

Alaska Subsistence and Personal Use Salmon Fisheries 2018 Annual Report

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Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

fork length	FL
mid-eye-to-fork	MEF
mid-eye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

<i>all standard mathematical signs, symbols and abbreviations</i>	
alternate hypothesis	H _A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2 , etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	log _z , etc.
minute (angular)	'
not significant	NS
null hypothesis	H ₀
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance:	
population	Var
sample	var

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The Division of Subsistence Technical Paper Series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions.

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ABSTRACT

Each year thousands of Alaskans participate in subsistence activities including the harvest of wild resources from Alaska's fisheries. Subsistence fishing is an important element of Alaska's social and cultural heritage, as well as a crucial component of the subsistence sector of the state's economy. In addition, personal use fisheries provide opportunities for Alaska residents to harvest salmon for home use using efficient methods in areas closed to subsistence fishing. This report summarizes Alaska's 2018 subsistence and personal use salmon fisheries based upon subsistence and personal use permit data and harvest assessment surveys from across the state. New information is compared to findings from previous years and the results are discussed. Where available, information about other subsistence finfish fisheries is included. Additional information from federal agencies regulating and administering certain subsistence fisheries, beginning in 1997, is included where available.

Key words: Pacific salmon, *Oncorhynchus* spp., sheefish, whitefish, rainbow/steelhead trout, Arctic char/Dolly Varden, northern pike, Chinook salmon, coho salmon, sockeye salmon, pink salmon, chum salmon, Norton Sound, Port Clarence, Kotzebue, Yukon, Kuskokwim, Bristol Bay, Chignik, Alaska Peninsula, Aleutian Islands, Kodiak, Cook Inlet, Prince William Sound, Southeast Alaska, Yakutat, subsistence salmon fisheries, personal use salmon fisheries

CHAPTER 1: INTRODUCTION

This is the 20th report in a series of annual reports that began with the 1999 harvest year on Alaska's subsistence and personal use fisheries. It was prepared by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence.

Alaska state law defines subsistence fishing as the taking of fish, shellfish, or other fisheries resources by Alaska residents for subsistence uses (AS 16.05.940 (31)). Subsistence uses of wild resources are defined as "noncommercial, customary and traditional uses" for a variety of purposes. These include:

... direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation, for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption, and for the customary trade, barter, or sharing for personal or family consumption
... (AS 16.05.940 (33))

Under Alaska's subsistence statute, the Alaska Board of Fisheries (BOF) must identify fish stocks that support subsistence fisheries. The BOF applies the Joint Board of Fisheries and Game Subsistence Procedures (5 AAC 99.010) to make these determinations, which are called "customary and traditional (C&T) findings." If there is a harvestable surplus of these stocks with C&T uses, the BOF must adopt regulations that provide reasonable opportunities for subsistence uses. When it is necessary to restrict harvests, the statute directs the BOF to assign a preference to subsistence uses (AS 16.05.258).

The Joint Board of Fisheries and Game (Joint Board) is required to identify "nonsubsistence areas," where "dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the area or community" (AS 16.05.258 (c)). The Joint Board has identified five nonsubsistence areas: the Ketchikan Nonsubsistence Area, the Juneau Nonsubsistence Area, the Anchorage–Matsu–Kenai Nonsubsistence Area, the Fairbanks Nonsubsistence Area, and the Valdez Nonsubsistence Area (5 AAC 99.015). The BOF may not authorize subsistence fisheries in nonsubsistence areas.

Alaska state law recognizes three additional categories of fishing: commercial, sport, and personal use. Commercial fishing is the taking of fish "with the intent of disposing of them for profit, or by sale, barter, trade, or in commercial channels" (AS 16.05.940 (5)).

Sport fishing is defined as the taking "for personal use, and not for sale or barter, any fresh water, marine, or anadromous fish by hook and line held in the hand, or by hook and line with the line attached to a pole or rod which is held in the hand or closely attended, or by other means defined by the Board of Fisheries" (AS 16.05.940 (30)).

Personal use fishing is defined as the taking of fish "by Alaska residents for personal use and not for sale or barter, with gill or dip net, seine, fish wheel, long line, or other means defined by the Board of Fisheries" (AS 16.05.940 (25)). Personal use fisheries differ from subsistence fisheries in that they do not meet the criteria for customary and traditional fisheries as established by the Joint Board (5 AAC 99.010), or because they occur within nonsubsistence areas; in addition, a sport fishing license is required. This type of fishery provides Alaska residents with opportunities to harvest fish for noncommercial purposes, utilizing gear other than rod and reel, within nonsubsistence areas.

Every year, the ADF&G Division of Commercial Fisheries prepares Fishery Management Reports (FMRs, formerly "annual management reports," AMRs) for most fishery management areas in the state. Figure 1-1 shows the location of these management areas. Although the FMRs focus primarily on commercial fisheries, most also routinely summarize basic data for programs that collect harvest information for subsistence fisheries and for those personal use fisheries that the Division of Commercial Fisheries administers. Detailed annual reports about subsistence fisheries harvest assessment programs are prepared in the Northwest Alaska, Yukon River, and Kuskokwim River areas. Additionally, the Division of Sport Fish prepares summaries for the personal use salmon fisheries it administers in the Cook Inlet and Prince William Sound (Upper Copper River) areas. However, until the Division of Subsistence annual subsistence

fisheries report series began in 1999, there was no single source that compiled subsistence and personal use fisheries harvest data from all management areas. That is the purpose of this 2018 annual report.

The Federal Subsistence Board (FSB) adopts subsistence fishing regulations for federal waters in Alaska, in compliance with the Alaska National Interest Lands Conservation Act (ANILCA). Only eligible Alaska rural residents may participate in federal subsistence fisheries. For most subsistence fisheries, a single program administered by ADF&G provides harvest estimates for all participants regardless of the location of effort. However, for some fisheries (such as the Pacific salmon *Oncorhynchus* fisheries of the Upper Copper River District), FSB regulations require a federal subsistence fishing permit. The following chapters on each management area note where separate state and federal harvest monitoring programs operate. Unless otherwise noted, subsistence harvest estimates in this report include data from both state and federal permit programs.

It is important to recognize the limitations associated with the effort to present a comprehensive annual report on Alaska's subsistence and personal use fisheries. These limitations include:

- Annual harvest assessment programs do not take place for all subsistence fisheries. Programs are in place for most salmon fisheries, but few other finfish fisheries or shellfish fisheries have annual harvest monitoring programs.

- Annual harvest data summarized in this report are limited to fisheries classified as subsistence or personal use by regulation, which, especially for salmon, generally means fish taken with gillnets, beach seines, dip nets, or fish wheels. In some parts of Alaska, substantial numbers of fish for home uses are taken with rod and reel (considered sport gear by most state area regulations) or are retained from commercial harvests. With noted exceptions, these harvests are not included in the analysis of subsistence harvest data in this report because they are not collected by annual subsistence fisheries harvest programs. Therefore, the harvest data in this report are a conservative estimate of the number of salmon being taken for subsistence uses in Alaska. Underestimations of subsistence salmon harvests are a particular issue in the Southeast region.

- Between management areas, and sometimes between districts within management areas, there is inconsistency in how subsistence and personal use harvest data are collected, analyzed, and reported.

- In some areas there are no routine mechanisms for evaluating the quality of subsistence harvest data. For example, in some areas it is not known if all subsistence fishers are obtaining permits and providing accurate harvest reports. This can result in a significant underestimation of harvests.

- There are also few programs for contextualizing annual subsistence harvest data so as to interpret changes in harvests. In some cases, however, FMRs do contain discussions of data limitations and harvest trends.

Despite these limitations, it is nonetheless possible to present an informative, conservative statewide overview of subsistence and personal use harvests of salmon. Information for all areas of the state where subsistence and personal use salmon fisheries occur is covered in this report. Before 2010, we only included data for personal use salmon fisheries in the Yukon Management Area, the Prince William Sound Management Area (specifically, the Chitina Subdistrict of the Upper Copper River District), and the Southeast region because these fisheries were classified as subsistence fisheries in the past, and are administered in programs that collect subsistence harvest data. We did not include data from the Cook Inlet Management Area personal use salmon fisheries in past (pre-2010) statewide overviews, primarily because most of these fisheries have relatively short histories. However, beginning in the report for 2010, we added harvest data from the Cook Inlet personal use salmon fisheries so as to provide a complete statewide summary for all subsistence and personal use salmon harvests.

The quality and quantity of subsistence harvest data for finfish other than salmon and for shellfish are very uneven. For other finfish, if annual subsistence harvest information is collected, it is included in this report if the summary data were available to the Division of Subsistence. Otherwise, we have usually noted which species are primarily used for subsistence, relying in general on baseline studies conducted by the Division

of Subsistence. In a small number of instances we have drawn from reports prepared for the BOF. This annual report does not attempt to provide a comprehensive overview of subsistence shellfish harvests.

In 1988, the Division of Subsistence prepared the first version of the Historical Subsistence Salmon Harvest Database (HSSHDB). As part of the cooperative agreement that supported the development of this annual report series, this database was updated, upgraded, and renamed the Alaska Subsistence Fisheries Database (ASFDB).¹ The database is written for Microsoft Access software.² It is organized by 21 subsistence fisheries and is generally reflective of unique harvest assessment programs and regulatory structures. It contains harvest data organized by species, year, community of residence of permit holder, and gear type. The number of permits issued and returned each year is included as well. The most complete data sets are sought; data sets which, in some cases, are more up-to-date than those reported in FMRs.

In 2008, the division received funding from the Alaska State Legislature to develop and annually update a web-based version of the ASFDB. This version of the database was developed using Microsoft SQL Server to store the data and Adobe ColdFusion 8 to create the user interface. Changes in platforms for storing and updating the data have delayed release for public access, but the dataset is current through 2018. The final product will contain all historical information from the HSSHDB along with contemporary data from the ASFDB stored in Microsoft Access, and will be updated periodically with new subsistence and personal salmon fisheries data.

The historical ASFDB is not currently available online. Upon request, the Division of Subsistence distributes the database on CD-ROM, along with the Community Subsistence Information System³, formerly the Community Profile Database (Scott et al. 2001). The CSIS includes the results of Division of Subsistence systematic household harvest surveys and is the primary source for subsistence harvest data for shellfish and for finfishes other than salmon.

In most fisheries data analysis, the Division of Subsistence expands harvest estimates from reported harvests in order to account for unreturned permits. In a few cases, this results in a larger estimate than is found in those FMRs that routinely only summarize data from returned permits. Also, the ASFDB calculates harvest estimates first for all permit holders by community represented in the fishery, and then sums these community estimates for a fishery total. This method is in contrast to the expansion method used by other divisions to analyze data from a few fisheries, such as the subsistence fishery in the Glennallen Subdistrict of the Prince William Sound Area. The harvest data analysis for this fishery presented in the FMR only considers the total number of issued and returned permits in expansion, resulting in slightly different estimates of total harvests than those in this report.

Significant modifications to data analysis procedures were implemented for two fisheries beginning with the 2015 report. First, as discussed in Chapter 3, there has been no annual subsistence salmon harvest monitoring program for the Kotzebue District since 2004. Few harvest estimates were developed from 2005 through 2011. Through special project funding, the Division of Subsistence conducted post-season salmon harvest surveys in selected Kotzebue District communities in 2012–2014. For the 2015 and subsequent reports, based on the available data, interpolated harvest estimates are developed for a set of core communities to estimate district harvests for years without post-season harvest assessment programs (primarily 2005–2011, and 2015–2018). These estimates appear in revised historical tables in Chapter 3 and in revised statewide historical summaries in Chapter 2. Second, as noted in Chapter 11, in the past, reported harvests in the Tyonek Subdistrict of the Cook Inlet Area have not been expanded to produce a harvest estimate. Beginning with the 2015 report, past permit return rates for this fishery were evaluated, and new, expanded harvest estimates were produced. These estimates now appear in the historical table for the Tyonek fishery, and

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1. David A. Caylor and Louis A. Brown. 2006. ASFDB. Alaska Department of Fish and Game Division of Subsistence, Juneau.
 2. Product names are given for scientific completeness; they do not constitute product endorsement.
 3. ADF&G Division of Subsistence, Community Subsistence Information System (CSIS): <http://www.subsistence.adfg.state.ak.us/CSIS/>.

were also used to revise statewide harvest estimates that appear in Chapter 2. Further details about the procedures used to develop these revised harvest estimates appear in Chapters 3 and 11, respectively.

It is important to note that the preparation of this annual report and the supporting database were two objectives of the Statewide Subsistence Fisheries Harvest Monitoring Strategy project funded by the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) and implemented jointly by the Division of Subsistence and the Alaska Inter-Tribal Council (AITC). A central goal of the project was to develop recommendations for a unified subsistence harvest assessment program for Alaska's subsistence fisheries. A working group composed of state, federal, and tribal members developed these recommendations. The recommendations are available as a separate document (ADF&G and AITC 2000). A final report with an overview of all the project activities is also available (Fall and Shanks 2000). The final report also includes comments on existing subsistence harvest assessment programs, based on working group discussions as well as interviews of ADF&G staff conducted by the Division of Subsistence. We have drawn on these comments for most of the evaluations of harvest data in this annual report. As background for the efforts of the working group, Division of Subsistence staff prepared detailed overviews of current subsistence fisheries harvest assessment programs. These are the basis of the program descriptions that appear in this report, with updates as necessary.

A final note regarding data ranges and averages: except where otherwise noted, averages in this report do not include the current data year (2018). Both date and numeric ranges are inclusive. The following list illustrates named-ranges used in this report and their meanings.

5-year average:	2013–2017
10-year average:	2008–2017
15-year average:	2003–2017
Historical average:	yyyy–2017, beginning of range varies depending on available data.

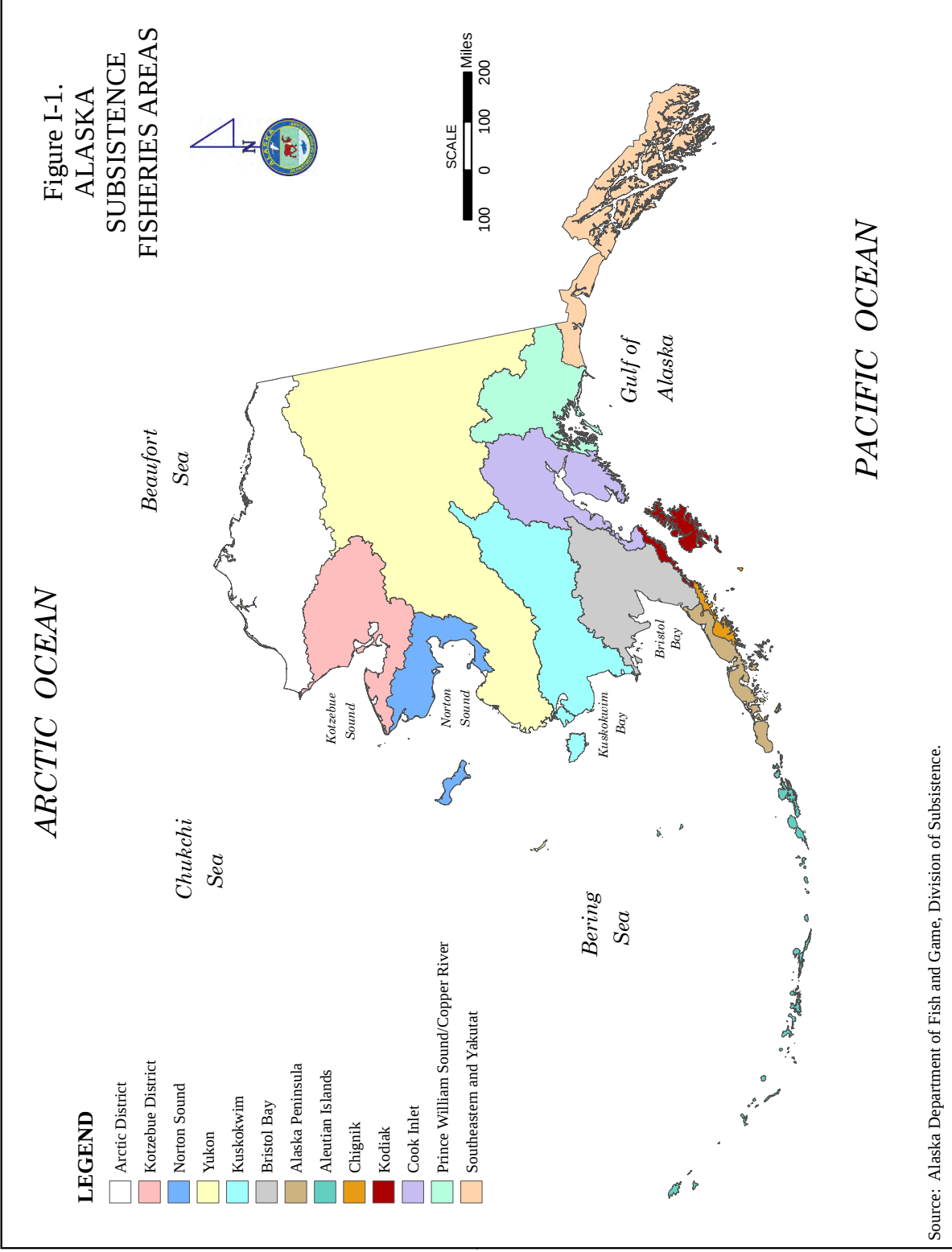


Figure 1-1.--Alaska subsistence fishery areas.

CHAPTER 2: OVERVIEW OF SUBSISTENCE FISHERIES IN ALASKA

SUBSISTENCE HARVESTS IN RURAL ALASKA

Of the estimated 34.0 million pounds of wild foods annually harvested for subsistence purposes in rural Alaska communities, subsistence fisheries contribute about 32.3% from salmon, 21.4% from other finfish and 3.1% from shellfish (Fall 2018:2, 3) (Figure 2-1). On average, the subsistence fisheries harvest provides about 155 lb of food per person annually in rural Alaska (Fall 2018:2). Although they constitute a major portion of the food supply, subsistence harvests represent just a small part of the annual harvest of wild resources in Alaska: about 0.9% (fish, game, and other resources combined), as measured in usable (edible) pounds. Commercial fisheries take 98.6% of the wild resource harvest, personal use fishing and general hunting by Alaskans take 0.2%, and sport fisheries and hunts take about 0.3% of the fish and game harvest.

SUBSISTENCE SALMON HARVESTS IN 2018

The estimated total subsistence harvest of salmon in Alaska in 2018, based on annual harvest assessment programs, was 737,469 fish (Table 2-1).¹ The estimated statewide harvest by species was as follows: 268,612 chum salmon *O. keta* (36.4%), 265,011 sockeye salmon *O. nerka* (35.9%), 69,044 coho salmon *O. kisutch* (9.4%), 84,983 Chinook salmon *O. tshawytscha* (11.5%), and 49,774 pink salmon *O. gorbuscha* (6.7%) (Figure 2-2).

In 2018, fisheries in nine management areas accounted for 95.1% of the total estimated statewide subsistence salmon harvest (Table 2-1; Figure 2-3). These were the Yukon Management Area (182,471 salmon; 24.7% of the statewide total); the Kuskokwim Management Area (137,076 salmon; 18.6%); the Bristol Bay Management Area (104,502 salmon; 14.2%); the Norton Sound-Port Clarence Area (77,447 salmon; 10.5%); the Kotzebue District² (67,385; 9.1%); the Glennallen Subdistrict of the Prince William Sound Management Area (65,792 salmon; 8.9%); Southeast Region³ (including the Stikine River federal fishery and other federal permits) (38,545 salmon; 5.2%); the Kodiak Management Area (including federal permits) (17,459 salmon; 2.4%); and the Alaska Peninsula Area (10,277 salmon; 1.4%).

The largest estimated subsistence harvests of Chinook salmon in 2018 occurred in the Yukon Management Area (31,812 salmon; 37.4%), followed by the Kuskokwim Management Area (26,478 salmon; 31.2%), Bristol Bay Management Area (13,758 salmon; 16.2%), the Glennallen Subdistrict (7,559 salmon; 8.9%); the Tyonek Subdistrict (Cook Inlet) (1,042 salmon; 1.2%; and the Norton Sound-Port Clarence Area (1,217 salmon; 1.4%) (Figure 2-4). For sockeye salmon, the largest estimated subsistence harvests in 2018 were in the Bristol Bay Area (78,666 salmon; 29.7%), followed by the Glennallen Subdistrict (58,079 salmon; 21.9%), the Kuskokwim Management Area (39,057 salmon; 14.7%), the Southeast Region (including the Stikine River federal fishery and other federal permits) (34,272 salmon; 12.9%), the Kodiak Management Area (including federal permits) (13,549 salmon; 5.1%), the Norton Sound-Port Clarence Area (13,231

-
1. Annual reports prior to 2010 included personal use salmon harvests from Southeast Alaska and the Chitina Subdistrict of the Upper Copper River in the discussion of subsistence harvests. Beginning with the 2010 report, personal use salmon fisheries are discussed separately. One exception is the small personal use harvest that occurs in those portions of the Yukon Management Area that are within the Fairbanks Nonsubsistence Area. Also, as noted in Chapter 1, Cook Inlet Area personal use salmon harvest data have been added to the annual report.
 2. See Chapter 3 for discussion of revised methods to estimate subsistence salmon harvests in the Arctic-Kotzebue Area.
 3. As discussed further in Chapter 13, state subsistence regulations for the Southeast Region focus on sockeye salmon. Small harvests of Chinook and coho salmon are reported on permit returns as incidental to sockeye salmon harvests. The major portion of coho and Chinook salmon harvests for home uses in Southeast is taken with rod and reel (classified by regulation as sport gear). Thus the Southeast Region is particularly underrepresented in statewide overviews based on permit data.

salmon; 5.0%), the Copper River Flats Area (5,627 salmon; 2.1%); the Alaska Peninsula Area (5,503salmon; 2.1%); and the Chignik Area (4,538salmon; 1.7%) (Figure 2-5).

In 2018, as in past recent years, four areas dominated the subsistence chum salmon estimated harvest: the Yukon Management Area (141,420salmon; 52.6% of the statewide harvest), Kotzebue District (56,209 salmon; 20.9%), the Kuskokwim Management Area (47,843 salmon; 17.8%), and the Norton Sound-Port Clarence Area (12,196salmon; 4.5%) (Figure 2-6). Of the statewide estimated subsistence harvest of coho salmon in 2018, the greatest shares were taken in the Kuskokwim Management Area (21,922 salmon; 31.8%), followed by the Norton Sound-Port Clarence Area (16,632; 24.1%), Bristol Bay and Kotzebue management areas (6,913 and 6,912 salmon, respectively; 10.0%), and the Yukon Area (5,527 salmon; 1.0 (Figure 2-7). Finally, the largest portion by far of the statewide estimated pink salmon subsistence harvest in 2018 occurred in the Norton Sound-Port Clarence Area (34,171 salmon; 68.7%), followed by the Yukon Area (3,712 salmon; 7.5%) and the Kotzebue District (3,079 salmon; 6.2%). The Southeast Region (including the Stikine River federal fishery and other federal permits) which in 2017 had the second highest regional harvest with an estimated 4,571 salmon or 8.4%, was one of the lowest in 2018 (1,047 salmon; 2.1 of the statewide pink salmon harvest), (Figure 2-8).

Table 2-2 reports historical estimated subsistence salmon harvests for 1994 through 2018 based on annual harvest assessment programs. While earlier estimates for many of the fisheries are available, 1994 marks the first year that data from all of the included fisheries were available and collected with methods comparable to those currently in use.

The 25-year period reflected in Table 2-2 shows a general downward trend in subsistence salmon harvests in Alaska. Estimates from 2000 through 2008 suggested this trend might have been stabilizing. However, all estimates since 2009 have been below the 2008 total of 978,547 salmon. The 2018 estimate of 737,467 salmon was the lowest in the entire dataset. The 2018 estimate was significantly lower than the harvest estimate for 2017, and lower than the recent 5-year average (886,666 salmon), the recent 10-year average (897,717 salmon), and the historical average since 1994 (992,963 salmon). It should also be noted that the estimate of 84,983Chinook salmon harvested in Alaska subsistence fisheries in 2018 was the highest estimate since 2011 and higher than the recent five-year harvest of 68,472 Chinook salmon. However, the 2018 Chinook subsistence harvest was lower than any year between 1994 and 2011 and was just 60% of the annual average since 1994 of 141,818 Chinook salmon.

PERSONAL USE SALMON HARVESTS IN 2018

In 2018, personal use fisheries produced an estimated harvest of 409,662 salmon (Table 2-1). The Kenai River dip net fishery accounted for 43.1% of the statewide personal use salmon harvest (176,440fish), followed by the Kasilof River dip net fishery (23.5%; 96,311 salmon), the Chitina Subdistrict dip net fishery (20.2%; 82,955 salmon), the Fish Creek (Knik Arm) dip net fishery (5.3%; 21,531 salmon), the Kasilof River setnet fishery (3.6%; 14,539 salmon), and the Southeast Region (Juneau and Ketchikan nonsubsistence areas only) (3.2%; 13,129 salmon) (Figure 2-9). Sockeye salmon composed 93.6% of the Alaska personal use salmon harvest in 2018 (Figure 2-10).

The personal use harvest of 409,662 salmon in 2018, was lower than the 2017 total of 580,315 and was the lowest total since 2007; it was also below the recent 5-, 10-year, and historical averages. Further, personal use harvest estimates have not been so low since the year including and prior to 2002 (Table 2-3). Decreased 2018 harvests in the Upper Cook Inlet personal use dip net fisheries accounted for most of the decline between 2017 and 2018 harvests (see Chapter 11).

STATEWIDE SUBSISTENCE AND PERSONAL USE SALMON HARVESTS, 1994–2018

Table 2-4 reports historical estimated subsistence and personal use salmon harvests for 1994 through 2018 based on annual harvest assessment programs. As noted above, 1994 marks the first year that comparable data from all of the included fisheries are available.

The 25-year period reflected in Table 2-4 shows generally stable statewide harvest totals: the recent (2013–2017) 5-year average harvest was 1,412,035salmon compared to a 24-year annual average of

1,475,079salmon. However, the total harvest estimate for 2018 of 1,147,129salmon is the second-lowest within the 25-year period. As noted above, however, harvests in subsistence fisheries have generally declined since 1994 and personal use harvests have also been decreasing since 2016. In 2018, sockeye salmon made up 56.5% of the combined subsistence and personal use salmon harvests, followed by chum (23.5%), Chinook (7.5%), coho (6.7%), and pink (5.7%) (Figure 2-11).

Table 2-5 reports subsistence and personal use harvests in 2018 by species and participants' place of residence, with harvests from all subsistence and personal use fisheries combined.

Table 2-1.--Alaska subsistence and personal use salmon harvests, 2018.

Fishery	Households or permits		Estimated salmon harvest						
	Total ^a	or returned	Chinook	Sockeye	Coho	Chum	Pink	Total	
									Surveyed
Subsistence									
Adak District	2	1	0	460	0	0	0	460	
Alaska Peninsula Management Area	155	111	271	5,503	1,996	1,474	1,033	10,277	
Arctic District ^b	1,900	432	126	519	846	4,247	2,594	8,332	
Batzulnetas Fishery	0	0	0	0	0	0	0	0	
Bristol Bay Management Area	1,105	925	13,758	78,666	6,913	4,030	1,135	104,502	
Chignik Management Area	84	69	68	4,538	966	157	399	6,128	
Chignik Management Area: Federal	3	3	0	0	0	0	0	0	
Chitina Subdistrict: Federal	131	117	100	3,254	34	0	0	3,388	
Copper River Flats	684	637	1,462	5,627	213	5	6	7,313	
Glennallen Subdistrict	1,995	1,654	7,559	58,079	154	0	0	65,792	
Kenai and Kasilof Rivers: Federal	368	354	0	4,348	35	0	6	4,389	
Kodiak Management Area ^a	1,311	1,311	97	13,549	3,174	190	449	17,459	
Kodiak Management Area: Federal	36	24	0	119	0	0	0	164	
Kotzebue District ^b	1,566	829	633	552	6,912	56,209	3,079	67,385	
Kuskokwim Management Area	4,302	1,741	26,478	39,057	21,922	47,843	1,776	137,076	
Norton Sound - Port Clarence Area ^b	1,992	1,907	1,217	13,231	16,632	12,196	34,171	77,447	
Port Graham & Koyuktoilik Subdistricts ^a	15	2	3	76	7	2	30	118	
Prince William Sound (General)	26	24	1	111	22	19	9	162	
PWS Eastern District (Tatitlek)	16	7	0	143	0	4	0	147	
PWS Southwestern District (Chenega Bay)	22	1	0	13	2	40	0	55	
PWS/Chugach Subdistrict: Federal	97	92	3	96	255	0	0	354	
Seldovia Fishery	9	6	15	15	0	1	71	101	
Southeast Region	2,985	1,338	192	32,540	2,196	613	921	36,462	
Southeast Region: Federal	262	89	9	408	372		94	883	
Stikine River Federal Fishery	117	117	94	1,732	57	74	126	2,083	
Tyonek Fishery	65	42	1,042	146	155	6	13	1,362	

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Table 2-1.-Page 2 of 2.

Fishery	Households or permits		Estimated salmon harvest					
	Total ^a	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Unalaska District	181	154	27	1,811	484	74	141	2,536
Upper Yentna Fishery	28	28	16	419	170	8	10	623
Yukon Management Area ^c	3,320	1,912	31,812	0	5,527	141,420	3,712	182,471
Subtotal, Subsistence	22,777	13,927	84,983	265,011	69,044	268,612	49,774	737,469
Personal use								
Chitina Subdistrict: State ^d	4,966	4,033	1,318	80,121	1,515	0	0	82,955
Kachemak Bay set net	192	187	6	259	1,947	11	161	2,384
Kasilof River set net ^e	NA	NA	120	14,390	2	5	22	14,539
Kasilof River dip net ^e	NA	NA	6	92,034	673	326	3,272	96,311
Kenai River dip net ^e	NA	NA	7	165,028	529	441	10,435	176,440
Fish Creek dip net ^e	NA	NA	5	18,659	1,779	208	880	21,531
Unknown Upper Cook Inlet ^e	NA	NA	0	2,085	21	4	209	2,319
Beluga River dip net	10	9	0	37	17	0	0	54
Southeast Region	595	595	68	10,984	1,046	506	525	13,129
Subtotal, Personal use ^e	30,485	23,360	1,530	383,597	7,529	1,501	15,504	409,662
Total	53,262	37,287	86,512	648,609	76,573	270,113	65,323	1,147,129

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Included in this table are all harvest estimates based upon annual harvest monitoring programs.

a. Because the numbers of permits issued for the Kodiak and Port Graham/Koyuktolik fisheries are unknown, the numbers of permits returned are used in place of these values.

b. Formerly included within Northwest Alaska. Partial coverage for Arctic and Kotzebue Districts; see Chapter 3 for details.

Table 2-2.—Historical Alaska subsistence salmon harvests, 1994–2018.

Year	Households or permits		Estimated salmon harvest					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	12,954	10,450	194,464	331,210	143,017	526,720	92,713	1,288,125
1995	12,721	10,321	188,236	287,741	120,020	621,089	53,006	1,270,090
1996	13,670	8,883	180,292	320,467	141,100	888,508	89,414	1,619,598
1997	14,178	9,935	177,721	362,864	103,235	424,909	39,569	1,108,298
1998	13,984	9,485	173,115	319,356	98,634	303,289	86,825	980,726
1999	14,679	10,168	159,820	359,574	97,961	360,255	34,532	1,012,143
2000	14,169	9,245	133,998	302,943	107,607	250,748	52,670	847,966
2001	16,083	10,838	166,859	342,803	99,365	250,133	42,505	901,664
2002	15,971	11,429	157,568	305,557	100,641	279,372	85,712	928,811
2003	16,046	11,337	164,255	321,670	105,861	246,514	68,247	906,548
2004	16,157	11,441	191,491	338,410	110,129	258,995	81,983	981,009
2005	15,184	9,991	170,334	331,035	104,463	306,646	77,007	989,485
2006	15,761	10,153	169,930	329,856	107,993	355,703	76,600	1,040,083
2007	16,045	10,124	184,349	337,461	87,572	335,400	34,615	979,398
2008	16,506	10,312	164,664	308,833	109,530	308,741	86,779	978,547
2009	16,279	10,475	144,011	299,102	88,406	259,925	39,296	830,737
2010	16,218	11,204	135,701	329,874	83,631	279,371	60,137	888,715
2011	16,660	11,571	129,800	344,906	80,354	303,235	36,838	895,133
2012	17,081	11,689	74,671	346,956	81,145	378,815	69,123	950,711
2013	17,328	11,685	83,786	348,461	82,582	373,654	31,462	919,945
2014	20,196	14,045	43,277	353,137	118,758	359,137	71,909	946,219
2015	21,841	14,077	49,250	351,899	96,443	299,515	49,144	846,252
2016	22,121	14,646	84,418	331,400	85,750	301,487	72,929	878,020
2017	21,551	13,718	81,629	307,055	88,004	306,380	48,701	842,894
2018	22,777	13,927	84,983	265,011	69,043	268,611	49,819	737,467
5-year average (2013–2017)	20,607	13,634	68,472	338,390	94,308	328,034	54,829	886,666
10-year average (2008–2017)	18,578	12,342	99,121	332,162	91,461	317,026	56,632	897,717
Historical average (1994–2017)	16,391	11,134	141,818	329,691	101,759	357,439	61,738	992,963

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Included in this table are all harvest estimates based upon annual harvest monitoring programs.

Table 2-3.—Historical Alaska personal use salmon harvests, 1994–2018.

Year	Households or permits		Estimated salmon harvest					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	7,346	6,223	4,293	127,845	7,058	1,841	2,341	143,379
1995	6,997	5,674	5,759	113,614	9,675	1,578	1,937	132,563
1996	25,614	23,445	4,410	251,107	11,899	1,651	4,977	274,045
1997	28,239	25,856	6,340	314,541	2,985	1,096	2,436	327,397
1998	29,658	26,281	7,500	330,297	6,706	2,426	3,600	350,529
1999	30,097	26,919	7,674	363,344	5,682	1,353	3,495	381,547
2000	27,848	24,163	4,653	271,926	9,743	1,562	3,919	291,803
2001	29,513	25,493	4,633	366,369	7,457	1,775	4,112	384,346
2002	27,083	22,314	3,448	359,604	7,366	1,524	10,035	381,978
2003	28,380	23,612	3,766	395,685	6,454	1,480	3,419	410,804
2004	33,344	27,456	3,783	471,980	8,605	1,781	3,573	489,721
2005	33,058	28,259	3,371	509,679	6,650	1,264	3,945	524,909
2006	30,049	25,650	4,271	354,888	7,819	1,225	13,789	381,991
2007	34,429	28,891	4,775	496,433	6,200	838	4,357	512,602
2008	34,515	29,572	3,648	410,632	8,739	935	13,126	437,080
2009	40,579	34,649	1,665	558,849	7,432	955	7,743	576,644
2010	42,781	34,510	1,830	661,577	12,293	1,272	7,495	684,467
2011	46,478	37,211	2,664	773,915	9,967	1,494	6,514	794,554
2012	47,035	37,459	831	774,989	9,033	1,022	5,898	791,774
2013	48,524	37,795	888	649,465	8,762	1,501	5,378	665,993
2014	48,281	37,866	935	684,462	13,197	2,334	27,296	728,224
2015	48,026	38,158	1,817	761,242	13,310	2,357	8,329	787,055
2016	43,355	33,939	1,618	513,273	8,607	2,250	11,300	537,049
2017	40,114	30,684	3,548	557,079	5,159	2,597	11,933	580,315
2018	30,485	23,360	1,530	383,598	7,529	1,501	15,504	409,662
5-year average (2013–2017)	45,660	35,688	1,761	633,104	9,807	2,208	12,847	659,727
10-year average (2008–2017)	43,969	35,184	1,944	634,548	9,650	1,672	10,501	658,315
Historical average (1996–2017)	36,227	30,008	3,549	492,333	8,367	1,577	7,576	513,401

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Included in this table are all harvest estimates based upon annual harvest monitoring programs. Personal use harvests for Southeast fisheries are based on gear types used.

a. Includes harvests from China Poot dipnet fishery, Chitna Subdistrict, Juneau Management Area, Kachemak Bay setnet fishery, Ketchikan Management Area, Petersburg/Wrangell Management Area, Sitka Management Area

b. Total permits issued for Southeast area personal use fisheries is unavailable.

c. Includes harvests from Cook Inlet personal use fisheries, Chitna Subdistrict, Juneau Management Area, Kachemak Bay setnet fishery, Ketchikan Management Area, Petersburg/Wrangell Management Area, Sitka Management Area.

d. Includes harvests from Beluga senior personal use fishery, Cook Inlet personal use fisheries, Chitna Subdistrict, Juneau Management Area, Kachemak Bay setnet fishery, Ketchikan Management Area, Petersburg/Wrangell Management Area, Sitka Management Area.

Table 2-4.—Historical Alaska subsistence and personal use salmon harvests, 1994–2018.

Year	Households or permits		Estimated salmon harvest					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	20,300	16,673	198,757	459,055	150,076	528,561	95,054	1,431,503
1995	19,718	15,995	193,995	401,355	129,694	622,667	54,943	1,402,654
1996	39,284	32,328	184,702	571,574	153,000	890,159	94,391	1,893,642
1997	42,417	35,791	184,061	677,405	106,220	426,005	42,005	1,435,695
1998	43,642	35,766	180,615	649,653	105,340	305,715	90,425	1,331,255
1999	44,776	37,087	167,494	722,918	103,643	361,608	38,027	1,393,690
2000	42,017	33,408	138,652	574,868	117,350	252,309	56,589	1,139,769
2001	45,596	36,331	171,492	709,172	106,822	251,908	46,617	1,286,010
2002	43,054	33,743	161,017	665,161	108,008	280,896	95,748	1,310,789
2003	44,426	34,949	168,021	717,355	112,316	247,994	71,666	1,317,352
2004	49,501	38,897	195,275	810,390	118,733	260,776	85,556	1,470,730
2005	48,242	38,250	173,705	840,715	111,113	307,910	80,951	1,514,394
2006	45,810	35,803	174,201	684,744	115,811	356,928	90,389	1,422,074
2007	50,474	39,015	189,124	833,894	93,772	336,239	38,971	1,492,000
2008	51,021	39,884	168,312	719,465	118,270	309,676	99,905	1,415,627
2009	56,858	45,124	145,676	857,951	95,838	260,880	47,039	1,407,381
2010	58,999	45,714	137,532	991,451	95,924	280,643	67,632	1,573,182
2011	63,138	48,782	132,464	1,118,821	90,321	304,729	43,352	1,689,687
2012	64,116	49,148	75,502	1,121,946	90,178	379,838	75,022	1,742,485
2013	65,852	49,480	84,674	997,925	91,345	375,154	36,840	1,585,939
2014	68,477	51,911	44,212	1,037,599	131,955	361,471	99,205	1,674,443
2015	69,867	52,235	51,067	1,113,141	109,753	301,872	57,473	1,633,307
2016	65,476	48,585	86,036	844,673	94,357	303,738	84,229	1,415,068
2017	61,665	44,402	85,177	864,134	93,163	308,976	60,634	1,423,209
2018	53,262	37,287	86,512	648,609	76,573	270,113	65,323	1,147,129
5-year average (2013–2017)	68,169	49,301	87,225	899,238	78,981	281,824	64,767	1,412,035
10-year average (2008–2017)	62,547	47,527	101,065	966,711	101,110	318,698	67,133	1,556,033
Historical average (1994–2017)	50,197	39,138	145,490	791,057	110,125	359,027	68,861	1,475,079

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Included in this table are all harvest estimates based upon annual harvest monitoring programs.

