

Upper Cook Inlet Commercial Fisheries Annual Management Report, 2018

by

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and

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code		all standard mathematical signs, symbols and abbreviations	
deciliter	dL		AAC		
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A
hectare	ha			base of natural logarithm	<i>e</i>
kilogram	kg	all commonly accepted		catch per unit effort	CPUE
kilometer	km	professional titles	e.g., Dr., Ph.D., R.N., etc.	coefficient of variation	CV
liter	L			common test statistics	(F, t, χ^2 , etc.)
meter	m	at	@	confidence interval	CI
milliliter	mL	compass directions:		correlation coefficient (multiple)	R
millimeter	mm	east	E		
		north	N	correlation coefficient (simple)	r
Weights and measures (English)		south	S	covariance	cov
cubic feet per second	ft ³ /s	west	W	degree (angular)	°
foot	ft	copyright	©	degrees of freedom	df
gallon	gal	corporate suffixes:		expected value	<i>E</i>
inch	in	Company	Co.	greater than	>
mile	mi	Corporation	Corp.	greater than or equal to	≥
nautical mile	nmi	Incorporated	Inc.	harvest per unit effort	HPUE
ounce	oz	Limited	Ltd.	less than	<
pound	lb	District of Columbia	D.C.	less than or equal to	≤
quart	qt	et alii (and others)	et al.	logarithm (natural)	ln
yard	yd	et cetera (and so forth)	etc.	logarithm (base 10)	log
		exempli gratia		logarithm (specify base)	log ₂ , etc.
Time and temperature		(for example)	e.g.	minute (angular)	'
day	d	Federal Information Code	FIC	not significant	NS
degrees Celsius	°C	id est (that is)	i.e.	null hypothesis	H ₀
degrees Fahrenheit	°F	latitude or longitude	lat or long	percent	%
degrees kelvin	K	monetary symbols		probability	P
hour	h	(U.S.)	\$, ¢	probability of a type I error (rejection of the null hypothesis when true)	α
minute	min	months (tables and figures): first three letters	Jan.,...,Dec	probability of a type II error (acceptance of the null hypothesis when false)	β
second	s	registered trademark	®	second (angular)	"
		trademark	™	standard deviation	SD
Physics and chemistry		United States (adjective)	U.S.	standard error	SE
all atomic symbols		United States of America (noun)	USA	variance	
alternating current	AC	U.S.C.	United States Code	population	Var
ampere	A			sample	var
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				

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**UPPER COOK INLET COMMERCIAL FISHERIES ANNUAL
MANAGEMENT REPORT, 2018**

by

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ABSTRACT

The 2018 Upper Cook Inlet area management report describes commercial fishing in Upper Cook Inlet (UCI). The UCI management area includes the waters of Cook Inlet north of Anchor Point and consists of 2 districts. A line between Boulder Point and the West Forelands separates the area into the Northern and Central Districts. In the south, the Central District includes 6 subdistricts, and to the north, the Northern District includes 2 subdistricts. All 5 species of Pacific salmon (sockeye *Oncorhynchus nerka*, Chinook *O. tshawytscha*, chum *O. keta*, coho *O. kisutch*, and pink *O. gorbuscha*), razor clams (*Siliqua patula*), Pacific herring (*Clupea pallasii*), and eulachon (*Thaleichthys pacificus*) are commercially harvested. All species of salmon are harvested from all districts, but herring and clams are only fished in the Central District, and eulachon are only harvested in the Northern District. The total sockeye salmon run estimate to UCI in 2018 of 3.1 million fish was 32% below the preseason forecast of 4.6 million. The 2018 estimated exvessel value of the commercial harvest of all salmon was \$12 million, which was 67% less than the 2008–2017 average annual exvessel value of \$30 million, and approximately 58% less than the 1960–2017 long-term average annual exvessel value of \$26 million. Sockeye salmon accounted for only 82% of the total exvessel value, which was the lowest proportion of the total value since 1991. The commercial harvest of 1.3 million salmon was approximately 69% less than the 1970–2017 average annual harvest of 4.1 million fish, and the commercial sockeye salmon harvest of 818,000 fish was 72% less than the 1970–2017 average annual harvest of 2.9 million fish. For the 2018 season, 5 of 7 sockeye salmon drainage escapement estimates fell within established goal ranges, and 2 of 7 exceeded goal ranges.

Key words: sockeye *Oncorhynchus nerka*, Chinook *O. tshawytscha*, chum *O. keta*, coho *O. kisutch*, pink *O. gorbuscha*, salmon, Pacific herring *Clupea pallasii*, smelt, eulachon *Thaleichthys pacificus*, razor clam *Siliqua patula*, commercial fishery, personal use fishery, gillnet, escapement, Upper Cook Inlet, Annual Management Report, AMR

INTRODUCTION

The Upper Cook Inlet (UCI) commercial fisheries management area, located in Southcentral Alaska, consists of that portion of Cook Inlet north of the latitude of the Anchor Point Light (lat 59°46.15'N) and is divided into the Central and Northern Districts (Figures 1 and 2). The Central District is approximately 75 miles long, averages 32 miles in width, and is divided into 6 subdistricts. The Northern District is 50 miles long, averages 20 miles in width, and is divided into 2 subdistricts. Harvest statistics are gathered and reported by statistical areas and subareas within the subdistricts (Figures 3 and 4); each statistical area is assigned a 5-digit numerical reference code. UCI commercial fisheries target 5 species of Pacific salmon (*Oncorhynchus* spp.), razor clams (*Siliqua patula*), Pacific herring (*Clupea pallasii*), and eulachon (*Thaleichthys pacificus*).

SALMON

Over its 140-year history since 1878¹, the commercial salmon fishery in UCI waters has included many gear types with varying degrees of success, including fish traps, gillnets, and seines. Currently, set gillnets are the only gear permitted in the Northern District, but both set and drift gillnets are used in the Central District. The use of seine gear is restricted to 1 area, the Chinitna Bay Subdistrict, where it may be operated via emergency order (EO) only; however, seine gear has not been fished in Chinitna Bay since 1982. Salmon are found in drainages throughout the UCI management area, and the run timing and migration routes used by all species overlap to such a degree that the commercial fishery is mostly mixed stock and mixed species in nature. Typically, UCI salmon harvest represents approximately 5% of the statewide commercial harvest. Nearly 10% of all salmon permits issued statewide are for the Cook Inlet area.

¹ See Alaska State Library–Historical Collections, Robert N. DeArmond papers, ca. 1945–1969, The Cook Inlet Fishing Industry, available at http://library.alaska.gov/hist/hist_docs/docs/asl_ms39_4_4.pdf (accessed January 3, 2020).

Detailed commercial salmon harvest statistics about UCI specific to gear type and location are available since 1966 (Appendices B1–B6). Since 1966, drift gillnets have accounted for approximately 6% of the average annual harvest of Chinook salmon (*O. tshawytscha*), which may be referred to as king salmon in regulations), as well as 55% of sockeye (*O. nerka*), 49% of coho (*O. kisutch*), 46% of pink (*O. gorbuscha*), and 89% of chum salmon (*O. keta*) (Appendices B1–B5); set gillnets have harvested virtually all of the remainder. Since 2007, the proportion of coho, pink, and chum salmon harvested by drift gillnets in UCI total yearly harvest has increased, but the proportion of sockeye salmon has not changed. The proportion of Chinook salmon harvested by drift gillnets in UCI total yearly harvest has been stable since 2007. In terms of recent economic value, sockeye salmon are the most important species of the UCI commercial salmon harvest, followed by coho, Chinook, chum, and pink salmon (Appendix B7).

HERRING

Commercial herring fishing began in UCI in 1973 (Flagg 1974), including a modest harvest of bait-quality fish along the east side of the Central District, which was expanded in the late 1970s to include small-scale sac roe fisheries in Chinitna and Tuxedni Bays (Appendix B8). Beginning in 1988, large decreases in herring abundance were observed in Tuxedni Bay, as well as a shift towards older herring, subsequently leading to the closure of Tuxedni Bay to commercial herring fishing prior to the 1992 season. In Chinitna Bay and along the eastside beaches of Cook Inlet, similar declines began to materialize after the 1990 season. As a result of these widespread declines, the Alaska Department of Fish and Game (ADF&G) submitted a proposal to the Alaska Board of Fisheries (BOF) to open the UCI herring fishery by EO only. This proposal became regulation in 1993, ending a long period of fixed opening dates on April 15 on the east side, and April 22 on the west side of Cook Inlet. This action effectively closed these fisheries to provide time for herring stocks to recover.

By 1997 some improvement in herring stock biomass was suspected. In 1998, the Upper Subdistrict of the Central District and the Eastern Subdistrict of the Northern District (Figure 1) were opened to commercial herring fishing to assess the status of the herring population. Herring fisheries on the west side of Cook Inlet remained closed until the status of the east side stocks was determined. In 1999, ADF&G again submitted proposals to the BOF, seeking to restructure the herring fishery to two 30-hour periods per week on Mondays and Thursdays. These proposals included the condition that fishermen register their intent to participate in the fishery prior to April 10, as well as the requirement to report harvests within 12 hours of the closure of a fishing period. These proposals were passed in the form of a specified management plan, *Central District Herring Recovery Management Plan* (5 AAC 27.409), which became active prior to the 1999 season, and limited herring fishing in UCI to the waters of the Upper, Western, and Chinitna Bay Subdistricts. In the Upper Subdistrict, fishing for herring is not allowed closer than 600 feet of the mean high tide mark on the Kenai Peninsula in order to reduce the incidental harvest of salmon. The management plan was amended by the BOF in 2002, to extend the closing date for the fishery from May 20 to May 31.

Sampling of the herring population has also occurred in conjunction with recent BOF management plan changes. In 2001, samples of herring were collected in Chinitna and Tuxedni Bays. Age, sex, and size distribution of the samples revealed the years of closed fishing in these areas resulted in an increase of younger-aged fish recruited into the population. As a result of these analyses, and in accordance with the herring recovery management plan, the commercial

fishery was reopened in 2002 in both Chinitna Bay and the Western Subdistrict. The management plan allows a very conservative harvest quota, not to exceed 40 short tons² in Chinitna Bay and 50 short tons in the Western Subdistrict. There has been very little participation in either fishery since they were reopened (Appendix B8).

The herring management plan was further modified by the BOF in 2005 and 2008. In 2005, the plan was no longer referred to as a recovery management plan, the Kalgin Island Subdistrict was included in legal waters, and fishing periods in the Upper Subdistrict were expanded to 108 hours per week, or from Monday at 6:00 AM until Friday at 6:00 PM. Additionally in 2005, the mesh size for herring gillnets was modified to no smaller than 2.0 inches or no greater than 2.5 inches. In 2008, the 108-hour weekly fishing period went into effect for all areas open to herring fishing, and the registration deadline of April 10 was amended to state that fishermen must register any time prior to fishing.

Because the glacial waters of UCI preclude the use of aerial surveys to estimate the biomass of herring stocks, management of these fisheries follows a limited and precautionary approach that restricts harvest strategies. In the Central District, herring may be taken only by set or drift gillnets, except in the Chinitna Bay and Kalgin Island Subdistricts where only set gillnets may be used. Gillnets are much less efficient at capturing herring than purse seines. Moreover, conservative guideline harvest levels have been set, which provide for a low-level commercial fishery on these stocks. In the Upper Subdistrict, harvests are generally concentrated in the Clam Gulch area, with very little or no participation in the Western Subdistrict (Tuxedni Bay), Chinitna Bay, or Kalgin Island Subdistricts.

SMELT

Smelt return to many of the larger river systems in UCI, including particularly large runs to the Susitna and Kenai Rivers. Both longfin smelt *Spirinchus thaleichthys* and eulachon *Thaleichthys pacificus* (referred to as smelt in this report, although often identified in local vernacular as hooligan) are documented in Cook Inlet. Smelt begin returning to spawning areas in Cook Inlet from mid-May to mid-June and return in quantities large enough to support a limited commercial fishery. Longfin smelt return to Cook Inlet in the fall but are not targeted because of the small run size.

Prior to adoption of the *Forage Fish Management Plan* in 1999 (5 AAC 39.212), the entire UCI area was open to smelt fishing from October 1 to June 1 (Shields 2005). The only documented commercial harvest of smelt occurred in 1978 (300 lb), 1980 (4,000 lb), 1998 (18,900 lb), and 1999 (100,000 lb). All harvests occurred in salt water near the Susitna River.

Fisheries for smelt in UCI were closed after the 1998 season due to concerns about the role of forage fish in the ecosystem, and beginning in 2000 the BOF began drafting the *Forage Fish Management Plan*. From 1998 to 2004 no fisheries occurred in UCI for smelt. At the 2005 BOF meeting, proposals were submitted to reopen the fishery, which the BOF accepted, authorizing a commercial smelt fishery beginning with the 2005 season. The fishery is conducted under 5 AAC 21.505, the *Cook Inlet Smelt Fishery Management Plan*. This fishery is allowed only in salt water from May 1 to June 30, specifically in that area of Cook Inlet from the Chuitna River

² The Alaska Board of Fisheries requires that inseason catch and aerial survey biomass estimates be calculated and reported in short tons. All references of "ton" or "tons" in this report indicate the English short ton, unless otherwise stated. The English short ton equals 2,000 lb or 907.2 kg.

to the Little Susitna River and in the Susitna River south of lat 61°21.50'N. Legal gear for the fishery is limited to a hand-operated dip net, as defined in 5 AAC 39.105, and total harvest may not exceed 100 tons of smelt. At the 2017 BOF meeting, the harvest cap was increased to 200 tons of smelt, based in part on a 2016 total biomass estimate of 48,000 metric tons (tonnes) (Willette and DeCino 2016). Any salmon caught during the fishery are to be immediately returned to the water unharmed. To participate in this fishery, a miscellaneous finfish permit is required, as well as a commissioner's permit, which can be obtained from the ADF&G office in Soldotna.

Very little quantitative data are available about Susitna River smelt. The Alaska Energy Authority contracted HDR Alaska and LGL Alaska Research Associates to evaluate life history, run timing, abundance, distribution, and habitat of eulachon as part of Susitna-Watana Hydroelectric feasibility studies (Alaska Energy Authority 2014). In 2016, ADF&G conducted the first year of an anticipated 3-year study to estimate the run timing, age, sex, and size composition and biomass of smelt spawning in the Susitna River watershed (Willette and DeCino 2016). Prior to this study, the total biomass of the smelt run in the Susitna River had not been estimated. The biomass estimate made during the 2016 run was calculated indirectly from estimates of larval densities and stream discharge data. Adult eulachon biomass was then estimated, similar to Moffitt (2002) for the Copper River, from the total number of larvae, estimated survival from egg to larvae, mean fecundity of female eulachon, mean female body weight, the sex ratio of males to females, and mean male body weight. This method indicated total smelt biomass in 2016 was 48,000 metric tons (Willett and DeCino 2016).

RAZOR CLAMS

Commercial harvest of razor clams from UCI beaches dates back to 1919 (Appendix B9). Harvest levels have fluctuated from no fishery to catches in excess of 500,000 lb. The sporadic nature of the fishery was more a function of limited market opportunities than limited availability of the resource. Razor clams are present in many areas of Cook Inlet and particularly dense concentrations occur near Polly Creek on the western shore and from Clam Gulch to Ninilchik on the eastern shore (Nickerson 1975). The eastern shoreline has been set aside for sport harvest exclusively since 1959, and all commercial harvests since that time have come from the west shore, principally from the Polly Creek and Crescent River sandbar areas. A large portion of the Polly Creek beach is approved by the Alaska Department of Environmental Conservation for the harvest of clams for the human food market. Within this approved area, a limit of 10% shell breakage is allowed, and broken-shelled clams are required to be dyed prior to sale as bait clams. A 4.5 inch size limit is also in regulation. No overall commercial harvest limits are in place for any area in regulation; however, ADF&G manages the commercial razor clam fishery to achieve a harvest of no more than 350,000–400,000 lb (in the shell) annually. Virtually all the commercial harvest has come by hand-digging, although regulations prior to 1990 allowed the use of mechanical harvesters (dredges) south of Spring Point, or within a 1 mile section of the Polly Creek beach. Numerous attempts to develop feasible dredging operations were largely unsuccessful due to excessive shell breakage or the limited availability of clams in the area open to this gear. Mechanical means of harvesting is no longer permitted in any area of Cook Inlet.

2018 COMMERCIAL SALMON FISHERY

The overall harvest and value of the 2018 UCI commercial salmon fishery was poor. The 2018 harvest of approximately 1.3 million salmon was 61% less than the 2008–2017 average annual

harvest of 3.4 million fish (Appendix B6). Although all 5 species of Pacific salmon are present in UCI, sockeye salmon are the most valuable, accounting for nearly 93% of the total value during the past 20 years. The estimated exvessel value of the 2018 harvest of all salmon species of approximately \$12 million was 60% less than the previous 2008–2017 average annual exvessel value of \$30 million. All species-specific exvessel values other than coho salmon were well below average in 2018 (Appendix B7).

Estimating average annual price paid per pound (Appendix B11) of UCI salmon is challenging because an increasing number of fishermen sell some or all of their harvest to niche markets where they often receive higher prices. In addition, early-season price of Chinook and sockeye salmon is often much higher than what is paid later in the season. The price per pound paid for sockeye salmon in 2018 was estimated to be \$2.04, which was 20% more than the average price of \$1.64 from the previous 10 years (2008–2017).

Currently, there are 7 sockeye salmon systems with escapement and/or inriver goals that are monitored in UCI (Table 1; Appendices A2–B10).

In 2018, 5 of 7 sockeye salmon assessment counts fell within established goal ranges, and 2 of 7 counts exceeded goal ranges. After the 2018 harvest of sockeye salmon above the sonar site is accounted for in the Kenai River, escapement in this drainage will probably also fall within the sustainable escapement goal (SEG) for this system. The 2018 inriver goal was also achieved. This marked the tenth year when sockeye salmon escapement in the Susitna River drainage was monitored at individual lakes in the Yentna River (Chelatna and Judd Lakes) and mainstem Susitna River (Larson Lake). These lakes are the major producers of sockeye salmon in the Susitna River watershed. Sockeye salmon escapement was also monitored at Fish Creek, which drains Big Lake, and in 1 drainage of the Central District at Packers Lake on Kalgin Island (Figure 1) using a remote video system.

The Upper Subdistrict of the Central District contains the East Side Setnet (ESSN) Fishery, which is the most highly regulated fishery in UCI. The Kasilof, Kenai, and East Foreland sections set gillnet fisheries (collectively, the ESSN fishery) primarily target sockeye salmon, but Chinook salmon are also harvested. During the last decade in the ESSN fishery, an average of 17 different days (77%) have been used for commercial fishery openings of the 22 potential days available for openings given typical management plan stipulations that include 2 mandatory closed periods each week. In 2018, during the month of July, the Kasilof Section set gillnet fishery was open on 13 different days (59%) of the potential 22 days available, and the Kenai and East Foreland sections were open on 8 different days (44%) of the 18 available days (Figure 5). The Kenai and East Foreland sections season opens 1 week later by regulation so that fewer days in July are available for these sections of the ESSN fishery. In August 2018, openings to the ESSN fishery were limited to the Kasilof River Special Harvest Area (KRSHA) which was opened on 5 concurrent days to specifically target Kasilof River sockeye salmon. Outside of the KRSHA, an average of 5 days have been used in the ESSN fishery of the 15 total days available in August during the past decade. In 2018, no fishery openings of the ESSN fishery occurred outside the KRSHA, due to low sockeye salmon abundance and very late sockeye salmon run timing in the Kenai River.

CHINOOK SALMON

The 2018 UCI commercial harvest of 3,405 Chinook salmon was the 2nd smallest since 1966 (52 years) and was approximately 60% less than the 2008–2017 average annual harvest of

8,430 fish (Appendices A3, B1, and B6). Exvessel value for UCI Chinook salmon in 2018 was estimated at \$207,901, which represented approximately 1.7% of the total exvessel value for all salmon (Appendix B7).

Chinook salmon harvests are concentrated in 2 different fisheries in UCI. These 2 fisheries are the set gillnet fisheries in the Northern District and in the Upper Subdistrict of the Central District. The recent pattern of below-average Chinook salmon harvests is the result of lower abundance of Chinook salmon in all of Cook Inlet, but largely related to restrictions placed upon commercial fisheries for the conservation of this species in the Kenai River and the Susitna Drainage.

Northern District

In the Northern District, the directed Chinook salmon set gillnet fishery was closed for the entire 2018 season to reduce the harvest of Northern Cook Inlet (NCI) Chinook salmon. In addition, the initial Northern District period for all salmon on June 25, which primarily targets sockeye salmon, was also closed to conserve Chinook salmon. Zero fish were harvested in 2018 in the Northern District directed Chinook salmon fishery. The estimated harvest of Chinook salmon in the subsequent Northern District salmon fishery in 2018 was only 143 fish, which resulted in a Northern District Chinook salmon harvest that was 93% less than the average annual Chinook salmon harvest of 1,986 fish (Appendix A3).

The *Northern District King Salmon Management Plan* (5 AAC 21.366) was created by the BOF in 1986 and was most recently modified in 2011. This plan provides direction to ADF&G regarding management of the Northern District of UCI for the commercial harvest of Chinook salmon. The fishing season opens on the first Monday on or after May 25 and is limited to openings 1 day per week for every Mondays through June 24. The most productive waters for harvesting Chinook salmon, which occur from 1 mile south of the Theodore River to the mouth of the Susitna River, are open to fishing only 1 day per year, on the second regular Monday period only. However, if the Theodore, Ivan, or Lewis Rivers are closed to sport fishing, the area from 1 mile south of the Theodore River to the Susitna River will be closed to commercial fishing. The plan further specifies that if the Chuitna River is closed to sport fishing, commercial fishing shall close for the remainder of the directed Chinook salmon fishery in that portion of the Northern District from a point at the wood chip dock (located approximately 2 miles south of Tyonek), to the Susitna River. Finally, if the Deshka River is closed to sport fishing, the Chinook salmon commercial fishery in the entire Northern District will close for all fishing periods provided for under this plan.

The management plan further stipulates that each permit holder can fish only one 35-fathom set gillnet, with a minimum separation of 1,200 feet between nets, which is twice the normal separation between nets in other UCI setnet fisheries. The commercial fishery is also limited to an annual harvest not to exceed 12,500 Chinook salmon. Fishing periods are 12 hours per day, or from 7:00 AM to 7:00 PM.

At the 2011 BOF meeting, Chuitna River Chinook salmon were found to be a stock of management concern, which resulted in the closure of the sport fishery on this river beginning with the 2011 season. In compliance with the *Northern District King Salmon Management Plan*, and continued low Chinook salmon abundance, the Northern District set gillnet fishery has remained closed from the wood chip dock to the Susitna River since 2011. Beginning in 2012, ADF&G began taking even more restrictive actions by reducing all 12-hour commercial fishing

periods to 6 hours in duration, and then from 2013 to 2015, the first fishing period of the year was also closed. All of these actions were taken in response to below-average Chinook salmon runs throughout northern Cook Inlet. Because Chinook salmon escapements had improved modestly in some NCI watersheds in recent years, sport fish restrictions had been relaxed in the Susitna River drainage, but 2018 abundance levels again declined, which resulted in further restrictions to sport fisheries and a total closure of the Northern District directed Chinook salmon setnet fishery.

The Deshka River is the primary system in NCI where Chinook salmon escapement has been monitored inseason using a weir; the SEG for this system is 13,000–28,000 fish. At the 2017 BOF meeting, a new Chinook salmon SEG of 2,100–4,300 fish in the Little Susitna River was adopted. The 2018 preseason run forecast for Deshka River Chinook salmon was approximately 12,800 fish. Based on this forecast, the 2018 run to the Deshka River would not be large enough to achieve the SEG, even without any harvest. The preseason outlook for the all other NCI Chinook salmon stocks in 2018 was poor. This followed 2017 when weak Chinook salmon production also occurred in NCI streams, which resulted in 12 of the 14 monitored Chinook salmon stocks not achieving their escapement goals, including all 7 Chinook salmon Stocks of Concern. The estimated final 2018 escapement of Chinook salmon in the Deshka River was approximately 8,544 fish, which was below the lower end of the SEG. The Little Susitna River weir count in 2018 was only 549 Chinook salmon, and even though the weir was submerged for considerable time due to high rainfall, the SEG was probably not achieved (Oslund et al. *In prep*).

The number of permit holders participating in the Northern District setnet fishery declined precipitously beginning in 1993, which was the year that UCI set gillnet fishermen were required to register (prior to fishing) to fish in 1 of 3 areas, either the Northern District, Upper Subdistrict, or Greater Cook Inlet area for the entire year (5 AAC 21.345). The registration requirement served to eliminate a common practice of fishing in multiple areas in UCI during the same year and resulted in lower overall Northern District Chinook salmon effort.

Upper Subdistrict (ESSN)

Following the 2012 season, a new SEG of 15,000–30,000 late-run Kenai River Chinook salmon was recommended by ADF&G (Fleischman and McKinley 2013), to be counted using dual frequency identification sonar (DIDSON). During the 2013 season, 5 abundance indices were used to corroborate the DIDSON estimates of passage (Eskelin and Miller 2010). At the 2014 BOF meeting, the Kenai River late-run Chinook salmon SEG was reviewed, but no changes were made. However, the BOF did implement numerous changes to the *Kenai River Late-Run King Salmon Management Plan* (KRLKSMP) beginning in 2014 (Shields and Dupuis 2015). Furthermore, at the 2017 BOF meeting, a substantial change in management of Kenai River late-run Chinook salmon was adopted. The Chinook salmon SEG was changed to 13,500–27,000 large (>75 cm mid eye to tail fork) fish, counted using adaptive resolution imaging sonar (ARIS) units.

The 2018 preseason outlook for early-run Chinook salmon to the Kenai River anticipated a total run of approximately 5,499 large fish³, which was within the new large-fish SEG of 2,800–5,600 fish; the large-fish optimal escapement goal (OEG) for this stock is 3,900–6,600 fish. The 2018

³ <https://www.adfg.alaska.gov/sf/EONR/index.cfm?adfg=region.NR&NRID=2526&Year=2018>

Kenai River early-run Chinook salmon sport fishery was open prior to June 10, but on June 11 the fishery was restricted to catch and release due to low fish abundance, and on June 20, the fishery was closed after continued low Chinook salmon counts. The 2018 escapement estimate was 2,859 fish and approximately 141 fish (harvest and catch-and-release mortality) were killed above the sonar (Lipka et al. *In prep*).

The 2018 preseason forecast for Kenai River late-run Chinook salmon was for a total run of approximately 21,503 large fish³. Based on average harvest rates of large fish in both commercial and sport fisheries, the forecasted run would probably provide for the new large-fish SEG to be met (13,500–27,000 Chinook salmon). However, lackluster early-run Kenai Chinook salmon abundance along with low Chinook salmon counts throughout the inlet led the Kenai River sport fishery for Chinook salmon to be restricted to no bait beginning July 1 and the fishery was subsequently further restricted to no retention on July 18 in response to continued low passage estimates (Lipka et al. *In prep*). Using mean run-timing and projected sport fishery mortality of 373 large fish, the projected final escapement of Kenai River late-run Chinook salmon was approximately 17,343 large fish (R. Begich, Division of Sport Fish Biologist, ADF&G, Soldotna, personal communication). The total run of large Chinook salmon was estimated to be 17,803 fish (Lipka et al. *In prep*), which was approximately 17% less than the preseason forecast.

Approximately 68% of the UCI Chinook salmon commercial harvest in 2018 occurred in the Upper Subdistrict or ESSN fishery (Appendix B1). The 2018 estimated harvest of 2,312 Chinook salmon was 57% less than the 2008–2017 average annual harvest and was approximately 75% less than the 1966–2017 average annual harvest in this fishery of 9,141 fish. In 2018, the peak daily harvest of 465 Chinook salmon of all stocks occurred on July 12, and the peak harvest week was from July 4 to July 12. The daily average harvest of Chinook salmon of all stocks per day was 105 fish (range 2 to 465) and the daily average percentage of total harvest of all stocks per day equaled 5% (range 0.08% to 20%) (Appendix A3). Of the 2,311 total year end Chinook salmon harvested in the ESSN fishery, an estimated 555 (24%) were large Kenai River mainstem (late-run) stock, based on sampling of the commercial catch (T. Eskelin, Division of Sport Fish, ADF&G, Soldotna, personal communication). Applying 24% to daily harvests, the 2018 estimated daily harvest of large Chinook salmon of the Kenai River mainstem stock in the 2018 ESSN fishery ranged from 1 to 111 fish.

SOCKEYE SALMON

Management of the UCI sockeye salmon fishery integrates information from a variety of programs, which together provide an inseason model of the actual annual run. These programs include: an offshore test fishery (OTF) that creates an index of run strength and timing; passage and escapement counts by sonar, weir, remote camera, and various mark-recapture studies (Shields and Dupuis 2015); comparative analyses of historical commercial harvest and effort levels; genetic stock identification (GSI); and age composition studies. Inseason analyses of the age composition of sockeye salmon escapement into the principal watersheds of UCI provides information necessary to estimate the stock contribution in various commercial fisheries by comparing age and size data in the escapement with that in the commercial harvest (Tobias and Tarbox 1999). Beginning in 2005, a comprehensive sampling program was initiated to estimate the stock composition of sockeye salmon harvested in UCI commercial fisheries using improved

GSI analyses. Publications of GSI data describing the UCI sockeye salmon catch allocation are available for the years 2005–2016 (Barclay 2017).

OTF assessments in UCI have been conducted since 1979. During the OTF project in 2018, a State of Alaska vessel (R/V *Solstice*) fished 6 fixed stations along a transect across southern Cook Inlet from Anchor Point to the Red River delta (Frothingham and Willette 2018). The OTF program was used to provide an inseason estimate of sockeye salmon run strength by determining the passage rate, which was an estimate of the number of sockeye salmon that enter the district per index point or catch per unit of effort (CPUE) statistic (Appendix A1). The cumulative CPUE curve was then compared to historical run timing profiles so that an estimate could be made of the final CPUE during the season. This in turn provided an inseason estimate of the total run of sockeye salmon to UCI. Based on OTF data, the timing of the 2018 sockeye salmon run was estimated to be approximately 4 days late, and well below forecast (R. DeCino, Division of Commercial Fisheries, ADF&G, Soldotna, personal communication).

Both sonar (hydroacoustics) and weirs are used to estimate inseason abundance of sockeye salmon. Sonar technology was first employed to quantify sockeye salmon escapement into glacial rivers in UCI in the Kenai and Kasilof rivers in 1968, then expanded to the Susitna River in 1978, and the Crescent River in 1979 (Westerman and Willette 2011). In 2011, ADF&G transitioned from older Bendix sonar systems to DIDSON (Westerman and Willette 2011) in both the Kenai and Kasilof rivers. The sockeye salmon sonar project in the Yentna River was terminated after the 2008 season when a comprehensive mark–recapture study in the Susitna River drainage verified that sockeye salmon passage estimates in the Yentna River were low due to fish wheel selectivity bias (Appendix A12; Yanusz et al. 2007). Based on this information, beginning in 2009, the Yentna River sockeye salmon SEG was replaced with 3 weir-based SEGs at Chelatna and Judd Lakes in the Yentna River drainage and at Larson Lake in the Susitna River drainage (Fair et al. 2009). At the 2017 BOF meeting, these 3 SEGs were modified (Table 1; Erikson et al. 2017) after incorporating 7 years of additional escapement data using the new 3-tier percentile approach (Clark et al. 2014). The new SEGs are 20,000–45,000 fish at Chelatna Lake, 15,000–40,000 at Judd Lake, and 15,000–35,000 at Larson Lake. A sonar project on the Crescent River, operational since 1979, was discontinued in 2013 due to a lack of funding. Age composition of adult sockeye salmon returning to certain systems was also assessed at weir sites detailed in Appendix A13.

In addition to the weirs in the Susitna River drainage, an adult salmon weir was operated by the Division of Sport Fish at Fish Creek (Knik Arm) and provided daily sockeye salmon escapement counts. Historically, a counting weir has also been employed at the outlet of Packers Lake (on Kalgin Island) but has since been replaced by a remote video camera system (Appendix B10; Shields and Dupuis 2012). The camera system was in operation from 2005 to 2006 and 2009 through 2018. However, in 2006, an electronic malfunction did not allow for a complete census of the escapement. From 2010 to 2013, and in 2016–2018, technical difficulties prevented retrieval of some data, but minimum counts were obtained. A complete count of the escapement into Packers Lake was obtained in 2014 and 2015 (Shields and Frothingham 2018).

In 2018, approximately 4.6 million sockeye salmon were forecast to return to UCI (Table 3; Appendix C1). The actual 2018 run estimate totaled 3.1 million fish, which was 32% less than the preseason forecast. The 2018 sport fishery harvests were not available; therefore, sport harvest was estimated by comparing previous years' catches from similar sized runs. Of the expected run of 4.6 million sockeye salmon, approximately 2.0 million fish were expected to

escape all fisheries, leaving 2.6 million sockeye salmon available for harvest to all users. If sport and personal use harvests in 2018 were similar in proportion to previous runs of this size, the commercial catch in 2018 was projected to be approximately 1.9 million sockeye salmon. The actual 2018 commercial sockeye salmon harvest of 818,000 fish (Appendices A4 and B2) was well below preseason expectations. Drift gillnet fishermen accounted for approximately 49% of the 2018 commercial sockeye salmon harvest, or 400,285 fish and set gillnet fishermen caught 51% of the commercial harvest, or 417,000 sockeye salmon (Appendix B2). The 2018 run was allocated to individual river systems inseason using a weighted age-composition catch allocation method (Tobias and Tarbox 1999). GSI samples were collected from the 2018 commercial harvest and will be analyzed later. The last reported commercial fishing activity in any area of UCI in 2018 was September 17.

In 2018, the total sockeye salmon harvest from commercial, sport, personal use, subsistence, and educational fisheries was estimated at 1.4 million fish (Appendix A22). This amount was approximately 61% less than the 1996–2017 average annual harvest of 3.6 million fish (for the Kenai River, these data include late-run sockeye salmon only) and 46% less than preseason expectations (Appendix A22). The 2018 sport harvest was estimated based on harvest from similar sized runs. The 2018 personal use harvest estimate of approximately 292,000 sockeye salmon was 16% less than the average annual harvest of 349,000 fish from 1996 to 2017. For more details about the specifics of personal use harvests, including demographics, see Reimer and Sigurdsson (2004), Dunker and Lafferty (2007), and Dunker (2010).

The average price paid per pound for all commercially harvested salmon are typically higher earlier in the season and declines as the season progresses (Appendix B11). Average prices reported here are generated from inseason grounds prices and do not reflect any postseason adjustments. Based on these estimated prices, the total exvessel value of the 2018 salmon fishery was approximately \$12 million (Appendix B7). Using an average price of \$2.04/lb (Appendix B11), the exvessel value for sockeye salmon was estimated to be \$10.1 million, which was 63% less than the previous 2008–2017 average value of \$27.6 million. In addition, sockeye salmon made up 82% of the 2018 total exvessel value, 10% less than the average proportion, and the lowest in proportion since 1991 (Appendix B7).

Big River

The first commercial salmon fishery to open in UCI in 2018 was the Big River fishery, which is managed under the *Big River Sockeye Salmon Management Plan* (5 AAC 21.368). This plan was adopted in 1989 and allows a small set gillnet fishery in the northwest corner of the Central District. At the 2005 BOF meeting, the plan was modified to expand the area open to fishing to include the waters along the west side of Kalgin Island. Between June 1 and June 24, fishing is allowed each Monday, Wednesday, and Friday from 7:00 AM to 7:00 PM. Permit holders are limited to a single 35 fathom set gillnet, and the minimum distance between nets is 1,800 feet, which is 3 times the normal separation of gear. Although targeting an early-run of sockeye salmon returning to Big River, this fishery also encounters Chinook salmon migrating through the area. The management plan limits the harvest of Chinook salmon to no more than 1,000 fish per year. Since 2005, when the management plan was changed, the average annual Chinook salmon harvest has been 450 fish, which was well below the 1,000 fish cap. Since 2005, the average annual sockeye salmon harvest has been 15,254 fish. The 2018 fishery began on Friday, June 1, and harvests were reported from 10 different days, yielding a total harvest of 5,994 sockeye and 341 Chinook salmon (Appendices A3 and A4). Of the total 2018 harvest,

81% of the Chinook and 59% of the sockeye salmon were caught in the Kalgin Island west side waters, which is Statistical Area 246-10 (Figure 3). There were 15 permit holders in 2018 who reported participating in the fishery on its peak day of June 20, which was less than half the historical highest peak number of participating permit holders for this fishery.

Western Subdistrict

The 2nd commercial fishery to open in 2018 was the set gillnet fishery in the Western Subdistrict of the Central District. This fishery opens on the first Monday or Thursday on or after June 16, and the regular fishing schedule consists of two 12-hour weekly fishing periods (Mondays and Thursdays) throughout the season, unless modified by EO. The fishery primarily targets sockeye salmon bound for Crescent Lake.

The Crescent River sockeye salmon sonar project has not been in operation since 2012. When it was operational, the set gillnet fishery in this area was often expanded to fishing 24 hours per day, 7 days per week in an attempt to keep escapement into Crescent Lake from exceeding the escapement goal range of 30,000–70,000 fish. In 2018, the Western Subdistrict set gillnet fishery opened for the season on Monday, June 18, and remained open for regular Monday and Thursday fishing periods through Thursday, July 5. An examination of sockeye salmon harvest near the Crescent River was similar to harvest in years when escapements fell within or exceeded the escapement goal range. Therefore, EO No. 8 was issued on July 7, opening that portion of the Western Subdistrict south of the latitude of Redoubt Point from 6:00 AM until 10:00 PM on Mondays, Thursdays, and Saturdays, beginning on Saturday, July 7. This fishing schedule remained in place until 10:00 PM on Monday, August 6, when EO No. 26 was issued, returning the fishery to its regular schedule of 2 fishing periods per week beginning on Thursday, August 9. In 2018, approximately 36,000 sockeye salmon were harvested by 17 permit holders fishing in the Western Subdistrict set gillnet fishery, which was 18% less than the 2008–2017 average annual harvest of approximately 44,000 fish (Appendices A8 and B2).

Northern District

The set gillnet fishery in the Northern District opens by regulation on or after June 25 for regular Monday and Thursday 12-hour periods. This fishery is managed primarily by the *Northern District Salmon Management Plan* (NDSMP; 5 AAC 21.358), and the *Susitna River Sockeye Salmon Action Plan* (SSSAP). The intent of these plans is to allow a mixed-stock commercial fishery while minimizing the harvest of NCI coho salmon and conserving Susitna River sockeye salmon.

At the 2008 BOF meeting, Susitna River sockeye salmon were found to be a stock of yield concern. No change was made to this assessment during the 2011 UCI BOF meeting. At the 2013 BOF work session, ADF&G recommended Susitna River sockeye salmon remain classified as a stock of yield concern because: 1) 5 of the lake escapement goals (out of 15 total) were below the minimum goal, and 2) harvests in Central and Northern Districts from 2008 through 2013 were generally less than long-term averages. Research studies are ongoing to better understand sockeye salmon abundance and distribution. According to the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222), a stock of yield concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock’s escapement needs; a yield concern is less severe than a management concern, which is less severe than a conservation concern.” As a result of this finding, an action plan was developed by ADF&G and

the BOF to identify conservative management measures in both the sport and commercial fisheries targeting Susitna River sockeye salmon stocks. Adopted by the BOF at the 2008 meeting, the SSSAP included the following statement: “In light of recent ADF&G data revealing concerns about the validity of Yentna River sockeye salmon count data, it is the intent of the BOF that Susitna River sockeye salmon stocks will be conservatively managed while ADF&G continues its studies in this drainage.” At the 2017 BOF meeting, ADF&G recommended Susitna River sockeye salmon remain a stock of yield concern, which the BOF approved.

In 2018, management of the Northern District set gillnet fishery was guided by provisions within the NDSMP and the SSSAP. These plans allow ADF&G to reduce the total allowable gear in the Northern District from July 20 through August 6 in order to aid in achieving the escapement goals at Judd, Chelatna, and Larson Lakes. EO No. 17 was issued on July 22 reducing legal gear in the General Subdistrict to 1 set gillnet per permit, and gear was reduced in the Eastern Subdistrict to no more than 2 set gillnets per permit. On Wednesday, August 1, EO No. 22 was released, which modified EO No. 17 and changed legal gear for that portion of the General Subdistrict of the Northern District, south of the Susitna River, and all of the Eastern Subdistrict to no more than 2 set gillnets per permit. That portion of the General Subdistrict east of the Susitna River remained limited to no more than 1 set gillnet per permit. On Monday, August 9, gear restrictions imposed by the NDSMP and the SSSAP expired and a full complement of gear became legal for the remainder of the season. In 2018, approximately 52,500 sockeye salmon were harvested by 73 permit holders in the Northern District set gillnet fishery (Appendices A4 and B2). This harvest was approximately 37% greater than the 2008–2017 average annual harvest of 38,261, similar to 2017, and was the third highest sockeye salmon harvest in the Northern District since 1999 (Appendix B2). Low fishing hours south of the district, in the Central District, due to Kenai River Chinook and sockeye salmon shortages, may contribute to high harvest spikes in the Northern District.

ESSN and Central District Drift Gillnet

At the 2014 BOF meeting, numerous changes to management of the ESSN fishery during years of low Kenai River Chinook salmon abundance were adopted which can have a large effect on sockeye salmon harvest (Shields and Dupuis 2017). Management of this fishery is now guided by 5 AAC 21.365, the *Kasilof River Salmon Management Plan* (KRSMP); 5 AAC 21.360, the *Kenai River Late-Run Sockeye Salmon Management Plan* (KRLSSMP); and 5 AAC 21.359, the KRLKSMP. In addition, the BOF also made fairly substantive changes to 5 AAC 21.353, the *Central District Drift Gillnet Fishery Management Plan* (CDDGFMP), in an attempt to pass more coho salmon to streams in NCI. At the 2017 BOF meeting, some of the changes made at the 2014 meeting were modified (Appendix C).

Within the KRSMP and KRLSSMP, there are 2 principal restrictions to the ESSN fishery that must be met each management week: 1) a limit on the number of additional hours that may be fished each week beyond the 2 regular 12-hour fishing periods, and 2) implementation of weekly closed fishing periods (or “windows”). By regulation, a week is defined as a period of time beginning at 12:01 AM Sunday and ending at 12:00 midnight the following Saturday (5 AAC 21.360 (i)). Weekly hour limitations vary according to the time of year and the size of the sockeye salmon run returning to the Kenai River. Restrictions to these fisheries must be balanced with meeting escapement goals, as provided for in 5 AAC 21.363, the *Upper Cook Inlet Salmon Management Plan* (UCISMP), which states, that although in most circumstances, ADF&G should adhere to the management plans in the chapter, no provision within a specific

management plan was intended to limit the commissioner's use of EO authority, under AS 16.06.060, to achieve established escapement goals in the management plans.

The Kasilof Section set gillnet fishery is open from June 25 through August 15. However, if 50,000 sockeye salmon are in the Kasilof River before June 25, the season may begin as early as June 20. The Kenai and East Foreland sections are open from July 8 through August 15. Beginning July 8, the Kasilof Section is managed in concert with the Kenai and East Foreland sections per the KRLSSMP. Drift gillnet fishing in the Central District of UCI opens on the third Monday in June, or June 19, whichever is later.

The 2018 commercial drift gillnet season began on Thursday, June 21, as provided for in the CDDGFMP. The drift fleet opening day harvest of approximately 1,200 sockeye salmon was below average for early in the season, as was the CPUE of 23 fish/boat (average of 45 fish/boat) (Appendix A4). Drifting was open for 1 regular period on June 21 that first week. The cumulative harvest after the first week of about 1,200 sockeye salmon was well below average (Appendix A4). Through June 20, only 8,600 sockeye salmon had passed the Kasilof River sonar counter (Appendix A2). Thus, the Kasilof Section setnet fishery was not opened until June 25. Per KRLSSMP, the total hours available were the 2 regular Monday and Thursday 12-hour periods, and 51 potential EO hours. Sockeye salmon passage in the Kasilof River through June 24 was 23,477 fish (Appendix A2). Approximately 11,500 sockeye salmon were harvested in the setnet fishery during the first fishing period, which was lower than any opening day harvest for the last 10 years (Appendix A4).

During the management week of June 24 to June 30, the drift gillnet fleet fished the regularly scheduled 12-hour districtwide fishing periods on June 25 and June 28, as well as 1 additional day in the regular Kasilof Section (Figure 6), which was a 14-hour period on June 30 (Appendices A10 and A11). The Kasilof Section set gillnet fishery was opened for the same schedule as the drift gillnet fishery during this week. Sockeye salmon passage into the Kasilof River through June 30 had reached only 38,000 fish (Appendix A2). Typically, passage into the Kasilof River through June 30 is about 24% complete, as such the June passage total projected a final passage of approximately 152,000 fish, well below the lower end of the BEG of 160,000 fish. The Kenai River sockeye salmon sonar project began count activities on July 1 and a first day passage estimate of 2,000 fish. For the week, drifters harvested approximately 20,000 sockeye salmon, and Kasilof Section setnetters harvested 36,000 sockeye salmon.

During the management week of July 1–7, the drift and set gillnet fisheries were both open for the 2 regular 12-hour periods on Monday and Thursday, with no extensions. The Kasilof Section was opened an additional 4 hours on July 4, and 8 hours on July 7 for both set and drift gillnets (Appendices A10 and A11). The total number of hours fished was 36 and the 36-hour no-fishing weekly “window” was implemented (Table 4). Drifters harvested approximately 88,500 sockeye salmon and setnetters took about 29,000 fish during the week (Appendix A4). Sockeye salmon passage in the Kasilof River through July 7 was estimated to be approximately 75,400 fish, which projected a final passage total of 216,000 fish based on average run timing (Appendix A2). The Kenai River sockeye salmon passage estimate through July 8 was 32,000 fish, and the run was typically only 4% complete through this date.

The week of July 8–14 marked the first time the entire ESSN fishery was open because this week included opening days for the Kenai and East Foreland sections along with continued openings in the Kasilof Section (Appendices A10 and A11). This management week also lined up with the

July 9–15 time period when mandatory area restrictions to the drift fishery per the CDDGFMP must occur. Thus, in compliance with this plan, the regularly scheduled drift gillnet fishing periods on July 9 and July 12 were restricted to Drift Area 1 and the Expanded Kenai and Expanded Kasilof sections (Figures 7 and 8). The preseason forecast for Kenai River sockeye salmon (Appendix C1) anticipated a total run greater than 2.3 million fish, and with this forecast, the KRLSSMP would allow up to 51 hours of additional fishing time during the week in the ESSN fishery. However, the implementation of the KRLKSMP (*Kenai River Late-Run King Salmon Management Plan*) limited fishing to a total of no more than 48 hours each week by EO south of the East Foreland Section. Both Monday and Thursday regular fishing periods occurred this week in the East Foreland section, as did coinciding EO openers for the remaining ESSN areas of the Kenai and Kasilof sections. The Kasilof Section setnet fishery was also opened and restricted to one-half mile from shore on July 14 for 12 additional hours. All additional fishing time during the week for the drift fishery was confined to the Expanded Kenai and Expanded Kasilof sections. At the end of the week, no additional fishing time had occurred in East Foreland section, where only the regular fishing periods were used, while 24 hours by EO were used in the Kenai Section and 36 hours in the Kasilof section. The estimated sockeye salmon harvest in the drift fishery for the week was 168,000 fish, and the setnet fishery harvested approximately 56,000 fish (Appendix A4). In the Kasilof River, the estimated total sockeye salmon passage through July 15 was 124,000 fish, which projected a final passage estimate of 271,000 fish based on average run timing (Appendix A2). Sockeye salmon passage in the Kenai River had reached 98,000 fish through July 15, projecting a season final passage of 805,000 fish based on average run timing.

The management week of July 15–21 presented challenges to commercial fishery management driven primarily by decreasing sockeye salmon passage into the Kenai River combined with low Chinook salmon abundance. The Kenai River Chinook salmon sport fishery was further restricted to no retention on July 18, which further limited hours in the Kenai and Kasilof sections of the ESSN fishery to no more than 24 total hours by EO only. The East Foreland section was fished only 1 time during the week, that being the regularly scheduled period on Monday, July 16 (Appendices A10 and A11). The Kasilof Section set gillnet fishery was open for 7 hours on Wednesday, July 18, but only within 600 feet of the mean high tide. Fishing periods were also open in the for 12 hours on Thursday, July 19, within one-half mile of shore in the Kasilof Section, and within 600 feet of shore in The North K. Beach Statistical Area (244-32) of the Kenai Section. On Saturday July 21, fishing was again open within one-half mile of shore in the Kasilof Section, and within 600 feet of shore in the North K. Beach Statistical Area. Setnetting was not open in the East Foreland Section (244-42) on Wednesday, Thursday, or Saturday during the week, and setnetting in the Salamatof Statistical Area (244-41) was not opened at all. The drift fleet was restricted to the Expanded Kenai and Expanded Kasilof sections, as required by the CDDGFMP, on Monday, but drift fishing was closed entirely for Thursday. The estimated passage of sockeye salmon into the Kasilof River was 127,000 fish and projected a total passage for the year of 255,000 fish based on average run timing (Appendix A2). At the beginning of the week in the Kenai River, the estimated sockeye salmon passage through July 15 was 105,000 fish, which projected a total passage of 675,000–1.1 million fish for on-time runs to 3-day late runs. However, as the week progressed, Kenai River run entry slowed and by July 17 the year-end inriver run projection was below 900,000 fish, even at 3 days late run timing. The drift fishery harvested 81,812 sockeye salmon, and the setnet fishery took 72,000 fish during the week (Appendix A4). The total sockeye

salmon commercial harvest through July 22 was 588,000 fish, which was well below pace to achieve the preseason commercial harvest forecast (Appendix C2) of 1.70 million sockeye salmon by year's end.

The July 22–28 management week started with an improvement to sockeye salmon passage in the Kenai River spurred by a daily passage on July 21 of 62,000 fish (Appendix A2), and stabilization of Chinook salmon projections within the SEG range (Lipka et al. *In prep*). During the week, the regularly scheduled fishing period on Monday July 23 was open for the entire ESSN fishery, and with drift nets in Drift Area 1 plus the expanded Kasilof and Kenai sections (Appendices A10 and A11). Although Chinook salmon counts remained stable throughout the week, sockeye salmon daily counts decreased after July 22, and as such, the Thursday ESSN commercial opening was restricted to within 600 feet of shore in the Kasilof Section only; all other areas in the ESSN fishery were closed, as was the drift fleet. An additional fishing period restricted to within 600 feet of shore was allowed in the Kasilof Section only on Saturday, July 28, to target Kasilof River sockeye salmon. The North K. Beach Statistical Area was not opened during this management week because the results from an inseason genetic mixed stock analysis of fish sampled from the preceding week's harvest of the area showed that, when fishing was restricted within 600 feet of shore, 47.6% (90% credibility interval: 38.8–57.3%) of the harvest was composed of Kenai River origin sockeye salmon (A. Barclay, Division of Commercial Fisheries, ADF&G Genetics Lab, Anchorage, personal communication). The estimated passage in the Kenai River through Sunday, July 22, had reached 270,000 fish, which now projected a final passage of greater than 900,000 fish for runs 4 days late, but this projection decreased quickly after that date. Passage in the Kasilof River through July 22 was 220,000 fish, projecting in excess of 320,000 sockeye salmon.

On July 24, UCI Commercial Fisheries staff completed an inseason assessment of the sockeye salmon run to date and estimated the Kenai River sockeye salmon run would be less than 2.3 million fish and would probably be 1 to 3 days late in run timing. Based on this assessment, the ESSN and Central District drift gillnet commercial fisheries changed to management plan provisions for runs less than 2.3 million sockeye salmon. Changes to 2018 management due to the lowered run abundance included a decrease to the Kenai River inriver goal from 1,000,000–1,300,000 fish to 900,000–1,100,000 fish. The ESSN fishery (except for the E. Foreland Section) remained limited to fishing no more than 24 hours (Appendix A10) by EO due to low Chinook salmon abundance. The Friday 36-hour no-fishing window was still in effect. For the week, drifters harvested 34,000 sockeye salmon for a season total of 394,000 fish (Appendix A4), and setnetters harvested 50,000 sockeye salmon for a season total of 278,000 fish.

During the week of July 29–August 4, the set and drift gillnet fisheries were closed entirely (Appendix A10) due to a continued slump in sockeye salmon abundance in the Kenai River. The paired restrictive provisions found in the KRLKSMP ended on July 31, by regulation. By the end of the week, the cumulative passage in the Kenai River was only 667,000 sockeye salmon, which projected a final passage of less than 750,000 fish (Appendix A2). In the Kasilof River, passage through August 4 was 339,000 sockeye salmon, which projected a final passage of 363,000–376,000 fish. Because no periods were open, no sockeye salmon were harvested during this week (Appendix A4).

The last full week of the 2018 ESSN season was August 5 to August 11. The regularly scheduled fishing period on Monday, August 6, was closed in the entire ESSN fishery as was the districtwide drift period. Both actions were taken to reduce the harvest of Kenai River sockeye

salmon (Appendices A10 and A11). Drift gillnetting was opened for a 12-hour period in Drift Gillnet Area 3 only on Tuesday, August 7. The KRSHA was opened to set and drift gillnetting on August 8 to focus harvest pressure on Kasilof River sockeye salmon; this area remained open for the remainder of the management week. Utilization of the KRSHA instead of the 600 foot fishery in the Kasilof Section was necessary due to continued low sockeye salmon run entry in the Kenai River, and also in response to very high sockeye salmon passage in the Kasilof River, where the BEG had already been exceeded and the OEG of 160,000 to 390,000 was projected to be exceeded without additional harvest of this stock (Appendix A2). During the week, a total of 9,800 sockeye salmon were harvested by setnets in the KRSHA and 3,900 by drift gillnets (Appendix A4). By August 12, sockeye salmon passage in the Kenai River had increased some and the total count had reached 727,500, which projected a season total of 788,000 to 820,000 fish for on-time to 3-day late runs. In the Kasilof River, the cumulative sockeye salmon passage through August 11 was 388,000 fish, projecting a season total of 395,000–400,000 fish that were on-time to 3-days late.

