by a lognormal distribution with the mean and SD taken from the SWHS.

Combining MSA Estimates Across Fisheries

Individual fishery estimates were combined into annual stock-specific harvest estimates for UCI summer (combined early and late fisheries) and the entire saltwater sport fishery (all fisheries) by weighting them by their respective harvests (Table 1) following the methods of Dann et al. (2009). These stock-specific harvest estimates, including their upper and lower bounds, were divided by

[4] Note that we use the acronym CI to mean credibility interval, not confidence interval, throughout this report.

the total harvest from each fishery to derive the overall proportion and credibility interval of each reporting group in the harvest.

Biological Compositions

Age Composition

The age proportions of the Chinook salmon harvest in each fishery were estimated as follows:

$$\hat{p}_k^{(z)} = \frac{n_k^{(z)}}{n_k} \tag{3}$$

where $\hat{p}_k^{(z)}$ is the estimated proportion of Chinook salmon from age category z in fishery k, $n_k^{(z)}$ is the number of Chinook salmon sampled from fishery k that were classified as age category z, and n_k is the number of Chinook salmon aged from fishery k.

Since $\hat{p}_k^{(z)}$ is an estimate of a multinomial proportion, the variance of $\hat{p}_k^{(z)}$ with a finite population correction was calculated as follows (Cochran 1977):

$$\widehat{\text{var}}\left[\hat{p}_k^{(z)}\right] = \left(1 - \frac{n_k}{H_k}\right)\frac{\hat{p}_k^{(z)}\left(1 - \hat{p}_k^{(z)}\right)}{n_k - 1} \tag{4}$$

where H_k is the reported number of Chinook harvested in fishery k.

Estimates of harvest by age category in each fishery were calculated as follows:

$$\hat{H}_k^{(z)} = H_k\hat{p}_k^{(z)} \tag{5}$$

Treating H_k as a constant, the variance of $\hat{H}_k^{(z)}$ was calculated as follows (Cochran 1977):

$$\widehat{\text{var}}\left[\hat{H}_k^{(z)}\right] = H_k^2\widehat{\text{var}}\left[\hat{p}_k^{(z)}\right] \tag{6}$$

Sex Composition

Sex composition and variance of the Chinook salmon harvest in each fishery was estimated using the same equations (3–6) used to estimate age composition.

Length Composition

Mean length $\bar{l}_k$ of Chinook salmon in each fishery k was estimated as follows:

$$\bar{l}_k = \frac{1}{n_k}\sum_{s=1}^{n_s} l_s \tag{7}$$

where l_s is the length of fish s in sample n_s, and n_k is the number of Chinook salmon from fishery k.

Maturity Composition

Maturity composition of Chinook salmon in each fishery was estimated using the same equations (3–6) used to estimate age and sex composition.

RESULTS

ANGLER SURVEYS

Upper Cook Inlet Early

The number of trip interviews was relatively stable from 2014 through 2018, although the harvest and total number of anglers participating in these trips varied by year (Table 3). In 2015, the number of Chinook salmon reported harvested from trip interviews was more than twice that in 2014 (956 vs. 373) despite similar numbers of interviews and anglers (Table 3). The numbers of trip interviews, and angler-days and harvest from these trips, were all lowest in 2014 and highest in 2018. The harvest from interviews was 42% (4,444/10,526; from Tables 3 and 1, respectively) of the SWHS estimated harvest for the UCI early summer fishery for all years combined.

Upper Cook Inlet Late

Sampling success for the UCI late summer fishery was low in 2014 and 2015 (82 and 56 trip interviews, respectively) despite average or above-average reported Chinook salmon harvest estimates from the SWHS (Table 1). The numbers of trip interviews, and anglers and harvest from these trips, were relatively similar in 2016 and 2017 and highest in 2018 (Table 3). In 2018, surveyed harvest was more than twice as high as in 2017 (1,071 vs. 423) despite lower magnitude changes in number of interviews and anglers. The harvest from interviews was 32% (1,977/6,095; from Tables 3 and 1, respectively) of the SWHS estimated harvest for the UCI late fishery for all years combined.

Upper Cook Inlet Summer

The number of trip interviews, and anglers and harvest from these trips, steadily increased from 2014 to 2018 for the UCI summer fishery (Table 3). Lower numbers of anglers and harvest in 2014 and 2015, when compared with other years, were influenced by low sampling effort in the UCI late fishery during 2014 and 2015. The harvest from interviews was 39% (6,421/16,621; from Tables 3 and 1, respectively) of the SWHS estimated harvest for the UCI summer fishery for all years combined.

Lower Cook Inlet Summer

The numbers of trip interviews, and anglers and harvest from these trips, were low in 2014, 2016, and 2017 in the LCI summer fishery (Table 3). In 2018, harvest from interviews was 3 times as high as in 2017 (5,469 vs. 1,707) whereas the number of trip interviews and the number of anglers on these trips only doubled. The harvest from interviews was 41% (15,935/38,498; from Tables 3 and 1, respectively) of the SWHS estimate for all years combined.

Winter

The numbers of trip interviews, and anglers and harvest from these trips, were lowest in 2014 and 2017, the first and last years of winter fishery sampling (Table 3). In 2015, surveyed harvest was 3 times as high as in 2014 (1,263 vs. 379) whereas the number of trip interviews and the number of anglers on these trips only doubled. Winter angler interviews took place mostly during fishing derbies and may not be representative of the number of anglers and harvest overall. The harvest from interviews was 11% (2,909/25,820; from Tables 3 and 1, respectively) of the SWHS estimate for all years combined.

Table 3.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from the Cook Inlet saltwater Chinook salmon sport fisheries, 2014–2018.

		Interviews			CWT			Biological sample numbers					Genetics
Fishery	Year	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	No. of tags decoded	Age (scales)[a]	Age sub-sample	Sex (internal examine)	Length (METF)	Maturity	Axillary clips
Upper Cook Inlet Early	2014	448	1,885	373	29	24	12	301	179	276	310	273	307
	2015	494	2,074	956	52	46	20	528	148	327	502	294	521
	2016	468	1,978	772	63	53	15	492	162	288	469	284	490
	2017	541	2,258	922	57	55	20	544	151	378	540	359	544
	2018	671	2,695	1,421	44	30	7	367	176	306	420	303	437
Upper Cook Inlet Late	2014	82	360	26	5	3	2	31	29	24	34	24	30
	2015	56	237	33	3	2	2	30	27	18	28	14	27
	2016	200	958	424	42	33	14	244	74	145	232	142	243
	2017	256	1,142	423	38	38	11	329	149	267	328	262	327
	2018	340	1,548	1,071	22	14	3	145	144	180	243	177	242
Upper Cook Inlet Summer	2014	530	2,245	399	34	27	14	332	208	300	344	297	337
	2015	550	2,311	989	55	48	22	558	175	345	530	308	548
	2016	668	2,936	1,196	105	86	29	736	236	433	701	426	733
	2017	797	3,400	1,345	95	93	31	873	300	645	868	621	871
	2018	1,011	4,243	2,492	66	44	10	512	320	486	663	480	679
Lower Cook Inlet Summer	2014	514	2,381	1,896	286	280	120	1,352	142	1,153	1,621	1,138	1,443
	2015	1,495	6,653	4,322	595	584	215	3,661	151	2,790	3,513	2,749	3,622
	2016	836	3,785	2,541	273	251	90	1,928	155	1,226	1,823	1,189	1,908
	2017	817	3,743	1,707	163	171	66	1,176	145	908	1,147	880	1,158
	2018	1,547	6,930	5,469	108	96	41	436	213	756	891	748	909
Winter[b]	2014	196	642	379	42	42	18	274	182	130	293	113	326
	2015	447	1,442	1,263	190	188	66	939	30	192	881	92	871
	2016	541	1,755	1,009	123	121	53	755	205	142	712	77	716
	2017	255	864	258	85	79	36	650	197	293	642	292	649
	2018	–	–	–	–	–	–	–	–	–	–	–	–

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Table 3.–Page 2 of 2.

		Interviews			CWT			Biological samples					Genetics
Fishery	Year	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	No. of tags decoded	Age (scales)[a]	Age sub-sample	Sex (internal examine)	Length (METF)	Maturity	Axillary clips
All	2014	1,240	5,268	2,674	362	349	152	1,958	532	1,583	2,258	1,548	2,106
	2015	2,492	10,406	6,574	840	820	303	5,158	356	3,327	4,924	3,149	5,041
	2016	2,045	8,476	4,746	501	458	172	3,419	596	1,801	3,236	1,692	3,357
	2017	1,869	8,007	3,310	343	343	133	2,699	642	1,846	2,657	1,793	2,678
	2018	2,558	11,173	7,961	174	140	51	948	533	1,242	1,554	1,228	1,588
All years		10,204	43,330	25,265	2,220	2,110	811	14,182	2,659	9,799	14,629	9,410	14,770

Note: An en dash means no data are available.

[a] Scales were subsampled for age composition estimates; see next column.

[b] No field sampling took place during the winter 2018 fishery.

All Fisheries

Harvest from interviews was lowest in all fisheries in 2014 and highest in 2018 (Table 3). In the UCI summer and LCI summer fisheries, a large increase in harvest from interviews was disproportionate to smaller increases in the number of trip interviews and anglers on these trips. Harvests from interviews were highest in the LCI summer fishery and lowest in the winter fishery (Table 3). Approximately 51% (5,209/10,204; Table 3) of interviews and 63% (15,935/25,265; Table 3) of the harvest from interviews was from the LCI summer fishery. Interview data by port of landing, month, and user is available in Appendices B1 through B10.

GENETIC COMPOSITIONS

Tissue Selection and Laboratory Analysis

For these results, a total of 5,463 fish from the 2014 through 2018 sport harvest samples were genotyped for MSA by fishery (Appendix C1). For MSA by maturity, 611 mature fish were genotyped and 2,240 immature fish were genotyped (Appendix C2). In order to meet sample size goals for MSA by maturity (300 fish each for UCI and LCI), 348 mature fish tissue samples were genotyped in addition to the 263 mature fish that had already been genotyped for the MSA by fishery sample. No additional immature fish were genotyped because sample sizes of immature fish within the 2014–2018 MSA by fishery were adequate.

Genotyping failure rates among the 5 years of MSA samples ranged from 0.83% to 2.02%. Discrepancy rates between original and QC analyses were uniformly low and ranged from 0.20% to 0.71% over the 5 years of samples. Assuming equal error rates in the original and the QC analyses, estimated error rates in the samples is half of the discrepancy rate (0.10–0.36%).

Data Retrieval and Quality Control

Eighty-seven of the assayed samples from 2014 to 2018 (1.53%) were removed from further analysis due to missing genetic data. Five samples were identified as duplicates and were removed from further analysis.

Upper Cook Inlet Early

From 2014 through 2018, the SWHS-estimated harvest for the UCI early fishery ranged from 1,554 in 2014 to 2,658 in 2015 (Table 1). The *Outside Cook Inlet* reporting group was the greatest contributor to the UCI early fishery harvest in all years (Table 4) and ranged from 70% in 2018 to 90% in 2016. Of the Cook Inlet reporting groups, the *Northern Cook Inlet* reporting group was the greatest contributor to the UCI early harvest in all years but 2017 when the *Southern Kenai Peninsula* reporting group was the greatest contributor.

Upper Cook Inlet Late

From 2014 through 2018, the SWHS-estimated harvest for the UCI late fishery ranged from 985 in 2014 to 1,528 in 2015 (Table 1). This fishery could not be assessed for genetic stock contribution in 2014 and 2015 because insufficient samples were collected. The *Outside Cook Inlet* reporting group was the greatest contributor to the UCI late fishery harvest for all years that estimates were available (Table 4) and ranged from 82% in 2017 to 97% in 2016. In 2016, the *Southern Kenai Peninsula* and *Kenai* reporting groups contributed equally to the harvest. In 2017 and 2018, the *Kenai* reporting group was the greatest contributor to the harvest among the Cook Inlet reporting groups. .

Table 4.–Chinook salmon genetic reporting group harvest composition and the harvest by reporting group in Cook Inlet salt waters by fishery, 2014–2018.

Fishery	Year	Number of genotyped samples	Percentage by genetic reporting group[a]				Harvest by genetic reporting group[a]				Total harvest
			Outside Cook Inlet	*Southern Kenai Peninsula*	*Kenai River*	*North Cook Inlet*	*Outside Cook Inlet*	*Southern Kenai Peninsula*	*Kenai River*	*North Cook Inlet*	
Upper Cook Inlet Early	2014	304	75.3	9.4	0.5	14.8	1,170	146	8	230	1,554
	2015	406	80.4	7.7	0.4	11.5	2,137	205	11	306	2,658
	2016	360	89.9	2.2	1.7	6.2	2,185	53	41	151	2,430
	2017	311	84.7	7.5	2.3	5.5	1,693	150	46	110	1,999
	2018	302	70.1	10.3	0.3	19.2	1,321	195	7	362	1,885
	Average	337	80.1	7.4	1.0	11.4	1,701	150	22	232	2,105
Upper Cook Inlet Late[b]	2014	–	–	–	–	–	881	16	77	11	985
	2015	–	–	–	–	–	1,367	25	119	18	1,528
	2016	242	96.5	1.6	1.6	0.3	1,286	21	21	4	1,333
	2017	309	82.0	3.2	12.7	2.2	949	37	147	25	1,157
	2018	242	89.9	0.0	9.1	1.0	981	0	100	11	1,092
	Average	264	89.5	1.6	7.8	1.2	1,093	20	93	14	1,219
Lower Cook Inlet Summer	2014	389	97.9	1.4	0.5	0.2	4,953	71	25	10	5,059
	2015	418	99.0	0.0	0.1	0.8	7,985	0	8	65	8,066
	2016	327	96.1	2.7	0.2	1.0	9,483	266	20	99	9,868
	2017	318	96.7	1.5	0.2	1.6	8,400	130	17	139	8,687
	2018	291	94.8	0.7	0.3	4.1	6,463	48	20	280	6,818
	Average	349	96.9	1.3	0.3	1.5	7,458	103	19	119	7,700
Winter[c]	2014	327	99.8	0.0	0.1	0.1	3,167	0	3	3	3,173
	2015	414	99.8	0.0	0.1	0.1	5,169	0	5	5	5,179
	2016	336	99.8	0.0	0.1	0.1	5,096	0	5	5	5,106
	2017	319	99.8	0.1	0.1	0.1	4,509	3	3	3	4,518
	2018	–	–	–	–	–	7,828	0	8	8	7,844
	Average	349	99.8	0.0	0.1	0.1	5,154	1	5	5	5,164

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Table 4.–Page 2 of 2.

Fishery	Year	Number of genotyped samples	Percentage by genetic reporting group[a]				Harvest by genetic reporting group[a]				Total harvest
			Outside Cook Inlet	*Southern Kenai Peninsula*	*Kenai River*	*North Cook Inlet*	*Outside Cook Inlet*	*Southern Kenai Peninsula*	*Kenai River*	*North Cook Inlet*	
All fisheries combined	2014	1,020	94.4	2.2	1.1	2.4	10,171	233	113	255	10,771
	2015	1,238	95.6	1.3	0.8	2.3	16,661	232	145	393	17,431
	2016	1,265	96.3	1.8	0.5	1.4	18,050	341	87	258	18,737
	2017	1,257	95.0	2.0	1.3	1.7	15,550	320	213	277	16,361
	2018	835	94.1	1.4	0.8	3.8	16,597	241	137	663	17,639
	Average	1,123	95.1	1.7	0.9	2.3	15,406	274	139	369	16,188
Upper Cook Inlet Summer[d]	2016	–	92.2	2.0	1.7	4.1	3,471	75	63	155	3,763
	2017	–	83.7	5.9	6.1	4.3	2,642	187	193	135	3,156
	2018	–	77.4	6.5	3.6	12.5	2,303	195	106	373	2,977
	Average	–	84.4	4.8	3.8	7.0	2,805	152	121	221	3,299

Note: An en dash means no data are available.

[a] Credibility intervals for the means can be found in Appendix D1.

[b] UCI late sample numbers in 2014 and 2015 were insufficient for MSA.

[c] No field sampling took place during the winter 2018 fishery.

[d] Upper Cook Inlet Summer is the sum of UCI early and late fisheries.

Upper Cook Inlet Summer

From 2014 through 2018, the SWHS–estimated harvest for the UCI summer fishery ranged from 2,539 in 2014 to 4,186 in 2015 (Table 1). The summer fishery could not be assessed for genetic stock contribution in 2014 and 2015 because no genetic tissue samples were analyzed from the UCI late fishery. The *Outside Cook Inlet* reporting group was the greatest contributor to the UCI summer fishery harvest for all years an estimate was available (Table 4) and ranged from 77% in 2018 to 92% in 2016. Among the Cook Inlet reporting groups, the *Northern Cook Inlet* reporting group was the greatest contributor to the harvests in 2016 and 2018 and the *Southern Kenai Peninsula* and the *Kenai* reporting groups contributed nearly equally to the harvest in 2017

Lower Cook Inlet Summer

From 2014 through 2018, the SWHS estimated harvest for the LCI summer fishery ranged from 5,059 in 2014 to 9,868 in 2016 (Table 1). The *Outside Cook Inlet* reporting group was the greatest contributor to the LCI summer fishery harvest for all years (Table 4) and ranged from 95% in 2018 to 99% in 2015. Of the Cook Inlet reporting groups, the *Southern Kenai Peninsula* reporting group was the greatest contributor to the harvest in 2014, and the *Northern Cook Inlet* reporting group was the greatest contributor to the harvest in 2015–2018 (Table 4).

Winter

From 2014 through 2018, the SWHS-estimated winter fishery harvest ranged from 3,173 in 2014 to 7,844 in 2018 (Table 1). The *Outside Cook Inlet* reporting group composed 99% of the winter fishery harvest for all years (Table 4).

All Fisheries

The *Outside Cook Inlet* reporting group was the greatest contributor to the LCIMA harvests in all years and fisheries (Table 4). The proportion of Cook Inlet stocks in the harvest was highest in the UCI fisheries and lowest in the winter fishery. The UCI early fishery harvest had the highest proportions of *Southern Kenai Peninsula* fish, with an average estimated harvest of 150 Chinook salmon annually (Table 4). The LCI summer fishery had very low proportions of *Southern Kenai Peninsula* fish in the sampled harvest, but due to higher harvest estimates, an average of 103 *Southern Kenai Peninsula* Chinook salmon were harvested annually. Credibility intervals and standard deviations for reporting group proportions and harvest estimates are available in Appendix D1.

Mixed Stock Analysis by Maturity

The *Outside Cook Inlet* reporting group composed 40% of the mature fish sampled during the UCI summer fishery (Figure 4) and 80% of the mature fish sampled during the LCI summer fishery for all years combined (Figure 5). The *Northern Cook Inlet* reporting group composed 28% of the mature fish sampled from the UCI summer fishery, *Southern Kenai Peninsula* composed 18%, and *Kenai* composed 13% for all years combined. Immature fish sampled from the harvest were composed of 98% or greater *Outside Cook Inlet* fish in both UCI and LCI summer for all years combined.

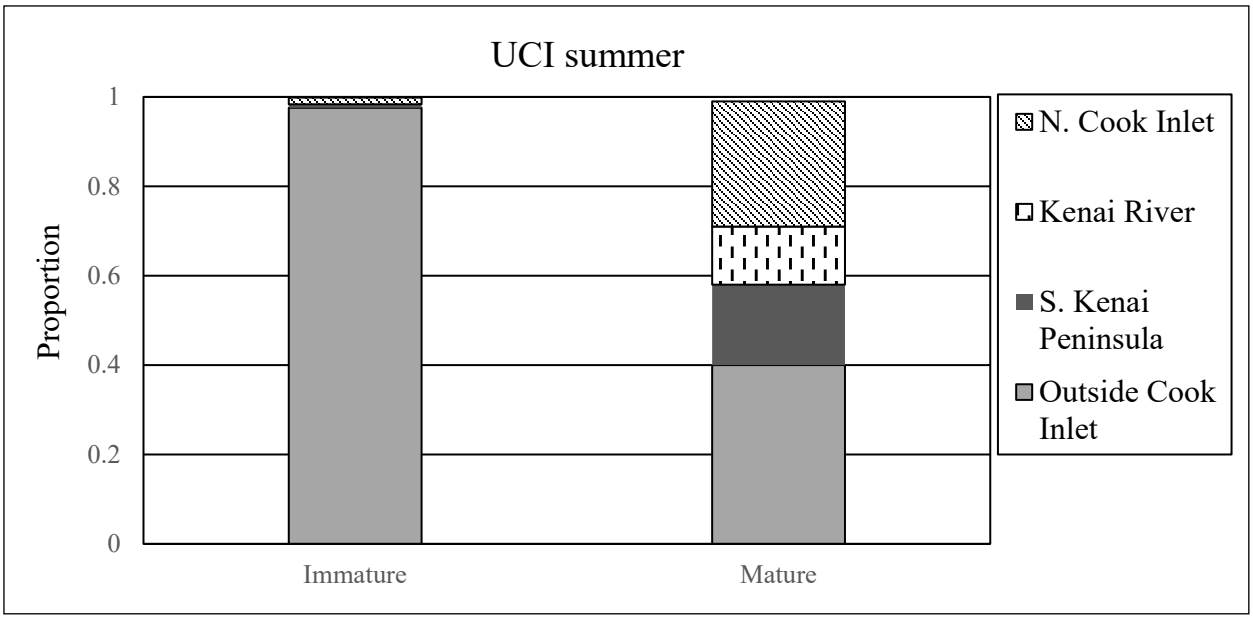

Figure 4.–Chinook salmon genetic reporting group harvest composition for mature and immature fish in Cook Inlet salt waters for the UCI summer fishery for combined years 2014–2018.

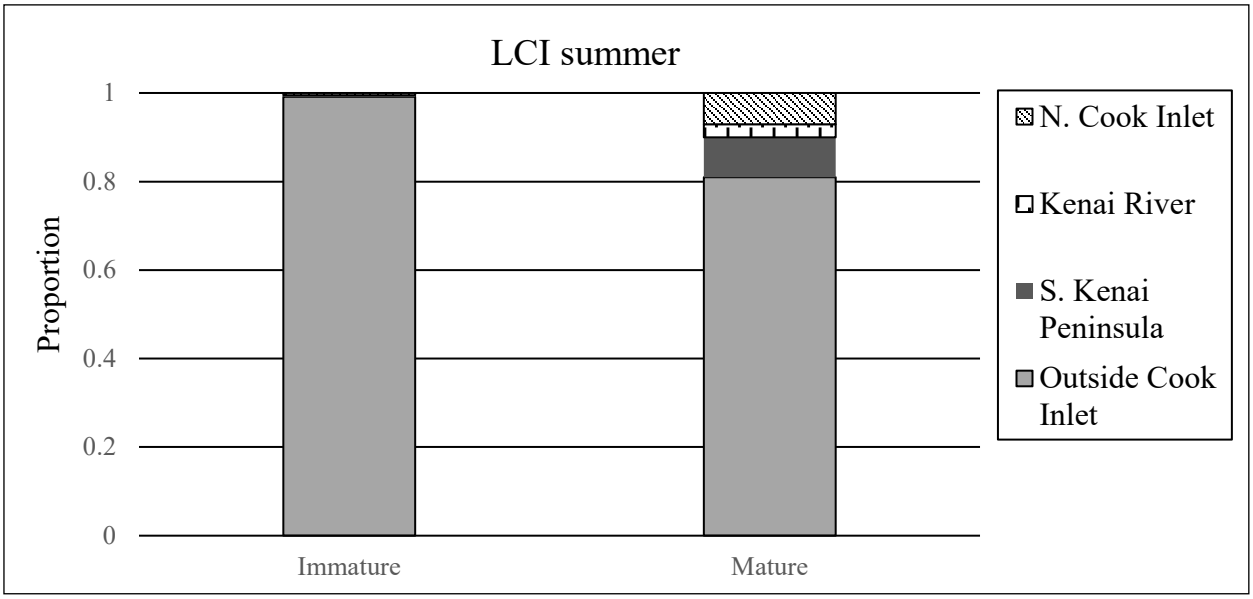

Figure 5.–Chinook salmon genetic reporting group harvest composition for mature and immature fish in Cook Inlet salt waters for the LCI summer fishery for combined years 2014–2018.