Table 2-5.—Alaska subsistence and personal use salmon harvests by species and place of residence, 2018.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak	2	1	0	460	0	0	0	460
Akhiok	9	9	30	711	60	0	23	824
Akiachak	191	98	2,520	2,848	1,343	3,897	38	10,646
Akiak	95	44	1,249	2,757	683	3,299	343	8,331
Alakanuk	144	69	424	9	188	6,152	8	6,780
Aleknagik	26	22	846	1,484	48	30	0	2,409
Allakaket	87	52	49	0	27	5,182	5	5,263
Ambler	78	56	7	99	190	3,242	202	3,740
Anaktuvuk Pass	4	3	0	46	0	0	1	46
Anchor Point	159	132	0	1,876	7	5	46	1,934
Anchorage	13,071	9,849	2,490	165,549	1,707	723	7,208	177,678
Anderson	3	1	0	28	0	0	0	28
Angoon	60	32	1	745	46	40	8	839
Aniak	184	81	803	3,509	2,107	1,822	739	8,979
Anvik	31	27	566	0	15	937	0	1,518
Arctic Village	2	2	0	23	0	0	0	23
Atmautluak	80	43	661	1,621	81	2,509	4	4,876
Atkasuk	2	1	0	17	0	0	2	18
Bear River	3	2	0	50	0	0	0	50
Beaver	30	25	328	0	0	150	0	478
Bethel	1,883	536	5,469	8,255	8,981	9,385	374	32,464
Big Lake	180	143	33	2,578	46	3	58	2,718
Bird Creek	3	2	2	16	0	0	0	18
Brevig Mission	48	48	27	1,501	490	3,139	2,595	7,752
Buckland	101	71	257	34	3,069	8,228	694	12,283
Cantwell	9	9	0	37	0	0	0	37
Central	13	12	575	25	0	1,278	0	1,878
Chalkyitsik	28	21	0	0	0	100	0	100
Chefornak	1	0	0	9	0	0	1	9
Chenega Bay	3	1	0	22	2	40	1	64
Chevak	1	0	0	9	0	0	1	9
Chickaloon	22	18	7	288	0	0	2	298
Chicken	1	0	0	9	0	0	1	9
Chignik	2	1	0	52	0	0	8	59
Chignik Bay	13	9	16	785	71	14	20	905
Chignik Lagoon	20	17	19	1,360	73	3	11	1,467
Chignik Lake	11	11	9	1,106	39	2	9	1,165
Chiniak	22	22	0	50	37	1	0	88
Chistochina	5	4	71	544	0	0	0	615
Chitina	32	30	383	1,582	11	0	0	1,975
Chuathbaluk	35	28	216	466	138	872	0	1,692
Chugiak	597	495	120	8,775	97	23	301	9,316
Clam Gulch	35	30	0	317	9	1	21	348
Clarks Point	13	9	140	306	159	130	13	748
Clear	7	4	0	42	0	0	1	43

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Table 2-5.—Page 2 of 7.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Clear Air Force Base	1	0	0	0	0	0	0	0
Coffman Cove	12	6	0	20	46	0	0	66
Cold Bay	14	12	6	337	6	48	0	397
Coldfoot	1	1	0	0	0	0	0	0
Cooper Landing	118	113	0	1,553	6	0	12	1,570
Copper Center	152	134	670	8,442	0	0	0	9,112
Copperville	3	3	52	210	0	0	0	262
Cordova	599	566	1,031	3,757	324	1	3	5,115
Craig	138	49	2	1,034	168	10	58	1,272
Crooked Creek	35	26	144	297	138	295	0	874
Deering	1	1	0	29	0	0	0	29
Delta Junction	318	268	273	6,873	63	3	35	7,248
Denali Park	36	34	1	539	8	0	6	553
Dillingham	323	265	6,385	13,603	2,726	2,049	524	25,287
Diomedes	3	3	0	0	0	0	44	44
Dot Lake	1	1	0	8	0	0	0	8
Douglas	64	42	1	702	39	5	2	749
Dutch Harbor	80	68	18	732	168	8	1	927
Eagle	36	35	1,007	14	0	16,807	0	17,828
Eagle River	1,736	1,466	279	21,154	185	82	896	22,596
Edna Bay	1	1	0	0	8	0	0	8
Eek	108	49	706	1,138	298	809	2	2,953
Egegik	8	5	5	51	134	0	0	190
Eielson Air Force Base	56	46	12	619	0	0	23	655
Ekwok	13	12	482	138	134	192	20	965
Elfin Cove	4	1	0	15	0	0	0	15
Elim	47	47	58	35	1,601	573	3,519	5,786
Emmonak	197	113	1,211	0	330	9,307	31	10,879
Ester	52	43	67	1,009	20	0	13	1,108
Eureka Roadhouse	1	1	5	43	0	0	0	48
Excursion Inlet	4	2	0	11	0	0	0	11
Fairbanks	2,413	1,918	2,436	35,701	648	3,320	326	42,431
False Pass	3	3	3	61	171	20	90	345
Fort Greely	18	14	5	215	1	0	1	222
Fort Richardson	1	1	1	4	0	0	0	5
Fort Wainwright	85	68	19	1,025	2	0	29	1,075
Fort Yukon	218	85	4,547	0	0	3,105	0	7,652
Fritz Creek Census Designated Place	26	22	0	260	71	11	25	367
Gakona	31	28	641	1,191	0	0	0	1,832
Galena	153	61	1,254	60	216	1,697	7	3,233
Gambell	4	2	0	17	0	0	1	18
Girdwood	215	184	34	2,525	58	13	83	2,713
Glennallen	91	85	436	4,162	0	0	1	4,600

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Table 2-5.—Page 3 of 7.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Golovin	37	37	30	72	586	349	1,902	2,939
Goodnews Bay	82	36	555	777	201	147	8	1,688
Grayling	57	29	911	0	0	1,566	16	2,493
Gulkana	3	2	0	84	0	0	0	84
Gustavus	22	15	0	338	43	4	14	399
Haines	453	322	19	7,549	292	340	470	8,669
Healy	37	32	2	417	0	0	31	451
Hollis	28	15	0	193	36	0	115	344
Holy Cross	59	35	562	0	23	477	0	1,062
Homer	530	452	180	6,960	226	115	375	7,855
Hoonah	88	37	1	532	64	2	0	599
Hooper Bay	237	115	456	27	117	8,490	635	9,725
Hope	44	39	0	571	0	0	1	571
Houston	8	8	0	125	0	0	0	125
Huslia	114	64	150	9	980	4,385	21	5,544
Hydaburg	35	18	0	1,013	29	0	40	1,082
Igiugig	5	2	2	819	0	0	0	820
Iliamna	23	19	0	5,781	0	9	0	5,790
Ivanof Bay	2	2	1	70	182	27	32	312
Joint Base Elmendorf Richardson	226	158	4	2,275	10	4	89	2,382
Juneau	891	516	68	9,824	346	26	203	10,465
Kake	103	56	9	522	70	117	3	721
Kaltag	52	26	570	0	34	91	0	695
Kasaan	13	8	0	173	80	0	0	253
Kasigluk	131	66	843	1,448	422	2,312	66	5,091
Kasilof	392	331	14	5,030	31	7	188	5,270
Kenai	1,174	931	67	12,786	139	19	689	13,701
Kennicott	3	3	0	0	0	0	0	0
Kenny Lake	66	56	268	1,858	8	0	0	2,134
Ketchikan	256	94	24	920	96	376	232	1,648
Kiana	101	69	4	43	159	2,753	188	3,147
King Cove	32	22	4	2,049	1,052	297	71	3,473
King Salmon	78	68	187	6,219	539	33	34	7,012
Kivalina	2	0	0	17	0	0	1	18
Klawock	119	60	0	2,191	304	0	59	2,554
Klukwan	12	10	0	253	35	10	1	299
Kobuk	34	28	2	0	6	2,174	4	2,186
Kodiak City	1,063	1,039	69	7,733	2,491	124	305	10,722
Kokhanok	20	16	19	5,275	0	0	5	5,299
Koliganek	17	15	1,202	809	431	348	17	2,807
Kongiganak	91	1	2	5	0	0	0	7
Kotlik	119	64	1,556	0	264	7,766	29	9,615
Kotzebue	614	162	16	595	47	11,385	70	12,113
Koyuk	83	45	69	279	596	1,470	1,396	3,810

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Table 2-5.—Page 4 of 7.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Koyukuk	45	18	864	0	24	451	0	1,339
Kupreanof city	2	0	0	0	0	0	0	0
Kwethluk	190	91	1,518	2,253	1,475	2,994	51	8,291
Lake Louise	3	3	2	45	0	0	0	47
Larsen Bay	18	17	1	1,267	20	1	22	1,311
Levelock	4	3	0	401	0	0	0	401
Lime Village	7	6	10	224	0	175	0	409
Lost River	11	5	0	125	0	0	0	125
Lower Kalskag	96	45	474	695	430	1,081	9	2,689
Manley Hot Springs	13	9	190	0	0	2,435	0	2,625
Manokotak	7	6	76	628	12	7	0	722
Marshall (Fortuna Ledge)	100	47	914	0	112	3,726	53	4,805
McCarthy	35	28	15	340	16	0	0	371
McGrath	139	53	239	524	411	706	5	1,885
Mentasta Lake	2	2	0	0	0	0	0	0
Metlakatla	5	1	0	22	0	0	0	22
Moose Pass	20	17	9	153	4	0	19	185
Mountain Village	169	80	1,030	0	270	6,222	94	7,616
Nabesna Road	3	3	6	145	0	0	0	151
Naknek	89	78	406	9,622	386	89	71	10,574
Nanwalek	5	1	3	65	0	0	0	68
Napakiak	106	48	842	1,336	597	1,959	0	4,734
Napaskiak	111	48	1,079	1,980	614	2,402	2	6,077
Naukati Bay	16	1	0	0	0	0	0	0
Nelchina	2	2	0	114	0	0	0	114
Nelson Lagoon	1	1	3	100	30	0	2	135
Nenana	64	55	324	371	3	2,894	6	3,599
New Stuyahok	40	25	2,270	1,325	1,013	454	168	5,230
Newhalen	14	13	0	2,938	0	0	0	2,938
Nikishka	4	4	0	62	15	3	1	81
Nikiski	110	80	1	790	8	1	58	858
Nikolaevsk	7	7	0	25	0	0	2	27
Nikolai	34	31	317	40	46	331	2	736
Ninilchik	327	305	1	3,240	33	1	41	3,316
Noatak	129	95	15	70	1,058	6,477	81	7,701
Nome	1,318	1,300	29	9,124	5,322	1,496	12,267	28,238
Nondalton	14	8	0	4,228	0	0	0	4,228
Noorvik	131	92	23	84	674	14,267	387	15,435
North Pole	631	513	358	10,031	51	2	145	10,587
Northway	2	2	9	77	0	0	0	86
Nuiqsut	109	59	0	52	0	261	99	411
Nulato	86	77	1,282	0	223	1,130	0	2,635
Nunam Iqua (Sheldon Point)	40	21	78	0	184	1,737	377	2,376
Nunapitchuk	131	73	1,389	1,532	412	4,058	17	7,408

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Table 2-5.—Page 5 of 7.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Old Harbor	15	14	10	138	110	11	13	281
Oscarville	16	16	123	234	58	553	4	972
Ouzinkie	22	22	1	3,707	342	45	134	4,229
Palmer	1,697	1,356	530	24,748	553	65	760	26,656
Pedro Bay	16	12	0	1,228	0	0	0	1,228
Pelican	7	4	7	183	0	0	0	190
Perryville	17	17	22	677	597	111	326	1,734
Peter's Creek	1	1	0	0	0	0	0	0
Petersburg	229	130	18	1,577	696	52	68	2,411
Pilot Point	3	1	12	1,050	225	6	18	1,311
Pilot Station	138	124	659	0	122	5,528	0	6,309
Pitkas Point	27	22	365	0	54	1,502	122	2,043
Platinum	20	17	67	210	254	203	26	760
Point Baker	1	1	0	0	1	11	57	69
Point Hope	177	105	313	22	1,694	2,141	1,428	5,597
Point Lay	63	40	32	358	142	258	1,151	1,940
Port Alexander	4	0	0	0	0	0	0	0
Port Alsworth	46	45	0	3,939	0	0	1	3,940
Port Graham	10	1	0	11	7	2	30	50
Port Heiden	7	5	113	15	52	2	0	182
Port Lions	25	25	0	277	89	0	0	366
Port Protection	1	1	0	5	0	2	0	7
Quinhagak	185	101	3,592	2,631	1,486	1,575	48	9,331
Red Devil	8	7	10	137	50	72	0	269
Ruby	52	23	1,137	0	26	1,835	0	2,998
Russian Mission	77	32	1,043	0	123	2,594	0	3,760
Saint Marys (Andreafsky)	145	79	1,180	0	37	5,061	35	6,313
Saint Paul	1	1	0	0	0	0	0	0
Salcha	45	35	32	846	41	0	5	923
Sand Point	47	30	97	1,727	500	990	498	3,812
Savoonga	5	4	0	64	4	0	41	108
Saxman	19	10	0	131	28	1	12	172
Scammon Bay	119	59	661	0	754	7,387	2,288	11,090
Selawik	175	123	0	78	6	559	5	650
Seldovia	20	15	15	131	0	1	73	220
Seward	124	108	48	1,266	55	2	52	1,423
Shageluk	35	30	198	0	8	689	0	895
Shaktoolik	70	58	162	56	2,107	319	1,121	3,765
Shishmaref	1	1	0	16	0	0	0	16
Shungnak	65	46	0	30	15	4,985	27	5,056
Silver Springs	2	2	18	216	0	0	0	234
Sitka	820	432	14	14,493	357	52	56	14,972
Skagway	45	26	0	652	5	9	34	700
Skwentna	14	14	6	176	83	2	4	271

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Table 2-5.—Page 6 of 7.

Community	Households or		Estimated salmon harvest					
	Total	Included ^a	Chinook	Sockeye	Coho	Chum	Pink	Total
Slana	19	18	4	507	0	0	0	511
Sleetmute	35	28	76	511	400	142	0	1,129
Soldotna	1,483	1,224	82	14,513	103	33	762	15,493
South Naknek	106	104	159	2,355	145	78	118	2,854
Sterling	356	303	27	4,025	35	6	134	4,228
Stevens Village	25	16	178	0	0	1,419	0	1,597
Stony River	17	13	53	92	23	0	0	168
Sutton	91	71	24	1,139	5	4	27	1,199
Takotna	25	23	2	0	0	0	0	2
Talkeetna	63	51	33	945	34	25	18	1,055
Tanana	98	56	5,253	0	1,343	23,343	0	29,939
Tatitlek	11	7	13	83	0	0	0	96
Tazlina	36	31	606	2,493	0	0	0	3,098
Telida	2	0	0	0	0	0	0	0
Teller	48	47	15	1,669	178	2,264	1,404	5,530
Tenakee Springs	8	2	0	35	0	0	0	35
Thorne Bay	116	37	0	104	184	0	31	319
Togiak	34	23	481	2,334	181	192	85	3,273
Tok	57	54	69	967	0	0	0	1,036
Tonsina	8	8	53	684	0	0	0	737
Trapper Creek	26	21	4	348	0	0	8	359
Tuluksak	106	52	705	1,231	529	2,623	2	5,090
Tuntutuliak	118	60	2,178	1,978	329	2,739	13	7,237
Two Rivers	13	11	5	202	0	0	4	211
Tyonek	49	33	839	70	151	6	7	1,074
Ugashik	6	5	48	175	46	1	0	270
Unalakleet	254	235	810	256	5,204	2,227	5,022	13,519
Unalaska	93	79	12	1,138	294	66	140	1,650
Upper Kalskag	70	35	638	532	419	883	35	2,507
Utqiagvik (Barrow)	1,642	289	81	1,154	499	3,641	1,271	6,646
Valdez	171	144	295	3,446	30	4	6	3,781
Venetie	73	29	443	0	0	2,558	0	3,001
Wainwright	145	75	27	86	209	89	97	507
Ward Cove	3	0	0	0	0	0	0	0
Wasilla	4,001	3,157	1,381	63,389	1,572	254	1,932	68,527
Whale Pass	5	0	0	0	0	0	0	0
White Mountain	37	37	17	56	493	356	4,523	5,445
Whittier	5	5	0	48	0	0	0	48
Willow	146	116	34	2,141	36	11	52	2,274
Wrangell	132	56	33	539	36	85	75	768
Yakutat	127	102	128	878	609	2	19	1,636
Other communities	129	70	453	0	0	163	0	616
Other USA	85	69	5	1,159	20	5	22	1,211
Unknown community	1,859	842	13	19,054	2,108	121	1,306	22,602
Total	53,262	37,287	86,512	648,609	76,573	270,113	65,323	1,147,129

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Table 2-5.—Page 7 of 7.

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

- a. "Included" is the sample size or the number of permits returned.
 - b. These communities were not contacted during the 2018 study period. Not enough data were available to estimate harvest.
 - c. "Other communities" includes residents of the Upper Tanana River drainage communities of Delta Junction, Dot Lake, Northway, Tanacross, and Tok. Also includes residents from Chugiak, Lake Minchumina, Nenana, Palmer, Wasilla, and Wiseman who were issued a subsistence and/or personal use permit for the Yukon Area.
- Data not available.

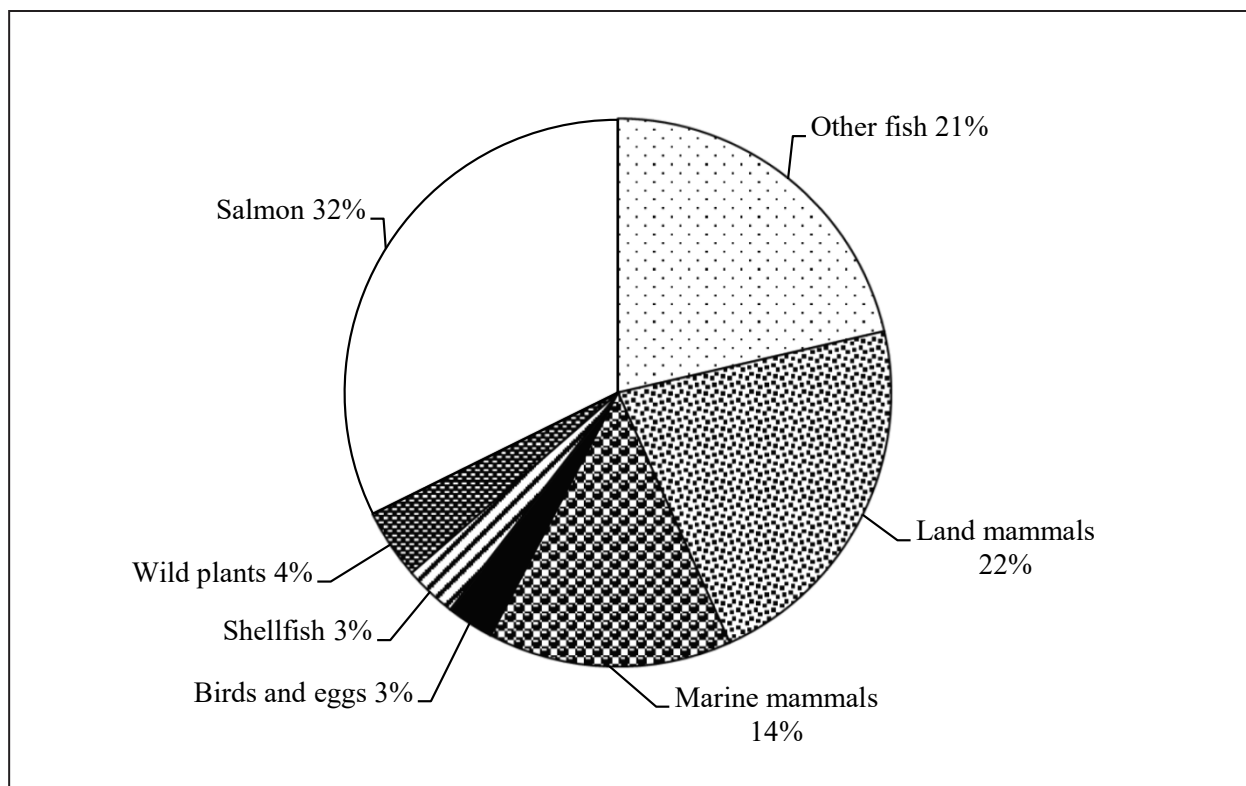


Figure 2-1.—Composition of subsistence harvest by rural Alaska residents, 2018.

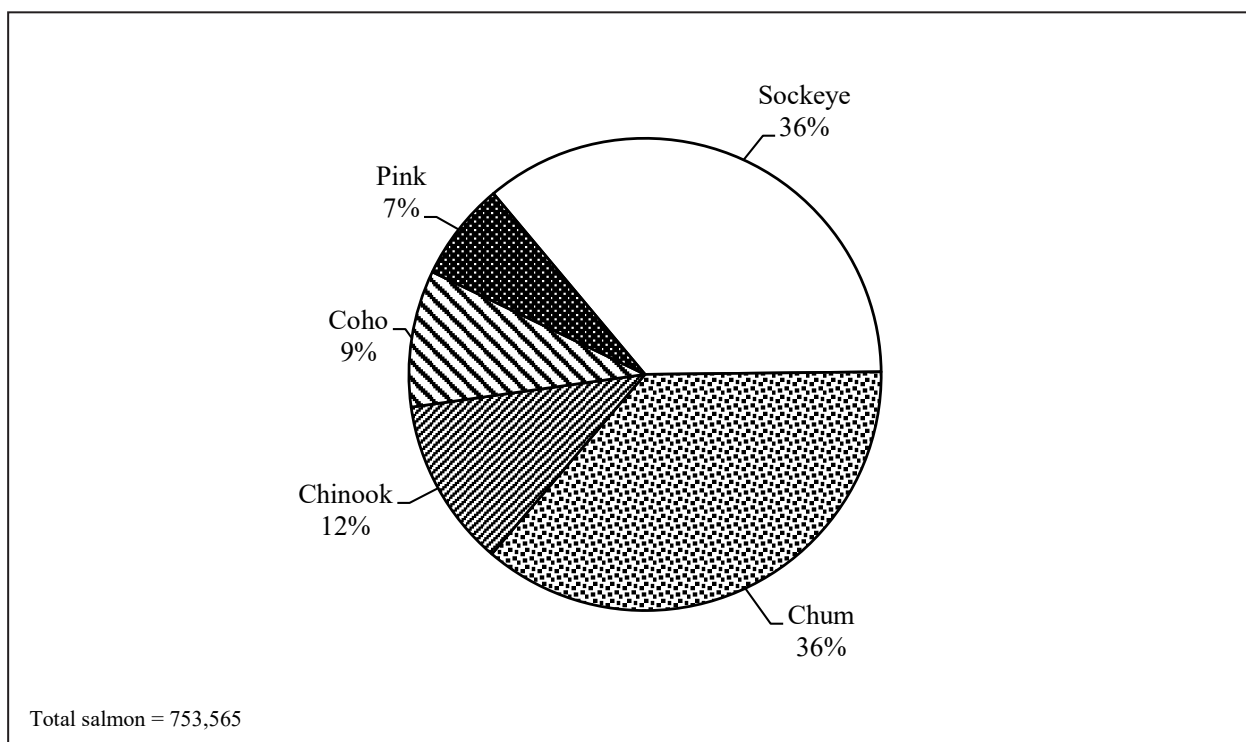


Figure 2-2.—Alaska subsistence salmon harvest by species, 2018.

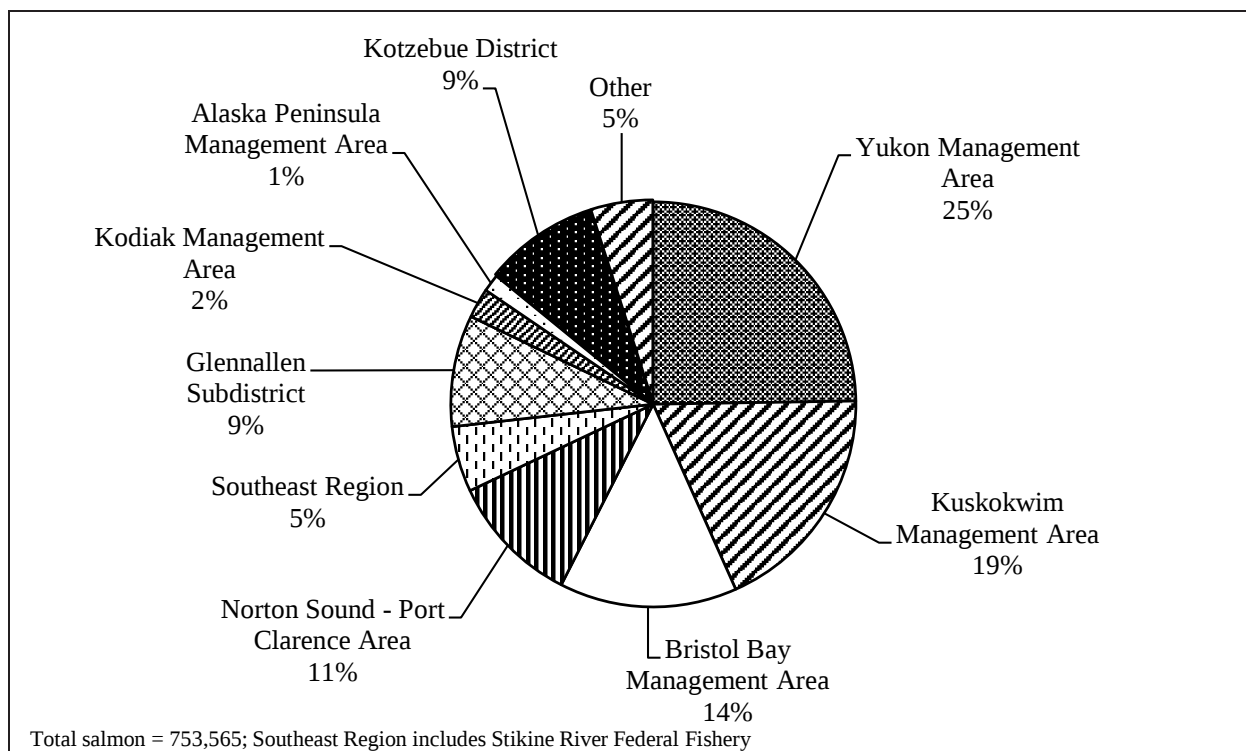


Figure 2-3.—Alaska subsistence salmon harvest by area, 2018.

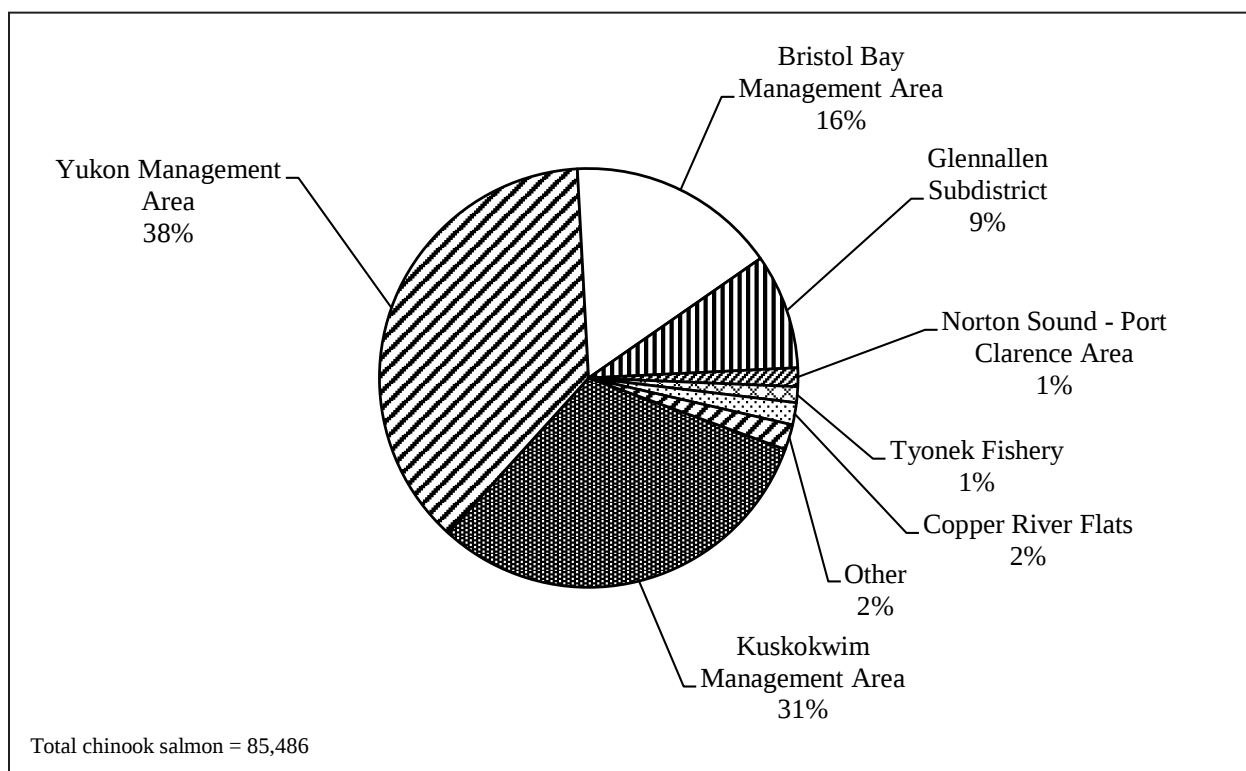


Figure 2-4.—Subsistence chinook salmon harvest by area, 2018.

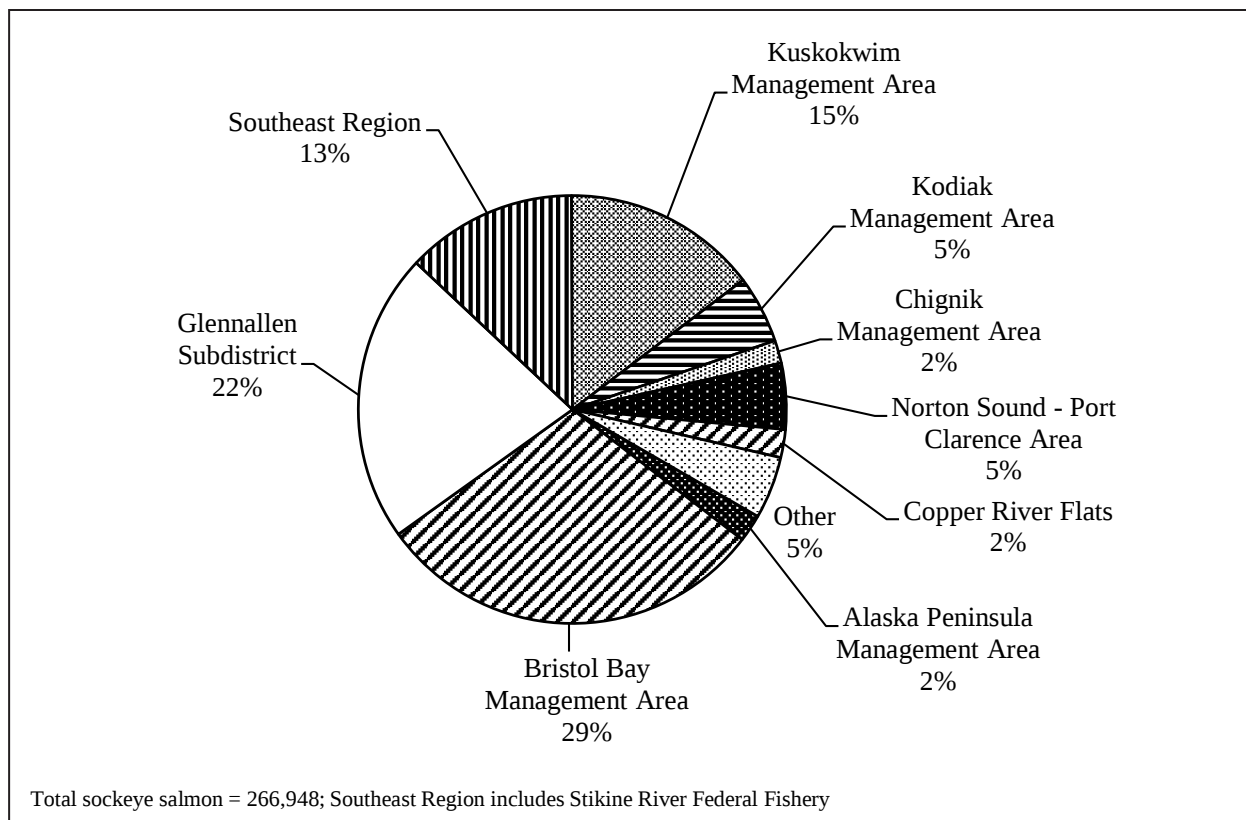


Figure 2-5.—Subsistence sockeye salmon harvest by area, 2018.

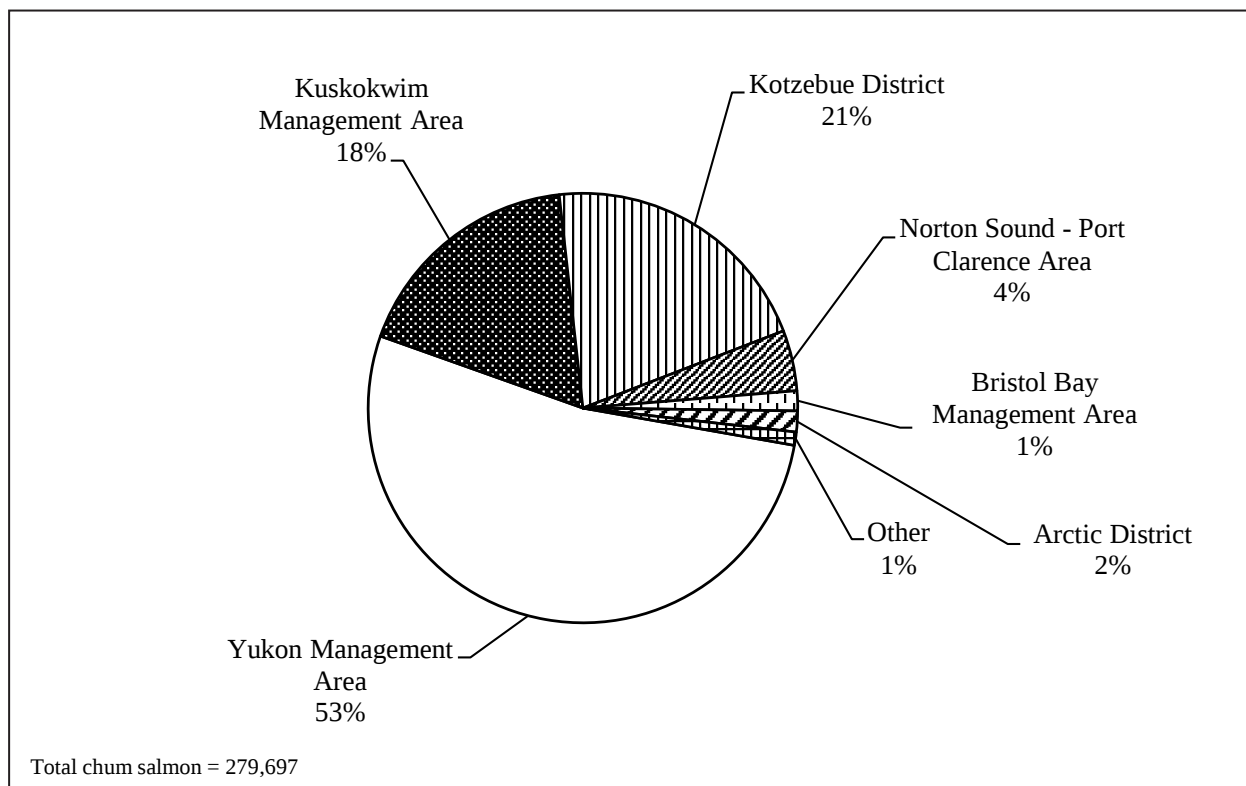


Figure 2-6.—Subsistence chum salmon harvest by area, 2018.