The final management week of Upper Subdistrict fishing occurred from Sunday, August 12, to Wednesday, August 15. By regulation, the ESSN fishery closes no later than August 15, and after that date the Central District drift gillnet fishery is open for Monday/Thursday fishing periods in Drift Gillnet Areas 3 and 4 (Figure 9). An extension of the previous week's KRSHA opener continued through 8:00 AM on August 12 (Appendix A10). The regularly scheduled fishing period for the ESSN fishery and full Central District drift fishery on Monday, August 13, was closed by EO; however, drift gillnetting was again allowed in Drift Gillnet Area 3 only for this period. For the week, the set gillnet fishery harvested approximately 1,600 sockeye salmon in the KRSHA, and drifters harvested 1 (Appendix A4). The season total harvest for the ESSN fishery was 290,000 fish, and the drift fleet season total was 398,000 fish (Appendices A4 and B2). Total EO hours used in the ESSN fishery in 2018 was considerably below that allowed by regulation (Table 4) due to low late run Chinook salmon abundance, as well as low abundance and very late run timing of sockeye salmon in the Kenai River.

The drift fleet was restricted to Drift Areas 3 and 4 beginning on Wednesday, August 16, by management plan provision. However, extraordinarily late run entry of sockeye salmon into the Kenai River from August 16 through August 21 prompted a late expansion of the drift opener on August 23 to include Area 1 in addition to drift Areas 3 and 4 (Appendices A10 and A11). Only 200 sockeye salmon were harvested (Appendix A4) by 26 drift boats that day, indicating no major abundance of sockeye salmon were left in Drift Area 1. Sockeye salmon counts in the Kenai River decreased rapidly after August 25 (Appendix A2).

Aerial surveys of Chinitna River/Clearwater Creek conducted in August of 2018 produced estimates below the SEG for Chinitna River/Clearwater Creek chum salmon (SEG: 3,500–8,000 fish). As such, Chinitna Bay was not opened to drift gillnetting until August 31, when the chum salmon run is nearly complete (Appendices A10 and A11). The drift fleet harvested an additional 2,000 sockeye salmon in Drift Areas 3 and 4 and approximately 60 sockeye salmon in Chinitna Bay for the remainder of the 2018 season (Appendix A4).

The 2018 total sockeye salmon harvest for drift gillnetters was approximately 400,000 fish, which represented 49% of the UCI total harvest (Appendix B2). This was the lowest harvest in the drift fleet since 1975, and more than 1.2 million fish less than the 2008–2017 average of nearly 1.6 million fish. The ESSN fishery total sockeye salmon harvest was approximately

290,000 fish, or 35% of the UCI total harvest. This harvest was about 700,000 fish less than the 2008–2017 average of 1 million fish (Appendix B2).

In 2018, sockeye salmon passage was monitored in the Kasilof River through August 14, producing a final estimate of 394,288 fish (Appendix A2). Of the previous 10 years passage, only 3 were higher than this value and 7 were lower (Appendix B10). The OEG for Kasilof River sockeye salmon for 2018 of 160,000–390,000 (used only when the lower end of the Kenai River escapement goal is in jeopardy) was exceeded by nearly 4,000 fish, whereas the BEG (160,000 to 340,000) was exceeded by approximately 50,000 fish. The Kenai River sockeye salmon sonar project was operational through August 28, producing a final passage estimate of 1,034,771 fish, thereby landing nearly in the middle of the inriver goal of 900,000 to 1,100,000 fish. Once sport fishing harvest above the sonar is subtracted, the SEG of 700,000–1,200,000 fish was probably met.

The midpoint of the 2018 sockeye salmon run measured at the Anchor Point OTF transect occurred on July 20, which was 4 days later than the historical average date of July 16. The cumulative sockeye salmon catch from the 2018 OTF was the second lowest since 1992 and the cumulative OTF CPUE was third lowest since 1992 (Appendix A1). At the Kasilof River sonar site, 50% of the 2018 sockeye salmon passage was reached on July 20 (Appendix A2), which was 5 days later than the 2008–2017 average date of July 15. In the Kenai River, 50% of the total 2018 sockeye salmon count had passed the sonar on August 4, which was 11 days later than the 2008–2017 average 50% date of July 23.

Kalgin Island Subdistrict

The total sockeye salmon harvest in the Kalgin Island Subdistrict in 2018 was estimated to be 36,367 fish. Approximately 3,550 fish, or 10% of the season total, was harvested on the west side of the island (Statistical Area 246-10) during the Big River sockeye salmon fishery, which occurs from June 1 to June 24 (Appendix A4). The 2018 Kalgin Island Subdistrict sockeye salmon harvest was 32% less than the 2008–2017 average annual harvest of approximately 53,000 fish. In 2018, a remote video system was once again used to estimate sockeye salmon escapement into Packers Lake. The video recording system operated from June 15 through August 24, producing a sockeye salmon escapement estimate of 16,247 fish. The solar panels and wind generator failed to provide enough power to operate the recorder in late August, which resulted in an incomplete census of the escapement. Although the count of the escapement was incomplete, enough data was collected to show that the sockeye salmon SEG for Packers Lake of 15,000–30,000 fish was achieved. No additional fishing time was provided in the Kalgin Island Subdistrict in 2018 beyond regular periods (Appendices A10 and A11).

COHO SALMON

The 2018 UCI commercial coho salmon harvest of 232,000 fish was approximately 29% greater than the 2008–2017 average annual harvest of approximately 180,000 fish but was approximately 19% less than the 1966–2017 average annual harvest of 289,000 coho salmon (Appendix B3).

The largest harvest of UCI coho salmon occurs in the UCI drift fishery (Appendix A5), where 109,000 fish were harvested in 2018, which was about equal to the 2008–2017 average annual harvest of 107,000 fish and 25% less than the 1966–2017 average annual harvest of 146,000 fish. Coho salmon catches in the OTF fishery were the highest observed since 2008 (1,157)

(Appendix A1). Along with the large OTF catch for coho salmon, and the good commercial catch, all coho salmon escapement goals were achieved or exceeded. Coho salmon escapement objectives were either projected well above the goal, such as in the Little Susitna River (7,583 projecting to 26,000 when weir was lost), within the goal, such as in the Deshka River (12,262), or exceeded the goal, such as in Fish Creek (5,203). The postseason foot survey at Jim Creek of 1,215 fish also exceeded the SEG of 450–700 fish for this system (Oslund et al. *In prep*).

Chinitna Bay was opened to drift gillnetting on Tuesdays and Fridays, beginning on Friday, August 31 (Appendices A10 and A11). The estimated coho salmon harvest by drifters in Chinitna Bay was 2,277 fish (Appendix A5).

The exvessel value of coho salmon from the 2018 UCI commercial fishery was \$1.4 million, or 11% of the total exvessel value (Appendix B7). The average price paid for coho salmon was estimated at \$0.94/lb (Appendix B11), which was the second highest price since 1988. Typically, the price paid for coho salmon in August and September is higher than July pricing.

PINK SALMON

Pink salmon runs in UCI are even-year dominant. Odd-year average harvests are typically about 15% of even-year harvests (Appendices A6 and B4). The 2018 UCI commercial pink salmon harvest of 126,923 fish was 67% less than the 2008–2017 average annual harvest of 386,000 fish. Chinook and sockeye salmon time restrictions to the drift and ESSN fisheries undoubtedly resulted in lower pink salmon harvests in 2018. Based on an average weight of 3.8 lb/fish (Appendix B12) and an average price of \$0.25 a pound (Appendix B11), the estimated exvessel value for the 2018 pink salmon harvest was \$115,431 or 0.9 % of the total exvessel value (Appendix B7).

CHUM SALMON

A total of 115,366 chum salmon were harvested by UCI commercial fishermen in 2018, which was 33% less than the 2008–2017 average annual harvest of 172,000 fish (Appendix B5). Similar to pink salmon, the above average harvest of chum salmon in 2018 should be viewed in light of the greatly diminished fishing time provided to the drift fleet in 2018 due to sockeye salmon shortfalls in the Kenai River. Drifters are the largest harvesters of chum salmon, capturing 94% of the total chum salmon harvest in the past 10 years. The 2018 exvessel value for chum salmon was \$569,659, or 4.6% of the overall exvessel value of the 2018 fishery (Appendix B7). The average price paid for chum salmon in 2018 was estimated to be \$0.68 per pound (Appendix B11), which was about \$0.12 a pound more than the previous 10-year average.

PRICE, AVERAGE WEIGHT, AND PARTICIPATION

The estimated price per pound paid to UCI commercial fishermen for their harvest in 2018 was higher than the 2008–2017 average for all species. (Appendix B11). The estimate of \$2.04 per pound for sockeye salmon was \$0.18 more than the \$1.86 a pound paid in 2017, and \$0.40 more than the 2008–2017 average annual price of \$1.64. Calculating the average price for what fishermen receive for their harvest is difficult (Shields and Dupuis 2013). Average prices reported here are generated from inseason grounds prices and do not reflect any postseason adjustments. Harvest statistics showed that salmon size was variable in 2018 compared to previous years. The weights of salmon in the 2018 UCI commercial harvest showed a sockeye salmon yearly average weight

of 5.2 lb, which was the smallest yearly average ever (Appendix B12). The 13.8 lb yearly average weight of Chinook salmon was also the smallest ever, but the yearly average weight of 8.3 lb for chum salmon was the largest yearly average ever. The yearly average pink salmon weight of 3.8 lb and yearly average weight of 6.3 lb for coho salmon were very close to the previous 10-year averages.

In 2018, the Chinook salmon yearly average weight dropped back significantly to a value lowest yet recorded from its increase in 2017, similar to the very small average weight seen in 2013. As noted by Shields and Dupuis (2017), the small size of commercially harvested Chinook salmon in 2018, as well as most of the recent years other than 2017, was probably due to the age of the fish in the harvest. For example, from 2001 to 2018, the age composition of Chinook salmon harvested in the ESSN fishery averaged 44% for fish that had spent 2 years or less in salt water. This was about twice the 1987–2000 average of 22% for these age classes (Figure 10; Appendix A15)

The Commercial Fisheries Entry Commission (CFEC) reported that 576 active drift gillnet permits were issued in 2018, of which 430 (75%) were issued to Alaskan residents (Appendix B13). In the setnet fishery, CFEC reported that 740 permits were issued of which 621 (84%) were issued to Alaskan residents. In 2018, 446 drift gillnet permits and 490 set gillnet permits reported fishing in UCI (Appendix A8). In the drift fishery, 96 vessels and 100 different permits were reported fishing as part of a dual-permit operation. Farrington et al. (2014) discuss detailed information about dual-permit fishing operations in the Cook Inlet drift gillnet fishery.

Ten major fish processors (Appendix A16), out of a total of 17 shore-based processors, purchased UCI fish in 2018, as well as 14 direct marketing vessels, 3 catcher-exporters, 2 buyer-exporters, and 42 catcher-sellers. A catcher-seller is defined in 5 AAC 39.130(k) as a “commercial fisherman who sells or attempts to sell unprocessed fish that were legally harvested by the catcher-seller.” These fish may be sold 1) to the general public for use for noncommercial purposes; 2) for use as bait for commercial or noncommercial purposes; 3) to restaurants, grocery stores, and established fish markets; or 4) by shipping the fish to a licensed buyer, processor, or exporter within the state.

Direct marketing means selling a product directly to a user at a higher point on the distribution chain than the primary processor (<http://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.marketers>).

SALMON ENHANCEMENT

Salmon enhancement through hatchery stocking has been a part of UCI salmon production since the early 1970s. Currently, there is a single private hatchery that is fully operational in UCI, the Trail Lakes facility operated by Cook Inlet Aquaculture Association (CIAA). The Trail Lakes hatchery is in the upper Kenai River drainage near Moose Pass. This hatchery was originally built and operated by ADF&G’s Fisheries Rehabilitation and Enhancement Division, but was subsequently leased to CIAA in 1990, as State of Alaska operating budgets declined. The Trail Lakes hatchery primarily produces sockeye salmon, but minor production of coho and Chinook salmon also occurs. Most of the production from this facility has benefited Lower Cook Inlet fishermen.

From 1975 to 2008, a sockeye salmon enhancement project was conducted at Big Lake, located in the Matanuska-Susitna Valley, approximately 15 miles west of Wasilla (Figure 1). ADF&G directed the stocking program from 1975 through 1992; beginning in 1993, CIAA took over the

program and was responsible for gamete collection, incubation, and release activities. As a result of poor fry survival in Big Lake, CIAA ceased their involvement in salmon enhancement activities after the 2008 season. Because the fry/smolt stocking program was terminated, CIAA also ceased the smolt count project at Fish Creek, the stream that runs out of Big Lake. After CIAA terminated their involvement in the smolt count project, ADF&G was able to secure funding to operate smolt count studies from 2011 to 2015. The Big Lake sockeye salmon smolt count project was discontinued in 2016 due to budget shortfalls (Table 5). CIAA conducts other activities that benefit wild salmon production, such as trapping and netting of northern pike *Esox lucius*, removal of beaver dams, installation and monitoring of flow control structures, and other seasonal barrier modifications.

The only lake in UCI currently stocked with sockeye salmon is Hidden Lake, which is located on the Kenai Peninsula. Production from this enhancement program contributes to the UCI commercial, personal use, educational, and recreational fisheries. In 2017, no hatchery fry were released into Hidden Lake because low sockeye salmon escapement into the lake in 2016 (only 1,225 adults) did not provide enough fish for broodstock collection. From May 16 to July 6, 2017 CIAA counted approximately 254,883 sockeye salmon smolt emigrating Hidden Lake, of which 55.3% were estimated to be of hatchery origin, and 93% were age-1 smolt (Wizik 2018). Adult salmon are also sampled and examined for hatchery otolith marks when they swim through the weir at Hidden Creek. In 2017, CIAA counted approximately 10,032 adult sockeye salmon returning to Hidden Lake. Based on thermal mark readings from 468 pairs of otoliths, 61% of the fish escaping into the lake were of hatchery origin. The dominant age class of the escapement were age-1.2 (85%) and age-2.2 (12%) (Wizik 2018).

STOCK STATUS AND OUTLOOK

Overall, the status of UCI monitored salmon stocks is positive. However, some stocks warrant additional management review due to low abundance. These stocks include Susitna River and Fish Creek (Big Lake) sockeye salmon and 7 Northern Cook Inlet Chinook salmon stocks.

SOCKEYE SALMON

Susitna River

The Susitna River sockeye salmon run forecast (Table 3) for 2018 of 329,000 fish was 18% less than the 2008–2017 average of 398,000. This forecast was derived using mean return per spawner by age class and mark–recapture estimates of spawner abundance for brood years 2006–2014. Sonar estimates of spawner abundance were not used, because mark–recapture studies have shown that the Yentna sonar project underestimated sockeye salmon escapement causing estimates of adult returns to also be underestimated. The 5 year mean absolute percent error (MAPE) for this forecast method is 17%. The predominant age classes in the 2018 Susitna sockeye salmon run forecast were age-1.2 (20%), and age-1.3 (57%).

The 2018 sockeye salmon actual run to the Susitna River was estimated at 256,000 fish (using the escapement and the mean harvest rate estimated from genetic stock composition of the commercial harvest in 2007–2010; Table 6). The 2018 run was about 22% less than the preseason forecast (Table 3). Weirs were operated on Susitna River drainage tributaries at Chelatna, Judd, and Larson Lakes. At Chelatna Lake, 20,438 fish were counted (SEG: 20,000–45,000; Table 1); at Judd Lake the count estimate was 30,683 (SEG: 15,000–40,000); and the weir estimate at Larson Lake was 23,444 (SEG: 15,000–35,000). Thus, even though the

total sockeye salmon run to the Susitna River was 18% less than the preseason forecast, all 3 SEGs were met.

Since 1976, Susitna River sockeye salmon total annual run estimates have ranged from 147,000 to 773,000 fish (Fair et al. 2009). As a result of undercounting sockeye salmon at the Yentna River sockeye salmon sonar site (Shields and Dupuis 2013), ADF&G initiated an out-of-cycle Susitna River sockeye salmon escapement goal review in late 2008 (Fair et al. 2009). This analysis concluded the existing escapement goal for the Susitna River drainage was inappropriate. The report from these analyses recommended that the Yentna River sockeye salmon SEG should be eliminated and replaced with SEGs for the 3 subdrainages of Chelatna, Judd, and Larson Lakes. Details about the declining sockeye salmon runs to the Susitna River drainage over the past decade are discussed in Shields (2007).

Susitna River sockeye salmon were first designated as a stock of yield concern in 2008. As a result of this classification, an action plan was developed by ADF&G and BOF to identify restrictive management measures in those fisheries harvesting Susitna River sockeye salmon stocks. These restrictions have undoubtedly reduced the harvest of Susitna sockeye salmon, but even with a reduction in harvest, Susitna sockeye salmon as a whole merit continued concern. In a memo to the BOF, dated October 3, 2016, ADF&G recommended no change to the stock of yield concern status for Susitna River sockeye salmon. In a separate memo presented to the BOF on the same date, recommendations were made regarding escapement goals at Chelatna, Judd, and Larson Lakes. With 7 additional years of escapement data since the lake goals were first developed, coupled with an updated methodology (Clark et al. 2014), the escapement goal committee recommended updating the SEG at Chelatna Lake to 20,000–45,000 fish; at Judd Lake, the recommendation was for an SEG of 15,000–40,000 fish; and at Larson Lake, the SEG recommendation was 15,000–35,000 fish. Thus, the lower end of the new goals did not change at Chelatna and Larson Lakes, but the upper bound of the SEGs for both lakes decreased. At Judd Lake, both the lower and upper end of the new SEG decreased as a result of the additional years of data and new escapement goal setting methodology.

A number of factors or activities have been identified that have potential negative effects on the production of salmonids in the Matanuska-Susitna basin⁴. Potential affects can be characterized in 2 different categories: natural and anthropogenic. Natural threats include natural loss or alteration of wetland and riparian habitats, alteration in water quality and quantity, and beaver dams blocking fish migration. Anthropogenic affects include urbanization that increases loss or alteration of wetlands and riparian habitats and decreases water quantity and quality; culverts that block or impair fish passage; ATV affects to spawning habitats, stream channels, wetlands and riparian habitats; and introduction of invasive northern pike.

In summary, Susitna River sockeye salmon stocks warrant continued close monitoring. Within the Susitna River drainage, sockeye salmon production from Judd, Chelatna, and Larson Lakes appears to be stable. However, there are other lakes within the drainage that are producing fewer adults than they once did, and some are now void of sockeye salmon altogether, such as Red Shirt Lake. Sockeye salmon production at Shell Lake, which has been estimated to have a production potential of 10% of the total production from the Susitna River drainage (Tarbox and

⁴ ADF&G Habitat Research and Restoration Staff. 2013. A comprehensive inventory of impaired anadromous fish habitats in the Matanuska-Susitna basin, with recommendations for restoration, 2013. Alaska Department of Fish and Game, Division of Habitat Research and Restoration. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2013-2014/uci/anadromous_fish.pdf (Accessed: December 2019).

Kyle 1989), has experienced a large decline in sockeye salmon abundance. CIAA has identified at least 4 contributing factors to the collapse: beaver dams blocking adult salmon passage; predation by invasive northern pike; and 2 diseases, proliferate kidney disease and *Loma salmonae*, a pathogen associated with pre-spawning mortality (Wizik 2016). This coming field season will mark the final year of CIAA's involvement with Alaska Sustainable Salmon Fund (AKSSF) project 44172, which was designed to mitigate northern pike predation on sockeye salmon in Shell Lake. In 2016, 759 northern pike were removed from Shell Lake, and an additional 784 northern pike were taken out in 2017, and 575 in 2018. A CIAA remote video camera at Shell Lake estimated 575 adult sockeye salmon escaping into the lake in 2017, which was the most fish observed there since 2011, but much less than the average escapement of approximately 13,000 sockeye salmon per year from 2001 to 2011. ADF&G and CIAA were awarded a 3-year (2018–2020) AKSSF project for northern pike suppression at Hewitt and Whiskey Lakes and ADF&G has 2 years remaining on AKSSF project 44365, designed to remove northern pike from Chelatna Lake. Continued research is needed to better understand sockeye salmon abundance and distribution within the Susitna River drainage.

Fish Creek

Fish Creek drains Big Lake, which is located approximately 60 highway miles north of Anchorage, and empties into the turbid waters of Knik Arm. A decline in sockeye salmon numbers in the late 1990s led to a technical review assessing Fish Creek sockeye salmon production (Litchfield and Willette 2001). The report proposed 2 possible causes for the decline: 1) degradation of spawning habitat as a result of questionable hatchery practices; and 2) placement of a coffer dam at the outlet of the lake, which prevented many wild fry from being able to recruit into the lake, as well as causing a productive spawning area at the lake outlet to be filled in with silt and mud. At the 2002 BOF meeting, Fish Creek sockeye salmon were found to be a stock of yield concern, and ADF&G proposed additional studies to more clearly define limitations to sockeye salmon production in this system. As a result of identifying the coffer dam as a barrier to upstream migration of juvenile sockeye salmon fry, modifications were made at the lake outlet that allowed fry to more easily recruit into Big Lake. It was expected that more adults would again utilize this productive spawning area. Fish hatchery culture methods and stocking procedures were also modified in the hope that these changes, combined with the modifications at the lake outlet, would improve sockeye salmon production in Big Lake. In response to improved runs, Fish Creek sockeye salmon were removed as a stock of yield concern at the 2005 BOF meeting.

CIAA historically stocked Big Lake with sockeye salmon fry, but fry-to-smolt survival was very poor (Dodson 2006). The number of smolt emigrating Big Lake from 2003 to 2008 ranged from 117,000 to 632,000 fish (Table 5). In an attempt to try and isolate the mechanisms leading to poor juvenile survival, CIAA released fish at 3 different time intervals and juvenile life history stage: spring fry, fall fry, and spring smolt. However, the number of smolt emigrating Big Lake did not increase, even with the stocking of larger juveniles. As a result of poor sockeye salmon smolt emigrations from Big Lake, CIAA ceased enhancement activities after the fry release in 2008. From 2002 to 2012, the average annual hatchery proportion of the run to Big Lake was 40%, ranging from 2% in 2002 to 73% in 2006 (W. Gist, Commercial Fisheries Biologist, ADF&G, Soldotna, personal communication). No smolt emigration counting was conducted at Fish Creek in 2017.

The 2018 total run forecast for Fish Creek sockeye salmon was 211,000 fish (Table 3), but the actual run was approximately 116,000 fish (Table 5), or 45% below forecast. The 2018 escapement estimate of 71,556 fish was 21% above the upper end of the modified SEG of 15,000–45,000 fish for this system (Table 1). As a result of the strong escapement, the Fish Creek personal use dip net fishery was open from July 24–31, with 18,659 fish harvested. Using the age-composition allocation method of allocating the commercial harvest to stock of origin, the commercial fishery harvest rate of Fish Creek sockeye salmon averaged approximately 34% per year. In 2018, approximately 25,627 (Table 6) Fish Creek sockeye salmon were estimated to have been harvested commercially, which represented a harvest rate of 22% for this stock.

Although sockeye salmon runs to Fish Creek have been highly variable (Table 5), ranging from as few as 25,000 fish to as many as 209,000 fish, escapement goals have been met fairly regularly. From 1982 to 2001 (20 years), Fish Creek escapement goal was a point goal of 50,000 fish; during this time the goal was met 15 times (75%) and missed 5 times (25%). Beginning in 2002, the goal became an SEG of 20,000–70,000 fish, and from 2002–2016 the SEG was met or exceeded 10 times (67%), and was not achieved 5 times (33%). In 2017, the Fish Creek SEG was changed to 15,000–45,000 fish (Erickson et al. 2017); the 2018 estimated escapement was more than 71,000 fish. In summary, from 1982 to 2018 (37 years), the escapement goal at Fish Creek has been met or exceeded 28 times, or 76% of the time. The 2019 run forecast for Fish Creek sockeye salmon is 124,000 fish (Appendix C2). If this stock is harvested at the commercial average of 34%, then approximately 82,000 fish could enter the stream. If the run returns as forecasted, then nearly 37,000 fish will need to be harvested in the dip net fishery in order to not exceed the SEG.

2018 Sockeye Salmon Outlook

A run of approximately 4.6 million sockeye salmon was forecasted to return to Upper Cook Inlet (UCI) in 2018 (Table 3 and Appendix C1), and expected harvest by all user groups was 2.6 million fish. The commercial fishery harvest in 2018 was estimated to be approximately 817,895 sockeye salmon, which is 2 million fish less than the 2008–2017 average annual commercial sockeye salmon harvest of 2.8 million fish.

The run forecast for the Kenai River (Table 3) was approximately 2.5 million, which is 1.1 million less than the 20-year average run of 3.6 million. In 2018, the predominant age classes were projected to be age-1.3 (47%), age-1.2 (17%), age-2.2 (5%), and age-2.3 (29%). The 10-year mean absolute percent error (MAPE) for the set of models used for the 2018 Kenai River sockeye salmon forecast is 14%.

The Kasilof River sockeye salmon run forecast was 866,000 fish (Table 3), which is 11% less than the 20-year average of 971,000. The predominant age classes in the run forecast are age-1.2 (29%), age-1.3 (34%), age-2.2 (26%), and age-2.3 (9%). The 10-year MAPE for the set of models used for the 2018 Kasilof sockeye salmon run forecast is 21%.

The Susitna River sockeye salmon run forecast was 329,000 (Table 3), which is 18% less than the 2008–2017 average of 398,000. This forecast was derived using mean return per spawner by age class and mark–recapture estimates of spawner abundance for brood years 2006–2014. Sonar estimates of spawner abundance were not used, because mark–recapture studies have shown that the Yentna sonar project underestimated sockeye salmon escapement causing estimates of adult returns to also be underestimated. The 5-year MAPE for this forecast method is 17%. The

predominant age classes in the 2018 Susitna sockeye salmon run forecast are age-1.2 (20%) and age-1.3 (57%).

The Fish Creek sockeye salmon run forecast was 211,000 (Table 3), which is 276% greater than the 20-year average run of 76,000. The predominant age classes in the 2017 Fish Creek run forecast are age-1.2 (78%) and age-1.3 (11%). The 10-year MAPE for the Fish Creek sockeye salmon run forecast is 69%.

PINK SALMON

Pink salmon runs in UCI are even-year dominant and odd-year average annual harvests are about one-seventh of even-year harvests (Appendix B4).

Pink salmon are generally harvested in relatively large quantities in UCI beginning in late July and early August. The 2018 UCI commercial harvest of pink salmon was estimated to be approximately 126,923 fish which was nearly 67% less than average annual harvest of 396,000 fish from the previous 10 years of even-year harvests (Table 7). It also was the smallest even-year harvest since 1966. (Appendix B4).

Prior to 2009, a weir on the Deshka River counted the majority of the pink salmon run (Table 7). Although pink salmon are still counted there, the weir is now removed prior to the end of the pink salmon run. Additionally, there are no escapement goals in UCI for this species. Thus, the only data collected on pink salmon stocks are from commercial fisheries harvests, recreational fishing surveys, and some information collected at projects designed to count other species (e.g., the Deshka River weir).

In general, pink salmon stocks in UCI have maintained even-year dominance; however, the 2007 and 2009 harvests were above average for odd-year runs. Although pink salmon count data are limited, ADF&G did conduct a marine tagging project designed to estimate total population size, escapement, and harvest rates for coho, pink, and chum salmon returning to UCI in 2002 (Willette et al. 2003). This study estimated the harvest rate of pink salmon by the UCI commercial fishery to range between 1% and 12%, indicating pink salmon were harvested at very low rates in UCI.

CHUM SALMON

Chum salmon runs to UCI are concentrated predominately in the western and northern watersheds, and the most substantial harvest comes from the Central District drift gillnet fishery. The 2018 harvest of 114,000 chum salmon was approximately 31% less than the 2008–2017 average annual harvest of 165,000 fish (Appendix B5). An evaluation of UCI chum salmon stocks is difficult because of a lack of information other than commercial harvest data and very limited escapement data. Chum salmon are no longer counted at either the Deshka River or Little Susitna River weirs. They are captured in the Anchor Point OTF project, but this project was designed temporally and spatially to assess UCI sockeye salmon stocks. The only chum salmon escapement goal in UCI is an aerial survey SEG in Clearwater Creek (Chinitna Bay) of 3,500–8,000 fish (Erickson et al. 2017). Since 2002, this SEG has been met or exceeded in 15 of 17 years. An aerial survey of Clearwater Creek/Chinitna River on August 23, 2018 estimated escapement at only 1,800 fish, which meant the SEG had not been achieved. Therefore, no early drift openings were allowed for chum salmon in Chinitna Bay in 2018. Emergency Order No. 32 opened set and drift gillnetting in the Chinitna Bay Subdistrict on Tuesdays and Fridays from

7:00 AM until 7:00 PM, beginning on Friday, August 31, after run timing data showed chum salmon had typically left salt waters.

Although ADF&G lacks long-term quantitative chum salmon escapement information, escapements to streams throughout UCI have benefited by management actions or regulatory changes aimed principally at other species. These actions have included the following: 1) large reductions in the offshore drift gillnet and Northern District set gillnet fisheries to conserve Susitna River sockeye salmon; 2) adoption of the NDSMP (5 AAC 21.358), which states that its primary purpose is to minimize the harvest of coho salmon bound for the Northern Cook Inlet; 3) lack of participation in the directed chum salmon fishery in Chinitna Bay; and 4) harvest avoidance by the drift fishery as a result of lower prices being paid for chum salmon than for sockeye salmon. Other than aerial counts in Chinitna Bay, most of the sporadic chum salmon data available to assess annual runs can be used to make general conclusions (i.e., determining if the run was below average, average, or above average). It is unclear how the chum salmon stocks in all of UCI did in 2018 due to low harvest hours allowed in the drift fishery relative to Kenai River Restrictions. The low assessment of chum salmon in Chinitna Bay may suggest that chum salmon stocks in that area of UCI were depressed.

COHO SALMON

Commercial coho salmon harvests in UCI during the 1980s and early 1990s were much higher than the long-term average (Appendix B3). This can be attributed to good coho salmon production, but also due to additional fishing time on strong sockeye salmon runs to UCI. Recent coho salmon harvest data, however, may or may not be a true indication of run strength, largely due to regulatory changes that were made to reduce commercial harvest of coho salmon. For example, coho salmon runs in 1997 and 1999 were viewed as mediocre to poor, prompting BOF actions in 1997, 1999, and 2000 that placed restrictions on sport and commercial fishermen in much of UCI. From 2000 to 2004, the commercial ESSN fishery was closed no later than August 7, and no more than 1 EO, not to exceed 24 hours in duration, was allowed during the month of August. These actions resulted in marked reductions in commercial coho salmon harvests. However, coho salmon runs in 2000 and 2001 improved, and the 2002 run was exceptional (Lafferty et al. 2007). Therefore, at the 2005 BOF meeting, restrictions on commercial fishing in August in the ESSN fishery and Central District drift gillnet fishery were relaxed. Both fisheries' closing dates were changed to no later than August 10, and the set gillnet fishery would now be managed under the same set of weekly guidelines in August that were applicable in July. In 2008, the BOF extended the ESSN and districtwide drift gillnet fishing seasons to no later than August 15. These changes were made largely due to data revealing good coho salmon runs and low Kenai River coho salmon harvest by commercial fishermen during this extended time period. Recent years' coho salmon harvests have undoubtedly been affected by restrictions to the ESSN fishery for Chinook salmon conservation and by modifications made to the CDDGFMP at the 2014 BOF meeting to reduce coho salmon harvest by the drift fishery (Shields and Dupuis 2015).

Northern District

The Division of Sport Fish has used coho salmon weir counts at the Little Susitna River as a surrogate of escapement for all Knik Arm coho salmon stocks since 2005. The SEG for this system was set in 2000 at 10,100–17,700 fish (Fair et al. 2007). The SEG was met or exceeded in 13 of 18 years from 2000–2017 (Table 8).

It should be noted that the weir washed out early in 2006, but based on the inriver sport fishing performance, the 2006 coho salmon run in the Little Susitna River was categorized as very early and very strong and the SEG was probably achieved (S. Ivey, Sport Fish Biologist, ADF&G, Palmer, personal communication). The weir also washed out early in 2005, which means the estimated passage of 16,839 fish was less than the actual escapement (Ivey et al. 2009). In 2012, the Little Susitna River weir was moved downstream approximately 40 miles to its current location at river mile (RM) 32.5. This provided managers with timelier inseason information of coho salmon passage.

At the 2017 UCI BOF meeting, ADF&G recommended a new coho salmon SEG of 10,200–24,100 for the Deshka River using the Clark et al. (2014) percentile approach. Nearly 13,000 coho salmon were counted at the Deshka River weir in 2018.

When coho salmon run abundances (Table 8) are viewed over a long period of time in Northern Cook Inlet, there are no substantive concerns about the sustainability of these stocks. The Little Susitna River coho salmon escapement goal was first established in 1990, and since that time (29 years), the escapement goal has been met or exceeded in 23 years, or 79% of the time. The coho salmon escapement goal at Fish Creek has been achieved or exceeded in 21 years out of the 24 years (87%) it has been in existence, including every year for the past 19 years. There is a coho salmon single foot-survey escapement goal at Jim Creek; from 1994 to 1999, it was a point goal of 830 fish, then in 2000, the goal was changed to an SEG of 400–700 fish. Since then, the SEG has been achieved or exceeded 14 times (74%), including 2018. Finally, 12,962 fish were counted at the Deshka River and the new coho salmon SEG was met in 2018 (Oslund et al. *In prep*).

Kenai River

The status of Kenai River coho salmon were reviewed in Shields and Dupuis 2016. Current sport and commercial fishing regulations for Kenai River coho salmon are believed to be providing for sustainable harvest and the most recent inriver harvest estimates (2007–2009) were stable and near the historical average. There are no known conservation concerns for Kenai River coho salmon, currently.

CHINOOK SALMON

Northern District

The Northern District has approximately 345 streams and rivers where Chinook salmon are present and its largest drainage, The Susitna River, has an estimated total annual Chinook salmon run between 100,000 and 200,000 fish (see Delaney and Vincent-Lang, *Unpublished*).⁵ In response to the proposed Susitna-Watana hydroelectric project, studies are underway to document salmon abundance in the Susitna drainage. Based on these investigations, the estimated Chinook salmon abundance in the Susitna River upstream of the Yentna River was approximately 89,463 fish in 2013; 68,225 fish in 2014; and 88,600 fish in 2015 (Alaska Energy Authority 2014 and 2015). Additionally, the estimated Chinook salmon abundance in the Yentna River was approximately 22,267 fish in 2014 and 48,400 in 2015 (Alaska Energy Authority

⁵ Delaney, K., and D. Vincent-Lang. *Unpublished*. Current status and recommendations for the future management of the Chinook salmon stocks of Northern Cook Inlet. A report to the Alaska Board of Fisheries, Anchorage, Alaska, November 1992. Alaska Department of Fish and Game, Division of Sport Fish, Anchorage.

2015). The average harvest in the Northern District directed commercial Chinook salmon fishery for the previous 10 years (2006–2015) was approximately 2,100 fish (Table 2), or about 18% of the total Northern District Chinook salmon harvest (including sport harvest). Based on recent estimates of Chinook salmon abundance in the Susitna River, the commercial fisheries average annual harvest rate would range between 1.2% and 2.4%. If all northern Cook Inlet Chinook salmon stocks were considered, the commercial fisheries harvest rate would be even less.

In an ADF&G memo (RC 6⁶) to the BOF dated October 1, 2010, a summary of results from the stock of concern evaluation for UCI salmon was presented. ADF&G's recommendation stated that despite sport fishery restrictions already in place and recent commercial fishery restrictions and closures on Westside fisheries, Chuitna, Theodore, and Lewis Rivers' Chinook salmon escapement goals had not been achieved for 4 consecutive years. Escapements were evaluated with a single aerial census flight each year. ADF&G recommended that the BOF consider these systems for stock of management concern status. In addition, ADF&G recommended Alexander Creek Chinook salmon as a stock of management concern because runs to this system had declined drastically over the previous 5 years despite closure of the sport fishery beginning in 2008. The ADF&G memo also recommended Willow and Goose Creeks' Chinook salmon be considered as stocks of yield concern in response to a failure to meet the SEG over several consecutive years. The BOF reviewed these ADF&G recommendations at the 2011 UCI BOF finfish meeting in Anchorage, and agreed with ADF&G staff to list Chinook salmon stocks in Alexander, Willow, and Goose Creeks, and the Chuitna, Theodore, and Lewis Rivers, as stocks of concern. At the 2014 BOF meeting, additional stock status information was presented, including repeated failure to meet the SEG at Goose Creek. As a result, this system was elevated to a stock of management concern; and Sheep Creek was added as a stock of management concern.

As a result of the decision to list the Theodore, Lewis, and Chuitna Rivers as stocks of concern, the sport fishery in these rivers has been closed by regulation since 2011. In response to the sport fishing closures, commercial fishing with set gillnets has also been closed from the wood chip dock to the Susitna River during the directed Chinook salmon fishery per the *Northern District King Salmon Management Plan*. Additional restrictions beyond the area closure have also been implemented in the commercial fishery, including closures of fishing periods and reductions in hours fished (Shields and Dupuis 2016), and a season closure in 2018.

Deshka River

After experiencing a marked decline in abundance in the early to mid-1990s, Northern District Chinook salmon stocks rebounded, and exceptional runs were measured at the Deshka River weir, which was the only site where total counts of Chinook salmon occurred in the Northern District (Table 9). From 1999 through 2006, the upper end of the Deshka River BEG of 13,000–28,000 fish was exceeded (Fair et al. 2007). As a result of strong runs during this time, there were numerous liberalizations to the inriver sport fishery through inseason EO. In addition, in 2005, the BOF lengthened fishing periods for the commercial fishery from 6 hours to 12 hours and in 2008, allowed the commercial fishery to remain open through June 24 (Monday periods only). The commercial fishery harvest cap of 12,500 Chinook salmon remained in effect. The 2007 Deshka River run fell within the BEG range. The 2008 and 2009 runs, which were

⁶ <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo&date=10-13-2010&meeting=kenai>

projected to be smaller than average, were both poor runs, which resulted in closures to both sport and commercial fisheries. The lower end of the BEG was not achieved either year.

The poor runs that were experienced in 2008, 2009, and 2010 resulted in restrictions to the sport and commercial fisheries that harvest Chinook salmon throughout northern Cook Inlet (Shields and Dupuis 2012). Although recent forecasts for Deshka River Chinook salmon have projected below average runs, restrictive actions taken in both sport and commercial fisheries have resulted in the SEG being met for 7 of the past 8 years. In 2017, the use of bait was prohibited in the lower portion of the Deshka River beginning on Friday, June 23. In the commercial fishery, the June 19 final fishing period of the year was reduced from 12 hours to 6 hours in duration. The final Chinook salmon escapement estimate of approximately 11,400 fish was below the SEG range of 13,000–28,000 fish (Table 9). Although Chinook salmon stocks throughout Cook Inlet are experiencing a period of lower abundance, the escapement goal at the Deshka River has been met or exceeded in 20 of the past 24 years. However, in recent years, restrictive actions, and in 2018, closures in both commercial and sport fisheries have been enacted to conserve fish.

Kenai River

The early-run of Kenai River Chinook salmon migrates through Cook Inlet in May and June, and therefore receives very little commercial exploitation.

Beginning in 1986, Kenai River late-run Chinook salmon estimates of inriver passage were completed via traditional target-strength (TS) sonar by the Division of Sport Fish. The original escapement goal was developed in 1989 and set a minimum goal of 15,500 fish and an optimum escapement of 22,300 (McBride et al. 1989). In 1999, this goal was revised to a BEG of 17,800–35,700 (Fried 1999). In 2011, ADF&G changed the escapement goal from a BEG to an SEG (still 17,800–35,700 fish) because of the uncertainty in the estimates of escapement and lack of stock-specific information in the commercial harvest. In addition, ADF&G informed the public that it would discontinue use of TS-based estimates of inriver run in favor of 5 abundance indices and would also continue development of the new DIDSON-based assessment (Shields and Dupuis 2013). In 2011, ADF&G managed the Kenai River late-run Chinook salmon fishery primarily on these indices of abundance, rather than use of traditional sonar technology. For the 2012 season, the TS-based sonar was replaced with the newer DIDSON technology. Because the escapement goals were not DIDSON-based goals, estimation of late-run Chinook salmon passage was completed using several indices of abundance.

At the annual work session meeting in October 2012, the BOF formed the Cook Inlet Task Force. The mission of the task force was to evaluate the *Kenai River Late-Run Chinook Salmon Management Plan* and attempt to come to consensus on a set of recommended adjustments that would allow for both sport and commercial fishing opportunity during times of low Chinook salmon abundance, as experienced in the 2012 season. The 11-member task force (9 members of the public and 2 BOF members, Vince Webster and Tom Kluberton) met 3 different times (November 2012, January 2013, and February 2013) to address proposals submitted by task force members suggesting modifications to the management plan. A list of suggested changes was developed, but no consensus was reached on how to proceed. However, this list of changes formed the basis of a full BOF review at the statewide meeting in March of 2013.

In March 2013, ADF&G released a new DISON-based interim escapement goal for Kenai River late-run Chinook salmon (Fleischman and McKinley 2013). The new goal was developed, in part, to facilitate the change in sonar technology and to address the confusion over assessment

methods that was experienced in 2011 and 2012. An age-structured state-space model and Bayesian statistical methods were used to develop the new goal. It was recommended that an interim SEG of 15,000–30,000 fish be adopted for the Kenai River late-run Chinook salmon. The BOF adopted the recommended SEG at the March 2013 meeting but left the rest of the *Kenai River Late-Run Chinook Salmon Management Plan* intact.

For the 2013 season, DIDSON was the primary method of Chinook salmon assessment. Two DIDSON sites were operational during the 2013 season (at RM 9 and RM 14), but only counts from the RM 9 project were used for inseason management. Because the forecast for late-run Chinook salmon indicated the run would be below average, the ESSN fishery and the sport fishery in the Kenai River were prosecuted conservatively. There were numerous restrictions and even closures to both commercial and sport fisheries during the 2013 season, which resulted in an estimated late-run Chinook salmon escapement of approximately 15,400 fish (Shields and Dupuis 2013).

The BOF made numerous changes to the KRLKSMP at their 2014 UCI finfish meeting that affected prosecution of sport and commercial fisheries from 2014 to 2016 (Shields and Dupuis 2015). During each of these 3 years, restrictive actions to the ESSN fishery were implemented in compliance with the modified KRLKSMP. The SEG was achieved all 3 years.

In 2015, the Division of Sport Fish announced that Chinook salmon sonar operations in the Kenai River at RM 8.6 (RM 9) would be discontinued and replaced with sonar counts from a site at RM 13.7 (RM 14). The SEG of 15,000–30,000 fish remained in place for the 2015 and 2016 seasons. At the 2016 work session, ADF&G presented the BOF with its annual escapement goal memo, where it was stated that a new goal for both early- and late-run Chinook salmon stocks in the Kenai River was being developed. The memo clarified that ADF&G was finalizing run reconstructions and stock-recruit analyses for fish approximately 75 cm (~33.3 inches) in length or greater for both Kenai River Chinook salmon runs. Based on these analyses, recommendations to determine new large fish SEGs were being developed. At the 2017 UCI BOF meeting, ADF&G presented a written report detailing spawner-recruit analyses that were used to set the new large-fish SEGs for both early- and late-run Kenai River Chinook salmon (Fleischman and Reimer 2017). Both of these new large-fish SEGs were in place for the 2017 season and both were achieved.

In summary, the Kenai River Chinook salmon late-run stock have never failed to achieve its minimum escapement objective since counting began in 1986. In addition, the upper end of the escapement goal has been exceeded in 15 out of the 31 years escapements have been monitored. However, similar to other Chinook salmon stocks in Cook Inlet, Kenai River Chinook salmon are currently experiencing a period of low abundance.

COMMERCIAL HERRING FISHERY

The 2018 UCI herring fishery produced a harvest of 17.6 short tons, and all of the harvest came from the Upper Subdistrict (Appendix B8). A total of 10 permit holders reported fishing, which was slightly less than the 2008–2017 average annual numbers of 11 participants per year. Although open to both set and drift gillnets, all of the harvest was harvested by set gillnets. Samples of the harvest were obtained annually to assess age, weight, size, and sex distribution. In the Upper Subdistrict, 4 age classes dominated the population in 2018, comprising 96% of the 184 samples collected from 3 sample dates. The average by age class was age-2 (32%), age-3 (20%), age-4 (28%), age-5 (16%), age-6 (4%), and age-7 (1%) (Appendix A19). It should be

noted that the samples used for these analyses are obtained from the set gillnet fishery and may reflect biases in the gear type used to collect the samples.

All of the herring harvested in UCI were used exclusively for personal use or sold as bait. Because Prince William Sound and Kamishak Bay herring fisheries have remained closed for many years, bait herring from UCI has risen in value. Demand by commercial and sport halibut fishermen has resulted in an average price of at least \$1.00 per pound or \$2,000 per ton. Based on this price, and harvest of 17.6 short tons (Appendix B8), the estimated exvessel value of the 2018 commercial herring fishery was approximately \$35,000.

COMMERCIAL SMELT FISHERY

From 1978 to 2018, commercial smelt harvests in UCI have ranged from 0.2 tons to 191 tons (Table 10). For more details about the history of smelt fishing in UCI, see Shields (2005). The fishery is prosecuted under 5 AAC 21.505, the *Cook Inlet Smelt Fishery Management Plan*. In 2018, the total smelt harvest in UCI was approximately 191.5 tons, the largest recorded harvest since the harvest cap on the fishery had increased from 100 tons to 200 tons at the 2017 BOF meeting. The amount of smelt harvested in this fishery has typically been limited by market demand and the logistics of getting the harvest to a location where the smelt can be processed (boxed and frozen) prior to shipment, rather than abundance of fish.

Estimating the exvessel value of this fishery is difficult. Participants catch and market all of their harvest. Most of the product is transported by boat to the Kenai River, where it is boxed and frozen for shipment to the west coast of the U.S. The harvest is sold as bait and also marketed for human consumption. The final value of the smelt fishery is unknown, but probably exceeds \$1.00 per pound. Using this price estimate and the harvest of 383,000 pounds (Table 10), the estimated exvessel value was approximately \$383,000.

Age-composition analyses (determined from otoliths) of samples collected from the 2006 to 2018 harvests show that age-4 smelt were typically the most abundant age class, ranging from 64% to 81% of the sampled fish (Appendix A20). The average fork length from the 2018 samples of 168 mm was smaller than the average fork length of 199 mm from 2006 to 2017. In 2018, 112 smelt were sampled for age and length data and 79 fish (71%) were females. This was a higher proportion female than the average of 44% females from all previous years (Appendix A20). It should be noted that due to budgetary constraints, the smelt samples collected for age and size data were taken from a single date of the harvest, and therefore may not reflect temporal changes in these parameters or differences between harvested fish and the overall population.

COMMERCIAL RAZOR CLAM FISHERY

The razor clam fishery on the west side of Cook Inlet has historically been confined to the area between Crescent River and Redoubt Creek (Figure 11). All clams harvested in this area are directed, by regulation, to be sold for human consumption, except for the small percentage (less than 10% of the total harvest) of broken clams, which may be sold for bait. Razor clams are present throughout UCI and dense concentrations are present in the Polly Creek and Crescent River areas. In the remainder of the UCI Management Area, there are no restrictions on the amount of clams that can be sold for bait. Currently, though, there is no directed effort to harvest razor clams for the bait market. The minimum legal size for razor clams is 4.5 inches (114 mm) in shell length (5 AAC 38.075).

In 2016, ADF&G began a study in the Polly Creek/Crescent River area beach with the goal being able to estimate razor clam abundance and to collect data needed to develop an optimal sampling design for a future full-scale survey of this beach (Dupuis and Willette 2016). A grant was awarded to ADF&G in 2017 from the North Pacific Research Board that allowed testing of the sampling designs and gear to assess razor clam populations in all of Cook Inlet.

The 2018 commercial razor clam harvest, taken primarily from the Polly Creek/Crescent River area, was approximately 199,160 lb in the shell (Appendices A23 and B9). A total of 14 diggers participated in the fishery. Harvest was reported from 73 different days from May 12 to August 15. Diggers were paid an average of \$0.66/lb for their harvest, which resulted in an exvessel value for this fishery of approximately \$131,500. The average clam size from the 2018 harvest was 5.0 inches or 128 mm (Figure 12).

SUBSISTENCE AND PERSONAL USE FISHERIES

There is a long history of Alaskans harvesting fish and game for their personal consumptive needs under sport, personal use, subsistence, and commercial fishing regulations in the Cook Inlet area (Braund 1982). Since 1978, when the State of Alaska passed its first subsistence statute (AS 16.05.258), many changes have occurred in the regulations governing the harvest of fish and game for personal consumption in Cook Inlet. Beginning in 1981, a new category of fisheries was established. Personal use fishing was created to provide the personal consumptive needs of state residents not able to meet their needs in other fisheries. Since inception, numerous changes have occurred in the personal use and subsistence fisheries in Cook Inlet, and many of these changes came as a result of challenges in the State of Alaska court system, the Alaska State Legislature, or the BOF process. The only personal use or subsistence fishery that has occurred consistently in Cook Inlet during this entire period is the Tyonek Subdistrict subsistence fishery. A review of the various personal use and subsistence fisheries that have been conducted in Cook Inlet are reported in Brannian and Fox (1996), Reimer and Sigurdsson (2004), Dunker and Lafferty (2007), and Holen and Fall (2011).

TYONEK SUBSISTENCE SALMON FISHERY

The subsistence fishery in the Tyonek Subdistrict was mandated by an Anchorage Superior Court order in May 1980. In March 1981, the BOF adopted permanent regulations for this fishery (Stanek et al. 2007). Originally open only to those individuals living in the community of Tyonek, court decisions ruled all Alaska residents are eligible to participate. According to 5 AAC 01.560, *Fishing Seasons and Daily Fishing Periods*, subsistence fishing is allowed in the Tyonek Subdistrict of the Northern District during 2 distinct time periods. A separate permit is required for each period. The early-season permit allows for fishing from 4:00 AM to 8:00 PM each Tuesday, Thursday, and Friday from May 15 to June 15. The late-season permit allows for fishing from 6:00 AM to 6:00 PM each Saturday after June 15. Both permits allow for 25 salmon per permit holder and 10 salmon for each dependent. However, 5 AAC 01.595(a)(3) allows for up to 70 Chinook salmon per permit holder in the Tyonek Subdistrict subsistence fishery, which are mostly caught during the early season. At the 2011 BOF meeting in Anchorage, a report was given to BOF members by the Division of Subsistence (Holen and Fall 2011), which the BOF relied upon to specify the amounts necessary for subsistence of Chinook salmon and other salmon in the Tyonek Subdistrict as 700–2,700 Chinook salmon and 150–500 other salmon. Each permit holder is allowed a single 10 fathom gillnet, with a mesh size no greater than

6.0 inches. The early-season permit targeting the Chinook salmon run is the most popular fishery. Few late-season permits are issued.

The 2018 harvest in the Tyonek subsistence salmon fishery included 1,413 Chinook, 217 sockeye, 154 coho, 10 pink, and 11 chum salmon harvested by 22 permit holders (Appendix B15).

UPPER YENTNA RIVER SUBSISTENCE SALMON FISHERY

A subsistence salmon fishery (5 AAC 01.593) is allowed in the Yentna River drainage outside the Anchorage-Matsu-Kenai Nonsubsistence Area, which is described in 5 AAC 99.015(a)(3). The BOF has determined that 400–700 salmon, other than Chinook salmon, are reasonably necessary for subsistence uses in the Yentna River (5 AAC 01.566(e)). The provisions of this fishery allow for the harvest of 25 salmon per head of household, plus 10 more for each dependent. All Chinook salmon and rainbow trout must be returned to the water alive. The specific area open for the fishery is in the mainstem Yentna River from its confluence with Martin Creek upstream to its confluence with the Skwentna River. Legal gear consists of fish wheels only. The subsistence fishing season typically occurs from July 15 through July 31 from 4:00 AM to 8:00 PM each Monday, Wednesday, and Friday during this timeframe. However, in 2018, ADF&G Division of Sport Fish issued EO 2-KS-2-24-18 closing the Upper Yentna River subsistence fishery during the Chinook salmon season effective June 25. The 2018 Yentna River subsistence fisheries harvest included 405 sockeye, 167 coho, 8 pink, and 10 chum salmon harvested by 29 permit holders (Appendix B15).

EDUCATIONAL FISHERIES

Educational fisheries first began in UCI in 1989 after a federal court-ordered subsistence fishery for the Kenaitze Indian Tribe began (Sweet et al. 2004). The fishery was labeled as a subsistence fishery due to differences in interpretations of subsistence. The Alaska Superior Court ordered ADF&G to issue educational fishing permits beginning with the 1993 fishing season. The objectives for educational fisheries are specified in 5 AAC 93.235 as “educating persons concerning historic, contemporary, or experimental methods for locating, harvesting, handling, or processing fishery resources.” The present standards for educational fisheries are established by the BOF under 5 AAC 93.200 and include the following: 1) instructors must be qualified to teach the subject matter; 2) there must be students enrolled in the fishery; 3) there are minimum attendance requirements; 4) procedures for testing a student’s knowledge of the subject matter or the student’s proficiency in performing learned tasks must be administered; and 5) standards for successful completion of the program must be set. According to 5 AAC 93.210, the commissioner will issue a nontransferable, no-cost educational fishery permit to an applicant who proposes to operate an educational fishery program that meets the above standards, except in the following cases: 1) when the commissioner determines that the educational objective of the program can be accomplished under existing fisheries statutes and regulations; 2) the sustained yield of any fishery resource would be jeopardized or the fishery resource would be significantly reallocated among existing users; 3) the applicant failed to provide the information required by the permit; 4) the applicant violated a condition or requirement of an educational fishery permit; or 5) the applicant failed to comply with the reporting requirements of the permit.