BIOLOGICAL COMPOSITIONS

A total of 14,182 fish were sampled for age, of which 2,659 were subsampled for age composition (Table 3). A total of 9,799 fish were sampled for sex, 14,629 for length, 9,410 for maturity, and 14,770 genetic samples were collected (Table 3). Spatial and temporal distributions of samples by fishery, statistical area, and month are available in Appendices E1 through E5.

A total of 2,110 heads were collected from fish missing their adipose fin (Table 5). Of the heads that were processed, approximately 38% (811/2,110) contained CWTs and their origin was

determined. Most of these known-origin fish came from British Columbia, Washington, and Oregon. All but 2 known-origin fish identified as originating from Alaska were from outside of Cook Inlet. Decoded CWT information by fishery and year is available in Appendices F1–F5.

Table 5.–Number of coded-wire-tagged Chinook salmon by region of origin sampled from Cook Inlet salt waters by fishery, 2014–2018.

Fishery	Year	Total heads collected	Alaska		British Columbia	Washington	Oregon	Idaho	Total decoded tags
			Cook Inlet	Outside Cook Inlet					
Upper Cook Inlet Early	2014	24	0	1	8	1	2	0	12
	2015	46	0	0	10	7	3	0	20
	2016	53	0	1	10	3	1	0	15
	2017	55	0	5	7	7	1	0	20
	2018	30	1	0	3	1	2	0	7
	Total	208	1	7	38	19	9	0	74
Upper Cook Inlet Late	2014	3	0	0	1	1	0	0	2
	2015	2	0	1	0	0	1	0	2
	2016	33	0	1	4	6	3	0	14
	2017	38	0	2	3	3	3	0	11
	2018	14	0	0	2	1	0	0	3
	Total	90	0	4	10	11	7	0	32
Upper Cook Inlet Summer[a]	2014	27	0	1	9	2	2	0	14
	2015	48	0	1	10	7	4	0	22
	2016	86	0	2	14	9	4	0	29
	2017	93	0	7	10	10	4	0	31
	2018	44	1	0	5	2	2	0	10
	Total	298	1	11	48	30	16	0	106
Lower Cook Inlet Summer	2014	280	0	18	35	38	28	1	120
	2015	584	0	24	57	98	32	4	215
	2016	251	0	12	25	39	14	0	90
	2017	171	1	10	16	25	14	0	66
	2018	96	0	8	20	7	6	0	41
	Total	1,382	1	72	153	207	94	5	532
Winter[b]	2014	42	0	0	8	3	7	0	18
	2015	188	0	2	26	24	14	0	66
	2016	121	0	6	29	11	7	0	53
	2017	79	0	6	12	12	6	0	36
	2018	–	–	–	–	–	–	–	–
	Total	430	0	14	75	50	34	0	173
All fisheries	2014	349	0	19	52	43	37	1	152
	2015	820	0	27	93	129	50	4	303
	2016	458	0	20	68	59	25	0	172
	2017	343	1	23	38	47	24	0	133
	2018	140	1	8	25	9	8	0	51
All years		2,110	2	97	276	287	144	5	811

[a] Upper Cook Inlet summer is the sum of UCI early and late fisheries.

[b] No field sampling took place during the winter 2018 fishery.

Upper Cook Inlet Early

Ocean-age composition in the Upper Cook Inlet early fishery was significantly different over the reporting years (Fisher's exact test: $P < 0.05$, 2-sided). Differences between age classes among years were driven mainly by ocean-age-2 fish in 2017, which were detected in equal proportions to ocean-age-3 fish (Table 6). Ocean-age-0 fish were not detected in the harvest and few ocean-age-1 and ocean-age-5 fish were detected. Despite other differences, ocean-age-3 was the primary age class in all years but 2017, and an estimated 1,082 ocean-age-3 fish were harvested annually on average (Table 6).

A test of no difference in sex composition across reporting years using a chi-square distribution with 4 degrees of freedom and a sample size of 1,575 indicated no significant difference over the reporting years ($X^2 = 6.42$, df = 4, $P = 0.17$). Females composed 51–61% of the sampled harvest over the reporting years (Table 7). A test of no difference in average METF length across years using an F distribution with 4 degrees of freedom and a sample size of 2,236 indicated average length was significantly different over the reporting years ($F = 24.21$, df = 4, $P < 0.05$). Average METF length was over 700 mm in all years except 2016 and 2018, when the average length was 662 mm and 683 mm, respectively (Table 7).

The UCI early harvest was composed of 80% immature fish on average (Table 8). Maturity composition across reporting years was significantly different for both males ($X^2 = 84.38$, df = 4, $P < 0.05$, $N = 663$) and females ($X^2 = 14.97$, df = 4, $P < 0.05$, $N = 850$). Mature fish composed less than 30% of sampled harvest in all years for both sexes except in 2014, when 48% of males were mature (Appendices H1–H5).

A total of 208 adipose-finclipped fish were sampled for CWTs from UCI early fishery harvests for all years, with 99% of decoded tags (73/74) originating from outside of Cook Inlet (Table 5).

Upper Cook Inlet Late

Ocean-age composition was significantly different over the reporting years (Fisher's exact test: $P < 0.05$, 2-sided test). The primary age class was ocean-age-3 in 2014 and 2015 and ocean-age-2 in 2017 and 2018 (Table 6). In 2016, ocean-age-2 and ocean-age-3 fish were detected in equal proportions. Sample sizes were low in 2014 and 2015 (29 and 27; Table 3). An estimated 9 ocean-age-0 fish were harvested in 2017, but none in any other year, and a few ocean-age-5 fish were detected in the harvests in 2015 and 2018 (Table 6).

Sex composition was not significantly different over the reporting years ($X^2 = 5.39$, df = 4, $P = 0.25$, $N = 634$). Females composed 51–67% of the sampled harvest (Table 7). The highest proportion of females in all years and fisheries (67%) was detected in 2015 (Table 7). Low sample sizes in 2014 and 2015 prevented these years from being included in an F test but for 2016 through 2018, METF length was significantly different between years ($F = 3.88$, df = 2, $P < 0.05$, $N = 800$). Average METF length was lowest in 2016 and 2018 (Table 7).

Table 6.–Age composition of the saltwater Chinook salmon harvest in Cook Inlet, 2014–2018.

		Percentage by ocean age						Harvest by ocean age						Total
Fishery	Year	0	1	2	3	4	5	0	1	2	3	4	5	harvest[a]
Upper Cook Inlet Early	2014	0.0	0.6	27.5	53.9	18.0	0.0	0	9	427	838	280	0	1,554
	2015	0.0	2.7	31.1	49.3	16.9	0.0	0	72	827	1,310	449	0	2,658
	2016	0.0	1.4	23.4	58.2	15.6	1.4	0	34	569	1,414	379	34	2,430
	2017	0.0	6.3	40.9	41.7	11.0	0.0	0	126	818	834	220	0	1,999
	2018	0.0	0.7	32.2	53.9	14.2	0.0	0	13	607	1,016	268	0	1,885
	Average	0.0	2.3	31.0	51.4	15.1	0.3	0	51	649	1,082	319	7	2,105
Upper Cook Inlet Late	2014	0.0	0.0	34.8	52.2	13.0	0.0	0	0	343	514	128	0	985
	2015	0.0	0.0	30.4	47.8	17.4	4.3	0	0	465	730	266	66	1,528
	2016	0.0	0.0	48.6	48.6	2.7	0.0	0	0	648	648	36	0	1,333
	2017	0.8	17.3	53.4	23.3	5.3	0.0	9	200	618	270	61	0	1,157
	2018	0.0	15.0	54.2	17.5	12.5	0.8	0	164	592	191	137	9	1,092
	Average	0.2	6.5	44.3	37.9	10.2	1.0	2	73	533	471	126	15	1,219
Upper Cook Inlet Summer	2014	0.0	1.0	28.0	54.0	17.0	0.0	0	25	711	1,371	432	0	2,539
	2015	0.0	2.0	31.0	49.0	17.0	1.0	0	84	1,298	2,051	712	42	4,186
	2016	0.0	1.0	32.0	55.0	11.0	1.0	0	38	1,204	2,070	414	38	3,763
	2017	0.0	12.0	47.0	32.0	8.0	0.0	0	379	1,483	1,010	252	0	3,156
	2018	0.0	7.0	42.0	37.0	13.0	0.0	0	208	1,250	1,101	387	0	2,977
	Average	0.0	4.6	36.0	45.4	13.2	0.4	0	147	1,189	1,521	439	16	3,324
Lower Cook Inlet Summer	2014	0.0	1.4	50.7	45.1	2.1	0.7	0	71	2,565	2,282	106	35	5,059
	2015	0.0	6.2	66.9	21.4	4.8	0.7	0	500	5,396	1,726	387	56	8,066
	2016	0.0	14.6	36.5	45.3	2.9	0.7	0	1,441	3,602	4,470	286	69	9,868
	2017	0.0	28.0	47.0	22.0	3.0	0.0	0	2,432	4,083	1,911	261	0	8,687
	2018	0.6	10.4	59.5	28.3	0.6	0.6	41	709	4,057	1,929	41	41	6,818
	Average	0.1	12.1	52.1	32.4	2.7	0.5	8	1,031	3,940	2,464	216	40	7,700
Winter[b]	2014	0.0	15.6	61.9	22.4	0.0	0.0	0	495	1,964	711	0	0	3,173
	2015	0.0	11.5	73.1	11.5	3.8	0.0	0	596	3,786	596	197	0	5,179
	2016	0.0	22.5	58.5	18.3	0.7	0.0	0	1,149	2,987	934	36	0	5,106
	2017	7.3	40.1	37.9	12.4	2.3	0.0	330	1,812	1,712	560	104	0	4,518
	2018	–	–	–	–	–	–	–	–	–	–	–	–	7,844
	Average	1.8	22.4	57.9	16.2	1.7	0.0	82	1,013	2,612	700	84	0	5,164

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Fishery	Year	Percentage by ocean age						Harvest by ocean age						Total harvest[a]
		0	1	2	3	4	5	0	1	2	3	4	5	
All fisheries	2014	0.0	5.4	45.3	41.5	7.5	0.2	0	582	4,879	4,470	808	22	10,771
	2015	0.0	4.7	49.4	34.5	10.8	0.6	0	819	8,611	6,014	1,883	105	17,431
	2016	0.0	10.9	40.9	41.7	5.9	0.6	0	2,042	7,663	7,813	1,105	112	18,737
	2017	2.5	24.4	44.3	23.7	5.1	0.0	409	3,992	7,248	3,878	834	0	16,361
	2018	0.2	8.5	48.9	33.7	8.3	0.5	35	1,499	8,625	5,944	1,464	88	17,639
	Average	0.5	10.8	45.8	35.0	7.5	0.4	89	1,787	7,405	5,624	1,219	65	16,188

Note: Values given to age and harvest may not sum to total due to rounding. Standard errors are presented in Appendix G1.

[a] Harvest estimates from SWHS.

[b] No field sampling took place during the 2018 Winter fishery.

Table 7.–Chinook salmon sex composition, average length (mid eye to tail fork [METF] in millimeters), and number of sex and length samples in Cook Inlet salt waters by fishery, 2014–2018.

Fishery		Year					Average
		2014	2015	2016	2017	2018	
Upper Cook Inlet Early	Number of sex samples	276	327	288	378	306	315
	Percent male	46.4	43.1	39.2	42.6	48.7	44.0
	Percent female	53.6	56.9	60.8	57.4	51.3	56.0
	SE (sex)	2.7	2.6	2.7	2.3	2.6	
	Number of length samples	310	502	469	540	420	448
	Average length (METF)	704.9	717.1	662.3	705.7	683.7	694.7
	SE (length)	6.6	4.3	4.2	3.6	5.3	
Upper Cook Inlet Late	Number of sex samples	24	18	145	267	180	127
	Percent male	41.7	33.3	40.0	49.4	41.7	41.2
	Percent female	58.3	66.7	60.0	50.6	58.3	58.8
	SE (sex)	10.2	11.4	3.9	2.7	3.4	
	Number of length samples	34	28	232	328	243	173
	Average length (METF)	725.4	753.9	635.7	662.6	634.4	682.4
	SE (length)	15.7	28.6	5.6	8.7	9.8	
Upper Cook Inlet Summer	Number of sex samples	300	345	433	645	486	442
	Percent male	46.0	42.6	39.5	45.4	46.1	43.9
	Percent female	54.0	57.4	60.5	54.6	53.9	56.1
	SE (sex)	2.7	2.6	2.2	1.8	2.1	
	Number of length samples	344	530	701	868	663	621
	Average length (METF)	706.9	719.0	653.5	689.4	665.6	686.9
	SE (length)	17.1	29.0	7.0	9.4	11.2	
Lower Cook Inlet Summer	Number of sex samples	1,153	2,790	1,226	908	756	1,367
	Percent male	41.3	43.8	41.8	43.9	44.9	43.1
	Percent female	58.7	56.2	58.2	56.1	55.1	56.9
	SE (sex)	1.3	0.8	1.3	1.6	1.7	
	Number of length samples	1,621	3,513	1,823	1,147	891	1,799
	Average length (METF)	652.9	637.9	625.2	634.9	583.9	627.0
	SE (length)	2.2	1.5	2.1	3.2	3.7	
Winter[a]	Number of sex samples	130	192	142	293	–	189
	Percent male	44.6	38.0	35.9	48.1	–	41.7
	Percent female	55.4	62.0	64.1	51.9	–	58.4
	SE (sex)	4.3	3.4	4.0	2.8	–	
	Number of length samples	293	881	712	642	–	632
	Average length (METF)	670.4	675.9	623.3	613.8	–	645.8
	SE (length)	5.7	3.3	3.3	5.3	–	
All fisheries	Number of samples	1,583	3,327	1,801	1,846	1,242	1,960
	Percent male	43.0	43.3	40.9	45.1	45.1	43.5
	Percent female	57.0	56.7	59.1	54.9	54.9	56.5
	SE (sex)	1.1	0.8	1.1	1.1	1.4	
	Number of length samples	2,258	4,924	3,236	2,657	1,554	2,926
	Average length (METF)	663.4	653.4	630.9	647.6	617.8	642.6
	SE (length)						

[a] No field sampling took place during the 2018 winter fishery.

Table 8.–Maturity composition of harvests and estimated numbers harvested by maturity of Chinook salmon in Cook Inlet salt waters by fishery, 2014–2018.

		Percentage by maturity			Harvest by maturity			
Fishery	Year	Immature	Intermediate females[a]	Mature	Immature	Intermediate females[a]	Mature	Total harvest
Upper Cook Inlet Early	2014	65.6	–	34.4	1,019	–	535	1,554
	2015	78.2	–	21.8	2,079	–	579	2,658
	2016	88.7	–	11.3	2,156	–	274	2,430
	2017	86.4	–	13.6	1,726	–	273	1,999
	2018	51.5	25.1	23.4	970	473	442	1,885
	Average	74.1	–	20.9	1,590	–	420	2,105
Upper Cook Inlet Late	2014	58.3	–	41.7	574	–	411	985
	2015	64.3	–	35.7	982	–	546	1,528
	2016	88.7	–	11.3	1,183	–	150	1,333
	2017	84.7	–	15.3	980	–	177	1,157
	2018	75.7	14.1	10.2	827	154	111	1,092
	Average	74.4	–	22.8	909	–	279	1,219
Upper Cook Inlet Summer	2014	62.8	–	37.2	1,594	–	945	2,539
	2015	73.1	–	26.9	3,062	–	1,124	4,186
	2016	88.7	–	11.3	3,339	–	424	3,763
	2017	85.8	–	14.2	2,707	–	449	3,156
	2018	60.4	21.1	18.6	1,797	627	553	2,977
	Average	74.2	–	21.6	2,500	–	699	3,324
Lower Cook Inlet Summer	2014	91.1	–	8.9	4,610	–	449	5,059
	2015	88.8	–	11.2	7,165	–	901	8,066
	2016	89.7	–	10.3	8,847	–	1,021	9,868
	2017	95.8	–	4.2	8,322	–	365	8,687
	2018	83.8	9.0	7.2	5,715	611	492	6,818
	Average	89.8	–	8.4	6,932	–	646	7,700

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Fishery	Year	Percentage by maturity			Harvest by maturity			Total harvest
		Immature	Intermediate females[a]	Mature	Immature	Intermediate females[a]	Mature	
Winter[b]	2014	100.0	0.0	0.0	3,173	0	0	3,173
	2015	100.0	0.0	0.0	5,179	0	0	5,179
	2016	100.0	0.0	0.0	5,106	0	0	5,106
	2017	100.0	0.0	0.0	4,518	0	0	4,518
	2018	–	–	–	–	–	–	7,844
	Average	100.0	–	0.0	4,494	–	0	5,164
All fisheries	2014	86.7	–	13.3	9,344	–	1,427	10,771
	2015	87.9	–	12.1	15,329	–	2,102	17,431
	2016	89.9	–	10.1	16,843	–	1,894	18,737
	2017	93.0	–	7.0	15,211	–	1,150	16,361
	2018	74.7	13.7	11.6	13,172	2,413	2,054	17,639
Average[c]		86.4	–	10.8	13,980	–	1,725	16,188

[a] Intermediate maturity category was only used in 2018.

[b] No field sampling took place during the 2018 winter fishery.

[c] Average maturity values are from 2014 to 2017.

Low sample sizes from the UCI late fishery in 2014 and 2015 prevented these years from being included in a chi-square test, but for 2016 through 2018, maturity composition was not significantly different across years for both males (X^2 = 0.002, df = 2, P = 0.99, N = 260) and females (X^2 = 5.16, df = 2, P = 0.08, N = 321). From 2016 through 2018, mature fish composed 17% of the sampled harvest for males and 5–13% for females (Table 8; Appendices H3–H5).

A total of 90 adipose-finclipped fish were sampled for CWT from the UCI late fishery harvest for all years, with 100% of decoded tags originating from outside of Cook Inlet (Table 5).

Upper Cook Inlet Summer

Ocean-age composition was significantly different over the reporting years in the Upper Cook Inlet summer fishery (Fisher's exact test: $P < 0.05$, 2-sided test). The primary age class was ocean-age-3 in 2014 through 2016 and ocean-age-2 in 2017 and 2018 (Table 6). Ocean-age-5 fish were detected in the harvest only in 2015 and 2016 (Table 6).

Sex composition was not significantly different over the reporting years (X^2 = 5.72, df = 4, P = 0.22, N = 2,209). Females composed 54–61% of the sampled harvest (Table 7). METF length was significantly different over the reporting years (F = 3.22, df = 4, $P < 0.05$, N = 3,101). Average METF length was highest in 2014 and 2015 and lowest in 2016 and 2018 (Table 7).

Maturity composition over the reporting years was significantly different for both males (X^2 = 81.05, df = 4, $P < 0.05$, N = 1,686) and females (X^2 = 34.34, df = 4, $P < 0.05$, N = 1,194). Mature fish composed less than 20% of the sampled harvest in all years except 2014 and 2015 (Table 8).

A total of 298 adipose-finclipped fish were sampled for CWT from the UCI summer fishery harvest for all years, with 99% of decoded tags (105/106) originating from outside of Cook Inlet (Table 5).

Lower Cook Inlet Summer

Ocean-age composition was significantly different (Fisher's exact test: $P < 0.05$, 2-sided test) over the reporting years in the Lower Cook Inlet summer fishery. Ocean-age-2 was the primary age class in all years except 2016, when ocean-age-3 was dominant (Table 6). Except in 2018 when an estimated 41 fish were harvested, ocean-age-0 fish were not detected in the harvest; however, a total of more than 80 ocean-age-4 and -5 fish were estimated to have been harvested every year (Table 6). In 2017, 28% of the sampled harvest was ocean-age-1 fish compared with 1–15% in other years (Table 6).

Sex composition was not significantly different over the reporting years (X^2 = 5.72, df = 4, P = 0.22, N = 6,832). Females composed 55–59% of the sampled harvest (Table 7). METF length was not significantly different over the reporting years (F = 0.76, df = 4, P = 0.56, N = 8,990). Average METF length was lowest in 2018 (584 mm; Table 7).

Maturity composition was significantly different over the reporting years for both males (X^2 = 20.46, df = 4, $P < 0.05$, N = 2,740) and females (X^2 = 49.57, df = 4, $P < 0.05$, N = 3,658). Maturity rates were low in the LCI summer fishery for all years (Table 8), with mature males composing a maximum of 11% of the harvest in 2016 and mature females a maximum of 14% of the harvest in 2015 (Appendices H1–H5). In 2017, maturity rates were low, with mature males and females composing 5% or less of the sampled harvest (Appendix H4).

A total of 1,382 adipose-finclipped fish were sampled for CWTs from the LCI summer fishery harvest for all years, with 99% of decoded tags (531/532) originating from outside of Cook Inlet (Table 5).

Winter

Ocean-age composition was significantly different over the reporting years in the winter fishery (Fisher's exact test: $P < 0.05$, 2-sided). Ocean-age-2 was the primary age class in all years except 2017, when ocean-age-1 was the primary age class (Table 6). In 2017, 7% of the sampled harvest was ocean-age-0 fish, whereas in all other fisheries and years ocean-age-0 fish composed at most 1% of the sampled harvest. The winter fishery was not sampled in 2018.

Sex composition was significantly different over the reporting years (excluding 2018; $X^2 = 8.11$, df = 3, $P < 0.05$, $N = 757$). Females were dominant in all years and composed over 60% of sampled fish in 2015 and 2016 (Table 7). METF length was also significantly different over the reporting years ($F = 59.18$, df = 3, $P < 0.05$, $N = 2{,}524$) with smaller fish in 2016 and 2017 (Table 7).

The sampled harvest for the winter fishery was composed of 100% immature fish (Table 8).

A total of 430 adipose-finclipped fish were sampled for CWTs from the winter fishery harvest for all years, with 100% of decoded tags originating from outside of Cook Inlet (Table 5).

All Fisheries

Ocean-age compositions in UCI fisheries were composed of older fish than LCI fisheries. UCI early, UCI late, and UCI summer fisheries all had higher proportions of ocean-age-3 and ocean-age-4 fish than the LCI summer and especially the winter fisheries (Table 6). LCI summer and winter fisheries were composed of primarily ocean-age-2 fish and also had higher proportions of ocean-age-1 fish than the UCI fisheries. Ocean-age 0 fish were detected in significant numbers only in the winter fishery harvest in 2017 (330 fish; Table 6).

Sex composition did not vary among fisheries ($X^2 = 0.7$, df = 3, $P > 0.05$, $N = 9{,}798$) and females composed the majority of fish sampled in each fishery for each year (Table 7). Average lengths were longer in the UCI early and UCI summer fisheries than in LCI summer and winter fisheries (Table 7).

Mature fish were more commonly sampled in the UCI summer fisheries than in LCI summer and especially the winter fisheries (Table 8). Mature fish composed higher proportions of the samples from UCI fisheries during 2014 and 2015 than in other years (Appendices H1–H5).

DISCUSSION

As the use of genetic MSA has increased for Cook Inlet mixed stock fisheries, there is a better understanding of harvest compositions and more refined information for management decisions (Seeb et al. 2000; Habicht et al. 2007; Barclay et al. 2019). Historical attempts to assess stock composition of the Chinook salmon sport harvest in Cook Inlet salt waters were limited to the use of CWTs, which also required marking smolt (Begich 2007). This MSA study was initiated with the primary goal of estimating the harvest contribution of Kenai and Susitna River stocks and was later expanded to assess the lower Kenai Peninsula stocks as a genetic reporting group (Barclay et al. 2019). Our results supported realigning and simplifying sport fishing regulations and management plans for all Chinook salmon sport fisheries in Cook Inlet salt waters. Our results

have also increased the understanding of Cook Inlet Chinook salmon harvests in these fisheries and helped assess the magnitude of the changes in annual harvests.