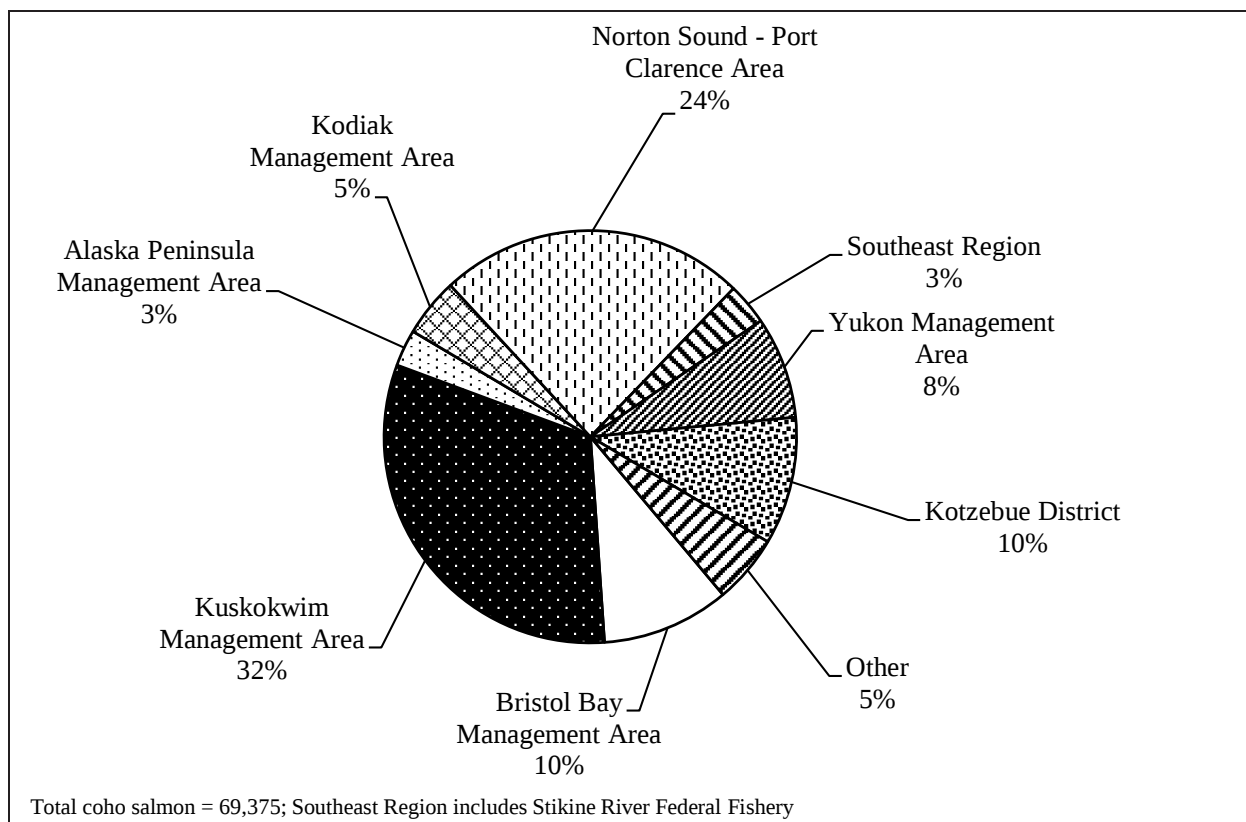


Figure 2-7.—Subsistence coho salmon harvest by area, 2018.

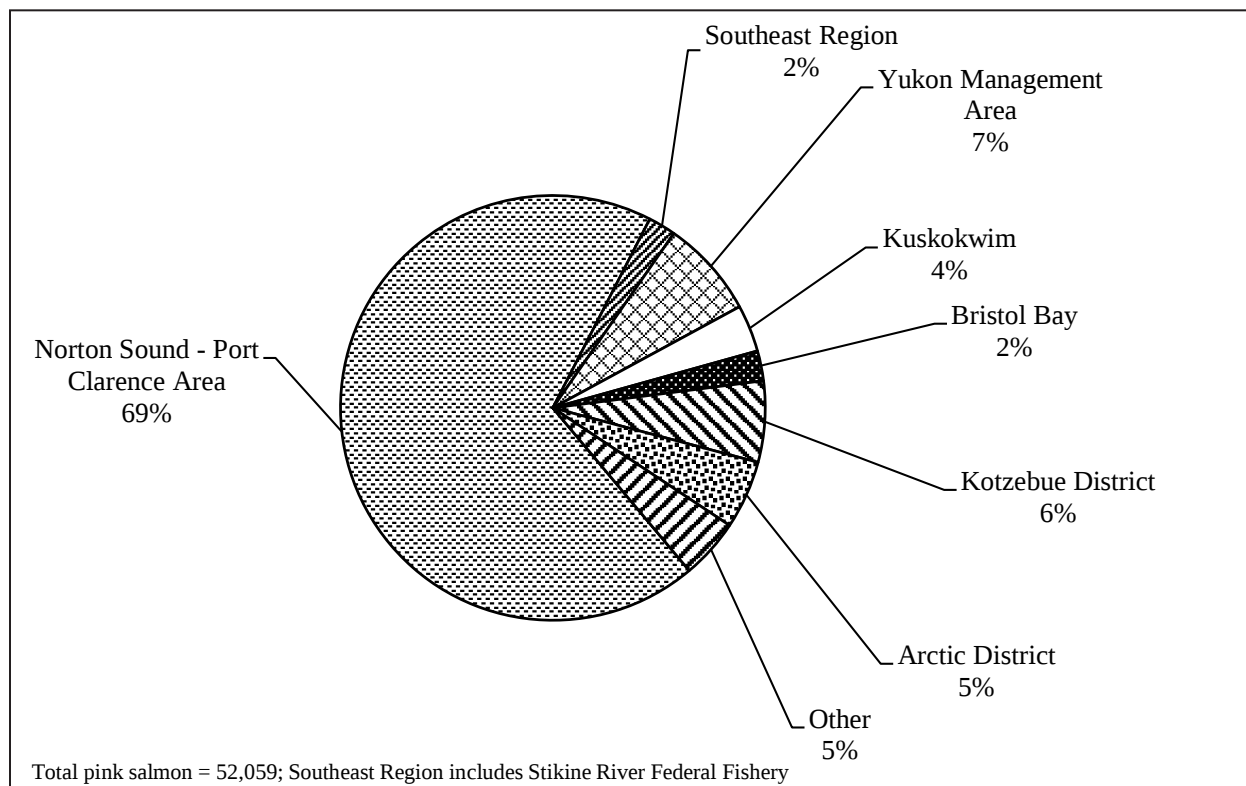


Figure 2-8.—Subsistence pink salmon harvest by area, 2018.

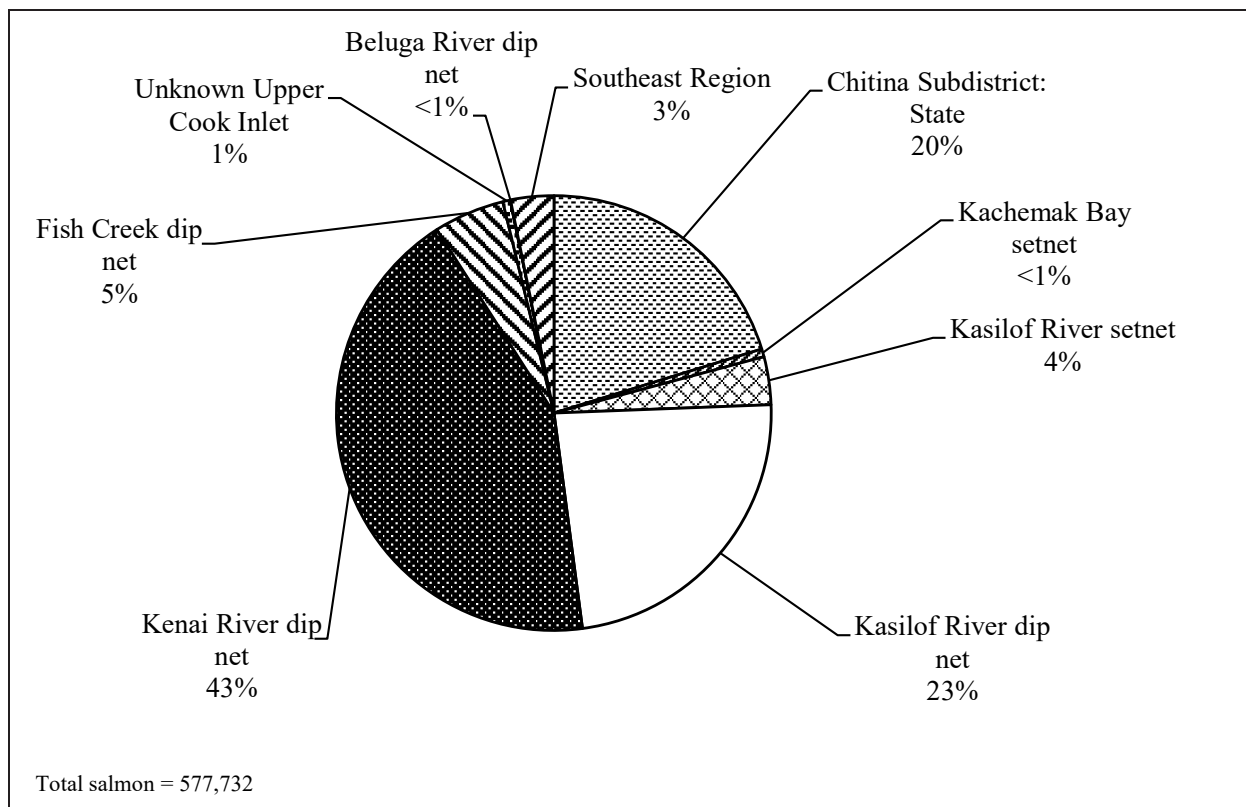


Figure 2-9.—Alaska personal use salmon harvest by fishery, 2018.

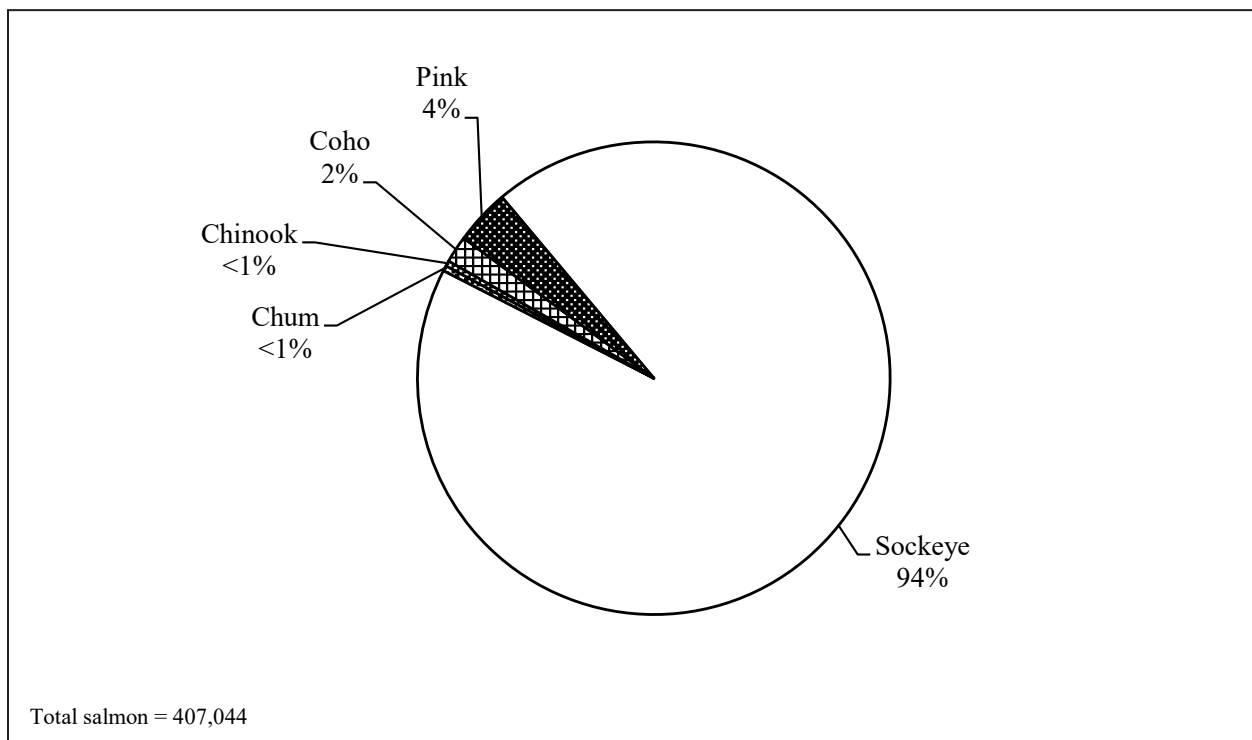


Figure 2-10.—Alaska personal use salmon harvest by species, 2018.

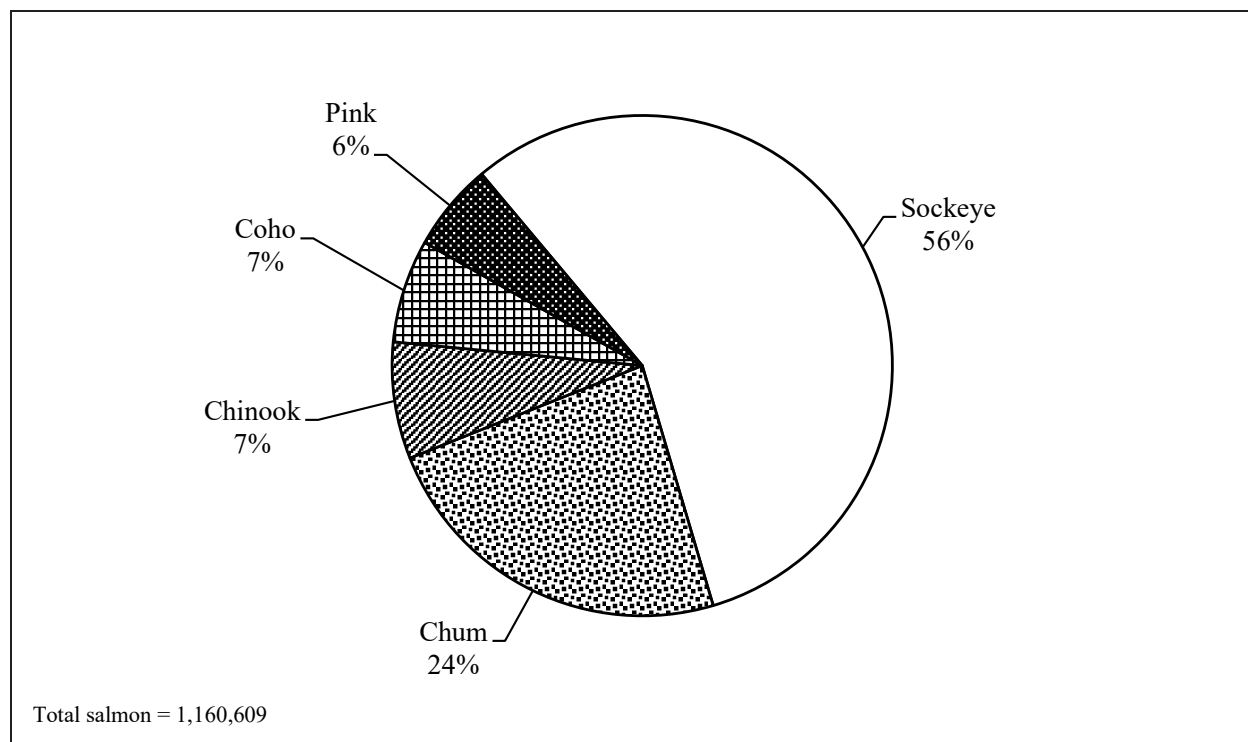


Figure 2-11.—Alaska subsistence and personal use salmon harvest by species, 2018.

CHAPTER 3: NORTON SOUND-PORT CLARENCE AREA AND ARCTIC-KOTZEBUE AREA

INTRODUCTION

Fisheries management districts in Northwest and Northern Alaska are organized such that the Norton Sound-Port Clarence Management Area includes the Norton Sound District and the Port Clarence District, and the Arctic-Kotzebue Management Area includes the Arctic District and the Kotzebue District (Menard et al. 2013). Each management area is fully described below. This chapter includes harvest information from limited subsistence fisheries research in the Arctic-Kotzebue Area, which supplements data from the ongoing annual subsistence harvest monitoring program in Norton Sound and Port Clarence.

NORTON SOUND-PORT CLARENCE AREA SALMON

Background

The archaeological record of the Norton Sound-Port Clarence region provides physical evidence of subsistence fishing dating back to the Arctic Small Tool/Norton Tradition, ca. 1500–1000 B.C.E. (Harritt 2010; Smith and Vreeman 1995). Large numbers of prospectors went to the Seward Peninsula following the 1890s discovery of gold in the region, which affected salmon and salmon fishing in substantial ways (Menard et al. 2009; 2020; Thomas 1980; 1982). In particular, dredging damaged spawning grounds while the growing immigrant population increased the demand for salmon, especially around Nome. As across Alaska, salmon supported the integration of the subsistence way of life and the emerging market economy, first through customary trade and later through commercial fishing. Since the beginning of commercial fishing at Unalakleet in 1961, variable salmon abundance, market demand, and buyer availability have engendered a dynamic set of subsistence and commercial salmon fisheries across the districts (Menard et al. 2020:7–8).

The regional center of Nome had a 2018 population estimate of 3,651, and 13 smaller communities ranging in size from 99 (Diomedes) to 717 (Unalakleet).¹ Overall, approximately 70% of Nome Census Area residents are Alaska Native, with an additional 10% reporting two or more racial backgrounds. More than 90% of the region’s population outside of Nome is Alaska Native, primarily of Inupiaq, Yupik, and Siberian Yupik descent. Most residents of the region continue to participate in a mixed subsistence-cash economy and depend on wild foods for cultural and nutritional sustenance. While more opportunities for wage work exist in Nome itself, subsistence activities are still an important facet of life in many Nome households.

In summer, subsistence fishers harvest salmon with gillnets or seines in the main Seward Peninsula rivers and coastal marine waters. Beach seines are also used near the spawning grounds to harvest schooling or spawning salmon and other species of fish. A major portion of fish taken during the summer months is air dried or smoked for later consumption by residents. Chum and pink salmon are the most abundant salmon species districtwide; Chinook and coho salmon are present throughout the area but are more common in eastern and southern Norton Sound. Sockeye salmon are primarily found in two Seward Peninsula river systems: Glacier Lake and the Sinuk River in the Nome subdistrict, which is difficult to access, and Salmon Lake and the Pilgrim River in the Port Clarence District, much of which is road accessible to Nome residents.

The history of variation and change to specific salmon harvests across the region motivate fishers to travel to adjacent or nearby units for subsistence fishing opportunities, as may be feasible and necessary. For example, the concentrated population at Nome generally relies on chum salmon from Subdistrict 1 and sockeye salmon from the Port Clarence District. Multiple salmon stocks have been designated with various

1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed March 16, 2020. <http://live.laborstats.alaska.gov/pop/estimates/data/TotalPopulationPlace.xls>

levels of concern, most notably chum salmon in Subdistrict 1 (Nome), sockeye salmon in the Port Clarence District, and Chinook salmon in subdistricts 5 and 6 (Shaktoolik and Unalakleet), as described in more detail below.

Regulations

The Norton Sound-Port Clarence Area spans two districts from Point Romanof north to Cape Prince of Wales. The Norton Sound District (Point Romanof to Cape Douglas) is divided into six subdistricts, from Nome to Unalakleet, and includes peripheral coastal areas: Cape Woolley (northwest of Nome) and southern Norton Sound. The Port Clarence District (Cape Douglas to Cape Prince of Wales) includes the single subdistrict of Grantley Harbor. Of communities in the region, Nome is the regional hub community and Unalakleet is a subregional hub for eastern Norton Sound. The Norton Sound District encompasses all waters from Point Romanof north to Cape Douglas. It is divided into six subdistricts: 1) Nome, 2) Golovin, 3) Moses Point/Elim, 4) Norton Bay, 5) Shaktoolik, and 6) Unalakleet. In subdistricts 1 and 6, restrictions exist on gear, fishing periods, and areas open to fishing. In 2001, a regulatory change by the BOF made rod and reel a legal subsistence fishing gear type in the area from Cape Espenberg on northern Seward Peninsula to Bald Head, which is between Elim and Koyuk. This area includes subsistence fishing areas used by the residents of Nome, White Mountain, Golovin, Elim, Koyuk, Shaktoolik, and Unalakleet. Sport fishing bag and possession limits still apply, except when a subsistence salmon permit is required or fishing through the ice. In the former case, the harvest limits (if any exist) specified on the permit for each river apply. When fishers catch their limit in one drainage, they can fish in another. Subsistence fishing regulations are most restrictive in Subdistrict 1 (Nome) and Subdistrict 6 (Unalakleet), where the two largest communities in the area are located.

In Subdistrict 1 (Nome), subsistence harvests historically consisted primarily of chum salmon and pink salmon. Chum salmon runs were low in the 1980s and 1990s. Since 1991, subsistence fishing has been prosecuted primarily by emergency order, and BOF classified Nome subdistrict chum salmon as a stock of management concern in 2000 (Menard et al. 2020:13).² From 1999 through 2005, chum salmon fishing in Subdistrict 1 was managed as Tier II, the only such fishery to exist in the state (5 AAC 01.182, 5 AAC 01.184).³ In 1999, the chum salmon return was so poor that even Tier II fishing was closed; in 2000, only 10 permits were awarded (Soong et al. 2008:10).

In the early 2000s, the chum salmon season frequently started with a closure; openings were much less frequent than in regulation, and fishing periods in marine waters were also limited. Tier II chum salmon

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2. The Policy for Management of Sustainable Salmon Fisheries (SSFP; 5 AAC 39.222) defines three levels of concern for salmon stocks based on status reports and recommendations from ADF&G. A stock of Yield Concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain specific yields, or harvestable surpluses, above a stock’s escapement needs; a Yield Concern is less severe than a Management Concern” (5 AAC 39.222(f)(42)). A stock of Management Concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG, BEG, OEG, or other specified management objectives for the fishery; a Management Concern is not as severe as a Conservation Concern.” (5 AAC 39.222(f)(21)). A stock of Conservation Concern is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain escapements for a stock above a sustained escapement threshold (SET); a Conservation Concern is more severe than a Management Concern.” (5 AAC 39.222(f)(6)).
 3. A “Tier II” subsistence permit program is necessary when the number of participants in a subsistence fishery or hunt must be limited because the harvestable surplus of the fish stock or wildlife population is less than the lower bounds of the amount necessary to provide for subsistence uses. Individual Alaskans are distinguished from one another through the submission of Tier II applications, which are scored based on their history of uses of the particular resource and the ability to obtain alternative food; those with the highest scores receive Tier II permits, the others do not. Tier II provides a process that ensures that subsistence opportunities are provided to those most dependent upon the resource. Tier II implies that there is an insufficient harvestable surplus to provide for all subsistence uses (AS 16.05.258).

fishing permits allowed a limited number of qualified Nome households with the highest dependency on salmon for food to have first priority over other subsistence fishers when only a small number of chum salmon were available for harvest. This priority allowed these households to fish earlier in the season, when weather conditions were more suitable for drying salmon. Tier I fishing permits were available to all other households when ADF&G determined run strength was adequate to meet escapement goals. However, wetter weather later in the summer made it difficult to dry fish properly (Magdanz et al. 2003), and in the 2000s, Nome fishers continued to increase their use of adjacent units to fish for salmon (Menard et al. 2009). The number of Subdistrict 2 permits issued to Nome residents declined in the later 2000s, and fishery managers attributed the decline to the easing of fishing restrictions in the Nome Subdistrict and rising fuel costs (Menard et al. 2010).

Chum salmon returns gradually improved, allowing ADF&G to manage the fishery as Tier I since 2006, generally with the fishing schedule provided for by regulation.⁴ In 2007, the BOF changed the classification of Subdistrict 1 chum salmon from a “stock of management concern” to a “stock of yield concern” and returns continued to improve. The BOF rescinded yield concern designation in 2016 and further reduced restrictions (Menard et al. 2020:14). Regulation changes made at the 2013 BOF meeting allowed for subsistence gillnet fishing seven days a week in marine waters in the eastern half of Subdistrict 1, and beach seining in all subsistence areas during the chum salmon run when gillnet fishing is open. The Board also passed regulations in 2015 allowing for a commercial chum salmon fishery in Subdistrict 1 based on conservative management guidelines. Additionally, regulation changes in 2016 increased subsistence gillnet fishing in the marine waters in the western half of Subdistrict 1 from three days to five days a week and freshwater subsistence gillnet fishing throughout the subdistrict from four days to five days a week. For the thirteenth year in a row, Subdistrict 1 opened on June 15 for subsistence salmon fishing as per regulation. In recent years, subsistence fishing time was liberalized in the Nome Subdistrict by increasing gillnet fishing time from three days to five days a week west of Cape Nome and seven days a week east of Cape Nome. In 2018, upstream portions of most rivers were still closed to protect spawning salmon, and harvests are limited in all subdistrict rivers; when a fisher reaches their limit in one river, they can fish another.

In Subdistrict 2 (communities of Golovin and White Mountain) and Subdistrict 3 (Elim), chum salmon escapement and commercial and subsistence harvests dropped significantly through the 1990s. Chum salmon stocks were designated as a “yield concern” in 2000 (Menard and Bergstrom 2006:2). Restrictions primarily affected commercial fishing, but subsistence restrictions were in place in 2003. Chum salmon runs have greatly improved since then, such that ADF&G recommended rescinding stock of yield concern status in October of 2018, which the BOF accepted (Menard 2018).

Run assessment in remote Subdistrict 4 (Koyuk) is especially challenging but improved in 2011, when an enumeration tower project was initiated on the Inglutalik River to provide an index of salmon escapement to Norton Bay. Pink and chum salmon predominate in Norton Bay and its rivers, and these runs were strong again in 2018. However, Chinook salmon conservation concerns prompted limits to subsistence fishing. In June 2018, two 48-hour periods for subsistence salmon fishing occurred each week. Net mesh size was restricted to six inches or less during the first weekly opening and unrestricted for the second opening.

Subdistrict 5 (Shaktoolik) and Subdistrict 6 (Unalakleet) are typically managed together because actions in one subdistrict affect the movement of fish in the other. Poor Chinook salmon runs in these subdistricts since the early 2000s resulted in their designation as “stocks of yield concern” and restrictions on all types of fishing in 2003, 2004, and since 2006 (Menard et al. 2020). No directed Chinook salmon commercial fishery has occurred since 2005 and a conservative Chinook salmon management plan was adopted in 2007 (5 AAC 04.395; Menard et al. 2020). The management plan ensures adequate escapement by restricting subsistence fishing with a stipulated opening schedule that can be adjusted by emergency order from mid-June to mid-July. Despite these restrictions, Chinook salmon returns were weak again in 2018.

4. In a “Tier I” subsistence fishery, all interested Alaska residents may participate. Other fishers (commercial, sport, and personal use) are prohibited or restricted because the harvestable surplus is sufficient only to provide for customary and traditional subsistence uses (AS 16.05.258).

The 2018 season began with a closure to subsistence gillnet fishing with mesh greater than four inches and the stipulation that any Chinook salmon caught in dip nets or cast nets be released to the water alive, which was followed by limited openings through mid-July (Menard et al. 2020).

The Port Clarence District includes all waters from Cape Douglas north to Cape Prince of Wales, including Salmon Lake and the Pilgrim River drainage. Residents of the communities of Teller and Brevig Mission, both located in the Grantly Harbor Subdistrict, use these waters heavily for salmon and other subsistence needs. Fishers from Nome also have a long history of fishing in the Port Clarence District (Magdanz 1992:27)—especially when regulations restrict fishing opportunities in the Nome Subdistrict, such as in the 1990s (Magdanz et al. 2003). Since 2004, subsistence salmon permits have been required in all Port Clarence waters. In most of the district, subsistence salmon fishing has few restrictions other than the general statewide provisions. Standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Salmon may be taken in most areas at any time, with no harvest limits. However, some areas that are accessible by road from Nome in the Pilgrim River drainage, including Salmon Lake and the Kuzitrin River drainage, are closed to subsistence salmon fishing. Following a 16-year closure of fishing in Salmon Lake (1972–2004) due to a crash of the sockeye population, managers established a permit system (Menard et al. 2009) and have issued few permits since then; no Salmon Lake permits were issued in 2018 (Menard et al. 2020).

Norton Sound and Port Clarence are among the few places in the state where the customary trade of fish caught in state waters is legal. Effective July 1, 2007, regulations allowed cash sales, up to \$200, of subsistence-caught finfish per household per year. Persons who wanted to participate had to obtain a customary trade record keeping form from Nome ADF&G. Sales could not be made to a fishery business nor the fish resold by the buyer. Sales could also occur only within the Norton Sound–Port Clarence Area (Soong et al. 2008:34). Effective April 13, 2013, the BOF increased the annual limit for selling subsistence-taken finfish as customary trade from \$200 per year to \$500 total per household in a calendar year (5 AAC 01.188).

Subsistence Salmon Harvest Data Collection Methods

Two methods were used by the Division of Commercial Fisheries to assess subsistence salmon harvests in 2018: (1) fishing permits in the northern portion of Norton Sound (Subdistricts 1, 2, and 3) and the Port Clarence District; and (2) postseason household surveys in the eastern and southern portions of Norton Sound District (Subdistricts 4, 5, and 6).

Permits capture fishing by local and non-local residents and most accurately estimate harvests from a given body of water. Postseason household harvest surveys capture fishing by community households and most accurately estimate the surveyed community's total harvests. Generally speaking, most permit holders reside in the place where they fish. However, some residents fish outside their home district or subdistrict, and some fishers come from outside the region to participate (usually to fish with relatives or friends still residing in the region)⁵. In northern Norton Sound and Port Clarence, all subsistence salmon fishers are obliged to obtain and return permits that describe their fishing by each location and species caught. Tables 3-1, 3-2, and 3-3 show estimated subsistence fish harvests taken from the waters in each place listed, by fishers residing anywhere in Alaska. In contrast, Table 3-4 shows estimated subsistence fish harvests taken from the entire Norton Sound–Port Clarence Area, by fishers residing in the listed communities.

Although based on the same data, all of which is collected by the Division of Commercial Fisheries, some numbers in this chapter diverge from those found in the 2018 annual management report for the area (Menard et al. 2020). Minor divergences are generally attributable to late permit returns or duplicated permits, while larger scale divergences are generally due to different assumptions and methods for data collection and analysis employed by the Division of Commercial Fisheries, which produces the management reports, and the Division of Subsistence, which produces this report.

5. Anna Godduhn, ADF&G Subsistence Resource Specialist, personal communication from Jim Menard, ADF&G Fisheries Biologist, March 31, 2020.

Norton Sound Subdistricts 1, 2, and 3: Subsistence Fishing Permits

Permits have been required for subsistence salmon fishing in Norton Sound Subdistrict 1 (Nome) since 1974. Since 1998, the Nome permit data have not been expanded to account for households whose permits were not returned. This contrasts with earlier years when permit data were expanded by drainage, with expansion factors based upon the fraction of unreturned permits for that drainage. ADF&G staff believed that expansion of the permit data led to an overestimation of the salmon harvest because the unreturned permits were most likely from households that did not fish (Menard et al. 2010:9). In 2018, chum salmon abundance was again projected to achieve the biological escapement goal for the subdistrict and provide amounts reasonably necessary for subsistence. Because of this, a Tier II fishery was not implemented (Menard et al. 2020). The Nome ADF&G office issued 620 subsistence (Tier I) salmon permits for fishing in Subdistrict 1, of which 614 were returned and 466 reported fishing (Menard et al. 2020:70; Table 3-1)⁶, breaking the record number of permits (584) issued in 2016 (Menard et al. 2018) and was a slight increase from 2017, when 533 permits were issued for salmon fishing in Subdistrict 1; of the 528 returned permits, 320 reported fishing.

A total of 466 households fished their permits, many in multiple places. The largest number of permits fished on the Nome River (316) and the Snake River (106) (harvests in Subdistrict 1 came largely from those two rivers and marine waters; Menard et al. 2020:69–70).

Subsistence fishing permits were also issued for Cape Woolley, a traditional camp and fishing area for King Island households, who, although they settled in Nome more than 40 years ago, maintain a distinct community identity. Located in the Norton Sound District west of Nome, this portion of coast lies outside Subdistrict 1 but within the boundaries of the area for which fishing permits are required (Rocky Point to Cape Douglas). In 2018, 14 permits were issued for Cape Woolley; all were returned to ADF&G (Table 3-1). Of those, one household fished their permit (Menard et al. 2020:69–70).

Subsistence permits have been required for salmon fishing in Subdistrict 2 (Golovin) and Subdistrict 3 (Moses Point/Elim) since 2004. In 2018, 210 permits were issued for Subdistrict 2, primarily to residents of White Mountain and Golovin (Menard et al. 2020). Of the 208 permits that were returned, 94 reported fishing (Menard et al. 2020:70; Table 1) (Table 3-1). The number of Subdistrict 2 permits issued to Nome residents has dropped since 2004, and fishery managers have attributed the decline to the easing of fishing restrictions in the Nome Subdistrict and rising fuel costs (Menard et al. 2010). The number of permits issued in Subdistrict 3 has remained steady. In 2017, 53 issued permits were all returned and 46 reported fishing. In 2018, ADF&G issued 56 permits for Subdistrict 3 (Table 3-1). All 56 permits were returned and 43 households reported fishing (Menard et al. 2020:70).

Port Clarence District: Salmon Lake and Pilgrim River Subsistence Fishing Permits

Permits have been required to fish the Pilgrim River since 1974 (Magdanz 1992:27) and all Port Clarence waters since 2004. Permits for subsistence fishing in the Port Clarence district have increased since 2000 to a record in 2018, when 689 permits were issued; of those 683 permits were returned and 316 permits reported fishing—again, sometimes in multiple places (Menard et al. 2020:69–70; tables 3-2 and 3-3). Of the permits issued in 2018, 500 were to fish the Pilgrim River only, which was similar to the last several years (494 of the 500 were returned with 244 reports of fishing the Pilgrim River). All of the remaining 189 permits were issued for other waters in the district were returned with 88 reports of fishing, primarily in marine waters. No permits were issued for Salmon Lake in 2018 (Menard et al. 2020).

The number of permits for the Pilgrim River grew substantially between 2003 and 2008, likely in response to several consecutive years of record sockeye salmon runs during a time of restricted chum salmon fishing in Norton Sound Subdistrict 1 (Magdanz et al. 2003; Soong et al. 2008:13). A decline in permits issued from 2009 to 2012 was likely related to poor runs in 2008 followed by the crash in 2009, when only 953 sockeye

6. Table 3-1 shows 613 permits for fishing in Norton Sound Subdistrict 1 (Nome), which does not reflect a single permit that was returned late (Anna Godduhn, ADF&G Subsistence Resource Specialist, personal communication from Jim Menard, ADF&G Fisheries Biologist, March 31, 2020).

salmon were counted passing through the Pilgrim River weir (Menard et al. 2012; 2015a). Sockeye salmon runs slowly improved, and Pilgrim River escapements in 2015 (36,052 fish) and 2017 (55,764 fish) were especially strong. In 2018, sockeye escapement was estimated at 33,802 salmon (Menard et al. 2020:131).

In 2007, the BOF adopted regulations that closed the southwestern half of Salmon Lake and allowed for fishing on the northeastern half by emergency order. Very little salmon fishing has been allowed in recent years in Salmon Lake due to the crash of the sockeye salmon run in 2009 and poor runs in 2010–12 (Menard et al. 2013). In 2013, limited fishing in Salmon Lake occurred for the first and only time since 2008, with no such permits issued in 2014 (Menard et al. 2015a; 2015b). One permit was issued over three years (2015–2017) but was only fished in 2017 (Menard et al. 2017; 2018), and no permits were issued for Salmon Lake in 2018 (Menard et al. 2020:70).

Household Surveys

Beyond the permit system introduced for Nome in 1974, tracking of subsistence fishing in the larger area was sporadic and incomplete until ADF&G began conducting annual subsistence salmon harvest surveys in other Norton Sound communities in 1994. With the expansion of the permit system in 2004, household salmon surveys are no longer conducted in northern Norton Sound but remain the primary method of estimating salmon harvests at household, community, and regional levels in eastern and southern Norton Sound. In 2018, ADF&G Division of Commercial Fisheries conducted salmon harvest surveys with households in Koyuk, Shaktoolik, and Unalakleet (located in subdistricts 4 (Norton Bay), 5 (Shaktoolik), and 6 (Unalakleet), respectively). Researchers attempted to contact all of the households in each of the surveyed communities. Actual sample rates varied: 233 of 252 Unalakleet households (92%) were contacted, as were 58 of 70 Shaktoolik households (83%), and 45 of 83 Koyuk households (54%) (Table 3-4).

The goals of the postseason household survey were to:

- collect harvest data that would result in a total harvest estimate for subsistence salmon by species and by community;
- compile information on harvest by gear types, participation rates, household size, use of salmon for dog food, and participation in customary barter and trade.

Subsistence Salmon Harvests in 2018

Norton Sound District Subsistence Salmon Abundance and Harvest

Chum salmon abundance in 2018 was expected to provide for both subsistence and commercial harvests, and for the sixth consecutive year after a 20-year hiatus, commercial fishing for chum salmon occurred in the Nome Subdistrict (Menard et al. 2020:86). Also, targeted coho salmon fishing occurred for the third time in two decades in the Nome subdistrict. The combined commercial salmon harvest in Norton Sound was the highest since 1998 and the fourth highest on record, with higher totals for all salmon species than in 2017 (Menard et al. 2020). Chum salmon escapement goals were exceeded in all rivers with counting projects and those rivers that received aerial surveys. Pink salmon runs broke records in several Norton Sound rivers, and all escapement goals were easily exceeded. Counts and escapements were high across the district with substantial variation. In the most extreme example, 3.2 million pink salmon counted at the Nome River weir “obliterated the previous record of nearly 1.2 million pink salmon counted in 2008”; in contrast, the North River count was “only” the seventh highest on record (Menard et al. 2020:50).

Chinook salmon runs were weak, and subsistence fishing restrictions were in effect in eastern and southern Norton Sound. Despite slight improvement from 2017, the lower end of the SEG goal of 250 Chinook salmon at the Kwiniuk River weir was again not met, with only 87 fish counted. Since the record low of 15 Chinook salmon counted at the Kwiniuk River tower in 2013, SEG goals were only met in 2014 and 2015. The North River count of 2,568 Chinook salmon fell near the high end of the escapement goal range (1,200–2,600 fish). Additionally, the Unalakleet River weir again had the highest count of Chinook salmon (3,326) in the eight years of the project (Menard et al. 2020:47).

Sockeye salmon are typically found in small numbers throughout the Norton Sound District with the largest spawning stock at Glacial Lake. Typically, 1,000 to 2,000 sockeye salmon return to spawn each year, although large runs from 5,000 to over 10,000 sockeye salmon were recorded from 2004–2006 and in 2015 at the Glacier Lake weir; the weir was discontinued in 2015 (Menard et al. 2020). In 2018, the aerial survey escapement goal of 800–1,600 sockeye salmon at Glacial Lake was met with a count of 1,570 salmon.