The total harvest from all educational fisheries in 2018 was 8,581 fish. The average annual harvest from 1994 through 2017 was approximately 7,188 fish (Appendix B16).

CENTRAL DISTRICT EDUCATIONAL FISHERIES

In the Central District of UCI, there currently are 8 groups permitted to conduct educational fisheries, including the Kenaitze Tribal Group, Ninilchik Traditional Council (NTC), Ninilchik Native Descendants (NND), Ninilchik Emergency Services, Anchor Point Veterans of Foreign Wars (VFW), Homer Sons of the American Legion Post 16, Kasilof Regional Historical Association, and the Southcentral Foundation.

In 1993, a state court ordered ADF&G to create an educational fishery for the Kenaitze Indian Tribe, pending final court rulings on other subsistence cases. In 2018, the Kenaitze Tribe harvested 3 Chinook, 6,155 sockeye, 887 coho, and 259 pink salmon, for a total of 7,304 salmon (Appendix B16). From 1994 through 2017, the average annual harvest of all salmon by the Kenaitze Indian Tribe was 5,156 fish. The total fish harvest quota for this group is 10,000 fish.

In 1993, NTC applied for and was granted a permit for an educational fishery (Szarzi and Begich 2004). In 1998, a group of NTC members formed a new organization, the NND, and requested a separate permit with similar goals of passing on traditional knowledge and providing food for tribal members. Initially 1 permit was issued for both groups, but this was not acceptable to the NTC and both groups were allowed to fish concurrently. There have been a number of changes to the annual harvest limits allowed under these permits, but the total salmon quota more than tripled in 2007 from 850 to 2,800 fish for both the NTC and NND groups. In 2018, the NTC harvested 5 Chinook, 169 sockeye, 219 coho, and 110 pink salmon. The NND reported a harvest of 6 Chinook, 23 sockeye, 85 coho, and 15 pink salmon (Appendix B16).

In 2003, another group from Ninilchik, the Ninilchik Emergency Services (NES), applied for and was granted an educational fishery. In 2018, the NES harvested a total of 6 sockeye (Appendix B16).

The Anchor Point VFW applied for and was granted an educational fishery permit in 2007. They reported the following harvest from their 2018 fishing activities: 28 sockeye, 21 coho, and 20 pink salmon (Appendix B16).

In 2011, the Sons of American Legion applied for and were granted an educational fishery permit. They reported a harvest of 35 sockeye and 27 coho salmon in 2018 (Appendix B16).

The Kasilof Regional Historical Association applied for an educational permit beginning with the 2008 season. In 2018, they reported the following harvest: 10 sockeye and 37 coho salmon (Appendix B16).

Finally, the Southcentral Foundation (SCF) applied for an educational permit beginning in 2010. They are an Alaska Native-owned, nonprofit health care organization serving nearly 60,000 Alaska Native and American Indian people living in Anchorage, the Matanuska-Susitna Valley, and 60 rural villages in the Anchorage Service Unit. This fishery occurs on the west side of Cook Inlet in the Silver Salmon Creek area. The SCF harvest in 2018 was 14 sockeye, 17 coho, and 2 chum salmon (Appendix B16).

NORTHERN DISTRICT EDUCATIONAL FISHERIES

In the Northern District of UCI, 3 groups were granted permits for educational fisheries and include the following: 1) the Knik Tribal Council; 2) Native Village of Eklutna; and 3) Alaska's Territorial Homestead Lodge, operated by Tim O'Brien (Appendix B16).

The Knik Tribal Council began an educational fishery in 1994 (Sweet et al. 2004). Its harvest in 2018 totaled 100 sockeye, 50 coho, and 12 chum salmon for an all species total of 162 fish (Appendix B16). The peak harvest from this group of 823 fish occurred in 2003.

The Native Village of Eklutna was also issued an educational fishery permit beginning in 1994. They reported a harvest in 2018 of 77 sockeye, 48 coho, 0 pink, and 11 chum salmon (Appendix B16).

The Native Village of Tyonek began an educational fishery in 1997. This educational fishery was denied a permit beginning in 2011 as a result of Chuitna, Theodore, and Lewis Rivers' Chinook salmon stocks being designated as stocks of management concern by the BOF.

Alaska's Territorial Homestead Lodge (Tim O'Brien) applied for and received an educational fishery permit beginning in 2007. This fishery is located near Moose Point in the Eastern Subdistrict of the Northern District. In 2018, the harvest from this fishery was 4 Chinook, 82 sockeye, 31 coho, 6 pink, and 7 chum salmon (Appendix B16).

The Chickaloon Native Village applied for and received their first educational fishery permit in 2016. However, there was no fishing activity that took place under this permit in 2018.

PERSONAL USE SALMON FISHERY

Operating under the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* (5 AAC 77.540), personal use fishing is allowed in limited areas in Cook Inlet. The management plan received substantial changes at the BOF meeting in January of 1996. In 1995, personal use fishing was allowed with set gillnets in most areas of Cook Inlet normally open to commercial set gillnet fishing. Most of this area was closed in 1996, but to compensate for the lost opportunity, dip net fisheries were expanded to allow for approximately the same level of harvest that had occurred with gillnets in 1995. Personal use fishing using gillnets is now only open near the Kasilof River in the waters of UCI normally closed to commercial set gillnet fishing. This area encompasses approximately 1 mile on either side of the Kasilof River terminus, extending out from shore for 1 mile. In addition, personal use fishing with dip nets is allowed at the terminus of the Kenai and Kasilof Rivers, and in some years, at Fish Creek. The personal use management plan was again amended at the 2002 BOF meeting, modifying how the dip net fishery at Fish Creek in Knik Arm was to be managed, as well as making time changes to both the Kenai and Kasilof personal use fisheries. The Fish Creek dip net fishery was continued in regulation, but per 5 AAC 77.540(d)(1), it is open only from July 10 through July 31, and only if ADF&G projects that the escapement of sockeye salmon into Fish Creek will exceed 35,000 fish. All salmon other than Chinook salmon may be retained. The Kasilof River gillnet fishery was also modified by the BOF in 2002, expanding the days and hours that the fishery was open. The fishery now opens on June 15 and takes place from 6:00 AM until 11:00 PM daily. Instead of being managed for a harvest goal of 10,000–20,000 fish, the fishery remains open until 11:00 PM on June 24, regardless of how many fish are harvested. The Kasilof River dip net personal use fishery occurs from June 25 through August 7, 24 hours per day. The BOF-amended management plan also changed how the Kenai River dip net fishery was prosecuted. This fishery is open from July 10 through July 31, 7 days per week, but only from 6:00 AM to 11:00 PM daily, subject to the requirement of achieving the lower end of the Kenai River late-run sockeye salmon OEG. If ADF&G determines that the abundance of Kenai River late-run sockeye salmon is greater than 2.3 million fish, this fishery may be extended by EO to 24 hours per day.

In 2008, the BOF authorized a new UCI personal use fishery. Referred to as the *Beluga River Senior Citizen Personal Use Dip Net Fishery* (5 AAC 77.540(g)), salmon may be taken by dip net only by persons 60 years of age or older (no proxy fishing is allowed). The fishery is open 24 hours per day from July 10 through August 31 from the Beluga River Bridge downstream to an ADF&G regulatory marker located approximately 1 mile below the bridge. The annual limit in this fishery is the same as for other personal use fisheries, except that within the total annual limit, 1 Chinook salmon may be retained per household. The fishery will close, by EO, when 500 salmon, other than Chinook salmon, have been harvested. Permit holders are required to report their harvests weekly to ADF&G as specified in the permit.

A permit issued by ADF&G, and an Alaska resident sport fishing license, or an exemption from licensing under AS 16.05.400, is required to participate in any of the personal use fisheries. The annual limits are 25 salmon per head of household, and 10 additional salmon for each household member. In the Kasilof River dip net fishery, Chinook salmon may not be retained and must be released immediately to the water unharmed. In the Kenai River dip net fishery, 1 Chinook salmon may be retained per household. There are no Chinook salmon harvest restrictions in the Kasilof River gillnet personal use fisheries. Legal gear under the management plan are set gillnets and dip nets. A set gillnet cannot exceed 10 fathoms (60 feet) in length or 45 meshes in depth. Mesh size must be greater than 4.0 inches, but may not exceed 6 inches. Gillnets must be set at least 100 feet apart at all times. A legal dip net has been defined in regulation (5 AAC 39.105) as a bag-shaped net supported on all sides by a rigid frame. The maximum straight-line distance between any 2 points on the net frame, as measured through the net opening, may not exceed 5 feet. The depth of the bag must be at least one-half of the greatest straight-line distance, as measured through the net opening. No portion of the bag may be constructed of webbing that exceeds a stretched measurement of 4.5 inches; the frame must be attached to a single rigid handle and be operated by hand.

KASILOF RIVER GILLNET

In 2018, EO 2S-02-18 issued June 12, reduced the hours of the personal use set gillnet fishery at the mouth of the Kasilof River from 6:00 AM to 11:00 PM to 11:00 AM to 11:00 PM opening Friday, June 15 to Sunday, June 24. The reduction in hours was in response to the poor early-run Kasilof River Chinook salmon run. For the 2018 season, 120 Chinook, 14,390 sockeye, 2 coho, 22 pink, and 5 chum salmon were harvested in this fishery. The 2008–2017 average annual Chinook salmon harvest was 110 fish, and the 1996–2017 average was 176. The average annual sockeye salmon harvest during 2008–2017 was 22,746 fish (calculated from Appendix B17).

KASILOF RIVER DIP NET

The Kasilof River dip net fishery was open 24 hours per day from June 25 through August 7, 2018 (44 days), producing an estimated harvest of 92,034 sockeye salmon (Appendix A17). The 2008–2017 average annual harvest of sockeye salmon was 72,062 fish (calculated from Appendix B17). For the second consecutive year, the area open to dipnetting at the Kasilof River was not expanded upstream to the highway bridge. Expansion of the area open to dipnetting is typically allowed in response to inseason assessments of sockeye salmon escapement that projects the sockeye salmon BEG will be exceeded. However, ADF&G did not determine that the BEG in the Kasilof River would be exceeded until after the personal use dip net fishery had closed. The final Kasilof River sockeye salmon escapement in 2017 was estimated to be 358,724 fish (Appendix A2), above the BEG range of 160,000–340,000 fish.

KENAI RIVER DIP NET

The personal use dip net fishery located at the mouth of the Kenai River opened by regulation on July 10. The fishery was open from 6:00 AM to 11:00 PM daily. The sockeye salmon dip net harvest in 2018 was approximately 165,000 fish (Appendix A17), which was the smallest harvest since 2006 when 128,000 fish were harvested. The entry pattern of sockeye salmon into the Kenai River in 2018 was not conducive to large dip net harvests because large passage events took place late in the dip net season (Appendix A2; Appendix A18). In result of the late timing and poor sockeye salmon returns, the Kenai River personal dip net fishery was closed by EO 2-RS-1-45-18 effective Monday, July 30, closing the season 2 days early. The largest daily estimate of sockeye salmon passage in the Kenai River during the 2018 season was 55,768 fish on August 7. In previous years, large pulses of sockeye salmon entered the Kenai River on weekend days in mid-July; weekends typically see higher levels of effort and harvest than weekdays. The 2008–2017 average annual sockeye salmon harvest was approximately 369,000 fish (calculated from Appendix B17).

UNKNOWN FISHERY

Households that failed to indicate which fishery they participated in were estimated as “unknown fishery” (Dunker 2016). In 2018, the total sockeye salmon harvest from all personal use fisheries categorized as “unknown” was 2,085. This was approximately 1.2% of the total personal use harvest of 406,889 sockeye salmon (Appendix B17).

FISH CREEK DIP NET FISHERY

According to 5 AAC 77.540 (d), the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan*, the Fish Creek dip net fishery may be opened from July 10 through July 31 if ADF&G projects that the escapement of sockeye salmon into Fish Creek will be more than 35,000 fish. During the 2018 season, the Division of Sport Fish issued an EO opening the Fish Creek personal use dip net fishery from July 24 to July 31. As stated in the EO, the escapement goal had been achieved and the overall sockeye salmon run was projected to be well over 35,000 sockeye salmon. The estimated harvest in 2018 was 18,659 sockeye salmon. By the end of the 2018 season, sockeye salmon escapement to Big Lake was approximately 71,000 fish (Table 1; Appendix B10).

BELUGA RIVER SENIOR CITIZEN DIP NET FISHERY

Ten permit holders participated in the 2018 Beluga River senior citizen dip net fishery. The total harvest was 54 salmon (37 sockeye salmon and 17 coho salmon; Appendix A17).

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TABLES AND FIGURES

Table 1.—Upper Cook Inlet sockeye salmon goals and passage, 2018.

System	Goal type	Goal range		2018 Passage
		Lower	Upper	
Fish Creek	SEG	15,000	45,000	71,158
Kasilof River	BEG	160,000	340,000	394,288
Kenai River	Inriver	900,000	1,100,000 ^a	1,034,771
Larson Lake	SEG	15,000	35,000	23,444
Chelatna Lake	SEG	20,000	45,000	20,437
Judd Lake	SEG	15,000	40,000	30,683
Packers Creek	SEG	15,000	30,000	16,247

Note: Passage estimates do not account for any harvest above counting sites.
 BEG = biological escapement goal; SEG = sustainable escapement goal; OEG = optimal escapement goal.

^a Inriver goal changed from 1,000,000–1,300,000 to 900,000–1,100,000 at midseason projection.

Table 2.—Chinook salmon harvest during the directed fishery in the Northern District, 1986–2018.

Year	Chinook	Permits	Periods	Year	Chinook	Permits	Periods
1986	13,771	135	3	2003	1,185	30	3
1987	11,541	129	4	2004	1,819	44	3
1988	11,122	142	3	2005	3,150	52	3
1989	11,068	137	3	2006	3,887	59	3
1990	8,072	130	3	2007	3,132	62	3
1991	6,305	140	4	2008	3,855	74	4
1992	3,918	137	3	2009	1,266	55	3
1993	3,072	80	4	2010	1,674	51	4
1994	3,014	73	2	2011	2,187	61	4
1995	3,837	65	1	2012	1,030	38	4
1996	1,690	58	1	2013	1,134	38	4
1997	894	45	2	2014	1,377	44	4
1998	2,240	51	2	2015	1,560	40	4
1999	2,259	56	2	2016	2,030	41	4
2000	2,046	47	3	2017	2,031	44	4
2001	1,616	43	3	2018	0	0	0
2002	1,747	36	3				

Table 3.—Upper Cook Inlet sockeye salmon forecast versus actual run by river system, 2018.

System	Forecast	Actual	Difference
Kenai River	2,485	2,100	-34%
Kasilof River	866	695	-19%
Susitna River	329	256	-22%
Fish Creek	211	116	-57%
Minor systems	3,891	2,678	-31%
Overall total	4,556	3,094	-32%

Table 4.—Upper Subdistrict set gillnet fishing hours allowed beyond regular periods and mandatory closures, 2018.

Week	Kasilof Section				Kenai Section				East Forelands			
	Additional		Window		Additional		Window		Additional		Window	
	Hours in plans	Hours used	Hours in plan	Hours observed	Hours in plans	Hours used	Hours in plan	Hours observed	Hours in plans	Hours used	Hours in plan	Hours observed
Jun 17–23	Closed season				Closed season				Closed season			
Jun 24–30	51	0	60	60	Closed season				Closed season			
Jul 1–7 ^a	48	24	36	36	Closed season				Closed season			
Jul 8–14	48	36	36	36	48	24	36	36	51	0	60	60
Jul 15–21 ^b	24	24	36	36	24	24	36	36	51	0	60	60
Jul 22–28	24	12	36	36	24	12	36	36	51	0	60	60
Jul 29–Aug 4 ^c	24	0	36	36	24	0	36	36	24	0	60	60
Aug 5–11	24	0	0	0	24	0	0	0	24	0	60	60
Aug 12–15	24	0	0	0	24	0	0	0	24	0	60	60
Totals	267	96	240	240	168	60	144	144	225	0	360	360

^a Kenai River sport fishery for king salmon restricted to no bait, triggering a reduction in the total hours allowed for commercial fishing.

^b Kenai River sport fishery for king salmon restricted to no retention, triggering a further reduction in the total hours allowed for commercial fishing.

^c Inseason projection of the Kenai River late-run sockeye salmon updated to <2.3 million fish, reducing the allowable additional hours for commercial fishing.

Table 5.—Production of sockeye salmon in Big Lake, 1997–2018.

Year	Total run	Weir count	Spawners	Spring fry release	Fall fry release	Smolt release	Smolt emigration	
							Age-1	Age-2
1997	131,814	54,656	48,513	4,018,000				
1998	45,622	22,859	18,789	5,000,000				
1999	45,714	26,749	25,199		197,000			
2000	37,635	19,533	16,704	846,000				
2001	70,013	43,486	39,093					
2002	133,640	90,483	86,181	4,316,000				
2003	149,586	91,743	86,858	3,589,000			114,654	2,340
2004	42,160	22,157	20,065	5,000,000			251,195	25,632
2005	21,967	14,215	12,140	1,742,300			135,739	22,623
2006	36,567	32,562	26,712	444,200	426,000		205,135	19,307
2007	48,277	27,948	23,845	3,812,400	702,500	315,700	278,351	30,928
2008	26,872	19,339	19,314	3,610,000		433,000	592,919	38,785
2009	121,965	83,477	83,477					
2010	209,000	126,826	126,826					
2011	119,528	66,183	66,183				269,020	23,722
2012	32,460	18,813	18,713				178,081	11,857
2013	25,082	18,912	18,315				422,258	8,241
2014	64,729	43,915	43,824				271,557	7,828
2015	120,085	102,309	102,124				424,112	8,552
2016	63,938	46,202	46,202				None	None
2017	98,281	61,469	61,310				None	None
2018	116,081	72,148	70,840				None	None

Table 6.—Upper Cook Inlet sockeye salmon run, 2018.

System	Commercial harvest	Escapement	Other harvests	Total
Fish Creek	25,627	71,556	19,423	116,000
Kasilof River	189,812	394,309	110,392	695,000
Kenai River	428,236	1,035,761	621,116	2,100,000
Susitna River	57,090	190,819	7,350	256,000
All Others	81,052	332,506	18,376	432,000
Total	781,817	2,024,951	776,657	3,599,000

Table 7.—Upper Cook Inlet pink salmon commercial harvests and Deshka River escapements, 1996–2018.

Year	UCI Pink salmon			
	Commercial harvest		Deshka River enumeration	
	Even-year	Odd-year	Even-year	Odd-year
1997		70,945		1,101
1998	551,737		541,946	
1999		16,176		766
2000	146,482		1,248,498	
2001		72,560		3,845
2002	446,960		946,255	
2003		48,789		9,214
2004	357,939		390,087	
2005		48,419		7,088
2006	404,111		83,454	
2007		147,020		3,954
2008	169,368		12,947	
2009		214,321		26,077
2010	292,706		9,328	
2011		34,123		4,489 ^a
2012	469,598		78,853	
2013		48,275		27,926
2014	642,879		78,111	
2015		47,997		6,328
2016	382,436		65,456	
2017		168,042		24,868
2018	126,828		59,153	

^a No counts from Aug 8 to Aug 14 due to high water.

Table 8.—Coho salmon escapement and enumeration, 1996–2018.

Year	Fish Creek	Little Susitna River	Jim Creek ^a	Deshka River	OTF CPUE ^b
1996		15,803			534
1997	2,578 ^c	9,894			362
1998	5,463	15,159			403
1999	1,766	3,017			294
2000	5,979	14,436	657		766
2001	10,047	30,587	1,019		838
2002	15,187	47,938	2,473	24,612	798
2003	2,142	10,877	1,421	17,305	368
2004	3,255 ^c	40,199	4,652	62,940	785
2005	3,836 ^c	16,839 ^d	1,464	47,887	367
2006	5,723 ^c	8,786 ^d	2,389	59,419	1,034
2007	9,618 ^c	17,573	725	10,575	482
2008	9,603 ^c	18,485	1,890	12,724	718
2009	8,666	9,523	1,331	27,348	283
2010	7,034	9,214	242	10,393	454
2011	1,428 ^c	4,826	261	7,326	264
2012	1,237	6,770	213	6,825	154
2013	7,593	13,583 ^d	663	22,141	494
2014	10,283	24,211	122	11,578	661
2015	7,912	12,756	571	10,775	277
2016	2,483	9,998	106	6,820	396
2017	8,966	17,781	5,646	36,869	527
2018	5,023	7,583	5,515	12,962	952

^a Escapement is a foot index survey of a section of McRoberts Creek, a tributary of the Jim Creek drainage.

^b OTF CPUE represents the number of fish caught in 100 fathoms of gillnet in one hour in the southern offshore test fishery.

^c Represents a partial count, the weir was pulled before the coho salmon run was complete.

^d Weir washed out, count incomplete.

Table 9.—Deshka River Chinook salmon passage, 1995–2017.

Year	Passage	Year	Passage
1995	10,044	2007	18,714
1996	14,349	2008	7,533
1997	35,587	2009	11,960
1998	15,409	2010	18,594
1999	29,649	2011	19,026
2000	35,242	2012	14,088
2001	29,004	2013	18,532
2002	29,427	2014	16,335
2003	40,069	2015	24,395
2004	57,934	2016	22,774
2005	37,725	2017	11,383
2006	31,150	2018	8,549

Table 10.—Commercial eulachon harvest, 1978, 1980, 1998–99, and 2006–2018.

Year	Pounds	Tons ^a	Permits
1978	300	0.2	NA
1980	4,000	2.0	NA
1998	18,610	9.3	<3
1999	100,000	50.0	NA
2006	90,783	45.4	8.0
2007	125,044	62.5	11.0
2008	127,365	63.7	6.0
2009	78,258	39.1	6.0
2010	126,135	63.1	3.0
2011	201,570	100.8	5.0
2012	195,910	98.0	4.0
2013	190,830	95.4	4.0
2014	198,814	99.4	4.0
2015	213,934	107.0	4.0
2016	191,536	95.8	4.0
2017	18,685	9.3	<3
2018	382,967	191.5	4.0

^a Tons = short tons = 2,000 lb or 907.2 kg.

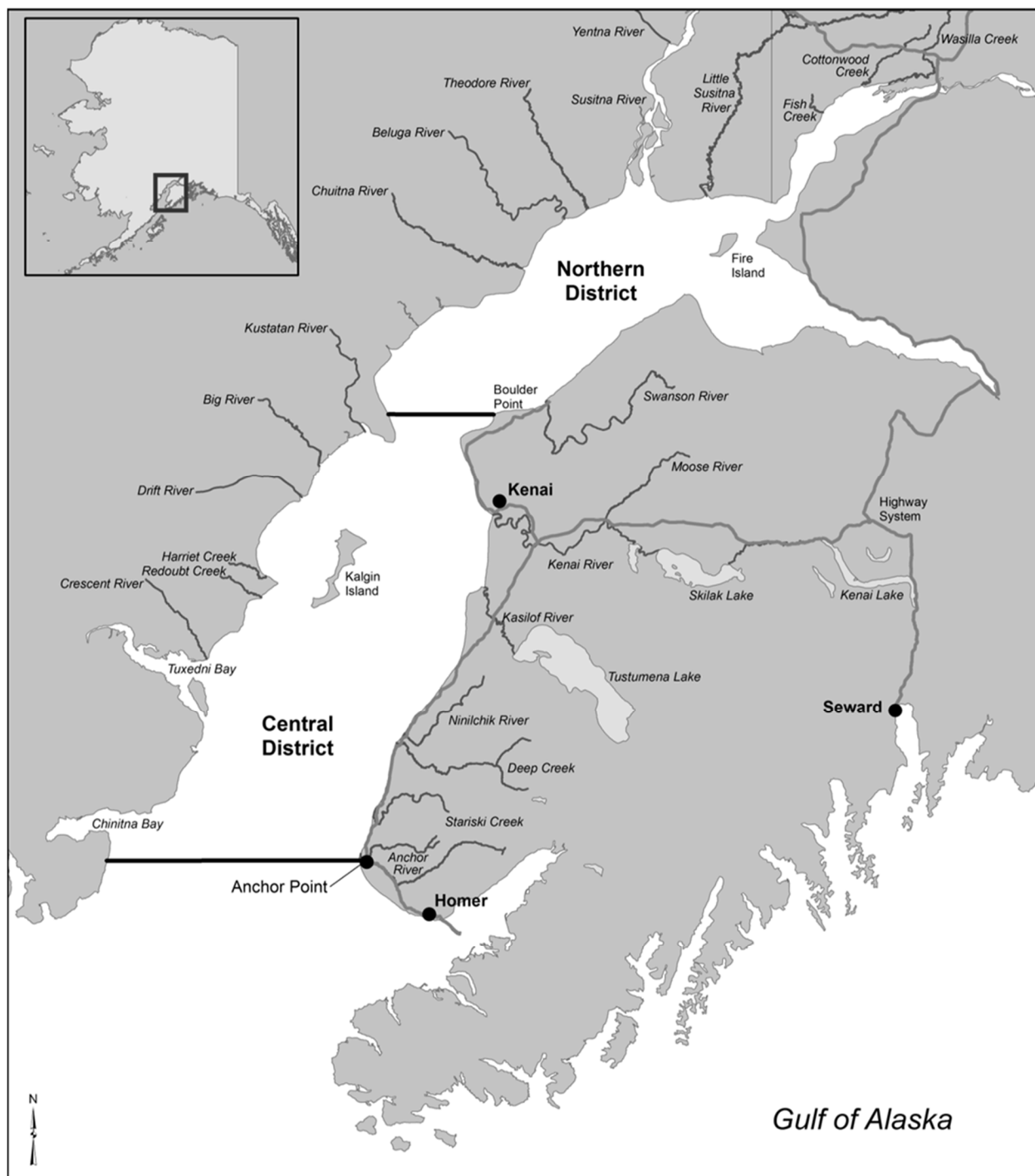


Figure 1.—Major tributaries of the Cook Inlet basin.

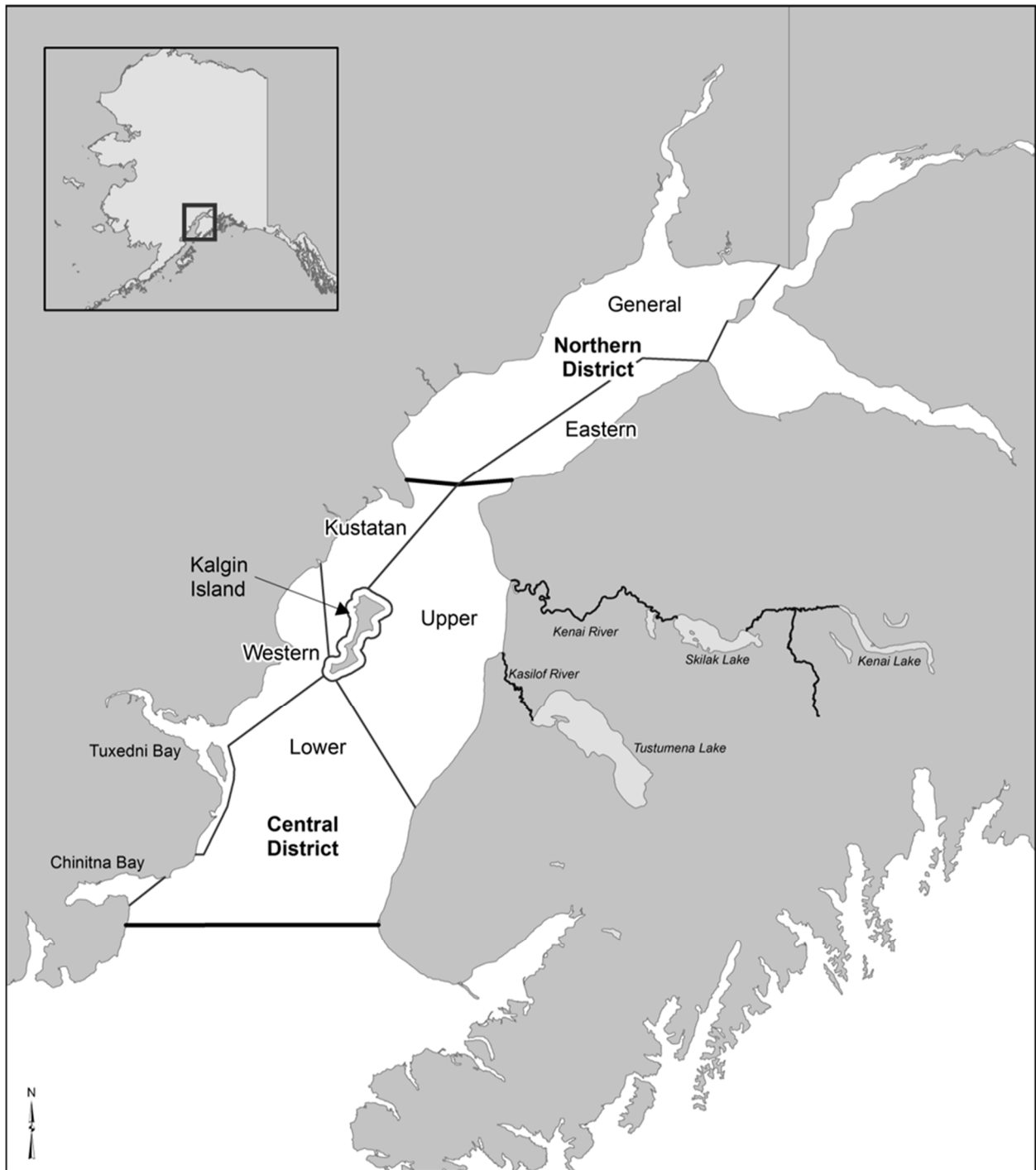


Figure 2.—Upper Cook Inlet commercial fisheries subdistrict fishing boundaries.

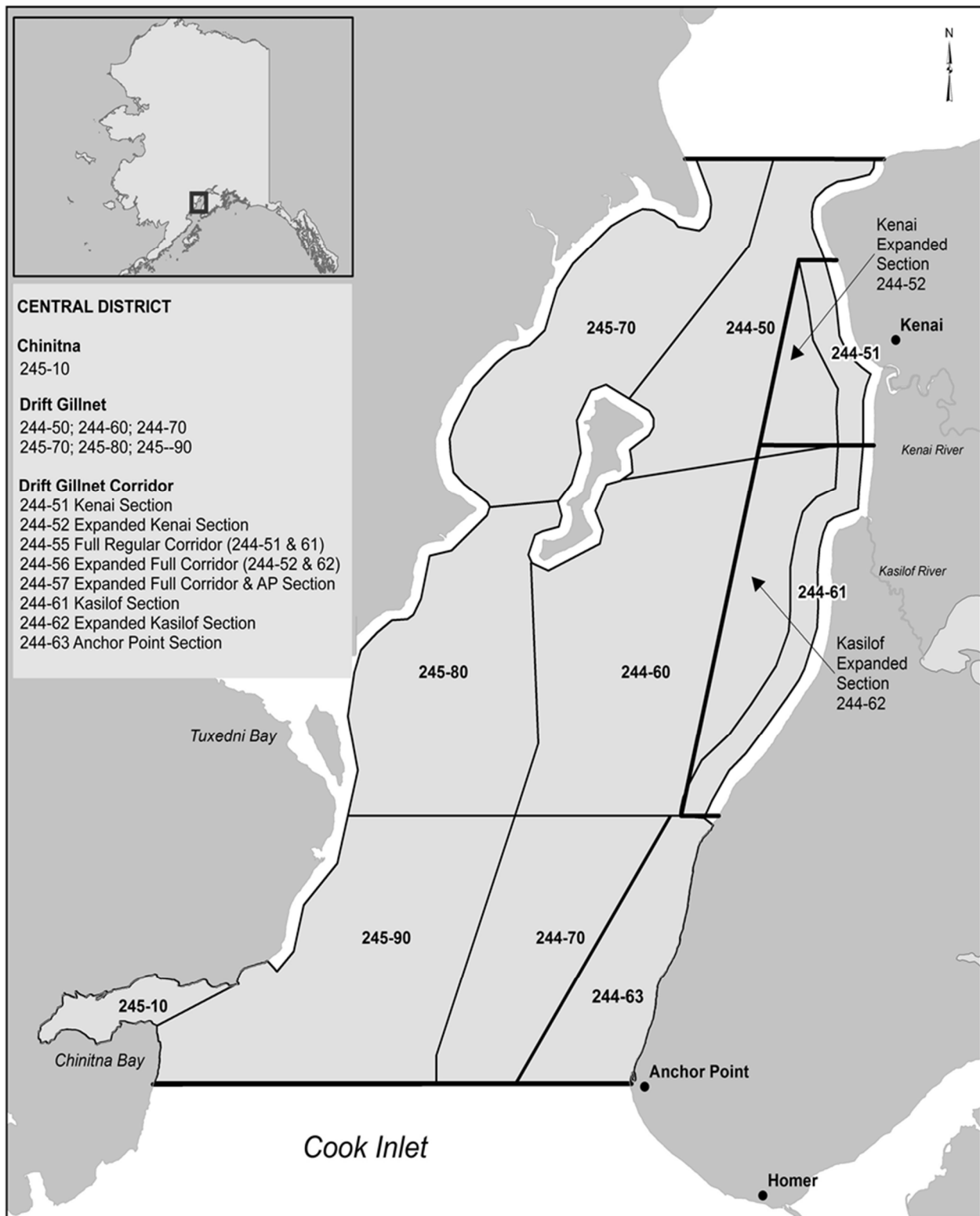


Figure 4.—Upper Cook Inlet commercial drift gillnet statistical areas.

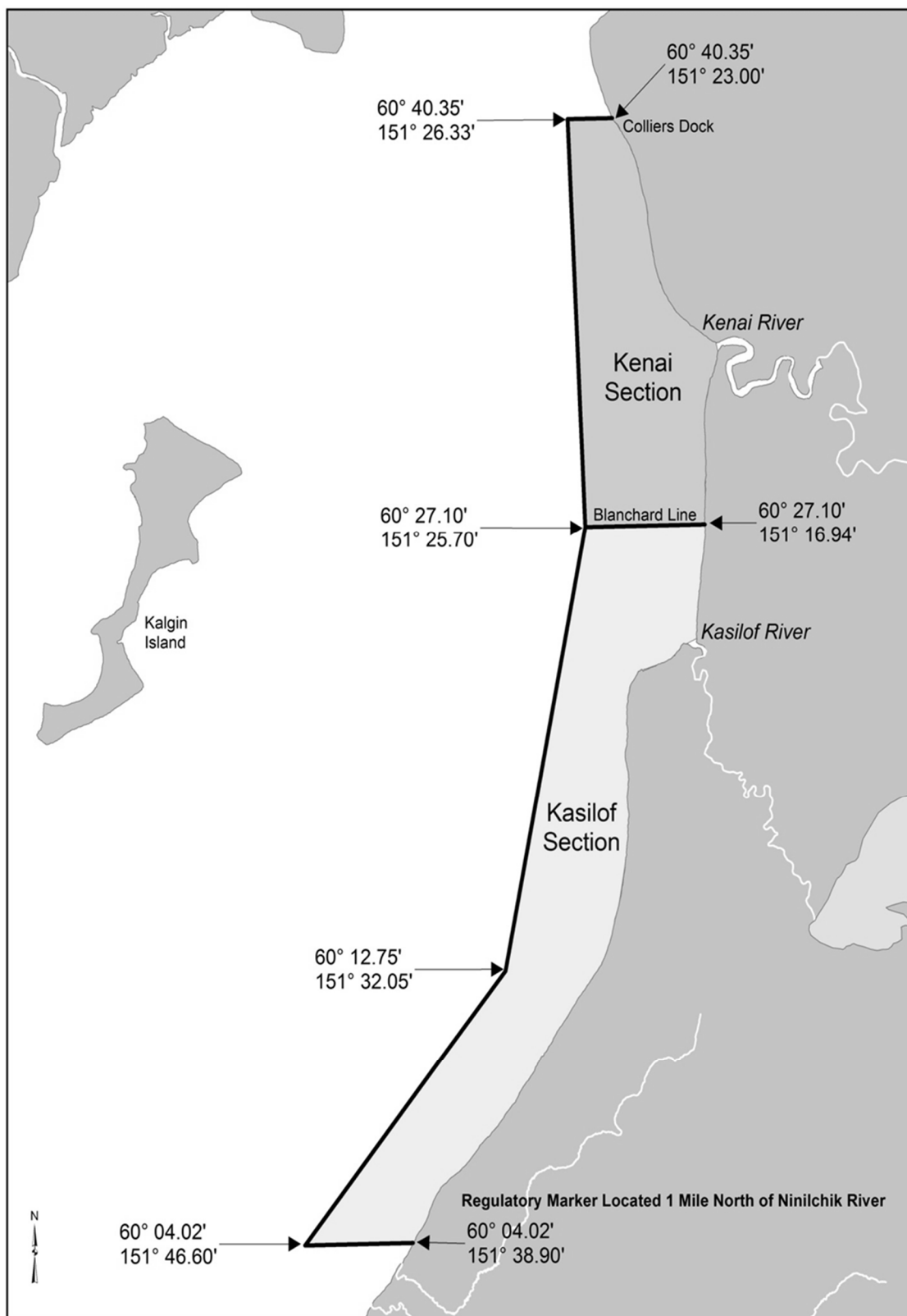


Figure 5.—Map of the Kenai and Kasilof Sections with waypoint descriptions.

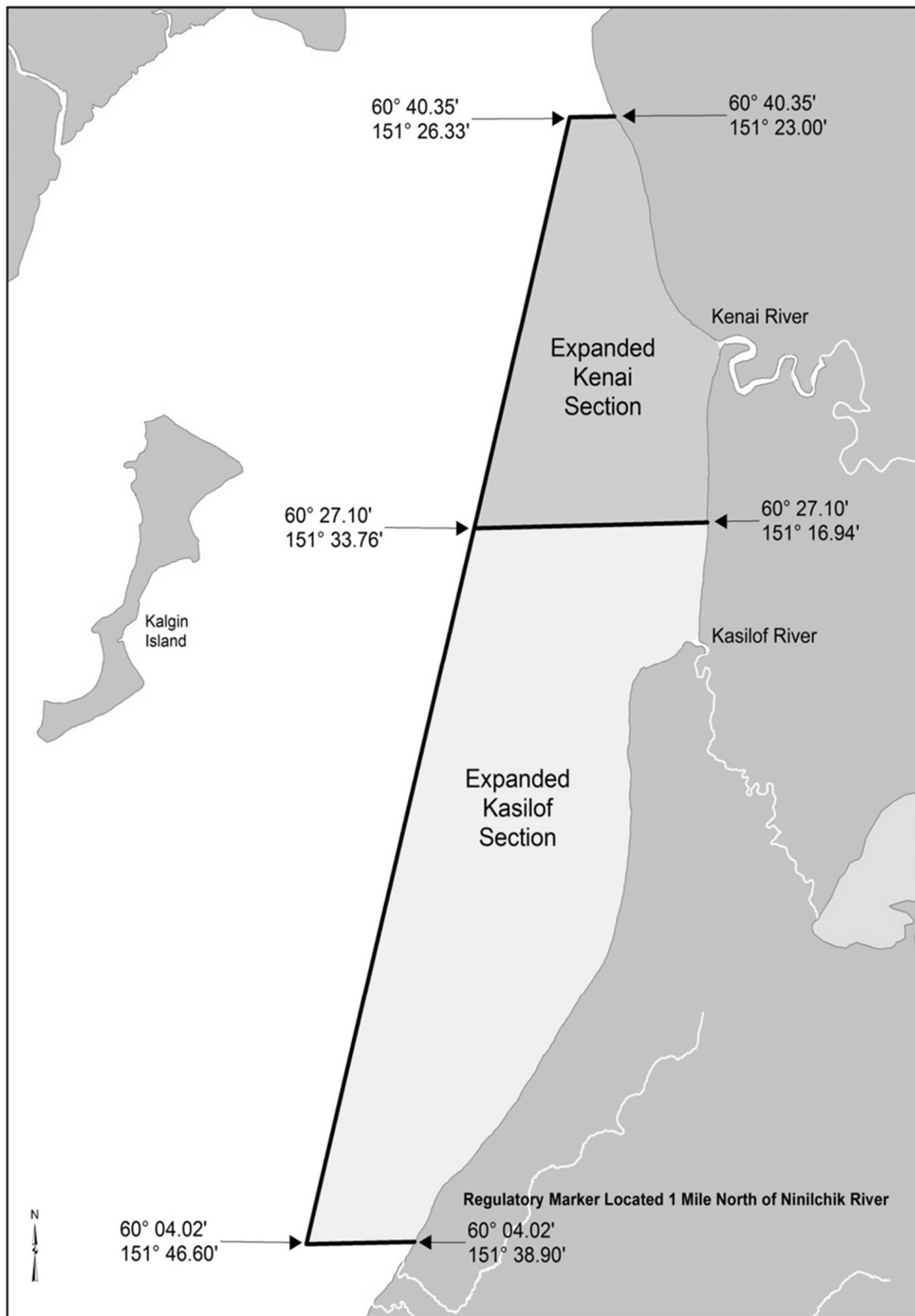


Figure 6.—Map of the Expanded Kenai and Expanded Kasilof Sections with waypoint descriptions.

Week of June 18 - 24							
	Sun 17	Mon 18	Tue 19	Wed 20	Thu 21	Fri 22	Sat 23
Midnight							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
Noon							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Week of June 24 - June 30							
	Sun 24	Mon 25	Tue 26	Wed 27	Thu 28	Fri 29	Sat 30
Midnight							
1							
2							
3							
4							
5							
6							
7							EO#5
8							
9							
10							
11							
Noon							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

EO #5

Kasilof Section 7am to 9pm 6/30

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Figure 7.—Hours fished in the Upper Subdistrict set gillnet fishery, 2018

Week of July 1 - 7							
	Sun 1	Mon 2	Tue 3	Wed 4	Thu 5	Fri 6	Sat 7
Midnight							
1							
2							
3							
4							
5							
6							
7				EO #6			EO #7
8							
9							
10							
11							
Noon							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

EO #6 Kasilof Section from 7am to 11pm

EO #7 Kasilof Section from 7am to 3pm

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Week of July 8 - 14							
	Sun 8	Mon 9	Tue 10	Wed 11	Thu 12	Fri 13	Sat 14
Midnight							
1							
2							
3							
4							
5							
6							
7		EO #9			EO #10		
8							EO #11
9							
10							
11							
Noon							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

EO #9 Kenai and Kasilof Sections 7am to 7pm

EO #10 Kenai and Kasilof Sections 7am to 7pm

EO #11 Kasilof section within one-half mile 8am to 8pm

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Figure 7.–Page 2 of 4.

Week of July 15 - 21							
	Sun 15	Mon 16	Tue 17	Wed 18	Thu 19	Fri 20	Sat 21
Midnight							
1							
2							
3							
4							
5							
6							
7					EO #14		EO #15
8							
9							
10							
11							
Noon							
1							
2							
3							
4							
5				EO #13			
6							
7							
8							
9							
10							
11							

EO #13 Kasilof section within 600ft 5pm to 11:59pm

EO #14 Kasilof section within one-half mile and N. K-beach 600ft

EO #15 Kasilof section within 600ft 7am to 7pm

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Week of July 22 - 28							
	Sun 22	Mon 23	Tue 24	Wed 25	Thu 26	Fri 27	Sat 28
Midnight							
1							
2							
3							
4							
5							
6							
7		EO #18					
8	EO #16						
9							
10							
11					EO #19		
Noon							
1							
2							EO #20
3							
4							
5							
6							
7							
8							
9							
10							
11							

EO #16 Kasilof section within 600ft 8am to 8pm

EO #18 Kenai, Kasilof, E. Foreland Section 7am to 7pm

EO #19 Kasilof section within 600ft 11am to 11pm

EO #20 Kasilof section within 600ft 2pm to 10pm

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Figure 7.–Page 3 of 4.

Week of July 29 - Aug 4							
	Sun 29	Mon 30	Tue 31	Wed 1	Thu 2	Fri 3	Sat 4
Midnight							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
Noon							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Figure 7.—Page 4 of 4.

Week of Aug 5 - 11							
	Sun 5	Mon 6	Tue 7	Wed 8	Thu 9	Fri 10	Sat 11
Midnight							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
Noon				EO #25			
1							
2							
3							
4							
5							
6					EO #28	EO #29	
7							
8							
9							
10							
11							

EO #25 KRSA 12 noon on 8/8 to 6pm on 8/9

EO #28 KRSA 6pm on 8/9 to 6pm on 8/10

EO #29 KRSA 6pm on 8/9 to 8am on 8/12

Regular Fishing Periods
Additional Fishing Time
No Commercial Fishing

Drift Gillnet Area 1 and Area 2 Descriptions

Area 2 Description and Coordinates

- A. Southwest Corner: 60° 20.43' N. lat, 151° 54.83' W. lon.
- B. Northwest Corner: 60° 41.08' N. lat., 151° 39.00' W. lon.
- C. Northeast Corner: 60° 41.08' N. lat., 151° 24.00' W. lon.
- D. Blanchard Line Corridor Boundary: 60° 27.10' N. lat., 151° 25.70' W. lon.
- E. Southeast Corner: 60° 20.43' N. lat., 151° 28.00' W. lon.

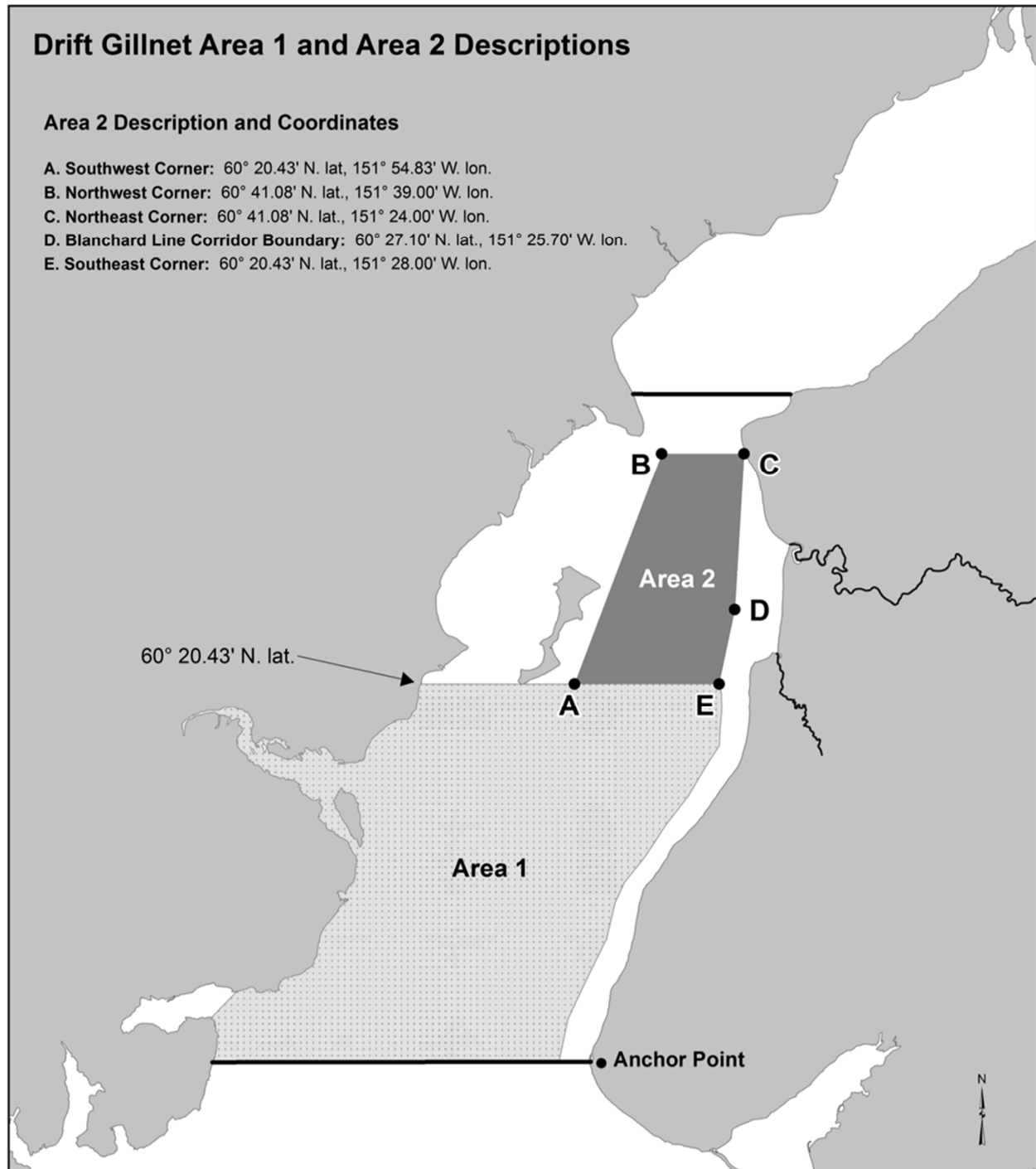


Figure 8.—Drift gillnet boundaries for fishing Areas 1 and 2.

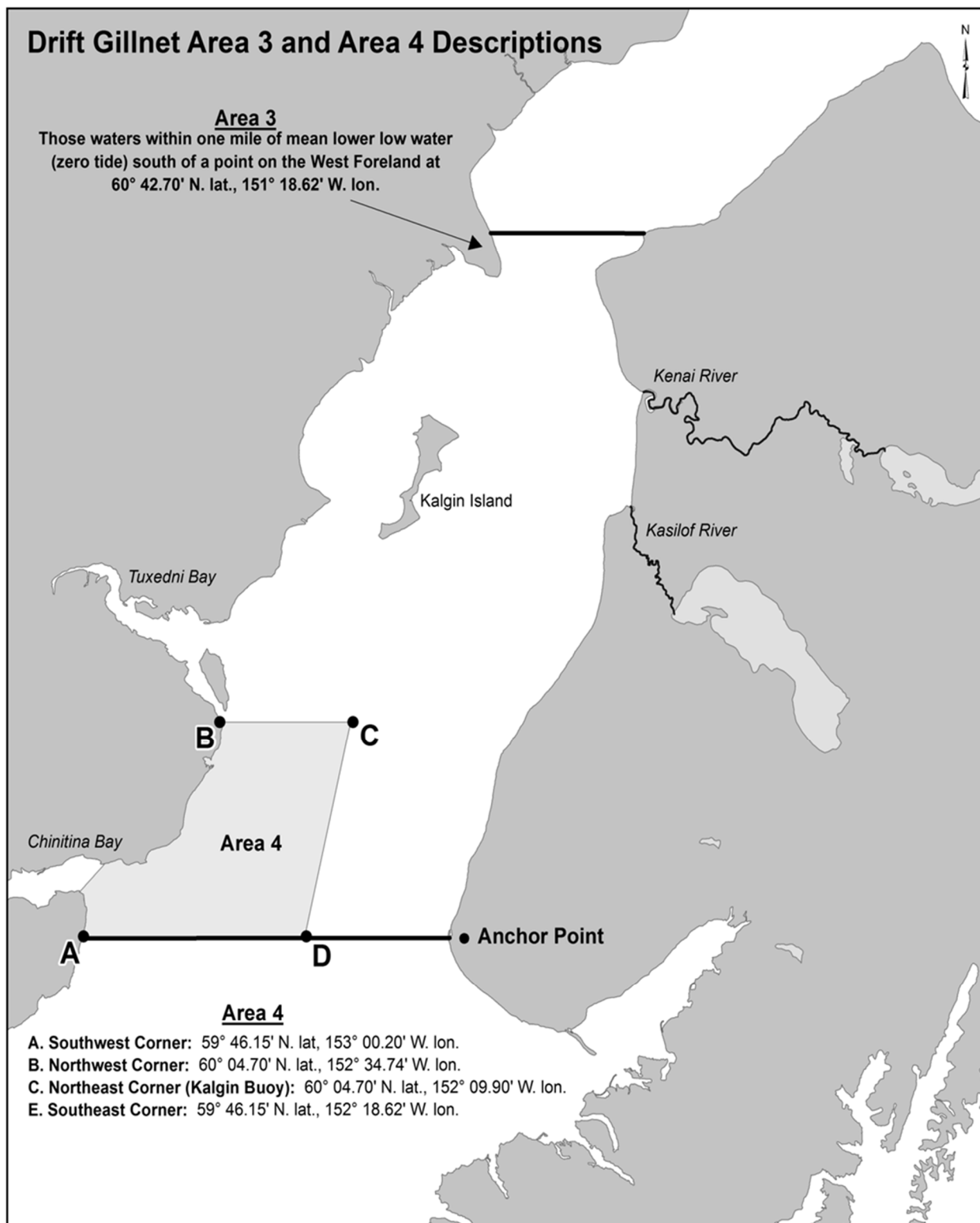


Figure 9.—Map of drift gillnet Areas 3 and 4.