Although there was some annual fluctuation in the contribution of Cook Inlet stocks to the Chinook salmon sport harvests in the UCI summer fishery, our results show the overall harvest was primarily composed of the *Outside Cook Inlet* reporting group for all years (Table 4). This may have been due to the increased productivity and year-round prevalence of nonlocal stocks (CTC 2018). The Chinook salmon harvest in the Cook Inlet saltwater sport fisheries ranged from just under 12,000 fish in 2014 to just over 20,000 fish in 2016 (Table 1), but this change in harvest did not result in increased harvest of Cook Inlet stocks. This may be because the increased harvests were in the LCI summer and winter fisheries, which had harvests composed of higher proportions of fish from the *Outside Cook Inlet* reporting group. The UCI summer fishery harvest, which had greater contributions from Cook Inlet stocks, was relatively stable over the years of this study.

Interestingly, Cook Inlet Chinook salmon productivity fluctuated over the monitoring years as well. Kenai Peninsula and Susitna River runs were below average in 2014 and 2018 for most stocks and average to above average in 2015 through 2017 (Booz et al. 2019; Oslund et al. 2020). However, the harvest of Cook Inlet stocks was not necessarily higher in years when productivity was above average, most likely because effort (based on ADF&G charter logbook data) was focused in the LCI summer fishery (with greater than 94% *Outside Cook Inlet* stocks) during these years; the LCI summer fishery is less restrictive (bag limit of 2 per day instead of the 1 per day in UCI) allowing for more success in productive years.

Information on the spatial and temporal distribution of the Chinook salmon saltwater sport harvest allows for more refined structuring of emergency order (EO) regulations to restrict the harvest of Cook Inlet stocks. During years of below average run sizes (2014 and 2018), emergency orders were issued to restrict and close Chinook salmon sport fishing in Upper Cook Inlet. In 2014 and 2015, preseason restrictions reduced the annual limit from 5 to 2 Chinook salmon 20 inches or greater in total length in combination with the lower Kenai Peninsula roadside streams such as the Anchor River. In 2018, runs for most early-run Cook Inlet Chinook salmon stocks were well below average, which required further restrictions in both freshwater and saltwater sport fisheries. To minimize the effect on other sport fisheries such as Pacific halibut, information on where Chinook salmon were harvested at a higher rate (this study; McKinley 1999; Begich 2007) was used to close sport fishing for Chinook salmon within 1 mile of shore in the UCI summer fishery. The closure also allowed Chinook salmon sport fishing to continue in the Upper Cook Inlet summer saltwater fishery from north of Bluff Point to Anchor Point Light at distances greater than 1 mile from shore. These outer waters are a popular location for anglers because immature fish are commonly caught there year-round. During years of poor Cook Inlet Chinook salmon runs, EO restrictions to the LCI saltwater summer fishery and the saltwater winter fishery are unnecessary due to the low contribution of Cook Inlet stocks to the harvest and because restrictions are not likely to increase escapement for any Cook Inlet stock.

Sport harvest estimates by genetic reporting group (Table 4) provide a better understanding of the magnitude of harvest of Cook Inlet stocks in Cook Inlet saltwater fisheries; however, extrapolating the estimates to stocks included within the reporting groups used in this study requires some assumptions. It is assumed the harvest of stocks that compose the *Northern Cook Inlet* reporting group is highly mixed, and it is likely that the larger stocks from this group (such as the Yentna River) have a larger contribution to the harvest from this reporting group. Only the *Kenai River* genetic reporting group directly estimates the harvest of a single stock, but only if the harvest

estimates are assumed to be entirely from the Kenai River early-run stock for the UCI early fishery and entirely from the late-run stock for the UCI late fishery. This assumption cannot be made for harvest in the LCI summer fishery, which requires an assumed proportion of the early- and late-run stocks from the Kenai River. For the *Southern Kenai Peninsula* reporting group, harvest of a specific stock (such as the Anchor River) in Cook Inlet salt waters requires apportioning the harvest of the reporting group by the stocks that compose the group. One way to do this would be to compare annual run sizes. The proportion of the Anchor River escapement in relation to the other stocks composing the *Southern Kenai Peninsula* reporting group during the study years was as much as 55% during the UCI early fishery and 32% during the UCI late fishery (Holly Dickson, Fishery Biologist, ADF&G, Homer, personal communication).

The MSA of mature and immature Chinook salmon from both the UCI summer and LCI summer fisheries harvests during 2014–2018 indicated almost all immature fish were from outside Cook Inlet (Figures 4 and 5), providing further support that Cook Inlet stocks were not present in Cook Inlet outside of their brief migration through the inlet to their natal stream to spawn during these years. The absence of Cook Inlet stocks in the immature group suggests that most fish from these stocks were not rearing in Cook Inlet during 2014–2018. It is surprising that MSA results showed a large proportion of *Outside Cook Inlet* stocks in the mature group. Historical monitoring indicated that all mature fish were Cook Inlet stocks (Begich 2007) but these results show this was not a valid assumption for recent years. The historical monitoring was conducted during a period of high productivity of Cook Inlet stocks and when the Cook Inlet saltwater sport harvest mostly occurred in the nearshore waters of Upper Cook Inlet from April to mid-June, which was a shorter duration and smaller area than during this study. It is likely that most, but not all, of the mature Chinook salmon during historical monitoring were actually Cook Inlet stocks and the results of the present study reflect the lower productivity of local stocks. The nonlocal mature Chinook salmon found in UCI and LCI summer harvests from 2014 to 2018 are most likely southern Chinook salmon stocks with a later run timing than Cook Inlet stocks, such as Columbia River fall run stocks.

CWTs provided some insight into stocks of known origin, but with significant limitations. Primarily, these limitations are a result of the inconsistent use of CWTs in hatchery Chinook salmon throughout the north Pacific from northern California to Alaska (Ed Jones, Fish and Game Coordinator, ADF&G, Juneau, personal communication). Historically, all adipose-finclipped hatchery Chinook salmon were required to be coded-wire-tagged. This policy started changing in the late 2000s, which resulted in lower and differing proportions (by release) of finclipped fish with CWTs. Out of the total number of Chinook salmon sampled from Cook Inlet saltwater sport harvests during 2014–2018, only 15.4% (2,220/14,388) were adipose finclipped, and of those, only 36.5% (811/2,220) were detected with CWTs, resulting in 5.6% (806/14,388) known origin fish. Coded-wire-tagged fish were released into Cook Inlet in 2015 and 2016, after the start of this monitoring program, and they should have been most prevalent in 2018 harvests; however, only 1 tagged Cook Inlet fish was sampled from the harvest in 2018. An MSA augmented with CWT (known origin) fish was conducted with these data, but it did not sufficiently improve the composition estimates (Barclay et al. 2019) when compared with the results of the analytically simpler MSA (that did not include CWT data) presented here.

The age, sex, length, and maturity compositions for all Cook Inlet saltwater Chinook salmon sport fisheries remained consistent relative to one another throughout the study. Compared to the LCI summer fishery harvests, the UCI summer fishery harvests were composed of larger, older, and

more mature fish in most years (Tables 6, 8, and 9). This may be because the UCI summer harvest made up a higher proportion of the returning Cook Inlet stocks. The winter fishery was composed of entirely immature salmon with a younger composition than the summer fisheries, but because the winter fishery was not sampled with the same regularity as the summer fisheries, there may be more variation in the biological compositions than detected in the results here.

A large number of age samples were collected during this project, which required a substantial amount of laboratory work to prepare and age annually. Unlike the subsampling of genetic samples to assess stock composition, no subsampling occurred for the biological samples prior to aging. Unfortunately, ages were assessed by multiple fisheries technicians and biologists, and no comparisons between years and aging staff were conducted until after the work was completed. These comparisons revealed inconsistency in age estimates, which had to be estimated a second time using a subsample of scales, a single age reader, and precision testing protocols. To increase the accuracy and precision of age data, future studies should use stringent precision testing throughout the age assessment process and keep the number of aging personnel to a minimum.

Information derived from this project is valuable when the sport angler effort in the UCI summer fishery is high and there are concerns of overharvesting Cook Inlet stocks. Currently, the UCI summer fishery harvest has been well below the guideline harvest level in the management plan. However, Cook Inlet Chinook salmon sport fisheries are dynamic and change with the presence and abundance of mature local stocks from April to August and the presence and abundance of nonlocal stocks year-round. A more efficient monitoring program would focus on collecting samples from only the UCI summer fishery, subsampling for age and length data in the field, assessing maturity on all fish, and collecting genetic tissue samples from only mature fish. It would also be worthwhile to explore a more adaptive sampling approach to address the challenges faced in collecting samples from the UCI summer fishery during this study (Barclay et al. 2019).

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APPENDIX A: GENETIC BASELINE

Appendix A1.–Genetic baseline tissue collections of Chinook salmon collected throughout their coastal range, including reporting group used for mixed stock analysis, years sampled, and number of samples analyzed from each collection.

Population number	Reporting group	Geographic region	Location[a]	Sample year(s)	No. of samples
1	Outside Cook Inlet	Russia	Bistraya River	1998	94
2			Bolshaya River	1998, 2002	76
3			Kamchatka River late	1997, 1998	115
4			Pakhatcha River	2002	50
5		Western Alaska	Pilgrim River	2005, 2006	72
6			Unalakleet River	2005	82
7			Golsovia River	2005, 2006	112
8			Andreafsky River	2002, 2003	233
9			Anvik River	2002	51
10			Gisasa River	2001	99
11			Tozitna River	2002, 2003	355
12			Henshaw Creek	2001	145
13			South Fork Koyukuk River	2003	51
14			Kantishna River	2005	187
15			Chena River	2001	181
16			Salcha River	2005	188
17			Beaver Creek	1997	91
18			Chandalar River	2002, 2003, 2004	168
19			Sheenjek River	2002, 2004, 2006	47
20			Chandindu River	2000, 2001, 2003	237
21			Klondike River	1995, 2001, 2003	74
22			Stewart River	1997	98
23			Mayo River	1992, 1997, 2003	122
24			Blind River	2003	134
25			Pelly River	1996, 1997	116
26			Little Salmon River	1987, 1997	86
27			Big Salmon River	1987, 1997	106
28			Tatchun Creek	1987, 1997, 2002, 2003	163
29			Nordenskiold River	2003	55
30			Nisutlin River	1987, 1997	55
31			Takhini River	1997, 2002, 2003	160
32			Whitehorse Hatchery	1985, 1987, 1997	218
33			Goodnews River	1993, 2005, 2006	367
34			Arolik River	2005	148
35			Kanektok River	1992, 1993, 2005	243
36			Eek River	2002, 2005	171
37			Kwethluk River	2001	94
38			Kisaralik River	2001, 2005	191
39			Tuluksak River	1993, 1994, 2005	195
40			Aniak River	2002, 2006	251
41			George River	2002, 2005	191

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Population number	Reporting group	Geographic region	Location[a]	Sample year(s)	No. of samples
42	Outside Cook Inlet	Western Alaska	Kogrukluk River	1992, 1993, 2005	149
43			Stony River	1994	94
44			Cheeneetnuk River	2002, 2006	115
45			Gagaryah River	2006	190
46			Takotna River	1994, 2005	170
47			Tatlawiksuk River	2002, 2005	190
48			Salmon River - Pitka Fork	1995	96
49			Togiak River	1993, 1994	154
50			Nushagak River	1992, 1993	57
51			Mulchatna River	1994	97
52			Stuyahok River	1993, 1994	87
53			Naknek River	1995, 2004	110
54			Big Creek	2004	66
55			King Salmon River	2006	131
56			Meshik River	2006	42
57			Milky River	2006	66
58			Nelson River	2006	94
59			Black Hills Creek	2006	51
60			Steelhead Creek	2006	93
61		Kodiak	Chignik River	1995, 2006	75
62			Ayakulik River	1993, 2006	135
63			Karluk River	1993, 2006	139
64	Northern Cook Inlet	West Side Cook Inlet	Straight Creek	2010	95
65			Chuitna River	2008, 2009	134
66			Coal Creek	2009, 2010, 2011	118
67			Theodore River	2010, 2011, 2012	191
68			Lewis River	2011, 2012	87
69		Yentna River	Red Creek	2012, 2013	111
70			Hayes River	2012, 2013	50
71			Canyon Creek	2012, 2013	91
72			Talachulitna River	1995, 2008, 2010	178
73			Sunflower Creek	2009, 2011	123
74			Peters Creek	2009, 2010, 2011, 2012	107
75		Susitna River	Portage Creek	2009, 2010, 2011, 2013	162
76			Indian River	2013	79
77			Chulitna River middle fork	2009, 2010	169
78			Chulitna River east fork	2009, 2010, 2011, 2013	77
79			Byers Creek	2013	55
80			Spink Creek	2013	56
81			Troublesome Creek	2013	71
82			Bunco Creek	2013	99
83			unnamed Talkeetna trib.	2013	69
84			Prairie Creek	1995, 2008	162

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Population number	Reporting group	Geographic region	Location[a]	Sample year(s)	No. of samples
85	Northern Cook Inlet	Susitna River	Iron Creek	2013	57
86			Disappointment Creek	2013	64
87			Chunilna Creek	2009, 2012	80
88			Montana Creek	2008, 2009, 2010	213
89			Little Willow Creek	2013	54
90			Willow Creek	2005, 2009	170
91			Deshka River	1995, 2012, 2005	303
92			Sucker Creek	2011, 2012	144
93		Knik Arm	Little Susitna River	2009, 2010	124
94			Moose Creek	1995, 2008, 2009, 2012	149
95			Eagle River	2009, 2011, 2012	77
96			Ship Creek	2009	268
97		Turnagain Arm	Campbell Creek	2010, 2011, 2012	110
98			Carmen River	2011, 2012	50
99			Resurrection Creek	2010, 2011, 2012	97
100			Chickaloon River	2008, 2010, 2011	128
101	Kenai River	Kenai River	Grant Creek	2011, 2012	55
102			Quartz Creek	2006, 2007–2011	131
103			Crescent Creek	2006	163
104			Juneau Creek	2005, 2006, 2007	142
105			Russian River	2005, 2006, 2007, 2008	214
106			Kenai Upper Mainstem	2009	191
107			Benjamin Creek	2005, 2006	204
108			Killey River	2005, 2006	255
109			Funny River	2005, 2006	219
110			Kenai Middle Mainstem	2003, 2004, 2006	299
111			Kenai Lower Mainstem	2010, 2011	126
112			Slikok Creek	2004, 2005, 2008	137
113	Southern Kenai Peninsula	Kasilof River	Kasilof River mainstem	2005	316
114			Crooked Creek	2005, 2011	306
115		Coastal Kenai Peninsula	Ninilchik River	2006, 2010	209
116			Deep Creek	2009, 2010	196
117			Stariski Creek	2011, 2012	99
118			Anchor River	2006, 2010	250
119	Outside Cook Inlet	Copper River	Indian River	2004, 2005	50
120			Bone Creek	2004, 2005	78
121			E. Fork Chistochina River	2004	132
122			Otter Creek	2005	128
123			Sinona Creek	2004, 2005	156
124			Gulkana River	2004	210
125			Mendeltna Creek	2004	132
126			Kiana Creek	2004	75
127			Manker Creek	2004, 2005	62

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Population number	Reporting group	Geographic region	Location[a]	Sample year(s)	No. of samples
128	Outside Cook Inlet	Copper River	Tonsina River	2004, 2006	96
129			Tebay River	2004, 2005, 2006	68
130		Northeast Gulf of Alaska	Situk River	1988, 1990, 1991, 1992	127
131			Big Boulder Creek	1992, 1993, 1995, 2004	171
132			Tahini River	1992, 2004	168
133			Tahini River - Pullen Creek Hatchery	2005	78
134			Kelsall River	2004	153
135		Southeast Alaska	King Salmon River	1989, 1990, 1993	142
136			King Creek	2003	172
137			Chickamin River	1990, 2003	134
138			Chickamin River - Little Port Walter	1993, 2005	217
139			Chickamin River - Whitman Lake Hatchery	1992, 1998, 2005	378
140			Humpy Creek	2003	123
141			Butler Creek	2004	190
142			Clear Creek	1989, 2003, 2004	194
143			Cripple Creek	1988, 2003	142
144			Genes Creek	1989, 2003, 2004	93
145	Outside Cook Inlet	Southeast Alaska	Kerr Creek	2003, 2004	151
146			Unuk River - Little Port Walter	2005	149
147			Unuk River - Deer Mountain Hatchery	1992, 1994	147
148			Keta River	1989, 2003	144
149			Blossom River	2004	189
150			Andrews Creek	1989, 2004	151
151			Crystal Lake Hatchery	1992, 1994, 2005	396
152			Medvejie Hatchery	1998, 2005	273
153			Hidden Falls Hatchery	1994, 1998	154
154			Macaulay Hatchery	2005	135
155			Klukshu River	1989, 1990	170
156			Kowatua River	1989, 1990	135
157			Little Tatsemenie River	1989, 1990, 2005	230
158			Upper Nahlin River	1989, 1990	130
159			Nakina River	1989, 1990	132
160			Dudidontu River	2005	85
161			Tahltan River	1989	95
162		British Columbia	Kateen River	2005	94
163			Damdochax Creek	1996	65
164			Kincolith Creek	1996	109
165			Kwinageese Creek	1996	62
166			Oweegee Creek	1996	80
167			Bulkley River	1999	91
168			Sustut River	2001	130
169			Ecstall River	2001, 2002	86

-continued-

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Population number	Reporting group	Geographic region	Location[a]	Sample year(s)	No. of samples
170	Outside Cook Inlet	British Columbia	Lower Kalum River	2001	142
171			Lower Atnarko River	1996	143
172			Kitimat River	1997	140
173			Wannock River	1996	144
174			Klinaklini River	1997	83
175			Porteau Cove	2003	154
176			Conuma River	1997, 1998	108
177			Marble Creek	1996, 1999, 2000	144
178			Nitinat River	1996	99
179			Robertson Creek	1996, 2003	103
180			Sarita River	1997, 2001	155
181			Big Qualicum River	1996	141
182			Nanaimo River	2002	78
183			Quinsam River	1996	119
184			Morkill River (Su)	2001	153
185			Salmon River (Su)	1997	92
186			Torpy River (Su)	2001	85
187			Chilko River (Su)	1995, 1996, 1999, 2002	242
188			Nechako River (Su)	1996	115
189			Quesnel River (Su)	1996	144
190			Stuart River (Su)	1996	161
191			Clearwater River (Su)	1997	147
192			Louis River (Sp)	2001	178
193			Lower Adams River (Fa)	1996	44
194			Lower Thompson River (Fa)	2001	100
195			Middle Shuswap River (Su)	1986, 1997	125
196			Birkenhead River (Sp)	1997, 1999, 2001, 2002, 2003	91
197			Harrison River	2002	96
198		Washington	Makah National Fish Hatchery (Fa)	2001, 2003	79
199			Forks Creek (Fa)	2005	149
200			Upper Skagit River (Su)	2006	89
201			Soos Creek Hatchery (Fa)	2004	117
202			Lyons Ferry Hatchery (Su/Fa)	2002, 2003	118
203			Hanford Reach	2000, 2004, 2006	107
204		Oregon	Lower Deschutes River (Fa)	2002	86
205			Carson Hatchery (Sp)	2001	95
206			McKenzie River (Sp)	2004	94
207			Alsea River (Fa)	2004	69
208			Siuslaw River (Fa)	2001	75
209		California	Klamath River	1990, 2006	52
210			Eel River (Fa)	2000, 2001	83
211			Sacramento River (Wi)	2005	95

Source: Barclay et al. (2019).

Note: Population numbers correspond to baseline sampling sites.

[a] "Sp" means spring run, "Su" means summer run, "Fa" means fall run, and "Wi" means winter run.

APPENDIX B: INTERVIEW DATA BY PORT OF LANDING

Appendix B1.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Deep Creek and Anchor Point tractor launches, 2014.

			Interviews			CWT		Biological samples				Genetics
Port	Month	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Deep Creek	May	Private	63	185	21	3	2	13	18	18	9	18
		Charter	71	372	63	3	3	63	63	63	31	63
		Total	134	557	84	6	5	76	81	81	40	81
	Jun	Private	33	114	12	0	0	9	6	9	3	9
		Charter	69	363	34	4	3	34	33	34	15	34
		Total	102	477	46	4	3	43	39	43	18	43
	Jul	Private	21	80	0	0	0	0	0	0	0	0
		Charter	19	106	0	0	0	0	0	0	0	0
		Total	40	186	0	0	0	0	0	0	0	0
	Aug[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	117	379	33	3	2	22	24	27	12	27
		Charter	159	841	97	7	6	97	96	97	46	97
		Total	236	1,034	130	10	8	119	120	124	58	124
Anchor Point	May	Private	69	233	70	4	3	51	49	66	33	66
		Charter	34	168	31	0	0	24	25	31	20	31
		Total	103	401	101	4	3	75	74	97	53	97
	Jun	Private	50	167	32	6	6	21	29	30	27	30
		Charter	47	244	22	5	0	19	5	22	3	22
		Total	97	411	54	11	6	40	34	52	30	52
	Jul	Private	32	122	25	4	4	17	25	25	12	24
		Charter	12	66	4	1	0	3	0	4	0	4
		Total	44	188	29	5	4	20	25	29	12	28
	Aug	Private	12	40	19	2	2	18	19	19	18	19
		Charter	15	85	35	10	10	26	1	35	1	35
		Total	27	125	54	12	12	44	20	54	19	54
	All year	Private	163	562	146	16	15	107	122	140	90	139
		Charter	108	563	92	16	10	72	31	92	24	92
		Total	271	1,125	238	32	25	179	153	232	114	231

[a] No field sampling took place in Deep Creek during August 2014.

Appendix B2.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at the Homer harbor, 2014.

			Interviews			CWT		Biological samples				Genetics
Port	Month(s)	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Homer harbor	Jan–Mar	Private	128	432	140	0	0	0	0	0	0	0
		Charter	6	26	15	0	0	0	0	0	0	0
		Total	134	458	155	0	0	0	0	0	0	0
	Apr	Private	1	2	3	0	0	0	0	0	0	0
		Charter	0	0	0	0	0	0	0	0	0	0
		Total	1	2	3	0	0	0	0	0	0	0
	May	Private	49	134	37	10	10	70	25	88	9	118
		Charter	31	138	118	2	2	12	9	17	8	23
		Total	80	272	155	12	12	82	34	105	17	141
	Jun	Private	33	87	66	7	7	35	53	52	37	49
		Charter	95	487	395	41	39	235	289	352	236	305
		Total	128	574	461	48	46	270	342	404	273	354
	Jul	Private	34	101	75	6	6	44	64	64	52	58
		Charter	75	390	288	31	31	153	174	224	144	198
		Total	109	491	363	37	37	197	238	288	196	256
	Aug	Private	28	100	72	13	12	43	66	76	62	65
		Charter	134	726	725	123	122	462	387	637	375	607
		Total	162	826	797	136	134	505	453	713	437	672
	Sep	Private	6	21	25	3	3	5	6	6	6	6
		Charter	15	78	106	16	16	61	59	83	59	72
		Total	21	99	131	19	19	66	65	89	65	78
	Oct–Dec	Private	62	184	224	43	43	137	126	220	125	215
		Charter	0	0	0	36	36	69	96	127	96	87
		Total	62	184	224	79	79	206	222	347	221	302
	All year	Private	341	1,061	642	82	81	334	340	547	291	511
		Charter	356	1,845	1,647	249	246	992	1,014	1,440	918	1,292
		Total	697	2,906	2,289	331	327	1,326	1,354	1,946	1,209	1,803

Appendix B3.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Deep Creek and Anchor Point tractor launches, 2015.