Despite inclement weather that precluded survey flights, record harvests indicate that the 2018 coho salmon run was perhaps the greatest on record (Menard et al. 2020:49). In the Nome subdistrict, weirs counted record numbers of coho salmon. Coho runs were also reported as very strong in other rivers. For example, the North River tower count of 20,010 coho salmon was second only to the record count in 2009 (22,274 fish), when the tower operated for two weeks longer than in 2018 (Menard et al. 2020:49).

The estimated 2018 subsistence harvest of salmon from Norton Sound District waters was 54,066 fish, about 33% less than the 2016 harvest of 80,781 fish, and also less than the 2017 harvest of 69,720 salmon, which was the largest odd-year harvest since 2005. Pink salmon abundance commonly follows an even–odd year cycle (tables 3-1, 3-2). Their abundance in Norton Sound is usually significantly higher in even-numbered years (2004, 2006, 2008, etc.) with districtwide harvests typically reflecting this difference. In 2018, although pink salmon escapements dwarfed records in several rivers, the total Norton Sound pink salmon subsistence harvest (29,615 fish) was the lowest even-year on record. Chum salmon harvests (6,571) were lower than the historical average (1994–2017) of 18,346. Coho salmon harvests (15,868) were lower than the historical average harvest of 16,248 coho salmon (Table 3-2). Sockeye salmon were mostly taken from Port Clarence District waters (Menard et al. 2020).

Total subsistence catches of four out of the five salmon species from Norton Sound waters were lower in 2018 than 2017. Fishers caught fewer pink, chum, sockeye, and coho salmon, and more Chinook salmon (Table 3-2). Overall, the estimated 2018 subsistence salmon harvest was the lowest total harvest since 2013 and the lowest even year harvest on record (54,066 salmon). Between 1995 and 2017, odd-year harvests of all salmon have ranged from a low of 43,883 in 2011, to a high of 113,612 in 1995, with a 1995–2017 average of 69,916 salmon. Even-year harvests have ranged from the low in 2010 of 67,149 to a high of 134,050 in 1996, with a 1994–2016 average of 91,645 salmon.

Subdistrict 1 Harvest

The 2018 chum salmon run was the greatest since the early 1980s with record escapements at the Eldorado, Solomon, and Nome River weirs. Because of this, subsistence gillnet fishing followed the standard freshwater schedule.

Despite liberalized fishing in Subdistrict 1 and strong returns during good weather in 2018, subsistence harvests of chum salmon were the second lowest on record (Table 3-2), and many Nome households again acquired permits for sockeye salmon fishing in the Pilgrim River drainage of the Port Clarence District (Menard et al. 2020:17,44). Multiple factors have contributed to this shift, especially including massive pink salmon runs that choke nets meant for chum salmon (especially in even years), and strong sockeye salmon runs in the Pilgrim River (Menard et al. 2020:44). Aerial surveys indicate these runs are also strengthening but Nome residents tend to fish the sockeye salmon runs in the Sinuk River less heavily because of difficult access (Menard et al. 2020:16).

While no coho salmon escapement goals have been established for Subdistrict 1, escapement in the Nome and Snake rivers has continued to increase, and was again at least 50% higher than average compared to previous years (Menard et al. 2020). Coho salmon were caught in record numbers for subsistence for the second year in a row, nearly four times the chum salmon subsistence harvest. Historically, fishers caught late-season coho salmon in much lower numbers than chum salmon unless fishing for chum had been restricted earlier in the year. The estimated 2018 subsistence salmon harvest in the Nome Subdistrict was 1,195 chum salmon, 10,786 pink salmon, 4,935 coho salmon, 341 sockeye salmon, and 12 Chinook salmon (Table 3-1).

Subdistricts 2 and 3 Harvest

As in Subdistrict 1, no subsistence catch limits were in place in subdistricts 2 and 3 for 2018, and as in 2017, commercial fishing for chum and pink salmon was limited more by buyer capacity than fish abundance. Most salmon harvested in these subdistricts are caught by residents of the communities of White Mountain, Golovin, and Elim. Pink salmon composed the greatest percentage of the harvest (75% of fish in Subdistrict 2 and 65% in Subdistrict 3; Table 3-1). Coho (25% and 15%) and chum (8% and 9%) salmon made up most of the rest, with a few Chinook and sockeye salmon each making up less than 1% of the total harvest. In 2018, a total of 9,219 salmon were harvested in Subdistrict 2 (Golovin) (Table 3-1). The subsistence harvest was the highest since 2014 and fell closer to the higher 10-year average than the lower 5-year average. The chum salmon harvest in Subdistrict 2 was the third lowest on record, less than one half of the most recent 5-year average. In contrast, coho salmon harvests were comparable to recent data, falling between the 5- and 10-year averages (Menard et al. 2020:93). In 2018, the Fish River counting tower was limited by high water both early and late in the season; the tower was in operation from July 10 to August 26. The tower counted passage of 37,170 chum, over 2.7 million pink, and Kwiniuk coho salmon (Menard et al. 2020:45).

The Niukluk River counting tower was used to evaluate escapement in the Golovin Subdistrict from 1995–2012, but the project was eliminated in 2013; the Niukluk River is a tributary of the Fish River, a major salmon producing waterway in the area. In 16 of the 18 years that both were operational, the Niukluk and Kwiniuk counting towers tracked together on escapement achievement (Menard et al. 2017). The chum salmon escapement goal was exceeded at the Kwiniuk counting tower in 2018 with the passage of 41,658 chum salmon, well surpassing the escapement goal range of 11,500–23,000 fish (Menard et al. 2020:46).

Based upon subsistence fishing permits, residents of Golovin harvested an estimated 2,939 salmon in 2018, the majority of which were pink salmon (1,902 fish, 65%; Table 3-4). Coho and chum salmon harvests (586 fish, 20%, and 349 fish, 12%, respectively) filled out the bulk of the remainder. Chinook salmon (30) and sockeye salmon harvests (72) together contributed about 3% to the total Golovin salmon harvest. White Mountain residents harvested an estimated 5,403 salmon, 4,523 (84%) of which were pink salmon. The remainder of the harvest was composed mostly of coho salmon (493; 12%) and chum salmon (356; 7%); sockeye salmon (14) and Chinook salmon (17) contributed less than 1% each.

In Subdistrict 3 (Moses Point/Elim), coho salmon harvests were record breaking, and the run achieved well above average escapement at the Kwiniuk River while the pink salmon count of over 1.8 million fish was the fourth highest on record. Subsistence fishers harvested an estimated 6,699 salmon, 65% of the fish were pink salmon, 25% coho salmon, 9% chum salmon, and less than 1% Chinook and sockeye salmon, respectively (Table 3-1). The total harvest of 6,699 salmon in 2018 was on par with the recent 5-year average of 6,757 salmon and slightly below the 2017 estimated harvest of 7,221 salmon (Menard et al. 2020:96). The harvest of coho and chum salmon was lower in 2018 than 2017 and the pink salmon harvest was substantially higher; 59 Chinook salmon was 8 fish more than in 2017 but well below the 5-year and 10-year averages of 145 and 184 fish, respectively (Menard et al. 2020:96).

Subdistrict 4 Harvest

In 2018, ADF&G restricted subsistence fishing in the Norton Bay Subdistrict to two 36-hour fishing periods per week during the month of June to allow for Chinook salmon escapement (Menard et al. 2020). The first fishing period each week had restrictions of six inches or smaller mesh size. The second fishing period each week in the month of June had no mesh size restrictions. (Menard et al. 2020:47) Fishers caught an estimated 3,601 salmon for subsistence in the Norton Bay subdistrict (Table 3-1). Most of the harvest was made up of chum and pink salmon (41% and 38%, respectively). Of the remainder, 17% were coho salmon, 3% were sockeye salmon, and 2% Chinook salmon (Table 3-1).

Table 3-4 presents harvests at the community level. Because residents of Koyuk sometimes fish outside of their subdistrict, the community harvests are occasionally slightly different than the total harvest for the individual subdistricts (Table 3-1).

Subdistricts 5 and 6 Harvests

As mentioned previously, in 2004, BOF designated Chinook salmon as stocks of yield concern in subdistricts 5 and 6 and adopted a conservative management plan that allowed for subsistence fishing opportunities as well as escapement windows for Chinook salmon (5 AAC 04.395). However, in 2013 both harvests and escapements were at record lows. Beginning in 2014, all marine and freshwater subsistence salmon fishing from north of Wood Point near St. Michael, to Bald Head near Elim were closed preseason with scheduled openings. In 2018, the Unalakleet River closed to subsistence fishing on June 1, and marine and other fresh waters closed on June 9. One 24-hour subsistence fishing period with gillnets restricted to six inches or smaller mesh size was allowed each week in marine waters throughout the month of June; during two weeks of June, runs were strong enough to allow for two 24 hour periods (Menard et al. 2020). Beach seining was allowed in river seven days a week with the stipulation that all Chinook salmon must be released.

During the first half of July, subsistence fishing was open in marine waters for two 24-hour fishing periods and in freshwater for two 12-hour fishing periods. All waters stayed open to subsistence salmon gillnet fishing on July 15, after the lower end of the Chinook salmon escapement goal was reached.

The Shaktoolik Subdistrict subsistence catch of 162 Chinook was below both the 5-year and 10-year averages (Menard et al. 2020:99–100). In Unalakleet Subdistrict, 810 Chinook salmon subsistence harvested was above the 5-year average but below the 10-year average (Menard et al. 2020:101–102).

In the interest of Chinook conservation, directed commercial chum salmon fishing was delayed until after June 30 based upon the management plan (Menard et al. 2020). In 2018, the Chinook salmon run met the escapement goal for the first time since 2015 (there has been no directed commercial fishery since 2005).

In subdistrict 5 (Shaktoolik), subsistence fishers caught an estimated 3,765 salmon in 2018, over half of which (2,107 salmon or 56%) were coho salmon. Pink salmon (2,107 fish) composed about 30% of the total harvest. The rest of the harvest was composed of chum salmon (319) and Chinook salmon (162), which provided 8% and 4% of the total, respectively. Less than 2% of the harvest was sockeye salmon (Table 3-1).

In subdistrict 6 (Unalakleet), subsistence fishers caught an estimated 13,493 salmon, 39% (5,204) of which were coho salmon. Pink salmon (5,017) made up 37% of the annual harvest, followed by chum salmon (2,227 or 17%), and Chinook salmon (810 or 6%). Almost 2% of the total harvest was sockeye salmon (Table 3-1).

Table 3-4 presents harvests at the community level. Because residents of Shaktoolik and Unalakleet sometimes fish outside of their subdistrict, the community harvests are occasionally slightly different than the total harvest for the individual subdistricts. Households in Shaktoolik and Unalakleet harvested the same number of salmon as is reported at the Subdistrict level in 2018. Commercial fishing in both subdistricts was opened for chum salmon on July 1 and chum salmon abundance allowed for two 48-hour fishing periods per week in July (Menard et al. 2020). A strong coho salmon season in 2018 allowed for two 72-hour periods as well as a 96-hour period in August and two 120-hour periods in September.

Commercial catches for chum salmon in both subdistricts were among the highest on record; Shaktoolik commercial fishers caught 41,482 chum salmon (the fourth highest harvest on record) and Unalakleet fishers caught 108,305 chum salmon (the second highest on record, for the second year in a row). Commercial harvests of coho salmon were again the highest on record for both subdistricts with Shaktoolik fishers harvesting 71,468 fish and Unalakleet fishers harvesting 155,578 fish. Shaktoolik and Unalakleet commercial fishers also caught record numbers of incidental sockeye salmon: 516 and 1,766 fish, respectively (Menard et al. 2020).

Norton Sound Harvest Overall

The 2018 total Norton Sound salmon harvest was the third lowest on record. The harvest of four salmon species was lower than in 2017: pink (7% less), chum (54%), sockeye (37%), and coho (28%). In contrast, the Chinook salmon harvest (1,162 fish) was about 8% higher than 2017 (1,076 fish) and 72% lower than the historical average (4,271 fish; Table 3-2). Of the estimated total 2018 subsistence salmon harvest in

Norton Sound, 55% were pink salmon, 29% were coho salmon, 12% were chum salmon, 2% were sockeye salmon, and 2% were Chinook salmon (Figure 3-1). Total harvest estimates for the Norton Sound District for 1994–2017 are presented in Table 3-2. Data collection methods changed in 2004 when permits replaced surveys in Norton Sound Subdistrict 2 (Golovin and White Mountain) and Norton Sound Subdistrict 3 (Moses Point/Elim). Very little of the documented 2018 subsistence salmon harvest was taken by residents from outside the district. Residents of Anchorage, Bethel, Fairbanks, Galena, Houston, Kodiak, North Pole, Palmer, Seward, Sitka, and Wasilla received 51 permits and harvested 716 salmon. (Table 3-4). Many of these fishers have connections to the area and participate in local community subsistence economies by fishing with their families; others use rod and reel gear under sport regulations.⁷

Port Clarence District Subsistence Salmon Harvest

Two small communities in the Port Clarence District, Teller and Brevig Mission, have traditional salmon fisheries along the coast and in the rivers; additionally, many Nome residents travel from the Norton Sound District to participate in the largest sockeye salmon fishery on the Seward Peninsula in the upper Pilgrim River. In 2018, 33,802 sockeye salmon were counted at the Pilgrim River weir, the third highest weir count since 2007 (Menard et al. 2020:52). Again, as since 2015, ADF&G waived subsistence catch limits early in the season (Menard et al. 2020).

The estimated 2018 subsistence harvest of salmon in the Port Clarence District was 23,381 fish (tables 3-2 and 3-3). This was the second largest subsistence harvest on record and larger than all historical averages (Table 3-2). Of the total salmon harvest, 53% was sockeye salmon, 24% was chum salmon, 20% was pink salmon, 3% was coho salmon less than 1% was Chinook salmon, and (Figure 3-2).

ARCTIC-KOTZEBUE AREA SALMON

Introduction

In 2013, management districts in Northern and Northwest Alaska were reorganized. In particular, the North Slope, formerly called the “Northern District” was renamed the “Arctic District” and combined with the Kotzebue District to compose the Arctic-Kotzebue Area. The former Kotzebue Area became the Kotzebue District. Previous annual reports have not addressed subsistence fisheries information from the Arctic District, as there have been no annual harvest monitoring programs conducted by ADF&G. Ongoing Division of Subsistence research will continue to expand available information on subsistence fisheries by residents of North Slope Borough communities. Some research results from the North Slope Borough Department of Wildlife Management are also summarized below to better document the extent of subsistence fisheries on the North Slope.

In addition to salmon, major subsistence fisheries take place in the Arctic-Kotzebue Management Area for sheefish, other whitefishes, and Dolly Varden (known locally as “trout”). Where salmon are less abundant, these nonsalmon fish are more prevalent in local diets. Regarding nonsalmon fish harvests, ADF&G has conducted far more extensive research in the Kotzebue District compared with Arctic District and has a substantial data set for 2014 (discussed in Fall et al. 2017:37–38).

Background

Kotzebue District

Kotzebue Sound residents have relied on fish as a key nutritional and cultural resource for thousands of years. Most residents in the region continue to participate in a mixed subsistence-cash economy, harvesting a wide variety of wild foods. The Kotzebue District includes the subsistence fishing areas used by Point Hope, Kivalina, Noatak, Kotzebue, Kiana, Noorvik, Selawik, Ambler, Shungnak, Kobuk, Buckland, Deering, Shishmaref, and Wales. The role of salmon in the wild food diet varies from community to community and is driven primarily by salmon abundance. Communities that harvest few salmon typically harvest

7. Anna Godduhn, ADF&G Subsistence Resource Specialist, personal communication from Jim Menard, ADF&G Fisheries Biologist, April 6, 2020.

large numbers of nonsalmon fish, such as sheefish *Stenodus leucichthys*, other whitefishes *Prosopium* and *Coregonus* spp., and Dolly Varden *Salvelinus malma*. Along the Noatak and Kobuk rivers, where runs of chum salmon are strong, many households' activities in mid- and late summer revolve around the harvesting, drying, and storing of salmon for use during the winter. Chum salmon predominate in the district, composing approximately 90% of the subsistence salmon harvest. Small numbers of other salmon species are present in the district. ADF&G Division of Subsistence recently completed a subsistence fisheries research project in the Kotzebue Sound region (OSM Project No. 12-153, Northwest Alaska Key Subsistence Fisheries Harvest Monitoring Program). This research resulted in subsistence fish harvest estimates for 2012–2014 (Braem et al. 2018), discussed in previous annual reports and summarized below.

Arctic District

Although not a major subsistence focus in all households, many North Slope families have included fish as key nutritional and cultural resources in their seasonal round for generations. The only systematic subsistence fisheries harvest monitoring program has been conducted by the North Slope Borough's (NSB) Department of Wildlife Management (Bacon et al. rev2011). The most recent report by NSB described subsistence fish harvests in the region from 1994–2003; this includes harvest amounts, harvest timing, locations, gear and other qualitative information (Bacon et al. rev2011). Most residents in the region continue to participate in a mixed subsistence-cash economy, harvesting a wide variety of wild foods. The Arctic District includes the subsistence fishing areas used by Anaktuvuk Pass, Atkasuk, Barrow, Kaktovik, Nuiqsut, Point Hope,⁸ Point Lay, and Wainwright. The role of salmon and nonsalmon in the wild food diet varies from community to community and is affected primarily by resource availability. Chum and pink salmon are present in the greatest abundance, although sockeye, coho, and Chinook salmon are occasionally caught. Residents often refer to ocean bright salmon as “silvers” leading to the misidentification of chum harvests as coho salmon in some cases. Nonsalmon species important to subsistence include Arctic grayling, Dolly Varden, lake trout, burbot, rainbow smelt, various whitefishes, Arctic cod, and saffron cod. ADF&G Division of Subsistence conducted a subsistence fisheries research project along the western coast of the North Slope [Office of Subsistence Management (OSM) Project No. 12-154, North Slope Emerging Salmon Fisheries], focusing on subsistence fishing harvest and use patterns by residents of Point Lay and Wainwright from 2012–2014 (Mikow et al. 2016). The findings were discussed in previous annual reports and are summarized below.

Regulations

In the Arctic-Kotzebue Area, subsistence salmon fishing has few restrictions, other than the general statewide provisions (e.g., 5 AAC 01.010) and specifications regarding lawful subsistence gear and gear specifications (5 AAC 01.120). Standard conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Salmon may be taken in the Arctic-Kotzebue Area at any time with no harvest limits and no required permits, except that during commercial fishing closures in the Kotzebue District, commercial fishers may not fish for subsistence purposes (5AAC 01.110). Salmon may be taken only by gillnets, beach seines, or, in the Kotzebue District, by hook and line attached to a rod or pole, but only in the state waters of, and all flowing waters that drain into the Chukchi Sea or Kotzebue Sound from Cape Espenberg to Cape Prince of Wales (5 AAC 01.120(f)).

Fish other than salmon may be taken by set gillnet, drift gillnet, beach seine, fish wheel, pot, longline, fyke net, dip net, jigging gear, spear, and lead, or, as specified in 5 AAC 01.120(f), by hook and line attached to a rod or pole. In the Kotzebue District, gillnets used to take sheefish may not be more than 50 fathoms in aggregate length nor 12 meshes in depth, nor have a mesh size larger than seven inches (5 AAC 01.120(e)).

Other regulatory restrictions associated with subsistence fishing in the Arctic-Kotzebue Area include the provision that a gillnet may not obstruct more than one-half the width of any fish stream and any channel or side channel of a fish stream. Furthermore, a stationary fishing device may not obstruct more than one-half

8. Point Hope lies within the Kotzebue District but is near the boundary of the Arctic and Kotzebue districts, and harvests fish in both districts. Available harvest data cannot be separated by district fished. Therefore, all harvest estimates for Point Hope in this report are included in the Kotzebue District.

the width of any salmon stream and any channel or side channel of a salmon stream (5 AAC 01.120(c)). Except when fishing through the ice or when a subsistence fishing permit is required, use of a hook and line attached to a rod or pole between Cape Espenberg and Cape Prince of Wales requires subsistence fishers to follow the methods and means specified in sport fishing regulations 5 AAC 70.011 and 5 AAC 70.030, and the bag and possession limits, by species, detailed in 5 AAC 70.011.

Subsistence Salmon (and Nonsalmon) Harvest Data Collection Methods

From 1994 through 2004, with funding from the Division of Commercial Fisheries, the Division of Subsistence conducted annual household surveys in selected Kotzebue District communities to collect subsistence salmon harvest data (Fall et al. 2007:23–38). Because funding for that effort has not been available since 2004, no annual surveys have been conducted; therefore, subsistence salmon harvest estimates since then are available for only for communities participating in special projects, which also collected data about nonsalmon fish harvests.⁹ Harvest data from these projects are presented in tables 3-5–3-6, and are discussed in the 2014 annual report (Fall et al. 2017:37–38). Kotzebue District data for 2014 were more complete than for any year since 2004, missing only three communities: Deering, Shishmaref, and Wales. Table 3-7 shows, by year for 1994–2004, which communities were included in the annual harvest assessment program, and since 2004, in which communities comprehensive or fisheries-specific harvest surveys were conducted.

Very little fisheries information has been collected by ADF&G in the Arctic District. In Point Lay, a comprehensive survey of 2012 (Braem et al. 2017) was followed by fish harvest surveys for 2013 and 2014 (Mikow et al. 2016). In Wainwright, fish harvest data was collected for 2012, 2013, and 2014 (Mikow et al. 2016). Additionally, comprehensive harvest surveys for 2014 were conducted in the Arctic District communities of Anaktuvuk Pass, Barrow, and Nuiqsut (Brown et al. 2016). Results from these projects were discussed in the 2014 annual report (Fall et al. 2017:38–39).¹⁰

Arctic-Kotzebue Area Subsistence Salmon Harvest Estimates

Kotzebue District

As noted above, the Division of Subsistence conducted annual salmon harvest surveys in selected Kotzebue District communities from 1994 through 2004. The average yearly subsistence harvest for the regularly surveyed communities between 1994 and 2004 was 72,796 salmon, the majority of which were chum salmon (Table 3-2). This average was certainly low due to incomplete datasets for several years during that period; no year included all Kotzebue District communities. Harvest estimates for 1994, 2002, 2003, and 2004 summarized in earlier annual reports did not include the regional center of Kotzebue, by far the largest community in the district.

There is little subsistence salmon harvest data for Kotzebue District communities between 2005 and 2011, creating a large gap in statewide subsistence salmon harvest estimates. From 2012 to 2014, Division of Subsistence staff (Braem et al. 2018) systematically collected salmon harvest data from most Kotzebue District communities that had been part of the former annual program. This effort resulted in more complete district harvest estimates for those years and enabled the division to design a method to interpolate harvest estimates for a core set of district communities: Ambler, Kiana, Kobuk, Kotzebue, Noatak, Noorvik, and Shungnak. Buckland and Selawik were added to the core set of communities post-2013, when enough data became available. These interpolated estimates fill in critical data gaps to produce better estimates of district subsistence salmon harvests for all years back to 1994. Table 3-2 relies on those estimate methods to fill in data gaps for the Kotzebue District.

9. Subsistence research projects since 2007 have included: Fall et al. (2007:33), Magdanz et al. (2011:49–50), Magdanz et al. (2010), Braem et al. (2013), Braem et al. (2015), Braem et al. (2017), Braem et al. (2018).

10. Note that results from surveys in Point Hope were included in the Arctic District summary in the 2014 annual report. In this current report, Point Hope is included in the Kotzebue District, and data summaries for previous years have been modified to reflect this change.

The following protocols were followed to develop interpolated harvest estimates:

1. At least three years of data must be available upon which to interpolate an estimate for a missing year for a community;
2. Data gaps are only filled in for years after the third year of data becomes available. An exception is that an interpolated estimate for Kotzebue for 1994 was developed based on harvest data for 1995–1997;
3. The nearest three available estimates are used for each gap year;
4. In the event that two years are tied for being closest to a gap year, the most recent estimate is used;
5. Interpolated values using data available for this report have remained unchanged from the 2015 report and will remain the same in future reports even if new data become available. Only future data gaps will be addressed, using the above protocol;
6. Shishmaref is an exception; it has been excluded from the core communities even though three harvest estimates are available, because of the large variability in those three estimates and the very wide time gaps between them;
7. For 2015, Point Hope is also an exception. This North Slope Borough community, while within the Kotzebue District, is close to the boundary with the Arctic District and harvests salmon in both districts. Point Hope residents harvest a relatively large number of salmon compared to other North Slope Borough communities. As discussed below, no new harvest data for Arctic District communities were collected for 2015, and 2014 harvest estimates based on household surveys were used to represent 2015 harvests. The 2014 harvest estimate for Point Hope was therefore also used for 2015 and added to the interpolated values for the nine core communities within the Kotzebue District, as a step towards a more complete estimate for the entire management area;
8. If a salmon harvest estimate was, or becomes, available for a non-core community, it is included in the district total for that study year.

Table 3-7 shows, for each district community and each study year, whether a salmon harvest estimate is available through fisheries specific or comprehensive harvest surveys or interpolated using the rules described above, and those for which a harvest estimate cannot be developed. The table provides an overview of which district communities are represented in each annual estimate for the district, and the source of the data.

These protocols were applied to produce a Kotzebue District subsistence salmon harvest estimate for 2015, which was also used for 2016 and 2017 (Table 3-8). Because no salmon harvest surveys were conducted for any district community for 2015, 2016, or 2017, all the values in Table 3-8 for nine core communities are interpolated, and the 2014 harvest estimate for Point Hope was used to represent the 2015, 2016, and 2017 harvests. The harvest estimate for the district was 67,385 salmon, including 56,209 chum (83%), 6,912 coho (10%), 3,079 pink (5%), 633 Chinook (1%), and 552 sockeye (1%) (Figure 3-3). Historical harvest estimates for the Kotzebue District, 1994–2016, reported in Table 3-2 have been revised to include interpolated estimates, and therefore differ from estimates appearing in earlier annual reports. These revised annual estimates have also been used to revise the statewide estimates that are discussed in Chapter 2.

Arctic District

The Division of Subsistence conducted multiple subsistence harvest surveys in Arctic District communities (North Slope Borough) in 2012–2014, such that data reported in tables 3-9 and 3-10 are drawn from three separate projects identified above. Data for 2014 documented the fisheries in six of the eight communities in the Arctic District (including Point Hope, results for which are included in the Kotzebue District totals) (tables 3-9 and 3-10). The findings for salmon and nonsalmon fish were discussed in the 2014 annual report (Fall et al. 2017:38–39). Also, Table 3-11 summarizes all salmon harvest estimates for North Slope Borough

communities (Arctic District and Point Hope), including those before 2012. Note that these earlier (pre-2012) estimates are not included in statewide totals or used to develop district estimates because community coverage is very incomplete.

Fish harvest estimates for Point Lay are highly variable for the three most recent years (2012, 2013, 2014) for which information was collected. In 2014, residents of five Arctic District communities harvested about 8,332 salmon and 179,085 nonsalmon fish (about 2,111 of which were actually gallons of about 33 tiny fish). The composition of harvests varied dramatically between communities, both in the ratio of nonsalmon to salmon and also within the categories of salmon and nonsalmon fishes.

The ratio of salmon generally increased east to west. The inland community of Anaktuvuk Pass, high in the Brooks Range, reported zero harvest of salmon. The Colville River delta community of Nuiqsut, 150 miles east of Barrow, focuses their fish harvest on nonsalmon fish species and reported less than 1% of the fish harvests as salmon. In contrast, residents of the westernmost coastal community of Point Lay reported that 31% of the fish they caught were salmon.

Based on survey results for 2012–2014, subsistence salmon harvests in the Arctic District vary by community and also vary within the salmon category, with a general east to west trend of increasing diversity in the composition of the harvests. Chum salmon were the majority of the reported salmon harvest in Nuiqsut (72%) and Barrow (66%), augmented primarily by pink salmon (27% and 23%). The salmon supply in Barrow is augmented by catches from farther south, such as the Kenai Peninsula (Brown et al. 2016), probably more heavily than in the other communities because of statewide travel by many residents. In Wainwright, 41% of the salmon were reported as coho salmon, followed by 19% pink, 18% chum salmon, and 17% sockeye salmon. In Point Lay, 60% of salmon were reported as pink salmon, followed by 18% sockeye, and just 13% chum.

No salmon harvest survey data are available for Arctic District communities for 2015–2018. To fill this gap, harvest estimates for four communities (Barrow, Nuiqsut, Point Lay, and Wainwright) for 2014 were used as estimates for 2015–2018. The total estimated harvest is 8,332 salmon, with most identified as chum (4,247 salmon; 51%), pink (2,594 salmon; 31%), and 846 coho (10%) (Table 3-12, Figure 3-4)

As described by Mikow et al. (2016), fisheries in Alaska’s Arctic are overshadowed by the volume of marine mammal and large land mammal harvests and the intensity of hunting for those resources, but salmon are an increasingly important feature of the seasonal round. Even without consideration of the actual edible pounds provided, 8,332 salmon (12,500 salmon if Point Hope is included) clearly represent a substantial amount of food. Additional research is needed to monitor and document changes to salmon abundance and availability near these communities, as well as the efforts made to catch them.

Northwest Alaska Subsistence Salmon Harvests

Table 3-13 combines harvest estimates for the Norton Sound-Port Clarence Area and the Arctic-Kotzebue Area to provide estimates to compare with previous annual reports, where a “Northwest Alaska” harvest summary was prepared. Harvest estimates in this table for 1994–2014 were revised to include the interpolated values developed for the Kotzebue District. The Northwest Alaska subsistence salmon harvest in 2018 of 153,248 salmon was composed primarily of chum (72,652 salmon; 47%) and pink (39,860 salmon; 26%). The total salmon harvest for the combined areas in 2018 exceeded the recent 10-year average but was lower than the recent 5-year average and the historical average since 1994.

Table 3-1.—Subsistence salmon harvests by Norton Sound subdistricts, Norton Sound-Port Clarence Area, 2018.

Subdistrict ^b	Households surveyed or permits returned	Estimated salmon harvest ^a					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Cape Woolley	14	0	0	0	0	20	20
Elim	56	59	35	1,657	588	4,360	6,699
Golovin	209	50	83	1,369	773	6,944	9,219
Nome	613	12	341	4,935	1,195	10,786	17,269
Norton Bay	43	69	100	596	1,469	1,367	3,601
Shaktoolik	58	162	56	2,107	319	1,121	3,765
Unalakleet	233	810	235	5,204	2,227	5,017	13,493
Total	1,226	1,162	850	15,868	6,571	29,615	54,066

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Caution should be used when comparing data from other ADF&G divisions as different analytical methods may be used.

a. Includes subsistence harvests and commercial harvests retained for home use.

b. Saint Michael and Stebbins subdistricts were not surveyed in 2018.

Table 3-2.—Historic subsistence salmon harvests by district, Norton Sound-Port Clarence, and Arctic-Kotzebue Areas, 1994–2018.

Year	Norton Sound District						Total
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	
1994	839	7,212	1,161	22,108	24,776	70,821	126,077
1995	851	7,766	1,222	23,015	43,014	38,594	113,612
1996	858	7,255	1,182	26,304	34,585	64,724	134,050
1997 ^a	1,113	8,998	1,892	16,476	26,803	27,200	81,370
1998 ^a	1,184	8,295	1,214	19,007	20,032	51,933	100,480
1999	898	6,144	1,177	14,342	19,398	20,017	61,078
2000	860	4,149	682	17,062	17,283	38,308	77,485
2001	878	5,576	767	14,550	20,213	30,261	71,367
2002	935	5,469	763	15,086	17,817	64,354	103,490
2003	940	5,290	801	14,105	13,913	49,674	83,782
2004	1,003	3,169	363	8,225	3,200	61,813	76,770
2005	1,061	4,087	774	13,896	12,008	53,236	84,000
2006	1,066	3,298	901	19,476	10,306	48,764	82,745
2007	1,041	3,744	923	13,564	18,170	21,714	58,116
2008	1,151	3,087	399	18,889	11,505	56,096	89,976
2009	1,200	5,131	388	15,852	10,599	26,110	58,080
2010	1,030	2,074	554	11,517	14,295	38,710	67,149
2011	925	1,645	562	10,155	12,946	18,576	43,883
2012	1,245	1,290	437	11,500	16,247	47,050	76,524
2013	1,062	859	571	13,343	15,491	18,007	48,271
2014	1,239	1,713	766	18,257	23,802	39,673	84,210
2015	1,329	2,524	1,855	15,628	21,538	24,167	65,712
2016	1,435	2,649	1,423	16,514	18,144	42,051	80,781
2017	1,124	1,076	1,354	21,083	14,230	31,977	69,720
2018	1,226	1,162	850	15,868	6,571	29,615	54,066
5-year average (2013–2017)	1,238	1,764	1,194	16,965	18,641	31,175	69,739
10-year average (2008–2017)	1,174	2,205	831	15,274	15,880	34,242	68,431
Historical average (1994–2017)	1,053	4,271	922	16,248	18,346	40,993	80,780

Year	Port Clarence District						Total
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	
1994	151	203	2,220	1,892	2,294	4,309	10,918
1995	151	76	4,481	1,739	6,011	3,293	15,600
1996	132	194	2,634	1,258	4,707	2,236	11,029
1997	163	158	3,177	829	2,099	755	7,019
1998	157	289	1,696	1,759	2,621	7,815	14,179
1999	177	89	2,392	1,030	1,936	786	6,233
2000	163	72	2,851	935	1,275	1,387	6,521
2001	160	84	3,692	1,299	1,910	1,183	8,167

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Year	Port Clarence District						Total
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	
2002	176	133	3,732	2,194	2,699	3,394	12,152
2003	242	176	4,436	1,434	2,425	4,108	12,578
2004	371	278	8,688	1,131	2,505	5,918	18,520
2005	329	152	8,532	726	2,478	6,593	18,481
2006	345	133	9,862	1,057	3,967	4,925	19,944
2007	362	85	9,484	705	4,454	1,468	16,196
2008	399	125	5,144	562	2,499	7,627	15,957
2009	328	40	1,643	799	3,060	1,887	7,429
2010	295	57	824	596	5,232	5,202	11,911
2011	271	56	1,611	393	4,338	2,610	9,008
2012	335	44	1,422	703	7,802	5,201	15,172
2013	431	38	5,243	651	6,588	1,788	14,308
2014	429	21	3,969	564	5,085	4,940	14,579
2015	549	64	13,872	550	4,231	2,982	21,699
2016	659	40	12,140	627	4,303	4,322	21,432
2017	664	39	15,424	697	6,886	5,365	28,411
2018	683	55	12,381	764	5,625	4,556	23,381
5-year average (2013–2017)	546	40	10,130	618	5,419	3,879	20,086
10-year average (2008–2017)	436	52	6,129	614	5,002	4,192	15,991
Historical average (1994–2017)	310	110	5,382	1,005	3,809	3,754	14,060

Year	Kotzebue District ^{b,c}						Total
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	
1994 ^d	377	137	461	963	50,075	3,386	55,022
1995	537	149	489	1,820	95,901	564	98,924
1996	596	550	471	317	99,137	951	101,426
1997	529	468	531	848	57,149	1,190	60,186
1998	592	378	392	461	48,974	2,116	52,321
1999	353	9	478	1,334	94,260	841	96,922
2000	423	210	74	2,546	62,582	75	65,486
2001 ^e	447	26	15	776	49,481	59	50,356
2002 ^f	555	94	16	304	51,092	123	51,628
2003 ^{gh}	650	467	223	1,790	27,444	964	30,888
2004 ^g	548	124	21	1,647	31,770	1,123	34,686
2005 ⁱ	520	729	739	1,327	38,082	721	41,598
2006 ^{ij}	664	951	2,469	4,203	39,906	3,334	50,863
2007 ^{ij}	583	872	1,131	1,286	36,359	832	40,480
2008 ⁱ	527	929	1,271	1,671	43,605	948	48,425
2009 ⁱ	530	766	1,237	1,928	45,264	983	50,177
2010 ⁱ	528	752	1,148	1,783	44,678	964	49,325

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Year	Kotzebue District ^{b,c}						
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	Total
2011 ^j	594	761	1,303	2,151	46,160	951	51,326
2012 ^k	507	31	668	1,274	37,915	757	40,645
2013 ^l	822	301	560	4,042	58,075	1,773	64,751
2014 ^m	1,061	814	3,070	6,288	64,580	5,111	79,864
2015 ⁿ	737	364	748	3,068	48,911	1,454	54,545
2016 ⁿ	737	364	748	3,068	48,911	1,454	54,545
2017 ⁿ	737	364	748	3,068	48,911	1,454	54,545
2018 ⁿ	829	633	552	6,912	56,209	3,079	67,385
5-year average (2013–2017)	819	441	1,175	3,907	53,877	2,249	61,650
10-year average (2008–2017)	678	545	1,150	2,834	48,701	1,585	54,815
Historical average (1994–2017)	590	442	792	1,998	52,884	1,339	57,456

Year	Arctic District ^o						
	Number of households	Chinook	Sockeye	Coho	Chum	Pink	Total
2012	120	34	79	477	710	1,256	2,556
2013	122	62	151	147	337	238	935
2014	485	126	519	846	4,247	2,594	8,332
2015	432	126	519	846	4,247	2,594	8,332
2016	432	126	519	846	4,247	2,594	8,332
2017	432	126	519	846	4,247	2,594	8,332
2018	432	126	519	846	4,247	2,594	8,332
Historical average (2012–2017)	337	100	384	668	3,006	1,979	6,136

Source ADF&G

a. Includes Gambell and Savoonga.

b. Formerly Kotzebue Area

c. For 1994–2001, normally included Ambler, Kiana, Kobuk, Kotzebue, Noatak, Noorvik, and Shungnak. See Table 3-7 for details.

d. Also includes Deering, Wales, Shishmaref, and Point Hope; includes imputed values for Kotzebue.

e. Includes imputed estimates for Ambler.

f. Includes Kotzebue, Noatak, Noorvik, and imputed values for Kobuk, Kiana, Ambler, and Shungnak.

g. Kotzebue values for species other than chum are imputed.

h. Also includes Buckland.

i. Core communities for Kotzebue Sound have been imputed based on data collected in other years, see

j. Harvest survey data exist in 2006, 2007 and 2011 for Kiana (2006), Shishmaref (2006), Wales (2006), Kivalina (2007), Noatak (2007), and Selawik (2011). These are available online through the Community Subsistence Information System (CSIS) at <http://www.adfg.alaska.gov/sb/CSIS/>, other core values have been imputed, see Table 3-7

k. Includes Ambler, Kiana, Kobuk, Noatak, Noorvik, Shungnak, and imputed values for Kotzebue.