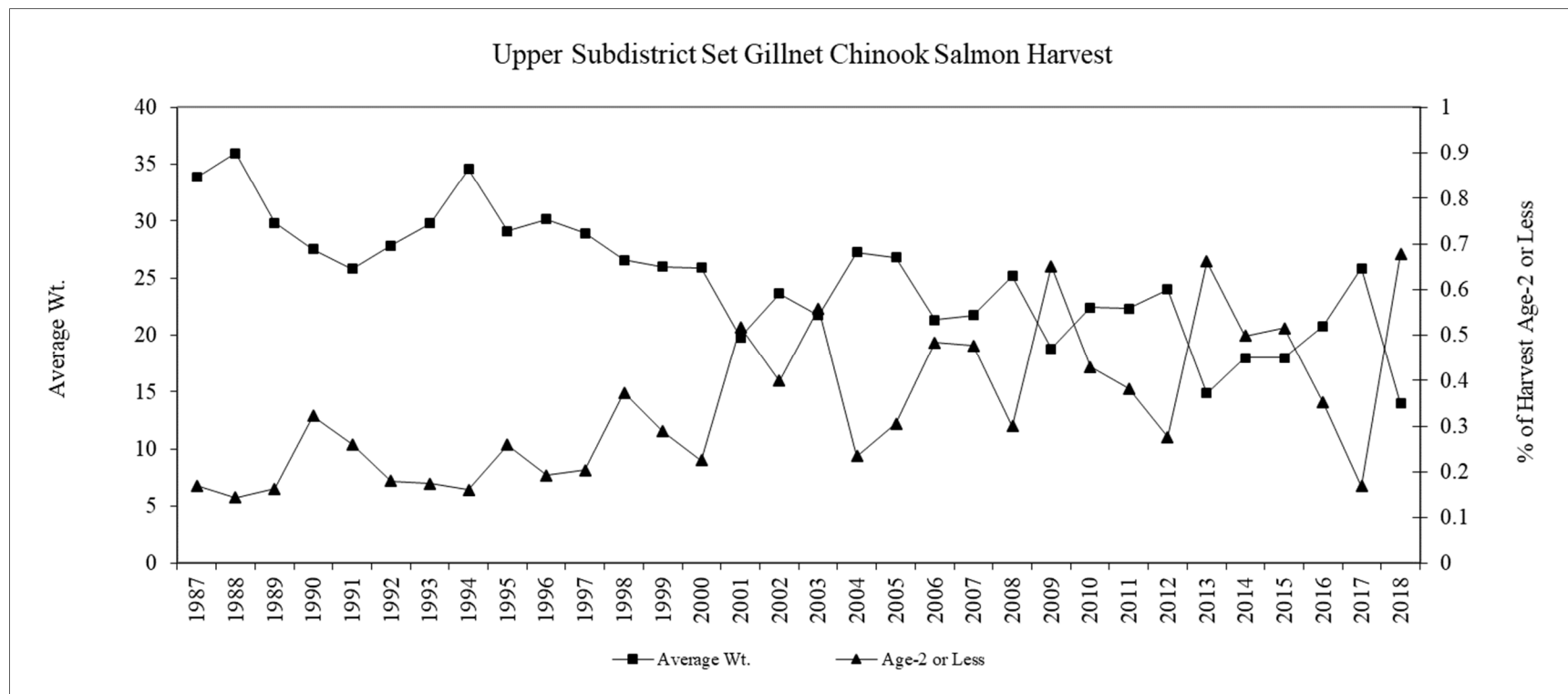


Figure 10.—Chinook salmon average weight in pounds (all fish) and percentage of the harvest composed of age-2 or less fish in the Upper Subdistrict set gillnet commercial fishery, 1987–2018.

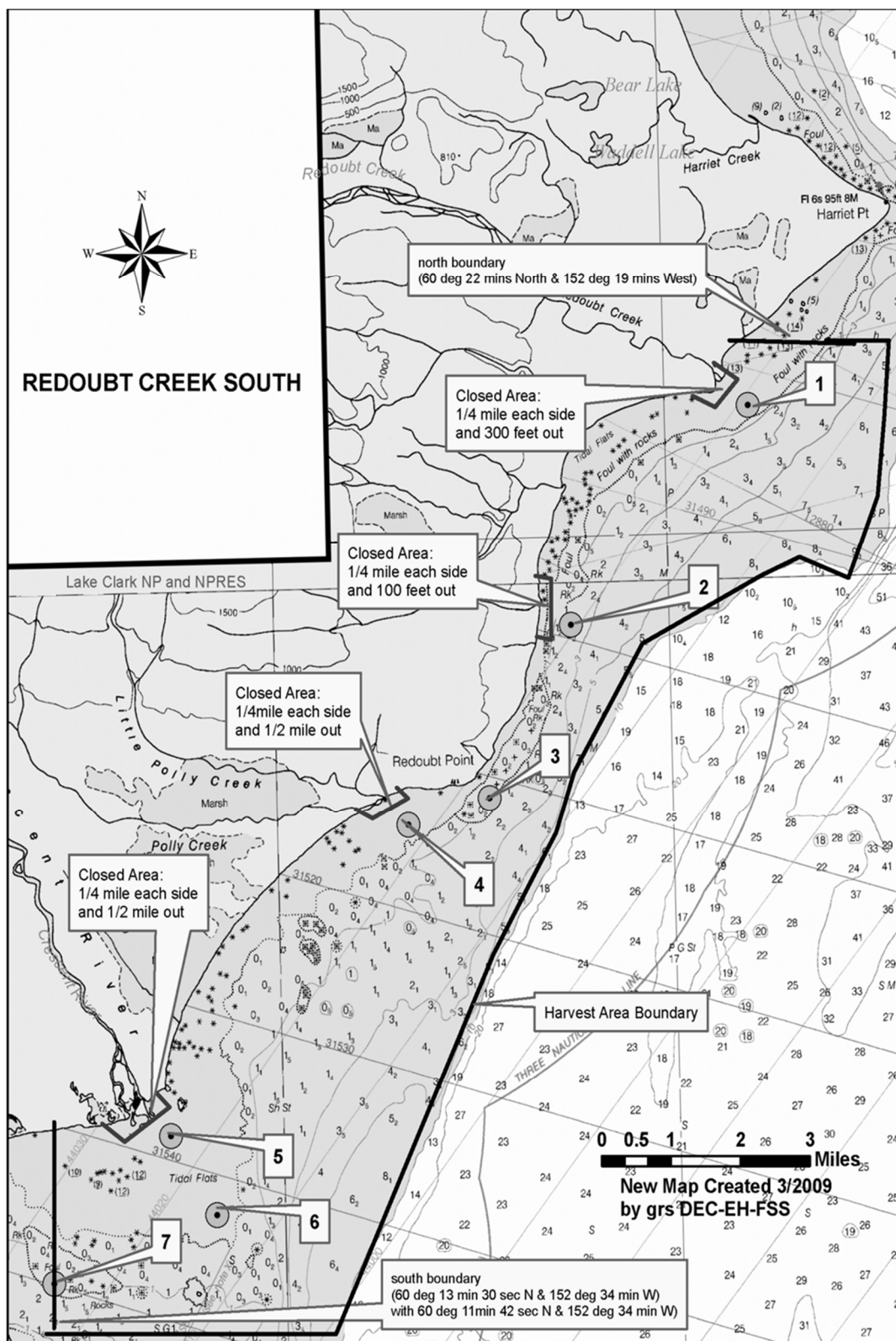


Figure 11.—Area open to the commercial razor clam fishery on the west side of Cook Inlet, Alaska.

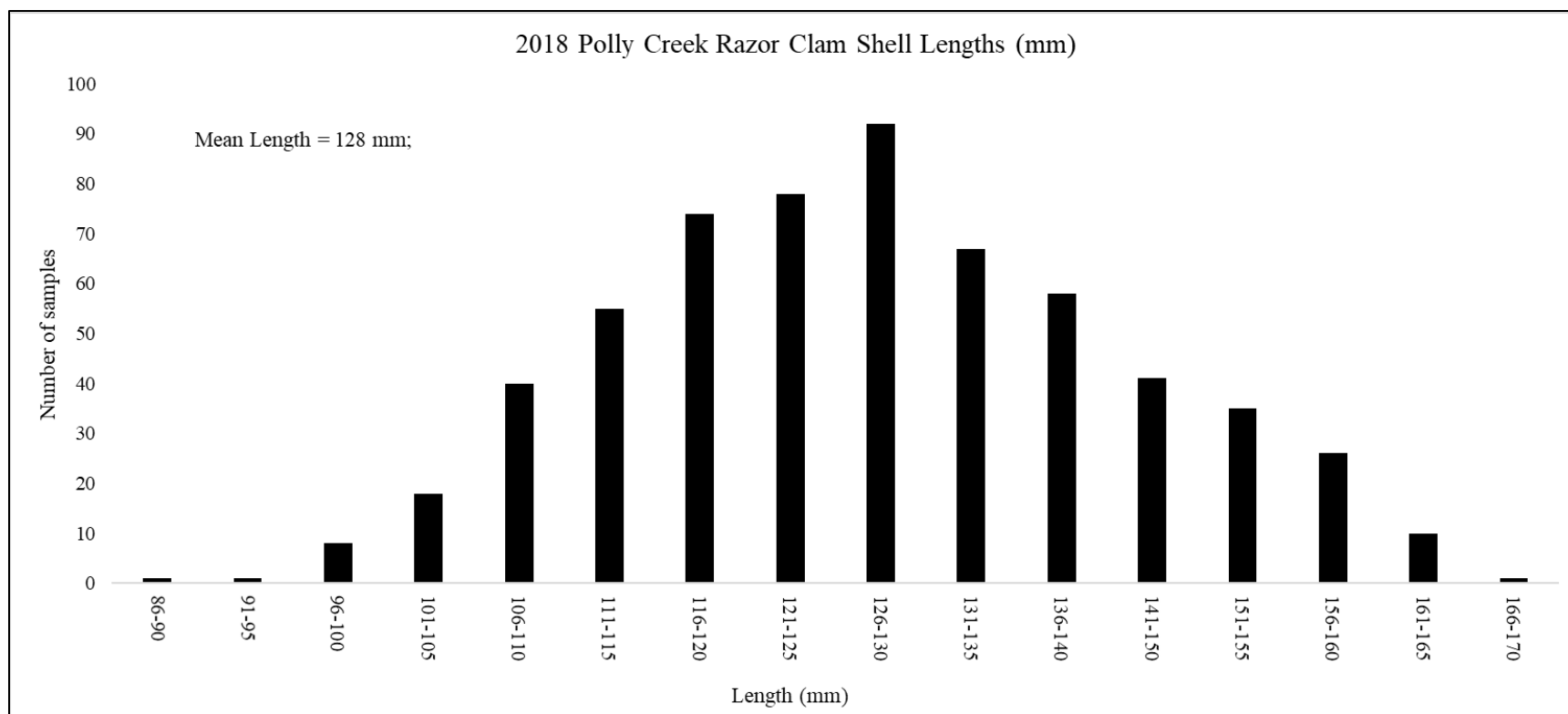


Figure 12.—Length frequency of razor clam shells sampled from the 2018 Polly Creek commercial razor clam fishery.

APPENDIX A: 2018 SEASON DATA

Appendix A1.—Offshore test fishery sockeye salmon catch results and environmental data, 2018.

Date	No. of stations	Fishing time (min)	Catch		Index ^a		Mean length (mm)	Water temp (°C)	Air temp (°C)	Salinity (ppm)	Beginning wind		Ending wind	
			Daily	Cum	Daily	Cum					Vel	Dir	Vel	Dir
1 Jul	6	218.5	3	3	2	2	572	9.6	15.7	27.0	12	S	6	S
2 Jul	6	223.5	37	40	29	31	509	9.5	14.4	28.7	5	-	5	-
3 Jul	6	227.5	5	45	4	35	569	10.2	17.6	27.0	2	-	5	-
4 Jul	6	233.5	104	149	75	110	540	9.7	13.1	28.5	10	S	12	S
5 Jul	6	225.0	20	169	15	125	529	10.3	16.3	28.1	10	S	12	S
6 Jul	6	224.5	28	197	21	145	522	10.9	14.7	28.7	10	S	0	-
7 Jul	6	220.0	31	228	25	170	534	10.5	14.4	28.4	15	SW	15	SW
8 Jul	2 ^b	88.5	108	336	99	269	546	10.1	12.1	29.0	20	SE	20	SE
9 Jul	6	236.5	90	426	67	336	546	10.7	11.9	26.9	15	SE	10	NE
10 Jul	6	225.5	38	464	30	366	560	9.9	12.1	29.9	12	NE	0	-
11 Jul	6	236.0	59	523	43	409	544	9.7	12.1	29.8	18	SW	18	SW
12 Jul	6	218.0	42	565	34	443	536	9.8	12.8	29.5	10	N	-	-
13 Jul	6	194.5	113	678	88	531	533	9.6	11.2	30.5	18	NE	20	N
14 Jul	6	225.5	57	735	41	571	536	10.0	12.1	29.0	20	N	20	N
15 Jul	6	220.5	10	745	8	579	509	10.3	15.5	29.0	2	N	4	S
16 Jul	6	203.0	28	773	25	604	532	10.0	13.4	29.8	3	SW	5	SW
17 Jul	5 ^b	195.5	119	892	95	699	538	10.6	14.4	29.5	9	SE	0	-
18 Jul	6	224.5	94	986	73	773	532	10.4	13.7	29.3	9	SE	5	SE
19 Jul	4 ^b	145.6	37	1,023	44	817	538	10.8	14.1	28.5	15	SW	0	-
20 Jul	6	223.0	16	1,039	13	829	535	10.7	12.2	28.0	10	SW	2	SW
21 Jul	6	226.0	75	1,114	52	881	547	11.5	14.7	28.0	5	NW	12	SW
22 Jul	6	239.0	83	1,197	58	940	540	11.2	13.1	27.9	12	SW	12	SW
23 Jul	6	220.0	71	1,268	54	994	539	11.5	13.1	27.3	8	NE	20	N
24 Jul	4 ^b	160.0	43	1,311	35	1,029	536	11.2	13.4	26.5	15	N	0	-
25 Jul	4 ^b	128.5	11	1,322	28	1,056	549	10.3	13.1	30.0	25	N	25	N
26 Jul	6	219.0	29	1,351	23	1,080	543	10.8	12.8	28.1	10	SW	5	SW
27 Jul	6	233.5	151	1,502	17	1,187	534	10.6	13.7	29.2	10	S	10	SW
28 Jul	6	214.5	13	1,515	11	1,198	542	10.9	13.0	27.9	5	N	14	NW
29 Jul	6	205.5	21	1,536	17	1,214	535	10.5	14.4	28.9	2	-	5	N
30 Jul	6	212.0	10	1,546	8	1,223	551	10.9	13.9	27.4	10	SW	10	SW

Note: Wind velocity (Vel) is in knots.

^a Sockeye salmon indices were linearly interpolated for days with missing stations.

^b Not all stations fished due to weather or mechanical issues.

Appendix A2.—Upper Cook Inlet sockeye salmon counts by watershed and date, 2018.

Date	Kenai River		Kasilof River		Fish Creek		Chelatna Lake		Larson Lake		Judd Lake	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15 Jun			799	799								
16 Jun			958	1,757								
17 Jun			1063	2,820								
18 Jun			1,860	4,680								
19 Jun			1,872	6,552								
20 Jun			2,100	8,652								
21 Jun			1,920	10,572								
22 Jun			2,400	12,972								
23 Jun			4,997	17,969								
24 Jun			5,508	23,477								
25 Jun			4,151	27,628								
26 Jun			1,398	29,026								
27 Jun			2,364	31,390								
28 Jun			3,542	34,932								
29 Jun			1,254	36,186								
30 Jun			2,238	38,424								
1 Jul	1,968	1,968	2,454	40,878								
2 Jul	3,694	5,662	5,676	46,554								
3 Jul	2,394	8,056	6,738	53,292								
4 Jul	4,551	12,607	7,584	60,876								
5 Jul	5,065	17,672	3,603	64,479								
6 Jul	6,505	24,177	6,180	70,659								
7 Jul	7,786	31,963	4,746	75,405								
8 Jul	5,544	37,507	5,682	81,087								
9 Jul	5,730	43,237	5,226	86,313	557	557						
10 Jul	4,218	47,455	2,604	88,917	2,032	2,589			8	8	0	
11 Jul	3,853	51,308	6,744	95,661	1,220	3,809			0	8	0	
12 Jul	14,898	66,206	18,192	113,853	1,426	5,235			0	8	0	
13 Jul	23,394	89,600	5,540	119,393	410	5,645			0	8	0	
14 Jul	8,593	98,193	4,584	123,977	1,072	6,717			0	8	0	
15 Jul	7,626	105,819	3,066	127,043	148	6,865			0	8	0	

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Appendix A2.–Page 2 of 3.

Date	Kenai River		Kasilof River		Fish Creek		Chelatna Lake		Judd Lake		Larson Lake	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
16 Jul	7,110	112,929	6,366	133,409	424	7,289			0	8	0	
17 Jul	11,072	124,001	15,102	148,511	103	7,392			60	68	0	
18 Jul	19,240	143,241	26,616	175,127	550	7,942			20	88	0	
19 Jul	30,293	173,534	13,218	188,345	484	8,426	0	0	870	958	0	
20 Jul	33,858	207,392	21,312	209,657	1,998	10,424	1	1	737	1,695	0	
21 Jul	62,623	270,015	10,734	220,391	3,785	14,209	0	1	624	2,319	0	
22 Jul	24,618	294,633	8,484	228,875	3,469	17,678	59	60	410	2,729	0	
23 Jul	33,606	328,239	8,658	237,533	3,290	20,968	511	571	1,184	3,913	0	
24 Jul	25,470	353,709	5,670	243,203	394	21,362	664	1,235	342	4,255	0	
25 Jul	14,186	367,895	13,488	256,691	55	21,417	801	2,036	1,344	5,599	226	226
26 Jul	15,316	383,211	8,818	265,509	49	21,466	948	2,984	1,949	7,548	238	464
27 Jul	16,043	399,254	6,162	271,671	0	21,466	1,058	4,042	1,685	9,233	221	685
28 Jul	8,923	408,177	5,970	277,641	0	21,466	2,133	6,175	3,045	12,278	481	1,166
29 Jul	11,501	419,678	4,657	282,298	79	21,545	2,256	8,431	2,201	14,479	242	1,408
30 Jul	14,879	434,557	8,268	290,566	0	21,545	1,465	9,896	2,727	17,206	1,195	2,603
31 Jul	18,579	453,136	8,526	299,092	21	21,566	1,396	11,292	837	18,043	997	3,600
1 Aug	22,740	475,876	5,952	305,044	1,384	22,950	1,211	12,503	472	18,515	1,669	5,269
2 Aug	17,838	493,714	11,448	316,492	4,448	27,398	522	13,025	440	18,955	2,417	7,686
3 Aug	22,848	516,562	12,504	328,996	5,351	32,749	811	13,836	956	19,911	2,257	9,943
4 Aug	27,423	543,985	9,792	338,788	4,738	37,487	931	14,767	450	20,361	1,820	11,763
5 Aug	31,938	575,923	10,427	349,215	37	37,524	671	15,438	991	21,352	874	12,637
6 Aug	30,190	606,113	5,936	355,151	5,065	42,589	634	16,072	632	21,984	946	13,583
7 Aug	55,768	661,881	16,507	371,658	6,972	49,561	678	16,750	538	22,522	1,499	15,082
8 Aug	11,146	673,027	6,822	378,480	2,363	51,924	454	17,204	185	22,707	1,597	16,679
9 Aug	14,372	687,399	4,224	382,704	687	52,611	531	17,735	100	22,807	1,345	18,024
10 Aug	14,265	701,664	2,958	385,662	623	53,234	710	18,445	289	23,096	955	18,979
11 Aug	25,908	727,572	2,512	388,174	2,142	55,376	693	19,138	152	23,248	1,038	20,017
12 Aug	40,048	767,620	1,236	389,410	2,109	57,485	730	19,868	196	23,444	1,550	21,567
13 Aug	16,205	783,825	3,651	393,061	2,849	60,334	569	20,437			592	22,159
14 Aug	6,692	790,517	1,227	394,288	1,714	62,048					615	22,774
15 Aug	12,195	802,712			1,629	63,677					791	23,565

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Appendix A2.–Page 3 of 3.

Date	Kenai River		Kasilof River		Fish Creek		Chelatna Lake		Judd Lake		Larson Lake	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
16 Aug	18,030	820,742			301	63,978					757	24,322
17 Aug	23,004	843,746			1,973	65,951					669	24,991
18 Aug	26,642	870,388			354	66,305					789	25,780
19 Aug	28,742	899,130			1,271	67,576					630	26,410
20 Aug	27,787	926,917			254	67,830					758	27,168
21 Aug	17,005	943,922			1,241	69,071					862	28,030
22 Aug	6,532	950,454			608	69,679					365	28,395
23 Aug	28,895	979,349			355	70,034					279	28,674
24 Aug	17,189	996,538			469	70,503					298	28,972
25 Aug	19,651	1,016,189			301	70,804					366	29,338
26 Aug	7,795	1,023,984			175	70,979					501	29,839
27 Aug	9,351	1,033,335			179	71,158					428	30,267
28 Aug	1,436	1,034,771									416	30,683
29 Aug												
30 Aug												
31 Aug												
1 Sep												
2 Sep												
3 Sep												
4 Sep												
5 Sep												
6 Sep												
7 Sep												
8 Sep												
9 Sep												
10 Sep												
11 Sep												
12 Sep												
13 Sep												
14 Sep												
15 Sep												
16 Sep												

Note: Days without data indicate time periods where the projects were not operational.

Appendix A3.—Commercial Chinook salmon harvest by area and date, Upper Cook Inlet, 2018.

Upper Subdistrict set gillnet																
Date	244-21 Ninilchik		244-22 Cohoe		244-25 KRSNA		244-31 South K-Beach		244-32 North K-Beach		244-41 Salamatof		244-42 E. Forelands		Total	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
25 Jun	27	27	24	24		0	8	8		0		0		0	59	59
28 Jun	31	58	81	105		0	19	27		0		0		0	131	190
30 Jun	45	103	70	175		0	18	45		0		0		0	133	323
4 Jul	74	177	105	280		0	57	102		0		0		0	236	559
7 Jul	55	232	39	319		0	36	138		0		0		0	130	689
9 Jul	36	268	54	373		0	49	187	51	51	102	102	6	6	298	987
12 Jul	25	293	62	435		0	87	274	177	228	110	212	4	10	465	1,452
14 Jul	38	331	63	498		0	37	311		228		212		10	138	1,590
16 Jul		331		498		0		311		228		212	17	27	17	1,607
18 Jul	2	333	19	517		0	11	322		228		212		27	32	1,639
19 Jul	38	371	46	563		0	41	363	5	233		212		27	130	1,769
21 Jul	34	405	25	588		0	24	387	6	239		212		27	89	1,858
22 Jul	10	415	5	593		0	12	399		239		212		27	27	1,885
23 Jul	27	442	26	619		0	40	439	59	298	196	408	5	32	353	2,238
26 Jul	7	449	6	625		0	7	446		298		408		32	20	2,258
28 Jul	10	459	11	636		0	4	450		298		408		32	25	2,283
7 Aug		459		636	1	1		450		298		408		32	1	2,284
8 Aug		459		636	2	3		450		298		408		32	2	2,286
9 Aug		459		636	7	10		450		298		408		32	7	2,293
10 Aug		459		636	8	18		450		298		408		32	8	2,301
11 Aug		459		636	4	22		450		298		408		32	4	2,305
12 Aug		459		636	6	28		450		298		408		32	6	2,311

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Appendix A3.–Page 2 of 4.

Central District – west side set gillnet																				
Date	245-10 Chinitna Bay		245-20 Silver Salmon		245-30 Tuxedni Bay		245-40 Polly Creek		245-50 Little Jack Slough		245-55 Big River		245-60 West Forelands		246-10 Kalgin – West		246-20 Kalgin – East		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
1 Jun		0		0		0		0		0	6	6		0	79	79		0	85	85
4 Jun		0		0		0		0		0	4	10		0	11	90		0	15	100
6 Jun		0		0		0		0		0	16	26		0	28	118		0	44	144
8 Jun		0		0		0		0		0	18	44		0	79	197		0	97	241
11 Jun		0		0		0		0		0	8	52		0	32	229		0	40	281
13 Jun		0		0		0		0		0	2	54		0	31	260		0	33	314
15 Jun		0		0		0		0		0		54		0	2	262		0	2	316
18 Jun		0		0	2	2		0		0	4	58		0	3	265		0	9	325
20 Jun		0		0		2		0		0	2	60		0	9	274		0	11	336
21 Jun		0		0	4	6		0		0		60		0		274		0	4	340
22 Jun		0		0		6		0		0		60		0	1	275		0	1	341
25 Jun		0		0	13	19		0		0		60		0	7	282	2	2	22	363
28 Jun		0		0	6	25		0		0		60		0	4	286		2	10	373
2 Jul		0		0	16	41		0		0		60		0	4	290	2	4	22	395
5 Jul		0		0	9	50		0		0		60		0	3	293	1	5	13	408
7 Jul		0		0	5	55		0		0		60		0		293		5	5	413
9 Jul		0		0	1	56		0		0		60		0	5	298	2	7	8	421
12 Jul		0		0	2	58		0		0		60		0	2	300		7	4	425
16 Jul		0		0	1	59		0		0		60		0	6	306		7	7	432
19 Jul		0		0		59		0		0		60		0	2	308		7	2	434
23 Jul		0		0	2	61		0		0		60		0	4	312		7	6	440
26 Jul		0		0		61		0		0		60		0	2	314		7	2	442
30 Jul		0		0		61		0		0		60		0	1	315		7	1	443
2 Aug		0		0	1	62		0		0		60		0		315		7	1	444
9 Aug		0		0	1	63		0		0		60		0	2	317		7	3	447

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Northern District set gillnet																				
Date	247-10 Trading Bay		247-20 Tyonek		247-30 Beluga		247-41 Susitna Flats		247-42 Pt. McKenzie		247-43 Fire Island		247-70 Point Possession		247-80 Birch Hill		247-90 #3 Bay		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
28 Jun	13	13	12	12		0		0		0		0	9	9	4	4	5	5	43	43
2 Jul	1	14	22	34		0		0	1	1	1	1	2	11	2	6	2	7	31	74
5 Jul	1	15	8	42	2	2		0	2	3	1	2	7	18	1	7	3	10	25	99
9 Jul	7	22	5	47		2		0		3		2		18	3	10		10	15	114
12 Jul		22	1	48	2	4		0	1	4	2	4		18	1	11		10	7	121
16 Jul		22		48	6	10		0	2	6	1	5		18	1	12		10	10	131
19 Jul		22		48		10		0		6		5		18		12	1	11	1	132
23 Jul		22		48		10		0	1	7	1	6		18		12	1	12	3	135
26 Jul		22		48		10		0		7		6	1	19		12		12	1	136
2 Aug		22		48		10		0		7	1	7	1	20		12		12	2	138
9 Aug	1	23		48	1	11	1	1		7		7	1	21		12		12	4	142
30 Aug		23		48		11		1		7		7		21		12	1	13	1	143

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Central District drift gillnet													
Date	Deliveries	244-26 Kasilof SHA		244-57 Exp. Ken/Kas & AP ^a		244-60 District wide		244-61 Kasilof Section		245-10 Chinitna Bay		Total	
		Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
21 Jun	4					5						5	5
25 Jun	19					26						26	31
28 Jun	16					22						22	53
30 Jun	2							3				3	56
2 Jul	65					90						90	146
4 Jul	2							2				2	148
5 Jul	82					163						163	311
7 Jul	3							3				3	314
9 Jul	59					94						94	408
12 Jul	31					40						40	448
16 Jul	24			36								36	484
23 Jul	7					8						8	492
7 Aug	3					3						3	495
8 Aug	2	3										3	498
9 Aug	2	1				1						2	500
16 Aug	1					1						1	501
20 Aug	1					1						1	502
23 Aug	1					1						1	503

Note: Days without data indicate days when there was no harvest.

^a Statistical area 244-57 is composed of the Expanded Kenai (244-52), Expanded Kasilof (244-62), and Anchor Point (244-63) sections.

Appendix A4.—Commercial sockeye salmon harvest by area and date, Upper Cook Inlet, 2018.

Upper Subdistrict set gillnet																
Date	244-21 Ninilchik		244-22 Cohoe		244-25 KRSNA		244-31 South K-Beach		244-32 North K-Beach		244-41 Salamatof		244-42 E. Forelands		Total	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
25 Jun	7,341	7,341	2,657	2,657		0	1,568	1,568		0		0		0	11,566	11,566
28 Jun	7,283	14,624	3,035	5,692		0	1,464	3,032		0		0		0	11,782	23,348
30 Jun	5,695	20,319	3,375	9,067		0	3,121	6,153		0		0		0	12,191	35,539
4 Jul	9,652	29,971	5,663	14,730		0	4,655	10,808		0		0		0	19,970	55,509
7 Jul	4,391	34,362	1,988	16,718		0	2,532	13,340		0		0		0	8,911	64,420
9 Jul	5,675	40,037	2,521	19,239		0	1,819	15,159	1,184	1,184	2,582	2,582	1,056	1,056	14,837	79,257
12 Jul	10,726	50,763	14,737	33,976		0	7,954	23,113	6,277	7,461	19,376	21,958	4,958	6,014	64,028	143,285
14 Jul	4,504	55,267	5,535	39,511		0	2,904	26,017		7,461		21,958		6,014	12,943	156,228
16 Jul		55,267		39,511		0		26,017		7,461		21,958	1,939	7,953	1,939	158,167
18 Jul	2,654	57,921	5,380	44,891		0	4,394	30,411		7,461		21,958		7,953	12,428	170,595
19 Jul	6,905	64,826	17,663	62,554		0	8,504	38,915	6,885	14,346		21,958		7,953	39,957	210,552
21 Jul	7,585	72,411	4,711	67,265		0	3,037	41,952	2,172	16,518		21,958		7,953	17,505	228,057
22 Jul	3,490	75,901	1,636	68,901		0	2,588	44,540		16,518		21,958		7,953	7,714	235,771
23 Jul	5,469	81,370	2,367	71,268		0	2,240	46,780	2,595	19,113	15,018	36,976	3,713	11,666	31,402	267,173
26 Jul	2,408	83,778	2,153	73,421		0	2,083	48,863		19,113		36,976		11,666	6,644	273,817
28 Jul	1,718	85,496	1,405	74,826		0	1,491	50,354		19,113		36,976		11,666	4,614	278,431
7 Aug		85,496		74,826	62	62		50,354		19,113		36,976		11,666	62	278,493
8 Aug		85,496		74,826	1,315	1,377		50,354		19,113		36,976		11,666	1,315	279,808
9 Aug		85,496		74,826	3,855	5,232		50,354		19,113		36,976		11,666	3,855	283,663
10 Aug		85,496		74,826	2,642	7,874		50,354		19,113		36,976		11,666	2,642	286,305
11 Aug		85,496		74,826	1,965	9,839		50,354		19,113		36,976		11,666	1,965	288,270
12 Aug		85,496		74,826	1,571	11,410		50,354		19,113		36,976		11,666	1,571	289,841

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Central District - west side set gillnet																
Date	245-10 Chinitna Bay		245-30 Tuxedni Bay		245-50 L. J. Slough ^a		245-55 Big River		245-60 W. Forelands		246-10 Kalgín – West		246-20 Kalgín – East		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
1 Jun		0		0		0	127	127		0	491	491		0	618	618
4 Jun		0		0		0	42	169		0	126	617		0	168	786
6 Jun		0		0		0	104	273		0	224	841		0	328	1,114
8 Jun		0		0		0	180	453		0	380	1,221		0	560	1,674
11 Jun		0		0		0	224	677		0	370	1,591		0	594	2,268
13 Jun		0		0		0	152	829		0	617	2,208		0	769	3,037
15 Jun		0		0		0	96	925		0	125	2,333		0	221	3,258
18 Jun		0	114	114		0	219	1,144		0	151	2,484		0	484	3,742
20 Jun		0		114		0	166	1,310		0	791	3,275		0	957	4,699
21 Jun		0	1,016	1,130		0		1,310		0		3,275		0	1,016	5,715
22 Jun		0		1,130		0		1,310		0	279	3,554		0	279	5,994
25 Jun		0	1,973	3,103	64	64		1,310		0	758	4,312	353	353	3,148	9,142
28 Jun		0	2,377	5,480	15	79		1,310		0	736	5,048	155	508	3,283	12,425
2 Jul		0	1,905	7,385	46	125		1,310		0	1,422	6,470	308	816	3,681	16,106
5 Jul		0	2,176	9,561		125		1,310		0	1,866	8,336	371	1,187	4,413	20,519
7 Jul		0	2,884	12,445		125		1,310		0		8,336		1,187	2,884	23,403
9 Jul		0	1,242	13,687	65	190		1,310		0	797	9,133	430	1,617	2,534	25,937
12 Jul		0	1,437	15,124	114	304		1,310		0	799	9,932	267	1,884	2,617	28,554

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Central District - west side set gillnet																
Date	245-10 Chinitna Bay		245-30 Tuxedni Bay		245-50 L. J. Slough ^a		245-55 Big River		245-60 W. Forelands		246-10 Kalgin – West		246-20 Kalgin – East		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
14 Jul		0	1,963	17,087		304		1,310		0		9,932		1,884	1,963	30,517
16 Jul		0	1,193	18,280	353	657		1,310		0	2,095	12,027	248	2,132	3,889	34,406
19 Jul		0	3,015	21,295	482	1,139		1,310	357	357	3,993	16,020	749	2,881	8,596	43,002
21 Jul		0	2,323	23,618		1,139		1,310		357		16,020		2,881	2,323	45,325
23 Jul		0	1,805	25,423	409	1,548		1,310	119	476	2,572	18,592	817	3,698	5,722	51,047
26 Jul		0	1,493	26,916	321	1,869		1,310	498	974	3,238	21,830	1,295	4,993	6,845	57,892
28 Jul		0	1,289	28,205		1,869		1,310		974		21,830		4,993	1,289	59,181
30 Jul	1	1	964	29,169	482	2,351		1,310	561	1,535	1,777	23,607	581	5,574	4,366	63,547
2 Aug		1	1,263	30,432	302	2,653		1,310	43	1,578	1,053	24,660	703	6,277	3,364	66,911
3 Aug		1		30,432		2,653		1,310		1,578	31	24,691		6,277	31	66,942
4 Aug		1	1,453	31,885		2,653		1,310		1,578		24,691		6,277	1,453	68,395
6 Aug	2	3	321	32,206	238	2,891		1,310		1,578	1,020	25,711	215	6,492	1,796	70,191
9 Aug	3	6	375	32,581	173	3,064		1,310		1,578	1,088	26,799	473	6,965	2,112	72,303
13 Aug	3	9		32,581		3,064		1,310		1,578		26,799		6,965	3	72,306
16 Aug		9		32,581	145	3,209		1,310		1,578	1,429	28,228	415	7,380	1,989	74,295
20 Aug	4	13		32,581	51	3,260		1,310		1,578	12	28,240	236	7,616	303	74,598
23 Aug		13		32,581		3,260		1,310	54	1,632		28,240	139	7,755	193	74,791
27 Aug		13		32,581		3,260		1,310	54	1,686		28,240	75	7,830	129	74,920
30 Aug		13		32,581		3,260		1,310		1,686		28,240	70	7,900	70	74,990
3 Sep		13		32,581		3,260		1,310		1,686		28,240	118	8,018	118	75,108
6 Sep		13		32,581		3,260		1,310		1,686		28,240	56	8,074	56	75,164
10 Sep		13		32,581		3,260		1,310		1,686		28,240	12	8,086	12	75,176
13 Sep		13		32,581		3,260		1,310		1,686		28,240	12	8,098	12	75,188
17 Sep		13		32,581		3,260		1,310		1,686		28,240	29	8,127	29	75,217

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Appendix A4.–Page 4 of 6.

Northern District Set Gillnet																				
Date	247-10		247-20		247-30		247-41		247-42		247-43		247-70		247-80		247-90		Total	
	Trading Bay		Tyonek		Beluga		Su. Flats		Pt. McKenzie		Fire Island		Pt. Possession		Birch Hill		#3 Bay			
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
28-Jun	8	8	42	42		0		0		0		0	184	184	99	99	204	204	537	537
2-Jul	55	63	341	383		0		0	34	34	25	25	765	949	346	445	419	623	1,985	2,522
5-Jul	104	167	830	1,213	18	18		0	61	95	31	56	1,582	2,531	603	1,048	419	1,042	3,648	6,170
9-Jul	173	340	321	1,534	6	24	17	17	184	279		56	946	3,477	811	1,859	138	1,180	2,596	8,766
12-Jul	96	436	1,171	2,705	78	102	137	154	339	618	284	340	327	3,804	791	2,650	663	1,843	3,886	12,652
16-Jul	19	455	410	3,115	475	577	148	302	728	1,346	485	825	581	4,385	243	2,893	278	2,121	3,367	16,019
19-Jul	467	922	553	3,668	890	1,467	295	597	216	1,562	109	934	1,027	5,412	984	3,877	1,374	3,495	5,915	21,934
23-Jul	275	1,197	488	4,156	1,163	2,630	401	998	478	2,040	331	1,265	956	6,368	1,080	4,957	687	4,182	5,859	27,793
26-Jul	479	1,676	295	4,451	231	2,861	196	1,194	828	2,868	220	1,485	983	7,351	970	5,927	1,051	5,233	5,253	33,046
30-Jul	435	2,111	591	5,042	635	3,496	262	1,456	552	3,420	318	1,803	664	8,015	545	6,472	502	5,735	4,504	37,550
2-Aug	284	2,395	183	5,225	258	3,754	255	1,711	641	4,061	281	2,084	943	8,958	1,096	7,568	896	6,631	4,837	42,387
6-Aug	16	2,411	94	5,319		3,754	8	1,719	627	4,688	143	2,227	612	9,570	677	8,245	765	7,396	2,942	45,329
9-Aug	112	2,523	195	5,514	124	3,878	343	2,062	1,040	5,728	279	2,506	353	9,923	433	8,678	393	7,789	3,272	48,601
13-Aug		2,523	5	5,519		3,878	6	2,068	214	5,942		2,506		9,923	10	8,688	9	7,798	244	48,845
16-Aug	242	2,765	170	5,689		3,878		2,068	144	6,086	230	2,736	187	10,110	251	8,939	412	8,210	1,636	50,481
20-Aug	180	2,945	45	5,734		3,878		2,068	37	6,123	32	2,768	213	10,323	115	9,054	168	8,378	790	51,271
23-Aug	11	2,956	63	5,797		3,878	6	2,074	3	6,126		2,768	146	10,469	171	9,225	161	8,539	561	51,832
27-Aug	6	2,962		5,797		3,878		2,074		6,126		2,768	175	10,644	101	9,326	224	8,763	506	52,338
30-Aug	6	2,968	2	5,799		3,878		2,074	2	6,128		2,768	27	10,671	39	9,365	56	8,819	132	52,470
3-Sep	4	2,972		5,799		3,878		2,074		6,128		2,768	14	10,685	16	9,381	28	8,847	62	52,532
6-Sep		2,972		5,799		3,878		2,074		6,128		2,768	3	10,688	8	9,389	9	8,856	20	52,552

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Central District drift gillnet													
		244-26		244-57		244-60		244-61		245-10			
		Kasilof SHA		Exp. Ken/Kas & AP ^b		District Wide		Kasilof Section		Chinitna Bay		Total	
Date	Deliveries	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
21 Jun	52		0		0	1,208	1,208		0		0	1,208	1,208
25 Jun	99		0		0	5,008	6,216		0		0	5,008	6,216
28 Jun	165		0		0	15,268	21,484		0		0	15,268	21,484
30 Jun	13		0		0		21,484	189	189		0	189	21,673
2 Jul	275		0		0	36,424	57,908		189		0	36,424	58,097
4 Jul	8		0		0		57,908	100	289		0	100	58,197
5 Jul	307		0		0	51,885	109,793		289		0	51,885	110,082
7 Jul	4		0		0		109,793	108	397		0	108	110,190
9 Jul	338		0		0	78,474	188,267		397		0	78,474	188,664
12 Jul	276		0		0	89,824	278,091		397		0	89,824	278,488
16 Jul	350		0	81,812	81,812		278,091		397		0	81,812	360,300
23 Jul	361		0		81,812	33,959	312,050		397		0	33,959	394,259
7 Aug	73		0		81,812	1,656	313,706		397		0	1,656	395,915
8 Aug	35	373	373		81,812	2	313,708		397		0	375	396,290
9 Aug	66	286	659		81,812	1,459	315,167		397		0	1,745	398,035
10 Aug	2	13	672		81,812		315,167		397		0	13	398,048
11 Aug	5	70	742		81,812		315,167		397		0	70	398,118
12 Aug	1	1	743		81,812		315,167		397		0	1	398,119
13 Aug	1		743		81,812	7	315,174		397		0	7	398,126
16 Aug	49		743		81,812	1,129	316,303		397		0	1,129	399,255
20 Aug	30		743		81,812	510	316,813		397		0	510	399,765

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Appendix A4.–Page 6 of 6.

Central District drift gillnet													
Date	Deliveries	244-26		244-57		244-60		244-61		245-10		Total	
		Kasilof SHA		Exp. Ken/Kas & AP ^b		District Wide		Kasilof Section		Chinitna Bay			
		Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
23 Aug	26		743		81,812	213	317,026		397		0	213	399,978
27 Aug	5		743		81,812	61	317,087		397		0	61	400,039
30 Aug	10		743		81,812	140	317,227		397		0	140	400,179
31 Aug	3		743		81,812		317,227		397	10	10	10	400,189
3 Sep	7		743		81,812	32	317,259		397		10	32	400,221
4 Sep	6		743		81,812		317,259		397	25	35	25	400,246
6 Sep	2		743		81,812	6	317,265		397		35	6	400,252
7 Sep	5		743		81,812		317,265		397	18	53	18	400,270
10 Sep	2		743		81,812	8	317,273		397		53	8	400,278
11 Sep	1		743		81,812		317,273		397	7	60	7	400,285

Note: Days without data indicate days when there was no harvest.

^a "L. J. Slough" = Little Jack Slough.

^b Statistical area 244-57 is composed of the Expanded Kenai (244-52), Expanded Kasilof (244-62), and Anchor Point (244-63) sections.

Appendix A5.—Commercial coho salmon harvest by area and date, Upper Cook Inlet, 2018.

Upper Subdistrict set gillnet																
Date	244-21 Ninilchik		244-22 Cohoe		244-25 Kasilof SHA		244-31 South K-Beach		244-32 North K-Beach		244-41 Salamatof		244-42 E. Foreland		Total	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
25 Jun		0	1	1		0		0		0		0		0	1	1
28 Jun	1	1		1		0		0		0		0		0	1	2
4 Jul	1	2	2	3		0	1	1		0		0		0	4	6
7 Jul	4	6	1	4		0	1	2		0		0		0	6	12
9 Jul	13	19	9	13		0	3	5	5	5	62	62	76	76	168	180
12 Jul	65	84	79	92		0	20	25	39	44	200	262	77	153	480	660
14 Jul	11	95	11	103		0	2	27		44		262		153	24	684
16 Jul		95		103		0		27		44		262	333	486	333	1,017
18 Jul	33	128	8	111		0	2	29		44		262		486	43	1,060
19 Jul	85	213	59	170		0	17	46	11	55		262		486	172	1,232
21 Jul	223	436	93	263		0	36	82	22	77		262		486	374	1,606
22 Jul	84	520	65	328		0	11	93		77		262		486	160	1,766
23 Jul	367	887	104	432		0	14	107	25	102	136	398	173	659	819	2,585
26 Jul	243	1,130	108	540		0	13	120		102		398		659	364	2,949
28 Jul	292	1,422	122	662		0	20	140		102		398		659	434	3,383
8 Aug		1,422		662	156	156		140		102		398		659	156	3,539
9 Aug		1,422		662	350	350		140		102		398		659	350	3,889
10 Aug		1,422		662	318	318		140		102		398		659	318	4,207
11 Aug		1,422		662	222	222		140		102		398		659	222	4,429
12 Aug		1,422		662	276	276		140		102		398		659	276	4,705

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Central District - west side set gillnet																				
Date	245-10		245-20		245-30		245-40		245-50		245-55		245-60		246-10		246-20		Total	
	Chinitna Bay		Silv. Salmon		Tuxedni Bay		Polly Cr.		L. J. Slough ^a		Big River		W. Forelands		Kalgin – West		Kalgin – East		Day	Cum
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
28 Jun		0		0	3	3		0		0				0	12	12		0	15	15
2 Jul		0		0	7	10		0		0				0	18	30	5	5	30	45
5 Jul		0		0	11	21		0		0				0	84	114	29	34	124	169
7 Jul		0		0	50	71		0		0				0		114		34	50	219
9 Jul		0		0	62	133		0	11	11				0	248	362	75	109	396	615
12 Jul		0		0	160	293		0	27	38				0	641	1,003	110	219	938	1,553
14 Jul		0		0	340	633		0		38				0		1,003		219	340	1,893
16 Jul		0		0	380	1,013		0	80	118				0	1,600	2,603	335	554	2,395	4,288
19 Jul		0		0	553	1,566		0	84	202			298	298	920	3,523	395	949	2,250	6,538
21 Jul		0		0	590	2,156		0		202				298		3,523		949	590	7,128
23 Jul		0		0	889	3,045		0	179	381			342	640	6,082	9,605	1,314	2,263	8,806	15,934
26 Jul		0		0	1,377	4,422		0	943	1,324			1,288	1,928	7,451	17,056	1,982	4,245	13,041	28,975
28 Jul		0		0	1,485	5,907		0		1,324				1,928		17,056		4,245	1,485	30,460
30 Jul	73	73		0	1,529	7,436		0	862	2,186			340	2,268	3,484	20,540	1,110	5,355	7,398	37,858
2 Aug		73		0	1,963	9,399		0	791	2,977			699	2,967	2,622	23,162	729	6,084	6,804	44,662
4 Aug		73		0	1,291	10,690		0		2,977				2,967		23,162		6,084	1,291	45,953
6 Aug	72	145		0	399	11,089		0	446	3,423				2,967	192	23,354	36	6,120	1,145	47,098
9 Aug	137	282		0	278	11,367		0	449	3,872				2,967	668	24,022	96	6,216	1,628	48,726
13 Aug	206	488		0		11,367		0		3,872				2,967		24,022		6,216	206	48,932
16 Aug		488		0		11,367		0	186	4,058				2,967	306	24,328	12	6,228	504	49,436
20 Aug	189	677		0		11,367		0	79	4,137				2,967		24,328	58	6,286	326	49,762
23 Aug		677		0		11,367		0		4,137			62	3,029		24,328	146	6,432	208	49,970
27 Aug	223	900		0		11,367		0		4,137			43	3,072		24,328	158	6,590	424	50,394
30 Aug		900		0		11,367		0		4,137				3,072		24,328	220	6,810	220	50,614
31 Aug	789	1,689		0		11,367		0		4,137				3,072		24,328		6,810	789	51,403
3 Sep		1,689		0		11,367		0		4,137				3,072		24,328	312	7,122	312	51,715
4 Sep	982	2,671		0		11,367		0		4,137				3,072		24,328		7,122	982	52,697
6 Sep		2,671		0		11,367		0		4,137				3,072		24,328	170	7,292	170	52,867
7 Sep	492	3,163		0		11,367		0		4,137				3,072		24,328		7,292	492	53,359
10 Sep		3,163		0		11,367		0		4,137				3,072		24,328	128	7,420	128	53,487
11 Sep	14	3,177		0		11,367		0		4,137				3,072		24,328		7,420	14	53,501
13 Sep		3,177		0		11,367		0		4,137				3,072		24,328	175	7,595	175	53,676
17 Sep		3,177		0		11,367		0		4,137				3,072		24,328	182	7,777	182	53,858

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Northern District Set Gillnet																				
Date	247-10 Trading Bay		247-20 Tyonek		247-30 Beluga		247-41 Su. Flats		247-42 Pt. McKenzie		247-43 Fire Island		247-70 Pt. Possession		247-80 Birch Hill		247-90 #3 Bay		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
28-Jun		0		0		0		0		0		0		0		0	1	1	1	1
2-Jul		0	18	18		0		0	3	3	1	1	2	2	2	2	1	2	27	28
5-Jul	11	11	70	88	2	2	1	1	2	5	5	6	25	27	12	14	6	8	134	162
9-Jul	127	138	213	301	7	9	82	83	6	11		6	108	135	92	106	12	20	647	809
12-Jul	103	241	887	1,188	267	276	58	141	113	124	152	158	63	198	76	182	29	49	1,748	2,557
16-Jul	181	422	994	2,182	1,558	1,834	395	536	207	331	395	553	158	356	57	239	95	144	4,040	6,597
19-Jul	193	615	966	3,148	1,478	3,312	725	1,261	285	616	363	916	430	786	186	425	372	516	4,998	11,595
23-Jul	325	940	1,290	4,438	2,809	6,121	378	1,639	849	1,465	1,086	2,002	740	1,526	619	1,044	101	617	8,197	19,792
26-Jul	662	1,602	1,763	6,201	3,189	9,310	443	2,082	615	2,080	672	2,674	1,339	2,865	729	1,773	272	889	9,684	29,476
30-Jul	177	1,779	732	6,933	1,351	10,661	274	2,356	773	2,853	822	3,496	799	3,664	464	2,237	132	1,021	5,524	35,000
2-Aug	664	2,443	1,451	8,384	1,604	12,265	72	2,428	1,047	3,900	711	4,207	1,397	5,061	908	3,145	902	1,923	8,756	43,756
6-Aug	161	2,604	398	8,782		12,265	260	2,688	634	4,534	374	4,581	1,043	6,104	1,164	4,309	783	2,706	4,817	48,573
9-Aug	167	2,771	521	9,303	201	12,466	3	2,691	888	5,422	418	4,999	472	6,576	1,421	5,730	528	3,234	4,619	53,192
13-Aug		2,771	28	9,331		12,466		2,691	48	5,470		4,999		6,576	32	5,762	12	3,246	120	53,312
16-Aug	106	2,877	332	9,663		12,466		2,691	66	5,536	161	5,160	514	7,090	3,705	9,467	1,092	4,338	5,976	59,288
20-Aug	224	3,101	150	9,813		12,466	5	2,696	6	5,542	38	5,198	307	7,397	867	10,334	618	4,956	2,215	61,503
23-Aug	37	3,138	178	9,991		12,466		2,696	4	5,546		5,198	423	7,820	1,792	12,126	1,147	6,103	3,581	65,084
27-Aug	18	3,156		9,991		12,466		2,696		5,546		5,198	125	7,945	561	12,687	370	6,473	1,074	66,158
30-Aug	9	3,165	18	10,009		12,466		2,696	3	5,549		5,198	52	7,997	238	12,925	114	6,587	434	66,592
3-Sep	21	3,186		10,009		12,466		2,696		5,549		5,198	27	8,024	190	13,115	86	6,673	324	66,916
6-Sep	3	3,189		10,009		12,466		2,696		5,549		5,198	28	8,052	80	13,195	45	6,718	156	67,072
10-Sep		3,189		10,009		12,466		2,696		5,549		5,198		8,052	13	13,208		6,718	13	67,085
13-Sep		3,189		10,009		12,466		2,696		5,549		5,198		8,052	13	13,221		6,718	13	67,098

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Appendix A5.–Page 4 of 4

Central District drift gillnet													
Date	Deliveries	244-26 Kasilof SHA		244-57 Exp. Ken/Kas & AP ^b		244-60 District Wide		244-61 Kasilof Section		245-10 Chinitna Bay		Total	
		Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
25 Jun	10		0		0	12	12		0		0	12	12
28 Jun	65		0		0	132	144		0		0	132	144
2 Jul	181		0		0	492	636		0		0	492	636
5 Jul	275		0		0	3,140	3,776		0		0	3,140	3,776
7 Jul	1		0		0		3,776	3	3		0	3	3,779
9 Jul	329		0		0	14,176	17,952		3		0	14,176	17,955
12 Jul	272		0		0	28,391	46,343		3		0	28,391	46,346
16 Jul	332		0	7,537	7,537		46,343		3		0	7,537	53,883
23 Jul	354		0		7,537	33,140	79,483		3		0	33,140	87,023
7 Aug	77		0		7,537	5,297	84,780		3		0	5,297	92,320
8 Aug	30	253	253		7,537	1	84,781		3		0	254	92,574
9 Aug	54	103	356		7,537	3,114	87,895		3		0	3,217	95,791
10 Aug	2	18	374		7,537		87,895		3		0	18	95,809
11 Aug	5	43	417		7,537		87,895		3		0	43	95,852
12 Aug	1	7	424		7,537		87,895		3		0	7	95,859
13 Aug	1		424		7,537	89	87,984		3		0	89	95,948
16 Aug	51		424		7,537	3,417	91,401		3		0	3,417	99,365
20 Aug	31		424		7,537	3,723	95,124		3		0	3,723	103,088
23 Aug	30		424		7,537	1,122	96,246		3		0	1,122	104,210
27 Aug	5		424		7,537	464	96,710		3		0	464	104,674
30 Aug	11		424		7,537	997	97,707		3		0	997	105,671
31 Aug	13		424		7,537		97,707		3	789	789	789	106,460
3 Sep	7		424		7,537	829	98,536		3		789	829	107,289
4 Sep	11		424		7,537		98,536		3	982	1,771	982	108,271
6 Sep	2		424		7,537	64	98,600		3		1,771	64	108,335
7 Sep	6		424		7,537		98,600		3	492	2,263	492	108,827
10 Sep	2		424		7,537	65	98,665		3		2,263	65	108,892
11 Sep	2		424		7,537		98,665		3	14	2,277	14	108,906

Note: Days without data indicate days when there was no harvest.

^a “L. J. Slough” = Little Jack Slough

^b Statistical area 244-57 is composed of the Expanded Kenai (244-52), Expanded Kasilof (244-62), and Anchor Point (244-63) sections.

Appendix A6.—Commercial pink salmon harvest by area and date, Upper Cook Inlet, 2018.