			Interviews			CWT		Biological samples				Genetics
Port	Month	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Deep Creek	May	Private	44	166	80	2	2	18	11	41	2	41
		Charter	68	331	150	10	10	53	55	104	31	104
		Total	112	497	230	12	12	71	66	145	33	145
	Jun	Private	16	61	4	0	0	2	0	2	0	2
		Charter	28	119	10	1	1	2	3	4	2	4
		Total	44	180	14	1	1	4	3	6		6
	Jul	Private	9	28	5	0	0	5	4	5	0	5
		Charter	8	31	7	1	1	2	7	7	0	7
		Total	17	59	12	1	1	7	11	12	0	12
	Aug[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	69	255	89	2	2	25	15	48	2	48
		Charter	104	481	167	12	12	57	65	115	33	115
		Total	173	736	256	14	14	82	80	163	35	163
Anchor Point	May	Private	85	322	165	14	12	76	84	121	73	127
		Charter	35	174	98	5	3	20	20	31	16	32
		Total	120	496	263	19	15	96	104	152	89	159
	Jun	Private	30	124	15	0	0	9	9	11	8	11
		Charter	33	169	26	6	1	11	8	20	8	20
		Total	63	293	41	6	1	20	17	31	16	31
	Jul	Private	20	82	9	1	1	9	7	9	4	9
		Charter	29	162	26	1	1	10	4	16	4	16
		Total	49	244	35	2	2	19	11	25	8	25
	Aug	Private	23	89	45	6	5	19	15	34	13	34
		Charter	44	230	106	7	3	18	1	27	1	27
		Total	67	319	151	13	8	37	16	61	14	61
	All year	Private	158	617	234	21	18	113	115	175	98	181
		Charter	141	735	256	19	8	59	33	94	29	95
		Total	299	1,352	490	40	26	172	148	269	127	276

[a] No field sampling took place in Deep Creek during August 2015.

Appendix B4.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Homer harbor, 2015.

			Interviews			CWT		Biological samples				Genetics
Port	Month(s)	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Homer harbor	Jan–Mar	Private	309	1,023	602	41	41	57	130	390	72	385
		Charter	18	85	60	9	9	5	23	59	17	42
		Total	327	1,108	662	50	50	62	153	449	89	427
	Apr	Private	13	32	30	3	3	1	22	21	1	20
		Charter	4	12	18	1	1	12	18	18	14	14
		Total	17	44	48	4	4	13	40	39	15	34
	May	Private	395	1,150	534	36	35	204	198	286	123	301
		Charter	128	644	440	22	22	133	177	214	152	224
		Total	523	1,794	974	58	57	337	375	500	275	525
	Jun	Private	142	415	172	10	10	73	75	106	60	106
		Charter	263	1,320	940	81	79	545	537	676	413	698
		Total	405	1,735	1,112	91	89	618	612	782	473	804
	Jul	Private	56	183	87	13	13	34	56	64	43	69
		Charter	268	1,504	936	149	148	567	794	932	539	982
		Total	324	1,687	1,023	162	161	601	850	996	582	1,051
	Aug	Private	60	203	151	29	29	66	68	103	67	105
		Charter	223	1,291	1,163	230	230	662	889	1,118	772	1,139
		Total	283	1,494	1,314	259	259	728	957	1,221	839	1,244
	Sep	Private	9	29	34	9	9	20	25	25	24	24
		Charter	13	69	62	15	15	40	43	45	43	45
		Total	22	98	96	24	24	60	68	70	67	69
	Oct–Dec	Private	114	310	541	126	124	19	40	412	2	408
		Charter	6	34	62	14	14	0	0	38	0	35
		Total	120	344	603	140	138	19	40	450	2	443
	All year	Private	1,098	3,345	2,151	267	264	474	614	1,407	392	1,418
		Charter	923	4,959	3,681	521	518	1,964	2,481	3,100	1,950	3,179
		Total	2,021	8,304	5,832	788	782	2,438	3,095	4,507	2,342	4,597

Appendix B5.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Deep Creek and Anchor Point tractor launches, 2016.

			Interviews			CWT		Biological samples				Genetics
Port	Month	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Deep Creek	May	Private	70	258	66	5	4	37	9	42	7	42
		Charter	84	400	98	10	10	40	29	52	20	52
		Total	154	658	164	15	14	77	38	94	27	94
	Jun	Private	33	109	10	2	1	8	6	10	5	10
		Charter	12	61	37	4	1	16	15	37	15	17
		Total	45	170	47	6	2	24	21	47	20	27
	Jul	Private	22	22	3	0	0	1	1	3	0	3
		Charter	16	72	7	1	0	4	0	4	0	4
		Total	38	94	10	1	0	5	1	7	0	7
	Aug[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	125	389	79	7	5	46	16	55	12	55
		Charter	112	533	142	15	11	60	44	93	35	73
		Total	237	922	221	22	16	106	60	148	47	128
Anchor Point	May	Private	70	255	104	4	4	42	33	56	28	50
		Charter	17	83	34	1	0	10	2	12	2	12
		Total	87	338	138	5	4	52	35	68	30	62
	Jun	Private	42	120	23	4	2	18	14	21	14	21
		Charter	29	141	35	2	2	16	3	21	3	20
		Total	71	261	58	6	4	34	17	42	17	41
	Jul	Private	22	75	14	1	0	9	6	14	3	13
		Charter	18	104	63	3	0	6	0	13	0	12
		Total	40	179	77	4	0	15	6	27	3	25
	Aug	Private	8	25	13	0	1	10	4	12	3	12
		Charter	15	83	32	2	1	8	0	8	0	8
		Total	23	108	45	2	2	18	4	20	3	20
	All year	Private	142	475	154	9	7	79	57	103	48	96
		Charter	79	411	164	8	3	40	5	54	5	52
		Total	221	886	318	17	10	119	62	157	53	148

[a] No field sampling took place in Deep Creek during August 2016.

Appendix B6.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Homer harbor, 2016.

			Interviews			CWT		Biological samples				Genetics
Port	Month(s)	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Homer harbor	Jan–Mar	Private	366	1,225	251	31	31	11	56	240	20	240
		Charter	27	137	82	10	10	7	27	32	22	34
		Total	393	1,362	333	41	41	18	83	272	42	274
	Apr	Private	5	15	7	7	7	0	7	5	6	5
		Charter	1	4	7	1	1	0	0	0	0	0
		Total	6	19	14	8	8	0	7	5	6	5
	May	Private	105	319	102	20	19	44	62	91	48	55
		Charter	140	655	416	28	23	38	205	276	188	45
		Total	245	974	518	48	42	82	267	367	236	100
	Jun	Private	60	190	70	17	14	20	39	64	30	32
		Charter	279	1,412	933	91	81	71	495	698	431	77
		Total	339	1,602	1,003	108	95	91	534	762	461	109
	Jul	Private	44	119	31	9	8	14	20	27	13	21
		Charter	183	1,017	554	63	63	118	308	427	254	133
		Total	227	1,136	585	72	71	132	328	454	267	154
	Aug	Private	34	105	66	17	14	21	38	59	34	27
		Charter	181	989	829	81	76	137	358	561	344	157
		Total	215	1,094	895	98	90	158	396	620	378	184
	Sep	Private	13	30	25	5	5	6	11	20	6	17
		Charter	2	6	1	1	1	0	4	4	0	4
		Total	15	36	26	6	6	6	15	24	6	21
	Oct–Dec	Private	145	386	436	78	76	174	54	423	30	416
		Charter	2	11	2	4	4	7	5	17	5	13
		Total	147	397	438	82	80	181	59	440	35	429
	All year	Private	772	2,389	988	184	174	290	287	929	187	813
		Charter	815	4,231	2,824	279	259	378	1,402	2,015	1,244	463
		Total	1,587	6,620	3,812	463	433	668	1,689	2,944	1,431	1,276

Appendix B7.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Deep Creek and Anchor Point tractor launches, 2017.

			Interviews			CWT		Biological samples				Genetics
Port	Month	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Deep Creek	May	Private	61	254	115	4	3	40	12	54	10	50
		Charter	87	425	147	11	10	33	27	57	17	50
		Total	148	679	262	15	13	73	39	111	27	100
	Jun	Private	32	118	15	1	1	3	1	6	1	6
		Charter	31	144	37	5	5	17	12	20	11	20
		Total	63	262	52	6	6	20	13	26	12	26
	Jul	Private	16	59	2	0	0	0	0	0	0	0
		Charter	12	54	6	0	0	6	4	6	3	6
		Total	28	113	8	0	0	6	4	6	3	6
	Aug[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	109	431	132	5	4	43	13	60	11	56
		Charter	130	623	190	16	15	56	43	83	31	76
		Total	239	1,054	322	21	19	99	56	143	42	132
Anchor Point	May	Private	68	225	99	6	6	60	56	80	36	66
		Charter	14	65	23	0	0	7	6	11	5	9
		Total	82	290	122	6	6	67	62	91	41	75
	Jun	Private	43	143	50	3	3	19	22	25	18	22
		Charter	33	167	73	5	5	36	46	53	40	42
		Total	76	310	123	8	8	55	68	78	58	64
	Jul	Private	86	271	66	2	2	38	41	57	10	49
		Charter	28	157	25	2	2	14	17	19	15	17
		Total	114	428	91	4	4	52	58	76	25	66
	Aug	Private	9	37	1	0	0	1	0	1	0	1
		Charter	15	85	7	0	0	6	6	6	6	6
		Total	24	122	8	0	0	7	6	7	6	7
	All year	Private	206	676	216	11	11	118	119	163	64	138
		Charter	90	474	128	7	7	63	75	89	66	74
		Total	296	1,150	344	18	18	181	194	252	130	212

[a] No field sampling took place in Deep Creek during August 2017.

Appendix B8.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Homer harbor, 2017.

			Interviews			CWT		Biological samples				Genetics
Port	Month(s)	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Homer harbor	Jan–Mar	Private	241	790	206	18	16	19	21	136	20	27
		Charter	14	74	46	6	5	14	27	38	27	15
		Total	255	864	252	24	21	33	48	174	47	42
	April	Private	9	29	34	5	4	14	15	17	4	19
		Charter	6	25	32	5	5	36	28	36	21	36
		Total	15	54	66	10	9	50	43	53	25	55
	May	Private	100	293	146	17	16	65	54	78	38	85
		Charter	75	326	255	13	17	76	96	143	92	80
		Total	175	619	401	30	33	141	150	221	130	165
	Jun	Private	77	230	79	7	7	27	36	45	24	43
		Charter	213	1,047	606	45	49	305	318	410	298	370
		Total	290	1,277	685	52	56	332	354	455	322	413
	Jul	Private	108	348	87	5	5	40	39	57	28	57
		Charter	235	1,343	558	71	72	361	389	439	372	406
		Total	343	1,691	645	76	77	401	428	496	400	463
	Aug	Private	93	334	79	10	11	60	46	77	46	66
		Charter	171	957	490	40	40	268	279	314	277	295
		Total	264	1,291	569	50	51	328	325	391	323	361
	Sep	Private	165	392	145	20	19	118	88	141	88	138
		Charter	67	324	281	21	21	160	147	168	147	168
		Total	232	716	426	41	40	278	235	309	235	306
	Oct–Dec	Private	78	180	63	9	9	45	6	100	6	100
		Charter	5	20	14	4	4	8	7	19	7	20
		Total	83	200	77	13	13	53	13	119	13	120
	All year	Private	871	2,596	839	91	87	388	305	651	254	535
		Charter	786	4,116	2,282	205	213	1,228	1,291	1,567	1,241	1,390
		Total	1,657	6,712	3,121	296	300	1,616	1,596	2,218	1,495	1,925

Appendix B9.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Deep Creek and Anchor Point tractor launches, 2018.

			Interviews			CWT		Biological samples				Genetics
Port	Month	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Deep Creek	May	Private	117	469	271	7	3	64	36	86	35	75
		Charter	106	106	197	11	9	59	65	71	35	71
		Total	223	575	468	18	12	123	101	157	70	146
	Jun	Private	2	5	0	0	0	0	0	0	1	0
		Charter	21	21	50	0	0	16	13	16	1	16
		Total	23	26	50	0	0	16	13	16	2	16
	Jul	Private	1	3	0	0	0	0	0	0	0	0
		Charter	0	0	0	0	0	0	0	0	0	0
		Total	1	3	0	0	0	0	0	0	0	0
	Aug[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	120	477	271	7	3	64	36	86	36	75
		Charter	127	127	247	11	9	75	78	87	36	87
		Total	247	604	518	18	12	139	114	173	72	162
Anchor Point	May	Private	101	360	190	6	3	52	45	64	21	65
		Charter	40	202	98	2	2	20	23	26	10	27
		Total	141	562	288	8	5	72	68	90	31	92
	Jun	Private	25	82	5	0	0	2	0	0	1	2
		Charter	50	200	118	4	1	28	26	38	20	35
		Total	75	282	123	4	1	30	26	38	21	37
	Jul	Private	35	100	17	0	0	10	6	13	0	13
		Charter	34	154	71	1	0	22	27	26	18	26
		Total	69	254	88	1	0	32	33	39	18	39
	Aug	Private	0	0	0	0	0	0	0	0	0	0
		Charter	1	6	1	0	0	1	1	1	0	1
		Total	1	6	1	0	0	1	1	1	0	1
	All year	Private	161	542	212	6	3	64	51	77	22	80
		Charter	125	562	288	7	3	71	77	91	48	89
		Total	286	1,104	500	13	6	135	128	168	70	169

[a] No field sampling took place in Deep Creek during August 2018.

Appendix B10.–Number of interviewed trips, anglers, and Chinook salmon harvested from these trips; and CWT, biological, and genetic samples collected from Chinook salmon caught in Cook Inlet salt waters at Homer harbor, 2018.

			Interviews			CWT		Biological samples				Genetics
Port	Month(s)	User group	Count (trips)	No. of anglers	No. of Chinook salmon	No. of adipose-clipped fish	No. of heads collected	Age (scales)	Sex (internal exam)	Length (METF)	Maturity	Axillary clips
Homer harbor	Jan–Mar	Private	0	0	0	16	16	0	0	13	0	0
		Charter	0	0	0	0	0	0	0	0	0	0
		Total	0	0	0	0	0	0	0	0	0	0
	Apr	Private	18	39	23	0	0	5	7	6	2	6
		Charter	18	80	95	0	0	2	6	4	6	3
		Total	36	119	118	0	0	7	13	10	8	9
	May	Private	215	578	345	14	13	78	90	104	43	100
		Charter	107	435	297	9	8	33	54	56	31	38
		Total	322	1,013	642	23	21	111	144	160	74	138
	Jun	Private	140	331	114	7	5	27	33	43	20	32
		Charter	488	2,470	2,136	42	38	107	291	383	247	129
		Total	628	2,801	2,250	49	43	134	324	426	267	161
	Jul	Private	76	206	42	1	1	14	12	18	6	16
		Charter	540	2,535	1,904	38	35	114	290	331	235	142
		Total	616	2,741	1,946	39	36	128	302	349	241	158
	Aug	Private	125	445	427	6	2	29	45	55	42	
		Charter	419	1,871	1,807	33	26	107	237	291	224	132
		Total	544	2,316	2,234	39	28	136	282	346	266	132
	Sep[a]	Total	–	–	–	–	–	–	–	–	–	–
	Oct–Dec[a]	Total	–	–	–	–	–	–	–	–	–	–
	All year	Private	574	1,599	951	44	37	153	187	239	113	154
		Charter	1,572	7,391	6,239	122	107	363	878	1,065	743	444
		Total	2,146	8,990	7,190	166	144	516	1,065	1,304	856	598

[a] No field sampling took place in Deep Creek during September–December 2018.

APPENDIX C: TISSUE SAMPLE SELECTION

Appendix C1.–Number of genetic tissue samples genotyped annually from Chinook salmon harvested in Cook Inlet salt waters by fishery, user group, and month for a reporting group MSA for each fishery, 2014–2018.

Fishery	Year	User group	Total number of samples[a]	Number of genotyped samples by month(s)								Total genotyped samples[b]
				Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet Early	2014	Private	129	–	0	77	50	–	–	–	–	127
		Charter	178	–	0	120	57	–	–	–	–	177
		Total	307	–	0	197	107	–	–	–	–	304
	2015	Private	262	–	1	181	9	–	–	–	–	191
		Charter	259	–	0	185	14	–	–	–	–	199
		Total	521	–	1	366	23	–	–	–	–	390
	2016	Private	143	–	0	112	29	–	–	–	–	141
		Charter	347	–	0	62	147	–	–	–	–	209
		Total	490	–	0	174	176	–	–	–	–	350
	2017	Private	211	–	0	135	31	–	–	–	–	166
		Charter	333	–	0	47	87	–	–	–	–	134
		Total	544	–	0	182	118	–	–	–	–	300
	2018	Private	223	–	0	70	66	–	–	–	–	136
		Charter	214	–	0	161	1	–	–	–	–	162
		Total	437	–	0	231	67	–	–	–	–	298
Upper Cook Inlet Late	2014	Private	17	–	–	–	–	–	–	–	–	–
		Charter	13	–	–	–	–	–	–	–	–	–
		Total	30	–	–	–	–	–	–	–	–	–
	2015	Private	12	–	–	–	–	–	–	–	–	–
		Charter	15	–	–	–	–	–	–	–	–	–
		Total	27	–	–	–	–	–	–	–	–	–
	2016	Private	45	–	–	–	4	13	25	–	–	42
		Charter	198	–	–	–	58	31	97	–	–	186
		Total	243	–	–	–	62	44	122	–	–	228
	2017	Private	73	–	–	–	1	58	13	–	–	72
		Charter	254	–	–	–	37	154	33	–	–	224
		Total	327	–	–	–	38	212	46	–	–	296
	2018	Private	49	–	–	–	0	21	28	–	–	49
		Charter	193	–	–	–	63	70	60	–	–	193
		Total	242	–	–	–	63	91	88	–	–	242

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Fishery	Year	User group	Total number of samples[a]	Number of genotyped samples by month(s)								Total genotyped samples[b]
				Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Lower Cook Inlet Summer	2014	Private	216	–	1	23	29	42	48	6	–	149
		Charter	1,227	–	0	9	51	37	104	9	–	210
		Total	1,443	–	1	32	80	79	152	15	–	359
	2015	Private	578	–	8	67	31	26	41	4	–	184
		Charter	3,038	–	1	11	60	262	185	4	–	235
		Total	3,616	–	9	78	91	288	226	8	–	419
	2016	Private	256	–	3	48	44	23	22	11	–	151
		Charter	1,652	–	0	34	54	34	38	0	–	160
		Total	1,908	–	3	82	98	57	60	11	–	311
	2017	Private	229	–	11	27	24	39	42	–	–	143
		Charter	929	–	9	13	40	56	39	–	–	157
		Total	1,158	–	20	40	64	95	81	–	–	300
	2018	Private	142	–	6	58	32	14	29	–	–	139
		Charter	767	–	0	14	48	51	39	–	–	152
		Total	909	–	6	72	80	65	68	–	–	291
Winter	2014	Private	309	110	–	–	–	–	–	–	200	310
		Charter	17	15	–	–	–	–	–	–	0	15
		Total	326	125	–	–	–	–	–	–	200	325
	2015	Private	793	165	–	–	–	–	–	–	33	198
		Charter	78	44	–	–	–	–	–	–	172	216
		Total	871	209	–	–	–	–	–	–	205	414
	2016	Private	664	99	–	–	–	–	–	–	185	284
		Charter	52	35	–	–	–	–	–	–	17	52
		Total	716	134	–	–	–	–	–	–	202	336
	2017	Private	383	93	–	–	–	–	–	99	70	262
		Charter	222	11	–	–	–	–	–	25	2	38
		Total	605	104	–	–	–	–	–	124	72	300

Note: An en dash indicates no samples were taken.

[a] Total number of tissue samples available for genotyping.

[b] Genotyped samples were used in MSA.

Appendix C2.–Number of genetic tissue samples genotyped from Chinook salmon harvested in Cook Inlet salt waters by fishery, maturity, user group, and year for a maturity MSA of all years combined for each fishery.

Fishery	Maturity	User group	Total number of samples[a]	Number of genotyped samples by year					Total genotyped samples[b]
				2014	2015	2016	2017	2018	
Upper Cook Inlet Summer	Immature	Private	517	83	89	80	85	88	425
		Charter	1,196	100	81	208	267	199	855
		Total	1,713	183	170	288	352	287	1,280
	Mature	Private	194	40	38	12	36	17	143
		Charter	203	62	31	36	10	25	164
		Total	397	102	69	48	46	42	307
Lower Cook Inlet Summer	Immature	Private	970	113	80	51	60	79	383
		Charter	4,894	112	146	98	122	99	577
		Total	5,864	225	226	149	182	178	960
	Mature	Private	121	14	13	14	8	20	69
		Charter	452	34	42	101	28	30	235
		Total	573	48	55	115	36	50	304

[a] Total number of tissue samples available for genotyping.

[b] Genotyped samples were used in MSA.

APPENDIX D: COMPOSITION, 90% CREDIBILITY INTERVALS, AND STANDARD DEVIATIONS OF HARVEST BY FISHERY, 2014–2016

Appendix D1.–Cook Inlet saltwater Chinook salmon genetic reporting group composition and harvest with 90% credibility intervals and standard deviations by fishery, 2014–2016.

			Percentage				Harvest by reporting group			
				Credibility intervals				Credibility intervals[a]		
Year	Fishery	Genetic reporting group	Mean	5%	95%	SD	Mean	5%	95%	SD
2014	Upper Cook Inlet Early	*Outside Cook Inlet*	75.3	71.1	79.4	2.5	1,171	847	1,564	220
		Northern Cook Inlet	14.8	10.9	18.9	2.4	230	147	333	57
		Kenai River	0.5	0	2.1	0.8	7	0	33	13
		Southern Kenai Peninsula	9.4	6.2	12.9	2.1	146	86	222	42
	Upper Cook Inlet Late	*Outside Cook Inlet*	–	–	–	–	–	–	–	–
		Northern Cook Inlet	–	–	–	–	–	–	–	–
		Kenai River	–	–	–	–	–	–	–	–
		Southern Kenai Peninsula	–	–	–	–	–	–	–	–
	Lower Cook Inlet Summer	*Outside Cook Inlet*	97.9	96.6	99.0	0.7	4,955	4,121	5,882	538
		Northern Cook Inlet	0.2	0.0	0.7	0.3	8	0	35	13
		Kenai River	0.5	0.0	1.7	0.6	23	0	86	30
		Southern Kenai Peninsula	1.4	0.3	2.8	0.8	72	16	144	40
	Winter	*Outside Cook Inlet*	99.8	99.2	100.0	0.3	3,165	2,225	4,330	648
		Northern Cook Inlet	0.1	0.0	0.5	0.2	4	0	16	6
		Kenai River	0.1	0.0	0.4	0.2	3	0	13	5
		Southern Kenai Peninsula	0.0	0.0	0.2	0.1	1	0	6	3
2015	Upper Cook Inlet Early	*Outside Cook Inlet*	80.4	77.1	83.6	2.0	2,137	1,645	2,719	329
		Northern Cook Inlet	11.5	8.8	14.5	1.8	306	209	425	66
		Kenai River	0.4	0.0	2.0	0.7	11	0	53	20
		Southern Kenai Peninsula	7.7	5.2	10.3	1.5	204	128	296	52
	Upper Cook Inlet Late	*Outside Cook Inlet*	–	–	–	–	–	–	–	–
		Northern Cook Inlet	–	–	–	–	–	–	–	–
		Kenai River	–	–	–	–	–	–	–	–
		Southern Kenai Peninsula	–	–	–	–	–	–	–	–
	Lower Cook Inlet Summer	*Outside Cook Inlet*	99.0	98.0	99.7	0.5	7,988	6,764	9,340	785
		Northern Cook Inlet	0.8	0.2	1.7	0.5	65	12	142	41
		Kenai River	0.1	0.0	0.6	0.2	10	0	51	20
		Southern Kenai Peninsula	0.0	0.0	0.2	0.1	3	0	18	9