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- l. Includes Ambler, Buckland, Deering, Diomedes, Kiana, Kobuk, Noatak, Noorvik, Selawik, and Shungnak, and imputed values for Kotzebue.
- m. Includes Ambler, Buckland, Kiana, Kobuk, Kotzebue, Noatak, Noorvik, Point Hope, Selawik, Shishmaref, and Shungnak.
- n. No harvest data collected. Imputed values for nine core communities and Point Hope; see Table 3-7.
- o. Includes Point Lay and Wainwright for 2012 and 2013. Includes Anaktuvuk Pass, Barrow, Nuiqsut, Point Lay, and Wainwright for 2014. No new harvest data collected for 2015–2018; values for 2014 used to represent 2015–2018 harvests.

Table 3-3.–Subsistence salmon harvests by district, Norton Sound-Port Clarence, and Arctic-Kotzebue areas, 2018.

District	Households surveyed or permits returned	Estimated salmon harvest ^a					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Norton Sound District ^b	1,226	1,162	850	15,868	6,571	29,615	54,066
Port Clarence District ^c	683	55	12,381	764	5,625	4,556	23,381
Kotzebue District ^d	826	633	552	6,912	56,209	3,079	67,385
Arctic District ^e	432	126	519	846	4,247	2,594	8,332
Total	3,167	1,976	14,302	24,390	72,652	39,844	153,164

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Harvests reported during household surveys are expanded into estimates to account for uncontacted households. Harvests reported on permits are not expanded.

b. Household surveys conducted in Unalakleet, Koyuk, and Shaktoolik. Permits issued for Cape Woolley, Nome Subdistrict (Tier I), Golovin Subdistrict, and Elim Subdistrict.

Port Clarence District,

d. No new harvest data were collected for 2018. Harvest estimates are imputed based on the most recent three years of data for nine core communities in the district, plus 2014 values for Point Hope. See Table 3-7.

e. No new harvest data were collected. Estimates for 2014 used to represent 2018 harvests.

Table 3-4.—Subsistence salmon harvests by community, Norton Sound-Port Clarence Area, 2018.

Community ^b	Households or permits Surveyed		Estimated salmon harvest ^a					
	Total	or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	16	16	0	104	1	0	124	229
Bethel	1	1	0	0	3	0	0	3
Brevig Mission	48	48	27	1,501	490	3,139	2,595	7,752
Diomedes	3	3	0	0	0	0	44	44
Elim	47	47	58	35	1,601	573	3,519	5,786
Fairbanks	8	8	0	58	0	0	4	62
Galena	3	3	0	0	0	1	4	5
Gambell	2	2	0	0	0	0	0	0
Golovin	37	37	30	72	586	349	1,902	2,939
Houston	1	1	0	0	0	0	0	0
Kodiak (city)	2	2	0	10	0	2	0	12
Koyuk	83	45	69	279	596	1,470	1,396	3,810
Nome	1,312	1,297	29	9,053	5,322	1,496	12,265	28,165
North Pole	5	5	0	63	0	0	65	128
Palmer	6	6	0	62	0	0	10	72
Savoonga	3	3	0	0	4	0	40	44
Seward	2	2	0	0	47	0	30	77
Shaktolik	70	58	162	56	2,107	319	1,121	3,765
Sitka	3	3	0	0	0	0	1	1
Teller	48	47	15	1,669	178	2,264	1,404	5,530
Unalakleet	252	233	810	235	5,204	2,227	5,017	13,493
Wasilla	4	4	0	20	0	0	107	127
White Mountain	36	36	17	14	493	356	4,523	5,403
Total	1,992	1,907	1,217	13,231	16,632	12,196	34,171	77,447

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Includes subsistence harvests and commercial harvests retained for home use.

b. Harvest information from residents of nonlocal communities (e.g. Anchorage) is available only for Norton Sound and Port Clarence permit areas. Nonlocal residents might subsistence fish in other northwest Alaska areas, but these harvests are not documented in the regional household surveys.

Table 3-5.—Subsistence salmon harvests by Kotzebue District^a communities.

Year	Community	Households		Estimated salmon harvest					Total
		Total	Surveyed	Chinook	Sockeye	Coho	Chum	Pink	
2006	Kiana	95	77	43	270	510	4,604	89	5,516
	Shishmaref	133	75	155	1,056	2,091	938	1,765	6,005
	Wales	41	39	43	452	475	407	829	2,206
Total, 2006		269	191	241	1,778	3,076	5,949	2,684	13,727
2007	Kivalina	81	42	40	0	33	401	120	593
	Noatak	119	90	11	42	247	4,167	163	4,630
Total, 2007		200	132	51	42	280	4,568	283	5,224
2011	Selawik	169	61	0	167	7	879	0	1,053
Total, 2011		169	61	0	167	287	879	0	1,053
2012	Ambler	76	53	1	126	11	1,621	9	1,769
	Kiana	103	65	3	63	240	2,442	320	3,068
	Kobuk	36	30	4	0	14	2,637	4	2,659
	Noatak	126	83	2	94	612	7,814	80	8,601
	Noorvik	135	83	7	81	338	9,584	275	10,285
	Shungnak	69	46	0	90	15	2,595	9	2,709
Total, 2012		545	360	16	455	1,230	26,694	697	29,092
2013	Ambler	69	52	8	9	187	4,320	260	4,784
	Buckland	105	87	226	236	838	3,104	129	4,533
	Deering	44	32	1	34	327	1,309	849	2,521
	Diomedede	39	25	0	16	0	109	27	151
	Kiana	93	68	5	37	161	2,969	212	3,384
	Kobuk	31	24	3	1	0	2,043	9	2,056
	Noatak	125	94	5	0	1,233	5,655	32	6,925
	Noorvik	132	99	37	15	1,207	19,972	173	21,404
	Selawik	171	145	1	0	0	362	15	378
	Shungnak	65	49	0	0	0	7,257	0	7,257
Total, 2013		874	675	286	348	3,953	47,100	1706	53,394
2014	Ambler	74	55	5	40	369	4,182	336	4,933
	Buckland	98	90	250	318	1,144	4,188	957	6,857
	Kiana	98	73	3	3	75	2,849	31	2,960
	Kobuk	33	28	0	0	4	1,840	0	1,843
	Noatak	125	106	38	6	1,859	6,577	126	8,605
	Noorvik	124	96	32	133	619	16,668	920	18,371
	Point Hope	176	105	142	13	1,123	1,723	1,170	4,172
	Selawik	183	161	23	10	11	1,151	122	1,317
	Shishmaref	140	86	142	1,924	1,027	7,129	1,281	11,503
	Shungnak	62	43	0	0	29	5,101	72	5,202
	Kotzebue	826	214	46	625	324	21,144	367	22,507
Total, 2014		1,939	1,057	681	3,073	6,583	72,551	5,382	88,270
2018	Buckland	101	71	257	34	3,069	8,228	694	12,283
Total, 2018		101	71	257	34	3,069	8,228	694	12,283

Source ADF&G Division of Subsistence, household surveys, 2008, 2012, 2013, 2014, 2015, 2019.

a. Formerly Kotzebue Area.

Table 3-6.-Subsistence nonsalmon harvests by Kotzebue District^a communities.

Year	Community	Households			Estimated number of fish								
		Total	Surveyed	Dolly Varden	Arctic grayling	Burbot	Broad whitefish	Humpback whitefish	Unknown whitefishes	Northern pike	Saffron cod	Sheefish	Total
2006	Kiana ^a	95	77	413	113	909	ND	ND	0	1,043	4	1,298	3,780
	Shishmaref ^b	132	75	1,331	1,533	176	ND	ND	0	0	20,131	42	23,212
	Wales ^b	41	39	220	11	0	ND	ND	0	0	6.3	0	237
Total, 2006		268	191	1,963	1,656	1,085	0	0	0	1,043	20,141	1,340	27,229
2007	Kivalina ^b	81	42	20,527	786	15	ND	ND	0	0	25,824	0	47,152
	Noatak ^b	119	90	10,234	1,222	42	ND	ND	0	144	192	99	11,933
Total, 2007		200	132	30,761	2,008	58	0	0	0	144	26,015	99	59,086
2011	Selawik	169	61	19	815	1,081	47,394	12,647	0	15,956	0	6,190	84,102
Total, 2007		169	61	19	815	1,081	47,394	12,647	0	15,956	0	6,190	84,102
2012	Ambler	76	53	85	948	146	9,150	1,544	0	568	0	1,156	13,597
	Kiana	103	65	249	ND	464	3,596	2,307	0	278	ND	1,787	8,682
	Kobuk	36	30	40	256	23	286	157	0	96	0	1,062	1,919
	Noatak	126	83	6,437	352	ND	1,826	1,205	0	26	ND	100	9,946
	Noorvik	135	83	99	28	876	10,087	6,406	0	5,134	0	6,032	28,662
	Shungnak	69	46	99	399	50	888	660	0	38	0	1,556	3,689
Total, 2012		545	360	7,008	1,983	1,559	25,833	12,280	0	6,139	0	11,694	66,496
2013	Ambler	69	52	175	646	40	3,496	2,301	0	673	11	2,649	9,991
	Buckland	105	87	341	10	120	333	1,118	0	246	ND	1,013	3,180
	Deering	44	32	489	135	92	21	94	0	150	296	176	1,452
	Diomedede	39	25	0	0	0	0	0	0	0	0	0	0
	Kiana	93	68	54	ND	316	2,832	3,251	0	242	ND	1,787	8,482
	Kobuk	31	24	22	140	0	1,337	1,382	12,211	61	ND	865	16,018
	Noatak	125	94	6,223	ND	78	2,219	358	0	63	0	247	9,188
	Noorvik	132	99	207	ND	815	14,380	15,945	0	7,932	27	3,167	42,473
	Selawik	171	145	0	33	795	23,159	7,648	0	10,593	0	8,829	51,057
	Shungnak	65	49	44	110	42	578	8,400	0	127	ND	3,559	12,860
Total, 2013		874	675	7,555	1,074	2,298	48,355	40,496	12,211	20,087	334	22,292	154,701

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Table 3-6.-Page 2 of 2.

Year	Households			Estimated number of fish									
	Community	Total	Surveyed	Dolly		Arctic		Burbot	Broad		Humpback	Unknown	
				Varden	grayling	grayling	grayling		whitefish	whitefish		whitefishes	whitefishes
2014	Ambler	74	55	67	908	417	9,492	3,352	0	358	ND	1,806	16,400
	Buckland	98	90	747	1	312	1,150	105	0	99	11,807	1,067	15,288
	Kiana	98	73	351	ND	320	4,113	4,570	0	419	0	1,073	10,846
	Kobuk	33	28	11	231	41	7	2,251	0	55	ND	781	3,377
	Noatak	125	106	9,289	84	21	879	1,165	0	44	47	206	11,735
	Noorvik	124	96	260	ND	306	11,728	11,660	568	5,975	0	2,964	33,462
	Point Hope	176	105	5,692	7,006	ND	240	39	ND	ND	ND	0	12,977
	Selawik	183	161	2	126	298	17,202	5,250	0	8,855	0	4,164	35,897
	Shishmaref	140	86	1,205	969	34	230	1,037	8	0	34,209	11	37,702
	Shungnak	62	43	216	1,116	19	7,776	1,067	0	29	ND	3,123	13,346
	Kotzebue	826	214	2,116	182	50	201	367	0	436	17,118	17,322	37,792
Total, 2014		1,939	1,057	19,955	10,623	1,819	53,017	30,862	576	16,270	63,181	32,517	228,821
2018 Buckland		101	71	604	48	424	477	405	44	842	19,017	2,444	24,306
Total, 2018		101	71	604	48	424	477	405	44	842	19,017	2,444	24,306

Source ADF&G Division of Subsistence, household surveys, 2007, 2008, 2012, 2013, 2014, 2015.

a. Formerly Kotzebue Area.

b. Harvest information is available for whitefishes as a species category only. Kiana harvested 10,834 whitefishes, Shishmaref harvested 4,616, and Wales harvested 262 in 2006. Kivalina harvested 338 whitefishes and Noatak harvested 6,778 in 2007.

ND = no data

Table 3-7.-Communities of the Kotzebue District for which salmon harvest estimates are available through postseason harvest surveys, 1994–2015.

	Ambler ^a	Buckland ^b	Deering	Diomedé	Kiana ^a	Kivalina	Kobuk ^a	Kotzebue ^a	Noatak ^a	Noorvik ^a	Pt. Hope	Selawik ^b	Shishmaref	Shungnak ^a	Wales
1994	X		X		X		X		X	X	XX		X	X	X
1995	X				X		X	X	X	X				X	
1996	X				X		X	X	X	X				X	
1997	X				X		X	X	X	X				X	
1998	X				X		X	X	X	X				X	
1999	X				X		X	X	X	X				X	
2000	X				X		X	X	X	X				X	
2001	X				X		X	X	X	X				X	
2002								XX	X	X					
2003	X	XX			X		X	XX	X	X				X	
2004	X				X		X	XX	X	X				X	
2005															
2006					XX				XX				XX		XX
2007															
2008															
2009															
2010															
2011															
2012	X				X		X		X	X		XX		X	
2013	X	X	XX		X		X		X	X		X		X	
2014	X	X			X		X	X	X	X	X		XX	X	
2015															

X = harvest data are the product of annual salmon harvest monitoring programs (1994–2004) or salmon-specific harvest surveys (2012+)

XX = harvest data are product of comprehensive household harvest survey project

Harvest estimates interpolated based on available survey data and used to estimate district harvests

Harvest estimates cannot be interpolated based on available data; no community estimate included in district total

Estimated harvest for 2014 used to represent Point Hope harvest in 2015.

a. Communities included in all Kotzebue District salmon estimates ("core communities"), 1994–present

b. Communities included in all Kotzebue District salmon estimates post-2012

Sources: For communities not part of annual subsistence salmon harvest surveys: Whiting (2007) for Kotzebue 2002–2004; Bacon et al. (2009) for Point Hope 1994; CSIS for all others.

Table 3-8.—Imputed subsistence salmon harvests for Kotzebue District communities, 2018.

Community	Households		Estimated salmon harvest ^b					
	Total	Surveyed	Chinook	Sockeye	Coho	Chum	Pink	Total
Ambler	73	53	5	59	189	3,242	200	3,694
Buckland ^c	101	71	257	34	3,069	8,228	694	12,283
Kiana	98	69	4	34	159	2,753	188	3,137
Kobuk	33	27	2	0	6	2,174	4	2,186
Kotzebue	589	148	15	213	44	11,385	66	11,722
Noatak	125	94	15	33	1,057	6,477	80	7,662
Noorvik	130	93	23	75	674	14,267	387	15,425
Point Hope ^d	176	105	313	13	1,694	2,141	1,427	5,588
Selawik	174	122	0	59	6	559	5	631
Shungnak	66	46	0	30	15	4,985	27	5,056
Total	1,566	829	633	552	6,912	56,209	3,079	67,385

Source Estimates based on ADF&G Division of Subsistence, household surveys, 2008, 2012, 2013, 2014, 2015.

a. Formerly Kotzebue Area.

b. No new data collection occurred for 2016, estimates provided are based on 2015 estimates.

c. Buckland was surveyed for the 2018 fishing season.

d. For Point Hope, value for 2014 used to represent 2018.

Table 3-9.--Subsistence salmon harvests by Arctic District communities.

Year	Community	Households		Estimated salmon harvest					
		Total	Surveyed	Chinook	Sockeye	Coho	Chum	Pink	Total
2012	Point Lay	67	42	14	13	372	659	1,120	2,178
	Wainwright	152	78	20	66	105	51	136	378
Total, 2012		219	120	34	79	477	710	1,256	2,556
2013	Point Lay	64	42	0	30	3	157	84	274
	Wainwright	150	80	62	121	144	180	154	661
Total, 2013		214	122	62	151	147	337	238	935
2014	Anaktuvuk Pass	99	53	0	0 ^a	0	0	0	0
	Nuiqsut	108	58	0	2	0	261	99	361
	Point Lay	63	40	32	358	142	258	1,151	1,940
	Utqiagvik	1,584	259	67	73	495	3,639	1,248	5,523
	Wainwright	145	75	27	86	209	89	97	507
Total, 2014		1,999	485	126	519	846	4,247	2,594	8,332

Source ADF&G Division of Subsistence, household surveys, 2015.

a. An estimated 56 sockeye salmon were harvested with dip nets in the Chitina personal use fishery (Brown et al. 2016:421).

Table 3-10.--Subsistence nonsalmon harvests by Arctic District communities.

Year	Households			Estimated number of fish											
	Community	Total	Surveyed	Arctic char / Dolly Varden		Arctic cisco	Arctic grayling	Bering cisco	Broad whitefish	Humpback whitefish	Least cisco	Round whitefish	Sheefish	Smelt ^a	Total
2012	Point Lay	67	42	493	279	1,945	479	0	5	0	479	37	55	3,770	
	Wainwright	152	78	0	0	7,513	648	1,562	1,606	624	0	0	3,489	15,442	
Total, 2012		219	120	493	279	9,458	1,127	1,562	1,611	624	479	37	3,545	19,212	
2013	Point Lay	64	42	20	0	2,670	0	0	8	0	0	0	73	2,771	
	Wainwright	150	80	62	934	3,056	4,104	508	253	1,554	19	38	1,480	12,008	
Total, 2013		214	122	82	934	5,726	4,104	508	261	1,554	19	38	1,553	14,780	
2014	Anaktuvuk Pass	99	53	1,200	0	2,519	0	0	47	19	4	0	0	3,787	
	Nuiqsut	108	58	648	46,277	1,626	19	11,439	119	13,332	19	0	152	73,632	
	Point Lay	63	40	69	9	4,078	11	25	3	2	0	0	97	4,294	
	Utqiagvik	1,584	259	398	17,510	11,173	0	43,962	1,500	13,375	654	0	225	88,797	
	Wainwright	145	75	213	696	2,714	58	3,180	44	97	0	10	1,563	8,575	
Total, 2014		1,999	485	2,527	64,492	22,110	88	58,607	1,713	26,825	677	10	2,037	179,085	

Source ADF&G Division of Subsistence, household surveys, 2015.

a. Smelt are counted in gallons.

Table 3-11.—Subsistence salmon harvest estimates, North Slope Borough communities.

Community	Year	Estimated number of salmon harvested						Total
		Chinook	Sockeye	Coho	Chum	Pink	Unknown	
Anaktuvuk Pass ^a	1992							0
Anaktuvuk Pass ^a	1994							0
Anaktuvuk Pass ^a	1996					68		68
Anaktuvuk Pass ^a	1998			3				3
Anaktuvuk Pass ^a	1999							0
Anaktuvuk Pass ^a	2000							0
Anaktuvuk Pass ^a	2001							0
Anaktuvuk Pass ^a	2002							0
Anaktuvuk Pass ^b	2011	37		47	1		3	88
Anaktuvuk Pass ^b	2014		56 ^f					56
Atkasuk ^b	1994	0	0	14	0	0	0	14
Atkasuk ^b	1996	4	0	0	6	0	0	9
Atkasuk ^b	1997	0	0	0	0	40	0	40
Kaktovik ^c	1985	0	0	0	0	0	0	0
Kaktovik ^c	1986	0	0	0	0	0	0	0
Kaktovik ^c	1992	0	0	0	0	8	42	50
Kaktovik ^b	1994	0	0	0	1	0	0	1
Kaktovik ^b	2002	0	0	0	0	0	0	0
Nuiqsut ^c	1985	0	0	0	0	441	0	441
Nuiqsut ^b	1992	3	0	5	0	0	0	8
Nuiqsut ^c	1993	10	0	12	70	160	19	272
Nuiqsut ^b	1994	0	0	0	0	10	0	10
Nuiqsut ^b	1995	0	0	0	0	0	42	42
Nuiqsut ^b	2000	3	0	5	0	0	2	10
Nuiqsut ^b	2014	0	2	0	261	99	0	361
Point Hope ^{b,e}	1992	266	0	554	0	801	0	1,621
Point Hope ^{b,e}	1994	0	0	214	641	0	6,197	7,052
Point Hope ^{d,e}	2014	142	13	1,123	1,723	1,170	0	4,172
Point Lay ^c	1987	0	0	0	40	107	0	147
Point Lay ^b	1994	4	0	182	3	200	86	476
Point Lay ^b	2002	2	70	99	2	0	0	173
Point Lay ^d	2012	14	13	372	659	1,120	0	2,178
Point Lay ^d	2013	0	30	3	157	84	0	274
Point Lay ^d	2014	32	358	142	258	1,151	0	1,940
Utqiagvik ^c	1987	4	0	103	11	12	66	196
Utqiagvik ^c	1988	1	0	70	5	1	3	80
Utqiagvik ^c	1989	31	0	828	529	262	439	2,088
Utqiagvik ^c	1992	287	0	777	0	573	0	1,637
Utqiagvik ^c	1995	6	0	27	0	51	204	288
Utqiagvik ^c	1996	9	0	78	203	0	55	345
Utqiagvik ^c	2000	165	0	463	374	1,085	12	2,100
Utqiagvik ^c	2001	34	0	93	63	107	36	332

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Table 3-11–Page 2 of 2.

Community	Year	Estimated number of salmon harvested						Total
		Chinook	Sockeye	Coho	Chum	Pink	Unknown	
Utqiagvik ^c	2003	439	0	845	1,617	1,050	44	3,995
Utqiagvik ^c	2014	67	73	495	3,639	1,248	0	5,523
Wainwright ^c	1988	0	0	0	3	6	2	11
Wainwright ^c	1989	9	0	0	68	52	0	129
Wainwright ^b	1992	50	0	214	0	99	0	363
Wainwright ^b	2002	0	0	120	28	129	44	321
Wainwright ^d	2012	20	66	105	51	136	0	378
Wainwright ^d	2013	62	121	144	180	154	0	661
Wainwright ^d	2014	27	86	209	89	97	0	507

a. Known estimates of salmon harvests in Arctic District communities based on household surveys since 1985. Only estimates since 2012 are included in area and statewide totals.

b. *Source* Bacon et al. 2009.

c. *Source* CSIS.

d. *Source* Fall et al. 2017.

e. The North Slope Borough community of Point Hope is within the Kotzebue District, but near the boundary with the Arctic District, and harvests salmon and other fish in both districts.

Table 3-12.—Estimated subsistence salmon harvests for Arctic District communities, 2018.

Community	Households		Estimated salmon harvest ^a					
	Total	Surveyed	Chinook	Sockeye	Coho	Chum	Pink	Total
Nuiqsut	108	58	0	2	0	261	99	361
Point Lay	63	40	32	358	142	258	1,151	1,940
Utqiagvik	1,584	259	67	73	495	3,639	1,248	5,523
Wainwright	145	75	27	86	209	89	97	507
Total	1,900	432	126	519	846	4,247	2,594	8,332

Source ADF&G Division of Subsistence, household surveys, 2015.

a. Values for 2014 used to represent 2018 harvests.

Table 3-13.—Historical subsistence salmon harvests, Norton Sound, Port Clarence, Arctic, and Kotzebue districts, 1975–2018.

Year	Households or permits Surveyed or		Estimated salmon harvest ^a					
	Total	returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1975	117	79	3	225	102	3,698	7,298	11,326
1976	138	104	6	0	275	1,856	5,472	7,609
1977	195	181	35	64	623	12,222	2,839	15,783
1978	168	126	31	0	242	4,035	10,697	15,005
1979	138	119	519	0	1,007	3,419	5,842	10,787
1980	232	161	135	0	2,075	5,839	21,728	29,777
1981	236	169	47	88	1,844	9,251	6,100	17,330
1982	230	182	33	6	2,093	5,719	20,480	28,331
1983	243	189	74	40	1,950	7,013	8,499	17,576
1984	240	189	85	0	1,890	4,945	18,067	24,987
1985	215	198	56	114	1,054	5,717	2,117	9,058
1986	279	240	157	127	788	8,494	9,011	18,577
1987	235	173	97	102	812	7,265	705	8,981
1988	192	166	67	171	1,089	6,379	2,543	10,249
1989	173	130	24	131	549	3,456	924	5,084
1990	188	165	60	234	542	4,525	2,413	7,774
1991	155	128	83	166	1,279	3,715	194	5,437
1992	163	132	152	163	1,720	2,030	7,746	11,811
1993	142	104	51	74	1,780	1,578	758	4,241
1994	2,390	1,386	8,079	3,880	25,284	118,696	79,588	235,527
1995	2,329	1,445	8,070	6,639	27,314	151,905	43,947	237,875
1996	2,177	1,454	7,999	4,287	27,879	139,032	67,911	247,108
1997	2,398	1,645	9,620	5,597	18,153	86,808	29,135	149,313
1998	2,620	1,730	8,967	3,301	21,226	71,632	61,863	166,989
1999	2,351	1,300	6,242	4,046	16,706	115,676	21,644	164,315
2000	2,247	1,336	4,399	3,612	20,654	84,196	40,499	153,360
2001	2,261	1,298	5,686	4,474	16,641	74,517	31,503	132,820
2002	2,047	1,568	5,715	4,669	18,511	82,404	68,108	179,407
2003	2,141	1,609	5,576	5,453	17,192	55,257	54,646	138,122
2004	2,386	1,922	3,604	9,322	12,198	58,834	71,122	155,080
2005	2,084	1,626	4,359	9,600	16,350	67,360	60,822	158,491
2006	2,257	1,765	3,774	12,788	25,136	68,971	57,297	167,966
2007	2,185	1,658	3,996	10,841	16,123	73,829	24,231	129,020
2008	2,237	1,701	3,340	6,023	21,691	72,599	64,887	168,540
2009	2,404	1,741	5,322	2,830	18,910	71,598	29,121	127,781
2010	2,238	1,566	2,269	2,108	14,227	76,881	45,017	140,502
2011	2,348	1,532	1,848	3,064	13,207	76,320	22,278	116,718
2012	2,633	1,867	1,479	2,747	14,237	74,224	54,339	147,027
2013	2,735	1,972	1,339	6,617	18,094	90,902	20,998	137,950
2014	5,137	2,690	2,399	6,403	25,222	98,557	51,307	183,888
2015	5,450	3,164	3,391	17,075	21,785	81,067	32,641	155,960
2016	5,619	3,380	3,492	14,912	22,749	77,745	51,865	170,763
2017	5,379	3,074	1,918	18,126	27,388	76,414	42,834	166,681
2018	5,480	3,108	1,976	14,369	24,390	72,652	39,860	153,248

-continued-

Table 3-13.—Page 2 of 2.

5-year average (2013–2017)	4,864	2,856	2,508	12,627	23,048	84,937	39,929	163,048
10-year average (2008–2017)	3,618	2,269	2,680	7,990	19,751	79,631	41,529	151,581
Historical average (1994–2017)	2,836	1,851	4,703	7,017	19,870	85,226	46,983	163,800

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Since 1994 ADF&G has conducted annual subsistence salmon harvest assessment efforts in Northwest Alaska that provide more extensive and reliable estimates than those for earlier years. Harvest estimates prior to 1994 cannot be directly compared with those of previous years.

a. After 1994, includes selected communities in the Norton Sound District, Port Clarence District, Arctic District, and Kotzebue District (formerly Kotzebue Area) that were part of annual harvest assessment programs or a post-season survey. Also includes imputed values for a core set of Kotzebue District communities beginning in 1994. See Table 3-3 and Table 3-7 for details on which communities were included for study years since 1994. Harvest estimates are only available since 2012 for selected Arctic District communities. See Table 3-7 and Table 3-9 for details.

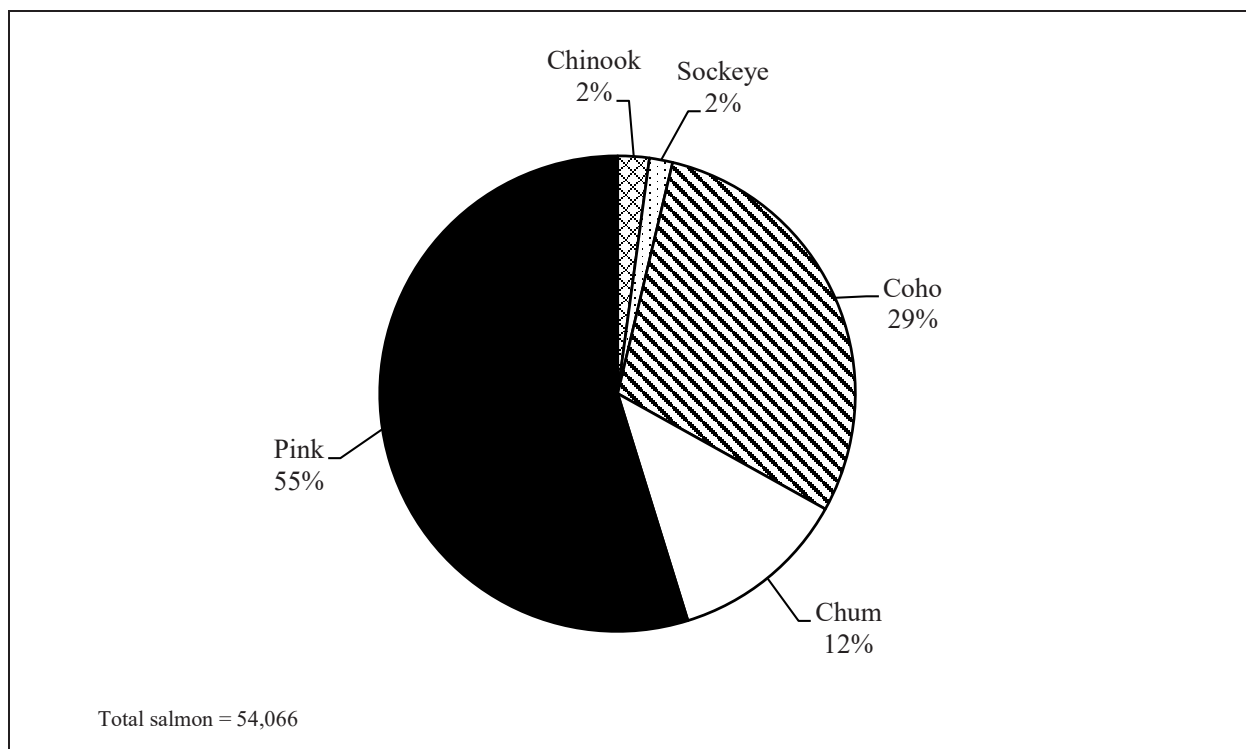


Figure 3-1.—Species composition of estimated subsistence salmon harvests, Norton Sound District, 2018.

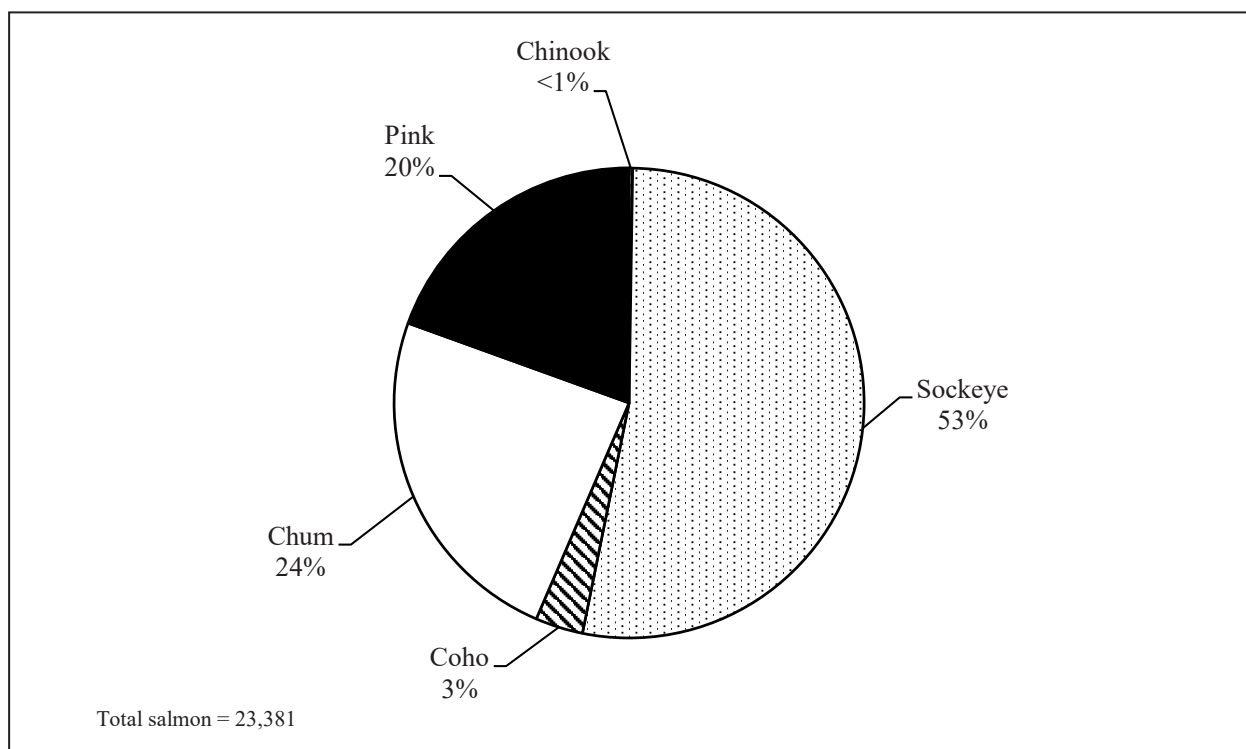


Figure 3-2.—Species composition of estimated subsistence salmon harvests, Port Clarence District, 2018

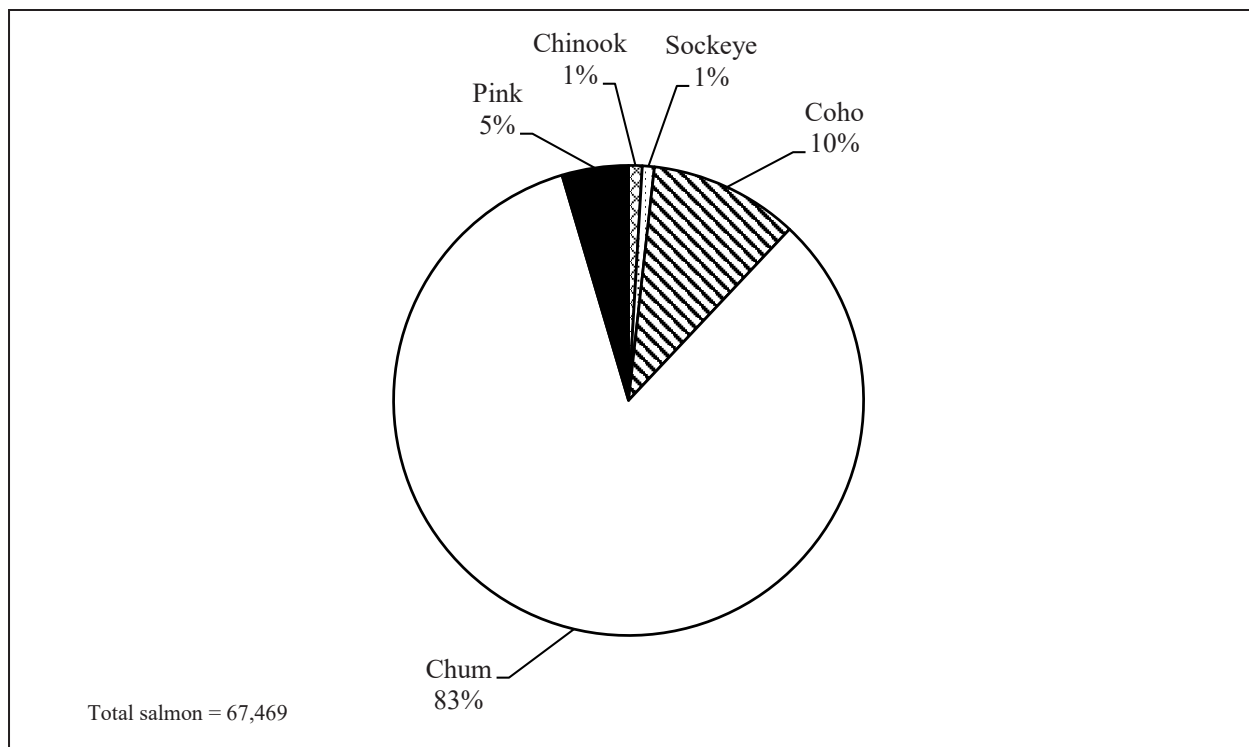


Figure 3-3.—Species composition of estimated subsistence salmon harvests, Kotzebue District, 2018.

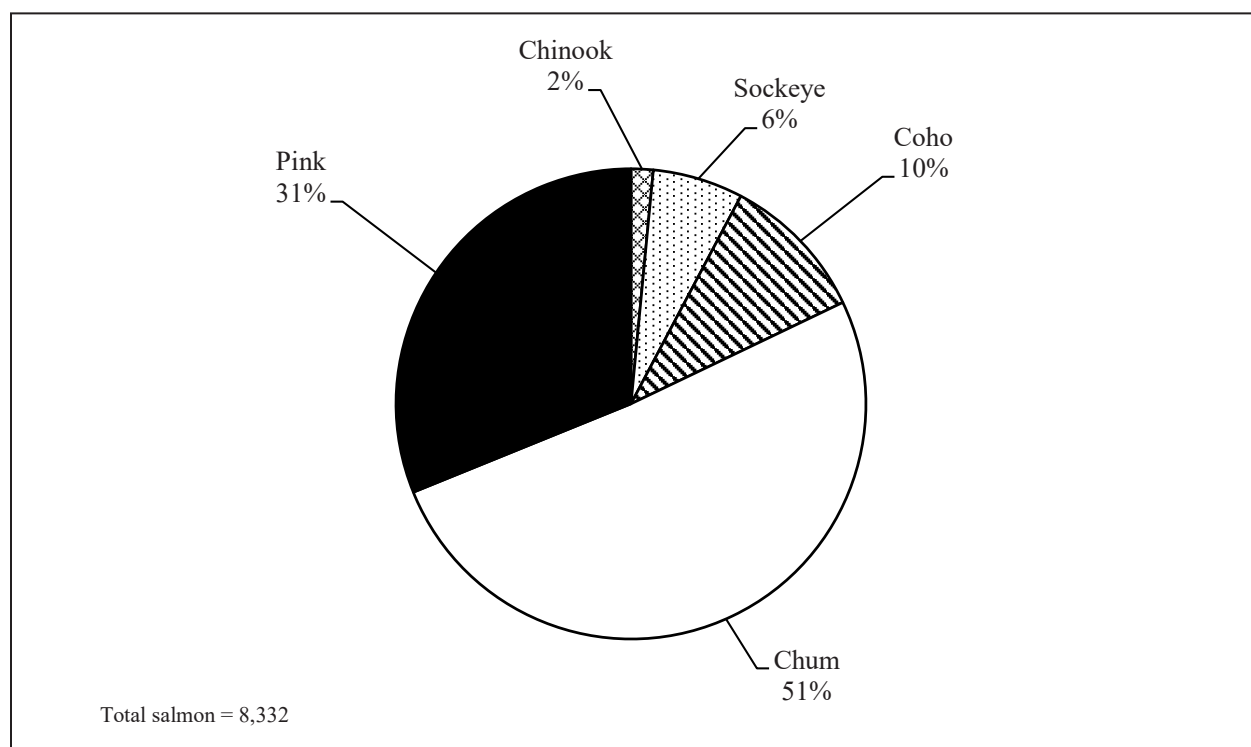


Figure 3-4.—Species composition of estimated subsistence salmon harvests, Arctic District, 2018.