Upper Subdistrict set gillnet																
Date	244-21 Ninilchik		244-22 Cohoe		244-25 Kasilof SHA		244-31 South K-Beach		244-32 North K-Beach		244-41 Salamatof		244-42 E. Foreland		Total	
	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
25 Jun	1	1	2	2		0		0		0		0		0	3	3
28 Jun	1	2	3	5		0		0		0		0		0	4	7
30 Jun	6	8	2	7		0		0		0		0		0	8	15
4 Jul	25	33	9	16		0	4	4		0		0		0	38	53
7 Jul	23	56	12	28		0	2	6		0		0		0	37	90
9 Jul	62	118	33	61		0	10	16	14	14	88	88	88	88	295	385
12 Jul	224	342	113	174		0	23	39	28	42	328	416	353	441	1,069	1,454
14 Jul	95	437	74	248		0	21	60		42		416		441	190	1,644
16 Jul		437		248		0		60		42		416	754	1,195	754	2,398
18 Jul	124	561	101	349		0	4	64		42		416		1,195	229	2,627
19 Jul	267	828	252	601		0	31	95	32	74		416		1,195	582	3,209
21 Jul	1,413	2,241	293	894		0	75	170	31	105		416		1,195	1,812	5,021
22 Jul	737	2,978	181	1,075		0	22	192		105		416		1,195	940	5,961
23 Jul	2,489	5,467	576	1,651		0	169	361	127	232	996	1,412	1,642	2,837	5,999	11,960
26 Jul	1,151	6,618	585	2,236		0	205	566		232		1,412		2,837	1,941	13,901
28 Jul	1,396	8,014	788	3,024		0	124	690		232		1,412		2,837	2,308	16,209
8 Aug		8,014		3,024	1,407	1,407		690		232		1,412		2,837	1,407	17,616
9 Aug		8,014		3,024	1,824	3,231		690		232		1,412		2,837	1,824	19,440
10 Aug		8,014		3,024	1,215	4,446		690		232		1,412		2,837	1,215	20,655
11 Aug		8,014		3,024	748	5,194		690		232		1,412		2,837	748	21,403
12 Aug		8,014		3,024	419	5,613		690		232		1,412		2,837	419	21,822

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Central District - west side set gillnet																				
Date	245-10		245-20		245-30		245-40		245-50		245-55		245-60		246-10		246-20		Total	
	Chinitna Bay		Silv. Salmon		Tuxedni Bay		Polly Cr.		L. J. Slough ^a		Big River		W. Forelands		Kalgin – West		Kalgin – East		Day	Cum
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
25 Jun		0			1	1							0		0		0		1	1
28 Jun		0			2	3							0		0		0		2	3
2 Jul		0			1	4							0	1	1	1	1		3	6
5 Jul		0			5	9							0	3	4	4	5		12	18
7 Jul		0			17	26							0		4		5		17	35
9 Jul		0			16	42							0	24	28	15	20		55	90
12 Jul		0			12	54							0	48	76	10	30		70	160
14 Jul		0			6	60							0		76		30		6	166
16 Jul		0			5	65							0	987	1,063	19	49		1,011	1,177
19 Jul		0			23	88							40	40	1,870	2,933	160	209	2,093	3,270
21 Jul		0			47	135							40		2,933		209		47	3,317
23 Jul		0			43	178							23	63	559	3,492	178	387	803	4,120
26 Jul		0			12	190							10	73	1,383	4,875	166	553	1,571	5,691
28 Jul		0			13	203								73		4,875		553	13	5,704
30 Jul	2	2			32	235							4	77	744	5,619	168	721	950	6,654
2 Aug		2			21	256							6	83	573	6,192	52	773	652	7,306
4 Aug		2			99	355				0						6,192		773	99	7,405
6 Aug	2	4			26	381			2	2					159	6,351		773	189	7,594
9 Aug		4			10	391			8	10					446	6,797	47	820	511	8,105
16 Aug		4				391				10					188	6,985		820	188	8,293
20 Aug	1	5				391				10						6,985		820	1	8,294
31 Aug	2	7				391				10						6,985		820	2	8,296
7 Sep	1	8				391				10						6,985		820	1	8,297

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Northern District set gillnet																		
Date	247-10 Trading Bay		247-20 Tyonek		247-30 Beluga		247-41 Su. Flats		247-42 Pt. McKenzie		247-70 Pt. Possession		247-80 Birch Hill		247-90 #3 Bay		Total	
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
2 Jul		0		0		0		0		0	4	4	2	2	1	1	7	7
5 Jul		0		0		0		0		0	24	28	5	7	4	5	33	40
9 Jul		0		0		0		0		0	154	182	97	104	17	22	268	308
12 Jul		0	2	2		0	2	2	2	2	50	232	168	272	164	186	388	696
16 Jul		0		2	39	39	2	4	7	9	227	459	182	454	195	381	652	1,348
19 Jul	2	2		2	63	102	22	26	15	24	1,012	1,471	1,054	1,508	695	1,076	2,863	4,211
23 Jul	15	17		2	1,027	1,129	71	97	22	46	1,056	2,527	1,190	2,698	806	1,882	4,187	8,398
26 Jul	2	19		2	210	1,339		97	39	85	580	3,107	475	3,173	398	2,280	1,704	10,102
30 Jul	3	22		2	157	1,496	39	136	36	121	299	3,406	304	3,477	195	2,475	1,033	11,135
2 Aug	10	32	7	9	52	1,548	46	182	66	187	482	3,888	326	3,803	237	2,712	1,226	12,361
6 Aug		32		9		1,548		182	33	220	129	4,017	109	3,912	144	2,856	415	12,776
9 Aug	6	38		9	31	1,579	21	203	59	279	39	4,056	59	3,971	73	2,929	288	13,064
13 Aug		38		9		1,579		203	2	281		4,056		3,971	2	2,931	4	13,068
16 Aug	3	41		9		1,579		203	1	282	23	4,079	24	3,995	98	3,029	149	13,217
20 Aug		41		9		1,579		203		282	2	4,081	2	3,997	3	3,032	7	13,224
23 Aug		41		9		1,579		203		282		4,081	5	4,002	25	3,057	30	13,254
27 Aug		41		9		1,579		203		282		4,081	3	4,005	11	3,068	14	13,268
30 Aug		41		9		1,579		203		282		4,081		4,005	1	3,069	1	13,269
3 Sep		41		9		1,579		203		282	1	4,082	1	4,006	1	3,070	3	13,272

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Central District drift gillnet													
Date	Deliveries	244-26 Kasilof SHA		244-57 Exp. Ken/Kas & AP ^b		244-60 District Wide		244-61 Kasilof Section		245-10 Chinitna Bay		Total	
		Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
25 Jun	17		0		0	19	19		0			19	19
28 Jun	55		0		0	91	110		0			91	110
2 Jul	89		0		0	158	268		0			158	268
4 Jul	1		0		0		268	1	1			1	269
5 Jul	239		0		0	1,170	1,438		1			1,170	1,439
9 Jul	318		0		0	4,973	6,411		1			4,973	6,412
12 Jul	267		0		0	16,281	22,692		1			16,281	22,693
16 Jul	347		0	22,183	22,183		22,692		1			22,183	44,876
23 Jul	361		0		22,183	29,707	52,399		1			33,148	78,024
7 Aug	62		0		22,183	669	53,068		1			3,720	81,744
8 Aug	39	3,441	3,441		22,183	22	53,090		1			233	81,977
9 Aug	59	3,051	6,492		22,183	771	53,861		1			1,209	83,186
10 Aug	4	211	6,703		22,183		53,861		1			21	83,207
11 Aug	5	438	7,141		22,183		53,861		1			0	83,207
12 Aug	1	21	7,162		22,183		53,861		1			0	83,207
16 Aug	43		7,162		22,183	239	54,100		1			239	83,446
20 Aug	16		7,162		22,183	42	54,142		1			42	83,488
23 Aug	15		7,162		22,183	38	54,180		1			38	83,526
27 Aug	2		7,162		22,183	3	54,183		1			3	83,529
30 Aug	2		7,162		22,183	3	54,186		1			3	83,532
31 Aug										2		2	83,534
7 Sep										1		1	83,535

Note: Days without data indicate days when there was no harvest.

^a “L. J. Slough” = Little Jack Slough

^b Statistical area 244-57 is composed of the Expanded Kenai (244-52), Expanded Kasilof (244-62), and Anchor Point (244-63) sections.

Appendix A7.—Commercial chum salmon harvest by area and date, Upper Cook Inlet, 2018.

Upper Subdistrict set gillnet																
	244-21		244-22		244-25		244-31		244-32		244-41		244-42			
	Ninilchik		Cohoe		Kasilof SHA		South K-Beach		North K-Beach		Salamatof		E. Foreland		Total	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
25 Jun	1	1		0		0						0		0	1	1
4 Jul	1	2		0		0						0		0	1	2
7 Jul	1	3		0		0						0		0	1	3
9 Jul	1	4		0		0					7	7	2	2	10	13
12 Jul	2	6	1	1		0					3	10	4	6	10	23
14 Jul		6	1	2		0						10		6	1	24
16 Jul		6		2		0						10	1	7	1	25
19 Jul	6	12	3	5		0						10		7	9	34
21 Jul	4	16	2	7		0						10		7	6	40
22 Jul	2	18		7		0						10		7	2	42
23 Jul	16	34	2	9		0					3	13	2	9	23	65
26 Jul	1	35	1	10		0						13		9	2	67
28 Jul	3	38	1	11		0						13		9	4	71
8 Aug		38		11	2	2						13		9	2	73
9 Aug		38		11	5	7						13		9	5	78

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Central District - west side set gillnet																
Date	245-10		245-30		245-40		245-50		245-60		246-10		246-20		Total	
	Chinitna Bay		Tuxedni Bay		Polly Cr.		Little Jack Slough		W. Forelands		Kalgin – West		Kalgin – East		Day	Cum
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
28 Jun		0	1	1				0		0	1	1		0	2	2
5 Jul		0	6	7				0		0	5	6		0	11	13
7 Jul		0	30	37				0		0		6		0	30	43
9 Jul		0	28	65				0		0	2	8		0	30	73
12 Jul		0	31	96				0		0	8	16		0	39	112
14 Jul		0	12	108				0		0		16		0	12	124
16 Jul		0	19	127			1	1		0	14	30		0	34	158
19 Jul		0	119	246			1	2		0	93	123	10	10	223	381
21 Jul		0	135	381				2		0		123		10	135	516
23 Jul		0	170	551			5	7	1	1	47	170	44	54	267	783
26 Jul		0	101	652			6	13		1	177	347	8	62	292	1,075
28 Jul		0	87	739				13		1		347		62	87	1,162
30 Jul	305	305	121	860			15	28	2	3	33	380	9	71	485	1,647
2 Aug		305	194	1,054			3	31	1	4	51	431	3	74	252	1,899
4 Aug		305	195	1,249				31		4		431		74	195	2,094
6 Aug	312	617	50	1,299			4	35		4	5	436		74	371	2,465
9 Aug	206	823	34	1,333			3	38		4	27	463	43	117	313	2,778
13 Aug	41	864		1,333				38		4		463		117	41	2,819
16 Aug		864		1,333			3	41		4	51	514	1	118	55	2,874
20 Aug	10	874		1,333				41		4		514	1	119	11	2,885
23 Aug		874		1,333				41	8	12		514		119	8	2,893
27 Aug	27	901		1,333				41	4	16		514		119	31	2,924
31 Aug	211	1,112		1,333				41		16		514		119	211	3,135
4 Sep	23	1,135		1,333				41		16		514		119	23	3,158
7 Sep	15	1,150		1,333				41		16		514		119	15	3,173
11 Sep	8	1,158		1,333				41		16		514		119	8	3,181

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Northern District - set gillnet																				
Date	247-10		247-20		247-30		247-41		247-42		247-43		247-70		247-80		247-90		Total	
	Trading Bay		Tyonek		Beluga		Su. Flats		Pt. McKenzie		Fire Island		Pt. Possession		Birch Hill		#3 Bay			
	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
2 Jul	1	1		0		0		0		0		0	1	1	1	1		0	3	3
5 Jul	3	4		0		0		0		0	2	2	12	13		1	1	1	18	21
9 Jul	16	20		0	2	2	1	1	9	9		2	21	34	10	11		1	59	80
12 Jul		20	26	26	32	34	12	13	36	45	113	115	10	44	2	13	1	2	232	312
16 Jul		20	5	31	371	405	47	60	117	162	184	299	13	57		13		2	737	1,049
19 Jul		20		31	231	636	72	132	46	208	120	419	65	122	6	19	1	3	541	1,590
23 Jul	8	28	2	33	293	929	41	173	85	293	153	572	51	173	8	27		3	641	2,231
26 Jul		28	2	35	248	1,177	22	195	75	368	108	680	36	209	3	30	3	6	497	2,728
30 Jul		28	3	38	375	1,552	73	268	74	442	62	742	35	244	5	35		6	627	3,355
2 Aug		28		38	57	1,609	36	304	158	600	55	797	61	305	10	45	4	10	381	3,736
6 Aug		28		38		1,609	15	319	42	642	35	832	16	321	8	53		10	116	3,852
9 Aug		28	2	40	27	1,636	20	339	113	755	32	864	3	324		53	2	12	199	4,051
13 Aug		28		40		1,636	1	340	28	783		864		324		53		12	29	4,080
16 Aug	1	29		40		1,636		340	16	799	13	877	4	328	3	56	6	18	43	4,123
20 Aug	1	30		40		1,636		340	2	801	2	879	1	329	1	57	1	19	8	4,131
23 Aug		30		40		1,636	1	341	1	802		879		329	1	58	3	22	6	4,137
27 Aug		30		40		1,636		341		802		879	2	331	4	62		22	6	4,143
3 Sep	2	32		40		1,636		341		802		879	1	332		62	1	23	4	4,147
6 Sep		32		40		1,636		341		802		879		332	1	63		23	1	4,148

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Central District drift gillnet													
Date	Deliveries	244-26 Kasilof SHA		244-57 Exp. Full Corridor & AP ^a		244-60 District Wide		244-61 Kasilof Section		245-10 Chinitna Bay		Total	
		Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum	Day	Cum
21 Jun	17		0		0	32	32		0		0	32	32
25 Jun	70		0		0	382	414		0		0	382	414
28 Jun	149		0		0	3,420	3,834		0		0	3,420	3,834
2 Jul	269		0		0	6,546	10,380		0		0	6,546	10,380
4 Jul	1		0		0		10,380	1	1		0	1	10,381
5 Jul	306		0		0	21,895	32,275		1		0	21,895	32,276
7 Jul	1		0		0		32,275	35	36		0	35	32,311
9 Jul	335		0		0	24,425	56,700		36		0	24,425	56,736
12 Jul	274		0		0	26,495	83,195		36		0	26,495	83,231
16 Jul	348		0	9,620	9,620		83,195		36		0	9,620	92,851
23 Jul	361		0		9,620	13,642	96,837		36		0	13,642	106,493
7 Aug	31	12	12		9,620	491	97,328		36		0	503	106,996
8 Aug	7	9	21		9,620		97,328		36		0	9	107,005
9 Aug	31	1	22		9,620	388	97,716		36		0	389	107,394
11 Aug	1		22		9,620		97,716		36		0	0	107,394
16 Aug	42		22		9,620	307	98,023		36		0	307	107,701
20 Aug	18		22		9,620	82	98,105		36		0	82	107,783
23 Aug	24		22		9,620	83	98,188		36		0	83	107,866
27 Aug	5		22		9,620	12	98,200		36		0	12	107,878
30 Aug	5		22		9,620	60	98,260		36		0	60	107,938
31 Aug	11		22		9,620		98,260		36	211	211	211	108,149
3 Sep	3					20	98,280				211	20	108,169
4 Sep	6						98,280			23	234	23	108,192
7 Sep	3						98,280			15	249	15	108,207
10 Sep	1					1	98,281				249	1	108,208
11 Sep	1						98,281			8	257	8	108,216

Note: Days without data indicate days when there was no harvest.

^a Statistical area 244-57 is composed of the Expanded Kenai (244-52), Expanded Kasilof (244-62), and Anchor Point (244-63) sections.

Appendix A8.—Commercial salmon harvest by gear, stat area and species, Upper Cook Inlet, 2018.

Gear	District	Subdistrict	Stat area	Permits ^a	Chinook	Sockeye	Coho	Pink	Chum	Total
Drift	Central	All	All	392	503	400,285	108,906	83,535	108,216	701,445
Setnet	Central	Upper	244-21	74	460	85,496	1,422	8,014	38	95,430
			244-22	65	636	74,826	662	3,024	11	79,159
			244-31	48	450	50,354	140	690		51,634
			244-32	36	298	19,113	102	232		19,745
			244-41	45	408	36,976	398	1,412	13	39,207
			244-42	30	32	11,666	659	2,837	9	15,203
			244-25	48	28	11,410	1,322	5,613	7	18,380
			All	296	2,312	289,841	4,705	21,822	78	318,758
		Kalgin Is.	246-10	23	317	28,240	24,328	6,985	514	60,384
			246-20	3	7	8,127	7,777	820	119	16,850
			All	23	324	36,367	32,105	7,805	633	77,234
		Chinitna	245-10	1		13	900	5	901	1,819
		Western	245-20							0
			245-30	13	63	32,581	11,367	391	1,333	45,735
			245-40							0
			245-50	4	0	3,260	4,137	10	41	7,448
			All	17	63	35,841	15,504	401	1,374	53,183
		Kustatan	245-55	10	60	1,310				1,370
			245-60	3		1,686	3,072	83	16	4,857
			All	13	60	2,996	3,072	83	16	6,227
Setnet	Central	All	All	344	2,759	365,058	56,286	30,116	3,002	457,221
Setnet	Northern	General	247-10	6	23	2,972	3,189	41	32	6,257
			247-20	8	48	5,799	10,009	9	40	15,905
			247-30	10	11	3,878	12,466	1,579	1,636	19,570
			247-41	7	1	2,074	2,696	203	341	5,315
			247-42	7	7	6,128	5,549	282	802	12,768
			247-43	5	7	2,768	5,198		879	8,852
			All	39	97	23,619	39,107	2,114	3,730	68,667
Setnet	Northern	Eastern	247-70	15	21	10,688	8,052	4,082	332	23,175
			247-80	12	12	9,389	13,221	4,006	63	26,691
			247-90	8	13	8,856	6,718	3,070	23	18,680
			All	31	46	28,933	27,991	11,158	418	68,546
Setnet	Northern	All		69	143	52,552	67,098	13,272	4,148	137,213
Setnet	All			314	2,902	417,610	123,384	43,388	7,150	594,434
All UCI				802	3,405	817,895	232,290	126,923	115,366	1,295,879

^a Permit totals may be less than the sum of individual statistical areas if some permits were fished in multiple statistical areas.

Appendix A9.—Commercial salmon harvest per permit by statistical area, Upper Cook Inlet, 2018.

Gear	District	Subdistrict	Stat area	Permits ^a	Chinook	Sockeye	Coho	Pink	Chum	Total
Drift	Central	All	All	392	1	1,021	278	213	276	1,789
Set	Central	Upper	244-21	74	6	1,155	19	108	1	1,290
			244-22	65	10	1,151	10	47	0	1,218
			244-31	48	9	1,049	3	14	0	1,076
			244-32	36	8	531	3	6	0	548
			244-41	45	9	822	9	31	0	871
			244-42	30	1	389	22	95	0	507
			244-25	48	1	238	28	117	0	383
			All	296	8	979	16	74	0	1,077
		Kalgin Is.	246-10	23	14	1,228	1,058	304	22	2,625
			246-20	3	2	2,709	2,592	273	40	5,617
			All	23	14	1,581	1,396	339	28	3,358
		Chinitna	245-10	1	0	13	900	5	901	1,819
		Western	245-20	0	0	0	0	0	0	0
			245-30	13	5	2,506	874	30	103	3,518
			245-40	0	0	0	0	0	0	0
			245-50	4	0.0	815	1,034	3	10	1,862
			All	17	4	2,108	912	24	81	3,128
		Kustatan	245-55	10	6	131	0	0	0	137
			245-60	3	0	562	1,024	28	5	1,619
			All	13	5	230	236	6	1	479
		All	All	344	8	1,061	164	88	9	1,329
Northern	General		247-10	23	1	129	139	2	1	272
			247-20	8	6	725	1,251	1	5	1,988
			247-30	10	1	388	1,247	158	164	1,957
			247-41	7	0	296	385	29	49	759
			247-42	7	1	875	793	40	115	1,824
			247-43	5	1	554	1,040	0	176	1,770
			All	39	2	606	1,003	54	96	1,761
		Eastern	247-70	15	1	713	537	272	22	1,545
			247-80	12	1	782	1,102	334	5	2,224
			247-90	8	2	1,107	840	384	3	2,335
			All	31	1	933	903	360	13	2,211
		All	All	69	2	762	972	192	60	1,989
		All	All	314	9	1,330	393	138	23	1,893
All	All	All	All	802	4	240	0	1	1	1,616

^a Permit totals may be less than the sum of individual statistical areas if some permits were fished in multiple statistical areas.

Appendix A10.—Commercial fishing emergency orders issued during the 2018 Upper Cook Inlet fishing season.

Emergency order no.	Effective date	Action	Reason
2S-01-18	28 May	Closed that portion of the General Subdistrict of the Northern District from a point at the wood chip dock located approximately 3 miles south of Tyonek at 61°02.77' N. lat., 151° 10.04' W. long., to the Susitna River to commercial Chinook salmon fishing for the 2018 directed Chinook salmon fishery. The fishing periods affected by this announcement were May 28, June 4, June 11, and June 18, 2018.	Chuitna River Chinook salmon are a stock of management concern. As a result, sport fishing in the Chuitna River was closed, which, according to the N. Dist. King Salmon Mgmt. Plan, required a closure of the commercial fishery from the wood chip dock to the Susitna River.
2S-02-18	15 Jun	Reduces the hours open during the Kasilof River personal use setnet fishery from 11:00 a.m. to 11:00 p.m. daily from Friday June 15th through Sunday, June 24, 2018.	To reduce the harvest of Kasilof River Chinook salmon
2S-03-18	25 Jun	Closed set gillnetting in the Northern District from 7:00 a.m. until 7:00 p.m. on Monday, June 25, 2018.	To reduce the harvest of Chinook salmon migrating to streams throughout Northern Cook Inlet
2S-04-18	1 Jul	Modified weekly fishing periods in the Upper Subdistrict of the Central District beginning 12:01 a.m. on July 1, 2018.	To reduce the harvest of Kenai bound Chinook salmon and to comply with the Kenai River Late-Run Chinook Salmon Management Plan
2S-05-18	30 Jun	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 9:00 p.m. on Saturday, June 30, 2018. Opened drift gillnetting in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 9:00 p.m. on Saturday, June 30, 2018.	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-06-18	4 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Wednesday, July 4, 2018. Opened drift gillnetting in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Wednesday, July 4, 2018.	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-07-18	7 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Wednesday, July 4, 2018. Opened drift gillnetting in the Kasilof Section of the Upper Subdistrict from 7:00 a.m. until 3:00 p.m. on Saturday, July 7, 2018.	To reduce the escapement rate of Kasilof River sockeye salmon.

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Emergency order no.	Effective date	Action	Reason
2S-08-18	7 Jul	Opened commercial salmon fishing with set gillnets in that portion of the Western Subdistrict of the Central District south of the latitude of Redoubt Point from 6:00 a.m. until 10:00 p.m. on Mondays; from 6:00 a.m. until 10:00 p.m. on Thursdays; and from 6:00 a.m. until 10:00 p.m. on Saturdays each week until further notice, effective beginning at 6:00 a.m. on Saturday, July 7, 2018	To reduce the escapement rate of Crescent River sockeye salmon.
2S-09-18	9 Jul	Opened commercial salmon fishing with set gillnets in the Upper Subdistrict south of the East Foreland Section from 7:00 a.m. until 7:00 p.m. on Monday, July 9, 2018. Also restricted drift gillnetting to Drift Gillnet Area 1 and the Expanded Kenai and Expanded Kasilof sections of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Monday, July 9, 2018 and Thursday, July 12, 2018	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
2S-10-18	12 Jul	Opened commercial salmon fishing with set gillnets in the Upper Subdistrict south of the East Foreland Section from 7:00 a.m. until 7:00 p.m. on Thursday, July 12, 2018. Also restricted drift gillnetting to Drift Gillnet Area 1 and the Expanded Kenai and Expanded Kasilof sections of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Thursday, July 12, 2018	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
2S-11-18	14 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict within one-half mile of the mean high tide mark on the Kenai Peninsula shoreline from 8:00 a.m. until 8:00 p.m. on Saturday, July 14, 2018	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-12-18	16 Jul	Opened commercial salmon fishing with drift gillnets in the Expanded Kenai and Kasilof sections of the Upper Subdistrict and in the Anchor Point Section from 7:00 a.m. until 7:00 p.m. on Monday, July 16, 2018	To reduce the escapement rate of Kenai and Kasilof River sockeye salmon.
2S-13-18	18 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict within 600 feet of the mean high tide mark on the Kenai Peninsula shoreline from 5:00 p.m. until 11:59 p.m. on Wednesday, July 18, 2018	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-14-18	19 Jul	Closed commercial salmon fishing with drift gillnets in the Central District of Upper Cook Inlet and closed commercial salmon fishing with set gillnets in the East Foreland Section of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Thursday, July 19, 2018. Opened commercial fishing with set gillnets within one-half mile of the mean high tide mark on the Kenai Peninsula shoreline in the Kasilof Section of the Upper Subdistrict and will be open within 600 feet of the mean high tide mark of the Kenai Peninsula shoreline in that portion of the Kenai Section of the Upper Subdistrict south of the southern ADF&G regulatory marker at the mouth of the Kenai River at 60° 30.49' N. lat., 151° 16.80" W long from 7:00 a.m. until 7:00 p.m. on Thursday, July 19, 2018.	To reduce the harvest rate of Kenai River sockeye salmon.

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Emergency order no.	Effective date	Action	Reason
2S-15-18	21 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict within one-half mile of the mean high tide mark on the Kenai Peninsula shoreline from 7:00 a.m. until 7:00 p.m. on Saturday, July 21, 2018. This announcement also opens commercial salmon fishing with set gillnets within 600 feet of the mean high tide mark in that portion of the Kenai Section of the Upper Subdistrict south of the southern ADF&G regulatory marker at the mouth of the Kenai River at 600 30.49' N. lat., 1510 16.80" W. long. from 7:00 a.m. until 7:00 p.m. on Saturday, July 21, 2018	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-16-18	22 Jul	Opened commercial fishing with set gillnets in the Kasilof Section of the Upper Subdistrict within 600 feet of the mean high tide mark on the Kenai Peninsula shoreline from 8:00 a.m. until 8:00 p.m. on Sunday, July 22, 2018.	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-17-18	23 Jul	Reduced legal gear to one set gillnet per permit, measuring no more than 70 fathoms in length, in the General Subdistrict of the Northern District and to no more than 2 set gillnets per permit, measuring no more than 35 fathoms in length in the Eastern Subdistrict of the Northern District from 7:00 a.m. until 7:00 p.m. on Monday, July 23, 2018, and Thursday, July 26, 2018, and from 7:00 a.m. until 7:00 p.m. on Monday, July 30, 2018.	To comply with the Northern District Salmon Management Plan and the Susitna River Sockeye Salmon Action Plan
2S-18-18	23 Jul	Opened commercial salmon fishing with set gillnets in the Kenai, Kasilof, and East Foreland sections of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Monday, July 23, 2018. Drift gillnetting was opened in the Drift Gillnet Area 1 and the Expanded Kenai and Expanded Kasilof sections of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Monday, July 23, 2018.	To reduce the escapement rate of Kenai River and Kasilof River sockeye salmon.
2S-19-18	26 Jul	Closed commercial salmon fishing with set gillnets in the Kenai, Kasilof, and East Foreland sections of the Upper Subdistrict and with drift gillnets in all waters of the Central District on Thursday, July 26, 2018. Opened commercial fishing within 600 feet of the mean high tide mark on the Kenai Peninsula shoreline in the Kasilof Section of the Upper Subdistrict from 11:00 a.m. until 11:00 p.m. on Thursday, July 26, 2018.	To reduce the harvest of Kenai River sockeye salmon.
2S-20-18	28 Jul	Opened commercial salmon fishing with set gillnets in the Kasilof Section of the Upper Subdistrict within 600 feet of the mean high tide mark on the Kenai Peninsula shoreline from 2:00 p.m. until 10:00 p.m. on Saturday, July 28, 2018.	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-21-18	30 Jul	Closed drift gillnetting in the Central District of Upper Cook Inlet and closes set gillnetting in the East Foreland Section of the Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Monday, July 30, 2018	To reduce the harvest of Kenai River and Kasilof River sockeye salmon.

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Emergency order no.	Effective date	Action	Reason
2S-22-18	2 Aug	Reduced legal gear in the General Subdistrict of the Northern District, south of the Susitna River, and in the Eastern subdistrict of the Northern District of Upper Cook Inlet to no more than two set gillnets per permit, with the aggregate length not to exceed 70 fathoms, from 7:00 a.m. until 7:00 p.m. on Thursday, August 2, 2018 and from 7:00 a.m. until 7:00 p.m. on Monday, August 6, 2018. Legal gear in the General Subdistrict of the Northern District east of the Susitna River, which includes Fire Island, will be limited to no more than one set gillnet per permit, measuring no more than 35 fathoms in length, from 7:00 a.m. until 7:00 p.m. on Thursday, August 2, 2018 and from 7:00 a.m. until 7:00 p.m. on Monday, August 6, 2018	To comply with the Northern District Salmon Management Plan and the Susitna River Sockeye Salmon Action Plan
2S-23-18	2 Aug	Closed commercial salmon fishing with set and drift gillnets in the entire Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Thursday, August 2, 2018.	To reduce the harvest of Kenai River and Kasilof River sockeye salmon.
2S-24-18	6 Aug	Closed commercial salmon fishing with set and drift gillnets in the entire Upper Subdistrict from 7:00 a.m. until 7:00 p.m. on Monday, August 6, 2018	To reduce the harvest of Kenai River and Kasilof River sockeye salmon.
2S-25-18	8 Aug	Opened commercial salmon fishing with set and drift gillnets in the Kasilof River Special Harvest Area (KRSHA) from 12:00 p.m. on Wednesday, August 8, 2018 until 6:00 p.m. on Thursday, August 9, 2018	To reduce the escapement rate of Kasilof River sockeye salmon.
2S-26-18	10 Aug	Rescinded Emergency Order No. 2S-08-18 and closed set gillnetting in that portion of the Western Subdistrict south of the latitude of Redoubt Point, effective immediately. This area reopened to set gillnetting during regular fishing periods only, on Mondays and Thursdays from 7:00 a.m. until 7:00 p.m., beginning on Thursday, August 9, 2018, at 7:00 a.m.	To reduce the harvest of Crescent Lake sockeye salmon.
2S-27-18	9 Aug	Closed commercial salmon fishing with set gillnets in the entire Upper Subdistrict of Upper Cook Inlet, except for the Kasilof River Special Harvest Area from 7:00 a.m. until 7:00 p.m. on Thursday, August 9, 2018. Commercial Fishing Announcement No. 25 opened set gillnetting in the Kasilof River Special Harvest Area (KRSHA) from 12:00 p.m. on Wednesday August 8, 2018 until 6:00 p.m. on Thursday, August 9, 2018. Closed drift gillnetting in all waters of the Central District, except for Drift Gillnet Area 3, from 7:00 a.m. until 7:00 p.m. on Thursday, August 9, 2018. Commercial Fishing Announcement No. 25 opened drift gillnetting in the Kasilof River Special Harvest Area (KRSHA) from 12:00 p.m. on Wednesday August 8, 2018 until 6:00 p.m. on Thursday, August 9, 2018.	To reduce the escapement rate Kasilof River sockeye salmon.

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Emergency order no.	Effective date	Action	Reason
2S-28-18	9 Aug	Extended commercial salmon fishing with set and drift gillnets in the Kasilof River Special Harvest Area (KRSHA) from 6:00 p.m. on Thursday, August 9, 2018 until 6:00 p.m. on Friday, August 10, 2018.	To reduce the escapement rate Kasilof River sockeye salmon.
2S-29-18	14 Aug	Extended commercial salmon fishing with set and drift gillnets in the Kasilof River Special Harvest Area (KRSHA) from 6:00 p.m. on Friday, August 10, 2018 until 8:00 a.m. on Sunday, August 12, 2018.	To reduce the escapement rate Kasilof River sockeye salmon.
2S-30-18	14 Aug	Closed commercial salmon fishing with set gillnets in the entire Upper Subdistrict of Upper Cook Inlet, from 7:00 a.m. until 7:00 p.m. on Monday, August 13, 2018. closes drift gillnetting in all waters of the Central District, except for Drift Gillnet Area 3, from 7:00 a.m. until 7:00 p.m. on Monday, August 13, 2018.	To reduce the harvest of Kenai River and Kasilof River sockeye salmon.
2S-31-18	23 Aug	Opened drift gillnetting in Drift Gillnet Area 1 from 7:00 a.m. until 7:00 p.m. on Thursday, August 23, 2018. By regulation, Drift Gillnet Area 3 and 4 remain open from 7:00 a.m. until 7:00 p.m. on Thursday, August 23, 2018	To reduce the escapement rate of Kenai River and Kasilof River sockeye salmon.
2S-32-18	31 Aug	Opened set and drift gillnetting in the Chinitna Bay Subdistrict of the Central District on Tuesdays and Fridays from 7:00 a.m. until 7:00 p.m., beginning at 7:00 a.m. on Friday, August 31, 2018	To provide fishing opportunity in the Chinitna Bay Subdistrict
2S-33-18	5 Oct	Closed commercial salmon fishing with set gillnets in the Northern District, and also in the Western, Kalgin Island, Kustatan, and Chinitna Bay Subdistricts of Upper Cook Inlet for the remainder of the 2018 season, effective at 7:00 p.m. on Friday, October 5, 2018. Commercial salmon fishing with drift gillnets was closed in the Central District of Upper Cook Inlet for the remainder of the 2018 season, effective at 7:00 p.m. on Friday, October 5, 2018.	In compliance with 5 AAC 21.310, that states these areas remain open until closed each year by emergency order

Appendix A11.—Commercial salmon fishing periods, Upper Cook Inlet, 2018.

Date	Day	Time	Set gillnet	Drift gillnet
1 Jun	Fri	0700-1900	Kustatan (Big River) - Kalgin Island	
4 Jun	Mon	0700-1900	Kustatan (Big River) - Kalgin Island	
6 Jun	Wed	0700-1900	Kustatan (Big River) - Kalgin Island	
8 Jun	Fri	0700-1900	Kustatan (Big River) - Kalgin Island	
11 Jun	Mon	0700-1900	Kustatan (Big River) - Kalgin Island	
13 Jun	Wed	0700-1900	Kustatan (Big River) - Kalgin Island	
15 Jun	Fri	0700-1900	Kustatan (Big River) - Kalgin Island	
18 Jun	Mon	0700-1900	Western Subdistrict	
		0700-1900	Kustatan (Big River) - Kalgin Island	
20 Jun	Wed	0700-1900	Kustatan (Big River) - Kalgin Island	
21 Jun	Thu	0700-1900	Western Subdistrict	All
22 Jun	Fri	0700-1900	Kustatan (Big River) - Kalgin Island	
25 Jun	Mon	0700-1900	All except Kenai & E. Foreland Sections	All
28 Jun	Thu	0700-1600	All except Kenai & E. Foreland Sections	All
30 Jun	Sat	0700-2100	Kasilof Section	Kasilof Section
2 Jul	Mon	0700-1900	All except Kenai & E. Foreland Sections	All
4 Jul	Wed	0700-2300	Kasilof Section	Kasilof Section
5 Jul	Thu	0700-1900	All except Kasilof, Kenai & E. Foreland Sections	All
7 Jul	Sat	0700-1500	Kasilof Section	Kasilof Section
		0600-2200	Western Subdistrict south of Redoubt Pt.	
9 Jul	Mon	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All	Drift Area 1, Exp. Ken/Kas
12 Jul	Thu	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All	Drift Area 1, Exp. Ken/Kas
14 Jul	Sat	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0800-2000	Kasilof Section within one-half mile	
16 Jul	Mon	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Kenai Section of U. Subdistrict	Exp. Ken/Kas, and Anchor Pt.
18 Jul	Wed	1700-2359	Kasilof Section within 600 ft	
19 Jul	Thu	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Salamatof Section of U. Subdistrict	
		0700-1900	Ken & Kas Section within one-half mile and N. K. Beach 600 ft	
21 Jul	Sat	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	Kasilof Section one-half mile and N. K Beach 600 ft	
22 Jul	Sun	0800-2200	Kasilof Section within 600 ft	
23 Jul	Mon	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All	Exp. Ken/Kas, and Anchor Pt.
26 Jul	Thu	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Kenai and Salamatof Sections of U. Subdistrict	
		1100-2300	Kasilof Section within 600 ft	

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Date	Day	Time	Set gillnet	Drift gillnet
30 Jul	Mon	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Upper Subdistrict	
2 Aug	Thu	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Upper Subdistrict	
4 Aug	Sat	0600-2200	Western Subdistrict south of Redoubt Pt.	
6 Aug	Mon	0600-2200	Western Subdistrict south of Redoubt Pt.	
		0700-1900	All except Upper Subdistrict	
7 Aug	Tue	0700-1900		Area 3
8 Aug	Wed	1200-2359	Kasilof River Special Harvest Area (KRSHA)	KRSHA
9 Aug	Thu	0700-1900	Western Subdistrict south of Redoubt Pt.	
		0000-2359	Kasilof Special Harvest Area	Area 3, KRSHA
10 Aug	Fri	0000-2359	Kasilof Special Harvest Area	KRSHA
11 Aug	Sat	0000-2359	Kasilof Special Harvest Area	KRSHA
12 Aug	Sun	0000-0800	Kasilof Special Harvest Area	KRSHA
13 Aug	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3
16 Aug	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
20 Aug	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
23 Aug	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 1, 3 and 4
24 Aug	Fri	0700-1900	Chinitna Bay	Chinitna Bay
27 Aug	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
28 Aug	Tue	0700-1900	Chinitna Bay	Chinitna Bay
30 Aug	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
31 Aug	Fri	0700-1900	Chinitna Bay	Chinitna Bay
3 Sep	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
4 Sep	Tue	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
6 Sep	Thu	0700-1900	Chinitna Bay	Chinitna Bay
7 Sep	Fri	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
10 Sep	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
11 Sep	Tue	0700-1900	Chinitna Bay	Chinitna Bay
13 Sep	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
14 Sep	Fri	0700-1900	Chinitna Bay	Chinitna Bay
17 Sep	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
18 Sep	Tue	0700-1900	Chinitna Bay	Chinitna Bay
20 Sep	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
21 Sep	Fri	0700-1900	Chinitna Bay	Chinitna Bay
24 Sep	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
25 Sep	Tue	0700-1900	Chinitna Bay	Chinitna Bay
27 Sep	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
28 Sep	Fri	0700-1900	Chinitna Bay	Chinitna Bay
1 Oct	Mon	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
2 Oct	Tue	0700-1900	Chinitna Bay	Chinitna Bay
4 Oct	Thu	0700-1900	All except Upper Subdistrict	Drift Areas 3 & 4
5 Oct	Fri	0700-1900	Chinitna Bay	Chinitna Bay

Note: "Exp. Ken/Kas" = Expanded Kenai and Kasilof Sections.

Appendix A12.—Susitna River sockeye salmon studies, 2006–2016.

Yentna River passage	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015 ^a	2016 ^a
Bendix	92,051	79,901	90,146	28,428							
DIDSON-adjusted	166,697	125,146	131,772	43,972– 153,910	53,399– 144,949	62,231– 140,445	30,462– 89,957	76,227– 212,125	55,759– 137,256	ND	ND
Weir data	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Chelatna	18,433	41,290	74,469	17,721	37,784	70,353	36,736	70,555	26,212	69,897	72,657
Judd	40,633	57,392	53,681	44,616	18,446	39,984	18,715	14,088	22,416	47,934	48,218
Larson	57,411	47,924	34,595	40,929	20,324	12,190	16,566	21,821	12,040	23,185	14,313
Weir totals	116,477	146,606	162,745	103,266	76,554	122,527	72,017	106,464	60,668	141,016	135,188
Susitna pop. est.	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Mark–Recapture (M–R)	418,197	327,732	304,449	219,041	190,460	314,447	141,804	228,536	167,374	373,915	312,068
M–R: Weirs ratio	3.6	2.2	1.9	2.1	2.5	2.6	2.0	2.1	2.8	NA	NA
M–R: Bendix ratio	4.5	4.1	3.4	9.7	ND	ND	ND	ND	ND	ND	ND

^a DIDSON was not operational in 2015 and 2016.

Appendix A13.—Age composition (in percent) of sockeye salmon escapements, Upper Cook Inlet, 2018.

Stream	Age Group												Total ^a
	0.2	1.1	1.2	2.1	1.3	2.2	1.4	2.3	3.1	2.4	3.2	3.3	
Kenai River	0.1	0.1	42.1	2.3	37.6	11.8	1.7	3.6		0.6		0.1	100.0
Kasilof River		0.8	52.0	1.2	11.3	34.0		0.7					100.0
Fish Creek		1.2	86.8		2.3	9.7							100.0
Hidden Creek		0.6	97.8	0.2	0.8	0.6							100.0
Larson		0.6	30.1		47.6	20.8		0.9					100.0
Chelatna			65.1	0.7	32.5	0.3		1.0	0.3				100.0
Judd			60.1		27.1	12.5				0.3			100.0

^a May not sum to 100 due to rounding.

Appendix A14.–Upper Cook Inlet salmon average weights (in pounds) by area, 2018.

Fishery	Chinook	Sockeye	Coho	Pink	Chum
Upper Cook Inlet Total	13.8	5.2	6.3	3.8	8.3
Northern District Total	8.2	4.7	6.2	3.8	7.4
Northern District West	7.6	4.6	6.0	3.8	7.4
Trading Bay: 247-10	10.4	5.2	6.0	3.9	8.2
Tyonek: 247-20	6.9	4.8	5.7	3.1	7.7
Beluga: 247-30	5.5	5.1	6.1	3.9	7.4
Susitna Flat: 247-41	5.0	4.4	5.8	3.2	7.0
Pt. Mackenzie: 247-42	6.9	4.2	6.3	3.6	7.3
Fire Island: 247-43	7.4	4.4	6.0		7.8
Northern District East	9.4	4.7	6.5	3.8	7.5
Pt. Possession: 247-70	9.1	4.7	5.9	3.7	7.7
Birch Hill: 247-80	9.7	4.6	7.0	4.0	6.8
Number 3 Bay: 247-90	9.8	4.6	6.2	3.7	6.5
Central District Total	14.1	5.3	6.3	3.8	8.3
East Side Set Total	15.1	4.8	6.2	4.0	7.2
Salamatof/East Foreland	15.2	5.5	5.8	4.2	8.4
Salamatof: 244-41	15.2	5.6	5.7	4.4	8.5
East Foreland: 244-42	14.4	5.3	5.9	4.2	8.2
Kalifonsky Beach	14.0	4.5	5.0	3.9	-
South K. Beach: 244-31	14.3	4.3	4.7	3.8	-
North K. Beach: 244-32	13.6	5.0	5.4	4.1	-
Kasilof Terminal: 244-25	21.7	3.8	6.9	4.2	6.1
Cohoe/Ninilchik	15.6	4.7	6.1	3.8	6.8
Cohoe: 244-22	14.0	4.6	5.9	4.1	6.7
Ninilchik: 244-21	17.8	4.8	6.1	3.7	6.8
West Side Set Total	23.0	5.0	6.4	4.1	7.1
Little Jack Slough: 245-50		4.6	6.3	3.1	6.8
Tuxedni Bay: 245-30	23.0	5.1	6.4	4.1	7.1
Kustatan Total	14.3	5.0	6.2	3.4	5.9
Big River: 245-55	14.3	4.5			
West Foreland: 245-60		5.3	6.2	3.4	5.9
Kalgin Island Total	14.5	4.9	6.4	3.9	6.6
West Side: 246-10	14.4	4.9	6.2	3.9	6.6
East Side: 246-20	16.7	5.0	6.9	3.5	6.9
Chinitna Bay Total	-	4.8	7.4	4.3	7.4
Set: 245-10	-	5.2	6.3	4.2	7.8
Drift: 245-10	-	4.7	7.8	4.3	6.2
Central District Set Total	15.2	4.8	6.3	4.0	7.2
Central District Drift Total	8.2	5.7	6.3	3.7	8.4
Area 1/District-wide: 244-60	8.0	5.8	6.3	3.7	8.4
Kasilof Corridor: 244-61	8.0	5.4	6.7	4.0	9.9
Full Regular Corridor: 244-55	6.5	5.3	6.2	3.6	7.8
Kasilof Terminal: 244-26	42.0	4.4	6.8	3.9	8.0

Note: Average weights determined from total pounds of fish divided by numbers of fish reported on fish tickets.

Appendix A15.—Age composition of Chinook salmon harvested in the ESSN fishery, Upper Cook Inlet, Alaska, 1987–2018.

Year	Sample size	Percent composition by age class (%)														Total
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	1.5	2.4	2.5	1.6	
1987	1212	0.08	2.06	0.08	14.69			33.01	0.17	48.5	0.25	1.07	0.08			100
1988	870		3.22		10.81		0.23	14.25	0.35	68.5	0.12	1.83	0.69			100
1989	854		0.94		15.11			21.08	0.23	53.28		9.37				100
1990	437	0.2	1.1	0.2	29.5	0.9	0.5	29.0	0.5	32.7	0.4	3.4	1.6			100
1991	446	0.2	0.7		24.9	0.2	0.5	32.1	0.0	38.5	0.7	2.0	0.2			100
1992	688		2.5		15.0			27.6	0.6	49.6	0.9	3.8	0.2			100
1993	992		3.3		14.0			20.8	0.1	56.5	0.8	4.0	0.5			100
1994	1,502		3.5		12.3	0.1		14.7	0.3	61.3	0.5	5.8	1.6		0.1	100
1995	1,508		2.7		22.4	0.1		32.9	0.8	35.0	0.1	5.9	0.2	0.1		100
1996	2,186		3.3		15.8	0.1		34.9	0.2	42.3	1.6	1.5	0.5			100
1997	1,691		6.4		13.5	0.3		31.1	0.3	45.6	0.7	0.7	1.4			100
1998	911	0.5	11.8	0.2	23.2	0.3	0.1	21.1	1.6	38.4	0.5	1.9	0.6			100
1999	1,818	0.1	2.3		26.3	0.2		24.5		43.5	0.4	2.8				100
2000	991		9.2	0.1	12.2	0.9		38.7	0.3	37.6	0.3	0.8	0.1			100
2001	989		11.7		40.0			14.5		32.5		1.2				100
2002	1,224		10.6	0.0	29.3			36.7		22.6		0.7	0.1			100
2003	678		3.8		51.8			23.6	0.3	18.7		1.8				100
2004	1,409		3.5		19.8	0.1		48.2		27.6	0.0	0.7				100
2005	482	0.2	2.9		27.0			20.1	0.4	47.5		1.7	0.2			100
2006	560		12.9		35.4			22.0	0.2	27.1		2.5				100
2007	789		4.8		42.7			22.4	0.1	28.5		1.3	0.1			100
2008	380		10.3		19.7			27.6		40.8		1.6				100
2009	487		13.8		51.3			12.3		22.0		0.6				100
2010	743		18.3		24.6			36.0	0.1	20.1	0.2	0.8				100
2011	1,187		4.6		33.7			25.2		35.3	0.1	1.2				100
2012	167		9.6		18.0			36.6		35.8						100
2013	668		22.7		43.4			15.2		18.7						100
2014	459		17.6		32.3			29.1		20.9		0.1				100
2015	610		14.2		37.4			24.3		23.8		0.3				100
2016	809		6.7		28.5			36.2		26.7		1.9				100
2017	881		3.6		13.3			43.0		39.7		0.4				100
2018	300		13.3		54.5			12.0		19.8		0.4				100
Mean	904	0.04	7.43	0.02	26.64	0.10	0.04	26.89	0.20	36.23	0.23	1.94	0.25	0.00	0.00	100

Appendix A16.—Major buyers and processors of Upper Cook Inlet fishery products, 2018.

Buyer/processor	Code	Plant site	Contact	Address
Icicle Seafoods Inc	F0135	Seward	Kelly Glidden	842 Fish Dock Rd. Homer, AK 99603
Pacific Star Seafoods Inc.	F1834	Kenai	Steve Lee	PO Box 190 Kenai Alaska, 99611
Alaska Pacific Seafoods	F10419	Kenai	Leauri Moore	4 Nickerson Street Kenai, AK 99611
Copper River Seafoods	F6426	Anchorage	Nicole Holiday	1118 E. 5th Ave. Anchorage, AK 99501
Alaska Salmon Purchasers	F4665	Kenai	Mark Powell	46655 Kenai Spur Hwy. Kenai, AK 99611
Fishhawk Fisheries	F1540	Kenai	Steve Fick	PO Box 715 Astoria Oregon 97103
Peninsula Processing	F6618	Soldotna	Tim Berg Jr.	720 K. Beach Rd. Soldotna, AK 99669
The Fish Factory LLC	F4449	Homer	Mike McCune	800 Fish Dock Rd. Homer, AK 99603
Favco Inc.	F0398	Anchorage	Bill Buck	PO Box 190968 Anchorage, AK 99519
Tanner's Fresh Fish Processing	F9070	Ninilchik	Rory Tanner	16050 Sterling Hwy Ninilchik, AK 99639

Appendix A17.—Number of salmon harvested by gear, area, and species in personal use fisheries, Upper Cook Inlet, 2018.

Fishery	Harvest					Total
	Chinook	Sockeye	Coho	Pink	Chum	
Kasilof gillnet	120	14,390	2	22	5	14,539
Kasilof dip net	6	92,034	326	3,272	326	96,311
Kenai dip net	7	165,028	529	10,435	441	176,439
Fish Creek dip net	5	18,659	1,779	880	208	21,531
Beluga dip net	0	37	17	0	0	54
No site reported	0	2,085	21	209	4	2,319
Total	138	292,233	2,674	14,818	984	311,193

Note: Harvest numbers are preliminary.

Appendix A18.—Personal use sockeye salmon harvest by day, 2018.

Date	Kasilof gillnet		Kasilof dip net		Kenai dip net	
	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
15 Jun	988	988				
16 Jun	1,146	2,134				
17 Jun	947	3,081				
18 Jun	1,242	4,323				
19 Jun	993	5,316				
20 Jun	1,455	6,771				
21 Jun	1,045	7,816				
22 Jun	1,106	8,922				
23 Jun	1,678	10,600				
24 Jun	1,480	12,080				
25 Jun			428	428		
26 Jun			377	805		
27 Jun			468	1,273		
28 Jun			213	1,486		
29 Jun			346	1,832		
30 Jun			358	2,190		
1 Jul			885	3,075		
2 Jul			834	3,909		
3 Jul			1,368	5,277		
4 Jul			780	6,057		
5 Jul			1,096	7,153		
6 Jul			1,532	8,685		
7 Jul			1,251	9,936		
8 Jul			866	10,802		
9 Jul			485	11,287		
10 Jul			1,266	12,553	627	627
11 Jul			1,749	14,302	1,429	2,056
12 Jul			1,572	15,874	2,390	4,446
13 Jul			1,400	17,274	1,592	6,038
14 Jul			1,836	19,110	2,149	8,187
15 Jul			1,855	20,965	2,341	10,528
16 Jul			2,095	23,060	2,468	12,996
17 Jul			4,577	27,637	5,072	18,068
18 Jul			4,043	31,680	10,790	28,858
19 Jul			3,476	35,156	12,431	41,289
20 Jul			5,262	40,418	20,536	61,825
21 Jul			3,000	43,418	11,482	73,307
22 Jul			2,357	45,775	11,296	84,603

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Date	Kasilof gillnet		Kasilof dip net		Kenai dip net	
	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
23 Jul			1,223	46,998	5,977	90,580
24 Jul			1,972	48,970	5,864	96,444
25 Jul			2,403	51,373	8,746	105,190
26 Jul			1,434	52,807	7,687	112,877
27 Jul			2,210	55,017	7,313	120,190
28 Jul			1,950	56,967	7,013	127,203
29 Jul			2,089	59,056	5,826	133,029
30 Jul			2,182	61,238	672	133,701
31 Jul			1,215	62,453	159	133,860
1 Aug			1,202	63,655		
2 Aug			1,281	64,936		
3 Aug			1,625	66,561		
4 Aug			2,023	68,584		
5 Aug			1,583	70,167		
6 Aug			2,069	72,236		
7 Aug			854	73,090		

Note: Data presented are for “known” permits during legal harvest dates.

Appendix A19.–Age, weight, sex, and size distribution of Pacific herring sampled by gillnet in Upper Cook Inlet, 2018.

Sample date = 5/9–11														
Sample area	Age	Number of fish						% of total	Weight			Length		
		Male	Imm. female	Ripe female	Spawned female	Unknown	Total		Mean (g)	SD	Number weighed	Mean (mm)	SD	Number measured
ESSN	2	4	-	2	-	-	6	10	78	20.3	6	177	13.7	6
	3	4	-	5	-	-	9	15	122	11.9	9	207	7.9	9
	4	10	-	14	-	-	24	40	133	16.1	24	210	7.7	24
	5	5	-	13	-	-	18	30	148	24.1	18	217	9.5	18
	6	1	-	2	-	-	3	5	174	32.6	3	224	6.1	3
Sample total		24	0	36	0	0	60	100	132	28.9	60	209	14.0	60
Sex composition		40%	0%	60%	0%	0%								

Sample date =5/16–18														
Sample area	Age	Number of fish						% of total	Weight			Length		
		Male	Imm. female	Ripe female	Spawned female	Unknown	Total		Mean (g)	SD	Number weighed	Mean (mm)	SD	Number measured
ESSN	2	2	-	-	-	-	2	4	69	20.6	2	168	12.0	2
	3	3	-	7	-	-	10	20	122	24.2	10	204	10.9	10
	4	10	-	13	-	-	23	46	128	15.7	23	208	8.8	23
	5	7	-	4	-	-	11	22	148	21.9	11	214	9.3	11
	6	1	-	3	-	-	4	8	169	32.8	4	224	7.5	4
Sample total		23	0	27	0	0	50	100	132	27.4	50	208	13.3	50
Sex composition		46%	0%	54%	0%	0%								

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Sample date = 5/28–6/4														
Sample area	Age	Number of fish						% of total	Weight			Length		
		Male	Imm. female	Ripe female	Spawnd female	Unknown	Total		Mean (g)	SD	Number weighed	Mean (mm)	SD	Number measured
ESSN	2	21	-	30	-	-	51	69	83	14.0	51	178	9.0	51
	3	9	-	8	-	-	17	23	110	24.9	17	195	16.3	17
	4	2	-	2	-	-	4	5	152	16.2	4	217	4.7	4
	6	-	-	1	-	-	1	1	178	-	1	229	-	1
	7	-	-	1	-	-	1	1	166	-	1	228	-	1
Sample total		32	0	42	0	0	74	100	120	27.6	74	185	16.8	74
Sex composition		43%	0%	57%	0%	0%								

Sample date = all 2018														
Sample area	Age	Number of fish						% of total	Weight			Length		
		Male	Imm. female	Ripe female	Spawnd female	Unknown	Total		Mean (g)	SD	Number weighed	Mean (mm)	SD	Number measured
ESSN	2	27	-	32	-	-	59	32	82	14.9	59	177	9.6	59
	3	16	-	20	-	-	36	20	116	22.5	36	200	14.0	36
	4	22	-	29	-	-	51	28	132	16.7	51	210	8.3	51
	5	12	-	17	-	-	29	16	148	22.9	29	216	9.4	29
	6	2	-	6	-	-	8	4	172	27.8	8	224	6.2	8
	7	-	-	1	-	-	1	1	166	-	1	228	-	1
Sample total		79	0	105	0	0	184	100	117	33.2	184	199	14.1	184
Sex composition		43%	0%	57%	0%	0%								

Appendix A20.—Age, sex, and size distribution of eulachon (smelt) from Upper Cook Inlet commercial dip net fishery, 2006–2018.