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Year	Fishery	Genetic reporting group	Percentage				Harvest by reporting group			
				Credibility intervals				Credibility intervals[a]		
			Mean	5%	95%	SD	Mean	5%	95%	SD
2015	Winter	*Outside Cook Inlet*	99.8	99.4	100.0	0.2	5,170	3,878	6,708	865
		Northern Cook Inlet	0.1	0.0	0.4	0.2	5	0	21	8
		Kenai River	0.1	0.0	0.3	0.1	3	0	15	6
		Southern Kenai Peninsula	0.0	0.0	0.1	0.1	1	0	8	4
2016	Upper Cook Inlet Early	*Outside Cook Inlet*	89.9	87.0	92.6	1.7	2,185	1,693	2,759	326
		Northern Cook Inlet	6.2	3.7	9.1	1.6	152	85	234	46
		Kenai River	1.7	0.0	3.9	1.2	40	0	98	31
		Southern Kenai Peninsula	2.2	0.7	4.1	1.0	53	17	102	27
	Upper Cook Inlet Late	*Outside Cook Inlet*	96.5	94.3	98.2	1.2	1,286	935	1,715	239
		Northern Cook Inlet	0.3	0.0	1.3	0.5	4	0	17	6
		Kenai River	1.6	0.0	4.5	1.6	21	0	62	21
		Southern Kenai Peninsula	1.6	0.0	4.4	1.5	22	0	61	21
	Lower Cook Inlet Summer	*Outside Cook Inlet*	96.1	94.2	97.8	1.1	9,487	8,323	10,751	739
		Northern Cook Inlet	1.0	0.2	2.3	0.7	99	15	229	68
		Kenai River	0.2	0.0	0.9	0.4	20	0	91	35
		Southern Kenai Peninsula	2.7	1.2	4.4	1.0	262	119	444	100
	Winter	*Outside Cook Inlet*	99.8	99.3	100.0	0.3	5,095	3,823	6,604	857
		Northern Cook Inlet	0.1	0.0	0.5	0.2	6	0	25	10
		Kenai River	0.1	0.0	0.4	0.1	4	0	18	8
		Southern Kenai Peninsula	0.0	0.0	0.2	0.1	2	0	10	5
2017	Upper Cook Inlet Early	*Outside Cook Inlet*	84.7	81.2	88.0	2.1	1,693	1,321	2,122	245
		Northern Cook Inlet	5.5	2.5	8.9	2.0	109	47	186	43
		Kenai River	2.3	0.0	6.2	2.0	47	0	126	40
		Southern Kenai Peninsula	7.5	4.3	10.9	2.0	149	82	230	46

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			Percentage				Harvest by reporting group			
				Credibility intervals				Credibility intervals[a]		
Year	Fishery	Genetic reporting group	Mean	5%	95%	SD	Mean	5%	95%	SD
2017	Upper Cook Inlet Late	*Outside Cook Inlet*	82.0	78.1	85.6	2.3	948	617	1,374	235
		Northern Cook Inlet	2.2	0.0	7.1	2.4	25	0	85	29
		Kenai River	12.7	6.8	17.9	3.4	147	69	243	54
		Southern Kenai Peninsula	3.2	1.0	6.3	1.6	37	11	78	22
	Lower Cook Inlet Summer	*Outside Cook Inlet*	96.7	94.8	98.2	1.0	8,398	7,321	9,566	683
		Northern Cook Inlet	1.6	0.4	3.1	0.8	137	37	272	73
		Kenai River	0.2	0.0	1.1	0.4	21	0	94	35
		Southern Kenai Peninsula	1.5	0.5	3.0	0.8	131	39	260	69
	Winter	*Outside Cook Inlet*	99.8	99.2	100.0	0.3	4,507	3,338	5,906	788
		Northern Cook Inlet	0.1	0.0	0.4	0.2	4	0	18	7
		Kenai River	0.1	0.0	0.4	0.2	4	0	18	7
		Southern Kenai Peninsula	0.1	0.0	0.4	0.2	4	0	18	7
2018	Upper Cook Inlet Early	*Outside Cook Inlet*	70.1	65.5	74.6	0.0	1,322	176	1,053	1,619
		Northern Cook Inlet	19.2	14.9	23.7	0.0	364	70	258	487
		Kenai River	0.3	0.0	2.4	0.0	6	17	0	41
		Southern Kenai Peninsula	10.3	7.0	14.0	0.0	193	48	122	277
	Upper Cook Inlet Late	*Outside Cook Inlet*	89.9	86.1	93.0	0.0	981	221	659	1,092
		Northern Cook Inlet	1.0	0.0	3.7	0.0	11	15	0	42
		Kenai River	9.1	5.7	12.9	0.0	99	34	52	160
		Southern Kenai Peninsula	0.0	0.0	0.1	0.0	0	1	0	1
	Lower Cook Inlet Summer	*Outside Cook Inlet*	94.8	92.3	97.1	0.0	6,466	624	5,479	6,818
		Northern Cook Inlet	4.1	1.8	6.7	0.0	281	110	117	468
		Kenai River	0.3	0.0	2.3	0.0	24	62	0	168
		Southern Kenai Peninsula	0.7	0.0	2.7	0.0	47	65	0	177

Note: An en dash means value cannot be calculated due to inadequate sample sizes and no genetic analyses were conducted. Stock composition and harvest estimates may not sum to 100% due to rounding errors.

[a] The 90% credibility intervals of harvest estimates may not include the point estimate for the very low extrapolated harvest numbers because fewer than 5% of iterations had values above zero.

APPENDIX E: SPATIAL AND TEMPORAL DISTRIBUTION OF COOK INLET SALTWATER CHINOOK SALMON HARVEST SAMPLES BY AREA

Appendix E1.–Spatial and temporal distribution of Cook Inlet saltwater Chinook salmon harvest samples by area, 2014.

Fishery	Statistical area	Month(s)								Total
		Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet	515936	0	0	5	11	4	0	0	0	20
	515937	0	0	21	60	46	1	0	0	128
	515938	0	0	1	0	0	0	0	0	1
	515939	0	0	12	5	0	0	0	0	17
	516001	0	0	0	0	0	0	0	0	0
	525931	0	0	2	4	0	109	8	40	163
	Total	0	0	41	80	50	110	0	0	281
Lower Cook Inlet	515901	0	0	0	3	0	0	0	0	3
	515902	0	0	0	0	0	1	0	0	1
	515903	0	0	0	0	0	0	0	0	0
	515904	0	0	0	0	0	0	0	0	0
	515905	0	0	0	0	1	0	0	0	1
	515906	0	0	0	45	4	0	0	0	49
	515907	0	0	30	87	96	186	16	5	420
	515908	0	0	8	0	0	0	0	15	23
	515931	0	0	1	19	1	8	0	19	48
	515932	0	0	2	2	0	0	0	10	14
	515933	0	0	5	2	0	0	0	27	34
	515934	0	0	0	0	0	0	0	7	7
	515935	0	0	13	24	2	20	6	49	114
	515936	0	0	62	169	86	40	6	54	417
	515937	0	0	17	16	3	139	7	50	232
	525901	0	0	0	0	75	139	26	50	290
	525902	0	0	0	0	0	149	16	8	173
	525931	0	0	2	4	0	109	8	40	163
	Total	0	0	140	371	268	791	85	334	1,989
Both areas		0	0	181	451	318	901	85	334	2,270

Appendix E2.–Spatial and temporal distribution of Cook Inlet saltwater Chinook salmon harvest samples by area, 2015.

Fishery	Statistical area	Month(s)								Total
		Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet	221000	6	0	5	0	0	1	0	0	12
	221010	97	1	197	20	8	2	0	27	352
	221020	8	0	16	2	0	0	0	10	36
	221030	5	0	2	0	0	0	0	0	7
	221040	3	0	73	4	2	0	0	6	88
	221050	0	1	94	4	3	0	0	0	102
	221060	0	0	65	5	5	0	0	0	75
	221070	0	0	44	0	4	0	0	0	48
	221080	0	0	0	0	0	0	0	0	0
	Total	119	2	496	35	22	3	0	43	720
Lower Cook Inlet	222000	9	0	19	3	265	820	65	8	1,189
	222010	58	31	233	22	115	308	1	133	901
	222020	0	0	5	1	0	0	0	40	46
	222030	36	1	36	112	78	27	0	69	359
	222040	26	4	5	2	1	0	5	165	208
	222050	57	2	44	560	581	150	6	14	1,414
	222060	0	0	6	108	26	18	0	0	158
	223000	0	0	0	0	0	0	0	0	0
	223010	1	0	0	0	0	0	0	0	1
	223020	0	0	0	0	0	0	0	14	14
	223030	0	0	0	0	1	0	0	3	4
	223040	1	0	0	0	0	0	0	1	2
	223050	0	0	0	0	0	0	0	0	0
	Total	188	38	348	808	1,067	1,323	77	447	4,296
Both areas		307	40	844	843	1,089	1,326	77	490	5,016

Appendix E3.–Spatial and temporal distribution of Cook Inlet saltwater Chinook salmon harvest samples by area, 2016.

Fishery	Statistical area	Month(s)								Total
		Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet	221000	0	0	0	11	1	0	0	0	12
	221010	54	0	50	244	40	117	0	8	513
	221020	13	1	19	9	0	13	0	0	55
	221030	3	0	6	1	1	0	0	0	11
	221040	2	0	39	53	0	0	0	0	94
	221050	0	0	47	13	5	2	0	0	67
	221060	2	0	4	0	1	0	0	0	7
	221070	0	0	52	4	1	0	0	0	57
	221080	3	0	2	0	0	0	0	0	5
	Total	77	1	219	335	49	132	0	8	821
Lower Cook Inlet	222000	0	0	3	7	0	4	0	6	20
	222010	51	3	142	278	43	235	0	76	828
	222020	2	1	9	8	14	50	12	101	197
	222030	28	0	142	33	83	70	4	142	502
	222040	35	0	6	11	46	30	8	77	213
	222050	47	3	29	233	261	121	2	0	696
	222060	0	0	3	16	7	2	0	0	28
	223000	3	0	0	0	0	0	0	0	3
	223010	2	0	0	0	0	0	0	0	2
	223020	5	0	0	0	0	0	0	5	10
	223030	6	0	0	0	0	0	3	18	27
	223040	0	0	0	1	0	0	0	0	1
	223050	0	0	5	0	0	0	0	0	5
	Total	179	7	339	587	454	512	29	425	2,532
Both areas		256	8	558	922	503	644	29	433	3,353

Appendix E4.–Spatial and temporal distribution of Cook Inlet saltwater Chinook salmon harvest samples by area, 2017.

Fishery	Statistical area	Month(s)								Total
		Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet	221000	0	0	4	16	6	4	0	0	30
	221010	30	0	89	233	167	45	4	0	568
	221020	3	0	26	0	0	0	0	0	29
	221030	1	0	0	1	0	0	0	0	2
	221040	2	0	18	11	14	0	0	0	45
	221050	0	0	51	5	46	0	0	0	102
	221060	3	0	24	10	0	0	0	0	37
	221070	0	0	77	21	1	0	0	0	99
	221080	0	0	0	0	0	0	0	0	0
	Total	39	0	289	297	234	49	4	0	912
Lower Cook Inlet	222000	9	0	0	0	2	31	0	1	43
	222010	22	5	76	91	206	98	4	13	515
	222020	11	1	12	1	0	18	79	15	137
	222030	55	51	33	40	52	29	219	80	559
	222040	28	0	0	0	5	5	5	4	47
	222050	10	0	24	142	44	162	0	0	382
	222060	0	0	0	0	39	8	0	0	47
	223000	4	0	0	0	0	0	0	0	4
	223010	0	0	0	1	0	0	0	2	3
	223020	1	0	0	0	0	0	0	5	6
	223030	0	0	0	0	0	0	0	0	0
	223040	0	0	0	0	0	0	0	0	0
	223050	0	0	0	0	0	0	0	0	0
	Total	140	57	145	275	348	351	307	120	1,743
Both areas		179	57	434	572	582	400	311	120	2,655

Appendix E5.–Spatial and temporal distribution of Cook Inlet saltwater Chinook salmon harvest samples by area, 2018.

Fishery	Statistical area	Month(s)								Total
		Jan–Mar	Apr	May	Jun	Jul	Aug	Sep	Oct–Dec	
Upper Cook Inlet	221000	0	1	9	3	4	0	0	0	17
	221010	9	0	123	183	91	114	0	0	520
	221020	0	0	33	1	1	17	0	0	52
	221030	0	0	7	1	0	0	0	0	8
	221040	0	0	48	28	0	0	0	0	76
	221050	0	0	94	3	34	0	0	0	131
	221060	0	0	15	4	0	0	0	0	19
	221070	0	0	173	17	8	0	0	0	198
	221080	0	0	0	0	0	0	0	0	0
	Total	9	1	502	240	138	131	0	0	1,021
Lower Cook Inlet	222000	1	0	0	3	11	18	0	0	33
	222010	2	14	70	315	140	118	0	0	659
	222020	0	0	10	9	34	38	0	0	91
	222030	1	15	42	58	192	39	0	0	347
	222040	1	1	10	17	3	2	0	0	34
	222050	0	5	39	65	54	44	0	0	207
	222060	0	0	2	10	95	93	0	0	200
	223000	0	0	0	0	0	0	0	0	0
	223010	0	0	3	0	2	0	0	0	5
	223020	2	0	2	1	1	1	0	0	7
	223030	0	0	0	2	0	0	0	0	2
	223040	0	0	0	2	0	0	0	0	2
	223050	0	0	0	0	0	0	0	0	0
	Total	7	35	178	482	532	353	0	0	1,587
Both areas		16	36	680	722	670	484	0	0	2,608

APPENDIX F: COOK INLET SALTWATER CHINOOK SALMON HEAD SAMPLES FROM ADIPOSE-FINCLIPPED FISH AND DECODED CWT DATA BY PORT AND FISHERY

Appendix F1.–Cook Inlet saltwater Chinook salmon head samples from adipose-finclipped fish and decoded CWT data by port and fishery, 2014.

Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
8 May	Deep Creek	U	90641	547701	R	–	M	510	–	2011	OR
17 May	Anchor Point	U	635488	548701	4	4	M	789	2010	2009	WA
22 May	Anchor Point	U	181089	548702	3	3	M	841	2011	2010	BC
23 May	Deep Creek	U	182182	547704	3	2	F	675	2012	2010	BC
24 May	Anchor Point	U	181090	548704	3	3	M	782	2011	2010	BC
25 May	Homer	L	90435	575756	3	3	–	670	2011	2010	OR
29 May	Homer	L	90533	575760	4	3	–	640	2011	2010	OR
29 May	Homer	L	181594	575763	R	3	F	–	2011	2009	BC
29 May	Homer	L	90641	575765	–	3	–	–	2011	2011	OR
30 May	Homer	L	55364	575767	–	2	M	640	2012	2010	WA
1 Jun	Homer	U	42796	575801	–	2	M	710	2012	2010	AK
1 Jun	Anchor Point	U	181189	548705	3	3	M	627	2011	2010	BC
1 Jun	Homer	L	181170	575803	4	4	F	795	2010	2009	BC
1 Jun	Homer	U	180195	575806	3	3	F	645	2011	2010	BC
2 Jun	Homer	L	182182	575808	–	2	F	630	2012	2010	BC
2 Jun	Homer	L	181880	575809	–	3	F	650	2011	2010	BC
2 Jun	Anchor Point	U	181798	548708	R	3	F	765	2011	2010	BC
2 Jun	Homer	U	181799	575810	3	3	F	805	2011	2010	BC
3 Jun	Homer	L	181878	575812	R	2	F	610	2012	2010	BC
7 Jun	Deep Creek	U	90676	547706	1	–	F	435	–	2011	OR
11 Jun	Homer	–	90534	575821	3	3	M	710	2011	2010	OR
11 Jun	Homer	L	42580	575822	R	3	M	730	2011	2009	AK
13 Jun	Homer	–	181677	575824	R	3	F	670	2011	2010	BC
17 Jun	Homer	L	186138	575827	3	3	–	685	2011	2010	BC
20 Jun	Homer	L	42580	575836	R	3	F	825	2011	2009	AK
20 Jun	Homer	L	210910	575832	4	4	F	780	2010	2009	WA
20 Jun	Homer	L	181677	575833	4	3	M	795	2011	2010	BC
20 Jun	Homer	L	470172	575835	3	3	M	820	2011	2009	AK
22 Jun	Homer	L	181794	575838	2	2	F	610	2012	2010	BC
22 Jun	Homer	L	182180	575841	2	2	M	610	2012	2011	BC
23 Jun	Anchor Point	U	181793	548715	R	2	–	637	2012	2010	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
24 Jun	Homer	L	636167	575845	2	2	F	515	2012	2011	WA
24 Jun	Homer	L	182181	575846	R	2	M	710	2012	2010	BC
24 Jun	Homer	L	635598	575847	2	2	F	645	2012	2010	WA
27 Jun	Anchor Point	L	90498	548717	R	2	–	670	2012	2010	OR
1 Jul	Homer	L	636372	575702	–	2	M	535	2012	2011	WA
3 Jul	Anchor Point	U	635774	548719	R	2	–	624	2012	2010	WA
4 Jul	Homer	L	182192	575707	3	2	M	615	2012	2011	BC
4 Jul	Homer	L	90495	575706	2	2	F	690	2012	2010	OR
6 Jul	Homer	–	635965	575770	–	3	F	–	2011	2010	WA
9 Jul	Homer	L	635686	575712	–	2	F	620	2012	2010	WA
9 Jul	Homer	L	181095	575710	2	2	M	510	2012	2011	BC
11 Jul	Homer	L	635770	575714	R	2	–	655	2012	2010	WA
12 Jul	Homer	L	635686	575716	–	2	–	–	2012	2010	WA
12 Jul	Homer	U	181188	575718	4	4	F	935	2010	2009	BC
13 Jul	Homer	L	210962	575768	–	3	F	–	2011	2010	WA
16 Jul	Homer	L	635776	575723	–	2	F	670	2012	2010	WA
19 Jul	Homer	L	42985	575725	2	2	F	655	2012	2010	AK
26 Jul	Homer	L	90488	575726	3	3	M	675	2011	2010	WA
28 Jul	Homer	L	635764	575734	3	3	F	715	2011	2010	WA
1 Aug	Homer	L	636370	575738	2	2	F	650	2012	2011	WA
1 Aug	Homer	L	181090	575737	M	3	M	980	2011	2010	BC
1 Aug	Homer	L	210960	575736	–	3	F	710	2011	2010	OR
2 Aug	Homer	L	90538	575739	2	2	M	–	2012	2010	OR
2 Aug	Homer	L	42799	575740	3	2	F	–	2012	2010	AK
5 Aug	Homer	L	181476	575743	2	3	F	675	2011	2010	BC
7 Aug	Anchor Point	L	42986	548724	R	2	–	640	2012	2010	AK
7 Aug	Homer	L	181878	575746	2	2	F	650	2012	2010	BC
9 Aug	Homer	L	635970	575853	R	3	F	–	2011	2010	WA
10 Aug	Anchor Point	L	635686	548725	R	2	–	637	2012	2010	WA
10 Aug	Homer	L	42488	575857	R	3	F	755	2011	2009	AK
10 Aug	Homer	L	55364	575858	2	2	M	730	2012	2010	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
10 Aug	Homer	L	42081	575863	2	2	F	630	2012	2010	AK
10 Aug	Homer	L	181793	575856	2	2	F	670	2012	2010	BC
10 Aug	Homer	L	181798	575861	3	3	F	640	2011	2010	BC
11 Aug	Homer	L	42985	575870	2	2	–	675	2012	2010	AK
11 Aug	Homer	L	181477	575869	R	3	F	735	2011	2010	BC
11 Aug	Homer	L	180871	575867	2	3	F	680	2011	2010	BC
11 Aug	Homer	L	182180	575866	R	2	–	645	2012	2011	BC
11 Aug	Anchor Point	L	90472	548727	3	3	–	700	2011	2010	OR
12 Aug	Homer	L	42875	575874	2	2	F	635	2012	2010	AK
12 Aug	Homer	–	90476	575879	2	2	F	725	2012	2010	OR
12 Aug	Homer	L	210962	575773	–	3	F	550	2011	2010	WA
12 Aug	Homer	L	182291	575881	2	2	–	585	2012	2011	BC
12 Aug	Homer	L	180784	575750	3	2	F	715	2012	2010	BC
12 Aug	Homer	L	181989	575872	1	1	M	345	2013	2012	BC
12 Aug	Homer	L	90497	575771	2	2	F	690	2012	2010	OR
12 Aug	Homer	L	635691	575749	2	2	F	630	2012	2010	WA
13 Aug	Homer	L	42772	575886	3	2	F	645	2012	2010	AK
13 Aug	Homer	L	90536	575882	3	2	–	685	2012	2010	OR
13 Aug	Homer	L	210962	575777	R	3	F	775	2011	2010	WA
13 Aug	Homer	L	90641	575774	2	2	–	620	2012	2011	OR
13 Aug	Homer	L	635680	575885	R	1	M	465	2013	2011	WA
13 Aug	Homer	L	94235	575780	3	2	–	675	2012	2011	OR
14 Aug	Homer	L	181793	575891	2	2	F	630	2012	2010	BC
14 Aug	Homer	L	181981	575892	R	2	–	640	2012	2011	BC
14 Aug	Homer	L	180784	575887	2	2	F	740	2012	2010	BC
14 Aug	Homer	L	90641	575894	2	2	M	625	2012	2011	OR
14 Aug	Homer	L	100201	575889	–	2	M	685	2012	2011	ID
15 Aug	Homer	L	636282	575898	–	1	–	515	2013	2011	WA
15 Aug	Anchor Point	L	635699	548734	3	3	–	695	2011	2010	WA
15 Aug	Homer	L	30267	575895	2	2	M	630	2012	2010	AK
15 Aug	Homer	L	42798	575897	–	2	F	665	2012	2010	AK

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
15 Aug	Anchor Point	L	181986	548732	2	2	–	629	2012	2011	BC
15 Aug	Anchor Point	L	636173	548730	1	1	F	514	2013	2011	WA
15 Aug	Anchor Point	L	635578	548731	3	3	–	665	2011	2009	WA
17 Aug	Homer	L	36266	575782	2	2	–	635	2012	2010	AK
17 Aug	Homer	L	90674	575785	R	2	–	600	2012	2011	OR
17 Aug	Homer	L	181373	575784	2	2	F	595	2012	2011	BC
19 Aug	Homer	L	30269	575787	2	2	–	650	2012	2010	AK
19 Aug	Homer	L	90535	575788	R	2	–	610	2012	2010	OR
20 Aug	Homer	L	636372	575789	R	2	–	590	2012	2011	WA
21 Aug	Homer	L	181794	575792	2	2	F	675	2012	2010	BC
21 Aug	Homer	L	635776	575791	2	2	M	690	2012	2010	WA
22 Aug	Homer	–	635669	575907	–	1	M	535	2013	2011	WA
22 Aug	Homer	–	43037	575909	–	2	F	670	2012	2010	AK
22 Aug	Homer	L	36264	575913	–	2	F	685	2012	2010	AK
22 Aug	Homer	L	90641	575910	2	2	M	585	2012	2011	OR
22 Aug	Homer	L	635776	575794	3	2	F	675	2012	2010	WA
23 Aug	Homer	L	635668	575915	1	1	M	470	2013	2011	WA
23 Aug	Homer	L	635686	575924	–	2	F	690	2012	2010	WA
23 Aug	Homer	L	90672	575918	–	2	M	605	2012	2011	OR
23 Aug	Homer	L	90675	575916	R	2	F	610	2012	2011	OR
23 Aug	Anchor Point	L	181098	548733	2	2	–	613	2012	2011	BC
23 Aug	Homer	L	90585	575920	–	2	F	625	2012	2011	OR
26 Aug	Homer	L	181097	575799	R	2	–	630	2012	2011	BC
26 Aug	Homer	L	152180	575973	2	2	–	625	2012	2011	BC
27 Aug	Homer	L	90641	575929	3	2	–	–	2012	2011	OR
30 Aug	Homer	L	181677	575978	R	3	F	710	2011	2010	BC
1 Sep	Homer	L	90679	575931	R	1	F	510	2013	2011	OR
5 Sep	Homer	L	90528	575934	2	1	M	560	2013	2011	OR
7 Sep	Homer	L	90521	575956	2	2	–	720	2012	2010	OR
13 Sep	Homer	L	30267	575984	2	2	F	625	2012	2010	AK
13 Sep	Homer	L	90535	575980	3	2	M	650	2012	2010	OR

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
13 Sep	Homer	L	636173	575983	1	1	F	485	2013	2011	WA
23 Sep	Homer	L	635773	575959	2	1	M	520	2013	2011	WA
23 Sep	Homer	L	90677	575958	2	1	F	575	2013	2011	OR
4 Oct	Homer	L	635773	554675	1	1	–	610	2013	2011	WA
4 Oct	Homer	L	636505	575942	–	1	M	430	2013	2012	WA
4 Oct	Homer	L	90677	575943	–	1	M	545	2013	2011	OR
4 Oct	Homer	L	42795	575935	3	2	F	608	2012	2010	AK
4 Oct	Homer	L	211009	575968	–	2	–	–	2012	2011	WA
4 Oct	Homer	L	181569	575963	2	2	F	595	2012	2011	BC
4 Oct	Homer	L	181885	554668	1	2	F	680	2012	2011	BC
4 Oct	Homer	L	181878	554672	2	2	–	675	2012	2010	BC
4 Oct	Homer	L	184931	575946	–	2	M	595	2012	2011	BC
4 Oct	Homer	L	90494	575962	3	2	F	670	2012	2010	OR
4 Oct	Homer	L	92360	575936	2	2	F	650	2012	2011	OR
4 Oct	Homer	L	636178	575937	2	1	F	570	2013	2011	WA
5 Oct	Homer	L	211007	554687	M	2	–	645	2012	2011	WA
5 Oct	Homer	L	636372	575947	3	2	M	670	2012	2011	WA
5 Oct	Homer	L	635773	575950	1	1	M	480	2013	2011	WA
5 Oct	Homer	L	90679	554681	R	1	F	630	2013	2011	OR
5 Oct	Homer	L	211009	575991	2	2	M	540	2012	2011	WA
5 Oct	Homer	L	186342	554684	1	1	–	490	2013	2012	BC
5 Oct	Homer	L	182378	554678	R	2	F	660	2012	2011	BC
5 Oct	Homer	L	181272	554685	3	2	–	590	2012	2011	BC
5 Oct	Homer	L	182180	554677	2	2	F	660	2012	2011	BC
5 Oct	Homer	L	182180	554682	3	2	–	695	2012	2011	BC
5 Oct	Homer	L	182180	554686	R	2	–	695	2012	2011	BC
5 Oct	Homer	L	90659	554651	2	1	M	550	2013	2011	OR
5 Oct	Homer	L	90520	554665	3	2	M	785	2012	2010	OR
5 Oct	Homer	L	90527	554676	R	2	M	640	2012	2010	OR
5 Oct	Homer	L	90464	575996	–	1	F	590	2013	2011	OR
5 Oct	Homer	L	90532	575994	R	2	F	620	2012	2010	OR

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
14 Nov	Homer	L	636283	554734	–	1	F	560	2013	2011	WA
17 Dec	Homer	L	90532	554748	–	2	F	–	2012	2010	OR
21 Dec	Homer	L	90527	554750	–	2	M	760	2012	2010	OR

Note: METF means mid eye to tail fork length; CWT means coded wire tag; "U" means Upper Cook Inlet, "L" means Lower Cook Inlet, "R" means regenerated scale (unreadable), "M" is male, and "F" is female; an en dash means value is unknown.