CHAPTER 4: YUKON AREA

BACKGROUND

Residents of the Yukon River drainage have long relied on salmon and other nonsalmon fish for subsistence. These fish are an important source of food for both people and for dogs. Large quantities of salmon are harvested each summer and preserved for consumption throughout the rest of the year. In recent years, low abundance of Chinook salmon has had a major impact on area residents' abilities to meet their subsistence needs (Brown et al. 2015b). Each region of the Yukon River has a unique fishing profile based on species availability, river conditions, demographics, and the use of dog teams (Brown et al. *In prep*).¹ The river is divided into six fishing districts, and further into subdistricts, which allow fisheries managers to tailor regulations to the unique characteristics of each area (Figure 4-1).

Salmon fishing begins in late May at the mouth of the Yukon River and sequentially in other communities as fish migrate upstream. Chinook salmon are the first to enter the river, followed by summer chum, fall chum, and then coho salmon. Summer chum salmon do not typically migrate further upriver than the Tanana River drainage. Some pink and sockeye salmon are present in the lower portions of the river. Salmon fishing can continue late into the fall when the river begins to freeze, especially in the upper river where salmon arrive much later and where runs are not as concentrated. Nonsalmon fish are harvested throughout the year, although many are incidentally caught while fishing for salmon.

Subsistence harvesters usually base their fishing activities either from fish camps or from their home communities. Extended family groups, typically representing several households, often cooperate to harvest, process, preserve, and store salmon for subsistence uses.² In some regions of the river, commercial salmon fishing is a vital component of the local economy, and fishers may retain salmon from their commercial harvest for subsistence purposes.

Yukon Area fishers primarily use drift gillnets, set gillnets, and fish wheels to harvest salmon. Set gillnets are used throughout the Yukon Area, while drift gillnets are used extensively in the lower half of the river.³ Due to river conditions and the availability of wood for building materials, fish wheels are used almost exclusively on the middle and upper Yukon River and Tanana River. In recent years, the use of beach seines and dip nets ("selective gear") has been a common management tool to allow the release of Chinook salmon alive but enable fishers to harvest other species.

Subsistence salmon are preserved for later uses by freezing, drying, or smoking. Chinook salmon are prized for human consumption, while other species are commonly used for both people and dogs.⁴ The head, viscera, backbones and other scraps of all species are often fed to dogs, as well as any fish unfit for human consumption due to poor quality or disease. While the use of subsistence caught fish to feed sled dogs is a longstanding practice that continues in present day, the number of dogs and fish used to feed them has decreased since the primary adoption of snowmachines for winter transportation.

REGULATORY HISTORY

Within the Alaska portion of the Yukon River drainage, regulatory authority for Yukon River salmon management is shared by the State of Alaska Board of Fisheries (BOF) and the Federal Subsistence Board (FSB). ADF&G and its federal counterparts co-manage Yukon River salmon fisheries with input from

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1. C. L. Brown, A. Trainor, B. McDavid, J. S. Magdanz, and G. Rakhmetov. *In prep. Patterns and Trends of Salmon Harvest and Use in the Yukon River Drainage, Alaska, 1990–2014. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN, Fairbanks. Hereafter cited as Brown et al. In prep.*
 2. For more detail on subsistence uses of Yukon River salmon, see ADF&G 1987a–b, 1988.
 3. Under state regulations, drift gillnets are allowed from the mouth of the Yukon River through District 4-C (5 AAC 01.220).
 4. See Andersen (1992) for a more detailed history of the use of subsistence caught fish for sled dogs on the Yukon River.

public stakeholders through such groups as ADF&G Advisory Committees, federal Regional Advisory Councils, and the Yukon River Drainage Fisheries Association (YRDFA), among others. The transboundary Yukon River is also managed in accordance with the Pacific Salmon Treaty.⁵ The Yukon River Panel (YRP), a board of appointed members from both Alaska and Canada, meets twice a year to discuss various aspects of the treaty, such as escapement goals and border passage goals, and to approve funding of scientific research addressing salmon biology and use patterns.

The majority of the United States' portion of the Yukon Area is open to subsistence fishing. However, the Alaska Joint Board of Fisheries and Game has defined a portion of the Tanana River in the Yukon River drainage as lying within the Fairbanks Nonsubsistence Area (5 AAC 99.015). Subsistence fisheries may not be authorized within nonsubsistence areas; the harvest of fish for home uses in these nonsubsistence areas occurs under personal use and sport fishing regulations.

In 1993, the BOF made a positive customary & traditional use finding for all salmon in the Yukon–Northern Area and determined that the Amounts Necessary for Subsistence (ANS) ranged between 348,000–503,000 salmon for all species combined (5 AAC 01.236). In 2001, the BOF made species-specific ANS determinations for each of four species of salmon harvested in the Yukon Area, including separate ANS determinations for summer chum salmon and fall chum salmon. These ANS ranges can be found at the top of Table 4-1. In 2013, the BOF added an ANS for pink salmon. An ANS range provides one index of the extent to which reasonable opportunity is provided in each subsistence fishery. Harvests below the lower bound of the ANS range may indicate, with other evidence, that there was not reasonable opportunity for subsistence harvests during the previous season and that subsistence needs may not have been met.

Proposals submitted to and adopted by the BOF or FSB periodically result in regulatory changes that affect subsistence salmon fishing on the Yukon River. Proposals may be submitted by fisheries managers, local fishers, or any member of the public for a variety of reasons, allowing regulations to adapt as salmon stocks, environmental conditions, or the needs of users change. Prior versions of this report detail some of the major regulatory changes that have occurred over the past few decades (Fall et al. 2019). These changes have included such actions as establishing and adjusting subsistence fishing schedules and the types of gear allowed for salmon fishing. At various times, significant declines in Yukon River salmon stocks have also prompted regulatory action. Most notably in 2000, the BOF classified the Yukon River Chinook salmon stock as a “stock of yield concern” because of the inability to maintain expected yields and harvestable surpluses above escapement goals for several years (Lingnau and Salomone 2003). This designation has remained in place to the present date, being most recently renewed at the 2016 BOF meetings.⁶ Fall chum salmon returns have also been depleted at times. Restrictions on subsistence fall season salmon fishing occurred intermittently throughout the 1990s. In 2000, there was a complete closure of fall season salmon fishing, severely affecting the subsistence harvest of fall chum and coho salmon. In 2001, the BOF declared Yukon River fall chum salmon a stock of concern, but this designation was lifted in 2007 after run sizes showed improvement.

Chinook salmon abundance saw a modest increase between 2004 and 2007 but continued declines in 2008 required fishing restrictions to again be amplified. Restrictions have continued to be implemented through both period closures and limitations on the types of gear allowed for use. In 2010, the maximum allowable mesh size for salmon fishing in the Yukon Area was decreased to 7.5-inches. However, because of the need for additional conservation measures, mesh sizes have frequently been limited to 6-inches through ADF&G's inseason Emergency Order authority. Limiting mesh size is intended to allow more Chinook salmon to escape to spawning grounds while continuing to allow other species of salmon, and smaller, less fecund Chinook salmon, to be harvested. Beginning in 2014, allowable gear for summer chum salmon has

5. Pacific Salmon Commission. 2016. The Pacific Salmon Treaty. <https://www.psc.org/about-us/history-purpose/pacific-salmon-treaty/> (Accessed August 16, 2019).

6. Alaska Department of Fish and Game Division of Commercial Fisheries. “2016 Yukon River Summer Salmon Fishery News Release #1, Board of Fisheries Actions: Yukon Area Regulatory Changes,” news release, January 27, 2016. Accessed July 2019. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/638855337.pdf>

been limited to dip nets and beach seines during years when concerns about the conservation of Chinook salmon has prevented the use of gillnets. Use of beach seines and dipnets allows fishers to harvest chum salmon selectively and return all Chinook salmon to the water unharmed. In 2013, the BOF adopted first pulse protection, or the prohibition of fishing on the first Chinook salmon pulse as it enters the river and migrates upstream, in order to account for the uncertainty in the preseason Chinook salmon run projection and to protect the continued low runs (5AAC 05.360(j)). This prohibition may be relaxed in districts 3–6 if run assessment information suggests sufficient abundance. During the 2013 meeting, the BOF also prohibited the sale of Chinook salmon incidentally caught during directed summer chum commercial openings when subsistence salmon fishing is restricted (5AAC 05.360(i)). Both of these changes were reversed during a 2018 statewide BOF meeting.⁷ Mandatory first pulse protection was removed for Districts 1 and 2; instead requiring first pulse protection only if preseason run size projections indicate that Chinook salmon may not meet escapement goals. Otherwise, the run is to be managed conservatively to account for uncertainty, but some subsistence fishing may be allowed at the discretion of management.

In 2018, ADF&G submitted a proposal to the BOF seeking clarification on when the sale of incidentally caught Chinook salmon could be authorized. The submission of this proposal was prompted by events during the 2017 fishing season in which 168 incidentally caught Chinook salmon were sold during the fall season commercial fishery.⁸ After years of complying with subsistence fishing restrictions, Yukon River fishers were caught off guard by the decision to sell incidentally caught Chinook salmon. While managers were within their authority to take this action, and the vast majority of the Chinook salmon run had passed through the lower river when the sales began, stakeholders did not feel they were properly consulted or that the inputs they gave during the 2018 preseason meeting and throughout the summer season were heeded in the fall season. The concerns expressed by stakeholders regarding this decision were addressed by management staff and the ADF&G Commissioner during a tour of middle Yukon River communities. This episode highlights the need to engage stakeholders before fishing begins, and throughout the season while also ensuring strong communication and coordination between the summer and fall season management teams. Ultimately, the BOF determined that if escapement goals are projected to be met and there have been reasonable opportunities for subsistence Chinook salmon fishing, the sale of incidentally caught Chinook salmon during commercial chum salmon fishing may be authorized by emergency order.

Another 2018 regulatory change was the extension of drift gillnets as lawful subsistence fishing gear to subdistricts 4-B and 4-C (5 AAC 01.220).

OVERVIEW OF 2018 MANAGEMENT STRATEGIES

By regulation, salmon management on the Yukon River is divided into two seasons: 1) summer—which encompasses the Chinook and summer chum salmon runs beginning in late May or early June and 2) fall—which includes fall chum and coho salmon runs and begins on July 16th in District 1 (5 AAC 01.249). Prior to the start of the summer season, run size projections provided by the YRP Joint Technical Committee (JTC) and input from Yukon River fishers at the annual YRDFA preseason meeting, helped to shape initial management strategies that were then adjusted throughout the season as in-season run monitoring took place (JTC 2019). The preseason outlook for 2018 predicted a below average return of Chinook salmon, above average returns of summer and fall chum salmon, and an average return of coho salmon.⁹ Similar to recent years, because the Chinook salmon run was projected to be below average, conservative

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7. Alaska Department of Fish and Game Division of Commercial Fisheries. “2018 Yukon River Salmon Fishery News Release #2 Board of Fisheries Actions: Yukon Area Regulatory Changes,” news release, March 16, 2018. Accessed April 2020. www.adfg.alaska.gov/static/applications/dcfnewsrelease/895138453.pdf
 8. Alaska Department of Fish and Game Division of Commercial Fisheries. “2017 Preliminary Yukon River Summer Season Summary,” news release, October 6, 2017. Accessed April 2020. www.adfg.alaska.gov/static/applications/dcfnewsrelease/873421169.pdf
 9. Alaska Department of Fish and Game Division of Commercial Fisheries. “2018 Yukon River Salmon Fisheries Outlook,” news release, May 7, 2018. Accessed April 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/905686869.pdf>

management strategies remained in place. These included restrictions on subsistence fishing and a closure of the commercial Chinook salmon fishery.

In 2018, ice breakup in the lower river occurred on May 18, around three days earlier than the average.^{10,11} The first subsistence caught Chinook salmon was reported on May 27, and the first Chinook salmon caught in the Lower Yukon Test Fishery (LYTF) occurred on June 2. Beginning the week of June 8, lower river districts were placed on a reduced regulatory fishing schedule of one-half their regular periods and this restriction was subsequently applied in other districts as Chinook salmon migrated upriver (Table 4-2). Early in the season, some opportunity was provided to fish with 7.5-inch gillnets but this was later reduced to 6-inch mesh nets for conservation purposes. Additionally, Districts 1–4 had at least one subsistence fishing period cancelled. When the majority of the run had passed through each district, opportunity was again provided using 7.5-inch mesh nets. In Districts 5 and 6, as well as the Koyukuk and Innoko rivers, no fishing periods were cancelled. In District 5, 6-inch mesh size restrictions remained in place throughout the majority of the season until management was confident escapement goals would be met.

The estimated drainagewide population of Chinook salmon in 2018 was 178,000 fish, which was toward the lower end of the preseason projection of 173,000 to 251,000 fish (JTC 2019; Estensen et al. *In prep*). The spawning escapement of Canadian-origin Chinook salmon was calculated to be approximately 54,474 fish, as estimated using data gathered at Eagle Sonar and subtracting harvests that occurred upriver of the sonar. Escapement fell near the upper end of the goal range set in the Pacific Salmon Treaty (42,500–55,000). This was the fifth year in a row that Canadian border passage interim management escapement goal (IMEG) was met.

Because the use of selective gear types to protect Chinook salmon was not required in the subsistence fishery in 2018, there was likely less of a regulatory effect on subsistence summer chum salmon harvests than in recent years. Selective gear was still required to be used in the commercial summer chum fishery, although incidentally caught Chinook salmon could be retained for personal use. In 2018, commercial fishing for summer chum salmon took place in districts 1, 2, 4, and 6 (Estensen et al. *In prep*). A total of 12,326 Chinook salmon were caught in selective gear and released back to the water alive (JTC 2019:10), while 3,335 Chinook salmon were incidentally harvested during commercial chum salmon openings and kept for subsistence purposes (Estensen et al. *In prep*). Managers did not authorize the sale of incidentally caught Chinook salmon in 2018.

Inseason assessments at Pilot Station sonar estimated the passage of summer chum salmon at approximately 1.6 million fish in 2018, which was less than the historical median of 1.9 million fish (JTC 2019:20). Summer chum run sizes were well below preseason predictions but still provided for full subsistence and commercial fisheries. Drainagewide, an escapement of 1,468,759 fish exceeded the upper end of the goal range (500,000–1,200,000); however, escapement goals for the East Fork Andreafsky and Anvik rivers were not achieved.

In 2018, the sonar near Pilot Station began counting chum salmon as fall chum salmon on July 19 (Estensen et al. *In prep*). All districts and subdistricts were placed on their full regulatory subsistence fishing schedules at that time, occurring chronologically as the fish moved upriver. A total of seven distinct pulses of fall chum were detected in 2018. The only fall season fishing restrictions occurred on the Porcupine River, which was first placed on a reduced fishing schedule to increase passage into Canada and then fully closed when it became clear that the escapement goal for the Fishing Branch River, discussed in more detail below, would not be met. The Pilot Station sonar project estimated fall chum salmon passage to be 1.1 million fish with a drainagewide escapement of 643,000 fish (JTC 2019).

10. Alaska Department of Fish and Game Division of Commercial Fisheries. “2018 Preliminary Yukon River Summer Season Summary,” news release, September 18, 2018. Accessed April 2020. www.adfg.alaska.gov/static/applications/dcfnewsrelease/989143152.pdf

11. J. L. Estensen, H. C. Carroll, C. M. Gleason, B. M. Borba, S. D. Larson, D. M. Jallen, A. J. Padilla, and K. M. Hilton. *In prep*. Annual Management Report Yukon Area, 2018. Alaska Department of Fish and Game, Fishery Management Report No. YY-XX, Anchorage. Hereinafter cited as Estensen et al. *In prep*.

Spawning escapement of mainstem Canadian-origin fall chum salmon was 154,126 fish which was above the upper end of the IMEG border passage goal. The IMEG border passage goal of 22,000–49,000 for the Fishing Branch River was not met in 2018. Fall chum salmon escapement on the Fishing Branch River has fallen below the goal range for 11 of the past 20 years and below the mid-point of the range for 18 of the past 20 years. Management of Porcupine and Fishing Branch River fall chum salmon stocks is difficult because these fish make up a very small proportion (4%) of the total fall chum salmon run that migrates up the Yukon River drainage.¹² They enter the river dispersed throughout the entire fall season, inhibiting the ability of managers to apply targeted fishing closures to allow these stocks to pass. Additionally, on-going research is assessing possible changes to habitat on the Fishing Branch River and the effect those changes may be having to fall chum salmon spawning (EDI 2018). Like Chinook and summer chum salmon, the 2018 fall chum run sizes were also below preseason predictions but were large enough to allow for full subsistence and commercial fisheries, with the exception of restrictions on the mainstem Porcupine River.

In 2018, coho salmon passage at Pilot Station sonar was estimated to be 136,347 fish which is below the historical median. However, ADF&G identified a surplus of coho salmon and opened coho salmon-directed commercial fisheries in districts 1, 2, and 6.

SUBSISTENCE HARVEST ASSESSMENT METHODS

Subsistence salmon harvest information in the Yukon Area is collected in three ways: voluntary daily harvest calendars, voluntary postseason household harvest surveys, and through mandatory permits in select areas. In 2018, a total of 1,896 calendars were sent to Yukon River households, and additional calendars were also made available upon request from ADF&G offices in Emmonak and Fairbanks.¹³ The calendars provide space for fishers to record their daily subsistence harvests of salmon by species and can be returned via mail free of charge. Approximately 12% of calendar recipients (232) returned harvest calendars either by mail or through research staff during their fall surveys. Calendars provide additional Yukon Area run and harvest timing information that is not obtained by other data collection methods

Because harvest calendar return rates are so low, ADF&G Division of Commercial Fisheries primarily relies on data collected through the postseason harvest surveys and returned fishing permits in order to estimate total subsistence harvests. Household surveys are conducted in-person during the fall using a stratified random sample (Jallen et al. 2017). Strata are based on household fishing effort and households in each survey community are placed into strata based on their typical previous harvest levels. Survey questions focus on Chinook, summer chum, fall chum, and coho salmon harvests, but households are also asked about other species as well, such as pink salmon (primarily taken by coastal communities), northern pike, whitefishes, and sheefish. Some households that are not contacted in person by the surveyors are contacted by telephone. Those households not contacted by telephone are mailed a survey questionnaire and a postage-paid return envelope. Department staff surveyed 1,485 of 2,737 households (54%) in 33 communities the Yukon Area concerning their subsistence salmon harvests in 2018 (Table 4-3). An estimated 1,373 households participated in the fishery.

A subsistence permit is required in the road-accessible portions of the Yukon River drainage and other limited areas as described in state regulations (5 AAC 01.230). Subsistence fishers record their daily salmon harvests on a household permit and return the permit within 10 days of the expiration date on the permit.

Subsistence salmon permit holders in the upper portion of Subdistrict 6B and the personal use fishers in Subdistrict 6C are required to report their harvests weekly for inseason management purposes (5AAC 01.234). In 2018, a total of 583 salmon fishing permits were issued, including 484 subsistence and 96

12. J. Harding, J. and Estensen, J. 2017, “Porcupine-Fishing Branch Fall Chum 2017 Outlook and Management,” presentation to the Yukon River Panel. Accessed April 27, 2020. <https://www.yukonriverpanel.com/download/151/presentations/2650/porcupine-fishing-branch-fall-chum-2017-outlook-and-management.pdf>.

13. A. J. Padilla, K. S. Decker, B. M. Borba, and T. Hamazaki. *In prep.* Subsistence and personal use salmon harvests in the Alaska portion of the Yukon River drainage, 2018. Alaska Department of Fish and Game, Fishery Data Series No. YY-XX, Anchorage. Hereinafter cited as Padilla et al. *In prep.*

personal use permits (Table 4-4). Sixty-eight percent of subsistence permits and 98% of personal use permits were returned to ADF&G. Of the returned permits, approximately 73%% indicated that they fished. Unreturned permits were considered to be unfished, and subsistence fishing households were not eligible to receive a permit the following year until the previous year's permit was returned.

SUBSISTENCE SALMON HARVESTS IN 2018

The total estimated Yukon Area subsistence-personal use salmon harvest in 2018 was 182,471 fish (Table 4-5). This is approximately 15% lower than the average harvest over the previous five years, and 18% below the 10-year average harvest (Table 4-6). Compared to historical harvest data available since 1976, the 2018 total salmon harvest was 58% of the historical average of 314,127 salmon (1976–2017). As evident in Figure 4-2, harvests have declined over time for all species, but the patterns have been different for each species. Declining harvests have not necessarily been gradual or linear. Two periods of disastrously low harvests are apparent for two species: fall chum salmon from 2000–2002 and Chinook salmon from 2013–2016. After each of these severely low harvest periods, harvests subsequently increased but not to historically high harvest levels.

In 2018, the estimated subsistence-personal use salmon harvest composition for the Yukon Area included 31,812 Chinook salmon (18% of the total salmon harvest), 79,926 summer chum salmon (42%), 64,494 fall chum salmon (35%), 5,527 coho salmon (3%), and 3,712 pink salmon (2%) (Table 4-5; Figure 4-3). This is an estimated total based on household surveys and returned permits and calendars; it includes subsistence harvests, personal use harvests, commercial harvests retained for subsistence, and fish distributed from ADF&G test fisheries. In 2018, a total of 8,196 salmon were distributed to households from test fishing projects (Estensen et al. *In prep*).

Table 4-6 shows salmon harvests over time broken down by species. The 2018 Chinook salmon harvest estimate was roughly twice as high as the most recent Yukon Area 5-year average Chinook harvest (2013–2017) and around 14% higher than the 10-year average. However, these years include record low harvests due to severe fishing restrictions. Despite improvement from record low harvests in the recent past, the 2018 harvest was still 23% less than the historical average of 41,112 fish (1976–2017). Chinook salmon subsistence harvests have not fallen within the ANS range for the last 11 years (Table 4-1). The pattern of reduced Chinook harvests over time does not indicate a reduced need by fishing households; declines in harvest have occurred in response to conservative management actions based on low abundance. Additionally, some Yukon River communities and individual households have voluntarily reduced their Chinook salmon harvests to aid in rebuilding the run (Brown et al *In prep*).

Summer chum salmon harvests in 2018 were below the last 5- and 10-year averages (17% and 18% respectively; Table 4-6). In addition to a smaller than predicted run size in 2018, reductions in fishing periods to protect Chinook salmon likely had an effect on the harvest of summer chum salmon because the two species co-migrate. The 2018 summer chum salmon harvest was approximately 54% of the historical average harvest of 142,481. Prior to 1996, fishers commercially harvested summer chum salmon for roe and kept most of the carcasses primarily for dog food; these fish that were counted in the subsistence harvest. Since the roe fishery ended, summer chum salmon harvests have been relatively stable (Figure 4-2). Although summer chum salmon harvests have not increased, they may nevertheless play a more pronounced role in terms of the portion of total salmon harvested for human consumption due to reduced Chinook salmon availability. In 2018, summer chum salmon harvests fell below the ANS range for the first time since 2009 (Table 4-1).

In 2018, fall chum salmon harvests were at 70% of their 5-year average harvest and 75% of their 10-year average (Table 4-6). Compared to the average historical harvest (since 1976), 2018 harvests were at approximately 59%. The 2018 fall chum subsistence harvest was the lowest since 2004. Like summer chum salmon, historic declines in fall chum salmon harvests were also seen after the closure of the roe fishery but are also likely tied to a decline in the number of dog teams along the Yukon River (Figure 4-2). Fall chum salmon are used as both human food and dog food, especially in the upper river districts where they are the only other abundant salmon species besides Chinook salmon. In years of Chinook salmon fishing

restrictions, additional fall chum salmon harvests may supplement decreased Chinook harvests (Brown et al. In prep). During 2018, fall chum salmon harvest fell below the lower bound of the ANS range for the fourth year in a row (Table 4-1). Since 1998, fall chum salmon harvests have only been within the ANS range 5 out of 21 years.

Subsistence coho salmon harvests continued to be at record lows for the third consecutive year in 2018 (Table 4-6). The coho salmon harvest of 5,527 fish was the lowest subsistence harvest ever documented. Harvests amounted to 42% of the 5-year and 37% of the 10-year average harvests, and only 22% of the historical average (since 1976). Due to run timing, the management of coho salmon is tied to the management of fall chum salmon. As such, it is difficult to assess reasons for trends in coho salmon harvests over time, especially considering they are not specifically targeted by a large number of fishing households for subsistence due to their lower abundance compared to other species and late run timing. Coho salmon harvests were below the minimum bound of the ANS in 2018 and have only fallen within the range 6 out of the 21 years for which ANS has been in place (Table 4-1).

Pink salmon harvests are typically only reported in lower river communities, although the species is included on harvest surveys and catch calendars in all regions of the drainage (Table 4-5).¹⁴ Pink salmon abundance typically follows a two-year cycle and harvests fluctuate greatly from year to year. In 2018, 3,712 pink salmon were harvested. This harvest was greater than in 2017, but less than the most recent 5- and 10-year averages (Table 4-6). An ANS range for pink salmon on the Yukon River was first established in 2013. Harvests have fallen within the range since 2014 (Table 4-1).

Although sockeye salmon are occasionally found in the lower portion of the Yukon River, their numbers are so low that they are not included in harvest reporting.

Figure 4-4 shows the number of dogs reported by surveyed households in each fishing district, as well as the percentage of total dogs in the Yukon Area reported in each district. Of the 5,318 dogs owned by Yukon Area households in 2018, upper Yukon River households in districts 4, 5, and 6 owned 3,091 dogs (60% of the total number of dogs owned in Yukon River districts). Of the estimated 1,918 households in the Yukon Area that owned dogs, 280 households (15%) fed whole salmon to their dogs in 2018 (Padilla et al. In prep). In 2018, the Division of Commercial Fisheries collected information in surveyed communities on the number of salmon that fishers retained for dog food from subsistence harvests. An estimated 14,133 summer chum salmon, 24,931 fall chum salmon, and 2,217 coho salmon were used for dog food from subsistence salmon harvests. In permit communities, only the total number of whole salmon and not the number of each species was documented. Permit holders in districts 5 and 6 fed 17,915 whole salmon to dogs. In total, approximately 59,580 salmon were harvested for dogs in 2018.

Figure 4-5 shows the primary gear types used by Yukon Area fishing households in 2018. Drift gillnets were utilized by 50% of households, while 43% used set gillnets, 6% used fish wheels, and 1% used other gear types. Other gear types may include such methods as dipnets and beach seines. The gear types used for salmon fishing vary by region, in part due to differing regulations and river conditions throughout the drainage.

From 1992 through 2013, ADF&G asked surveyed households whether they were able to meet their subsistence salmon needs for each survey year. The disastrous fishing year in 2000 resulted in restrictions and closures in subsistence salmon fishing schedules and made it extremely difficult for fishing families to meet their needs (64% of surveyed households reported not meeting their needs in 2000 (Borba and Hamner 2001:98). Since 2014, the Division of Commercial Fisheries has no longer reported data on whether households met their subsistence needs. Historical needs-met data can be found in prior issues of this report. However, continued drainagewide Chinook salmon harvests well below ANS likely indicate that subsistence needs are still not being met. See Table 4-1 for a comparison of ANS ranges and subsistence salmon harvests by species from 1998–2018.

14. Pink salmon harvests on the Yukon River have been estimated only since 2000, compared to 1976 for other salmon species.

NONSALMON FISH HARVESTS

Although salmon are the focus of most management actions in the Yukon Area, nonsalmon fish harvests are also significant components of the annual subsistence round for Yukon Area fishers. Most nonsalmon species are available year-round, while salmon are only available seasonally. Nonsalmon fishes not only provide additional sources of nutrition for residents of the Yukon Area, they also represent a significant cultural resource for subsistence fishers in the region. In 1987, and again in 1993, the BOF made a positive C&T use determination for freshwater fish species in the Yukon Area, including sheefish, whitefish species, Arctic lamprey, burbot, longnose sucker, Arctic grayling, northern pike, and Arctic char (5 AAC 01.236). However, ANS ranges have not been established for nonsalmon species in the Yukon Area.

Subsistence fishing for nonsalmon species is generally open by regulation seven days per week, 24 hours per day, year-round. These state regulations also apply to subsistence fisheries in waters adjacent to federal lands (unless superseded on federal public lands by federal subsistence regulations, applicable only to federally qualified subsistence users). Under federal regulations established by the FSB, rural qualified Alaskan residents of the Yukon-Northern Area have a positive C&T use determination for nonsalmon fishes and in most waters may harvest them without limit.¹⁵

ADF&G Division of Commercial Fisheries collects nonsalmon harvest data on an annual basis as part of the postseason subsistence salmon harvest survey. Although these data have value as the only annual estimate of nonsalmon fish harvests in the Yukon Area, the stratified sample of salmon fishing households which the survey is administered to may not be the most appropriate methodology for collecting nonsalmon harvest information. Other single-year nonsalmon harvest data collection efforts suggest that the postseason survey may significantly underestimate harvests (Andersen et al. 2004; Brown et al. 2005).

Table 4-7 shows harvest estimates of whitefish, sheefish, and northern pike by surveyed community.¹⁶ The “large whitefish” category includes broad and humpback whitefishes while the “small whitefish” category includes least and Bering cisco species and round whitefish. In 2018, there were 24,510 large whitefish, 29,840 small whitefish, 21,055 northern pike, and 11,826 sheefish harvested for a total of 87,231 of these nonsalmon fish. This is less than the most recent 5-year average harvest of 104,872 and less than the 10-year average harvest of 92,185 (Fall et al. 2011rev.; 2009c; 2012a; 2013a; 2013b; 2014; 2015; 2017; 2018; 2019; 2019; 2020).

Harvest data for other species of nonsalmon fish are also recorded on the postseason harvest survey but are not reported in Table 4-7. Some of these other species are harvested in large numbers, particularly in the lower river (Padilla et al. *In prep*). Patterns in whitefish harvests are likely attributed to species abundance and migration patterns, availability of other resources, as well as the demographic and fishing profiles of each community and fishing district. It is difficult to describe patterns of harvest by location along the river because permitted communities in the upper river are not included in this dataset, and they make up a significant portion of the upper river region.

Information on historical and contemporary harvest and use of nonsalmon in communities along the Yukon River, where data are available, can be accessed through the Community Subsistence Information System (CSIS) on the ADF&G website.¹⁷ The CSIS includes data on nonsalmon fish harvests collected as part of comprehensive subsistence surveys as well as through nonsalmon specific research. For example, a 2005 study explored the contemporary use of nonsalmon in the lower middle Yukon River communities of Grayling, Anvik, Shageluk, and Holy Cross (Brown et al. 2005), and another study documented the harvest

15. U.S. Fish and Wildlife Service. “Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska, April 1, 2017–March 31, 2019.” Federal Subsistence Board, Office of Subsistence Management, n.d. https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Tetlin/PDF/2017-2019_fisheries_regulations-web_reduced.pdf (Accessed August 16, 2019).

16. Nonsalmon fish harvest data is not reported using the same categories on permits and is therefore not included here.

17. ADF&G Community Subsistence Information System (CSIS), <https://www.adfg.alaska.gov/sb/CSIS>. Hereinafter referred to as CSIS.

and use of nonsalmon in six lower Yukon River communities for study years 2014 and 2015 (Runfola et al. 2018a).

THE ROLE OF SALMON WITHIN ANNUAL SUBSISTENCE HARVESTS

Yukon Area residents harvest a wide variety of subsistence resources on an annual basis. The composition of a community's subsistence harvests varies by location due to the geographic distribution of different resources. However, salmon are a staple resource throughout most communities in the drainage, even though their abundance declines with distance from the river mouth and the mainstem river.

Considering salmon within the context of total subsistence harvests provides insight into the relative importance of this resource to Yukon Area residents. ADF&G Division of Subsistence staff have conducted comprehensive subsistence surveys in 36 Yukon Area communities since 2010 (Brown et al. 2015a; 2016; D. Holen et al. 2012; Ikuta et al. 2014; 2016a; McDavid and Cunningham 2020; Park et al. 2020; Trainor et al. 2020a; 2020b; Wilson and Kostick 2016). Results from these studies showed that salmon accounted for approximately 49% of the total subsistence harvest by weight across all study communities; however, this varied greatly between community. For example, during a 2011 study, salmon harvests contributed 0% to the total harvest in Healy Lake and Coldfoot while in contrast provided 90% of the total harvest in Eagle during 2017 (Holen et al. 2012; Trainor et al. 2020).

Overall, salmon harvested in the Yukon Area provides hundreds of thousands of pounds of wild foods to local residents each year (Brown et al. *In prep*).¹⁸ Not only is this salmon important for its nutritional value, the harvest of salmon is an important customary and traditional practice. Although the 2018 harvest of Chinook salmon was an improvement over recent years of record low harvests, it was still significantly lower than historical averages and the needs of subsistence users along the river. Despite continued restrictions on the harvest of Chinook salmon, harvest of all salmon remains a vital component of subsistence harvests in the Yukon Area.

18.CSIS.

Table 4-1.—Comparison of amounts necessary for subsistence (ANS) and estimated subsistence salmon harvests, Yukon Area, 1998–2018.

ANS range	Chinook 45,500–66,704	Coho 20,500–51,980	Summer chum 83,500–142,192	Fall chum 89,500–167,900	Pink ^b 2,100–9,700
Year	Estimated number of subsistence salmon harvested ^a				
1998 ^c	52,910	<u>16,606</u>	<u>81,858</u>	<u>59,603</u>	
1999 ^c	50,711	<u>20,122</u>	<u>79,348</u>	<u>84,203</u>	
2000 ^c	<u>33,896</u>	<u>11,853</u>	<u>72,807</u>	<u>15,152</u>	
2001	53,462	21,977	<u>68,544</u>	<u>32,135</u>	
2002	<u>42,117</u>	<u>15,619</u>	<u>79,066</u>	<u>17,908</u>	
2003	55,221	22,838	<u>78,664</u>	<u>53,829</u>	
2004	55,102	24,190	<u>74,532</u>	<u>61,895</u>	
2005	53,409	27,250	93,259	91,534	
2006	48,593	<u>19,706</u>	115,093	<u>83,987</u>	
2007	55,156	21,878	92,891	98,947	
2008	<u>45,186</u>	<u>16,855</u>	86,514	<u>89,357</u>	
2009	<u>33,805</u>	<u>16,006</u>	<u>80,539</u>	<u>66,119</u>	
2010	<u>44,559</u>	<u>13,045</u>	88,373	<u>68,645</u>	
2011	<u>40,980</u>	<u>12,344</u>	96,020	<u>80,202</u>	
2012	<u>30,415</u>	21,533	126,992	99,309	
2013	<u>12,533</u>	<u>14,457</u>	115,114	113,384	<u>1,076</u>
2014	<u>3,286</u>	<u>16,898</u>	86,900	92,229	6,932
2015	<u>7,577</u>	<u>18,107</u>	83,567	<u>86,600</u>	2,645
2016	<u>21,627</u>	<u>8,822</u>	88,082	<u>84,650</u>	8,719
2017	<u>38,100</u>	<u>7,313</u>	87,437	<u>85,093</u>	2,449
2018	<u>31,812</u>	<u>5,527</u>	<u>76,926</u>	<u>64,494</u>	3,712

Source Padilla et al. (*In prep*)

a. Estimates for 1998–2004 do not include personal use harvests, ADF&G test fishery distributions, or salmon removed from commercial harvests. Estimates for 2005–2018 include test fishery distributions because the amounts necessary for subsistence (ANS) are based on harvests from 1990–1999 and include test fishery distribution. Bold underlined cells indicate harvest amounts are below the minimum ANS.

b. ANS for pink salmon added by BOF in 2013.

c. Species-specific ANS ranges do not apply before 2001.

Table 4-2.–Yukon Area fishing schedule, 2018.

Area	Regulatory subsistence fishing periods	Open fishing times
Coastal District	7 days per week	M/T/W/TH/F/SA/SU - 24 hours/day
District 1	Two 36-hour periods per week	Mon 8 pm to Wed 8 am / Thu 8 pm to Sat 8 am
District 2	Two 36-hour periods per week	Wed 8 pm to Fri 8 am / Sun 8 pm to Tue 8 am
District 3	Two 36-hour periods per week	Wed 8 pm to Fri 8 am / Sun 8 pm to Tue 8 am
District 4	Two 48-hour periods per week	Sun 6 pm to Tue 6 pm / Wed 6 pm to Fri 6 pm
Koyukuk and Innoko rivers	7 days per week	M/T/W/TH/F/SA/SU - 24 hours/day
Subdistricts 5-A, -B, -C	Two 48-hour periods per week	Tue 6 pm to Thu 6 pm / Fri 6 pm to Sun 6 pm
Subdistrict 5D	7 days per week	M/T/W/TH/F/SA/SU - 24 hours/day
Subdistrict 6	Two 42-hour periods per week	Mon 6 pm to Wed Noon / Fri 6 pm to Sun Noon
Old Minto Area	5 days per week	Friday 6 pm to Wednesday 6 pm

Source JTC (2019)

Note This schedule was altered during the 2018 season based on Chinook salmon run strength.

Table 4-3.—Estimated number of subsistence fishing households in surveyed communities, with community and district totals, Yukon Area, 2018.