2006					2007				
Age	Sex	Length (mm)	Number sampled	Percent	Age	Sex	Length (mm)	Number sampled	Percent
3	Male	185	1	1%	3	Male	179	10	9%
	Female	-	-	-		Female	174	5	5%
4	Male	194	46	54%	4	Male	188	65	60%
	Female	186	22	26%		Female	186	23	21%
5	Male	200	14	16%	5	Male	201	4	4%
	Female	203	2	2%		Female	192	1	1%
Avg	Male	196	61	72%	Avg	Male	188	79	73%
	Female	187	24	28%		Female	184	29	27%
Avg - all		193	85	100%	Avg - all		187	108	100%

2008					2009				
Age	Sex	Length (mm)	Number sampled	Percent	Age	Sex	Length (mm)	Number sampled	Percent
3	Male	194	3	3%	3	Male	195	12	7%
	Female	185	10	10%		Female	191	18	10%
4	Male	201	37	37%	4	Male	203	74	41%
	Female	193	36	36%		Female	194	58	32%
5	Male	208	12	12%	5	Male	203	13	7%
	Female	206	3	3%		Female	203	5	3%
Avg	Male	202	52	51%	Avg	Male	202	99	55%
	Female	192	49	49%		Female	194	81	45%
Avg - all		197	101	100%	Avg - all		198	180	100%

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2010				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	189	14	7%
	Female	194	10	5%
4	Male	197	61	31%
	Female	204	105	53%
5	Male	204	3	2%
	Female	203	6	3%
Avg	Male	196	78	39%
	Female	203	121	61%
Avg - all		200	199	100%

2012				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	191	20	11%
	Female	198	19	10%
4	Male	204	50	27%
	Female	207	88	47%
5	Male	208	2	1%
	Female	215	7	4%
Avg	Male	201	72	39%
	Female	206	114	61%
Avg - all		204	186	100%

2011				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	192	25	13%
	Female	185	47	24%
4	Male	205	48	24%
	Female	203	41	21%
5	Male	210	28	14%
	Female	208	11	6%
Avg	Male	203	101	51%
	Female	195	99	50%
Avg - all		199	200	100%

2013				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	212	7	4%
	Female	216	7	4%
4	Male	219	78	50%
	Female	212	37	24%
5	Male	224	22	14%
	Female	217	5	3%
Avg	Male	220	107	69%
	Female	213	49	31%
Avg - all		218	156	100%

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2014				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	196	16	12%
	Female	194	22	16%
4	Male	211	51	37%
	Female	209	37	27%
5	Male	219	10	7%
	Female	218	2	1%
Avg	Male	209	77	56%
	Female	202	61	44%
Avg - all		207	138	100%

2015				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	184	73	30%
	Female	179	7	3%
4	Male	198	152	63%
	Female	192	8	3%
5	Male	214	3	1%
	Female	0	0	0%
All	Male	193	228	94%
	Female	185	15	6%
Avg - all		194	243	100%

2016				
Age	Sex	Length (mm)	Number sampled	Percent
3	Male	183	17	6%
	Female	179	28	10%
4	Male	193	117	43%
	Female	190	102	38%
5	Male	203	6	2%
	Female	0	0	0%
All	Male	192	140	52%
	Female	187	130	48%
Avg - all		190	270	100%

2017				
Age	Sex	Length (mm)	Number sampled	Percent
3	Female	172	2	1%
	Male	173	69	23%
4	Female	159	1	0%
	Male	187	232	76%
All	Male	167	301	99%
	Female	184	3	1%
Avg - all		183	304	100%

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2018					All Years (2007-2018)				
Age	Sex	Length (mm)	Number. sampled	Percent	Age	Sex	Length (mm)	Number sampled	Percent
3	Male	159	2	2%	3	Male	190	199	11%
	Female	159	29	26%		Female	188	202	11%
4	Male	173	28	25%	4	Male	201	761	40%
	Female	168	46	41%		Female	198	581	31%
5	Male	188	3	3%	5	Male	209	103	5%
	Female	183	4	4%		Female	166	40	2%
Avg	Male	173	33	29%	Avg	Male	202	354	56%
	Female	165	79	71%		Female	196	274	44%
Avg - all		168	112	100%	Avg - all		199	629	100%

Appendix A21.—Seldovia District tide tables, May through August 2018.

MAY											
HIGH TIDES						LOW TIDES					
Date	Day	AM		PM		Date	Day	AM		PM	
		Time	Feet	Time	Feet			Time	Feet	Time	Feet
1	Tue	3:50	19.9	4:35	18.4	1	Tue	10:11	-2.9	1:09	-1.6
2	Wed	4:21	19.4	5:13	17.6	2	Wed	10:47	-2.3	2:13	0.3
3	Thu	4:53	18.5	5:52	16.6	3	Thu	11:23	-1.3	3:26	1.8
4	Fri	5:26	17.3	6:35	15.3	4	Fri	—	-0.1	12:00	2.3
5	Sat	6:02	16.0	7:24	14.2	5	Sat	12:11	4.2	5:51	2.4
6	Sun	6:45	14.6	8:23	13.3	6	Sun	12:57	2.9	6:44	2.2
7	Mon	7:41	13.3	9:34	13.0	7	Mon	1:57	1.4	7:27	2.0
8	Tue	8:58	12.4	10:43	13.4	8	Tue	3:14	0.2	8:04	1.1
9	Wed	10:25	12.4	11:37	14.3	9	Wed	4:36	-0.9	8:38	1.1
10	Thu	11:38	13.3	—	—	10	Thu	5:43	-1.5	9:11	1.1
11	Fri	12:21	15.4	12:35	14.6	11	Fri	6:32	-1.8	9:45	2.2
12	Sat	12:59	16.8	1:24	16.0	12	Sat	7:14	-1.8	10:18	2.8
13	Sun	1:35	18.1	2:09	17.3	13	Sun	7:54	-1.3	10:54	3.5
14	Mon	2:11	19.4	2:52	18.4	14	Mon	8:33	-0.6	11:31	4.3
15	Tue	2:48	20.5	3:36	19.0	15	Tue	9:13	0.4	—	—
16	Wed	3:27	21.1	4:21	19.2	16	Wed	9:55	5.2	12:40	1.4
17	Thu	4:08	21.2	5:07	19.0	17	Thu	10:38	6.0	1:30	2.4
18	Fri	4:51	20.7	5:57	18.3	18	Fri	11:23	6.6	2:30	3.0
19	Sat	5:38	19.6	6:51	17.4	19	Sat	12:13	6.3	3:39	3.3
20	Sun	6:32	18.0	7:52	16.5	20	Sun	12:32	5.1	4:46	3.0
21	Mon	7:35	16.4	8:59	16.0	21	Mon	1:35	3.3	5:47	2.4
22	Tue	8:52	15.0	10:09	16.0	22	Tue	2:50	1.0	6:40	1.5
23	Wed	10:17	14.5	11:14	16.5	23	Wed	4:13	-1.3	7:30	0.7
24	Thu	11:36	14.7	—	—	24	Thu	5:29	-3.5	8:17	0.0
25	Fri	12:09	17.2	12:41	15.4	25	Fri	6:30	-5.1	9:03	-0.3
26	Sat	12:55	17.9	1:35	16.2	26	Sat	7:19	-6.0	9:49	-0.3
27	Sun	1:36	18.5	2:22	16.8	27	Sun	8:02	-6.1	10:37	0.3
28	Mon	2:13	18.9	3:04	17.3	28	Mon	8:40	-5.4	11:26	1.2
29	Tue	2:48	19.1	3:43	17.5	29	Tue	9:17	-3.1	—	—
30	Wed	3:24	19.1	4:20	17.4	30	Wed	9:51	2.3	12:52	-2.1
31	Thu	3:54	18.7	4:58	17.1	31	Thu	10:26	3.5	1:49	-0.2

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JUNE											
HIGH TIDES						LOW TIDES					
Date	Day	AM		PM		Date	Day	AM		PM	
		Time	Feet	Time	Feet			Time	Feet	Time	Feet
1	Fri	4:28	18.1	17:36	16.5	1	Fri	11:01	-1.6	23:10	3.9
2	Sat	5:03	17.3	18:16	15.8	2	Sat	11:38	-0.7	23:51	4.7
3	Sun	5:41	16.2	18:58	15.1	3	Sun	12:16	0.3	–	–
4	Mon	6:23	15.0	19:46	14.4	4	Mon	0:35	5.5	12:58	1.5
5	Tue	7:13	13.8	20:38	14.1	5	Tue	1:28	6.1	13:47	2.6
6	Wed	8:16	12.9	21:35	14.1	6	Wed	2:30	6.2	14:44	3.4
7	Thu	9:31	12.5	22:29	14.7	7	Thu	3:39	5.8	15:47	3.9
8	Fri	10:47	12.9	23:20	15.6	8	Fri	4:48	4.7	16:50	3.9
9	Sat	11:55	13.8	–	–	9	Sat	5:47	3.0	17:48	3.6
10	Sun	0:07	16.8	12:53	15.0	10	Sun	6:38	1.1	18:40	3.0
11	Mon	0:51	18.1	13:45	16.4	11	Mon	7:25	-1.0	19:29	2.3
12	Tue	1:35	19.5	14:35	17.6	12	Tue	8:10	-2.9	20:16	1.7
13	Wed	2:20	20.6	15:23	18.6	13	Wed	8:55	-4.4	21:03	1.2
14	Thu	3:05	21.3	16:10	19.2	14	Thu	9:39	-5.4	21:49	1.0
15	Fri	3:52	21.5	16:58	19.4	15	Fri	10:25	-5.6	22:37	1.1
16	Sat	4:40	21.1	17:47	19.1	16	Sat	11:11	-5.2	23:28	1.6
17	Sun	5:30	20.0	18:37	18.6	17	Sun	12:00	-4.0	–	–
18	Mon	6:24	18.5	19:31	17.8	18	Mon	0:22	2.2	12:51	-2.4
19	Tue	7:25	16.8	20:28	17.2	19	Tue	1:22	2.8	13:47	-0.6
20	Wed	8:34	15.2	21:29	16.7	20	Wed	2:30	3.3	14:48	1.2
21	Thu	9:52	14.2	22:31	16.6	21	Thu	3:45	3.2	15:53	2.6
22	Fri	11:11	13.9	23:29	16.7	22	Fri	5:00	2.6	16:59	3.5
23	Sat	12:21	14.2	–	–	23	Sat	6:06	1.6	18:00	3.9
24	Sun	0:20	17.0	13:20	14.8	24	Sun	7:00	0.6	18:54	4.0
25	Mon	1:05	17.4	14:09	15.5	25	Mon	7:45	-0.4	19:40	3.9
26	Tue	1:46	17.8	14:52	16.1	26	Tue	8:25	-1.1	20:21	3.7
27	Wed	2:23	18.1	15:30	16.6	27	Wed	9:00	-1.7	21:00	3.5
28	Thu	2:59	18.3	16:06	16.9	28	Thu	9:35	-2.0	21:37	3.3
29	Fri	3:35	18.3	16:41	17.0	29	Fri	10:08	-2.0	22:14	3.3
30	Sat	4:10	18.1	17:16	16.9	30	Sat	10:42	-1.8	22:52	3.5

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JULY											
HIGH TIDES						LOW TIDES					
Date	Day	AM		PM		Date	Day	AM		PM	
		Time	Feet	Time	Feet			Time	Feet	Time	Feet
1	Sun	4:46	17.6	17:51	16.6	1	Sun	11:16	-1.3	23:30	3.8
2	Mon	5:23	16.8	18:27	16.2	2	Mon	11:51	-0.4	–	–
3	Tue	6:03	15.9	19:05	15.7	3	Tue	0:11	4.2	12:28	0.6
4	Wed	6:47	14.8	19:47	15.3	4	Wed	0:56	4.6	13:09	1.7
5	Thu	7:40	13.8	20:33	15.1	5	Thu	1:47	4.8	13:55	2.8
6	Fri	8:45	13.0	21:25	15.3	6	Fri	2:46	4.8	14:50	3.8
7	Sat	10:01	12.8	22:22	15.8	7	Sat	3:54	4.2	15:54	4.5
8	Sun	11:18	13.2	23:19	16.7	8	Sun	5:02	2.9	17:01	4.6
9	Mon	12:27	14.3	–	–	9	Mon	6:05	1.2	18:05	4.3
10	Tue	0:15	17.9	13:28	15.7	10	Tue	7:01	-0.8	19:04	3.5
11	Wed	1:09	19.3	14:21	17.2	11	Wed	7:51	-2.7	19:57	2.5
12	Thu	2:01	20.5	15:10	18.6	12	Thu	8:39	-4.4	20:48	1.5
13	Fri	2:51	21.4	15:57	19.6	13	Fri	9:25	-5.5	21:37	0.7
14	Sat	3:41	21.8	16:43	20.1	14	Sat	10:10	-5.8	22:25	0.3
15	Sun	4:30	21.6	17:28	20.2	15	Sun	10:56	-5.4	23:14	0.2
16	Mon	5:20	20.7	18:13	19.7	16	Mon	11:41	-4.2	–	–
17	Tue	6:12	19.2	19:00	18.9	17	Tue	0:05	0.6	12:28	-2.4
18	Wed	7:07	17.4	19:50	18.0	18	Wed	1:00	1.3	13:18	-0.4
19	Thu	8:08	15.5	20:44	17.0	19	Thu	2:00	2.1	14:11	1.8
20	Fri	9:20	14.0	21:43	16.2	20	Fri	3:07	2.8	15:11	3.7
21	Sat	10:41	13.2	22:45	15.8	21	Sat	4:23	2.9	16:18	5.0
22	Sun	12:01	13.3	23:46	15.9	22	Sun	5:39	2.5	17:28	5.7
23	Mon	13:06	13.9	–	–	23	Mon	6:41	1.7	18:30	5.7
24	Tue	0:39	16.2	13:57	14.8	24	Tue	7:30	0.8	19:22	5.3
25	Wed	1:25	16.7	14:39	15.6	25	Wed	8:10	0.0	20:05	4.6
26	Thu	2:06	17.3	15:14	16.4	26	Thu	8:45	-0.8	20:44	3.9
27	Fri	2:43	17.9	15:47	17.0	27	Fri	9:17	-1.4	21:20	3.2
28	Sat	3:19	18.3	16:18	17.5	28	Sat	9:48	-1.7	21:56	2.7
29	Sun	3:55	18.5	16:49	17.7	29	Sun	10:20	-1.8	22:31	2.4
30	Mon	4:30	18.3	17:20	17.7	30	Mon	10:51	-1.5	23:06	2.4
31	Tue	5:06	17.8	17:51	17.4	31	Tue	11:24	-0.8	23:43	2.5

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AUGUST											
HIGH TIDES						LOW TIDES					
Date	Day	AM		PM		Date	Day	AM		PM	
		Time	Feet	Time	Feet			Time	Feet	Time	Feet
1	Wed	5:43	17.0	18:24	17.0	1	Wed	11:58	4.2	–	–
2	Thu	6:23	16.0	18:59	16.6	2	Thu	0:23	3.6	12:34	1.3
3	Fri	7:10	14.8	19:40	16.2	3	Fri	1:08	2.6	13:15	2.7
4	Sat	8:09	13.7	20:30	15.9	4	Sat	2:01	1.4	14:05	4.1
5	Sun	9:24	13.0	21:32	15.9	5	Sun	3:07	0.3	15:10	5.2
6	Mon	10:51	13.1	22:42	16.5	6	Mon	4:23	-0.8	16:26	5.7
7	Tue	12:11	14.1	23:50	17.5	7	Tue	5:37	-1.7	17:42	5.4
8	Wed	13:15	15.7	–	–	8	Wed	6:41	-2.2	18:48	4.2
9	Thu	0:53	18.9	14:07	17.4	9	Thu	7:36	-2.4	19:45	2.7
10	Fri	1:49	20.3	14:54	19.0	10	Fri	8:24	-2.0	20:36	1.1
11	Sat	2:42	21.4	15:38	20.2	11	Sat	9:09	-1.2	21:24	-0.3
12	Sun	3:31	22.0	16:20	20.9	12	Sun	9:53	–	22:10	-1.1
13	Mon	4:19	21.9	17:01	21.1	13	Mon	10:35	1.4	22:56	-1.3
14	Tue	5:06	21.1	17:42	20.6	14	Tue	11:18	2.0	23:42	-0.9
15	Wed	5:54	19.7	18:23	19.6	15	Wed	12:00	2.4	–	–
16	Thu	6:43	17.8	19:07	18.3	16	Thu	0:31	2.3	12:45	0.5
17	Fri	7:38	15.7	19:54	16.9	17	Fri	1:24	1.4	13:32	2.8
18	Sat	8:44	13.9	20:49	15.6	18	Sat	2:24	0.0	14:28	4.9
19	Sun	10:08	12.9	21:57	14.8	19	Sun	3:38	-1.6	15:36	6.5
20	Mon	11:39	12.9	23:12	14.6	20	Mon	5:05	-2.9	16:58	7.1
21	Tue	12:50	13.7	–	–	21	Tue	6:19	-3.7	18:14	6.8
22	Wed	0:17	15.1	13:40	14.7	22	Wed	7:12	-3.9	19:09	5.9
23	Thu	1:09	15.9	14:17	15.7	23	Thu	7:51	-3.5	19:51	4.7
24	Fri	1:51	16.8	14:49	16.7	24	Fri	8:24	-2.5	20:27	3.5
25	Sat	2:28	17.8	15:18	17.5	25	Sat	8:54	-0.9	21:01	2.4
26	Sun	3:03	18.5	15:47	18.2	26	Sun	9:23	–	21:34	1.5
27	Mon	3:37	19.0	16:15	18.6	27	Mon	9:53	1.6	22:07	0.9
28	Tue	4:12	19.1	16:44	18.8	28	Tue	10:24	3.0	22:40	0.6
29	Wed	4:46	18.8	17:13	18.7	29	Wed	10:55	4.2	23:15	0.7
30	Thu	5:23	18.0	17:43	18.3	30	Thu	11:28	4.9	23:53	1.0
31	Fri	6:02	17.0	18:17	17.8	31	Fri	12:03	4.7	–	–

Appendix A22.—Total sockeye salmon harvest from all sources in Upper Cook Inlet, 1996–2018.

Year	Commercial				Sport ^{a,b,c}			Personal use					Subsistence/ educational		Total
	Drift	Set	Test fishery	All	Kenai River	All other UCI	All	Kasilof gillnet	Kasilof dipnet	Kenai dipnet	Other ^d	All	Sub. ^e	Ed. ^e	
1996	2,205,067	1,683,855	2,424	3,891,346	205,959	16,863	222,822	9,506	11,197	102,821	22,021	145,545	259	2,405	4,262,377
1997	2,197,961	1,979,034	2,301	4,179,296	190,629	23,591	214,220	17,997	9,737	114,619	6,587	148,940	593	3,076	4,546,125
1998	599,396	620,121	5,456	1,224,973	189,885	23,477	213,362	15,975	45,161	103,847	11,598	176,581	636	3,567	1,619,119
1999	1,413,995	1,266,523	11,766	2,692,284	233,768	26,078	259,846	12,832	37,176	149,504	9,077	208,589	599	3,037	3,164,355
2000	656,427	666,055	9,450	1,331,932	261,779	32,194	293,973	14,774	23,877	98,262	12,354	149,267	442	2,933	1,778,547
2001	846,275	980,576	3,381	1,830,232	219,478	30,953	250,431	17,201	37,612	150,766	13,109	218,688	686	4,633	2,304,670
2002	1,367,251	1,405,867	37,983	2,811,101	259,733	21,770	281,503	17,980	46,769	180,028	14,846	259,623	623	3,722	3,356,572
2003	1,593,638	1,882,523	13,968	3,490,129	314,408	36,076	350,484	15,706	43,870	223,580	15,675	298,831	544	5,993	4,145,981
2004	2,529,642	2,397,442	10,677	4,937,761	317,233	28,823	346,056	25,417	48,315	262,831	13,527	350,090	484	5,237	5,639,628
2005	2,520,327	2,718,372	12,064	5,250,763	312,835	21,826	334,661	26,609	43,151	295,496	4,520	369,776	238	7,134	5,962,572
2006	784,771	1,407,959	10,698	2,203,428	203,602	24,517	228,119	28,867	56,144	127,630	3,406	216,047	408	5,444	2,653,446
2007	1,823,481	1,493,298	10,649	3,327,428	326,325	28,504	354,829	14,943	43,293	291,270	6,729	356,235	567	5,773	4,044,832
2008	983,303	1,396,832	16,957	2,397,092	254,359	30,155	284,514	23,432	54,051	234,109	6,890	318,482	450	4,761	3,005,299
2009	968,075	1,077,719	13,948	2,059,742	252,319	120,650	372,969	26,646	73,035	339,993	18,006	457,680	253	7,190	2,897,834
2010	1,587,657	1,240,685	6,670	2,835,012	304,635	55,831	360,466	21,924	70,774	389,552	32,052	514,302	865	5,652	3,716,297
2011	3,201,035	2,076,960	5,660	5,283,655	395,840	59,498	455,338	26,780	49,766	537,765	16,068	630,379	700	8,048	6,378,120
2012	2,924,144	209,695	11,839	3,145,678	455,454	50,164	505,618	15,638	73,419	526,992	13,304	629,353	441	4,418	4,285,508
2013	1,662,561	1,020,663	5,283	2,688,507	436,988	77,833	514,821	14,439	85,528	347,222	7,126	454,315	333	6,185	3,664,161
2014	1,501,678	842,356	5,648	2,349,682	360,831	89,785	450,616	22,567	88,513	379,823	15,144	506,047	587	7,724	3,314,656
2015	1,012,684	1,636,983	2,378	2,652,045	376,422	73,876	450,298	27,567	89,000	377,532	27,951	522,050	800	9,170	3,634,363
2016	1,266,696	1,130,112	2,096	2,398,904	329,702	53,768	383,470	26,539	58,723	259,057	4,837	349,156	659	7,449	3,139,638
2017	880,279	968,571	2,701	1,851,551	291,405	58,866	350,271	21,927	78,260	297,049	9,654	406,890	911	10,968	2,620,591
2018	400,285	417,610	1,546	819,441	250,000	20,000	270,000	14,390	92,034	165,028	2,085	292,233	622	8,581	1,390,877

^a Sport harvest in the Kenai River includes late-run stock only; early-run Russian River sockeye salmon harvest is excluded.

^b Sport harvest is estimated from the annual statewide sportfish harvest survey.

^c Sport harvest in 2017 is unknown until the statewide harvest survey is finalized; these figures are estimates based on size of 2017 sockeye salmon run.

^d Area of harvest not identified on returned permits, other than Fish Creek dip net, which was open from 1996–2001, 2009–2010, 2014–2015, 2017, and Beluga dip net (2008–2017).

^e “Sub.” = Subsistence; “Ed.” = Educational; see Appendices B15 and B16 for individual fishery harvests.

Appendix A23.—Daily commercial harvest of razor clams, Upper Cook Inlet, 2018.

Date	Pounds	Number of diggers	Date	Pounds	Number of diggers
12 May	699	12	28 Jun	2,628	14
13 May	1,763	14	29 Jun	3,720	14
14 May	2,800	14	30 Jun	3,743	14
15 May	3,404	14	1 Jul	3,368	13
17 May	2,744	12	2 Jul	3,439	13
18 May	2,675	14	3 Jul	2,963	12
19 May	1,874	11	4 Jul	1,451	12
20 May	1,900	10	9 Jul	1,972	14
21 May	1,604	13	10 Jul	3,030	13
22 May	1,516	13	11 Jul	3,937	15
25 May	619	10	12 Jul	3,077	13
26 May	1,811	11	13 Jul	3,949	15
27 May	3,450	13	14 Jul	2,909	15
28 May	2,800	13	15 Jul	3,000	15
29 May	2,844	14	16 Jul	3,023	14
30 May	2,807	12	17 Jul	2,984	14
31 May	3,705	14	18 Jul	2,941	14
1 Jun	2,776	13	24 Jul	2,867	13
2 Jun	2,770	13	25 Jul	2,035	13
3 Jun	2,698	14	26 Jul	3,066	13
4 Jun	1,699	13	27 Jul	3,626	14
5 Jun	874	12	28 Jul	3,930	14
10 Jun	2,657	13	29 Jul	2,967	14
11 Jun	2,068	13	30 Jul	3,085	13
12 Jun	3,919	13	31 Jul	2,468	14
13 Jun	5,057	13	1 Aug	2,728	14
14 Jun	5,435	13	2 Aug	1,387	13
15 Jun	3,009	13	7 Aug	1,953	13
16 Jun	2,864	13	8 Aug	2,570	13
17 Jun	2,922	12	9 Aug	3,034	13
18 Jun	2,454	13	10 Aug	3,925	13
19 Jun	2,850	12	11 Aug	2,908	12
20 Jun	1,636	13	12 Aug	2,957	12
24 Jun	2,932	13	13 Aug	1,061	11
25 Jun	1,890	12	14 Aug	2,432	13
26 Jun	3,875	14	15 Aug	2,556	13
27 Jun	2,073	11			
Total for year = 199,162 lb					

APPENDIX B: HISTORICAL DATA

Appendix B1.—Upper Cook Inlet commercial Chinook salmon harvest by gear type and area, 1966–2018.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1966	392	4.6	7,329	85.8	401	4.7	422	4.9	8,544
1967	489	6.2	6,686	85.1	500	6.4	184	2.3	7,859
1968	182	4.0	3,304	72.8	579	12.8	471	10.4	4,536
1969	362	2.9	5,834	47.1	3,286	26.5	2,904	23.4	12,386
1970	356	4.3	5,368	64.4	1,152	13.8	1,460	17.5	8,336
1971	237	1.2	7,055	35.7	2,875	14.5	9,598	48.6	19,765
1972	375	2.3	8,599	53.5	2,199	13.7	4,913	30.5	16,086
1973	244	4.7	4,411	84.9	369	7.1	170	3.3	5,194
1974	422	6.4	5,571	84.5	434	6.6	169	2.6	6,596
1975	250	5.2	3,675	76.8	733	15.3	129	2.7	4,787
1976	690	6.4	8,249	75.9	1,469	13.5	457	4.2	10,865
1977	3,411	23.1	9,730	65.8	1,084	7.3	565	3.8	14,790
1978	2,072	12.0	12,468	72.1	2,093	12.1	666	3.8	17,299
1979	1,089	7.9	8,671	63.1	2,264	16.5	1,714	12.5	13,738
1980	889	6.4	9,643	69.9	2,273	16.5	993	7.2	13,798
1981	2,320	19.0	8,358	68.3	837	6.8	725	5.9	12,240
1982	1,293	6.2	13,658	65.4	3,203	15.3	2,716	13.0	20,870
1983	1,125	5.5	15,042	72.9	3,534	17.1	933	4.5	20,634
1984	1,377	13.7	6,165	61.3	1,516	15.1	1,004	10.0	10,062
1985	2,048	8.5	17,723	73.6	2,427	10.1	1,890	7.8	24,088
1986	1,834	4.7	19,826	50.5	2,108	5.4	15,488	39.5	39,256
1987	4,552	11.5	21,159	53.6	1,029	2.6	12,700	32.2	39,440
1988	2,237	7.7	12,859	44.2	1,148	3.9	12,836	44.1	29,080
1989	0	0.0	10,914	40.8	3,092	11.6	12,731	47.6	26,737
1990	621	3.9	4,139	25.7	1,763	10.9	9,582	59.5	16,105
1991	246	1.8	4,893	36.1	1,544	11.4	6,859	50.6	13,542
1992	615	3.6	10,718	62.4	1,284	7.5	4,554	26.5	17,171

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Appendix B1.–Page 2 of 2.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1993	765	4.1	14,079	74.6	720	3.8	3,307	17.5	18,871
1994	464	2.3	15,575	78.0	730	3.7	3,193	16.0	19,962
1995	594	3.3	12,068	67.4	1,101	6.2	4,130	23.1	17,893
1996	389	2.7	11,564	80.8	395	2.8	1,958	13.7	14,306
1997	627	4.7	11,325	85.2	207	1.6	1,133	8.5	13,292
1998	335	4.1	5,087	62.6	155	1.9	2,547	31.4	8,124
1999	575	4.0	9,463	65.8	1,533	10.7	2,812	19.6	14,383
2000	270	3.7	3,684	50.1	1,089	14.8	2,307	31.4	7,350
2001	619	6.7	6,009	64.6	856	9.2	1,811	19.5	9,295
2002	415	3.3	9,478	74.5	926	7.3	1,895	14.9	12,714
2003	1,240	6.7	14,810	80.0	770	4.2	1,683	9.1	18,503
2004	1,104	4.1	21,684	80.5	2,208	8.2	1,926	7.2	26,922
2005	1,958	7.1	21,597	78.1	739	2.7	3,373	12.2	27,667
2006	2,782	15.4	9,956	55.2	1,030	5.7	4,261	23.6	18,029
2007	912	5.2	12,292	69.7	603	3.4	3,818	21.7	17,625
2008	653	4.9	7,573	56.8	1,124	8.4	3,983	29.9	13,333
2009	859	9.8	5,588	63.9	672	7.7	1,631	18.6	8,750
2010	538	5.4	7,059	71.3	553	5.6	1,750	17.7	9,900
2011	593	5.3	7,697	68.4	659	5.9	2,299	20.4	11,248
2012	218	8.6	705	27.9	555	22.0	1,049	41.5	2,527
2013	493	9.1	2,988	55.4	590	10.9	1,327	24.6	5,398
2014	382	8.2	2,301	49.4	507	10.9	1,470	31.5	4,660
2015	556	5.1	7,781	72.1	538	5.0	1,923	17.8	10,798
2016	606	6.0	6,759	67.4	460	4.6	2,202	22.0	10,027
2017	264	3.4	4,779	62.4	387	5.1	2,230	29.1	7,660
2018	503	14.8	2,312	67.9	447	13.1	143	4.2	3,405
1966–2017 Avg ^b	940	6.4	9,141	65.0	1,200	9.1	3,022	19.5	14,437
2008–2017 Avg	516	6.6	5,323	59.5	605	8.6	1,986	25.3	8,430

^a Harvest data prior to 2018 reflects minor adjustments to historical catch database.

^b 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B2.—Upper Cook Inlet commercial sockeye salmon harvest by gear type and area, 1966–2018.

Year	Central District						Northern District		Total
	Drift Gillnet		ESSN		Kalgin–west Side Set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1966	1,103,261	59.6	485,330	26.2	132,443	7.2	131,080	7.1	1,852,114
1967	890,152	64.5	305,431	22.1	66,414	4.8	118,065	8.6	1,380,062
1968	561,737	50.8	317,535	28.7	85,049	7.7	140,575	12.7	1,104,896
1969	371,747	53.7	210,834	30.5	71,184	10.3	38,050	5.5	691,815
1970	460,690	62.9	142,701	19.5	62,723	8.6	66,458	9.1	732,572
1971	423,107	66.5	111,505	17.5	61,144	9.6	40,533	6.4	636,289
1972	506,281	57.5	204,599	23.3	83,176	9.5	85,755	9.7	879,811
1973	375,695	56.1	188,816	28.2	59,973	8.9	45,614	6.8	670,098
1974	265,771	53.5	136,889	27.5	52,962	10.7	41,563	8.4	497,185
1975	368,124	53.8	177,336	25.9	73,765	10.8	65,526	9.6	684,751
1976	1,055,786	63.4	476,376	28.6	62,338	3.7	69,649	4.2	1,664,149
1977	1,073,098	52.3	751,178	36.6	104,265	5.1	123,750	6.0	2,052,291
1978	1,803,479	68.8	660,797	25.2	105,767	4.0	51,378	2.0	2,621,421
1979	454,707	49.2	247,359	26.8	108,422	11.7	113,918	12.3	924,406
1980	770,247	48.9	559,812	35.6	137,882	8.8	105,647	6.7	1,573,588
1981	633,380	44.0	496,003	34.5	60,217	4.2	249,662	17.3	1,439,262
1982	2,103,429	64.5	971,423	29.8	66,952	2.1	118,060	3.6	3,259,864
1983	3,222,428	63.8	1,508,511	29.9	134,575	2.7	184,219	3.6	5,049,733
1984	1,235,337	58.6	490,273	23.3	162,139	7.7	218,965	10.4	2,106,714
1985	2,032,957	50.1	1,561,200	38.4	285,081	7.0	181,191	4.5	4,060,429
1986	2,837,857	59.2	1,658,671	34.6	153,714	3.2	141,830	3.0	4,792,072
1987	5,638,916	59.5	3,457,724	36.5	208,036	2.2	164,572	1.7	9,469,248
1988	4,139,358	60.5	2,428,385	35.5	146,377	2.1	129,713	1.9	6,843,833
1989	5	0.0	4,543,492	90.7	186,828	3.7	280,801	5.6	5,011,126
1990	2,305,742	64.0	1,117,621	31.0	84,949	2.4	96,398	2.7	3,604,710
1991	1,118,138	51.3	844,603	38.8	99,855	4.6	116,201	5.3	2,178,797
1992	6,069,495	66.6	2,838,076	31.2	131,304	1.4	69,478	0.8	9,108,353

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Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1993	2,558,732	53.8	1,941,798	40.8	108,181	2.3	146,633	3.1	4,755,344
1994	1,901,475	53.3	1,458,162	40.9	85,830	2.4	120,142	3.4	3,565,609
1995	1,773,873	60.1	961,227	32.6	107,898	3.7	109,098	3.7	2,952,096
1996	2,205,067	56.7	1,483,008	38.1	96,719	2.5	104,128	2.7	3,888,922
1997	2,197,961	52.6	1,832,856	43.9	48,723	1.2	97,455	2.3	4,176,995
1998	599,396	49.2	512,306	42.0	47,165	3.9	60,650	5.0	1,219,517
1999	1,413,995	52.8	1,092,946	40.8	114,454	4.3	59,123	2.2	2,680,518
2000	656,427	49.6	529,747	40.1	92,477	7.0	43,831	3.3	1,322,482
2001	846,275	46.3	870,019	47.6	59,709	3.3	50,848	2.8	1,826,851
2002	1,367,251	49.3	1,303,158	47.0	69,609	2.5	33,100	1.2	2,773,118
2003	1,593,638	45.8	1,746,841	50.3	87,193	2.5	48,489	1.4	3,476,161
2004	2,529,642	51.3	2,235,810	45.4	134,356	2.7	27,276	0.6	4,927,084
2005	2,520,327	48.1	2,534,345	48.4	157,612	3.0	26,415	0.5	5,238,699
2006	784,771	35.8	1,301,275	59.3	94,054	4.3	12,630	0.6	2,192,730
2007	1,823,481	55.0	1,353,407	40.8	122,424	3.7	17,467	0.5	3,316,779
2008	983,303	41.3	1,303,236	54.8	67,366	2.8	26,230	1.1	2,380,135
2009	968,075	47.3	905,853	44.3	131,214	6.4	40,652	2.0	2,045,794
2010	1,587,657	56.1	1,085,789	38.4	114,719	4.1	40,177	1.4	2,828,342
2011	3,201,035	60.6	1,877,939	35.6	163,539	3.1	35,482	0.7	5,277,995
2012	2,924,144	93.3	96,675	3.1	90,440	2.9	22,580	0.7	3,133,839
2013	1,662,561	62.0	921,533	34.3	75,707	2.8	23,423	0.9	2,683,224
2014	1,501,678	64.1	724,398	30.9	80,271	3.4	37,687	1.6	2,344,034
2015	1,012,684	38.2	1,481,336	55.9	99,771	3.8	55,876	2.1	2,649,667
2016	1,266,746	52.8	997,853	41.6	85,194	3.6	47,150	2.0	2,396,943
2017	880,279	47.6	832,220	45.0	79,788	4.3	56,956	3.1	1,849,243
2018	400,285	48.9	289,841	35.4	75,217	9.2	52,552	6.4	817,895
1966–2017 Avg ^b	1,619,243	55.4	1,053,583	35.4	102,257	4.8	83,360	4.3	2,858,443
2008–2017 Avg	1,598,816	56.3	1,022,683	38.4	98,801	3.7	38,621	1.6	2,758,922

^a Harvest data prior to 2018 reflects minor adjustments to historical catch database.

^b 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B3.—Upper Cook Inlet commercial coho salmon harvest by gear type and area, 1966–2018.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1966	80,901	27.9	68,877	23.8	59,509	20.5	80,550	27.8	289,837
1967	53,071	29.9	40,738	22.9	40,066	22.5	43,854	24.7	177,729
1968	167,383	35.8	80,828	17.3	63,301	13.5	156,648	33.5	468,160
1969	33,053	32.8	18,988	18.9	28,231	28.0	20,412	20.3	100,684
1970	110,070	40.0	30,114	10.9	52,299	19.0	82,722	30.1	275,205
1971	35,491	35.4	16,589	16.5	26,188	26.1	22,094	22.0	100,362
1972	21,577	26.7	24,673	30.5	15,300	18.9	19,346	23.9	80,896
1973	31,784	30.4	23,901	22.9	24,784	23.7	23,951	22.9	104,420
1974	75,640	37.8	36,837	18.4	40,610	20.3	47,038	23.5	200,125
1975	88,579	39.0	46,209	20.3	59,537	26.2	33,051	14.5	227,376
1976	80,712	38.7	47,873	22.9	42,243	20.2	37,835	18.1	208,663
1977	110,184	57.2	23,693	12.3	38,093	19.8	20,623	10.7	192,593
1978	76,259	34.8	34,134	15.6	61,711	28.2	47,089	21.5	219,193
1979	114,496	43.2	29,284	11.0	68,306	25.8	53,078	20.0	265,164
1980	89,510	33.0	40,281	14.8	51,527	19.0	90,098	33.2	271,416
1981	226,366	46.7	36,024	7.4	88,390	18.2	133,625	27.6	484,405
1982	416,274	52.5	108,393	13.7	182,205	23.0	85,352	10.8	792,224
1983	326,965	63.3	37,694	7.3	97,796	18.9	53,867	10.4	516,322
1984	213,423	47.4	37,166	8.3	84,618	18.8	114,786	25.5	449,993
1985	357,388	53.6	70,657	10.6	147,331	22.1	91,837	13.8	667,213
1986	506,818	66.9	76,495	10.1	85,932	11.4	88,108	11.6	757,353
1987	202,506	44.8	74,981	16.6	75,201	16.6	97,062	21.9	449,750
1988	278,828	49.6	54,975	9.9	77,503	13.8	149,742	26.7	561,048
1989	856	0.2	82,333	24.1	81,004	23.9	175,738	51.8	339,931
1990	247,453	49.3	40,351	8.0	73,429	14.6	140,506	28.0	501,739
1991	176,245	41.2	30,436	7.1	87,515	20.6	132,302	31.0	426,498
1992	267,300	57.0	57,078	12.2	53,419	11.4	91,133	19.4	468,930

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Appendix B3.–Page 2 of 2.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1993	121,829	39.7	43,098	14.0	35,661	11.6	106,294	34.6	306,882
1994	310,114	52.7	68,449	11.9	61,166	10.5	144,064	24.8	583,793
1995	241,473	54.0	44,751	10.0	71,606	16.0	89,300	20.0	447,130
1996	171,434	53.3	40,724	12.6	31,405	9.8	78,105	24.3	321,668
1997	78,666	51.6	19,668	12.9	16,705	11.0	37,369	24.5	152,408
1998	83,338	51.9	18,677	11.6	24,286	15.1	34,387	21.4	160,688
1999	64,814	51.5	11,923	9.3	17,725	14.1	31,643	25.1	126,105
2000	131,478	55.5	11,078	4.7	22,840	9.6	71,475	30.2	236,871
2001	39,418	34.8	4,246	3.7	23,719	20.9	45,928	40.5	113,311
2002	125,831	51.1	35,153	14.3	35,005	14.2	50,292	20.4	246,281
2003	52,432	51.5	10,171	10.0	15,138	14.9	24,015	23.6	101,756
2004	199,587	64.2	30,154	9.7	36,498	11.7	44,819	14.4	311,058
2005	144,753	64.4	19,543	8.7	29,502	13.1	30,859	13.7	224,657
2006	98,473	55.4	22,167	12.5	36,845	20.7	20,368	11.5	177,853
2007	108,703	61.3	23,610	13.3	23,495	13.2	21,531	12.1	177,339
2008	89,428	52.0	21,823	12.7	18,441	10.7	42,177	24.5	171,869
2009	82,096	53.6	11,435	7.5	22,050	14.4	37,629	24.6	153,210
2010	110,275	53.2	32,683	15.8	26,281	12.7	38,111	18.4	207,350
2011	40,858	42.9	15,560	16.3	16,760	17.6	22,113	23.2	95,291
2012	74,678	69.9	6,537	6.1	12,354	11.6	13,206	12.4	106,775
2013	184,771	70.8	2,266	0.9	31,513	12.1	42,413	16.3	260,963
2014	76,932	56.0	5,908	4.3	19,379	14.1	35,200	25.6	137,419
2015	130,720	60.5	17,948	8.3	20,748	9.6	46,616	21.6	216,032
2016	90,242	61.2	11,606	7.9	15,171	10.3	30,476	20.7	147,495
2017	191,490	63.1	29,916	9.9	29,535	9.7	52,701	17.4	303,642
2018	108,906	46.9	4,705	2.0	51,581	22.2	67,098	28.9	232,290
1966–2017 Avg ^b	145,728	48.8	34,242	12.5	47,429	16.7	61,722	21.9	289,120
2008–2017 Avg	107,149	58.3	15,568	9.0	21,223	12.3	36,064	20.5	180,005

^a Harvest data prior to 2018 reflects minor adjustments to historical catch database.

^b 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B4.—Upper Cook Inlet commercial pink salmon harvest by gear type and area, 1966–2018.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1966	593,654	29.6	969,624	48.3	70,507	3.5	371,960	18.5	2,005,745
1967	7,475	23.2	13,038	40.5	3,256	10.1	8,460	26.2	32,229
1968	880,512	38.7	785,887	34.5	75,755	3.3	534,839	23.5	2,276,993
1969	8,233	25.3	10,968	33.7	5,711	17.6	7,587	23.3	32,499
1970	334,737	41.1	281,067	34.5	24,763	3.0	174,193	21.4	814,760
1971	6,433	18.1	18,097	50.8	2,637	7.4	8,423	23.7	35,590
1972	115,117	18.3	403,706	64.2	18,913	3.0	90,830	14.5	628,566
1973	91,901	28.2	80,596	24.7	16,437	5.0	137,250	42.1	326,184
1974	140,432	29.0	291,408	60.2	9,014	1.9	42,876	8.9	483,730
1975	113,868	33.9	112,423	33.4	19,086	5.7	90,953	27.0	336,330
1976	599,594	47.7	479,024	38.1	30,030	2.4	148,080	11.8	1,256,728
1977	286,308	51.7	125,817	22.7	25,212	4.6	116,518	21.0	553,855
1978	934,442	55.3	372,601	22.1	54,785	3.2	326,614	19.3	1,688,442
1979	19,554	26.8	19,983	27.4	7,061	9.7	26,382	36.1	72,980
1980	964,526	54.0	299,444	16.8	47,963	2.7	474,488	26.6	1,786,421
1981	53,888	42.4	15,654	12.3	4,276	3.4	53,325	41.9	127,143
1982	270,380	34.2	432,715	54.7	14,242	1.8	73,307	9.3	790,644
1983	26,629	37.9	18,309	26.0	3,785	5.4	21,604	30.7	70,327
1984	273,565	44.3	220,895	35.8	16,708	2.7	106,284	17.2	617,452
1985	34,228	39.0	17,715	20.2	5,653	6.4	30,232	34.4	87,828
1986	615,522	47.3	530,974	40.8	15,460	1.2	139,002	10.7	1,300,958
1987	38,714	35.4	47,243	43.2	5,229	4.8	18,203	16.6	109,389
1988	227,885	48.4	176,043	37.4	12,942	2.7	54,210	11.5	471,080
1989	2	0.0	37,982	56.3	5,580	8.3	23,878	35.4	67,442
1990	323,955	53.7	225,429	37.3	10,302	1.7	43,944	7.3	603,630
1991	5,791	39.5	2,670	18.2	1,049	7.2	5,153	35.1	14,663
1992	423,738	60.9	244,068	35.1	4,250	0.6	23,805	3.4	695,861

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Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgín–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1993	46,463	46.0	41,690	41.3	2,313	2.3	10,468	10.4	100,934
1994	256,248	49.0	234,827	44.9	3,178	0.6	29,181	5.6	523,434
1995	64,632	48.4	53,420	40.0	3,813	2.9	11,713	8.8	133,578
1996	122,728	50.5	95,717	39.4	3,792	1.6	20,674	8.5	242,911
1997	29,920	42.2	32,055	45.2	4,701	6.6	4,269	6.0	70,945
1998	200,382	36.3	332,484	60.3	7,231	1.3	11,640	2.1	551,737
1999	3,552	22.0	9,357	57.8	2,674	16.5	593	3.7	16,176
2000	90,508	61.8	23,746	16.2	11,983	8.2	20,245	13.8	146,482
2001	31,219	43.0	32,998	45.5	3,988	5.5	4,355	6.0	72,560
2002	224,229	50.2	214,771	48.1	1,736	0.4	6,224	1.4	446,960
2003	30,376	62.3	16,474	33.8	375	0.8	1,564	3.2	48,789
2004	235,524	65.8	107,838	30.1	12,560	3.5	2,017	0.6	357,939
2005	31,230	64.5	13,619	28.1	2,747	5.7	823	1.7	48,419
2006	212,808	52.7	184,990	45.8	4,684	1.2	1,629	0.4	404,111
2007	67,398	45.8	69,918	47.6	6,177	4.2	3,527	2.4	147,020
2008	103,867	61.3	59,620	35.2	2,357	1.4	3,524	2.1	169,368
2009	139,676	65.2	55,845	26.1	12,246	5.7	6,554	3.1	214,321
2010	164,005	56.0	121,817	41.6	3,106	1.1	3,778	1.3	292,706
2011	15,333	44.9	15,527	45.5	2,424	7.1	839	2.5	34,123
2012	303,216	64.6	159,003	33.9	3,376	0.7	4,003	0.9	469,598
2013	30,605	63.4	14,671	30.4	1,014	2.1	1,985	4.1	48,275
2014	417,344	64.9	213,616	33.2	4,331	0.7	7,695	1.2	642,986
2015	21,653	45.1	22,983	47.9	1,175	2.4	2,193	4.6	48,004
2016	268,908	70.3	103,503	27.1	2,089	0.5	7,968	2.1	382,468
2017	89,963	53.6	59,995	35.7	7,775	4.6	10,109	6.0	167,842
2018	83,535	65.8	21,822	17.2	8,294	6.5	13,272	10.5	126,923
1966–2017 Avg ^b	207,703	45.8	166,390	37.1	12,096	4.1	64,825	13.0	451,014
2008–2017 Avg	155,457	58.9	82,658	35.7	3,989	2.6	4,865	2.8	246,969

^a Harvest data prior to 2018 reflects minor adjustments to historical catch database.

^b 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B5.—Upper Cook Inlet commercial chum salmon harvest by gear type and area, 1966–2018.

Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgin–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1966	424,972	79.8	7,461	1.4	64,725	12.1	35,598	6.7	532,756
1967	233,041	78.5	399	0.1	25,013	8.4	38,384	12.9	296,837
1968	1,002,900	90.5	1,563	0.1	44,986	4.1	58,454	5.3	1,107,903
1969	238,497	89.1	399	0.1	16,954	6.3	11,836	4.4	267,686
1970	678,448	90.4	1,228	0.2	48,591	6.5	22,507	3.0	750,774
1971	274,567	84.8	128	0.0	32,647	10.1	16,603	5.1	323,945
1972	564,726	90.2	1,727	0.3	40,179	6.4	19,782	3.2	626,414
1973	605,738	90.7	1,965	0.3	29,019	4.3	30,851	4.6	667,573
1974	344,496	86.8	506	0.1	15,346	3.9	36,492	9.2	396,840
1975	886,474	93.2	980	0.1	33,347	3.5	30,787	3.2	951,588
1976	405,769	86.5	1,484	0.3	47,882	10.2	14,045	3.0	469,180
1977	1,153,454	93.5	1,413	0.1	54,708	4.4	23,861	1.9	1,233,436
1978	489,119	85.5	4,563	0.8	40,946	7.2	37,151	6.5	571,779
1979	609,239	93.8	867	0.1	30,342	4.7	9,310	1.4	649,758
1980	339,970	87.7	2,147	0.6	28,970	7.5	16,728	4.3	387,815
1981	756,922	91.0	2,386	0.3	26,461	3.2	46,208	5.6	831,977
1982	1,348,510	94.1	4,777	0.3	36,647	2.6	43,006	3.0	1,432,940
1983	1,044,636	93.7	2,822	0.3	38,079	3.4	29,321	2.6	1,114,858
1984	568,097	83.5	3,695	0.5	34,207	5.0	74,727	11.0	680,726
1985	700,848	90.7	4,133	0.5	31,746	4.1	36,122	4.7	772,849
1986	1,012,669	89.2	7,030	0.6	39,078	3.4	76,040	6.7	1,134,817
1987	211,745	60.6	16,733	4.8	53,771	15.4	66,901	19.2	349,150
1988	582,699	82.0	11,763	1.7	40,425	5.7	75,728	10.7	710,615
1989	72	0.1	12,326	10.1	27,705	22.7	81,948	67.1	122,051
1990	289,521	82.4	4,611	1.3	21,355	6.1	35,710	10.2	351,197
1991	215,476	76.9	2,387	0.9	22,974	8.2	39,393	14.1	280,230
1992	232,955	84.9	2,867	1.0	13,180	4.8	25,301	9.2	274,303

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Year	Central District						Northern District		Total
	Drift gillnet		ESSN		Kalgín–west side set		Set gillnet		
	Number ^a	%	Number ^a	%	Number ^a	%	Number ^a	%	
1993	88,826	72.4	2,977	2.4	5,566	4.5	25,401	20.7	122,770
1994	249,748	82.4	2,927	1.0	10,443	3.4	40,059	13.2	303,177
1995	468,224	88.4	3,711	0.7	13,826	2.6	43,667	8.2	529,428
1996	140,987	90.1	1,448	0.9	2,314	1.5	11,771	7.5	156,520
1997	92,163	89.4	1,222	1.2	1,770	1.7	7,881	7.6	103,036
1998	88,080	92.0	688	0.7	2,953	3.1	3,983	4.2	95,704
1999	166,612	95.5	373	0.2	3,567	2.0	4,002	2.3	174,554
2000	118,074	92.9	325	0.3	4,386	3.5	4,284	3.4	127,069
2001	75,599	89.5	248	0.3	6,445	7.6	2,202	2.6	84,494
2002	224,587	94.4	1,790	0.8	6,671	2.8	4,901	2.1	237,949
2003	106,468	88.2	1,933	1.6	7,883	6.5	4,483	3.7	120,767
2004	137,041	93.8	2,019	1.4	4,957	3.4	2,148	1.5	146,165
2005	65,671	94.2	710	1.0	2,632	3.8	727	1.0	69,740
2006	59,965	93.6	347	0.5	3,241	5.1	480	0.7	64,033
2007	74,836	96.9	521	0.7	1,275	1.7	608	0.8	77,240
2008	46,010	91.4	433	0.9	2,243	4.5	1,629	3.2	50,315
2009	77,073	93.1	319	0.4	2,339	2.8	3,080	3.7	82,811
2010	216,977	94.8	3,035	1.3	4,947	2.2	3,904	1.7	228,863
2011	111,082	85.8	1,612	1.2	9,995	7.7	6,718	5.2	129,407
2012	264,513	98.1	49	0.0	2,872	1.1	2,299	0.9	269,733
2013	132,172	94.8	102	0.1	4,854	3.5	2,237	1.6	139,365
2014	108,345	93.3	548	0.5	4,828	4.2	2,406	2.1	116,127
2015	252,331	91.4	2,248	0.8	15,312	5.5	6,069	2.2	275,960
2016	113,258	91.6	1,203	1.0	6,050	4.9	3,168	2.6	123,679
2017	232,501	95.4	601	0.2	5,684	2.3	4,814	2.0	243,600
2018	108,216	93.8	78	0.1	2,924	2.5	4,148	3.6	115,366
1966–2017 Avg ^b	371,110	88.9	2,381	0.7	20,561	5.0	22,427	5.4	416,479
2008–2017 Avg	155,426	93.0	1,015	0.6	5,912	3.9	3,632	2.5	165,986

^a Harvest data prior to 2018 reflects minor adjustments to historical catch database.