Appendix F2.–Cook Inlet saltwater Chinook salmon head samples from adipose-finclipped fish and decoded CWT data by port and fishery, 2015.

Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
18 Jan	Homer	L	181190	554760	–	4	M	–	2011	2010	BC
30 Jan	Homer	L	90659	554761	–	2	F	600	2013	2011	OR
14 Feb	Homer	L	90516	554775	–	3	M	790	2012	2010	OR
27 Feb	Homer	L	42666	554762	–	4	F	–	2011	2009	AK
17 Mar	Homer	L	181799	554767	4	4	F	800	2011	2010	BC
21 Mar	Homer	L	636372	553565	–	3	–	750	2012	2011	WA
21 Mar	Homer	L	90676	553566	–	2	–	695	2013	2011	OR
21 Mar	Homer	L	182192	554784	–	3	–	725	2012	2011	BC
21 Mar	Homer	L	181794	554778	–	3	–	785	2012	2010	BC
21 Mar	Homer	L	181799	553571	–	4	–	775	2011	2010	BC
21 Mar	Homer	L	180190	553568	–	2	–	525	2013	2012	BC
24 Mar	Homer	L	90697	554772	–	1	–	–	2014	2012	OR
30 Mar	Homer	L	90535	554796	–	3	–	–	2012	2010	OR
30 Mar	Homer	L	181165	554790	–	2	M	585	2013	2011	BC
31 Mar	Homer	L	90679	554797	–	2	F	–	2013	2011	OR
31 Mar	Homer	L	181798	554793	–	4	–	–	2011	2010	BC
4 Apr	Homer	U	90464	554800	–	2	F	635	2013	2011	OR
10 Apr	Homer	–	186138	554810	–	4	–	710	2011	2010	BC
26 Apr	Homer	–	182473	554806	–	2	–	480	2013	2012	BC
26 Apr	Homer	–	90667	554809	–	2	–	620	2013	2011	OR
26 Apr	Homer	–	90730	554807	–	2	–	–	2013	2012	OR
2 May	Homer	L	636471	554816	–	2	F	–	2013	2012	WA
5 May	Homer	U	182183	553601	2	2	M	680	2013	2011	BC
9 May	Homer	L	182182	553602	3	3	F	760	2012	2010	BC
9 May	Homer	L	181878	553653	–	3	F	745	2012	2010	BC
10 May	Homer	L	635773	553654	R	2	M	605	2013	2011	WA
14 May	Deep Creek	U	635773	547710	2	2	F	680	2013	2011	WA
16 May	Homer	L	180571	553612	2	3	M	–	2012	2011	BC
16 May	Anchor Point	U	181494	548739	R	3	M	595	2012	2011	BC
16 May	Deep Creek	U	182180	547711	3	3	F	760	2012	2011	BC
17 May	Homer	U	636507	553578	2	2	M	520	2013	2012	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
17 May	Deep Creek	U	181097	547713	R	3	F	700	2012	2011	BC
17 May	Anchor Point	U	90537	548740	R	3	–	720	2012	2010	OR
18 May	Homer	U	90730	553615	2	2	M	515	2013	2012	OR
18 May	Homer	L	90740	553614	2	1	M	460	2014	2012	OR
19 May	Homer	L	90570	553616	3	3	F	690	2012	2011	WA
19 May	Homer	L	186342	553618	2	2	F	500	2013	2012	BC
19 May	Homer	L	182465	553620	2	2	M	570	2013	2012	BC
20 May	Homer	U	181894	553580	–	2	M	625	2013	2012	BC
20 May	Homer	U	211008	553579	R	2	F	690	2013	2011	OR
22 May	Deep Creek	U	182180	547717	3	3	M	820	2012	2011	BC
23 May	Anchor Point	U	211009	548747	R	3	M	590	2012	2011	WA
23 May	Homer	L	181983	553623	3	3	M	700	2012	2011	BC
23 May	Homer	L	182565	553624	2	2	M	565	2013	2012	BC
23 May	Homer	L	636173	553585	–	2	F	700	2013	2011	WA
24 May	Homer	L	635668	553625	2	2	F	685	2013	2011	WA
25 May	Anchor Point	U	182289	548750	3	3	M	665	2012	2011	BC
28 May	Homer	L	181988	553655	2	2	–	590	2013	2012	BC
28 May	Homer	L	181089	548751	4	4	M	895	2011	2010	BC
29 May	Homer	U	636272	553628	2	2	M	600	2013	2011	WA
29 May	Homer	U	181896	553588	R	2	–	695	2013	2012	BC
29 May	Homer	U	182182	553627	3	3	F	815	2012	2010	BC
29 May	Deep Creek	U	182464	547720	2	2	M	570	2013	2012	BC
31 May	Homer	L	636172	553629	3	3	M	675	2012	2011	WA
31 May	Homer	U	636177	553590	–	3	F	780	2012	2011	WA
5 Jun	Homer	L	181794	553632	R	3	F	795	2012	2010	BC
5 Jun	Homer	L	182376	553633	4	4	F	805	2011	2010	BC
5 Jun	Homer	L	182464	553631	2	2	M	480	2013	2012	BC
6 Jun	Homer	L	181098	553634	3	3	M	665	2012	2011	BC
7 Jun	Homer	L	30717	553636	3	3		700	2012	2010	AK
7 Jun	Homer	L	182086	553656	2	2	M	595	2013	2012	BC
14 Jun	Homer	L	636279	553642	2	2	M	655	2013	2011	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
15 Jun	Homer	L	182085	553647	2	2	M	615	2013	2012	BC
18 Jun	Homer	L	211009	553665	2	3	M	710	2012	2011	WA
18 Jun	Homer	L	182564	553667	2	2	M	590	2013	2012	BC
18 Jun	Homer	L	182198	553666	2	3	F	670	2012	2011	BC
18 Jun	Homer	L	182193	553668	3	3		670	2012	2011	BC
19 Jun	Homer	L	43190	553648	2	2	F	690	2013	2011	AK
19 Jun	Homer	L	636174	553701	2	2		655	2013	2011	WA
21 Jun	Homer	L	635773	553712	2	2	F	615	2013	2011	WA
22 Jun	Homer	L	180194	553714	4	4	F	760	2011	2010	BC
22 Jun	Homer	L	636174	553715	R	2	F	640	2013	2011	WA
23 Jun	Homer	L	636282	553721	R	2	M	605	2013	2011	WA
23 Jun	Homer	L	42865	553720	R	3	F	640	2012	2010	AK
23 Jun	Homer	L	182192	553718	3	3	F	710	2012	2011	BC
23 Jun	Homer	L	635680	553717	2	2	M	625	2013	2011	WA
23 Jun	Homer	L	635680	553719	2	2	M	610	2013	2011	WA
24 Jun	Homer	L	636372	553724	4	3	F	665	2012	2011	WA
24 Jun	Homer	L	636167	553722	2	3	M	695	2012	2011	WA
24 Jun	Homer	L	43166	553723	3	2	F	615	2013	2011	AK
25 Jun	Homer	L	182085	553680	2	2	F	570	2013	2012	BC
26 Jun	Homer	L	636283	553682	3	2	M	665	2013	2011	WA
28 Jun	Homer	L	180190	553685	1	2	M	650	2013	2012	BC
29 Jun	Homer	L	181096	553726	–	3	F	680	2012	2011	BC
30 Jun	Homer	L	180190	553688	–	2	–	–	2013	2012	BC
2 Jul	Homer	L	636507	553690	2	2	M	700	2013	2012	WA
2 Jul	Homer	L	181993	555728	2	2	M	585	–	2012	BC
3 Jul	Homer	L	90713	553694	3	2	M	645	2013	2012	OR
3 Jul	Homer	L	90587	553729	R	3	F	735	2012	2011	ID
3 Jul	Homer	L	90577	553730	2	2	F	605	2013	2011	OR
5 Jul	Homer	L	636507	553752	2	2	M	600	2013	2012	WA
5 Jul	Homer	L	181992	553700	3	2	M	565	2013	2012	BC
6 Jul	Homer	L	182294	553734	3	3	F	695	2012	2011	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
6 Jul	Homer	L	182388	553736	2	3	F	640	2012	2011	BC
6 Jul	Homer	L	636176	553735	2	2	F	615	2013	2011	WA
9 Jul	Homer	L	635667	553756	–	3	F	620	2012	2011	WA
9 Jul	Homer	L	108187	553763	2	2	M	550	2013	2012	BC
9 Jul	Homer	L	636174	553758	2	2	F	640	2013	2011	WA
9 Jul	Homer	L	636175	553761	2	2	F	620	2013	2011	WA
10 Jul	Homer	L	55363	553744	1	2		600	2013	2011	WA
10 Jul	Deep Creek	U	42966	547723	R	3	F	750	2012	2010	AK
11 Jul	Homer	L	636505	553745	2	2	F	560	2013	2012	WA
11 Jul	Homer	L	42865	553746	3	3	M	735	2012	2010	AK
12 Jul	Homer	L	182564	548767	2	2	F	635	2013	2012	BC
12 Jul	Homer	L	636177	548768	R	2	F	610	2013	2011	WA
12 Jul	Homer	L	636176	553750	2	2	F	615	2013	2011	WA
13 Jul	Homer	L	636370	548771	3	3	F	670	2012	2011	WA
13 Jul	Homer	L	636279	548772	2	2	M	590	2013	2011	WA
14 Jul	Homer	L	182083	548773	2	2	M	545	2013	2012	BC
14 Jul	Homer	L	181986	548774	T	3	F	695	2012	2011	BC
15 Jul	Homer	L	42993	553770	2	2	F	595	2013	2011	AK
15 Jul	Homer	-L	636279	553769	R	2	F	690	2013	2011	WA
15 Jul	Homer	L	211009	553771	3	3	F	720	2012	2011	WA
15 Jul	Homer	L	182372	553767	2	2	M	570	2013	2012	BC
16 Jul	Homer	L	636505	553774	2	2	F	600	2013	2012	WA
16 Jul	Homer	L	636505	553777	2	2	F	580	2013	2012	WA
16 Jul	Homer	L	636292	553772	2	2	F	670	2013	2012	WA
16 Jul	Homer	L	636174	553775	R	2	F	625	2013	2011	WA
16 Jul	Homer	L	40993	553801	–	4	F	780	2011	2010	AK
17 Jul	Homer	L	42991	553853	–	2	–	650	2013	2011	AK
18 Jul	Homer	L	635773	553857	T	2	M	680	2013	2011	WA
18 Jul	Homer	L	55363	553808	2	2	F	645	2013	2011	WA
18 Jul	Homer	L	636272	553859	T	2	F	690	2013	2011	WA
19 Jul	Homer	L	42994	553815	2	2	M	620	2013	2011	AK

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
19 Jul	Homer	L	90677	553812	2	2	F	665	2013	2011	OR
19 Jul	Homer	L	43167	553810	2	2	F	650	2013	2011	AK
19 Jul	Homer	L	181986	553809	3	3	M	720	2012	2011	BC
20 Jul	Homer	L	90704	553818	2	2	M	540	2013	2012	OR
21 Jul	Homer	L	636283	553824	2	2	F	660	2013	2011	WA
21 Jul	Homer	L	636507	553819	2	2	F	610	2013	2012	WA
21 Jul	Homer	L	211009	553822	3	3	F	725	2012	2011	WA
21 Jul	Homer	L	635680	553823	2	2	F	615	2013	2011	WA
22 Jul	Homer	L	636370	553788		3	F	710	2012	2011	WA
22 Jul	Homer	L	182565	553786	2	2	F	565	2013	2012	BC
23 Jul	Homer	L	92054	553790	2	2	M	630	2013	2011	OR
23 Jul	Homer	L	90639	553797	–	2	M	665	2013	2011	OR
23 Jul	Homer	L	43188	553796	–	2	F	600	2013	2011	AK
23 Jul	Homer	L	90730	553800	–	2	–	600	2013	2012	OR
23 Jul	Homer	L	636173	553795	–	2	F	645	2013	2011	WA
23 Jul	Homer	L	94633	553789	2	2	F	580	2013	2012	OR
23 Jul	Homer	L	636177	553793	–	2	F	615	2013	2011	WA
26 Jul	Homer	L	182464	553903	2	2		605	2013	2012	BC
26 Jul	Homer	L	181465	553908	2	2	F	610	2013	2012	BC
26 Jul	Homer	L	635680	553906	2	2	F	695	2013	2011	WA
26 Jul	Homer	L	636173	553907	2	2	F	600	2013	2011	WA
27 Jul	Homer	L	181895	553835	2	2	F	585	2013	2012	BC
27 Jul	Homer	L	90578	553832	2	2	–	615	2013	2011	OR
28 Jul	Homer	L	635773	553837	R	2	F	620	2013	2011	WA
28 Jul	Homer	L	635680	553838	R	2	F	635	2013	2011	WA
29 Jul	Homer	L	636172	553910	3	3	F	660	2012	2011	WA
29 Jul	Homer	L	90581	553911	3	2	F	665	2013	2011	OR
31 Jul	Anchor Point	L	210994	548777	3	3	F	660	2012	2011	WA
1 Aug	Homer	L	635680	553842	1	2	M	325	2013	2011	WA
1 Aug	Anchor Point	L	636178	548778	2	2		630	2013	2011	WA
2 Aug	Homer	L	636281	553920	2	2	F	625	2013	2011	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
2 Aug	Homer	L	635773	553923	2	2	M	635	2013	2011	WA
2 Aug	Homer	L	36266	553921	3	3	F	760	2012	2010	AK
2 Aug	Homer	L	220237	553844	–	1	–	375	2014	2013	ID
4 Aug	Homer	L	636176	553847	2	2	F	745	2013	2011	WA
4 Aug	Homer	U	90581	554836	–	2	F	–	2013	2011	OR
5 Aug	Homer	L	635773	553849	2	2	F	710	2013	2011	WA
5 Aug	Homer	L	636479	553926	2	1	–	560	2014	2012	WA
5 Aug	Homer	L	90674	553930	–	3	M	645	2012	2011	OR
6 Aug	Homer	L	220222	553933	–	2	–	605	2013	2012	ID
6 Aug	Homer	L	635680	553938	3	2	–	620	2013	2011	WA
6 Aug	Homer	L	636176	553937	R	2	–	690	2013	2011	WA
7 Aug	Homer	L	636505	553956	2	2	M	605	2013	2012	WA
7 Aug	Homer	L	43092	553955	2	2	M	640	2013	2011	AK
7 Aug	Homer	L	635669	553954	2	2	F	730	2013	2011	WA
7 Aug	Homer	L	182397	553943	2	2	F	590	2013	2012	BC
7 Aug	Homer	L	180197	553951	1	2	M	425	2013	2012	BC
8 Aug	Homer	L	42994	553958	2	2	F	665	2013	2011	AK
8 Aug	Homer	L	55362	553946	2	2	F	680	2013	2011	WA
8 Aug	Homer	L	182374	553948	R	2	M	670	2013	2012	BC
8 Aug	Homer	L	181166	553957	2	2		685	2013	2011	BC
9 Aug	Homer	L	92052	554831	2	2		700	2013	2011	OR
9 Aug	Homer	L	55362	554832	2	2	F	710	2013	2011	WA
9 Aug	Homer	L	182368	553963	R	2	F	620	2013	2012	BC
11 Aug	Homer	L	42969	553979	3	3	M	685	2012	2010	AK
12 Aug	Homer	L	42995	553997	–	2	–	645	2013	2011	AK
12 Aug	Homer	L	43193	553989	2	2	–	605	2013	2011	AK
12 Aug	Homer	L	636174	553988	2	2	F	625	2013	2011	WA
13 Aug	Homer	L	635773	554841	T	2	M	690	2013	2011	WA
13 Aug	Homer	L	636272	553992	2	2	F	620	2013	2011	WA
13 Aug	Homer	L	90676	553995	2	2	F	620	2013	2011	OR
13 Aug	Homer	L	90678	554839	2	2	M	660	2013	2011	OR

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
13 Aug	Homer	L	635680	553991	2	2	F	705	2013	2011	WA
14 Aug	Homer	L	636174	553870	–	2	–	620	2013	2011	WA
14 Aug	Homer	L	90705	553868	2	2	M	670	2013	2012	OR
15 Aug	Homer	L	43187	553871	2	2	F	595	2013	2011	AK
16 Aug	Homer	L	90642	553884	2	2	–	650	2013	2011	OR
16 Aug	Homer	L	635773	553877	2	2	F	645	2013	2011	WA
16 Aug	Homer	L	636276	553889	–	3	–	605	2012	2011	WA
16 Aug	Homer	L	636280	553879	2	2	F	580	2013	2011	WA
16 Aug	Homer	L	181696	547724	T	2	M	680	2013	2011	BC
16 Aug	Homer	L	182689	553875	2	2	F	605	2013	2012	BC
16 Aug	Anchor Point	L	211049	548784	1	2	M	615	2013	2012	OR
16 Aug	Homer	L	90376	553874	2	2	M	635	2013	2011	OR
17 Aug	Anchor Point	L	636283	548787	–	2	F	645	2013	2011	WA
17 Aug	Homer	L	636283	553891	2	2	F	635	2013	2011	WA
17 Aug	Homer	L	43189	553892	R	2	M	620	2013	2011	AK
17 Aug	Homer	L	90676	547753	2	2	M	685	2013	2011	OR
17 Aug	Homer	L	90464	547754	2	2	M	730	2013	2011	OR
17 Aug	Homer	L	181097	553894	–	3	F	690	2012	2011	BC
17 Aug	Homer	L	181572	547752	T	2	M	670	2013	2012	BC
19 Aug	Homer	L	636505	547734	2	2	–	640	2013	2012	WA
19 Aug	Homer	L	92353	553897	2	2	F	670	2013	2011	OR
19 Aug	Homer	L	90721	553899	1	1	M	575	2014	2012	OR
19 Aug	Homer	L	636176	547731	2	2	F	600	2013	2011	WA
19 Aug	Homer	L	90579	554850	2	2	F	700	2013	2011	OR
20 Aug	Homer	L	636282	547740	2	2	–	660	2013	2011	WA
20 Aug	Homer	L	90704	547755	T	2	M	680	2013	2012	OR
21 Aug	Homer	L	636281	558564	2	2	F	630	2013	2011	WA
21 Aug	Homer	L	41527	558557	2	2	F	610	2013	2011	AK
21 Aug	Homer	L	636279	547748		2	F	640	2013	2011	WA
21 Aug	Homer	L	181571	558566	1	2	M	560	2013	2012	BC
21 Aug	Homer	L	636178	558560	2	2	F	645	2013	2011	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
22 Aug	Homer	L	636281	558568	–	2	F	655	2013	2011	WA
22 Aug	Anchor Point	L	635773	548790	2	2		615	2013	2011	WA
22 Aug	Homer	L	635773	558502	2	2	F	605	2013	2011	WA
22 Aug	Homer	L	220220	558503	R	2	M	565	2013	2012	ID
22 Aug	Homer	L	43164	558610	–	2	–	625	2013	2011	AK
22 Aug	Homer	L	200108	558504	1	1	F	445	2014	2013	WA
22 Aug	Homer	L	181568	558615	–	3	–	630	2012	2011	BC
22 Aug	Anchor Point	L	182464	548791	2	2	–	560	2013	2012	BC
22 Aug	Homer	L	181466	558609	–	2	F	560	2013	2012	BC
22 Aug	Homer	L	636173	558569	–	2	F	600	2013	2011	WA
22 Aug	Homer	L	636175	558567	–	2	M	650	2013	2011	WA
23 Aug	Homer	L	90692	558572	–	1	M	565	2014	2012	OR
24 Aug	Homer	L	636283	558510	T	2	–	740	2013	2011	WA
24 Aug	Homer	L	182084	558513	T	2	–	620	2013	2012	BC
24 Aug	Homer	L	636175	558511	T	2	–	720	2013	2011	WA
29 Aug	Homer	L	636283	558518	R	2	F	680	2013	2011	WA
29 Aug	Homer	L	90642	558519	–	2	–	620	2013	2011	OR
29 Aug	Homer	L	636507	558515	2	2	F	675	2013	2012	WA
29 Aug	Homer	L	635599	558523	–	2	–	670	2013	2011	WA
29 Aug	Homer	L	43072	558521	2	3	F	610	–	2011	AK
29 Aug	Homer	L	636178	558517	2	2	F	705	2013	2011	WA
29 Aug	Homer	L	90528	558514	2	2	M	660	2013	2011	OR
29 Aug	Homer	L	90699	558529	–	1	–	570	2014	2012	OR
1 Sep	Homer	L	43072	558532	2	2	F	615	2013	2011	AK
1 Sep	Homer	L	90665	558533	2	2	F	755	2013	2011	OR
2 Sep	Homer	L	90590	558577	2	2	M	590	2013	2011	OR
2 Sep	Homer	L	636177	558537	2	2	–	695	2013	2011	WA
3 Sep	Homer	L	636280	558538	R	2	F	650	2013	2011	WA
4 Sep	Homer	L	182688	558543	2	2	F	610	2013	2012	BC
8 Sep	Homer	L	90659	558620	–	2	–	–	2013	2011	OR
11 Sep	Homer	L	43088	558547	–	2	–	–	2013	2011	AK