Community	Households		Estimated number of fishing households
	Total	Surveyed	
Hooper Bay	236	114	108
Scammon Bay	117	57	89
Coastal District subtotal	353	171	197
Alakanuk	143	69	70
Emmonak	197	113	85
Kotlik	119	64	84
Nunam Iqua	40	21	19
District 1 subtotal	499	267	258
Marshall	100	47	72
Mountain Village	168	79	89
Pilot Station	138	124	68
Pitkas Point	27	22	19
St Marys	145	79	101
District 2 subtotal	578	351	349
Holy Cross	59	35	28
Russian Mission	77	32	60
Shageluk	35	30	13
District 3 subtotal	171	97	101
Alatna/Allakaket/Bettles	87	52	24
Anvik	31	27	21
Galena	146	55	72
Grayling	57	29	38
Hughes/Huslia	113	64	22
Kaltag	52	26	22
Koyukuk	45	18	29
Nulato	86	77	60
Ruby	52	23	22
District 4 subtotal	669	371	310
Beaver	30	25	21
Birch Creek/Fort Yukon	218	85	62
Stevens Village	20	12	9
Tanana	98	56	45
Venetie/Chalkyitsik	101	50	21
District 5 subtotal	467	228	158
Total	2,737	1,485	1,373

Source Padilla et al. (*In prep*)

Table 4-4.–Household subsistence and personal use permits, listed by fishery and community of residence, Yukon Area, 2018.

				Number of permits returned that fished
Community	Permits		Percent returned	
	Issued	Returned		
Subsistence permits				
Central/Circle	12	11	92%	9
Eagle	34	33	97%	26
Rampart/Stevens Village	5	4	80%	3
Fairbanks (FNSB) ^a	264	179	68%	159
Manley	11	8	73%	6
Minto	0	0	NA	0
Nenana/Healy ^e	38	34	89%	18
Other Subsistence ^c	120	61	51%	28
Subsistence permit subtotal	484	330	68%	249
Personal use permits				
Fairbanks (FNSB) ^a	90	88	98%	53
Other personal use ^d	9	9	100%	3
Personal use permit subtotal	99	97	98%	56
Total	583	427	73%	305

Source Padilla et al. (*In prep*)

a. Fairbanks North Star Borough (FNSB) residents from the communities of Ester, Fairbanks, North Pole, Salcha, and Two Rivers.

b. Includes residents from Anchorage, Homer, Sutton, Northway, and Tok who were issued a subsistence fishing permit and fished in the Tanana River.

c. Other Subsistence represents residents from Anchorage, Auke Bay, Eagle River, Manley, Minto, Nenana, Northway, Palmer, Tok, Venetie, Wasilla, and Wiseman who were issued a subsistence fishing permit for Yukon, Tanana, Tolovana, Kantishna, and upper Koyukuk rivers.

d. Includes residents from Delta Junction, Nenana, and Wasilla who were Other Personal Use includes residents from Delta Junction and Girdwood who were issued a personal use permit.

e. Includes the community of Healy.

Table 4-5.—Estimated subsistence salmon harvests by community, Yukon Area, 2018.

Community	Households or permits		Estimated salmon harvest ^a					Total
	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	
Hooper Bay	236	114	456	117	8,332	158	635	9,698
Scammon Bay	117	57	661	754	7,019	367	2,288	11,089
Coastal District subtotal	353	171	1,117	871	15,351	525	2,923	20,787
Alakanuk	143	69	424	188	5,632	520	7	6,771
Emmonak	197	113	1,211	330	7,094	2,213	31	10,879
Kotlik	119	64	1,556	264	7,007	759	29	9,615
Nunam Iqua (Sheldon Point)	40	21	78	184	1,549	188	377	2,376
District 1 subtotal	499	267	3,269	966	21,282	3,680	444	29,641
Marshall	100	47	914	112	3,311	415	53	4,805
Mountain Village	168	79	1,030	270	5,347	875	94	7,616
Pilot Station	138	124	659	122	4,401	1,127	0	6,309
Pitka's Point	27	22	365	54	1,390	112	122	2,043
St Marys	145	79	1,180	37	4,586	475	35	6,313
District 2 subtotal	578	351	4,148	595	19,035	3,004	304	27,086
Holy Cross	59	35	562	23	303	174	0	1,062
Russian Mission	77	32	1,043	123	2,245	349	0	3,760
Shageluk	35	30	198	8	506	183	0	895
District 3 subtotal	171	97	1,803	154	3,054	706	0	5,717
Alatna/Allakaket/Bettles	87	52	49	27	4,820	362	5	5,263
Anvik	31	27	566	15	437	500	0	1,518
Galena	146	55	1,254	216	303	1,393	0	3,166
Grayling	57	29	911	0	792	774	16	2,493
Hughes/Huslia	113	64	150	980	3,726	659	20	5,535
Kaltag	52	26	570	34	25	66	0	695
Koyukuk	45	18	864	24	150	301	0	1,339
Nulato	86	77	1,282	223	248	882	0	2,635
Ruby	52	23	1,137	26	993	842	0	2,998
District 4 subtotal	669	371	6,783	1,545	11,494	5,779	41	25,642
Beaver	30	25	328	0	8	142	0	478
Birch Creek/Fort Yukon	218	85	4,547	0	0	3,105	0	7,652
Central/Circle	12	11	575	0	0	1,278	0	1,853
Eagle	34	33	1,007	0	0	16,807	0	17,814
Fairbanks (FNSB)	354	267	1,395	53	477	2,788	0	4,713
Rampart /Stevens Village	25	16	178	0	2	1,417	0	1,597
Tanana	98	56	5,253	1,343	5,892	17,451	0	29,939
Venetie/Chalkyitsik	101	50	443	0	114	2,544	0	3,101
District 5 subtotal	872	543	13,726	1,396	6,493	45,532	0	67,147

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Table 4-5.—Page 2 of 2.

Community	Households or permits		Estimated salmon harvest ^a					
	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	Total
Manley	11	8	190	0	70	2,365	0	2,625
Minto	0	0	0	0	0	0	0	0
Nenana/Healy	38	34	323	0	108	2,779	0	3,210
District 6 subtotal	49	42	513	0	178	12,619	0	20,871
Other communities	129	70	453	0	39	124	0	616
Total	3,320	1,912	31,812	5,527	76,926	64,494	3,712	182,471

Source Padilla et al. (*In prep*)

a. Includes subsistence harvests, personal use harvests, commercial harvests retained for home use, and fish distributed from ADF&G test fisheries.

Table 4-6.—Historical subsistence salmon harvests, Yukon Area, 1976–2018.

Year	Households or		Estimated salmon harvest ^a					
	permits ^a							
	Total	Surveyed or returned	Chinook	Coho	chum	Fall chum	Pink	Total
1976			17,530	12,737		1,375		31,642
1977			16,007	16,333		4,099		36,439
1978			30,785	7,965	213,953	95,532		348,235
1979			31,005	9,794	202,772	233,347		476,918
1980			42,724	20,158	274,883	172,657		510,422
1981			29,690	21,228	210,785	188,525		450,228
1982			28,158	35,894	260,969	132,897		457,918
1983			49,478	23,905	240,386	192,928		506,697
1984			42,428	49,020	230,747	174,823		497,018
1985			39,771	32,264	264,828	206,472		543,335
1986			45,238	34,468	290,825	164,043		534,574
1987			55,039	46,213	300,042	226,990		628,284
1988	2,700	1,865	45,495	69,679	229,838	157,075		502,087
1989	2,211	983	48,462	40,924	169,496	211,303		470,185
1990	2,666	1,121	48,587	43,460	115,609	167,900		375,556
1991	2,521	1,261	46,773	37,388	118,540	145,524		348,225
1992	2,751	1,281	47,077	51,980	142,192	107,808		349,057
1993	3,028	1,397	63,915	15,812	125,574	76,882		282,183
1994	2,922	1,386	53,902	41,775	124,807	123,565		344,049
1995	2,832	1,391	50,620	28,377	136,083	130,860		345,940
1996	2,869	1,293	45,671	30,404	124,738	129,258		330,071
1997	2,825	1,309	57,117	23,945	112,820	95,141		289,023
1998	2,986	1,337	54,124	18,121	87,366	62,901		222,512
1999	2,888	1,377	53,305	20,885	83,784	89,940		247,914
2000	3,209	1,341	36,404	14,939	78,072	19,395	1,591	148,810
2001	3,072	1,355	55,819	22,122	72,155	35,703	403	185,799
2002	2,775	1,254	43,742	15,489	87,056	19,674	8,425	165,961
2003	2,850	1,377	56,959	23,872	82,272	56,930	2,167	220,033
2004	2,721	1,228	55,713	20,795	77,934	62,526	9,697	216,968
2005	2,662	1,406	53,409	27,250	93,259	91,534	3,132	265,452
2006	2,833	1,473	48,593	19,706	115,078	84,002	4,854	267,379
2007	2,819	1,495	55,174	19,624	92,926	101,221	2,118	268,945
2008	3,030	1,664	45,186	16,855	86,514	89,357	9,529	237,912
2009	2,853	1,508	33,805	16,006	80,539	66,119	2,300	196,469
2010	3,066	1,659	44,559	13,045	88,373	68,645	4,199	214,622
2011	3,060	1,574	40,980	12,344	96,020	80,202	2,291	229,546
2012	3,133	1,575	30,415	21,533	126,992	99,309	5,150	278,249
2013	3,228	1,607	12,533	14,457	115,114	113,393	1,079	255,497
2014	3,195	1,704	3,286	17,098	86,900	92,529	6,932	199,813
2015	3,141	1,567	7,577	18,107	83,567	86,600	2,645	195,851
2016	3,589	1,965	21,627	8,822	87,992	84,650	8,719	203,091
2017	3,119	1,619	38,036	7,302	87,437	85,093	2,449	217,868
2018	3,320	1,912	31,812	5,527	76,926	64,494	3,712	182,471

-continued-

Table 4-6.—Page 2 of 2.

Year	Households or permits ^a		Estimated salmon harvest ^a					
	Total	Surveyed or returned	Chinook	Coho	Summer			Total
					chum	Fall chum	Pink	
5-year average (2013–2017)	3,254	1,692	16,612	13,157	92,202	92,453	4,365	214,424
10-year average (2008–2017)	3,141	1,644	27,800	14,557	93,945	86,590	4,529	222,892
Historical average (1976–2017)	2,918	1,446	41,112	24,812	142,481	110,208	4,316	311,828

Source Padilla et al. (*In prep*)

Note Cells that do not contain data have no data available.

a. Estimates prior to 1988 are based on fish camp surveys and sampling information is unavailable.

Table 4-7.—Estimated subsistence harvest of whitefish, northern pike, and sheefish by community, Yukon Area, 2018.

Community	Households		Estimated nonsalmon harvest				Total
	Total	Surveyed ^a	Large whitefish ^b	Small whitefish	Northern pike	Sheefish	
Hooper Bay	236	107	120	3,028	339	14	3,501
Scammon Bay	117	53	1,855	3,232	5,002	317	10,406
Coastal District subtotal	353	160	1,975	6,260	5,341	331	13,907
Nunam Iqua (Sheldon Point)	40	21	137	751	262	990	2,140
Alakanuk	143	67	636	3,501	541	1,496	6,174
Emmonak	197	100	1,888	1,904	950	1,387	6,129
Kotlik	119	58	1,165	3,025	911	2,308	7,409
District 1 subtotal	499	246	3,826	9,181	2,664	6,181	21,852
Mountain Village	168	76	1,912	905	3,502	746	7,065
Pitkas Point	27	21	804	54	239	214	1,311
St Mary's	145	69	1,599	207	2,147	438	4,391
Pilot Station	138	117	1,577	154	475	212	2,418
Marshall	100	45	552	166	1,006	294	2,018
District 2 subtotal	578	328	6,444	1,486	7,369	1,904	17,203
Russian Mission	77	31	800	8	301	389	1,498
Holy Cross	59	32	491	102	259	56	908
Shageluk	35	25	291	0	246	238	775
District 3 subtotal	171	88	1,582	110	806	683	3,181
Anvik	31	27	112	0	90	62	264
Grayling	57	28	417	0	70	192	679
Kaltag	52	25	248	17	35	143	443
Nulato	86	75	260	23	21	145	449
Koyukuk	45	18	104	0	22	93	219
Galena	146	52	619	111	57	113	900
Ruby	52	21	226	0	8	50	284
Huslia/Hughes	113	60	1,406	80	2,903	659	5,048
Allakaket/Alatna/Bettles	87	44	1,541	816	325	478	3,160
District 4 subtotal	669	350	4,933	1,047	3,531	1,935	11,446
Tanana	98	47	5,289	11,305	598	482	17,674
Stevens Village/Rampart	20	12	89	50	98	25	262
Beaver	30	25	46	172	16	37	271
Birch Creek/Fort Yukon	218	77	264	102	487	211	1,064
Venetie/Chalkyitsik	101	44	62	127	145	37	371
District 5 subtotal	467	205	5,750	11,756	1,344	792	19,642
Total	2,737	1,377	24,510	29,840	21,055	11,826	87,231

Source Padilla et al. (*In prep*)

a. The number of households contacted per species may vary. The number of households indicated is the greatest number of households contacted for a given species.

b. Whitefish that are greater than 4 lb in weight are considered large whitefish, and those that are less than 4 lb in weight are considered small whitefish.

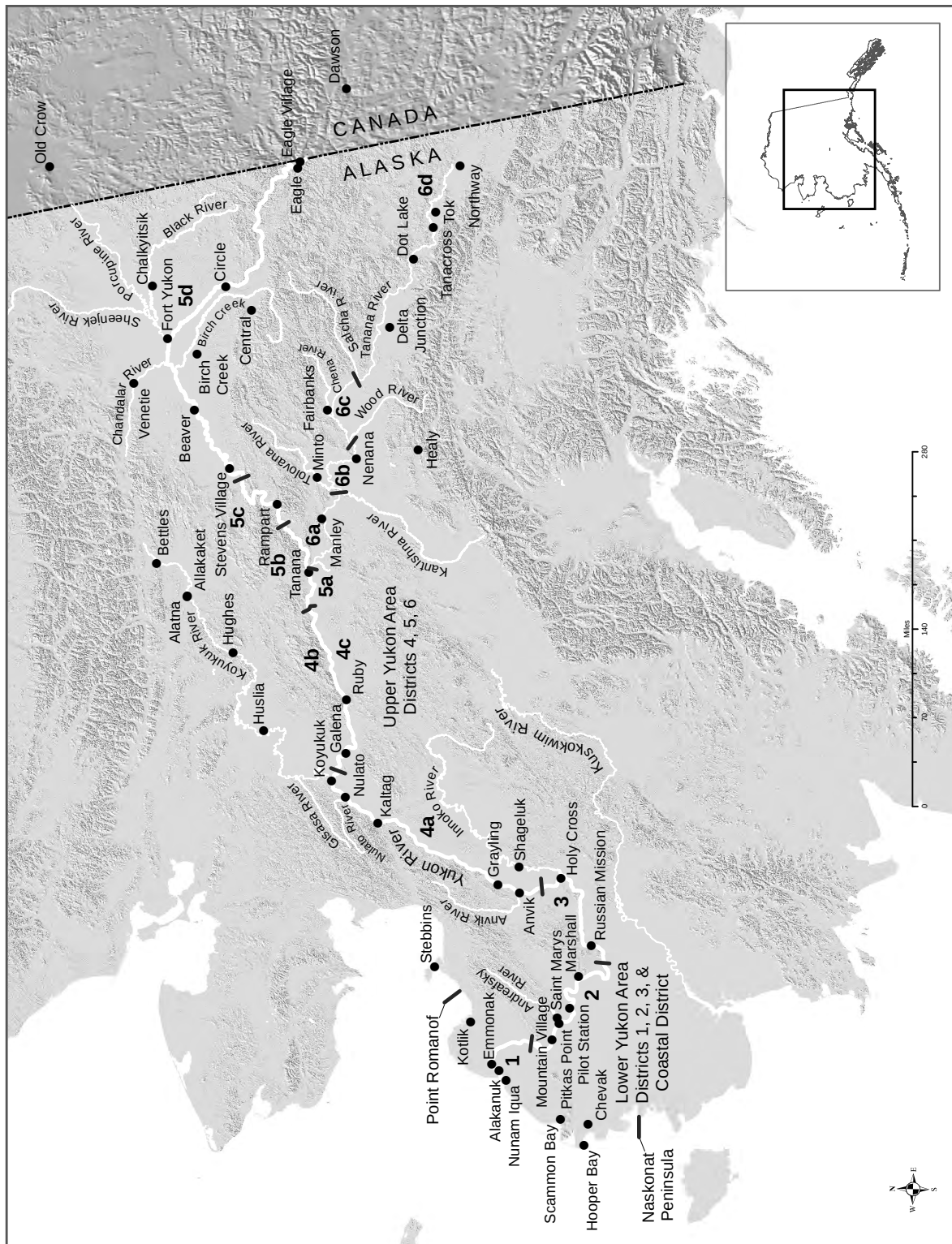


Figure 4-1.—Map of the Alaska portion of the Yukon River drainage, showing communities and districts.

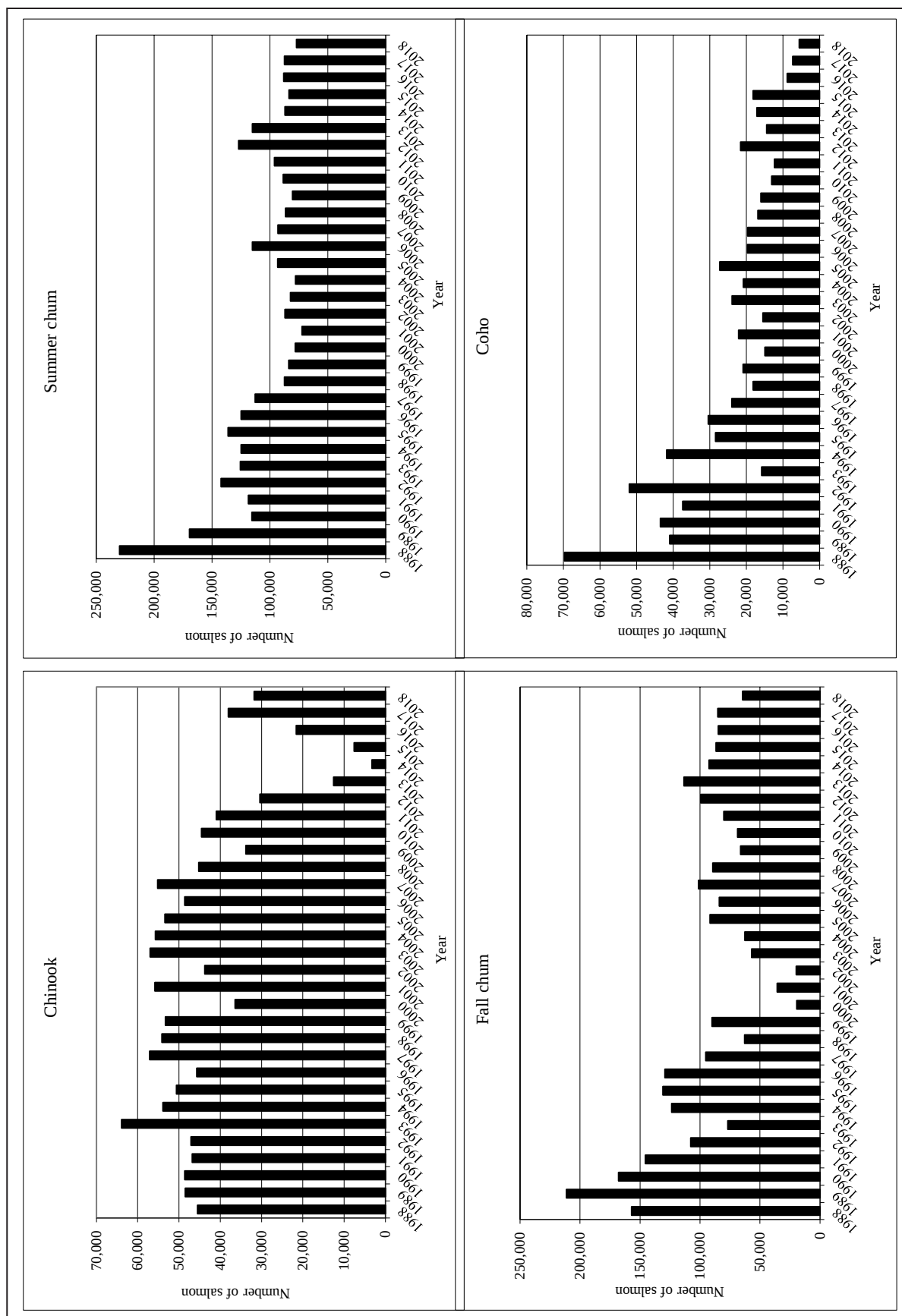


Figure 4-2.-Estimated subsistence salmon harvests by species, Yukon Area, 1988–2018.

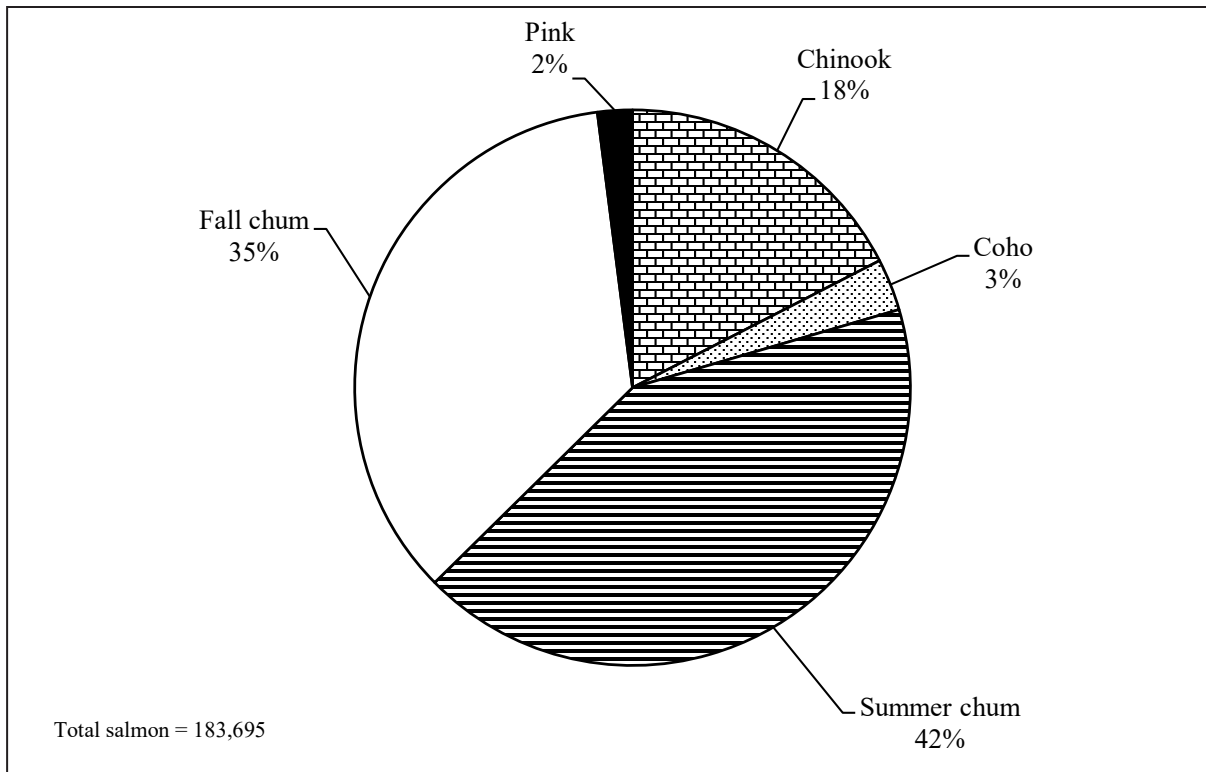


Figure 4-3.—Yukon Area estimated subsistence salmon harvests, 2018.

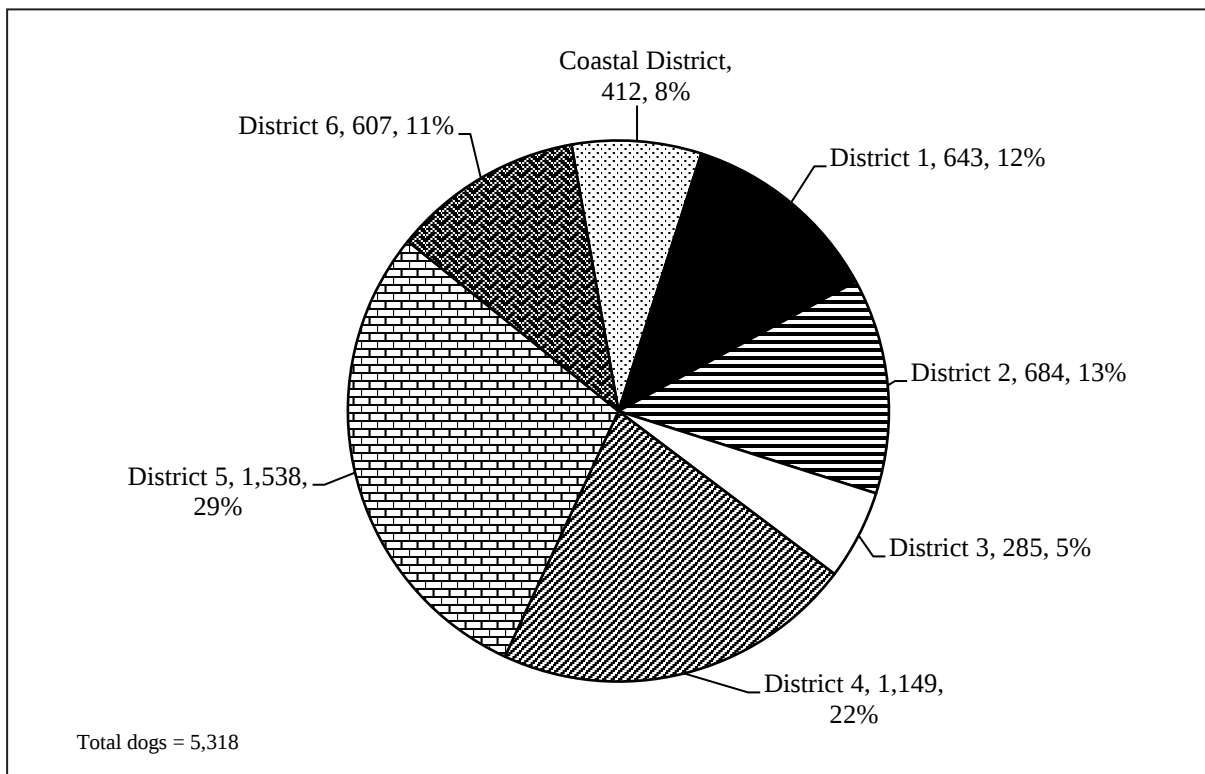


Figure 4-4.—Estimated number of dogs by district, Yukon Area, 2018.

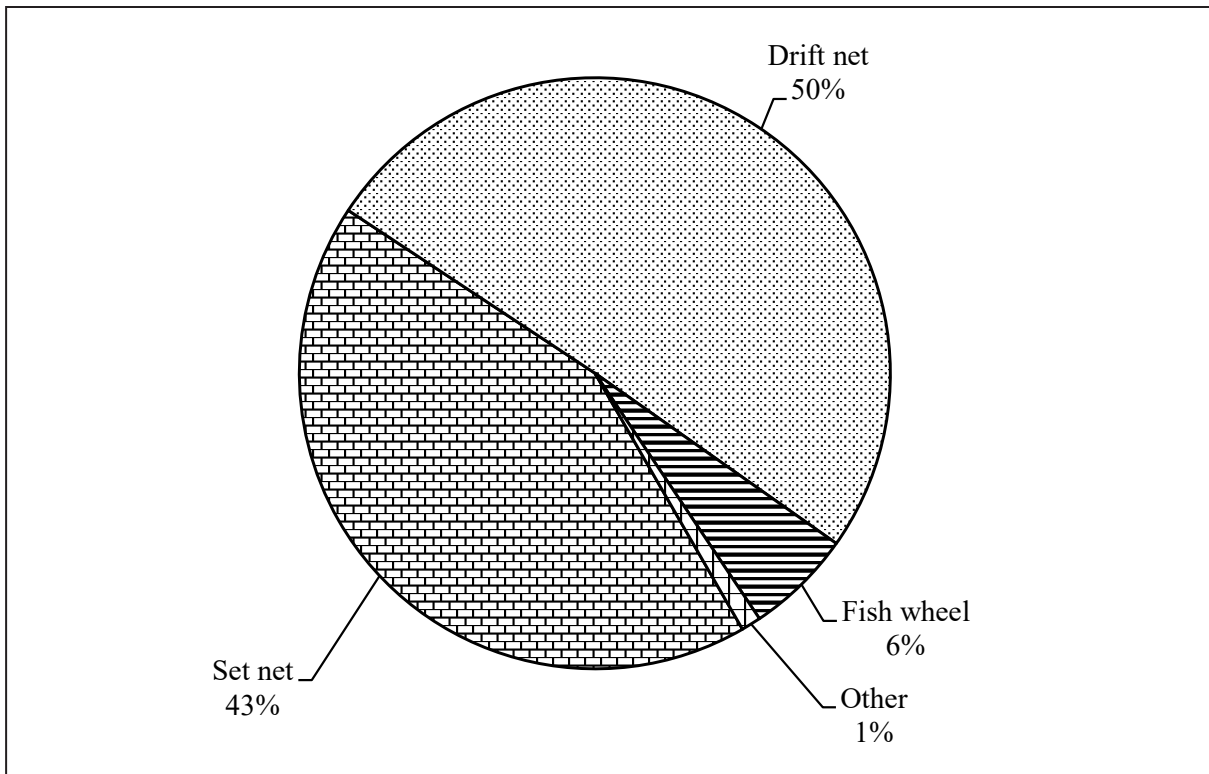


Figure 4-5.—Primary gear type utilized for subsistence salmon fishing, Yukon Area, 2018.

CHAPTER 5: KUSKOKWIM AREA

BACKGROUND

The subsistence salmon fisheries in the Kuskokwim Area are some of the largest in the state of Alaska, in terms of the number of residents who participate, and the number of salmon harvested (Fall et al. 2014). From 1994, when the Alaska Department of Fish and Game (ADF&G) began acquiring reasonably complete statewide coverage of subsistence salmon harvest data, through 2013, over 50% of Chinook salmon harvested under subsistence regulations were taken in the Kuskokwim Area, mostly in the Kuskokwim River drainage. However, declining salmon runs have resulted in conservative management over the last several years and in 2018, an estimated 26,478 Chinook salmon from the Kuskokwim Area represented 31% of the Chinook salmon subsistence harvest statewide (about 86,512 fish; Table 2-1). The 2018 Kuskokwim Area Chinook salmon harvest was about 19% higher than in 2017, when an estimated 22,150 Chinook salmon were taken from the Kuskokwim Area, but much lower than historical harvests.

Between 2010 and 2014 (study years 2009–2013), the Division of Subsistence conducted comprehensive subsistence harvest and use surveys in 23 Kuskokwim Management Area communities, in addition to the annual salmon harvest surveys conducted by the Division of Commercial Fisheries. The results indicate that, on average, salmon contributed 42% of the total wild resource harvest (in edible pounds) in the Lower Kuskokwim communities, 65% in the Central Kuskokwim communities, and 25% in the Upper Kuskokwim communities (Brown et al. 2012; 2013; Ikuta et al. 2014; Runfola et al. 2017). Residents of the Kuskokwim Area harvest five species of Pacific salmon for subsistence purposes: Chinook salmon *Oncorhynchus tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and sockeye salmon *O. nerka*. Many Kuskokwim Area residents consider Chinook salmon to be their preferred fish for eating (Andrews and Coffing 1986). This sentiment is reflected in salmon harvest estimates from ADF&G subsistence research conducted since 1983.¹ Drift gillnetting, set gillnetting, and hook and line fishing are the primary methods used when harvesting salmon, although additional gear types are allowed as specified in 5 AAC 01.270. Kuskokwim Area communities are heavily reliant upon the annual returns of salmon not only for basic nutrition, but also for maintenance of cultural identity and cultural values (Andrews and Coffing 1986; Andrews 1989:154; Barker 1993; Brown et al. 2012; 2013; Coffing 1991; Fienup-Riordan 1990:184; 1995:120, 123; Himmelheber 1987:32; Ikuta et al. 2013; 2014; Oswalt 1963b; 1963a; 1990; Pete 1993; Poetter and Tiernan 2017:3; Senecal-Albrecht 1998; 1990; Walker and Coffing 1993; Wolfe et al. 1984). However, subsistence salmon harvests have fallen dramatically over decades, and have been especially low in recent years; important economic opportunities for commercial sales of salmon were again unavailable in 2018 because no buyer/processor operated in the area (McDevitt et al. 2020).

ADF&G has been estimating Kuskokwim Area subsistence salmon harvests annually by postseason subsistence harvest surveys since 1960. Simon et al. (2007a) discussed the visual survey of fish racks used by the Division of Commercial Fisheries to monitor the annual harvest from 1960 to 1987, as well as the household surveys that were developed by the Division of Subsistence in 1988. Survey methods were improved in 1989, and Subsistence Division staff administered the surveys until 2007 (see also Walker and Coffing 1993). From 2008 to 2016, the Division of Commercial Fisheries administered the annual postseason subsistence salmon harvest monitoring program using methods outlined in Carroll and Hamazaki (2012a). In 2017 and 2018, these divisions shared tasks as the Division of Subsistence regained responsibility for survey administration and data analysis, with no substantial change to methods. There are 38 communities in the Kuskokwim, 37 of which are permanently occupied year-round.² Twenty-eight KMA

1. CSIS accessed May 6, 2020

2. Telida is an occasionally occupied location that has not had year-round residents since 2016. Headquarters for the Native Village of Telida are located in McGrath, where many members reside (J. Nikolai, Telida Tribal Administrator. Personal communication with A. Godduhn, February 21, 2019). Household number estimates are not available for any of six Bering Sea coastal communities or two of three communities on the north side of Kuskokwim Bay.

communities are typically surveyed each year for this project on a voluntary basis. A majority of Kuskokwim Area households lie within the lower river area. Bethel, in the lower river, is the largest community in the region, consisting of approximately 1,865 households (or approximately 39% of the total number of households in the Kuskokwim Area) in 2018 (McDevitt et al. 2020). Middle river communities account for 7% of the number of households and upper river communities account for 6%. The south Kuskokwim Bay communities of Quinhagak, Goodnews Bay, and Platinum compose about 6% of the total Kuskokwim Area households (Carroll and Hamazaki 2012b) and harvest salmon primarily from the drainages of the Kanektok, Arolik, and Goodnews rivers (Walker and Coffing 1993:1; Wolfe et al. 1984:321–322). The north Kuskokwim Bay communities of Kwigillingok, Kongiganak, and Kipnuk are also not located on the Kuskokwim River, but some residents travel to the Kuskokwim River to fish the historically massive salmon runs. Such travel was prevalent following the introduction of small motorboats in the 1950s but has declined with salmon returns to the Kuskokwim River (for example, Kipnuk residents described fishing for salmon closer to home, and targeting more halibut in recent years; Godduhn et al. 2020a). Many small coastal rivers are salmon-bearing, and residents also harvest salmon from marine waters (Andrew 2008; Himmelheber 1987:7; Ikuta et al. 2016b; Stickney 1984:60–61; Walker and Coffing 1993:1).

The coastal and Kuskokwim Bay communities are not consistently included in the annual salmon survey. Kongiganak has usually participated in the voluntary ADF&G harvest survey but has not been successfully visited often or consistently enough in recent years to provide a useful estimate and was therefore not estimated in 2018; Kwigillingok and Kipnuk have not participated since 2004, the most recent year in which all three participated (Simon et al. 2007a:36). Kuskokwim Area communities on the Bering Sea coast (Mekoryuk [on Nunivak Island], Newtok, Tununak, Toksook Bay, Nightmute, and Chefornak) have not participated in ADF&G postseason salmon surveys for most years (Carroll and Hamazaki 2012a; 2012b). While little quantitative information is available, residents of these communities harvest salmon from local rivers and coastal waters, which likely include coastal stocks as well as mixed stocks that were not bound for the Kuskokwim River (Fienup-Riordan 1983:112; Godduhn et al. 2020b; Walker and Coffing 1993:1). In 2011, the Association of Village Council Presidents (AVCP) collected subsistence salmon harvest data in these six coastal communities as well as Kipnuk with funds provided by the Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative (Wolfe et al. 2012). That project provided the most recent subsistence salmon harvest data for this portion of the Kuskokwim Area (Table 5-2), and in 2013, the Alaska Board of Fisheries (BOF) considered the data as they revised the amount reasonably necessary (ANS) for subsistence uses of salmon in the remainder of the Kuskokwim Area.

REGULATIONS

Statewide eligibility criteria require individuals to be Alaska residents for the preceding 12 months before harvesting salmon for subsistence uses. Most subsistence salmon fishers in the region are Kuskokwim Area residents; however, some subsistence fishers are domiciled in other parts of Alaska and return to fish alone, or to assist family or friends with the harvesting or processing of salmon (Simon et al., 2007a:5).

Prior to 1990, there were additional restrictions on participation in the subsistence fishery related to the state's rural priority for subsistence, which subsequently was determined by the Alaska Supreme Court in 1989 to be unconstitutional. In 1988, the BOF formed the Kuskokwim River Salmon Management Working Group (Working Group) in response to requests from stakeholders in the Kuskokwim Area who sought a more active role in the management of salmon fishery resources (Bailey and Shelden 2014:1; Smith and Linderman Jr. 2008:1). The Working Group is composed of knowledgeable stakeholders, processors, and sport fishery representatives, as well as ADF&G biologists and social scientists. It acts in a representative fashion for communities throughout the Kuskokwim River drainage and met 15 times in 2018, prior to and during the salmon fishing season.³

As a result of the passage of Alaska National Interest Lands Conservation Act (ANILCA) and in light of a 1989 Alaska Supreme Court decision in the *McDowell* case, the federal government established the federal

3. ADF&G Division of Commercial Fisheries, Kuskokwim River Working Group, "Meeting Documentation," Accessed May 5, 2020. <http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareakuskokwim.kswg#2018>

subsistence program, which provides subsistence opportunity for qualified rural residents on applicable federal public lands and in applicable federal public waters. Federal subsistence schedules, openings, closings, and fishing methods in the Kuskokwim Area are generally the same as those for state subsistence salmon fisheries, unless superseded by federal special action (50 CFR § 100.27). Regulatory authority for Kuskokwim River salmon management is shared by the Federal Subsistence Board (FSB) and the BOF. On the Kuskokwim, ADF&G is responsible for implementing the Kuskokwim River Salmon Management Plan (5 AAC 07.365) and also has inseason discretionary management authority for salmon in Alaska navigable waters. The portion of the Kuskokwim River drainage from the Aniak River downstream to Kuskokwim Bay is within the boundaries of the Yukon Delta National Wildlife Refuge (YDNWR). As such, the U.S. Fish and Wildlife Service (USFWS) shares inseason subsistence fishing management decision-making with ADF&G in this part of the Kuskokwim River. The USFWS holds final decision-making authority over management of salmon in these waters in the event that the federal subsistence program determines that subsistence uses by non-federally qualified users must be eliminated in order to meet the federal subsistence priority. The Working Group advises state and federal managers through an established process and is currently the primary forum through which management decisions are made regarding Kuskokwim River subsistence, commercial, and sport salmon fisheries (Smith and Linderman Jr. 2008:1). The highest priority in state and federal management of the Kuskokwim River's salmon populations is biological sustainability of the resources based on principles of sustained yield. In the event that returning salmon numbers are not sufficient to meet established escapement goals that will allow for the maintenance of future generations of salmon populations, consumptive uses of salmon may be restricted. Under conditions when there is a harvestable surplus beyond these minimum escapement levels, consumptive uses of salmon are prioritized for different user groups. Individuals must be Kuskokwim Area residents to participate in the Kuskokwim federal subsistence salmon fishery (50 CFR § 100.5).