^b 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B6.—Upper Cook Inlet commercial salmon harvest by species, 1966–2018.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1966	8,544	1,852,114	289,837	2,005,745	532,756	4,688,996
1967	7,859	1,380,062	177,729	32,229	296,837	1,894,716
1968	4,536	1,104,904	469,850	2,278,197	1,119,114	4,976,601
1969	12,397	692,175	100,777	33,383	269,847	1,108,579
1970	8,336	732,605	275,399	814,895	776,229	2,607,464
1971	19,765	636,303	100,636	35,624	327,029	1,119,357
1972	16,086	879,824	80,933	628,574	630,103	2,235,520
1973	5,194	670,098	104,420	326,184	667,573	1,773,469
1974	6,596	497,185	200,125	483,730	396,840	1,584,476
1975	4,787	684,752	227,379	336,333	951,796	2,205,047
1976	10,865	1,664,150	208,695	1,256,728	469,802	3,610,240
1977	14,790	2,052,291	192,599	553,855	1,233,722	4,047,257
1978	17,299	2,621,421	219,193	1,688,442	571,779	5,118,134
1979	13,738	924,415	265,166	72,982	650,357	1,926,658
1980	13,798	1,573,597	271,418	1,786,430	389,675	4,034,918
1981	12,240	1,439,277	484,411	127,164	833,542	2,896,634
1982	20,870	3,259,864	793,937	790,648	1,433,866	6,299,185
1983	20,634	5,049,733	516,322	70,327	1,114,858	6,771,874
1984	10,062	2,106,714	449,993	617,452	680,726	3,864,947
1985	24,088	4,060,429	667,213	87,828	772,849	5,612,407
1986	39,256	4,792,072	757,353	1,300,958	1,134,817	8,024,456
1987	39,440	9,469,248	449,750	109,389	349,150	10,416,977
1988	29,080	6,843,833	561,048	471,080	710,615	8,615,656
1989	26,738	5,011,159	339,931	67,443	122,051	5,567,322
1990	16,105	3,604,710	501,739	603,630	351,197	5,077,381
1991	13,542	2,178,797	426,498	14,663	280,230	2,913,730
1992	17,171	9,108,353	468,930	695,861	274,303	10,564,618
1993	18,871	4,755,344	306,882	100,934	122,770	5,304,801
1994	19,962	3,565,609	583,793	523,434	303,177	4,995,975
1995	17,893	2,952,096	447,130	133,578	529,428	4,080,125
1996	14,306	3,888,922	321,668	242,911	156,520	4,624,327
1997	13,292	4,176,995	152,408	70,945	103,036	4,516,676
1998	8,124	1,219,517	160,688	551,737	95,704	2,035,770
1999	14,383	2,680,518	126,105	16,176	174,554	3,011,736
2000	7,350	1,322,482	236,871	146,482	127,069	1,840,254
2001	9,295	1,826,851	113,311	72,560	84,494	2,106,511
2002	12,714	2,773,118	246,281	446,960	237,949	3,717,022

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Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2003	18,503	3,476,161	101,756	48,789	120,767	3,765,976
2004	26,922	4,927,084	311,058	357,939	146,165	5,769,168
2005	27,667	5,238,699	224,657	48,419	69,740	5,609,182
2006	18,029	2,192,730	177,853	404,111	64,033	2,856,756
2007	17,625	3,316,779	177,339	147,020	77,240	3,736,003
2008	13,333	2,380,135	171,869	169,368	50,315	2,785,020
2009	8,750	2,045,794	153,210	214,321	82,811	2,504,883
2010	9,900	2,828,342	207,350	292,706	228,863	3,567,161
2011	11,248	5,277,995	95,291	34,123	129,407	5,548,064
2012	2,527	3,133,839	106,775	469,598	269,733	3,982,472
2013	5,398	2,683,224	260,963	48,275	139,365	3,137,225
2014	4,660	2,344,034	137,419	642,986	116,127	3,245,226
2015	10,798	2,649,667	216,032	48,004	275,960	3,200,461
2016	10,027	2,396,943	147,495	382,468	123,679	3,060,612
2017	7,660	1,849,243	303,642	167,842	243,600	2,571,987
2018	3,405	817,895	232,290	126,923	115,366	1,295,879
1966–2017 Avg ^a	14,438	2,878,636	289,200	451,059	417,493	4,030,641
2008–2017 Avg	8,430	2,758,922	180,005	246,969	165,986	3,360,311

Note: Catch statistics prior to 2018 reflects minor adjustments to historical catch database.

^a 1989 not used in average because the drift fleet did not fish due to the Exxon Valdez oil spill; this had an effect on all other fisheries.

Appendix B7.—Approximate exvessel value of Upper Cook Inlet commercial salmon harvest by species, 1960–2018.

Year	Chinook	%	Sockeye	%	Coho	%	Pink	%	Chum	%	Total
1960	\$140,000	5.0%	\$1,334,000	47.9%	\$307,000	11.0%	\$663,000	23.8%	\$343,000	12.3%	\$2,787,000
1961	\$100,000	4.7%	\$1,687,000	79.4%	\$118,000	5.6%	\$16,000	0.8%	\$204,000	9.6%	\$2,125,000
1962	\$100,000	2.5%	\$1,683,000	42.3%	\$342,000	8.6%	\$1,274,000	32.0%	\$582,000	14.6%	\$3,981,000
1963	\$89,000	4.6%	\$1,388,000	72.3%	\$193,000	10.1%	\$13,000	0.7%	\$236,000	12.3%	\$1,919,000
1964	\$20,000	0.5%	\$1,430,000	38.9%	\$451,000	12.3%	\$1,131,000	30.8%	\$646,000	17.6%	\$3,678,000
1965	\$50,000	2.0%	\$2,099,000	82.1%	\$109,000	4.3%	\$70,000	2.7%	\$230,000	9.0%	\$2,558,000
1966	\$50,000	1.2%	\$2,727,000	64.4%	\$295,000	7.0%	\$823,000	19.4%	\$338,000	8.0%	\$4,233,000
1967	\$49,000	1.9%	\$2,135,000	82.6%	\$187,000	7.2%	\$13,000	0.5%	\$202,000	7.8%	\$2,586,000
1968	\$30,000	0.7%	\$1,758,000	40.4%	\$515,000	11.8%	\$1,209,000	27.8%	\$843,000	19.4%	\$4,355,000
1969	\$70,000	4.0%	\$1,296,697	73.9%	\$134,003	7.6%	\$18,291	1.0%	\$236,404	13.5%	\$1,755,394
1970	\$89,382	3.0%	\$1,190,303	39.9%	\$468,179	15.7%	\$456,354	15.3%	\$780,622	26.2%	\$2,984,840
1971	\$189,504	9.2%	\$1,250,771	61.0%	\$137,815	6.7%	\$18,402	0.9%	\$454,483	22.2%	\$2,050,974
1972	\$224,396	6.3%	\$1,863,177	52.6%	\$137,315	3.9%	\$478,246	13.5%	\$840,057	23.7%	\$3,543,192
1973	\$121,156	2.0%	\$3,225,847	52.3%	\$318,950	5.2%	\$362,658	5.9%	\$2,135,025	34.6%	\$6,163,635
1974	\$209,712	3.2%	\$3,072,221	46.8%	\$843,048	12.8%	\$919,916	14.0%	\$1,517,637	23.1%	\$6,562,535
1975	\$63,990	1.0%	\$2,628,036	39.2%	\$838,859	12.5%	\$419,173	6.3%	\$2,752,555	41.1%	\$6,702,612
1976	\$274,172	2.0%	\$8,668,095	63.4%	\$819,006	6.0%	\$1,874,915	13.7%	\$2,041,225	14.9%	\$13,677,413
1977	\$523,776	2.4%	\$13,318,720	61.8%	\$932,540	4.3%	\$767,273	3.6%	\$5,995,611	27.8%	\$21,537,920
1978	\$661,375	2.0%	\$26,167,741	80.3%	\$1,380,312	4.2%	\$2,154,176	6.6%	\$2,217,510	6.8%	\$32,581,114
1979	\$616,360	4.2%	\$8,093,280	55.3%	\$1,640,277	11.2%	\$82,339	0.6%	\$4,199,765	28.7%	\$14,632,021
1980	\$414,771	3.2%	\$7,937,699	61.7%	\$891,098	6.9%	\$2,114,283	16.4%	\$1,513,960	11.8%	\$12,871,810
1981	\$424,390	2.3%	\$11,080,411	60.1%	\$2,623,598	14.2%	\$170,038	0.9%	\$4,150,158	22.5%	\$18,448,596
1982	\$763,267	2.4%	\$25,154,115	80.0%	\$4,080,570	13.0%	\$553,635	1.8%	\$886,129	2.8%	\$31,437,716
1983	\$590,730	2.0%	\$24,016,294	81.8%	\$1,601,976	5.5%	\$41,338	0.1%	\$3,109,814	10.6%	\$29,360,152
1984	\$310,899	1.8%	\$12,450,532	71.8%	\$2,039,681	11.8%	\$522,795	3.0%	\$2,011,253	11.6%	\$17,335,160
1985	\$799,318	2.3%	\$27,497,929	80.0%	\$3,359,824	9.8%	\$57,412	0.2%	\$2,644,995	7.7%	\$34,359,478
1986	\$915,189	2.0%	\$38,683,950	83.3%	\$2,909,043	6.3%	\$724,367	1.6%	\$3,197,973	6.9%	\$46,430,522
1987	\$1,609,777	1.6%	\$95,915,522	94.9%	\$2,373,254	2.3%	\$84,439	0.1%	\$1,116,165	1.1%	\$101,099,156

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Year	Chinook	%	Sockeye	%	Coho	%	Pink	%	Chum	%	Total
1988	\$1,120,885	0.9%	\$111,537,736	91.3%	\$4,738,463	3.9%	\$650,931	0.5%	\$4,129,002	3.4%	\$122,177,017
1989	\$803,494	1.4%	\$56,194,753	95.0%	\$1,674,393	2.8%	\$86,012	0.1%	\$415,535	0.7%	\$59,174,188
1990	\$436,822	1.1%	\$35,804,485	88.0%	\$2,422,214	6.0%	\$512,591	1.3%	\$1,495,827	3.7%	\$40,671,938
1991	\$348,522	2.3%	\$12,249,200	80.4%	\$1,996,049	13.1%	\$5,478	0.0%	\$643,400	4.2%	\$15,242,649
1992	\$634,466	0.6%	\$96,026,864	96.0%	\$2,261,862	2.3%	\$404,772	0.4%	\$740,294	0.7%	\$100,068,258
1993	\$617,092	2.1%	\$27,969,409	93.1%	\$1,081,175	3.6%	\$36,935	0.1%	\$322,205	1.1%	\$30,026,815
1994	\$642,291	1.9%	\$29,441,442	85.5%	\$3,297,865	9.6%	\$240,545	0.7%	\$831,121	2.4%	\$34,453,264
1995	\$474,475	2.2%	\$19,168,077	87.1%	\$1,295,353	5.9%	\$53,114	0.2%	\$1,023,926	4.7%	\$22,014,944
1996	\$402,980	1.4%	\$28,238,578	95.0%	\$800,423	2.7%	\$44,386	0.1%	\$225,751	0.8%	\$29,712,117
1997	\$365,316	1.1%	\$31,439,536	97.1%	\$434,327	1.3%	\$12,004	0.0%	\$143,244	0.4%	\$32,394,427
1998	\$181,318	2.1%	\$7,686,993	88.5%	\$497,050	5.7%	\$187,759	2.2%	\$132,025	1.5%	\$8,685,145
1999	\$343,545	1.6%	\$20,029,356	95.5%	\$331,342	1.6%	\$6,011	0.0%	\$265,460	1.3%	\$20,975,713
2000	\$183,400	2.3%	\$7,104,456	87.2%	\$626,032	7.7%	\$47,075	0.6%	\$186,344	2.3%	\$8,147,307
2001	\$169,593	2.2%	\$7,134,560	92.3%	\$297,387	3.8%	\$20,313	0.3%	\$111,028	1.4%	\$7,732,881
2002	\$326,077	2.8%	\$10,679,780	91.7%	\$329,198	2.8%	\$84,859	0.7%	\$224,011	1.9%	\$11,643,925
2003	\$358,886	2.8%	\$12,275,919	95.3%	\$132,059	1.0%	\$8,663	0.1%	\$99,783	0.8%	\$12,875,310
2004	\$673,088	3.3%	\$19,416,259	93.8%	\$416,071	2.0%	\$65,884	0.3%	\$129,791	0.6%	\$20,701,093
2005	\$688,993	2.2%	\$30,165,827	95.2%	\$708,620	2.2%	\$12,796	0.0%	\$101,106	0.3%	\$31,677,341
2006	\$617,278	4.4%	\$12,311,850	88.5%	\$679,463	4.9%	\$174,522	1.3%	\$121,265	0.9%	\$13,904,377
2007	\$629,643	2.7%	\$21,916,852	93.6%	\$682,747	2.9%	\$53,029	0.2%	\$141,097	0.6%	\$23,423,367
2008	\$544,042	3.3%	\$15,530,144	93.0%	\$482,298	2.9%	\$64,466	0.4%	\$75,766	0.5%	\$16,696,717
2009	\$266,548	1.8%	\$13,720,051	94.1%	\$399,704	2.7%	\$71,582	0.5%	\$115,969	0.8%	\$14,573,854
2010	\$359,184	1.1%	\$30,556,535	92.1%	\$1,090,191	3.3%	\$311,199	0.9%	\$851,004	2.6%	\$33,168,113
2011	\$634,836	1.2%	\$51,363,720	96.7%	\$406,726	0.8%	\$27,548	0.1%	\$688,878	1.3%	\$53,121,708
2012	\$121,626	0.3%	\$32,008,304	91.6%	\$480,119	1.4%	\$622,809	1.8%	\$1,723,098	4.9%	\$34,955,955
2013	\$210,638	0.5%	\$37,787,069	93.9%	\$1,362,395	3.4%	\$53,754	0.1%	\$828,113	2.1%	\$40,241,970
2014	\$206,119	0.6%	\$32,819,090	93.6%	\$778,672	2.2%	\$588,409	1.7%	\$687,214	2.0%	\$35,079,504
2015	\$359,903	1.5%	\$22,285,338	92.2%	\$753,078	3.1%	\$39,197	0.2%	\$726,696	3.0%	\$24,164,211
2016	\$491,323	2.2%	\$20,853,404	92.3%	\$557,531	2.5%	\$328,922	1.5%	\$351,248	1.6%	\$22,582,429
2017	\$634,666	2.7%	\$19,711,471	82.7%	\$2,168,036	9.1%	\$89,448	0.4%	\$1,234,825	5.2%	\$23,838,446
2018	\$207,901	1.7%	\$10,139,195	81.8%	\$1,367,047	11.0%	\$115,431	0.9%	\$569,659	4.6%	\$12,399,234

Appendix B8.—Commercial herring harvest by fishery, Upper Cook Inlet, 1973–2018.

Year	Harvest (tons ^a)				Total
	Upper Subdistrict	Chinitna Bay	Tuxedni Bay	Kalgin Island	
1973	13.8	-	-	-	13.8
1974	36.7	-	-	-	36.7
1975	6.2	-	-	-	6.2
1976	5.8	-	-	-	5.8
1977	17.3	-	-	-	17.3
1978	8.3	55.3	-	-	63.6
1979	67.3	96.2	24.8	-	188.3
1980	37.4	20.0	86.5	-	143.9
1981	86.2	50.5	84.9	-	221.6
1982	60.2	91.8	50.2	-	202.2
1983	165.3	49.2	238.2	-	452.7
1984	117.5	90.6	159.0	-	367.1
1985	136.3	46.1	215.9	-	398.4
1986	142.6	111.1	191.9	-	445.6
1987	126.5	65.1	152.5	-	344.1
1988	50.7	23.4	14.1	-	88.1
1989	55.2	122.3	34.3	-	211.8
1990	55.4	55.9	16.1	-	127.5
1991	13.4	15.7	1.6	-	30.7
1992	24.7	10.4	-	-	35.2
1993	-	-	-	-	-
1994	-	-	-	-	-
1995	-	-	-	-	-
1996	-	-	-	-	-
1997	-	-	-	-	-
1998	19.5	-	-	-	19.4
1999	10.4	-	-	-	10.4
2000	14.7	-	-	-	16.3
2001	9.9	-	-	-	10.4
2002	16.2	1.9	0.0	-	18.1
2003	3.7	0.0	0.0	-	3.7
2004	6.7	0.1	0.0	-	6.8
2005	17.1	0.2	0.0	0.0	17.3
2006	14.4	0.0	0.0	0.0	14.4
2007	12.6	0.0	0.0	0.0	12.6
2008	13.5	0.0	0.0	0.0	13.5
2009	9.2	0.0	0.0	0.0	9.2
2010	16.4	0.2	0.0	0.0	16.6
2011	13.7	2.5	0.0	0.0	16.2
2012	16.7	7.0	0.0	0.0	23.8
2013	29.6	6.0	0.0	0.0	35.6
2014	29.0	0.0	0.0	0.0	29.0
2015	24.6	1.6	0.0	0.0	26.2
2016	22.9	0.0	0.0	0.0	22.9
2017	28.2	0.1	0.0	0.0	28.2
2018	17.6	0.0	0.0	0.0	17.6

Note: Hyphens represent years when fisheries were closed.

^a Tons = short tons = 2,000 lb or 907.2 kg.

Appendix B9.—Commercial harvest of razor clams in Upper Cook Inlet, 1919–2018.

Year	Pounds	Year	Pounds
1919	76,963	1969	0
1920	11,952	1970	0
1921	72,000	1971	14,755
1922	510,432	1972	31,360
1923	470,280	1973	34,415
1924	156,768	1974	0
1925	0	1975	10,020
1926	0	1976	0
1927	25,248	1977	1,762
1928	0	1978	45,931
1929	0	1979	144,358
1930	0	1980	140,420
1931	No Record	1981	441,949
1932	93,840	1982	460,639
1933	No Record	1983	269,618
1934	No Record	1984	261,742
1935	No Record	1985	319,034
1936	No Record	1986	258,632
1937	8,328	1987	312,349
1938	No Record	1988	399,376
1939	No Record	1989	222,747
1940	No Record	1990	323,602
1941	0	1991	201,320
1942	0	1992	296,727
1943	0	1993	310,481
1944	0	1994	355,165
1945	15,000	1995	248,358
1946	11,424	1996	355,448
1947	11,976	1997	366,532
1948	2,160	1998	371,877
1949	9,672	1999	352,910
1950	304,073	2000	369,397
1951	112,320	2001	348,917
1952	0	2002	338,938
1953	0	2003	411,403
1954	0	2004	419,697
1955	0	2005	371,395
1956	0	2006	368,953
1957	0	2007	283,085
1958	0	2008	390,999
1959	0	2009	361,388
1960	372,872	2010	379,547
1961	277,830	2011	189,172
1962	195,650	2012	307,409
1963	0	2013	380,912
1964	0	2014	348,294
1965	0	2015	318,538
1966	0	2016	284,800
1967	0	2017	177,147
1968	0	2018	199,162

Appendix B10.—Assessment goals and counts of sockeye salmon in selected streams of Upper Cook Inlet, 1978–2018.

Year	Kenai River		Kasilof River		Fish Creek	
	Enumeration goal ^{a,b}	Enumeration estimate ^{a,c}	Enumeration goal ^{b,c}	Enumeration estimate ^b	Enumeration goal	Enumeration estimate ^{c,d}
1978	350,000–500,000	398,900	75,000–150,000	116,600	-	3,555
1979	350,000–500,000	285,020	75,000–150,000	152,179	-	68,739
1980	350,000–500,000	464,038	75,000–150,000	184,260	-	62,828
1981	350,000–500,000	407,639	75,000–150,000	256,625	-	50,479
1982	350,000–500,000	619,831	75,000–150,000	180,239	50,000	28,164
1983	350,000–500,000	630,340	75,000–150,000	210,271	50,000	118,797
1984	350,000–500,000	344,571	75,000–150,000	231,685	50,000	192,352
1985	350,000–500,000	502,820	75,000–150,000	505,049	50,000	68,577
1986	350,000–500,000	501,157	75,000–150,000	275,963	50,000	29,800
1987	400,000–700,000	1,596,871	150,000–250,000	249,250	50,000	91,215
1988	400,000–700,000	1,021,469	150,000–250,000	204,000 ^d	50,000	71,603
1989	400,000–700,000	1,599,959	150,000–250,000	158,206	50,000	67,224
1990	400,000–700,000	659,520	150,000–250,000	144,289	50,000	50,000
1991	400,000–700,000	647,597	150,000–250,000	238,269	50,000	50,500
1992	400,000–700,000	994,798	150,000–250,000	184,178	50,000	71,385
1993	400,000–700,000	813,617	150,000–250,000	149,939	50,000	117,619
1994	400,000–700,000	1,003,446	150,000–250,000	205,117	50,000	95,107
1995	450,000–700,000	630,447	150,000–250,000	204,935	50,000	115,000
1996	550,000–800,000	797,847	150,000–250,000	249,944	50,000	63,160
1997	550,000–825,000	1,064,818	150,000–250,000	266,025	50,000	54,656
1998	550,000–850,000	767,558	150,000–250,000	273,213	50,000	22,853
1999	750,000–950,000	803,379	150,000–250,000	312,587	50,000	26,667
2000	600,000–850,000	624,578	150,000–250,000	256,053	50,000	19,533
2001	600,000–850,000	650,036	150,000–250,000	307,570	50,000	43,469
2002	750,000–950,000	957,924	150,000–250,000	226,682	20,000–70,000	90,483
2003	750,000–950,000	1,181,309	150,000–250,000	359,633	20,000–70,000	92,298
2004	850,000–1,100,000	1,385,981	150,000–250,000	577,581	20,000–70,000	22,157
2005	850,000–1,100,000	1,376,452	150,000–250,000	348,012	20,000–70,000	14,215
2006	750,000–950,000	1,499,692	150,000–250,000	368,092	20,000–70,000	32,566
2007	750,000–950,000	867,572	150,000–250,000	336,866	20,000–70,000	27,948
2008	650,000–850,000	614,946	150,000–250,000	301,469	20,000–70,000	19,339
2009	650,000–850,000	745,170	150,000–250,000	297,125	20,000–70,000	83,477
2010	750,000–950,000	970,662	150,000–250,000	267,013	20,000–70,000	126,829
2011	1,100,000–1,350,000	1,599,217	160,000–390,000	245,721	20,000–70,000	66,678
2012	1,100,000–1,350,000	1,581,555	160,000–390,000	374,523	20,000–70,000	18,813
2013	1,000,000–1,200,000	1,359,893	160,000–390,000	489,654	20,000–70,000	18,912
2014	1,000,000–1,200,000	1,520,340	160,000–340,000	439,977	20,000–70,000	43,915
2015	1,000,000–1,200,000	1,704,767	160,000–340,000	470,677	20,000–70,000	102,296
2016	1,100,000–1,350,000	1,383,692	160,000–340,000	239,981	20,000–70,000	46,202
2017	1,000,000–1,300,000	1,308,498	160,000–340,000	358,724	15,000–45,000	61,469
2018	900,000–1,100,000	1,035,761	160,000–340,000	394,309	15,000–45,000	71,556

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Year	Yentna River		Crescent River		Packers Creek	
	Enumeration goal	Enumeration estimate ^c	Enumeration goal	Enumeration estimate ^c	Enumeration goal	Enumeration estimate ^{c,g}
1980	100,000	-	50,000	90,863	-	16,477
1981	100,000	139,401	50,000	41,213	-	13,024
1982	100,000	113,847	50,000	58,957	-	15,687
1983	100,000	104,414	50,000	92,122	-	18,403
1984	100,000	149,375	50,000	118,345	-	30,684
1985	100,000	107,124	50,000	128,628	-	36,850
1986	100,000–150,000	92,076	50,000	20,385 ^f	-	29,604
1987	100,000–150,000	66,054	50,000–100,000	120,219	15,000–25,000	35,401
1988	100,000–150,000	52,330	50,000–100,000	57,716	15,000–25,000	18,607
1989	100,000–150,000	96,269	50,000–100,000	71,064	15,000–25,000	22,304
1990	100,000–150,000	140,290	50,000–100,000	52,238	15,000–25,000	31,868
1991	100,000–150,000	109,632	50,000–100,000	44,578	15,000–25,000	41,275
1992	100,000–150,000	66,054	50,000–100,000	58,229	15,000–25,000	28,361
1993	100,000–150,000	141,694	50,000–100,000	37,556	15,000–25,000	40,869
1994	100,000–150,000	128,032	50,000–100,000	30,355	15,000–25,000	30,788
1995	100,000–150,000	121,479	50,000–100,000	52,311	15,000–25,000	29,473
1996	100,000–150,000	90,781	50,000–100,000	28,729	15,000–25,000	19,095
1997	100,000–150,000	157,822	50,000–100,000	70,768	15,000–25,000	33,846
1998	100,000–150,000	119,623	50,000–100,000	62,257	15,000–25,000	17,732
1999	100,000–150,000	99,029	25,000–50,000	66,519	15,000–25,000	25,648
2000	100,000–150,000	133,094	25,000–50,000	56,599	15,000–25,000	20,151
2001	100,000–150,000	83,532	25,000–50,000	78,081	15,000–25,000	-
2002	90,000–160,000	78,591	25,000–50,000	62,833	15,000–30,000	-
2003	90,000–160,000	180,813	25,000–50,000	122,457	15,000–30,000	-
2004	90,000–160,000	71,281	25,000–50,000	103,201	15,000–30,000	-
2005	75,000–180,000	36,921	30,000–70,000	125,623	-	22,000 ^h
2006	90,000–160,000	92,896	30,000–70,000	92,533	-	-
2007	90,000–160,000	79,901	30,000–70,000	79,406	15,000–30,000	46,637
2008	90,000–160,000	90,146	30,000–70,000	90,684	15,000–30,000	25,247
2009	- ^e	- ^e	30,000–70,000	-	15,000–30,000	16,473 ^h
2010	- ^e	- ^e	30,000–70,000	86,333	15,000–30,000	-
2011	- ^e	- ^e	30,000–70,000	81,952	15,000–30,000	-
2012	- ^e	- ^e	30,000–70,000	58,838	15,000–30,000	-
2013	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	-
2014	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	19,242 ^h
2015	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	28,072 ^h
2016	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	-
2017	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	17,106 ^h
2018	- ^e	- ^e	30,000–70,000	ND	15,000–30,000	16,247 ^h

^a Inriver goal.

^b From 1978 to 2010, enumeration estimates and goals prior were in BENDIX units; 2011 through 2018 are in DIDSON units.

^c Enumeration estimates prior to 2018 reflect minor adjustments to the escapement database.

^d Weir counts.

^e Yentna River SEG replaced with lake goals at Judd, Chelatna, and Larson Lakes.

^f Combined counts from weirs on Bear and Glacier Flat Creeks and surveys of spawning streams; sonar count was 151,856.

^g Escapement estimates via remote camera; an unknown number of salmon passed into the lake after the camera was removed.

^h Partial count only; an unknown number of salmon passed into the lake while the camera did not have power.

Appendix B11.—Average price per pound for commercially harvested salmon, Upper Cook Inlet, 1975–2018.

Year	Chinook	Sockeye	Coho	Pink	Chum
1975	0.54	0.63	0.54	0.35	0.41
1976	0.92	0.76	0.61	0.37	0.54
1977	1.26	0.86	0.72	0.38	0.61
1978	1.16	1.32	0.99	0.34	0.51
1979	1.63	1.41	0.98	0.34	0.88
1980	1.15	0.85	0.57	0.34	0.53
1981	1.46	1.20	0.83	0.38	0.65
1982	1.27	1.10	0.72	0.18	0.49
1983	0.97	0.74	0.45	0.18	0.36
1984	1.08	1.00	0.64	0.21	0.39
1985	1.20	1.20	0.70	0.20	0.45
1986	0.90	1.40	0.60	0.15	0.38
1987	1.40	1.50	0.80	0.22	0.45
1988	1.30	2.47	1.20	0.37	0.76
1989	1.25	1.70	0.75	0.40	0.47
1990	1.20	1.55	0.75	0.25	0.60
1991	1.20	1.00	0.77	0.12	0.35
1992	1.50	1.60	0.75	0.15	0.40
1993	1.20	1.00	0.60	0.12	0.45
1994	1.00	1.45	0.80	0.12	0.40
1995	1.00	1.15	0.45	0.12	0.27
1996	1.00	1.15	0.40	0.05	0.19
1997	1.00	1.15	0.45	0.05	0.19
1998	1.00	1.15	0.45	0.09	0.19
1999	1.00	1.30	0.45	0.12	0.19
2000	1.10	0.85	0.40	0.09	0.19
2001	1.00	0.65	0.40	0.08	0.19
2002	1.15	0.60	0.20	0.05	0.12
2003	0.95	0.60	0.20	0.05	0.12
2004	1.00	0.65	0.20	0.05	0.12
2005	1.00	0.95	0.50	0.08	0.20
2006	1.75	1.10	0.60	0.10	0.25
2007	1.75	1.05	0.60	0.10	0.25
2008	1.75	1.10	0.40	0.10	0.20
2009	1.75	1.10	0.40	0.10	0.20
2010	1.75	1.75	0.80	0.25	0.55
2011	2.80	1.50	0.75	0.25	0.80
2012	2.80	1.50	0.75	0.35	0.80
2013	2.80	2.25	0.85	0.35	0.80
2014	2.80	2.25	0.90	0.25	0.80
2015	2.00	1.60	0.60	0.25	0.40
2016	2.50	1.50	0.60	0.20	0.40
2017	3.78	1.86	1.14	0.15	0.62
2018	3.27	2.04	0.94	0.25	0.68

Note: Price expressed as dollars per pound. Data source for 1969–1983: Commercial Fisheries Entry Commission; 1984–2017: random fish ticket averages, which do not include bonuses or postseason adjustments.

Appendix B12.—Average weight (pounds) of commercially harvested salmon, Upper Cook Inlet, 1975–2018.

Year	Chinook	Sockeye	Coho	Pink	Chum
1975	24.8	6.1	6.8	3.6	7.1
1976	27.4	6.9	6.4	4.0	8.1
1977	28.1	7.6	6.7	3.7	8.0
1978	33.0	7.6	6.4	3.8	7.6
1979	27.5	6.2	6.3	3.3	7.3
1980	26.1	5.9	5.8	3.5	7.3
1981	23.8	6.4	6.5	3.5	7.7
1982	28.8	7.0	7.1	3.9	8.2
1983	29.5	6.4	6.9	3.3	7.8
1984	28.6	5.9	7.1	4.0	7.6
1985	27.7	5.6	7.2	3.3	7.6
1986	25.9	5.8	6.4	3.7	7.4
1987	29.0	6.7	6.6	3.5	7.1
1988	29.7	6.6	7.0	3.7	7.7
1989	24.1	6.6	6.6	3.2	7.2
1990	22.6	6.4	6.4	3.4	7.1
1991	21.5	5.6	6.1	3.1	6.6
1992	23.6	6.6	6.4	3.9	6.7
1993	25.8	5.9	5.9	3.0	5.7
1994	31.6	5.7	7.1	3.9	6.9
1995	25.5	5.6	6.4	3.3	7.2
1996	28.3	6.3	6.2	3.7	7.6
1997	27.6	6.5	6.3	3.4	7.3
1998	22.8	5.5	6.9	3.8	7.3
1999	23.9	5.7	5.8	3.1	8.0
2000	22.7	6.3	6.6	3.6	7.7
2001	18.2	6.0	6.6	3.5	6.9
2002	22.3	6.4	6.7	3.8	7.8
2003	20.4	5.9	6.5	3.6	6.9
2004	25.0	6.1	6.7	3.7	7.4
2005	24.9	6.1	6.3	3.3	7.2
2006	19.6	5.1	6.4	4.3	7.6
2007	20.4	6.3	6.4	3.6	7.3
2008	23.3	5.9	7.0	3.8	7.5
2009	17.4	6.1	6.5	3.3	7.0
2010	20.7	6.2	6.6	4.3	6.8
2011	20.2	6.5	5.7	3.2	6.7
2012	17.2	6.8	6.0	3.8	8.0
2013	13.9	6.3	6.1	3.2	7.4
2014	15.8	6.2	6.3	3.7	7.4
2015	16.7	5.3	5.8	3.3	6.6
2016	19.6	5.8	6.3	4.3	7.1
2017	21.9	5.7	6.3	3.6	8.2
2008–2017 Avg	18.7	6.1	6.3	3.6	7.3
1975–2017 Avg	23.9	6.2	6.5	3.6	7.3
2018	13.8	5.2	6.3	3.8	8.3

Note: Average weights are total poundage divided by numbers of fish from fish ticket totals.

Appendix B13.—Registered active units of gillnet fishing effort by gear type in Cook Inlet, 1975–2018.

Year	DRIFT GILLNET			SET GILLNET			Total
	Resident	Nonresident	Subtotal	Resident	Nonresident	Subtotal	
1975	539	245	784	695	63	758	1,542
1976	410	186	596	675	44	719	1,315
1977	387	188	575	690	43	733	1,308
1978	401	190	591	701	46	747	1,338
1979	410	189	599	705	44	749	1,348
1980	407	190	597	699	48	747	1,344
1981	412	186	598	687	60	747	1,345
1982	413	178	591	695	53	748	1,339
1983	415	172	587	684	61	745	1,332
1984	423	165	588	670	74	744	1,332
1985	418	173	591	669	76	745	1,336
1986	412	176	588	665	78	743	1,331
1987	415	171	586	662	81	743	1,329
1988	421	164	585	660	83	743	1,328
1989	415	170	585	645	98	743	1,328
1990	412	173	585	644	99	743	1,328
1991	412	172	584	642	103	745	1,329
1992	404	179	583	636	109	745	1,328
1993	398	185	583	633	112	745	1,328
1994	395	187	582	628	117	745	1,327
1995	393	189	582	622	123	745	1,327
1996	392	190	582	621	124	745	1,327
1997	392	189	581	621	124	745	1,326
1998	393	186	579	621	124	745	1,324
1999	390	185	575	621	124	745	1,320
2000	394	182	576	621	124	745	1,321
2001	395	179	574	625	119	744	1,318
2002	396	176	572	620	123	743	1,315
2003	400	172	572	617	125	742	1,314
2004	402	169	571	616	123	739	1,310
2005	404	167	571	609	128	737	1,308
2006	400	169	570	614	124	738	1,308
2007	400	171	571	609	129	738	1,309
2008	405	166	571	613	125	738	1,309
2009	401	169	570	608	130	738	1,308
2010	407	162	569	604	132	736	1,305
2011	409	160	569	609	127	736	1,305
2012	410	159	569	620	116	736	1,305
2013	409	160	569	624	112	736	1,305
2014	414	155	569	623	112	735	1,304
2015	408	160	568	624	110	734	1,302
2016	409	159	568	613	122	735	1,303
2017	417	152	569	619	116	735	1,304
2018	421	147	568	614	121	735	1,303

Source: <http://www.cfec.state.ak.us/pstatus/14052016.htm> 1960–1974 ADF&G unpublished reports, 1975–2016 Commercial Fisheries Entry Commission (CFEC).

Note: Active Permits are defined by the CFEC as follows: all permanent permits, regardless of whether they have been renewed, and interim-use and interim-entry permits that have been issued. Excluded from Active Permits are any permits that have been cancelled and interim permits that have not been issued (renewed) for the given year.

Appendix B14.—Forecast and projected commercial harvests of salmon by species, Upper Cook Inlet, 1990–2018.

Year	Sockeye			Coho			Pink		Chum		Chinook		
	Forecast ^a	Actual ^{b,c}	Error	Projected ^d	Actual ^c	Error	Projected ^d	Actual ^c	Projected ^d	Actual ^c	Projected ^d	Actual ^c	Error
1990	4,300,000	3,822,864	-12%	250,000	501,739	50%	600,000	603,630	400,000	351,197	25,000	16,105	-55%
1991	3,200,000	2,472,589	-29%	400,000	426,498	6%	90,000	14,663	500,000	280,230	20,000	13,542	-48%
1992	3,600,000	9,502,392	62%	400,000	468,930	15%	400,000	695,861	350,000	274,303	20,000	17,171	-16%
1993	2,500,000	5,042,799	50%	450,000	306,882	-47%	25,000	100,934	350,000	122,770	15,000	18,871	21%
1994	2,000,000	3,826,508	48%	400,000	583,793	31%	600,000	523,434	250,000	303,177	15,000	19,962	25%
1995	2,700,000	3,224,087	16%	400,000	447,130	11%	100,000	133,578	250,000	529,428	15,000	17,893	16%
1996	3,300,000	4,262,377	23%	400,000	321,668	-24%	600,000	242,911	350,000	156,520	15,000	14,306	-5%
1997	5,300,000	4,546,125	-17%	400,000	152,408	-162%	100,000	70,945	250,000	103,036	15,000	13,292	-13%
1998	2,500,000	1,619,119	-54%	300,000	160,688	-87%	300,000	551,737	200,000	95,704	17,000	8,124	-109%
1999	2,000,000	3,164,355	37%	300,000	126,105	-138%	75,000	16,176	200,000	174,554	16,000	14,383	-11%
2000	3,000,000	1,778,547	-69%	150,000	236,871	37%	500,000	146,482	200,000	127,069	15,000	7,350	-104%
2001	2,700,000	2,304,670	-17%	300,000	113,311	-165%	50,000	72,560	250,000	84,494	13,000	9,295	-40%
2002	2,200,000	3,356,572	34%	160,000	246,281	35%	170,000	446,960	120,000	237,949	10,000	12,714	21%
2003	2,400,000	4,145,981	42%	170,000	101,756	-67%	80,000	48,789	140,000	120,767	10,000	18,503	46%
2004	3,700,000	5,639,628	34%	160,000	311,058	49%	380,000	357,939	150,000	146,165	10,000	26,922	63%
2005	4,100,000	5,962,572	31%	200,000	224,657	11%	70,000	48,419	140,000	69,740	10,000	27,667	64%
2006	2,100,000	2,653,446	21%	200,000	177,853	-12%	350,000	404,111	140,000	64,033	20,000	18,029	-11%
2007	3,300,000	4,044,832	18%	210,000	177,339	-18%	50,000	147,020	130,000	77,240	20,000	17,625	-13%
2008	3,900,000	3,005,299	-30%	200,000	171,869	-16%	380,000	169,368	100,000	50,315	20,000	13,333	-50%
2009	3,000,000	2,842,335	-6%	210,000	153,210	-37%	70,000	214,321	80,000	82,808	20,000	8,750	-129%
2010	2,300,000	3,695,633	38%	179,000	207,350	14%	305,000	292,706	70,000	228,863	17,000	9,900	-72%
2011	4,600,000	6,359,116	28%	178,000	95,291	-87%	106,000	34,123	101,000	129,407	14,000	11,248	-24%
2012	4,400,000	4,271,018	-3%	159,000	106,775	-49%	334,000	469,598	113,000	269,733	12,000	2,527	-375%
2013	4,900,000	3,639,862	-35%	147,000	260,963	44%	99,000	48,275	152,000	139,365	9,000	5,398	-67%
2014	4,300,000	3,329,970	-29%	165,000	137,376	-20%	338,000	642,879	170,000	116,093	7,600	4,660	-63%
2015	3,700,000	3,685,160	0%	161,000	216,032	25%	98,000	48,004	176,000	275,960	6,700	10,798	38%
2016	5,300,000	3,342,183	-59%	160,000	147,469	-8%	393,000	382,436	184,000	123,711	6,700	10,027	33%
2017	2,600,000	2,622,292	1%	167,000	303,642	45%	98,000	167,842	184,000	243,600	6,300	7,660	18%
2018	2,600,000	1,116,107	-133%	203,000	232,290	13%	389,000	126,923	177,000	115,366	7,400	3,405	-117%
Avg.	3,327,586	3,768,222	12%	247,552	245,422	-1%	246,552	249,056	202,655	175,641	14,059	13,085	-7%

^a Harvest forecasts have typically been prepared using average return per spawner values, parent-year escapements, and average marine maturity schedules or time series modeling tempered by available juvenile production data or combinations of these data sets.

^b Sockeye salmon harvest estimates include commercial, sport, personal use, educational, and subsistence fisheries.

^c Actual harvests prior to 2017 reflect minor adjustments to the harvest database.

^d Harvest projections are prepared using subjective estimates of parent-year escapements, gross trends in harvest, and expected intensity of fishery.

Appendix B15.—Upper Cook Inlet state subsistence fisheries salmon harvest, 1980–2018.

Tyonek Subsistence Fishery								
Year	Number of Permits		Chinook	Sockeye	Coho	Pink	Chum	Total
	Issued	Returned						
1980	67	67	1,936	262	0	0	0	2,198
1981	70	70	2,002	269	64	32	15	2,382
1982	69	69	1,590	310	113	4	14	2,031
1983	73	73	2,755	251	78	6	0	3,090
1984	70	70	2,364	310	66	23	3	2,766
1985	176	ND	1,967	163	91	10	0	2,231
1986	101	ND	1,674	198	210	44	45	2,171
1987	64	61	1,689	174	156	25	10	2,055
1988	47	42	1,776	102	283	13	9	2,183
1989	49	47	1,303	89	120	1	0	1,513
1990	42	37	886	75	400	14	23	1,397
1991	57	54	925	20	69	0	0	1,014
1992	57	44	1,170	96	294	24	9	1,594
1993	62	54	1,566	68	88	25	23	1,769
1994	58	49	905	101	122	27	0	1,154
1995	70	55	1,632	54	186	18	0	1,891
1996	73	49	1,615	88	177	9	27	1,917
1997	70	42	1,051	200	241	13	0	1,505
1998	74	49	1,430	251	97	3	2	1,783
1999	77	54	1,620	247	175	20	66	2,127
2000	60	47	1,461	78	103	0	8	1,649
2001	84	58	1,450	254	72	9	6	1,790
2002	101	71	1,609	314	162	6	14	2,106
2003	87	74	1,384	136	54	12	9	1,595
2004	97	75	1,751	121	168	0	0	2,040
2005	78	67	1,183	65	159	2	0	1,409
2006	82	55	1,366	32	23	1	0	1,422
2007	84	67	1,526	249	164	3	4	1,946
2008	94	77	1,492	146	227	11	16	1,892
2009	89	69	817	229	320	2	1	1,369
2010	105	77	1,116	281	223	3	3	1,626
2011	114	63	851	202	34	10	10	1,107
2012	89	69	1,102	223	174	3	5	1,507
2013	82	48	1,352	278	311	0	32	1,973
2014	92	73	896	487	575	15	5	1,978
2015	83	72	1,070	505	568	16	6	2,165
2016	74	64	1,030	188	225	8	12	1,462
2017	74	47	1,284	457	265	32	6	2,045
2018	65	22	1,413	217	154	10	11	1,805

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Yentna Subsistence Fishery								
Year	Number of Permits		Chinook	Sockeye	Coho	Pink	Chum	Total
	Issued	Returned						
Personal Use								
1996	17	14	0	242	46	115	51	454
1997	24	21	0	549	83	30	10	672
Subsistence								
1998	21	18	0	495	113	30	15	653
1999	18	16	0	516	48	18	13	595
2000	19	19	0	379	92	4	7	482
2001	16	15	0	545	50	10	4	609
2002	25	22	0	454	133	14	31	632
2003	19	15	0	553	67	2	8	630
2004	21	19	0	441	146	36	3	626
2005	18	17	0	177	42	24	25	268
2006	22	22	0	368	175	14	26	583
2007	22	22	0	367	66	17	18	468
2008	16	16	0	310	57	23	7	397
2009	17	17	0	253	14	0	6	273
2010	32	32	0	642	50	38	18	748
2011	25	25	0	598	90	337	21	1,046
2012	21	21	0	279	24	21	19	343
2013	22	19	0	160	92	128	32	412
2014	20	18	0	328	84	17	32	461
2015	29	27	0	578	151	47	69	845
2016	26	25	0	514	204	36	37	791
2017	26	26	0	454	185	47	10	696
2018	29	29	16	405	167	8	10	606

Note: Harvest estimated from returned permits only, not expanded for non-returned permits.

Appendix B16.—Upper Cook Inlet educational fisheries salmon harvest, 2018.

Fishery ^a	Chinook	Sockeye	Coho	Pink	Chum	Total
Kenaitze	3	6,155	887	259	0	7,304
NTC	5	169	219	110	0	503
NND	6	23	85	15	0	129
NES	0	6	0	0	0	6
APVFW	0	28	21	20	0	69
Sons of American Legion	0	35	27	0	0	62
Kasilof Regional HA	0	10	37	0	0	47
SCF	0	14	17	0	2	33
Knik	0	100	50	0	12	162
Eklutna	0	77	48	0	11	136
Territorial Homestead Lodge	4	82	31	6	7	130
Chickaloon Native Village	-	-	-	-	-	-
Total	18	6,699	1,422	410	32	8,581

Note: Harvest data include both early- and late-run Kenai River Chinook and sockeye salmon.

^a Kenaitze = Kenaitze Tribal Group; NTC = Ninilchik Traditional Council; NND = Ninilchik Native Descendants; NES = Ninilchik Emergency Services; APVFW = Anchor Point Veterans of Foreign Wars; Sons of American Legion = Homer Sons of the American Legion Post 16; Kasilof Regional HA = Kasilof Regional Historical Association; SCF = Southcentral Foundation; Knik = Knik Tribal Council; Eklutna = Native Village of Eklutna; Territorial Homestead Lodge = Alaska's Territorial Homestead Lodge, operated by Tim O'Brien.

Appendix B17.–Effort and harvest in Upper Cook Inlet personal use salmon fisheries, 1996–2018.

Kasilof River gillnet															
	Days	Days fished		Sockeye		Chinook		Coho		Pink		Chum		Total	
Year	open	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
1996	5	582	16	9,506	156	46	3	0	0	8	0	1	0	9,561	157
1997	5	815	26	17,997	231	65	2	1	0	102	7	3	1	18,168	233
1998	5	1,075	24	15,975	425	126	7	0	0	15	4	12	10	16,128	426
1999	10	1,287	39	12,832	371	442	27	25	2	10	0	10	0	13,319	374
2000	13	1,252	23	14,774	275	514	15	9	0	17	2	10	0	15,324	276
2001	8	1,001	20	17,201	394	174	6	6	0	11	0	7	5	17,399	397
2002	10	1,025	16	17,980	274	192	5	12	0	30	2	13	4	18,227	277
2003	10	1,206	17	15,706	277	400	13	107	0	9	0	4	0	16,226	284
2004	10	1,272	10	25,417	203	163	4	58	13	6	1	0	0	25,644	205
2005	11	1,506	6	26,609	104	87	1	326	5	16	1	1	0	27,039	104
2006	10	1,724	5	28,867	91	287	2	420	16	11	0	6	0	29,591	94
2007	10	1,570	7	14,943	66	343	3	68	4	2	0	0	0	15,356	66
2008	10	1,534	7	23,432	107	151	2	65	3	35	4	23	3	23,706	107
2009	10	1,761	9	26,646	167	127	2	165	0	14	1	11	2	26,963	167
2010	10	1,855	13	21,924	170	136	3	23	5	23	5	1	0	22,106	170
2011	10	1,846	16	26,780	244	167	4	47	10	23	1	3	0	27,020	244
2012	10	1,696	21	15,638	197	103	3	161	19	53	19	15	1	15,969	199
2013	5	1,082	13	14,439	187	46	2	129	32	3	0	5	1	14,621	187
2014	10	1,386	17	22,567	302	50	2	30	10	105	44	18	0	22,770	306
2015	10	1,741	22	27,567	339	61	3	191	41	20	5	2	1	27,841	341
2016	10	1,963	23	26,539	342	141	3	23	0	5	0	23	1	26,731	342
2017	10	1,874	27	21,927	309	118	4	5	1	48	8	43	9	22,141	309
2018	10	1,616	51	14,390	485	120	10	2	0	22	13	5	0	14,539	485
Mean	9	1,420		19,985		176		81		26		9		20,278	
Max.	13	1,963		28,867		514		420		105		43		29,591	

Kasilof River dip net															
	Days	Days fished		Sockeye		Chinook		Coho		Pink		Chum		Total	
Year	open	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
1996	27	1,300	23	11,197	127	50	1	334	18	103	2	17	0	11,701	130
1997	27	1,091	32	9,737	150	35	2	90	3	19	2	19	1	9,900	153
1998	27	3,421	33	45,161	525	134	3	731	18	610	25	74	32	46,710	528
1999	27	3,611	43	37,176	507	127	5	286	50	264	12	52	8	37,905	511
2000	27	2,622	36	23,877	403	134	7	1,004	16	841	39	34	0	25,890	407
2001	27	3,382	37	37,612	505	138	6	766	25	307	14	23	0	38,846	511
2002	44	4,020	38	46,769	530	106	6	1,197	59	1,862	73	139	7	50,073	553
2003	44	3,874	28	43,870	440	57	4	592	49	286	21	30	1	44,835	447
2004	44	4,432	19	48,315	259	44	3	668	21	396	15	90	5	49,513	263
2005	44	4,500	9	43,151	100	16	1	538	16	658	12	102	2	44,465	103
2006	44	5,763	10	56,144	113	55	1	1,057	15	992	8	105	4	58,353	117
2007	44	4,627	9	43,293	105	35	1	487	8	383	6	136	2	44,334	106
2008	44	5,552	14	54,051	153	46	3	509	11	787	10	143	4	55,536	154
2009	44	7,650	21	73,035	246	34	1	1,441	30	1,274	19	173	3	75,957	248
2010	44	7,588	27	70,774	303	31	2	1,768	45	974	24	279	9	73,826	307
2011	44	6,571	35	49,766	351	24	3	977	39	652	40	144	14	51,562	355
2012	44	6,536	32	73,419	448	16	1	1,170	42	896	38	147	11	75,649	452
2013	44	8,556	36	85,528	473	18	1	1,666	84	683	19	339	15	88,233	481
2014	44	10,236	51	88,513	547	0	0	2,606	106	2,769	66	342	15	94,230	561
2015	44	10,346	52	89,000	566	0	0	2,723	95	1,607	74	597	31	93,927	579
2016	44	9,334	50	58,273	414	26	2	1,255	57	1,733	46	329	23	61,618	421
2017	44	9,458	63	78,260	621	14	2	605	30	2,850	80	969	72	82,698	631
2018	44	9,377	132	92,034	1477	6	0	326	16	3,272	188	326	31	96,311	1,489
Mean	40	5,819		54,737		50		991		1,053		200		57,047	
Max.	44	10,346		92,034		138		2,723		3,272		969		96,311	

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Kenai River dip net													
Year	Days	Days fished		Sockeye		Chinook		Coho		Pink	Chum	Total	
	open	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	Est.	Est.	SE
1996	27	10,503	60	102,821	367	295	5	1,932	29	2,404	175	107,627	375
1997	22	11,023	87	114,619	439	364	13	559	21	619	58	116,219	448
1998	18	10,802	59	103,847	716	254	10	1,011	62	1,032	85	106,229	724
1999	22	13,738	79	149,504	1,084	488	13	1,009	108	1,666	102	152,769	1,094
2000	22	12,354	69	98,262	752	410	18	1,449	62	1,457	193	101,771	762
2001	22	14,772	66	150,766	909	638	15	1,555	105	1,326	155	154,440	926
2002	22	14,840	56	180,028	844	606	11	1,721	64	5,662	551	188,568	874
2003	22	15,263	50	223,580	891	1,016	18	1,332	68	1,647	249	227,824	905
2004	22	18,513	35	262,831	583	792	7	2,661	66	2,103	387	268,774	905
2005	22	20,977	18	295,496	273	997	3	2,512	24	1,806	321	301,132	275
2006	20	12,685	16	127,630	183	1,034	3	2,235	15	11,127	551	142,577	203
2007	22	21,908	23	291,270	335	1,509	4	2,111	24	1,939	472	297,301	337
2008	22	20,772	27	234,109	338	1,362	10	2,609	21	10,631	504	249,215	343
2009	22	26,171	35	339,993	524	1,189	7	2,401	29	5,482	285	349,350	525
2010	22	28,342	44	389,552	702	865	7	2,870	56	3,655	508	397,451	705
2011	22	32,818	60	537,765	1,105	1,243	10	4,745	107	3,914	915	548,583	1,115
2012	22	34,374	61	526,992	1,109	40	3	4,008	117	3,770	424,824	535,236	1,120
2013	22	33,193	63	347,222	822	11	1	3,169	74	3,625	701	354,727	827
2014	22	36,380	81	379,823	1,023	0	0	4,710	157	19,140	1,194	404,866	1,053
2015	22	31,487	75	377,532	1,088	66	2	4,150	130	4,147	957	386,853	1,101
2016	22	30,745	75	259,057	817	638	8	3,277	106	7,834	717	271,524	830
2017	22	27,775	87	297,049	1,103	1,194	14	732	41	7,962	886	307,824	1,112
2018	20	20,170	164	165,028	1,567	7	4	529	35	10,435	441	176,439	1,607
Mean	22	21,722		258,903		653		2,317		4,930	471	267,274	
Max.	27	36,380		537,765		1,509		4,745		19,140	1,194	548,583	

Unknown fishery^a

Year	Days	Days fished		Sockeye		Chinook		Coho		Pink	Chum	Total	
	open	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	Est.	Est.	SE
1996	-	472	33	4,761	463	24	7	131	37	127	4	5,047	467
1997	-	1,003	50	3,310	276	0	0	64	14	51	4	3,429	282
1998	-	921	39	7,562	287	34	5	294	77	196	20	8,106	301
1999	-	684	20	7,994	352	51	5	76	7	126	4	8,251	353
2000	-	648	23	5,429	274	44	13	218	60	84	24	5,799	282
2001	-	1,339	34	12,673	380	188	17	292	30	175	90	13,418	394
2002	-	1,339	26	14,846	353	166	10	341	25	916	54	16,323	380
2003	-	1,325	21	15,675	247	238	25	219	14	140	88	16,360	254
2004	-	1,143	13	13,527	179	99	3	366	25	210	25	14,227	185
2005	-	270	2	4,520	38	32	1	39	1	40	4	4,635	38
2006	-	371	2	3,406	34	29	1	47	2	304	84	3,870	41
2007	-	534	3	6,729	52	37	1	61	3	28	6	6,861	52
2008	-	622	4	6,890	63	41	2	66	3	412	58	7,467	64
2009	-	719	7	7,968	84	25	1	144	10	133	57	8,327	85
2010	-	760	8	8,300	125	15	1	168	7	109	12	8,605	125
2011	-	836	11	10,695	136	17	1	80	5	135	72	10,962	137
2012	-	937	14	13,295	219	4	1	173	25	127	36	13,635	221
2013	-	867	15	7,126	154	9	2	155	17	113	8	7,411	154
2014	-	1,022	14	9,315	131	0	0	129	18	563	78	10,085	135
2015	-	820	14	8,626	183	0	0	263	19	153	41	9,084	184
2016	-	645	14	4,837	155	15	1	34	7	233	81	5,200	158
2017	-	543	16	4,760	147	19	2	41	4	107	10	4,937	148
2018	-	352	27	2,085	152	0	0	21	4	209	4	2,319	157
Mean		790		8,014		47		149		204	38	8,450	
Max.		1,339		15,675		238		366		916	90	16,360	

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Fish Creek dip net															
Year	Days open	Days fished		Sockeye		Chinook		Coho		Pink		Chum		Total	
		Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
1996	22	3,749	41	17,260	161	37	8	2,414	25	331	9	153	5	20,195	168
1997	13	991	34	3,277	76	0	0	63	5	53	7	4	1	3,397	84
1998	15	1,141	21	4,036	113	1	0	649	19	80	10	29	2	4,795	117
1999	16	432	16	1,083	138	0	0	17	3	12	7	0	0	1,112	139
2000	16	1,054	25	6,925	211	0	0	958	72	83	12	29	3	7,995	225
2001	3	131	7	436	40	0	0	18	7	2	0	1	0	457	41
2009	7	1,436	8	9,898	73	10	0	53	6	66	3	33	5	10,060	73
2010	8	2,843	14	23,705	161	12	2	3,576	84	1,721	28	290	9	29,303	184
2011	3	1,379	14	5,236	86	2	0	905	29	155	10	72	7	6,371	92
2014	7	1,792	22	5,829	113	0	0	1,895	48	4,218	74	227	8	12,170	144
2015	8	2,303	22	19,260	280	0	0	3,321	87	1,329	48	329	27	24,239	298
2017	6	1,311	20	4,894	125	1	0	281	21	273	22	54	4	5,502	128
2018	8	2,324	62	18,569	683	5	0	1,779	91	880	118	208	59	21,531	702
Mean	10	1,607		9,262		5		1,225		708		110		11,317	
Max.	22	3,749		23,705		37		3,576		4,218		329		29,303	

Beluga River dip net															
Year	Days open	Days fished		Sockeye		Chinook		Coho		Pink		Chum		Total	
		Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
2008	43			31		0		35		0		0		66	
2009	43			140		0		78		7		0		225	
2010	43			47		0		1		0		5		53	
2011	43			137		0		17		0		5		159	
2012	43			9		0		7		0		0		16	
2013	43			30		0		55		2		1		88	
2014	43			32		0		12		1		1		46	
2015	43			65		0		17		0		0		82	
2016	43			52		0		45		2		2		102	
2017	43			26		0		36		4		0		66	
Mean	43			60		0		30		1		2		93	
Max.	43			140		0		78		7		5		225	

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Upper Cook Inlet personal use fisheries total ^b														
Year	Days fished		Sockeye		Chinook		Coho		Pink		Chum		Total	
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE
1996	16,606	85	145,545	644	452	12	4,811	56	2,973	50	350	12	154,131	655
1997	14,923	114	148,940	592	464	13	777	26	844	27	88	6	151,113	604
1998	17,360	84	176,581	1,032	549	14	2,685	102	1,933	70	220	34	181,968	1,043
1999	19,752	101	208,589	1,309	1,108	31	1,413	119	2,078	66	168	15	213,356	1,320
2000	17,930	88	149,267	961	1,102	28	3,638	114	2,482	86	290	35	156,779	976
2001	20,625	86	218,688	1,176	1,138	24	2,637	112	1,821	46	276	39	224,560	1,197
2002	21,224	74	259,623	1,092	1,070	17	3,271	91	8,470	149	757	38	273,191	1,136
2003	21,668	63	298,831	1,061	1,711	34	2,250	85	2,082	101	371	24	305,245	1,079
2004	25,360	43	350,091	678	1,098	9	3,754	75	2,715	32	502	14	358,158	689
2005	27,253	21	369,776	311	1,132	3	3,415	29	2,520	17	428	3	377,271	314
2006	20,543	20	216,047	236	1,405	4	3,759	27	12,434	41	746	10	234,391	242
2007	28,677	29	356,717	386	1,924	5	2,727	26	2,352	24	614	17	364,334	388
2008	28,491	34	318,594	412	1,601	11	3,249	24	11,869	52	727	10	336,040	416
2009	37,754	46	457,539	629	1,384	7	4,204	45	6,969	34	559	13	470,655	631
2010	41,387	56	514,254	808	1,059	8	8,405	113	6,482	47	1,091	20	531,291	818
2011	43,450	72	630,242	1,176	1,453	11	6,754	122	4,880	100	1,169	50	644,498	1,187
2012	43,543	74	629,344	1,232	163	5	5,512	128	4,846	111	623	19	640,489	1,244
2013	43,698	73	454,314	958	83	3	5,119	122	4,423	53	1,052	35	464,993	968
2014	50,819	94	506,047	1,164	50	2	9,370	199	26,795	217	1,859	56	544,121	1,202
2015	46,697	91	521,985	1,256	127	4	10,648	191	7,257	137	1,927	62	541,943	1,279
2016	42,687	90	348,707	958	820	10	4,590	122	9,805	105	1,150	45	365,072	972
2017	40,961	105	406,889	1,247	1,346	15	1,665	55	11,241	144	1,962	105	423,102	665
2018	33,839	199	292,196	2,138	137	12	3,003	99	14,818	435	984	85	311,139	2,186
Mean	30,663		346,905		929		4,246		6,613		779		359,471	
Max.	50,819		630,242		1,924		10,648		26,795		1,962		644,498	

Note: Fish Creek personal use fishery not open 2002–2008, and 2012–2013, 2016.