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
11 Sep	Homer	L	636173	558546	–	2	–	–	2013	2011	WA
14 Sep	Homer	L	182181	558548	–	3	F	810	2012	2010	BC
27 Sep	Homer	L	181794	558578	–	3	–	–	2012	2010	BC
2 Oct	Homer	L	636507	558581	–	2	–	–	2013	2012	WA
3 Oct	Homer	L	636282	558595	–	2	–	700	2013	2011	WA
3 Oct	Homer	L	90639	558596	–	2	–	710	2013	2011	OR
3 Oct	Homer	L	636272	558598	–	2	–	685	2013	2011	WA
3 Oct	Homer	L	90678	558582	2	2	–	680	2013	2011	OR
3 Oct	Homer	L	200108	558622	–	1	–	475	2014	2013	WA
3 Oct	Homer	L	182193	558597	–	3	–	790	2012	2011	BC
3 Oct	Homer	L	180597	558584	2	2	–	625	2013	2012	BC
3 Oct	Homer	L	182085	558626	–	2	–	680	2013	2012	BC
3 Oct	Homer	L	182085	558628	–	2	–	665	2013	2012	BC
3 Oct	Homer	L	182084	558632	–	2	–	625	2013	2012	BC
3 Oct	Homer	L	181674	558639	–	2	–	640	2013	2012	BC
3 Oct	Homer	L	182564	558635	–	2	–	575	2013	2012	BC
3 Oct	Homer	L	181895	558641	–	2	–	610	2013	2012	BC
4 Oct	Homer	L	636283	558672	–	2	–	685	2013	2011	WA
4 Oct	Homer	L	636283	558695	–	2	–	700	2013	2011	WA
4 Oct	Homer	L	636681	558667	–	1	–	470	2014	2013	WA
4 Oct	Homer	L	636505	558660	–	2	–	670	2013	2012	WA
4 Oct	Homer	L	94149	558690	–	2	–	670	2013	2011	OR
4 Oct	Homer	L	636474	558652	–	2	–	625	2013	2012	WA
4 Oct	Homer	L	30285	558691	–	2	–	680	2013	2011	AK
4 Oct	Homer	L	636737	558671	–	1	–	440	2014	2013	WA
4 Oct	Homer	L	181696	558704	–	2	–		2013	2011	BC
4 Oct	Homer	L	183565	558644	–	1	–	495	2014	2013	BC
4 Oct	Homer	L	183484	558668	–	1	–	400	2014	2013	BC
4 Oct	Homer	L	180190	558689	–	2	–	655	2013	2012	BC
4 Oct	Homer	L	181986	558678	–	3	–	740	2012	2011	BC
4 Oct	Homer	L	180187	558687	–	2	–	645	2013	2012	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
4 Oct	Homer	L	90730	558684	–	2	–	625	2013	2012	OR
4 Oct	Homer	L	636173	558654	–	2	–	735	2013	2011	WA
4 Oct	Homer	L	636174	558662	–	2	–	705	2013	2011	WA
4 Oct	Homer	L	636176	558645	–	2	–	580	2013	2011	WA
4 Oct	Homer	L	636175	558681	–	2	–	690	2013	2011	WA
4 Oct	Homer	L	90578	558682	–	2	–	670	2013	2011	OR
4 Oct	Homer	L	90578	558703	–	2	–	–	2013	2011	OR
5 Oct	Homer	L	180597	558697	–	2	M	600	2013	2012	BC
6 Oct	Homer	L	90659	558702	–	2	–	–	2013	2011	OR
9 Oct	Homer	L	636272	558709	–	2	–	–	2013	2011	WA
9 Oct	Homer	L	610449	558715	–	2	–	–	2013	2012	WA
9 Oct	Homer	L	636177	558713	–	2	–	–	2013	2011	WA
14 Oct	Homer	L	90678	558741	–	2	M	–	2013	2011	OR
14 Oct	Homer	L	181989	558746	–	2	F	–	2013	2012	BC
14 Oct	Homer	L	636173	558744	–	2	–	–	2013	2011	WA
17 Oct	Homer	L	636176	558763	–	2	F	650	2013	2011	WA
22 Oct	Homer	L	636484	558759	–	1	F	–	2014	2012	WA
29 Oct	Homer	L	636282	558770	–	2	F	630	2013	2011	WA
4 Nov	Homer	L	182473	558774	–	2	–	–	2013	2012	BC
4 Nov	Homer	L	183573	558772	–	1	–	–	2014	2013	BC
7 Nov	Homer	L	90863	558775	–	1	–	–	2014	2013	WA
15 Dec	Homer	L	636484	558778	–	1	–	–	2014	2012	WA

Note: METF means mid eye to tail fork length; CWT means coded wire tag; "U" means Upper Cook Inlet, "L" means Lower Cook Inlet, "R" means regenerated scale (unreadable), "M" is male, and "F" is female; an en dash means value is unknown.

Appendix F3.–Cook Inlet saltwater Chinook salmon head samples from adipose-finclipped fish and decoded CWT data by port and fishery, 2016.

Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
11 Jan	Homer	L	182180	558793	–	4	F	–	2012	2011	BC
22 Jan	Homer	L	90577	558851	R	3	F	575	2013	2011	OR
15 Feb	Homer	L	90878	558802	–	1	F	445	2015	2013	OR
19 Feb	Homer	L	180597	558854	–	3	M	760	2013	2012	BC
10 Mar	Homer	L	182478	558810	–	2	–	–	2014	2013	BC
14 Mar	Homer	L	180187	558812	–	3	F	740	2013	2012	BC
19 Mar	Homer	L	636507	558864	–	3	–	580	2013	2012	WA
19 Mar	Homer	L	55362	558818	–	3	–	690	2013	2011	WA
19 Mar	Homer	L	182564	558856	–	3	–	675	2013	2012	BC
19 Mar	Homer	L	181988	558859	–	3	–	630	2013	2012	BC
19 Mar	Homer	L	180190	558815	–	3	–	715	2013	2012	BC
19 Mar	Homer		90849	558824	–	2	–	550	2014	2013	OR
19 Mar	Homer	L	635680	558822	–	3	–	690	2013	2011	WA
24 Mar	Homer	L	30288	558828	–	2	M	530	2014	2012	AK
24 Mar	Homer	L	41387	558827	–	3	F	700	2013	2008	AK
21 Apr	Homer	L	636484	558834	–	2	F	–	2014	2012	WA
6 May	Deep Creek	U	182394	547759	R	3	F	400	2013	2012	BC
7 May	Homer	L	182276	558901	–	3	–	735	2013	2012	BC
8 May	Anchor Point	U	182564	548792	3	3	–	670	2013	2012	BC
11 May	Homer	L	182372	558873	–	3	–	720	2013	2012	BC
11 May	Homer	L	186028	558875	2	2	–	660	2014	2012	BC
11 May	Deep Creek	U	183484	547762	3	2	M	610	2014	2013	BC
12 May	Homer	L	636279	558878	–	3	F	705	2013	2011	WA
12 May	Homer	U	182086	558876	3	3	F	660	2013	2012	BC
12 May	Homer	U	181988	558877	2	3	M	770	2013	2012	BC
15 May	Deep Creek	U	636506	547767	3	3	–	610	2013	2012	WA
22 May	Homer	L	42693	558906	–	3	F	525	2013	2012	AK
22 May	Homer	L	182465	558907	–	3	M	650	2013	2012	BC
25 May	Homer	L	636178	558909	–	3	M	525	2013	2011	WA
26 May	Homer	L	182566	558847	–	3	M	–	2013	2012	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
27 May	Homer	L	42695	558882	2	2	F	530	2014	2012	AK
28 May	Homer	L	636681	558913	–	2	M	510	2014	2013	WA
28 May	Homer	L	636506	558883	–	3	M	675	2013	2012	WA
28 May	Homer	L	183484	558886	–	2	–	540	2014	2013	BC
30 May	Anchor Point	U	636504	548801	2	2	–	585	2014	2012	WA
3 Jun	Homer	L	90680	558888	–	3	F	640	2013	2012	WA
7 Jun	Homer	L	43090	558918	–	3	F	700	2013	2011	AK
7 Jun	Homer	U	182475	558889	–	2	M	650	2014	2013	BC
7 Jun	Homer	L	90881	558919	–	2	M	535	2014	2013	OR
7 Jun	Homer	L	182876	558920	–	2	M	600	2014	2012	BC
8 Jun	Homer	L	43386	558891	–	2	M	550	2014	2012	AK
8 Jun	Homer	L	182289	558894	–	4	–	805	2012	2011	BC
8 Jun	Homer	L	180690	558925	–	3	F	570	2013	2012	BC
8 Jun	Homer	L	90738	558923	–	1	–	460	2015	2013	OR
8 Jun	Homer	L	636176	558890	–	3	F	625	2013	2011	WA
8 Jun	Homer	L	90632	558921	–	1	–	455	2015	2013	OR
10 Jun	Homer	L	211087	558898	2	2	F	560	2014	2013	OR
10 Jun	Homer	L	636173	558900	–	3	F	765	2013	2011	WA
11 Jun	Homer	L	90853	558959	R	1	M	–	2015	2013	OR
11 Jun	Homer	L	182572	558926	–	2	–	485	2014	2013	–
13 Jun	Homer	U	182572	558927	–	2	M	565	2014	2013	BC
15 Jun	Homer	L	54793	558963	–	2	–	635	2014	2012	WA
15 Jun	Homer	U	184725	558964	–	2	M	645	2014	2013	BC
17 Jun	Homer	L	90738	558968	1	1	F	495	2015	2013	OR
18 Jun	Homer	U	31674	558970	–	2	M	670	2014	2012	AK
19 Jun	Homer	U	636280	558972	–	3	–	660	2013	2011	WA
20 Jun	Anchor Point	U	90862	548803	–	2	–	525	2014	2013	OR
21 Jun	Homer	L	182564	558940	2	3	F	650	2013	2012	BC
21 Jun	Homer	U	182086	558945	–	3	M	730	2013	2012	BC
21 Jun	Homer	U	182086	558946	–	3	F	650	2013	2012	BC
22 Jun	Homer	L	636504	558973	–	2	F	640	2014	2012	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
22 Jun	Homer	L	43470	558947	–	2	F	635	2014	2012	AK
25 Jun	Homer	L	181993	556458	–	3	–	670	2013	2012	BC
25 Jun	Homer	L	182373	556456	–	3	–	625	2013	2012	BC
25 Jun	Homer	U	183382	556452	–	2	–	345	2014	2013	BC
26 Jun	Homer	L	636506	556468	–	3	–	625	2013	2012	WA
26 Jun	Homer	L	181895	556466	–	3	F	635	2013	2012	BC
26 Jun	Homer	L	636293	556467	–	2	M	740	2014	2012	WA
27 Jun	Homer	L	30287	556470	–	2	M	625	2014	2012	AK
27 Jun	Homer	L	90713	556469	–	3	–	675	2013	2012	OR
28 Jun	Homer	L	636506	556474	–	3	–	690	2013	2012	WA
29 Jun	Homer	L	30719	556476	–	2	M	610	2014	2012	AK
29 Jun	Homer	L	211050	556477	–	3	F	635	2013	2012	WA
3 Jul	Homer	L	636507	556481	–	3	–	670	2013	2012	WA
5 Jul	Homer	L	183384	556484	–	2	F	510	2014	2013	BC
6 Jul	Homer	L	211050	556488	–	3	F	710	2013	2012	WA
6 Jul	Homer	L	211090	556487	R	2	F	610	2014	2013	WA
9 Jul	Homer	L	184725	556489	–	2	M	690	2014	2013	BC
12 Jul	Homer	U	636507	556496	–	3	M	675	2013	2012	WA
12 Jul	Homer	U	90365	556494	3	3	M	710	2013	2012	OR
13 Jul	Homer	L	30288	556499	2	2	F	645	2014	2012	AK
13 Jul	Homer	L	200108	558976	1	2	M	605	2014	2013	WA
13 Jul	Homer	L	90619	558975	2	2	F	690	2014	2012	OR
17 Jul	Homer	L	636562	558979	2	2	F	585	2014	2012	WA
18 Jul	Homer	L	636562	558981	–	2	M	670	2014	2012	WA
20 Jul	Homer	L	636621	558984	–	1	F	610	2015	2013	WA
20 Jul	Homer	L	30287	558985	2	2	F	670	2014	2012	AK
23 Jul	Homer	L	636507	558991	2	3	M	700	2013	2012	WA
23 Jul	Homer	L	43047	558989	R	3	F	630	2013	2011	AK
23 Jul	Homer	L	90656	558995	–	3	F	630	2013	2011	OR
24 Jul	Homer	L	90856	558998	1	1	–	495	2015	2013	OR
24 Jul	Homer	U	636481	558999	2	2	–	625	2014	2012	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
27 Jul	Homer	L	636483	556565	2	2	–	710	2014	2012	WA
27 Jul	Homer	L	90853	556568	–	1	M	570	2015	2013	OR
27 Jul	Homer	L	181995	556570	–	3	F	685	2013	2012	BC
28 Jul	Homer	L	182370	557501	3	3	F	755	2013	2012	BC
29 Jul	Homer	L	183276	557386	–	2	M	–	2014	2013	BC
2 Aug	Homer	L	182086	556578	R	3	–	755	2013	2012	BC
3 Aug	Homer	L	42994	556512	–	3	–	730	2013	2011	AK
3 Aug	Homer	L	200108	556510	–	2	–	720	2014	2013	WA
3 Aug	Homer	L	636388	556511	–	2	–	670	2014	2012	WA
5 Aug	Homer	L	54793	556518	–	2	F	580	2014	2012	WA
5 Aug	Homer	L	211047	556521	–	3	F	570	2013	2012	WA
5 Aug	Homer	L	90876	556519	–	1	M	530	2015	2013	OR
6 Aug	Homer	L	636483	556587	–	2	M	685	2014	2012	WA
6 Aug	Homer	L	636293	556591	–	2	M	680	2014	2012	WA
7 Aug	Homer	U	211050	556592	3	3	M	755	2013	2012	WA
7 Aug	Homer	L	182466	556586	3	3	F	730	2013	2012	BC
7 Aug	Homer	L	182570	556593	2	2	F	655	2014	2013	BC
7 Aug	Homer	L	90692	556594	3	2	M	610	2014	2012	OR
9 Aug	Anchor Point	U	636680	548812	2	2	–	640	2014	2013	WA
9 Aug	Homer	L	636295	556523	2	2	–	730	2014	2012	WA
10 Aug	Homer	L	636681	556528	–	2	F	610	2014	2013	WA
10 Aug	Homer	L	183382	556529	2	2	F	590	2014	2013	BC
10 Aug	Homer	U	90692	556538	–	2	M	590	2014	2012	OR
11 Aug	Homer	L	55362	556540	–	3	F	770	2013	2011	WA
12 Aug	Homer	L	636482	556546	–	2	F	690	2014	2012	WA
12 Aug	Homer	L	200108	556541	–	2	–	580	2014	2013	WA
12 Aug	Homer	L	90737	556545	–	1	M	570	2015	2013	OR
13 Aug	Homer	U	54793	556526	2	2	–	670	2014	2012	WA
14 Aug	Homer	L	210624	556556	2	2	–	635	2014	2013	WA
15 Aug	Homer	U	636482	556527	–	2	M	650	2014	2012	WA
15 Aug	Homer	U	183383	556530	–	2	F	540	2014	2013	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
17 Aug	Homer	L	181669	557404	–	1	–	420	2015	2014	BC
17 Aug	Homer	U	90692	557403	–	2	F	760	2014	2012	OR
18 Aug	Homer	U	31676	557415	–	2	F	670	2014	2012	AK
18 Aug	Homer	L	636783	557414	–	1	F	380	2015	2014	WA
18 Aug	Homer	U	183573	557412	–	2	M	485	2014	2013	–
18 Aug	Homer	L	90726	557418	–	2	F	715	2014	2012	OR
19 Aug	Homer	L	55363	557410	–	3	M	670	2013	2011	WA
19 Aug	Homer	U	183381	557413	–	2	F	570	2014	2013	BC
26 Aug	Homer	L	636484	557391	–	2	F	725	2014	2012	WA
27 Aug	Homer	L	43372	557408	–	2	F	590	2014	2012	AK
11 Sep	Homer	L	183484	557423	–	2	–	–	2014	2013	BC
1 Oct	Homer	L	636483	557433	–	2	F	660	2014	2012	WA
1 Oct	Homer	L	636494	557441	–	2	–	610	2014	2013	WA
1 Oct	Homer	L	31672	557448	–	2	–	670	2014	2012	AK
1 Oct	Homer	L	184725	557437	–	2	–	615	2014	2013	BC
1 Oct	Homer	L	180598	557444	R	3	–	725	2013	2012	BC
1 Oct	Homer	L	183667	557449	–	1	–	415	2015	2014	BC
1 Oct	Homer	L	182773	557432	2	2	–	615	2014	2013	BC
1 Oct	Homer	L	182888	557438	–	2	–	685	2014	2013	BC
1 Oct	Homer	L	182566	557431	2	2	–	685	2014	2012	BC
1 Oct	Homer	L	182465	557435	R	3	–	695	2013	2012	BC
1 Oct	Homer	L	182565	557439	–	3	–	660	2013	2012	BC
1 Oct	Homer	L	183381	557440	–	2	–	620	2014	2013	BC
1 Oct	Homer	L	90917	557429	1	1	–	465	2015	2014	OR
2 Oct	Homer	L	636647	557456	1	1	F	535	2015	2013	WA
2 Oct	Homer	L	200110	557485	–	1	–	595	2015	2013	WA
2 Oct	Homer	L	43471	557463	2	2	–	620	2014	2012	AK
2 Oct	Homer	L	43867	557484	–	1	–	585	2015	2013	AK
2 Oct	Homer	L	182878	557452	R	1	–	445	2015	2014	BC
2 Oct	Homer	L	182787	557455	2	2	M	560	2014	2013	BC
2 Oct	Homer	L	182787	557467	R	2	–	610	2014	2013	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
2 Oct	Homer	L	182570	557468	2	2	–	605	2014	2013	BC
2 Oct	Homer	L	182773	557472	2	2	–	635	2014	2013	BC
2 Oct	Homer	L	182572	557478	–	2	–	475	2014	2013	BC
2 Oct	Homer	L	183369	557480	–	1	–	620	2015	2014	BC
2 Oct	Homer	L	183276	557483	–	2	–	595	2014	2013	BC
2 Oct	Homer	L	182478	557474	R	2	–	695	2014	2013	BC
2 Oct	Homer	L	90884	557477	1	1	–	540	2015	2013	OR
2 Oct	Homer	L	90840	557458	1	1	–	580	2015	2013	OR
2 Oct	Homer	L	636672	557451	1	1	–	500	2015	2013	WA
3 Oct	Homer	L	182876	557497	–	2	F	660	2014	2012	–
6 Oct	Homer	L	182570	557488	R	2	–	625	2014	2013	BC
7 Oct	Homer	L	90884	557490	–	1	–	–	2015	2013	OR
8 Oct	Homer	L	636479	557491	–	2	–	–	2014	2012	WA
8 Oct	Homer	L	182475	557496	–	2	F	615	2014	2013	BC
13 Oct	Homer	L	182894	557495	2	2	–	640	2014	2013	BC
23 Oct	Homer	L	636481	557510	–	2	–	–	2014	2012	WA
23 Oct	Homer	L	43873	557500	–	1	–	–	2015	2013	AK
25 Oct	Homer	L	636650	557498	1	1	–	555	2015	2013	WA

Note: METF means mid eye to tail fork length; CWT means coded wire tag; "U" means Upper Cook Inlet, "L" means Lower Cook Inlet, "R" means regenerated scale (unreadable), "M" is male, and "F" is female; an en dash means value is unknown.

Appendix F4.–Cook Inlet saltwater Chinook salmon head samples from adipose-finclipped fish and decoded CWT data by port and fishery, 2017.

Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
4 Feb	Homer	CI	90627	557528	–	3	F	710	2014	2012	OR
21 Feb	Homer	CI	31676	557535	–	3	M	720	2014	2012	AK
23 Feb	Homer	CI	90863	557536	3	3	M	640	2014	2013	WA
25 Feb	Homer	CI	636479	557537	3	3	F	720	2014	2012	WA
10 Mar	Homer	CI	636483	557539	–	3	M	660	2014	2012	WA
25 Mar	Homer	CI	636506	557544	–	4	–	735	2013	2012	WA
25 Mar	Homer	CI	182369	557558	–	4	–	790	2013	2012	BC
25 Mar	Homer	CI	90884	557561	–	2	–	600	2015	2013	OR
25 Mar	Homer	CI	211059	557555	–	4	–	780	2013	2012	WA
25 Mar	Homer	CI	90699	557563	–	3	–	710	2014	2012	OR
3 Apr	Homer	L	31676	557542	3	3	M	720	2014	2012	AK
30 Apr	Homer	L	90853	557571	2	2	–	605	2015	2013	OR
30 Apr	Homer	L	90817	557572	–	3	–	–	2014	2013	OR
5 May	Anchor Point	U	180187	548814	4	4	M	740	2013	2012	BC
6 May	Homer	U	636680	557574	3	3	M	655	2014	2013	WA
6 May	Homer	L	183383	557576	3	3	–	690	2014	2013	BC
6 May	Homer	L	636293	557546	–	3	M	735	2014	2012	WA
7 May	Homer	L	200113	557578	2	2	M	615	2015	2013	WA
8 May	Deep Creek	U	636676	547778	3	3	–	670	2014	2013	WA
9 May	Homer	L	182878	557581	2	2	F	625	2015	2014	BC
10 May	Deep Creek	U	636504	547779	3	3	–	770	2014	2012	WA
14 May	Anchor Point	U	183484	548815	3	3	F	725	2014	2013	BC
15 May	Homer	L	636481	557588	3	3	M	745	2014	2012	WA
15 May	Deep Creek	U	30724	547781	3	3	F	700	2014	2012	AK
15 May	Anchor Point	U	43496	548817	2	2	F	705	2015	2013	AK
15 May	Homer	L	182195	557589	–	3	F	750	2014	2013	BC
16 May	Anchor Point	U	43398	548819	4	3	F	800	2014	2012	AK
17 May	Deep Creek	U	90878	547784	2	2	M	650	2015	2013	OR
21 May	Homer	L	181993	557590	4	4	–	–	2013	2012	BC
22 May	Homer	L	183171	557593	3	3	–	680	2014	2013	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
28 May	Homer	L	90747	557701	2	2	M	645	2015	2013	OR
28 May	Homer	L	183381	557600	3	3	F	760	2014	2013	BC
29 May	Anchor Point	U	54793	548816	3	3	F	740	2014	2012	WA
29 May	Homer	U	183381	557603	–	3	F	700	2014	2013	BC
30 May	Homer	U	636681	557606	–	3	F	680	2014	2013	WA
30 May	Deep Creek	U	43772	547788	2	2	F	670	2015	2013	AK
30 May	Homer	U	200113	557605	–	2	F	615	2015	2013	WA
8 Jun	Homer	L	43871	557703	2	2	M	600	2015	2013	AK
12 Jun	Homer	L	636650	557614	–	2	F	635	2015	2013	WA
12 Jun	Homer	L	43881	557612	2	2		630	2015	2014	AK
14 Jun	Homer	L	90726	557621	3	3	F	625	2014	2012	OR
17 Jun	Homer	U	36258	557712	2	2	M	610	2015	2013	AK
17 Jun	Homer	U	182878	557713	2	2	F	565	2015	2014	BC
18 Jun	Homer	U	636681	557627	3	3	F	720	2014	2013	WA
18 Jun	Homer	L	39903	557714	2	2	M	680	2015	2013	AK
18 Jun	Deep Creek	U	182481	547792	3	2	M	640	2015	2014	BC
19 Jun	Homer	L	36258	557628	2	2	M	610	2015	2013	AK
19 Jun	Homer	L	636672	557629	2	2	F	590	2015	2013	WA
20 Jun	Homer	U	183295	557630	–	2	F	630	2015	2014	BC
20 Jun	Homer	U	183484	557632	–	3	–	685	2014	2013	BC
21 Jun	Homer	L	36258	557718	2	2	F	655	2015	2013	AK
24 Jun	Homer	L	636678	557721	2	2	F	660	2015	2013	WA
27 Jun	Homer	U	183464	557637	2	2	F	560	2015	2014	BC
28 Jun	Anchor Point	L	43766	548829	2	2	F	580	2015	2013	AK
29 Jun	Homer	U	36259	557722	2	2	M	620	2015	2013	AK
2 Jul	Homer	L	636647	557728	2	2	M	585	2015	2013	WA
2 Jul	Anchor Point	U	636681	548831	3	3	F	650	2014	2013	WA
4 Jul	Anchor Point	L	90854	548834	2	2	M	565	2015	2013	OR
4 Jul	Anchor Point	L	183395	548833	2	2	M	535	2015	2014	BC
5 Jul	Homer	U	90938	557729	1	1	M	530	2016	2014	OR

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
6 Jul	Homer	L	183466	557730	2	2		650	2015	2014	BC
7 Jul	Homer	L	183484	557732	3	3	M	820	2014	2013	BC
10 Jul	Homer	L	636664	557644	2	2	M	660	2015	2013	WA
10 Jul	Homer	U	180271	557642	2	2	F	580	2015	2014	BC
12 Jul	Homer	U	90942	557734	1	1	F	550	2016	2014	OR
14 Jul	Homer	U	211102	557737	2	2	F	580	2015	2013	WA
15 Jul	Homer	U	183395	557740	2	2	F	600	2015	2014	BC
18 Jul	Homer	L	182580	557650	2	2	M	695	2015	2013	BC
18 Jul	Homer	L	211140	557664	2	2	F	555	2015	2014	WA
18 Jul	Homer	U	90928	557663	1	1	M	510	2016	2014	OR
19 Jul	Homer	L	90941	557744	1	1	F	535	2016	2014	OR
19 Jul	Homer	L	90928	557667	1	1	F	490	2016	2014	OR
21 Jul	Homer	L	39902	557670	2	2	F	645	2015	2013	AK
22 Jul	Homer	L	211050	557673	4	4	M	805	2013	2012	WA
25 Jul	Homer	L	90855	557755	–	2	F	625	2015	2013	OR
25 Jul	Homer	L	636651	557758	2	2	F	670	2015	2013	WA
25 Jul	Homer	L	636678	557763	2	2	F	645	2015	2013	WA
25 Jul	Homer	L	90942	557753	1	1	F	535	2016	2014	OR
25 Jul	Homer	L	211102	557754	2	2	F	605	2015	2013	WA
25 Jul	Homer	L	90930	557759	1	1	F	550	2016	2014	OR
29 Jul	Homer	L	636680	557682	3	3	F	685	2014	2013	WA
30 Jul	Homer	L	43485	557765	3	3	M	710	2014	2012	AK
3 Aug	Homer	L	636777	557687	2	2	–	610	2015	2014	WA
3 Aug	Homer	L	183666	557686	2	2	M	605	2015	2014	BC
5 Aug	Homer	L	90937	557766	1	1	M	580	2016	2014	OR
5 Aug	Homer	L	180272	557767	2	2	F	615	2015	2014	BC
7 Aug	Homer	L	43865	557771	2	2	F	630	2015	2013	AK
7 Aug	Homer	L	180272	557770	2	2	F	670	2015	2014	WA
9 Aug	Homer	L	90877	557773	2	2	F	730	2015	2013	OR
11 Aug	Homer	L	211133	557690	2	2	F	595	2015	2014	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
15 Aug	Homer	L	200112	557781	2	2	–	655	2015	2013	WA
15 Aug	Homer	L	183399	557779	2	2	F	585	2015	2014	BC
16 Aug	Homer	L	200116	557692	2	2	F	650	2015	2014	WA
21 Aug	Homer	L	33001	557700	2	2	–	–	2015	2013	AK
22 Aug	Homer	U	183484	557782	3	3	F	615	2014	2013	AK
23 Aug	Homer	L	90853	557784	2	2	F	680	2015	2013	OR
24 Aug	Homer	L	636628	557785	2	2	F	700	2015	2013	WA
25 Aug	Homer	L	200111	557789	2	2	F	650	2015	2013	WA
25 Aug	Homer	L	182484	557790	2	2	F	660	2015	2014	BC
25 Aug	Homer	L	183695	557788	1	1	M	410	2016	2015	BC
25 Aug	Homer	L	636750	557786	2	2	F	685	2015	2013	WA
28 Aug	Homer	L	55894	557793	1	1	M	400	2016	2015	WA
28 Aug	Homer	L	90981	557796	1	1	–	400	2016	2015	OR
29 Aug	Homer	L	184099	557794	1	1	–	380	2016	2015	BC
30 Aug	Homer	L	200123	557797	1	1	F	530	2016	2014	WA
31 Aug	Homer	L	636879	557798	–	1	M	455	2016	2014	WA
1 Sep	Homer	CI	43874	557810	2	2	F	655	2015	2013	AK
1 Sep	Homer	CI	636672	557809	2	2	F	735	2015	2013	WA
2 Sep	Homer	CI	184184	557815	1	1	M	330	2016	2015	BC
3 Sep	Homer	CI	183899	557816	1	1	M	425	2016	2015	BC
6 Sep	Homer	CI	636879	557821	1	1	F	505	2016	2014	WA
6 Sep	Homer	CI	43867	557819	2	2	F	665	2015	2013	AK
9 Sep	Homer	CI	636647	557822	2	2	F	655	2015	2013	WA
12 Sep	Homer	CI	90928	557827	1	1	–	525	2016	2014	OR
12 Sep	Homer	CI	90746	557829	2	2	–	685	2015	2013	OR
17 Sep	Homer	CI	636898	557830	1	1	M	430	2016	2014	WA
17 Sep	Homer	CI	182786	557828	3	3	F	760	2014	2013	BC
17 Sep	Homer	CI	183396	557832	2	2	M	570	2015	2014	BC
18 Sep	Homer	CI	43874	557835	2	2	F	620	2015	2013	AK
18 Sep	Homer	CI	200119	557833	1	1	M	425	2016	2014	WA

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
19 Sep	Homer	CI	184071	557837	1	1	M	410	2016	2015	BC
20 Sep	Homer	CI	90928	557838	1	1	M	475	2016	2014	OR
23 Sep	Homer	CI	43799	557840	2	2	M	670	2015	2013	AK
23 Sep	Homer	CI	183676	557839	2	2	–	545	2015	2014	BC
26 Sep	Homer	CI	211165	557841	1	1	–	425	2016	2015	WA
26 Sep	Homer	CI	184099	557844	2	1	M	455	2016	2015	BC
26 Sep	Homer	CI	200119	557845	1	1	M	360	2016	2014	WA
27 Sep	Homer	CI	200120	557846	1	1	F	495	2016	2014	WA
4 Oct	Homer	CI	90881	557849	2	3	F	–	2014	2013	AK
7 Oct	Homer	CI	636879	557901	–	1	–	535	2016	2015	BC
8 Oct	Homer	CI	185613	557908	–	2	–	655	2015	2014	BC
14 Oct	Homer	CI	183473	557909	1	1	–	480	2016	2015	BC
15 Oct	Homer	CI	181670	557911	2	2	–	665	2015	2014	BC

Note: METF means mid eye to tail fork length; CWT means coded wire tag; "U" means Upper Cook Inlet, "L" means Lower Cook Inlet, "R" means regenerated scale (unreadable), "M" is male, and "F" is female; an en dash means value is unknown.

Appendix F5.–Cook Inlet saltwater Chinook salmon head samples from adipose-finclipped fish and decoded CWT data by port and fishery, 2018.

Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
6 May	Homer	L	43699	556628	4	3	F	815	2015	2013	AK
6 May	Deep Creek	U	90941	557891	2	2	M	645	2016	2014	OR
7 May	Anchor Point	U	183397	557887	3	3	F	790	2015	2014	BC
12 May	Homer	L	184264	556635	–	2	F	470	2016	2015	BC
13 May	Homer	L	30289	556636	–	3	–	750	2015	2013	AK
18 May	Homer	U	182580	557914	–	3	F	–	2015	2013	BC
19 May	Anchor Point	U	90855	557915	3	3	F	765	2015	2013	OR
23 May	Deep Creek	U	43881	557881	3	3	F	720	2015	2014	KA
26 May	Homer	U	636647	556640	–	3	M	820	2015	2013	WA
30 May	Homer	L	44277	557938	2	2	M	–	2016	2014	AK
30 May	Homer	L	183476	557937	2	2	M	–	2016	2015	BC
2 Jun	Homer	L	42251	556646	–	2	M	560	2016	2014	AK
3 Jun	Homer	L	183694	557940	2	2	f	475	2016	2015	BC
3 Jun	Homer	L	90929	557941	2	2	f	587	2016	2014	OR
12 Jun	Homer	U	185039	557951	3	3	F	765	2015	2014	BC
13 Jun	Homer	L	183384	556650	–	4	F	750	2014	2013	BC
19 Jun	Homer	L	186141	557958	3	3	F	645	2015	2014	BC
20 Jun	Homer	L	184069	557947	–	2	M	600	2016	2015	BC
20 Jun	Homer	L	90931	557949	–	2	–	655	2016	2014	OR
25 Jun	Homer	U	183690	557962	–	2	–	595	2016	2015	BC
27 Jun	Anchor Point	L	183767	557918	2	2	F	540	2016	2015	BC
27 Jun	Homer	L	183474	547799	–	2	F	480	2016	2015	BC
28 Jun	Homer	L	44268	547902	–	2	M	620	2016	2014	AK
28 Jun	Homer	L	184071	547903	–	2	M	465	2016	2015	BC
29 Jun	Homer	L	184282	547905	–	2	F	630	2016	2015	BC
30 Jun	Homer	U	183177	547907	2	2	M	560	2016	2015	BC
1 Jul	Homer	L	90883	547908	1	1	F	450	2017	2015	OR
2 Jul	Homer	L	184098	557966	R	2	F	535	2016	2015	BC
2 Jul	Homer	L	90993	557965	–	1	F	490	2017	2015	BC
4 Jul	Homer	L	183267	547914	–	2	M	590	2016	2015	BC

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Recovery date	Port	Fishery	Number CWT	Number Head	Scale age	CWT age	Sex	METF (mm)	Release year	Brood year	Release state or province
6 Jul	Homer	L	211186	547803	–	2	–	565	2016	2015	WA
8 Jul	Homer	L	44694	557972	–	1	M	370	2017	2016	AK
8 Jul	Homer	L	44081	557970	–	1	M	440	2017	2015	AK
8 Jul	Homer	L	183178	557969	–	2	F	650	2016	2015	BC
8 Jul	Homer	L	183473	557971	–	2	–	–	2016	2015	BC
14 Jul	Homer	L	636963	557975	2	2	F	655	2016	2015	WA
17 Jul	Homer	L	184070	557976	–	2	M	475	2016	2015	BC
18 Jul	Homer	–	200127	547810	–	1	–	–	2017	2015	WA
18 Jul	Homer	L	90931	547808	–	2	F	710	2016	2014	OR
19 Jul	Homer	L	182893	547812	2	2	M	475	2016	2015	BC
25 Jul	Homer	L	636964	557977	–	1	M	465	2017	2015	WA
28 Jul	Homer	L	211168	557978	2	2	M	525	2016	2015	WA
1 Aug	Homer	L	636964	547816	1	1	M	435	2017	2015	WA
15 Aug	Homer	L	211168	557981	2	2	M	565	2016	2015	WA
16 Aug	Homer	L	44285	557982	–	2	M	735	2016	2014	AK
19 Aug	Homer	L	183690	557989	2	2	M	700	2016	2015	BC
19 Aug	Homer	L	184072	557984	2	2	M	525	2016	2015	BC
23 Aug	Homer	U	636964	557990	–	1	–	485	2017	2015	WA
24 Aug	Homer	L	183678	557992	–	1	M	380	2017	2016	BC
25 Aug	Homer	L	636809	557993	–	2	F	635	2016	2014	WA
26 Aug	Homer	L	90933	557994	2	2	M	605	2016	2014	OR
26 Aug	Homer	–	211186	557996	2	2	M	615	2016	2015	WA
29 Aug	Homer	–	636809	547821	–	2	M	600	2016	2014	WA
29 Aug	Homer	L	183799	557997	1	2	F	565	2016	2015	BC

Note: METF means mid eye to tail fork length; CWT means coded wire tag; "U" means Upper Cook Inlet, "L" means Lower Cook Inlet, "R" means regenerated scale (unreadable), "M" is male, and "F" is female; an en dash means value is unknown.

APPENDIX G: STANDARD ERRORS OF PROPORTIONS AND HARVEST BY AGE FOR COOK INLET CHINOOK SALMON FISHERIES, 2014–2018

Appendix G1.–Standard errors for proportions and harvest by age of Cook Inlet Chinook salmon by fishery, 2014–2018.

Fishery	Year	No. of age samples	Ocean age SE						Harvest SE					
			0	1	2	3	4	5	0	1	2	3	4	5
Upper Cook Inlet Early	2014	179	0.0	0.5	1.1	3.5	0.9	0.0	0	0	5	29	3	0
	2015	148	0.0	1.3	0.9	4.0	0.7	0.0	0	1	7	53	3	0
	2016	162	0.0	0.9	0.8	3.8	0.7	0.2	0	0	5	53	3	0
	2017	151	0.0	1.9	1.1	3.9	0.7	0.0	0	2	9	32	1	0
	2018	176	0.0	0.6	1.0	3.6	0.8	0.0	0	0	6	36	2	0
Upper Cook Inlet Late	2014	29	0.0	0.0	1.5	9.3	1.1	0.0	0	0	5	48	1	0
	2015	27	0.0	0.0	1.2	9.7	1.0	0.5	0	0	5	71	3	0
	2016	74	0.0	0.0	1.3	5.7	0.4	0.0	0	0	9	37	0	0
	2017	149	0.7	2.9	1.4	3.2	0.6	0.0	0	6	8	9	0	0
	2018	144	0.0	2.8	1.4	3.0	0.9	0.3	0	5	8	6	1	0
Upper Cook Inlet Summer	2014	208	0.0	0.7	0.9	3.3	0.7	0.0	0	0	6	46	3	0
	2015	175	0.0	1.0	0.7	3.7	0.6	0.2	0	1	9	76	4	0
	2016	236	0.0	0.6	0.7	3.1	0.5	0.2	0	0	9	65	2	0
	2017	300	0.0	1.8	0.8	2.6	0.5	0.0	0	7	13	26	1	0
	2018	320	0.0	1.3	0.9	2.6	0.6	0.0	0	3	11	28	2	0
Lower Cook Inlet Summer	2014	142	0.0	1.0	0.7	4.1	0.2	0.1	0	1	18	94	0	0
	2015	151	0.0	2.0	0.5	3.3	0.2	0.1	0	10	28	57	1	0
	2016	155	0.0	2.8	0.5	4.0	0.2	0.1	0	41	17	178	0	0
	2017	145	0.0	3.7	0.5	3.4	0.2	0.0	0	90	22	65	0	0
	2018	213	0.5	2.1	0.6	3.0	0.1	0.1	0	15	24	59	0	0
Winter	2014	182	0.0	2.6	0.8	3.0	0.0	0.0	0	13	16	22	0	0
	2015	30	0.0	5.9	0.6	5.9	0.3	0.0	0	35	23	35	1	0
	2016	205	0.0	2.9	0.7	2.7	0.1	0.0	0	33	20	25	0	0
	2017	197	1.8	3.4	0.7	2.3	0.2	0.0	6	62	12	13	0	0
	2018[a]	–	–	–	–	–	–	–	–	–	–	–	–	–
All fisheries	2014	532	0.0	1.0	0.5	2.1	0.2	0.0	0	6	23	93	2	0
	2015	356	0.0	1.1	0.4	2.5	0.2	0.1	0	9	32	150	4	0
	2016	596	0.0	1.3	0.4	2.0	0.2	0.1	0	26	27	155	2	0
	2017	642	0.6	1.7	0.4	1.6	0.2	0.0	2	66	28	64	1	0
	2018	533	0.2	1.2	0.4	2.0	0.2	0.1	0	18	32	120	3	0

Note: Proportions and harvest numbers are available in Table 6.

[a] No field sampling took place during the winter fishery in 2018.

APPENDIX H: COOK INLET SALTWATER CHINOOK SALMON HARVEST MATURITY SAMPLING AND RESULTS BY FISHERY

Appendix H1.–Cook Inlet saltwater Chinook salmon harvest samples by sex and fishery, 2014.

		Upper Cook Inlet Early			Upper Cook Inlet Late			Lower Cook Inlet Summer		
Sex	Statistic	Immature	Mature	Total	Immature	Mature	Total	Immature	Mature	Total
Females										
	Number sampled	114	34	148	7	7	14	602	63	665
	Estimated percent	77.0	23.0	100.0	50.0	50.0	100.0	90.5	9.5	100.0
	SE percent	3.8	7.2	–	20.3	20.3	–	1.1	3.7	–
	Estimated harvest	649	194	842	287	287	575	2,679	280	2,959
	SE harvest	29	11	33	53	53	78	51	8	53
Males										
	Number sampled	65	60	125	7	3	10	434	38	472
	Estimated percent	52.0	48.0	100.0	70.0	30.0	100.0	91.9	8.1	100.0
	SE percent	6.1	6.4	–	18.6	32.4	–	1.3	4.5	–
	Estimated harvest	370	342	712	287	123	410	1,931	169	2,100
	SE harvest	19	18	31	53	29	67	43	5	45
Combined										
	Number sampled	179	94	273	14	10	24	1,036	101	1,137
	Estimated percent	65.6	34.4	100.0	58.3	41.7	100.0	91.1	8.9	100.0
	SE percent	3.3	4.8	–	13.6	16.3	–	0.8	2.8	–
	Estimated harvest	1,019	535	1,554	575	410	985	4,610	449	5,059
	SE harvest	34	26	288	78	67	228	36	13	548

Note: All (100%) of the Winter fishery harvest were immature fish. An en dash means not applicable.

Appendix H2.–Cook Inlet saltwater Chinook salmon harvest samples by sex and fishery, 2015.

		Upper Cook Inlet Early			Upper Cook Inlet Late			Lower Cook Inlet Summer		
Sex	Statistic	Immature	Mature	Total	Immature	Mature	Total	Immature	Mature	Total
Females										
	Number sampled	122	48	170	5	4	9	1,195	199	1,394
	Estimated percent	71.8	28.2	100.0	55.6	44.4	100.0	85.7	14.3	100.0
	SE percent	4.0	6.5	–	24.8	28.7	–	1.0	2.5	–
	Estimated harvest	1,103	434	1,537	546	437	982	3,942	656	4,599
	SE harvest	49	23	58	117	99	157	57	13	61
Males										
	Number sampled	108	16	124	4	1	5	977	74	1,051
	Estimated percent	87.1	12.9	100.0	80.0	20.0	100.0	93.0	7.0	100.0
	SE percent	3.2	8.6	–	23.1	40.0	–	0.7	3.0	–
	Estimated harvest	976	145	1,121	437	109	546	3,223	244	3,467
	SE harvest	45	8	50	99	28	117	51	5	53
Combined										
	Number sampled	230	64	294	9	5	14	2,172	273	2,445
	Estimated percent	78.2	21.8	100.0	64.3	35.7	100.0	88.8	11.2	100.0
	SE percent	2.6	5.1	–	16.9	23.9	–	0.3	1.8	–
	Estimated harvest	2,079	579	2,658	982	546	1,528	7,165	901	8,066
	SE harvest	57	30	405	157	117	405	48	17	790

Note: All (100%) of the Winter fishery harvest were immature fish. An en dash means not applicable.

Appendix H3.–Cook Inlet saltwater Chinook salmon harvest samples by sex and fishery, 2016.

		Upper Cook Inlet Early			Upper Cook Inlet Late			Lower Cook Inlet Summer		
Sex	Statistic	Immature	Mature	Total	Immature	Mature	Total	Immature	Mature	Total
Females										
	Number sampled	150	22	172	79	6	85	623	67	690
	Estimated percent	87.2	12.8	100.0	92.9	7.1	100.0	90.3	9.7	100.0
	SE percent	2.7	7.3	–	2.8	11.4	–	1.2	3.6	–
	Estimated harvest	1,283	188	1,472	742	56	798	5,171	556	5,727
	SE harvest	52	11	55	41	5	42	103	16	108
Males										
	Number sampled	102	10	112	47	10	57	443	56	499
	Estimated percent	91.1	8.9	100.0	82.5	17.5	100.0	88.8	11.2	100.0
	SE percent	2.8	9.5	–	5.5	12.6	–	1.5	4.2	–
	Estimated harvest	873	86	958	441	94	535	3,677	465	4,141
	SE harvest	41	5	44	30	8	35	84	13	91
Combined										
	Number sampled	252	32	284	126	16	142	1,066	123	1,189
	Estimated percent	88.7	11.3	100.0	88.7	11.3	100.0	89.7	10.3	100.0
	SE percent	1.9	5.6	–	2.7	7.9	–	0.9	2.7	–
	Estimated harvest	2,156	274	2,430	1,183	150	1,333	8,847	1,021	9,868
	SE harvest	43	15	361	33	12	246	83	28	760

Note: All (100%) of the Winter fishery harvest were immature fish. An en dash means not applicable.

Appendix H4.–Cook Inlet saltwater Chinook salmon harvest samples by sex and fishery, 2017.

		Upper Cook Inlet Early			Upper Cook Inlet Late			Lower Cook Inlet Summer		
Sex	Statistic	Immature	Mature	Total	Immature	Mature	Total	Immature	Mature	Total
Females										
	Number sampled	169	34	203	115	17	132	470	24	494
	Estimated percent	83.3	16.7	100.0	87.1	12.9	100.0	95.1	4.9	100.0
	SE percent	2.8	6.4	–	3.0	8.3	–	1.0	4.4	–
	Estimated harvest	941	189	1,130	508	75	583	4,640	237	4,877
	SE harvest	36	10	39	24	4	25	107	8	109
Males										
	Number sampled	141	15	156	107	23	130	373	13	386
	Estimated percent	90.4	9.6	100.0	82.3	17.7	100.0	96.6	3.4	100.0
	SE percent	2.4	7.8	–	3.5	8.4	–	0.9	5.0	–
	Estimated harvest	785	84	869	473	102	574	3,682	128	3,810
	SE harvest	32	4	34	22	6	25	94	4	96
Combined										
	Number sampled	310	49	359	222	40	262	843	37	880
	Estimated percent	86.4	13.6	100.0	84.7	15.3	100.0	95.8	4.2	100.0
	SE percent	1.8	4.9	–	2.2	5.7	–	0.7	3.3	–
	Estimated harvest	1,726	273	1,999	980	177	1,157	8,322	365	8,687
	SE harvest	34	13	315	24	10	64	58	12	700

Note: All (100%) of the Winter fishery harvest were immature fish. An en dash means not applicable.

Appendix H5.–Cook Inlet saltwater Chinook salmon harvest samples by sex and fishery, 2018.

		Upper Cook Inlet Early				Upper Cook Inlet Late				Lower Cook Inlet Summer			
Sex	Statistic	Immature	Interm.[a]	Mature	Total	Immature	Interm.[a]	Mature	Total	Immature	Interm.[a]	Mature	Total
Females													
	Number sampled	49	76	32	157	74	25	5	104	324	67	24	415
	Estimated percent	32.2	48.4	20.4	100.0	71.2	24.0	4.8	100.0	78.1	16.1	5.8	100.0
	SE percent	6.6	5.7	7.2	–	5.1	8.6	10.7	–	2.2	4.5	4.9	–
	Estimated harvest	305	473	199	977	457	154	31	642	2,953	611	219	3783
	SE harvest	16	24	11	39	26	11	2	31	81	21	8	92
Males													
	Number sampled	107	–	39	146	60	–	13	73	302	–	30	302
	Estimated percent	73.3	–	26.7	100.0	82.2	–	17.8	100.0	91.0	–	9.0	100.0
	SE percent	4.2	–	7.1	–	4.8	–	11.0	–	1.6	–	5.3	–
	Estimated harvest	666	–	243	908	370	–	80	450	2,753	–	273	3026
	SE harvest	31	–	13	38	23	–	6	26	76	–	10	81
Combined													
	Number sampled	156	76	71	303	134	25	18	177	627	67	54	748
	Estimated percent	51.5	25.1	23.4	100.0	75.7	14.1	10.2	100.0	83.8	9.0	7.2	100.0
	SE percent	3.8	4.9	5.0	0.0	3.5	7.0	7.3	0.0	1.4	3.5	3.5	0.0
	Estimated harvest	970	473	442	1,885	827	154	111	1,092	5,715	611	492	6,818
	SE harvest	39	24	22	267	31	11	8	129	84	21	17	679

Note: All (100%) of the Winter fishery harvest were immature fish. An en dash means not applicable.

[a] "Interm." = Intermediate maturity category not assessed for males.