^a Unknown fishery includes harvest recorded on a UCI personal use permit but without a location specified.

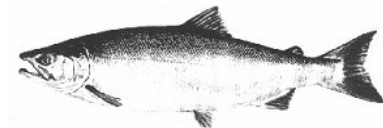
^b Total does not include harvest from the Beluga River dip net fishery.

APPENDIX C: SALMON OUTLOOK AND FORECAST

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE



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Date Issued: April 27, 2018

UPPER COOK INLET
2018 OUTLOOK FOR COMMERCIAL SALMON FISHING

SOCKEYE SALMON

A run of approximately 4.6 million sockeye salmon is forecasted to return to Upper Cook Inlet (UCI) in 2018, with an expected harvest by all user groups of 2.6 million. The commercial fishery harvest in 2018 is estimated to be approximately 1.9 million sockeye salmon, which is 900,000 fish less than the most recent 10-year average annual commercial sockeye salmon harvest of 2.8 million fish.

The run forecast for the Kenai River is approximately 2.5 million, which is 1.1 million less than the 20-year average run of 3.6 million. In 2018, the predominant age classes are projected to be age 1.3 (47%), age 1.2 (17%), age 2.2 (5%) and age 2.3 (29%). The 10-year mean absolute percent error (MAPE) for the set of models used for the 2018 Kenai River sockeye salmon forecast is 14%.

The Kasilof River sockeye salmon run forecast is 866,000 fish, which is 11% less than the 20-year average of 971,000. The predominant age classes in the run forecast are age 1.2 (29%), age 1.3 (34%), age 2.2 (26%), and age 2.3 (9%). The 10-year MAPE for the set of models used for the 2018 Kasilof sockeye salmon run forecast is 21%.

The Susitna River sockeye salmon run forecast is 329,000, which is 18% less than the 10-year average of 398,000. This forecast was derived using mean return per spawner by age class and mark-recapture estimates of spawner abundance for brood years 2006–2014. Sonar estimates of spawner abundance were not used, because mark-recapture studies have shown that the Yentna

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sonar project underestimated sockeye salmon escapement causing estimates of adult returns to also be underestimated. The 5-year MAPE for this forecast method is 17%. The predominant age classes in the 2018 Susitna sockeye salmon run forecast are age 1.2 (20%) and age 1.3 (57%).

The Fish Creek sockeye salmon run forecast is 211,000, which is 276% greater than the 20-year average run of 76,000. The predominant age classes in the 2017 Fish Creek run forecast are age 1.2 (78%) and age 1.3 (11%). The 10-year MAPE for the Fish Creek sockeye salmon run forecast is 69%.

Forecast runs to individual freshwater systems are as follows:

System	Run	Goals ^a
Kenai River ^{b,c}	2,485,000	1,000,000–1,300,000
Kasilof River ^{b,d}	866,000	160,000–340,000
Susitna River	329,000	
Larson Lake	N/A	15,000–35,000 ^e
Chelatna Lake	N/A	20,000–45,000 ^e
Judd Lake	N/A	15,000–40,000 ^e
Fish Creek	211,000	15,000–45,000 ^e
Unmonitored Systems ^f	665,000	N/A
Total	4,556,000	

^a Goals listed here are as follows: Kenai River: Inriver; Kasilof River: Biological Escapement Goal (BEG); Susitna River: SEG (weir goals); and Fish Creek: Sustainable Escapement Goal (SEG).

^b Kenai and Kasilof river escapement goals are now DIDSON-based.

^c Kenai River sustainable escapement goal is 700,000–1,200,000 sockeye salmon.

^d Kasilof River optimal escapement goal (OEG) is 160,000–390,000 sockeye salmon.

^e These goals were modified at the 2017 Alaska Board of Fisheries meeting; original goals were: Fish Creek (20,000–70,000); Larson Lake (15,000–50,000); Chelatna Lake (20,000–65,000); and Judd Lake (25,000–55,000).

^f Unmonitored systems are estimated to be 15% of monitored systems.

2018 FISHING STRATEGY

Northern District Set Gillnet

- Since 2011, management actions in the Northern District directed Chinook salmon set gillnet fishery have included area closures, time restrictions, and/or regularly scheduled fishing period closures in order to reduce the harvest of northern Cook Inlet Chinook salmon. However, even with restrictions in sport and commercial fisheries in 2017, the Deshka River failed to achieve its Chinook salmon escapement goal. In fact, only 2 of 15 Chinook salmon escapement objectives were achieved in 2017 in Northern Cook Inlet Management Area waters. The 2018 Deshka River preseason forecast suggests a total run that may not provide enough fish for the SEG to be achieved. Based on this information,

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the Division of Sport Fish issued an Emergency Order (EO) restricting sport fishing for Chinook salmon in the Deshka River and Yentna River drainages to catch-and-release and prohibited fishing for Chinook salmon in the remainder of the Susitna River drainage. In response to the poor Deshka River Chinook salmon forecast, and considering the restrictive actions taken in the Susitna River drainage Chinook salmon sport fisheries, the Division of Commercial Fisheries released an EO closing the Northern District directed Chinook salmon commercial fishery for the 2018 season. The fishing periods affected by this closure are May 28, and June 4, 11, and 18. Escapement of Chinook salmon in the Deshka and Little Susitna rivers will be closely monitored during the 2018 season. If runs are better than expected and the Deshka River SEG is projected to be achieved with moderate levels of harvest, reopening the directed Chinook salmon commercial fishery would be considered.

- Beginning Monday, June 25, the Northern District set gillnet fishery will be managed per provisions found in the *Northern District Salmon Management Plan*. This plan provides for two 12-hour weekly fishing periods with a full complement of gear and a normal separation between nets of at least 600 feet.
- Susitna River sockeye salmon remain a stock of yield concern. As a result of this designation, restrictive actions to fisheries that harvest this stock were retained in regulation at the 2017 Alaska Board of Fisheries (board) meeting. According to the *Northern District Salmon Management Plan*, the department may reduce the legal complement of gear in the Northern District set gillnet fishery to either one or 2 nets per permit from July 20 through August 6 to conserve Susitna River sockeye salmon. However, in that portion of the General Subdistrict south of the Susitna River, restrictive options for gear reduction are limited to 2 nets per permit after July 30. In 2018, five different fishing periods could be affected by a reduction of gear. All areas in the Northern District will return to a full complement of gear beginning on Thursday, August 9.

Central District Fisheries

Upper Subdistrict Set Gillnet Fishery – Overview

The 2018 Kenai River late-run Chinook salmon forecast projects a total run of approximately 21,500 “large” (>75cm mid-eye to tail fork) fish. The SEG for Kenai River late-run Chinook salmon is 13,500–27,000 large fish. If realized, this run would rank as the 3rd lowest measured run in 31 out of the last 33 years and would be approximately 30% less than the 2017 preliminary estimated run of 30,520 large fish. If harvest rates are average in both sport and commercial fisheries for a run of this size, this should provide enough fish in escapement to achieve the Kenai River late-run Chinook salmon large fish SEG, but likely at the lower end of the goal range. Thus, to begin the season, fishing time allowed in the Upper Subdistrict will be based on inseason assessment of sockeye salmon abundance, while ensuring adequate Chinook salmon escapement relative to the SEG.

According to 5 AAC 21.360 (b) *Kenai River Late-Run Sockeye Salmon Management Plan*, the Kenai River late-run sockeye salmon commercial, sport, and personal use fisheries shall be managed to:

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- (1) meet a sustainable escapement goal (SEG) range of 700,000–1,200,000 late-run sockeye salmon;
- (2) achieve inriver goals as established by the board and measured at the Kenai River sonar counter located at river mile 19; and
- (3) distribute the escapement of sockeye salmon evenly within the SEG range, in proportion to the size of the run.

All 3 of these management objectives are complementary to each other. Because the harvest of sockeye salmon by inriver users (sport and federal subsistence) above the sonar counter is not known inseason (although it is estimated for total run projection purposes), the primary inseason management objectives are the abundance-based sockeye salmon inriver goals in the Kenai River and the BEG/OEG in the Kasilof River. The Kenai River sockeye salmon SEG will be assessed after inriver sport and federal subsistence harvests above the sonar counter are accounted for. Achievement of the inriver goal ranges should result in meeting the SEG and distributing the escapement of sockeye salmon evenly within the SEG range, in proportion to the size of the run.

Upper Subdistrict Set Gillnet Fishery – Management

Kasilof Section Prior to July 8

- The Kasilof Section opens on the first regular period on or after June 25, unless the department estimates that 50,000 sockeye salmon are in the Kasilof River prior to that date, at which time the commissioner may open the fishery by emergency order (EO), however, the fishery may not open earlier than June 20. From the beginning of the season through July 7, this fishery will be open for regular 12-hour periods on Mondays and Thursdays and must close for 36 consecutive hours per week, which is to begin between 7:00 p.m. Thursday and 7:00 a.m. Friday. Additionally, the department may allow up to 48 hours of additional fishing time per week (Sunday through Saturday).

Kasilof, Kenai and East Foreland Sections

- The Kenai and East Foreland sections fishing season opens on or after July 8.
- Management of the Kasilof, Kenai and East Foreland sections (Upper Subdistrict) set gillnet fishery will be based on the projected run size of Kenai River sockeye salmon and passage levels of sockeye salmon in both the Kenai and Kasilof rivers, as well as the abundance of Kenai River late-run Chinook salmon. From July 1–31, if the run of Kenai River late-run Chinook salmon is projected to meet or exceed the minimum SEG, then management of the Upper Subdistrict set gillnet fishery is to follow provisions in the *Kenai River Late-Run Sockeye Salmon Management Plan*. For the 2018 season, the Kenai River sockeye salmon run projection is 2.5 million fish. Therefore, the season will be managed following guidelines outlined for run strengths between 2.3 and 4.6 million fish, which includes an inriver goal range of 1,000,000– 1,300,000 fish. The Kenai River sockeye salmon run will be reassessed after July 20 to determine inseason run strength.

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- For **run strengths between 2.3 and 4.6 million Kenai River sockeye salmon**, the Upper Subdistrict set gillnet fishery will be open for regular Monday and Thursday 12-hour fishing periods. The fishery will be closed for one continuous 36-hour period per week between 7:00 p.m. Thursday and 7:00 a.m. Friday and for one continuous 24-hour period per week beginning between 7:00 p.m. Monday and 7:00 a.m. Wednesday. The department may allow no more than 51 hours of additional fishing time per week. From July 1–31, if the Kenai River late-run Chinook salmon sport fishery is restricted to no bait or to no bait and no retention of Chinook salmon in order to meet the SEG, management actions in the Upper Subdistrict set gillnet fishery will be “paired” as described in *Kenai River Late-Run King Salmon Management Plan*. However, in 2017 the board modified the management plan exempting the East Foreland Section set gillnet fishery from the “paired” restrictive provisions in the plan.

From August 1–15, management of the Upper Subdistrict set gillnet fishery is based upon meeting Kenai and Kasilof River sockeye salmon escapement objectives as well as achieving the Kenai River late-run Chinook salmon SEG. If the Chinook salmon SEG is projected to be met, the Upper Subdistrict set gillnet fishery will follow the same provisions in August that applied in July. According to the *Kenai River Late-Run Sockeye Salmon Management Plan*, the set gillnet fishery closes no later than August 15, but from August 11–15, only Monday and Thursday regular 12-hour fishing periods are allowed. However, the season may close any time after August 7 if during 2 consecutive fishing periods the sockeye salmon harvest is less than one-percent of the season total. The one-percent rule applies separately to the Kasilof Section and the Kenai/East Foreland sections, which means one of the areas could close under the one-percent rule, while the other area remains open.

- From August 11–15, provisions found in 5 AAC 31.354. *Cook Inlet Pink Salmon Management Plan* (see specifics on page 6 of this document) allow for up to 2 additional 12-hour fishing periods during the August 11–15 time frame.

Central District Drift Gillnet Fishery – Overview

The department manages the UCI drift gillnet fleet primarily under the guidance of 5 AAC 21.353. *Central District Drift Gillnet Fishery Management Plan*. The purpose of this management plan is to ensure adequate escapement of salmon into Northern Cook Inlet drainages and to provide the department with management guidelines.

Central District Drift Gillnet Fishery – Management

- The drift gillnet fishery opens the third Monday in June or June 19, whichever is later.
- From July 9 through July 15:
 - a. Drift gillnet fishing is restricted for both regular fishing periods to the Expanded Kenai and Expanded Kasilof sections (Figures 1), and Drift Gillnet Area 1 (Figure 2).
 - b. One additional 12-hour fishing period may be allowed in the Expanded Kenai and Expanded Kasilof sections, and Drift Gillnet Area 1.
 - c. All additional fishing time is allowed only in the Expanded Kenai and Expanded Kasilof sections.

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- From July 16 through July 31:
 - a. For runs between 2.3 and 4.6 million Kenai River sockeye salmon, fishing during one regular 12-hour fishing period per week will be restricted to one or more of the following sections: the Expanded Kenai or Expanded Kasilof sections of the Upper Subdistrict, the Anchor Point Section of the Lower Subdistrict, or Drift Gillnet Area 1. The remaining weekly 12-hour fishing period and all additional fishing time outside regular fishing periods is allowed only in one or more of the following: the Expanded Kenai Section, the Expanded Kasilof Section, or the Anchor Point Section.
 - b. One regular 12-hour fishing period during this time period may be fished in all waters of the Central District instead of in Drift Gillnet Area 1.
- From August 1 through August 15:
 - a. Fishing is open in all waters of the Central District for Monday and Thursday regular 12-hour fishing periods. Additional fishing time outside regular fishing periods and the areas fished will be dependent upon meeting Chinook, sockeye, and coho salmon escapement objectives.
 - b. Two one-percent rules apply during this time period, the Upper Subdistrict set gillnet one-percent rule and the Central District drift gillnet one-percent rule (see 5 AAC 21.310(b)(2)(C)(iii) and 5 AAC 21.353(e)). If either one-percent rule is triggered, regular drift fishing periods will be restricted to Drift Areas 3 and 4 (Figure 3
- From August 16 until closed by EO:
 - a. Drift Areas 3 and 4 are open for regular periods.
 - c. Chinitna Bay may be opened by EO if chum salmon escapement objectives are achieved in Clearwater Creek.

5 AAC 31.354. Cook Inlet Pink Salmon Management Plan: This plan was modified at the 2017 UCI board meeting. From August 6–10, in even years only, if 25,000 or more pink salmon are harvested by Upper Subdistrict set gillnetters during a regular fishing period, or 50,000 or more pink salmon are harvested from 2 regular periods combined, a pink salmon fishery may be opened for up to 2 fishing periods from August 11–15. This fishery is open to setnetters in the Upper Subdistrict and to drift gillnetters in the Kenai Section (narrow Kenai corridor). The second fishing period may only be opened if more than 25,000 pink salmon and less than 2,500 coho salmon were harvested by setnetters during the first fishing period. Both set and drift gillnets are limited to a mesh size no larger than 4¾ inches during pink salmon fishing periods.

SEASON OPENING DATES

Season opening dates in 2018 for the various fisheries around the inlet are as follows:

- *Northern District Chinook Salmon Fishery:* Closed. As explained earlier in this document, because the preseason projection of the Deshka River Chinook salmon run is much below average, the Division of Commercial Fisheries released an EO closing the Northern District directed Chinook salmon commercial fishery for the 2018 season

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- *Big River Fishery*: June 1 and continuing through June 24, unless the 1,000 Chinook salmon harvest limit is reached prior to that date. Weekly fishing periods are Mondays, Wednesdays, and Friday from 7:00 a.m. to 7:00 p.m.
- *Western Subdistrict Set Gillnet Fishery*: June 18.
- *Drift Gillnet Fishery*: June 21.
- *All remaining set gillnet fisheries, except the Upper Subdistrict*: June 25.
- *Upper Subdistrict Set Gillnet Fishery*: June 25 for the Kasilof Section (that portion south of the Blanchard Line), unless opened earlier by EO (based on an inriver estimate of 50,000 sockeye salmon in the Kasilof River before the June 25 opener) but will not open before June 20. The Kenai and East Foreland sections (that portion of the Upper Subdistrict north of the Blanchard Line) will open on Monday, July 9. All Sections of the Upper Subdistrict will close for the season on or before August 15.

SETNET REGISTRATION AND BUOY STICKERS

All Cook Inlet setnet fishermen are required to register prior to fishing for one of 3 areas of Cook Inlet: 1) the Upper Subdistrict of the Central District; 2) the Northern District; or, 3) all remaining areas of Cook Inlet (Greater Cook Inlet). Once registered for one of these 3 areas, fishermen may fish only in the area for which they are registered for the remainder of the year. No transfers will be permitted. Set gillnet permit holders fishing in the Northern District or the Greater Cook Inlet area can register at ADF&G offices in Soldotna, Homer, or Anchorage or by mail. Forms are available at area offices or on the department's homepage at:

<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareauci.salmon#/management>.

Fishermen wishing to register in person for the Upper Subdistrict must register in the **Soldotna ADF&G office only** and must purchase buoy stickers at the time of registering. Electronic registration with the option to pay for buoy stickers online may be accessed at <http://www.adfg.alaska.gov/uciera/>. Electronic registration is available for all 3 set gillnet fishing areas in UCI.

GENERAL INFORMATION

The UCI commercial fisheries information line will again be available by calling 262-9611. The most recent EO announcement is always available on the recorded message line and catch, escapement and test fishing information is included whenever possible. The same recording may be accessed at <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareauci.main> and clicking on the UCI Commercial Fisheries Information Recording player.

All EO announcements are also faxed or emailed to processors as quickly as possible and posted at <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareauci.salmon>. For very general information, we invite you to visit the Commercial Fisheries web page on the Internet at <http://www.adfg.alaska.gov/index.cfm?adfg=fishingCommercial.main>.

If, during the summer, fishermen have information or questions concerning the commercial fishery, the Soldotna Division of Commercial Fisheries staff can be reached by phone at 262-9368, by fax at 262-4709, or by mail at 43961 Kalifornsky Beach Road, Suite B, Soldotna, 99669.

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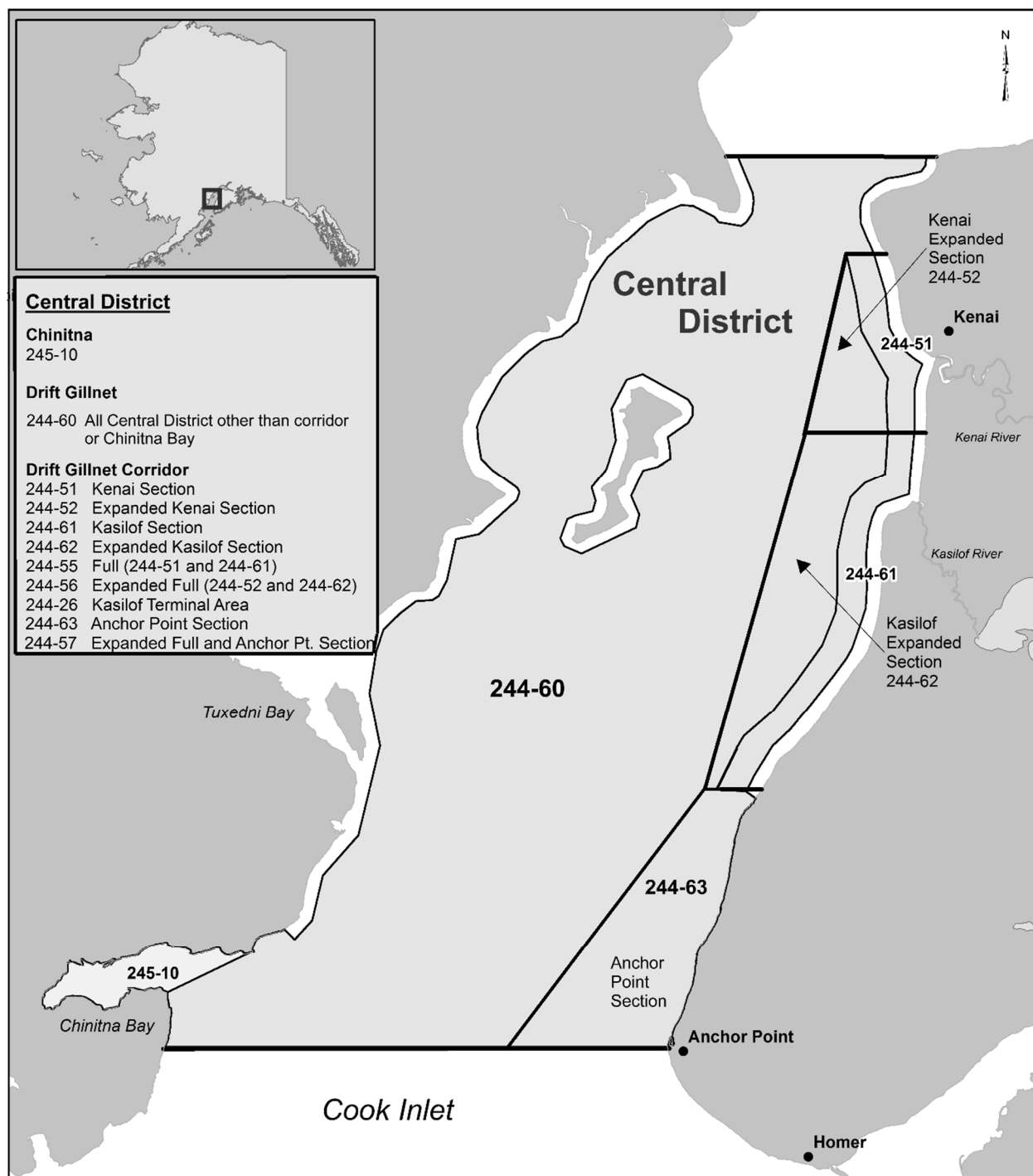
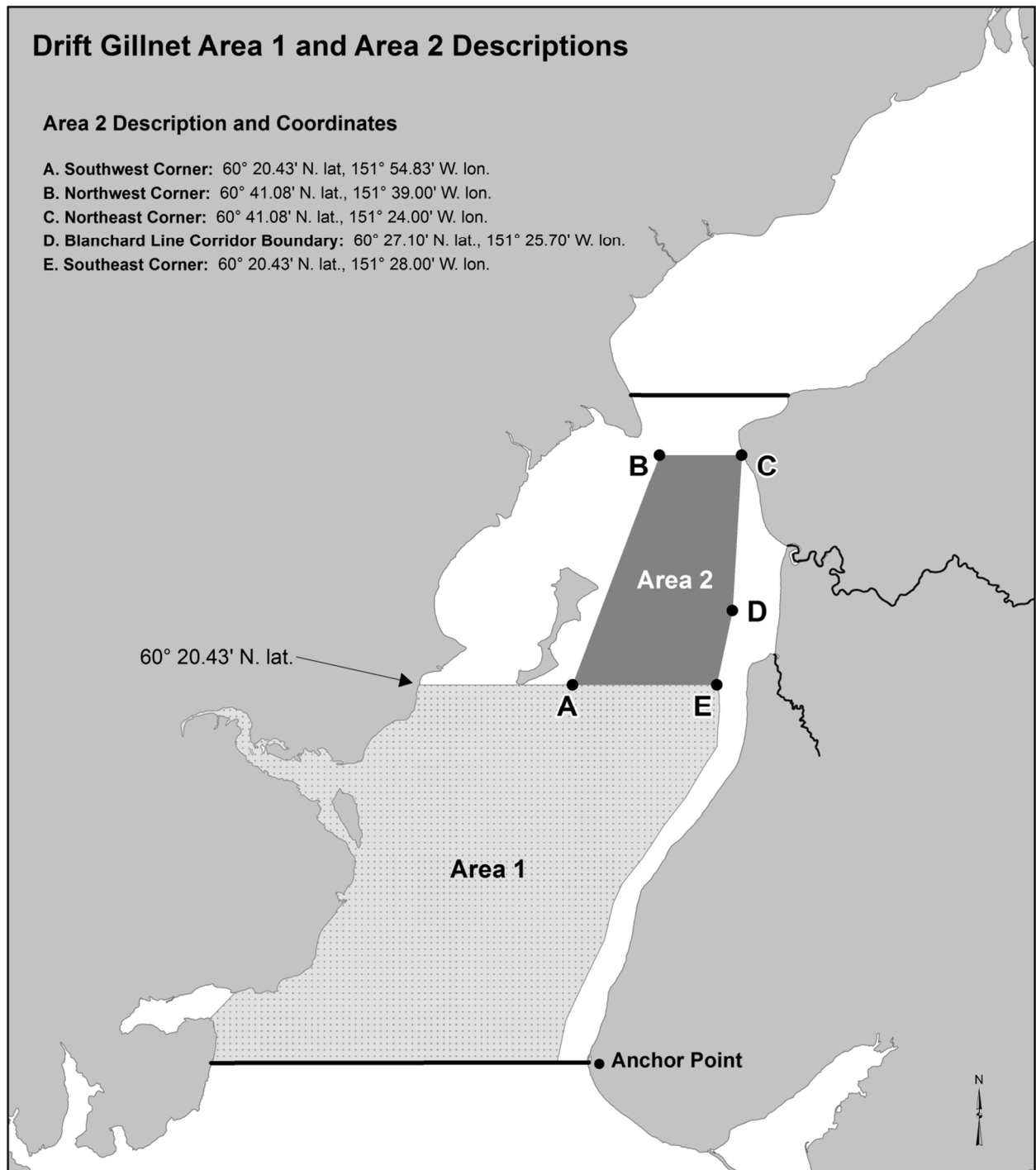


Figure 1.–Map of drift gillnet statistical areas.

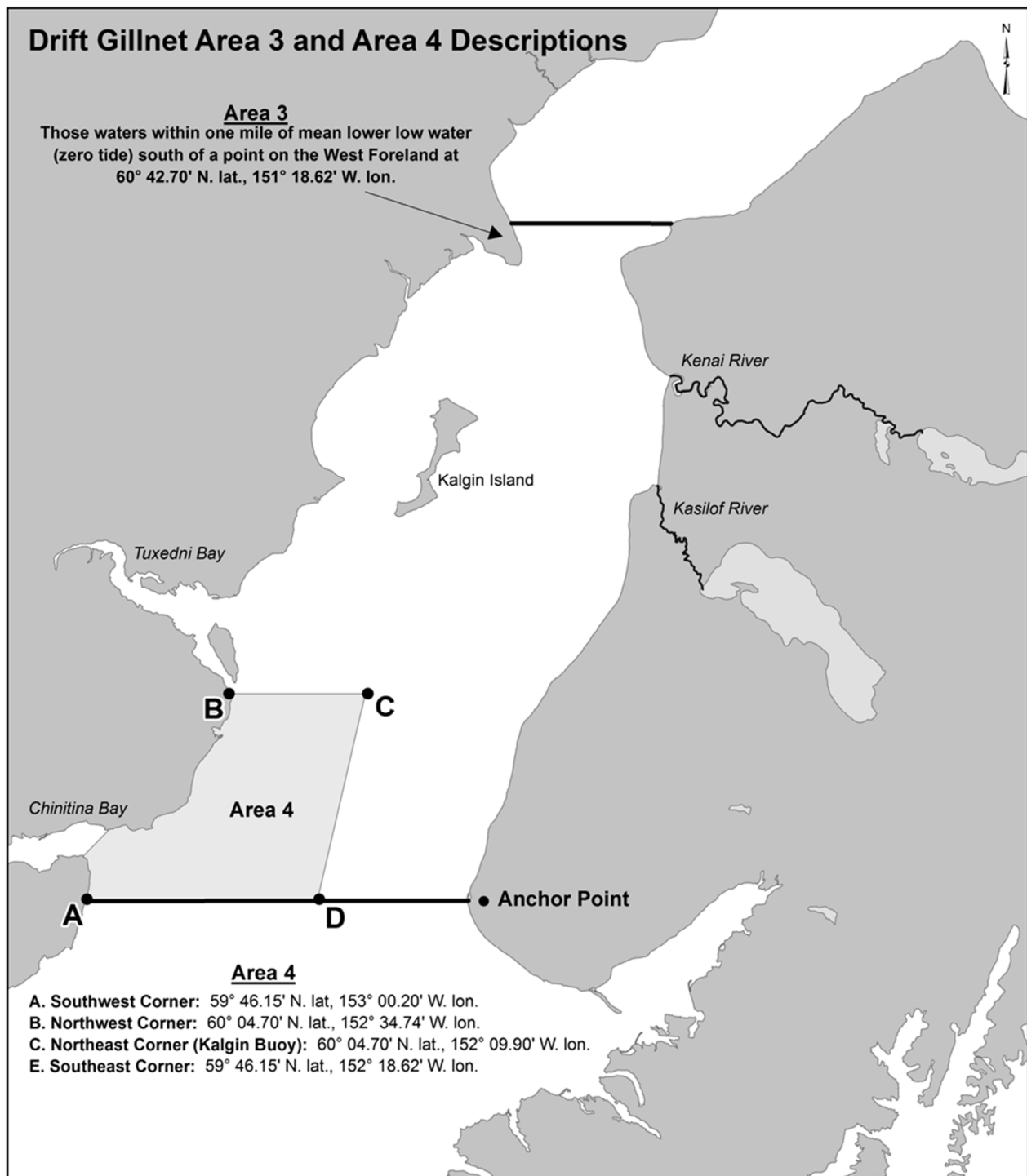
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Note: Latitude and Longitude are based on the North American Datum of 1983 (NAD 83), equivalent to the World Geodetic System 1984 (WGS 84).

Figure 2.—Map of drift gillnet areas 1 and 2.

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Note: Latitude and Longitude are based on the North American Datum of 1983 (NAD 83), equivalent to the World Geodetic System 1984 (WGS 84).

Figure 3.—Map of the drift gillnet areas 3 and 4; open after August 15.

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE



Douglas Vincent-Lang, Acting Commissioner
Forrest R. Bowers, Acting Director



Contact: Bob DeCino, Acting Research Project Leader; Brian Marston, Area Mgmt. Biologist
43961 Kalifornsky Beach Rd, Suite B Soldotna, AK 99669
Phone: (907) 262-9368 Fax: (907) 262-4709
Date Issued: January 04, 2019 Time: 4:00 p.m.

2019 UPPER COOK INLET SOCKEYE SALMON FORECAST

The forecasts of the 2019 Upper Cook Inlet sockeye salmon run and harvests are as follows:

	Forecast estimate (millions)	Forecast range (millions)
TOTAL PRODUCTION:		
Total run	6.0	4.8–7.3
Escapement	2.0	
UCI commercial harvest	3.0	
Other UCI harvests	1.0	

Forecast Methods

The major sockeye salmon systems in Upper Cook Inlet (UCI) are the Kenai, Kasilof, and Susitna rivers, and Fish Creek. Available escapement (spawner abundance), return, sibling, fry, and smolt data were examined for each system. To forecast the total return of sockeye salmon to UCI in 2019, up to four models were used to evaluate each stock and major age class: (1) the relationship between adult returns and spawners, (2) the relationship between adult returns and fall fry, (3) the relationship between adult returns and emigrating smolt, and (4) the relationship between sibling adult returns. Several forecast models were evaluated for each stock and age class. Models providing the smallest mean absolute percent error (MAPE) between the forecast and actual runs over the past 10 years were selected. Forecast model predictions were compared to evaluate uncertainty.

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The return of age-1.3 Kenai River sockeye salmon in 2019 was forecasted using a fry model. The fry-model prediction of the return of age-1.3 salmon is based on the abundance estimates of age-0 sockeye salmon fry that reared in Kenai and Skilak lakes in 2015. A spawner-recruit model was used to predict the age-1.2 salmon return based upon the spawning escapement in 2015. The Kenai River return of age-2.2 salmon was forecasted using a sibling model based upon the abundance of age-2.1 salmon that returned in 2018, and the return of age-2.3 salmon was forecasted using a sibling model based upon the abundance of age-2.2 salmon that returned in 2018.

The returns of age-1.2, -1.3, -2.2, and -2.3 Kasilof River sockeye salmon in 2019 were all forecasted using sibling models based upon returns of age-1.1, -1.2, -2.1, and -2.2 salmon in 2018.

The returns of age-0.3, -1.2, -1.3, -2.2 and -2.3 Susitna River sockeye salmon were forecasted using mean return per spawner by age class for brood years 2006–2015. Mark-recapture estimates of inriver run and genetic estimates of commercial harvest were available for these brood years.

The sockeye salmon forecast for unmonitored systems in UCI was estimated as 17% of the aggregate forecast for the four monitored stocks. Unmonitored stocks include Crescent River, Big River, McArthur River, Chilligan River, Coal Creek, Cottonwood Creek, Wasilla Creek, Eagle River, and many other smaller systems in the area. The fraction of the total run destined for unmonitored systems was estimated using genetic estimates of the stock composition of offshore test fishery harvests.

The total potential harvest by all user groups was estimated by subtracting the aggregate escapement from the total run forecast for all stocks. Aggregate escapement was estimated from the sum of the midpoints of the escapement goal ranges for each of the monitored sockeye salmon-producing systems and the escapement into unmonitored systems, which was estimated as 17% of the escapement into monitored systems. Commercial harvest was estimated from the average fraction (2011–2015) of total harvest taken in the commercial fishery. The harvest by all other user groups (sport, personal use, and subsistence) was estimated by subtracting commercial harvest from total harvest.

The 2019 total UCI run forecast range was calculated by multiplying the forecast by the MAPE of the actual UCI runs from published UCI run forecasts from 2009–2018. The run forecast ranges for Kenai, Kasilof, and Susitna rivers and Fish Creek were calculated by multiplying each system's forecast by the 10-year (2009–2018) MAPE for that watershed (Table 1).

2018 Run and Forecast

In 2018, the estimated total run was 1.7 million to the Kenai River; 697,000 to the Kasilof River; 250,000 to the Susitna River; and 106,000 to Fish Creek. The 2018 total run forecast was 2.5 million to the Kenai River; 866,000 to the Kasilof River; 329,000 to the Susitna River; and 211,000 to Fish Creek. In 2018, the commercial harvest of sockeye salmon in UCI (0.8 million) was 1.1 million less than the preseason forecast of 1.9 million. Overall, the 2018 sockeye

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salmon run of 3.1 million was approximately 1.5 million below the mid-point forecast of 4.6 million (range 3.6–5.5 million).

Forecast Discussion

In 2019, a total run of approximately 6.0 million sockeye salmon (range 4.8–7.3 million) is forecast to return to UCI with a potential commercial harvest of 3.0 million. The forecasted commercial harvest in 2019 is 200,000 more than the 20-year average harvest.

The run forecast for the Kenai River is approximately 3.8 million sockeye salmon (range 3.1–4.5 million), which is approximately 200,000 fish greater than the 20-year average run of 3.6 million. A fry model based upon the age-0 fry rearing in Kenai and Skilak lakes in 2015 (22.2 million compared to the 20-year average of 18.2 million) and the average weight of age-0 fall fry rearing in Skilak Lake (1.0 grams compared to the 20-year average of 1.1 grams) predicts a return of 2.7 million age-1.3 salmon in 2019. In contrast, a sibling model from the return of age-1.2 salmon in 2018 predicted a return of 3.1 million age-1.3 salmon. The fry-model was selected for this forecast because the 10-year MAPE was lower for the fry model (27%) compared to the sibling model (29%). A sibling model based upon the return of age-2.2 salmon in 2018 (202,000 vs. 20-year average of 247,000) predicted a return of 442,000 age-2.3 fish. A fry model based upon the abundance of age-1 fry rearing in Skilak and Kenai lakes in the fall of 2015 (996,000 vs. 20-year average of 2.1 million) predicted a return of 345,000 age-2.3 fish. The sibling model was selected for the forecast because the 10-year MAPE was lower for this method (82%) compared to the fry model (124%). The predominant age classes in the 2019 run forecast are age-1.2 (10%), age-1.3 (71%) and age-2.3 (12%). The 10-year MAPE for the set of models used for the 2019 Kenai sockeye salmon run forecast is 19%.

The Kasilof River sockeye salmon run forecast is approximately 873,000 (range 0.7–1.0 million), which is 11% less than the 20-year average of 979,000. A sibling model based upon the return of age-1.2 salmon in 2018 (355,000 vs. 20-year average of 321,000) was used to forecast a return of 320,000 age-1.3 salmon in 2019 with a corresponding MAPE of 56%. A sibling model based upon the return of age-1.1 salmon in 2018 was selected to forecast a return of 237,000 age-1.2 salmon in 2019; in contrast, a spawner-recruit model based upon spawner abundance in 2015 forecasted a return of 329,000 age-1.2 salmon in 2019. The sibling model was selected for this forecast because the 10-year MAPE was lower for the sibling (44%) than the spawner-recruit model (61%). A sibling model based upon the return of age-2.1 salmon in 2018 was used to forecast a return of 200,000 age-2.2 salmon in 2019. A spawner-recruit model forecast for age-2.2 salmon was 255,000. The sibling model was selected for this forecast, because the 10-year MAPE was lower for the sibling model (14%) compared to the spawner-recruit model (20%). The predominant age classes in the 2019 run forecast are age 1.2 (27%), age 1.3 (37%), and age 2.2 (30%). The 10-year MAPE for the set of models used for the 2019 Kasilof sockeye salmon run forecast is 19%.

The Susitna River sockeye salmon run forecast is approximately 343,000 (range 233,000–422,000) fish, which is 16% less than the 20-year average of 409,000. This forecast was derived using mean return per spawner by age class and mark-recapture estimates of spawner abundance for brood

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years 2006–2014. The 10-year MAPE for this forecast method is 32%. The predominant age classes in the 2019 Susitna sockeye salmon run forecast are age-1.2 (45%) and age-1.3 (40%).

The Fish Creek sockeye salmon run forecast is 124,000 (range 38,000–210,000) fish, which is 50% greater than the 20-year average run of 83,000. A sibling model based upon the return of age-1.1 salmon in 2018 (4,000 vs. 20-year average of 3,000) was used to forecast a return of 72,000 age-1.2 salmon. A spawner-recruit model forecasted a return of 98,000 age-1.2 salmon. The sibling model was used for this forecast, because the 10-year MAPE was lower for the sibling (64%) than the spawner-recruit model (106%). Sibling models were also used to forecast the returns of age-1.3, -2.2 and -2.3 salmon. The predominant age classes in the 2019 Fish Creek run forecast are age 1.2 (57%) and age 1.3 (30%). The 10-year MAPE for the Fish Creek sockeye salmon run forecast is 69%.

Table 1.—Sockeye salmon run forecasts, 20-year average runs and escapement goals (in thousands of fish) to individual freshwater systems in Upper Cook Inlet.

System		Major age classes				Total run ^a	Total run range	Escapement goals ^b
		1.2	1.3	2.2	2.3			
Kenai River	Forecast	382	2,691	231	442	3,814	3,089 – 4,539	1,000 – 1,300^c
	20-yr average	402	2,064	247	759	3,545		
Kasilof River	Forecast	237	320	200	97	873	707 – 1,039	160 – 340
	20-yr average	321	308	250	81	979		
Susitna River	Forecast	154	137	17	19	343	233 – 422	Lake goals^d
	20-yr average	91	179	26	37	377		
Fish Creek	Forecast	72	27	11	2	124	38 – 210	15 – 45
	20-yr average	47	19	6	2	83		
Unmonitored	Forecast	144	543	79	96	881		No goal
	20-yr average	147	439	90	150	852		
Total run	Forecast	989	3,718	538	656	6,035		
	20-yr average	1,008	3,009	619	1,029	5,821		

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Note: BEG = Biological Escapement Goal, SEG = Sustainable Escapement Goal.

^a Total run includes all age classes.

^b Goals listed here are as follows, Kenai River: Inriver; Kasilof River: BEG; Susitna River: SEG (weir goals); and Fish Creek: SEG.

^c This is the inriver sockeye salmon goal for runs between 2.3 and 4.6 million measured using sonar at river mile 19 on the Kenai River.

^d Susitna sockeye salmon are managed to achieve escapement goals at Larson, Chelatna and Judd lakes weirs. Current escapement goals for these lakes are: Larson (15,000–35,000), Chelatna (20,000–45,000) and Judd (15,000–40,000).

OTHER SALMON SPECIES

The forecast of the 2019 commercial harvest of other salmon species is as follows:

Commercial harvest forecasts	
Pink salmon	103,000
Chum salmon	175,000
Coho salmon	207,000
Chinook salmon	7,300

Forecast Methods

The recent 5-year average commercial harvest was used to forecast the harvest of chum, coho, and Chinook salmon in 2019. The forecast for pink salmon is based upon the average harvest during the previous 5 odd-numbered years.

Forecast Discussion

The recent 5-year average commercial harvest was used in the forecast, because harvests in these years likely best represent harvests under current regulations.

For more information contact Bob DeCino or Brian Marston at the Soldotna ADF&G office at (907) 262-9368.

APPENDIX D: COMMERCIAL SMELT AND HERRING

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE



Sam Cotten, Commissioner
Scott Kelley, Director



Contact: Pat Shields, Reg. Mngt. Coordinator; Alyssa Frothingham, Asst. Area Mgmt. Biologist
43961 Kalifornsky Beach Rd, Suite B Soldotna, AK 99669
Phone: (907) 262-9368 Fax: (907) 262-4709
Date Issued: April 9, 2018 Time: 10:00 a.m.

2018 UCI COMMERCIAL SMELT (HOOLIGAN) & HERRING FISHING SEASONS
EMERGENCY ORDER 2H-01-18

The *Central District Herring Management Plan* (5 AAC 27.409) states that a commercial herring fishery may occur by emergency order in the Central District of Upper Cook Inlet, but only in the waters of the Kalgin Island, Upper, Western, and Chinitna Bay subdistricts, as described in 5 AAC 21.200(b)(2), (b)(3), (b)(5), and (b)(6). The legal gillnet mesh size can be no smaller than 2.0 inches or no greater than 2.5 inches. The season is open from April 20 to May 31, with one fishing period per week that runs from 6:00 a.m. on Mondays until 6:00 p.m. on Fridays. A fishing period may extend beyond May 31 if the fishing period began before May 31. In 2018, commercial fishing for herring will open at 12:01 a.m. on Friday, April 20, and close at 6:00 p.m. on Friday, June 1, unless closed earlier by emergency order in any area where the guideline harvest range is met. In the Upper Subdistrict, the guideline harvest range is 0–40 tons and fishing for herring is not allowed any closer than 600 feet of the mean high tide mark on the Kenai Peninsula. In the Chinitna Bay Subdistrict, the department is to manage for a guideline harvest range of 0–40 tons; in the Western Subdistrict, the guideline harvest range is 0–50 tons, and in the Kalgin Island Subdistrict, the guideline harvest range is 0–20 tons.

In the Central District, herring may be taken only by gillnet, as defined in 5 AAC 27.431, except that in the Chinitna Bay and Kalgin Island Subdistricts, herring may only be taken by set gillnets (5 AAC 27.430 (b)). Prior to fishing, all participants are required to register at the department's Soldotna office. Fishermen are also required to report fishing time and the amount of smelt and herring harvested, whether sold or retained for personal use, to the Soldotna office by 12:00 noon of the next day for each day fished. Fishermen are also reminded that fish tickets are to be filled out and either mailed or dropped off at the Soldotna ADF&G office within seven days of the time of landing (5 AAC 39.130 (c)). If you intend to sell your catch to members of the public, you must first obtain a catcher-seller permit from ADF&G <http://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.sellers>.

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5AAC 21.505. *Cook Inlet Smelt Fishery Management Plan* allows for a small commercial fishery for smelt in the Northern District of Upper Cook Inlet (Figure 1) taken under the conditions of a commissioner’s permit. This fishery occurs in the marine waters of Cook Inlet in that portion of the General Subdistrict of the Northern District northeast of the Chuit River and southwest of the Little Susitna River. In 2018, the season will open at 12:01 a.m. on Tuesday, May, 1 and close no later than 11:59 p.m. on Saturday, June 30. The total harvest may not exceed 200 tons; the season will close immediately by emergency order if this level of harvest is reached. Legal gear for the fishery is a hand-operated dip net, as defined in 5 AAC 39.105. Any salmon caught must be released immediately and returned to the water unharmed. To participate in this fishery, a miscellaneous finfish permit (M99B) is required, as well as a commissioner’s permit, which can be obtained from the Alaska Department of Fish and Game (ADF&G) office in Soldotna. The commissioner’s permit must be obtained prior to applying for the miscellaneous finfish permit.

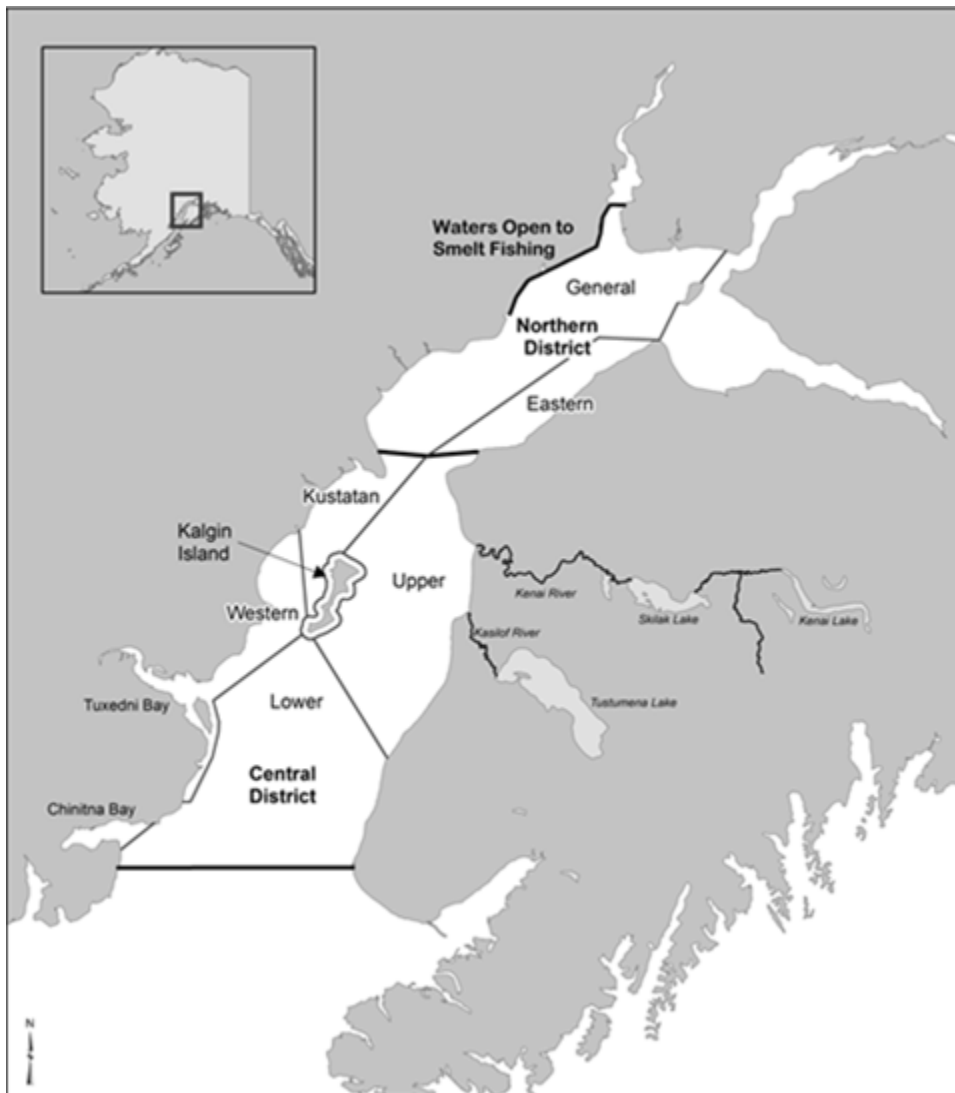


Figure 1.–Upper Cook Inlet commercial fisheries Subdistrict fishing boundaries.