Alaska Statute 16.05.258, "Subsistence use and allocation of fish and game," establishes the subsistence use priority (above sport, commercial, and personal use) when resources are not abundant enough to provide for all consumptive uses and while remaining in accordance with principles of sustained yield. Subsistence uses protected by the subsistence priority are those practices identified as customary and traditional practices as determined by the BOF. In 1993, the BOF made positive findings for customary and traditional uses of all salmon species in the entire Kuskokwim Area.⁴ As part of these findings, the BOF then determined the amount reasonably necessary for subsistence (ANS) in these respective areas as one means to provide reasonable opportunities for subsistence uses. Based on historical harvest information, an ANS of 192,000–242,000 for salmon of all species in the Kuskokwim Area was determined (5 AAC 01.286). In 2001, the BOF amended these ANS ranges for Kuskokwim River using subsistence harvest data from the years 1990 to 1999. After reviewing various options, the BOF made new customary and traditional use and ANS findings for the Kuskokwim Area by species.

In January 2013, the BOF again modified ANS ranges by species for the Kuskokwim River drainage⁵ and other portions of the Kuskokwim Area. The current ANS ranges for salmon in the Kuskokwim Management Area are as follows (5 AAC 01.286(b)):

67,200–109,800	king [Chinook] salmon in the Kuskokwim River drainage;
41,200–116,400	chum salmon in the Kuskokwim River drainage;
32,200–58,700	sockeye salmon in the Kuskokwim River drainage;
27,400–57,600	coho salmon in the Kuskokwim River drainage;

4. The Kuskokwim Area includes the Kuskokwim River drainage, all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, and Nunivak and St. Matthew islands. There are 37 communities within this area that are occupied year-round.

5. Alaska Department of Fish and Game Division of Commercial Fisheries, "Description of Subsistence Fishing Districts," Accessed September 30, 2019. http://www.adfg.alaska.gov/static-f/fishing/PDFs/commercial/kuskokwim/kuskokwim_subsistence_sections.pdf

500–2,000	pink salmon in the Kuskokwim River drainage;
6,900–17,000	salmon in Sections 4 and 5 combined; and
12,500–14,400	salmon in the remainder of the Kuskokwim Area

The BOF in 2013 also updated and clarified the Kuskokwim River Salmon Management Plan (5 AAC 07.365). The plan provides guidelines for managing the Kuskokwim River salmon fisheries to meet escapement goals and the subsistence priority; goals for Kuskokwim Area and other Arctic–Yukon–Kuskokwim (AYK) salmon stocks were reevaluated in 2015 (Conitz et al. 2015)⁶.

Subsistence harvest of Pacific salmon (hereinafter *salmon*) species in the Kuskokwim River is allowed without a permit (5 AAC 01.280) and with generally no closed seasons (5 AAC 01.260), except as specified in the management plan or otherwise ordered for conservation purposes, as has been the case in recent years. Alaska regulations allow a variety of gear types to be used in the Kuskokwim River for subsistence salmon fishing and include specifications regarding the use of gillnets (5 AAC 01.270). There are no federal or state bag or possession limits for subsistence salmon harvests in the Kuskokwim River, except from June 1 through August 31, when subsistence fishing with a hook and line attached to a rod or pole, in that portion of the Aniak River drainage upstream of Doestock Creek, the bag and possession limit is two Chinook salmon, and rainbow trout, *O. mykiss*, may not be retained (5 AAC 01.295). Federal regulations of all subsistence fish harvests in Alaska federal public lands and waterways are administered under 50 CFR §100.27, including seasons, gear types, and bag and possession limits on all salmon and nonsalmon species.

Therefore, until the recent sharp decline in Chinook salmon, the subsistence salmon fishing season in the Kuskokwim Area was generally open unless a subsistence fishing schedule closure was implemented by emergency order prior to, during, and after commercial fishing periods, or closures to the fishery were implemented by emergency order for conservation purposes (see 5 AAC 01.260, and 5 AAC 07.365). On the Kuskokwim River, a subsistence fishing schedule with periodic fishing closures (openings between these closures were often referred to as “windows” or “openers”) was implemented from 2001–2006 and has since been discontinued. Since 2007, a gillnet fishing closure has occurred by emergency order early in the season with timed openings announced during the Chinook salmon run; this limits fishing for these highly desired fish as well as other species.

Subsistence fishing within the Kuskokwim River drainage is managed in five sections (McDevitt et al. 2020). During times of Chinook salmon conservation, subsistence fishing opportunities are typically scheduled on the lowest section of the river first. Fishing opportunities then progress upriver to additional sections as the salmon run develops. Section 1 extends from the mouth of the Kuskokwim River to the mouth of the Johnson River; section 2 continues from the mouth of the Johnson River to approximately one half of a mile above the mouth of the Tuluksak River and includes the community of Bethel. Section 3 extends from the upper boundary of section two to a point near the mouth of the Aniak River. Sections one through three are within the boundaries of the Yukon Delta National Wildlife Refuge. Section 4 continues from the Yukon Delta National Wildlife Refuge border to markers just downstream from the Holitna River Mouth; section 5 includes the remainder of the drainage, from the Holitna River to the headwaters of the Kuskokwim River.

Several regulations adopted by the BOF since 2014 are intended to reduce overall Chinook salmon harvests while allowing for subsistence salmon fishing opportunities during times of Chinook salmon conservation; the regulations focus on gear that is either nonlethal or nonselective for Chinook salmon and stipulate the live release of Chinook salmon to the water. These regulations enable the department to allow and adjust the use of rod and reel, dip nets, fish wheels, 4-inch mesh set gillnets, and 3.5-inch mesh beach seines for catching salmon. In January of 2016, the BOF adopted language that annually suspends directed subsistence fishing for Chinook salmon in the Kuskokwim River until after June 11 in order to ensure that

6. “Kuskokwim Area revisions were recommended for Kanektok River Chinook, Kanektok River sockeye *O. nerka*, and North Fork Goodnews River sockeye salmon goals. Discontinuation of the Aniak River chum salmon goal was recommended because the sonar assessment project was discontinued. No other changes to the region’s escapement goals were recommended” (Conitz et al. 2015:1)

Chinook salmon reach the middle and upper Kuskokwim River for escapement and subsistence uses (5 AAC 07.365(a)).

In March of 2017, the BOF established a household subsistence Chinook salmon fishing permit for implementation during the 2018 fishing season (McDevitt et al. 2020; Runfola et al. 2018b). The system was designed to provide fishers with opportunities to harvest a small number of Chinook and other salmon within state waters of the Kuskokwim River drainage during times of Chinook salmon conservation. Permit data do not provide a household's total salmon harvest. Therefore, all eligible households within the Kuskokwim Area are invited to participate in the annual postseason household surveys that query all salmon harvests within the Kuskokwim Area—including catches made while fishing under the permit system.

2018 Subsistence Fishery

Very low Chinook salmon returns challenge managers to provide both adequate subsistence harvest opportunities and adequate escapement for long term productivity. As expected, for the fifth year in a row, gillnet fishing was closed early in 2018 to protect Chinook salmon. The department's preliminary management strategy was to institute restrictive management actions at the onset of the fishery with the potential to relax restrictions based on inseason information if warranted. The gillnet fishing closure to protect Chinook salmon escapement was initiated on May 25. Fishing by nonlethal gear types (beach seines, dipnets, fishwheels, and hook and line) was immediately reopened with the requirement that any Chinook salmon caught be released back to the river alive (McDevitt et al. 2020). As recommended by the Working Group, managers executed the 2018 closures to coincide with salmon arrivals: gillnet fishing was closed in Subsistence Section 1 (from the mouth at Kuskokwim Bay to the mouth of the Johnson River) on May 25 and proceeded upstream, including within salmon bearing tributaries,⁷ reaching Section 5 (upstream of the Holitna River mouth) June 9 and closing the entire mainstem to gillnets. Two openings for fishing with 4-inch or smaller mesh gillnets occurred prior to June 12 to allow the harvest of nonsalmon species (May 30 and June 6).

On June 12, the Federal Subsistence Board (FSB) initiated a Federal Special Action to manage the Chinook salmon fishery within the boundaries of the YDNWR. For the fourth consecutive year, an FSB special action allowed only federally qualified subsistence users (residents of the Kuskokwim River drainage and the villages of Chefornak, Kipnuk, Kwigillingok, and Kongiganak) to fish for salmon within the boundaries of the refuge, which was effective until July 6, when the state resumed management of the entire river.

Opportunities to fish for Kuskokwim River salmon in 2018 were different in federal waters (sections 1, 2, and 3) from state waters (sections 4 and 5). Fishers in the upper river (Section 5) had the fewest days of restriction. Upper river fishers also, as a rule, have fewer alternatives to make up for low Chinook salmon harvests later in the summer. Fish passage was inevitably less complete in Section 4 and Section 5 of the river when fishing in all sections of both federal and state jurisdiction began on June 12.

On June 12, ADF&G opened subsistence gillnet fishing indefinitely in state waters from the Holitna River to the Kuskokwim River headwaters (Section 5), and for 12 hours in state waters from the refuge boundary at Aniak to the Holitna River (Section 4); in both sections, nets were restricted to 6-inch or less mesh size and 25 fathoms or less in length. The ADF&G provided one additional opening of 12 hours in Section 4 on June 19 prior to opening that central portion of the river with the same net restrictions indefinitely on June 25. The Aniak River and other Chinook salmon spawning tributaries remained closed to gillnets until August 17.

In federal waters of the YDNWR (ADF&G Subsistence Sections 1, 2, and 3), in cooperation with Kuskokwim River Intertribal Fish Commission (KRITFC), USFWS provided five subsistence gillnet fishing opportunities during the Chinook salmon conservation closure to allow a limited harvest of Chinook salmon: 12 hours on June 12, June 16, and June 24, 6 hours on June 29, and 12 hours on July 5 (Staton 2018).

7. The Kwethluk, Kasigluk, Kisaralik, Tuluksak, and Aniak river drainages are major spawning streams for Chinook salmon and were closed throughout the 2018 Chinook salmon run.

On July 6, ADF&G resumed management of Kuskokwim River salmon fishing within the boundaries of the YDNWR and implemented restrictions similar to those in place upstream.⁸ The department lifted mainstem gear restrictions on July 26. Tributary restrictions were kept in place to protect Chinook salmon on their spawning grounds until August 16.

During the 2018 season, ADF&G stock assessment projects affirmed the preseason expectation that Chinook salmon returns appeared to be of below-average abundance. Although chum, sockeye, and coho salmon runs in the Kuskokwim River were strong, there were no commercial salmon buyer/processors in the Kuskokwim Area during the 2018 season, and there was no commercial fishing.

Based upon analysis of the department's Chinook Salmon Run Reconstruction Model, the total run of Kuskokwim River Chinook salmon in 2018 was estimated to be 132,312 fish (95% CI: 104,858-166,954). This was the third largest run since 2009 and met the drainagewide sustainable escapement goal of 65,000–120,000 fish (Smith 2019). Chinook salmon abundance in the Kuskokwim River drainage has decreased since 2007, with some improvement since the record low year of 2013.

The 2018 estimated total Kuskokwim Area Chinook salmon subsistence harvest of 26,478 fish (Table 5-1) was the fifth smallest estimated harvest on record, about 65% less than the 1989–2017 average of 75,847 fish (Table 5-3).

SUBSISTENCE SALMON HARVEST ASSESSMENT METHODS

As described in more detail below, salmon harvest estimates reported in this chapter's tables (except 5-2) are based on annual postseason surveys with Kuskokwim Area households each autumn (in particular October and November of 2018). However, management goals of maximizing the allowed harvest while ensuring adequate escapement for threatened stocks of Chinook salmon benefit from reliable real-time harvest estimates; such estimates are best informed by data collected from fishers as they return from fishing with their catch or shortly thereafter.

Inseason Fisher Harvest and Effort Surveys

In May of 2016, USFWS and the KRITFC established a formal partnership for fisheries management with the U. S. Department of the Interior (DOI) and USFWS, Kuskokwim River Partnership Memorandum of Understanding.⁹ In cooperation with the Orutsarmiut Native Council (ONC) of Bethel and, in 2018, ADF&G Division of Subsistence, these entities implemented a harvest and fishing effort assessment project to produce inseason subsistence salmon catch estimates. During each fishing opening, USFWS staff who supervised the project estimated harvest based upon dockside creel surveys that documented individual fisher catch and effort, coupled with aerial boat-counting surveys to estimate fishing fleet size in the YDNWR of the Kuskokwim River (Runfola et al. 2019; Staton 2018). The ongoing project is focused on real-time estimates of salmon taken from the lower portion of the mainstem Kuskokwim River, from the mouth to Aniak. The project expanded to include more communities in 2017 and again in 2018; thereby increasing creel and aerial survey sample sizes and reducing uncertainty in the daily catch and effort estimates (Staton 2018). The resulting total estimate of 87,750 (75,670–101,230) salmon harvested within refuge boundaries during the four openings was composed of approximately 20,870 Chinook, 43,570 chum, and 23,320 sockeye salmon (Staton 2018). Because these harvest data are inevitably incomplete, any comparisons to postseason data for communities that participated in the inseason project would be speculative. Unlike the postseason survey, the purpose of the inseason project is not to give a total harvest estimate for the season but to provide an estimated running total of the harvest in a portion of the Kuskokwim River as each opening occurs from approximately June 12 through July 1. Estimates assist managers and advisory stakeholder groups in their efforts to schedule subsequent fishing openings.

8. Gillnet mesh size was restricted to 6-inch or less and length to 25 fathoms or less, except in Section 1, where nets of up to 50 Fathoms were allowed.

9. Charles Enoch, 2016, "KRITFC Signs an MOU with USFWS." Accessed April 29, 2020. <http://www.kyuk.org/post/kritfc-signs-mou-usfws>

Postseason Household Harvest Surveys

ADF&G has been estimating Kuskokwim Area subsistence salmon harvests annually by postseason subsistence survey since 1960; methods were improved and standardized in 1988 and data are comparable since 1989 (Hamazaki 2011; McDevitt et al. 2020). The purpose of the survey is to estimate the total annual subsistence salmon harvest from Kuskokwim Area waters by area residents. The ADF&G, USFWS, BOF, and FSB rely on postseason subsistence salmon harvest data and resulting estimates to manage salmon fisheries and to provide reasonable opportunities for continued customary and traditional uses of salmon throughout the area. The Orutsararmiut Native Council (ONC) has been involved with subsistence salmon harvest monitoring in Bethel since 1999. The ADF&G responsibilities have shifted occasionally between the Division of Subsistence and the Division of Commercial Fisheries; in 2018, the divisions shared responsibility (McDevitt et al. 2020).

In 2018, under a cooperative program between ADF&G, the USFWS Office of Subsistence Management, and the ONC, postseason subsistence salmon harvest data collection in Bethel was conducted by ONC staff. Postseason subsistence harvest data collection in all other communities was conducted by ADF&G staff.

Study Design

In 2018, household surveys were attempted in 28 of the 38 communities within the Kuskokwim Management Area, including most communities along the Kuskokwim River and all communities within South Kuskokwim Bay. The community of Kongiganak in the north Kuskokwim Bay declined a request by ADF&G staff to conduct surveys in 2012–2018. The village of Telida is a seasonally occupied location with no year-round residents and was therefore not surveyed. With the exception of Bethel (simple random sample), the postseason subsistence harvest survey was designed based on stratified random sampling methodology (Cochran 1977; Scheaffer et al. 1990). In this study design, each household was the primary sampling unit. A household generally consists of one or more persons living together in a dwelling and sharing the same mailing address. Multiple generations living in one dwelling would be considered a single household. Each household was classified into one of five strata based on the household's recent harvest history. The five stratifications of participation in the subsistence fishery are as follows:

- High harvester: a household that has averaged a harvest of more than 200 salmon per year;
- Medium harvester: a household that has averaged a harvest of 101–200 salmon per year;
- Light harvester: a household that has averaged a harvest of 1–100 salmon per year;
- Usually does not fish: a household that did not participate in subsistence fishing activities;
- Unknown: a household that has no harvest record within any of the past five years.

For this study, fishing household was defined as a household that participated in subsistence fishing activities, such as harvesting or processing salmon. The household stratification was updated prior to the survey and was not re-assigned during the survey year (i.e., no post-survey reclassification), with the exception of unknown fishing households. From each stratum, survey households were selected randomly in the following percentages:

- High harvester: 100%;
- Medium harvester: 100%;
- Light harvester: 50%;
- Usually do not fish: 30%;
- Unknown: 100%.

When the number of households in each stratum was less than five, all households in the stratum were surveyed. Likewise, when the total number of households in a community was less than or equal to 40, all households in the community were surveyed and the survey method became a census (100% surveyed).

In Bethel, a simple random survey was conducted where each dwelling (physical location instead of household) was the primary sampling unit. Because Bethel is a main hub city of western Alaska, its population is highly fluid, and a high proportion of the population moves into and out of Bethel on a regular basis. In addition, people often change dwellings, making it difficult to maintain an accurate and complete household list that records household fishing histories. A dwelling list for Bethel has been maintained and updated annually. Dwelling maps are developed from maps provided by the Bethel city planner's office. Map and list are compared and updated both prior to the season and in season based on surveyor notes. Based on the updated list, occupied dwellings were randomly selected for survey. Households randomly selected for survey in Bethel were pursued using rigorous protocols to minimize bias. For each selected dwelling, at least three separate attempts to contact the household were required. Attempts were made on separate days and different times of day with at least one visit made after 5:00 PM. Exceptions included obviously abandoned or derelict dwellings or when contact was made, and the occupant declined to be surveyed. In these cases, the selected dwelling was excluded from the survey effort and replaced by another dwelling selected at random from those not previously selected. The final number of surveyed households was approximately 20% of the total number of occupied dwellings.

Postseason subsistence harvest surveys were conducted in early autumn after the majority of salmon fishing had ended. Fishers were still likely able to recall their harvest numbers immediately following the end of their subsistence salmon fishing season. In Bethel, surveys were conducted by ONC, and the other communities were surveyed by ADF&G.

Before conducting interviews, ADF&G and ONC worked together to train all surveyors in surveying techniques, including direction on how to get the best information possible from people who are not accustomed to quantifying their fish harvest. Surveyors were trained in salmon species name identification because local names for salmon vary throughout the drainage. Surveyors were also briefed on fishery issues and concerns from the recent subsistence and commercial salmon fishing season, to improve understanding of community members' reactions and comments during surveys.

During the survey, the crew contacted community officials to notify them about the project before arriving in the community to conduct surveys. The household lists were annotated and corrected as the surveyors completed the survey process in the community. During interviews, both surveyors and surveyed individuals contributed to the quality of the estimate. Surveyors were responsible for attempting contact with each selected household, asking questions consistently and understandably, and fostering a cooperative atmosphere. Surveyors attempted to interview a member of each selected household, preferably the primary harvester. Occasionally, interviews were conducted with households not pre-selected for the survey. Those households either 1) were new or previously unknown households found by surveyors or 2) voluntarily provided surveyors with their harvest information.

All survey data were entered into the subsistence harvest database maintained by the Division of Commercial Fisheries. The data were subsequently extracted and processed by Commercial Fisheries staff. The analyzed data were transmitted to Division of Subsistence analysts for final data formatting and inclusion in the Alaska Subsistence Fishery Database, maintained by the Division of Subsistence. All subsistence harvest data were treated as confidential, such that individual harvest data were not shared, and all analysis was aggregate and anonymous. The study was generally conducted in accordance with the Alaska Federation of Natives Guidelines for Research.¹⁰

Harvest Calendars

In addition to systematic household harvest surveys, subsistence salmon harvest calendars were mailed in late April or early May so that they were available to fishers prior to the start of the salmon fishing season. In 2018, ONC distributed calendars to Bethel area fish camps. The calendar data continue to be instrumental for

10. Alaska Federation of Natives. 2013. "Alaska Federation of Natives Guidelines for Research." Alaska Native Knowledge Network. Accessed April 29, 2020. <http://www.ankn.uaf.edu/IKS/afnguide.html>

examination of subsistence salmon harvest timing. Many area fishers reference information they recorded on the calendars during postseason household harvest surveys.

Calendar mailings were based on the most up-to-date household lists used in the harvest monitoring program. Extra calendars were printed and maintained at the Bethel ADF&G office for distribution as needed or upon request. Returned calendars were used to corroborate household survey data when possible at the time of survey completion at the respondent's household, and provide harvest timing data (McDevitt et al. 2020).

Data Correction and Archiving

Staff at ADF&G reviewed and edited all completed surveys and periodically sent reviewed surveys to staff in Bethel and Anchorage for further processing. The survey data were entered into an Arctic-Yukon-Kuskokwim Database Management System (AKDBMS) data server. The database was structured to ensure data were entered completely and accurately, and there were periodic back-ups to prevent data loss.

Data Analysis

Community estimates of subsistence salmon harvest for surveys collected in communities outside of Bethel were generated using a stratified random sampling expansion technique. This approach applies means to unsurveyed households within each stratum and sums total estimates of the five strata groups to calculate a community harvest estimate. Communities where harvest survey data were inadequate or unavailable, for 2016 and earlier, were estimated by employing a Bayesian hierarchical multiple imputation method, except in communities that had not participated frequently enough in recent years for an estimate to be calculated (Shelden et al. 2016). The details of these approaches are described in Shelden et al. (2014).

2018 SAMPLING SUMMARY

In 2018, there was an estimated total of 4,302 households in the 28 study communities, as well as the North Kuskokwim Bay community of Kongiganak, which declined to participate in the survey (Table 5-1). This estimate of 4,302 households does not include the north Kuskokwim Bay communities of Kwigillingok or Kipnuk or the Bering Sea coast communities of Nightmute, Mekoryuk, Newtok, Toksook Bay, Tununak, and Chefornak. Of the 4,302 estimated households, 76% were located in the Lower Kuskokwim region, including 1,865 households (43% of the total estimated households) in Bethel and 1,381 households (32%) in the remainder of Lower Kuskokwim communities, followed by 381 households in the Middle Kuskokwim, and 299 households in the Upper Kuskokwim (Table 5-1). Household number estimates in all portions of the Kuskokwim Area increased slightly from 2017.

Out of the 4,302 estimated 2018 households, surveys were conducted with 1,741 households in 28 Kuskokwim Area communities (Table 5-1). As noted above, subsistence salmon harvests in communities in which no household surveys took place may be estimated using a Bayesian hierarchical multiple imputation method if adequate harvest data for previous years existed; however, there were no Kuskokwim Area communities for which sufficient historical data enabled annual harvest estimates using this method in 2018. As a result, the Kuskokwim Area total should be viewed as an incomplete estimate because data for some communities are not available (Simon et al. 2007a:20).

For lower Kuskokwim River communities, 1,214 (37%) of the 3,246 households were contacted. In the south Kuskokwim Bay region (Quinhagak, Goodnews Bay, and Platinum), 154 (54%) of the 286 households were contacted. None of the Bering Sea coastal communities participated in postseason salmon surveys in 2018, and data for previous years are incomplete. Currently, subsistence salmon harvest information collected by AVCP for 2011 is the only available and reliable salmon harvest data source for the region (Table 5-2) (Wolfe et al. 2012).

Communities of the middle and upper Kuskokwim River regions are generally smaller than lower river communities, and together account for about 16% (680 households) of the total households (4,302) in the Kuskokwim Area. In the middle Kuskokwim River region, defined here as communities located on the Kuskokwim River from Lower Kalskag upriver to Chuathbaluk, 186 (49%) of 381 households were contacted in 2018. For upper Kuskokwim communities, defined here as communities located on the

Kuskokwim River from Crooked Creek upriver to Telida (in addition to Lime Village located on the Stony River and Takotna located on the Takotna River), 187 (63%) of 299 households were contacted. The historic communities of Georgetown, Napaimute, and Telida were not surveyed due to an absence of permanent populations; households who fish in these places are surveyed during their residence in other Kuskokwim River communities, and their catches are considered part of the residential community's total harvest.

2018 SUBSISTENCE SALMON HARVEST SUMMARY

A summary of the subsistence salmon harvest estimates by community and fishing area is presented in Table 5-1. In 2018, fishers harvested an estimated total of 137,076 salmon for subsistence use from the Kuskokwim Area; about 125,306 of the salmon were harvested from the Kuskokwim River (93%). People in the Lower Kuskokwim communities harvested about 104,011 salmon, 76% of the estimated total subsistence salmon harvest, including 32,325 salmon (24%) in Bethel and 71,686 salmon (52%) in the remaining Lower Kuskokwim communities (Table 5-1). Fishers in the Middle Kuskokwim communities harvested 15,841 fish (12%), followed by 11,770 fish (9%) in South Kuskokwim Bay, and 5,454 fish (4%) in the Upper Kuskokwim.

Chum salmon contributed 35% of the estimated subsistence salmon harvest (47,843 fish), followed by sockeye salmon (29%, 39,057 fish), coho salmon (16%, 21,922 fish), Chinook salmon (19%, 26,478), and pink salmon (1%, 1,176 fish) (Table 5-1 and Figure 5-1).

In 2018, the total subsistence salmon harvest was the lowest on record and the harvest of all five species was lower than the most recent 5-year average (2013–2017; Table 5-3). Chinook salmon was the only species more heavily harvested in 2018 (26,468 fish) compared to 2017 (22,151 fish); harvests of other salmon were dramatically lower than in 2017. Chinook salmon harvests have declined steeply since 2007. The 2018 subsistence harvest of Chinook salmon was about 8% lower than the recent 5-year average harvest of 28,800 fish, 45% below the 10-year average (48,259 fish), 58% below the 15-year average (62,895 fish), and 65% below the historical average (75,847 fish). The 2018 harvest of Chinook salmon was the fifth lowest year on record; this was higher than in 2012, 2014, 2015, and 2017, but 77% below the record high year of 1990.

Chum salmon harvests also show decline over decades, with variability: 2018 chum salmon harvests were about 13% lower than estimates for 2017, and about 12% below the most recent 5-year average, 16% below the 10-year average, 21% below the 15-year average, and 34% below the historical average. Subsistence sockeye salmon harvests in 2018 were 16%–20% lower than any of the recent averages, and 14% lower than the historical average of 45,314 fish. The 2018 subsistence harvests of coho salmon were also lower than any of the averages. Sockeye and coho salmon harvests have generally increased in response to reduced opportunities for Chinook salmon, but 2018 harvests did not show this pattern.

Many area residents contacted by Division of Subsistence staff during the 2018 salmon fishing season described attempting to increase their harvests of sockeye and coho salmon in order to meet their households' needs during a summer of restrictions that significantly limited their Chinook salmon harvests (McDevitt et al. 2020). However, the Chinook salmon run overlaps the sockeye run, so fishing for sockeye is also restricted until the Chinook run has dwindled. This happens after the warmer, drier weather of June has typically passed, making fish processing more difficult for most fishing households that dry their fish before storage. Likewise, respondents described coho fishing as limited by harvesters' ability to process their catches: These fish arrive in mid- to late July and through early autumn, when cool rainy weather continues.

Lower Kuskokwim River Area communities (76% of Kuskokwim Area households), accounted for 73% of the total estimated Chinook salmon subsistence harvest in the Kuskokwim Area, 83% of the total chum salmon harvest, 73% of the total sockeye salmon harvest, and 73% of the total coho salmon harvest. In 2018, residents of Bethel (43% of Kuskokwim Area households) accounted for approximately 21% of estimated total Kuskokwim Area subsistence-caught Chinook salmon, 41% of the coho salmon harvest, 21% of the sockeye salmon harvest, and 20% of the chum salmon harvest (Table 5-1).

Use of Salmon for Dog Food

Historically, a large portion of the overall subsistence salmon harvest was taken for use as dog food—especially chum and coho salmon. Over decades, the number of households harvesting salmon specifically for dog food has declined due to decreased use of dog teams for transportation. In 2018, respondents in 2,203 households reported owning dogs, and 94 households (2% of Kuskokwim Area households) reported feeding salmon to dogs (Table 5-4). An estimated total of 8,454 salmon were fed to dogs in 2018, a 71% decrease from the 2017 estimate of 28,821. About 36% of the salmon reported as fed to dogs were chum salmon (3,000 fish); 28% were sockeye salmon (2,368); 22% were coho salmon (1,874 fish); and 14% were pink salmon (1,142 fish). Households do not target Chinook salmon for dog food; however, about 70 Chinook salmon (<1%), likely unfit for human consumption, were reported to have been fed to dogs in an effort to avoid wasting the fish. Contemporarily, many households routinely feed scraps—backbones, entrails, and salmon unfit for human consumption—to their pet dogs.

Gear Types

Kuskokwim Area subsistence fishers deploy a variety of gear types to harvest salmon (e.g., set gillnet, drift gillnet, rod and reel, or fish wheel; Table 5-5). Households that harvested salmon were asked to provide information on the primary gear type used by their household for harvesting salmon. In 2018, 2,099 contacted fishing households responded to gear type questions. Of those, 1,655 (79%) reported salmon fishing predominantly with drift gillnets, 170 (8%) reported set gillnets, 185 (9%) reported subsistence rod and reel gear, and 84 (4%) reported a fish wheel as the gear type they used most for subsistence salmon fishing in 2018. Preferred gear types vary between regions of the Kuskokwim Area, and fishers often select which gear type to use based on local environmental factors such as river morphology and water level as well as salmon species to be targeted. In recent decades, drift gillnets have been the most common gear type deployed by fishers in the lower and middle Kuskokwim River communities where river depth and width permit the efficient use of this type of net. In communities of the upper Kuskokwim River, a narrower and generally shallower river channel typically restricts fishers to the use of set gillnets and occasionally fish wheels. Also, subsistence fishers who reside near clear water streams often harvest salmon by rod and reel (e.g., Kwethluk, Takotna, and Nikolai). Local community or family customs and traditions associated with subsistence salmon fishing are also important when fishers determine the best subsistence salmon fishing gear to use, such as rod and reel gear for Chinook salmon in the Pitka Fork Salmon River by Nikolai fishers and for coho salmon along the Kuskokwim riverfront in Aniak in July and August.

Salmon Retained from Commercial Fishing for Subsistence Uses

Households involved in commercial salmon fishing occasionally keep a portion of their commercial harvest for subsistence use. There was no commercial fishing in the Kuskokwim Area in 2018; therefore, no salmon were retained from commercial catches (McDevitt et al. 2020).

OTHER FISH

Harvest data for nonsalmon fish species were also collected as part of the postseason salmon survey (Table 5-6). Estimated 2018 harvests of nonsalmon species by residents of surveyed communities in the Kuskokwim Area included 22,583 humpback whitefish; 19,349 broad whitefish; 9,274 cisco (including Bering and least ciscoes); 3,399 sheefish; 5,825 burbot; 85,100 northern pike; 209,844 Alaska blackfish; 164,585 smelt (predominantly rainbow smelt); 3,922 Pacific herring; 2,504 Arctic grayling; 7,576 char/Dolly Varden; and 1,143 rainbow trout.

The Division of Subsistence conducted a study in 2017 of nonsalmon fisheries in Quinhagak as well as three coastal Kuskokwim Area communities that do not generally participate in the postseason salmon surveys: Kipnuk, Mekoryuk, and Nightmute (Godduhn et al. 2020a). The 2017 nonsalmon fish survey conducted in Quinhagak estimated significantly greater harvests for all nonsalmon species compared to the 2018 postseason salmon survey harvest estimates for the community. However, these estimates are not easily compared due to differences in the survey methods of the two separate data collection efforts (Fall et al. 2019). Postseason salmon surveys occur in the fall, which may cause harvests from the previous winter

to be underestimated. The 2017 nonsalmon surveys occurred midwinter, which may have resulted in a more accurate recollection of the harvest. Also, postseason surveys tend to target salmon fishers, such that some heavy nonsalmon fishing families may be missed.

Studies focusing on the local and traditional knowledge of nonsalmon fishes and nonsalmon fish harvest amounts were conducted in Aniak and Chuathbaluk for 2001–2003 (Krauthoefer et al. 2007), Bethel for 2001–2003 (Simon et al. 2007b), Eek, Tuntutuliak, and Nunapitchuk for 2005–2009 (Ray et al. 2010), as well as Nikolai and Lime Village for 2012–2013 (Godduhn et al. 2020b; Mikow et al. 2019; Van Lanen and Runfola 2015). Information on historical and contemporary harvest and use of salmon and nonsalmon in Kuskokwim Area communities, where data are available, can be accessed through the Community Subsistence Information System (CSIS) on the ADF&G website.

THE ROLE OF SALMON WITHIN ANNUAL SUBSISTENCE HARVESTS

The Division of Subsistence conducted comprehensive subsistence harvest and use surveys in the following 20 Kuskokwim River drainage communities: in 2010 (study year 2009), Aniak, Chuathbaluk, Crooked Creek, Lower Kalskag, Red Devil, Sleetmute, Stony River, and Upper Kalskag (Brown et al. 2012); in 2011 (study year 2010), Akiak, Kwethluk, Oscarville, Tuluksak, Georgetown, and Napaimute (Brown et al. 2013); in 2012 (study year 2011), Napakiak, Napaskiak, McGrath, Nikolai, and Takotna (Ikuta et al. 2014); in 2013 (study year 2012), Bethel (Runfola et al. 2017); and in 2014 (study year 2013), Tuntutuliak and Eek (Ikuta et al. 2016a). These comprehensive surveys included questions about the harvest and use of all wildlife and plants. In addition, the division conducted an ethnographic project to understand harvest patterns and trends of subsistence Chinook salmon fishing across the drainage in Tuntutuliak, Kwethluk, Kalskag, Sleetmute, and Nikolai in 2009 and in the Bethel area in 2012 (Ikuta et al. 2013). The results of these studies demonstrate that salmon provide a large portion of the total subsistence food supply in Kuskokwim River communities. In 2012, the top five resources harvested by edible weight were moose at 20%, chum salmon at 12%, coho salmon at 11%, sockeye salmon at 10%, and Chinook salmon at 8% of the estimated total subsistence harvest by Bethel residents (Runfola et al. 2017). However, declines in Chinook salmon abundance have prompted subsistence fishing restrictions during the Chinook salmon fishing season over the last decade. The 2011 harvest estimate of 65,850 Chinook salmon was the record low at that time, but greater than any harvest since then (Table 5-3). In 2012, for example, the total estimated Chinook salmon harvest in the Kuskokwim Area (25,353 fish) was more than 70% below the (2002–2011) 10-year average Chinook salmon harvest for the region (85,877 fish).

In other lower Kuskokwim River communities in 2010 (Oscarville, Kwethluk, Akiak, and Tuluksak) and 2011 (Napakiak and Napaskiak), the five most heavily harvested resources were Chinook salmon at 20%, chum salmon at 12%, and northern pike, sockeye salmon, and humpback whitefish in relatively similar proportions, each from 8 to 9% of the total subsistence harvest (Brown et al. 2013; Ikuta et al. 2014). Like people in Bethel, people living in other lower Kuskokwim River communities rely on salmon and moose, yet they tend to harvest more nonsalmon fish species, such as northern pike and humpback whitefish, than people living in Bethel (Runfola et al. 2017).

In the eight middle Kuskokwim River communities (Lower Kalskag, Upper Kalskag, Aniak, Chuathbaluk, Crooked Creek, Red Devil, Sleetmute, and Stony River), the five most heavily harvested resources in 2009 were Chinook salmon at 30% of the total subsistence harvest, chum salmon providing 15%, coho salmon at 12%, moose at 11%, and sockeye salmon at 8% of the total subsistence harvest (Brown et al. 2012). Like people in lower Kuskokwim River communities, residents of middle Kuskokwim River communities heavily rely on salmon and moose. These data demonstrate that, proportionally, Chinook salmon harvests make up a greater portion of the total annual subsistence harvest than in lower Kuskokwim River communities, 30% compared to 20%, respectively.

In the three upper Kuskokwim River communities (McGrath, Nikolai, and Takotna), the top five resources in 2012 were moose at 45%, Chinook salmon at 14%, coho salmon at 6%, and sheefish and northern pike both at 4% of the total subsistence harvest (Ikuta et al. 2014). People in upper Kuskokwim River communities are more dependent on moose than those in communities downstream in the drainage. However, Chinook

salmon was ranked as the second most harvested resource, demonstrating its importance to the overall subsistence economy of the upper Kuskokwim River region even following reductions to those harvests.

In 2011, AVCP conducted a study to estimate subsistence salmon harvests of 7 KMA coastal communities that are not included in the annual postseason salmon survey (Wolfe et al. 2012) (Table 5-2). The total estimated subsistence harvest of salmon for these seven communities in 2011 was 16,593 fish, including 7,226 chum (44%), 4,439 sockeye (27%), 2,864 coho (17%), 1,298 Chinook (8%), 746 pink (4%), and 20 salmon of unknown species (<1%).

Steep declines in the harvest of Chinook salmon have increased efforts to catch other species of salmon as well as nonsalmon fishes. However, Kuskokwim Area residents continue to express a strong preference for Chinook salmon, the largest and most oil-rich of all area fishes—such that cooperative efforts to conserve and rebuild Chinook salmon runs are critical. Research into the patterns and trends of fishing along the Kuskokwim demonstrates determined adaptation, both by fishers and managers, to negotiate this period of Chinook conservation with long term sustainability in mind (Godduhn et al. 2020b).

Table 5-1.—Subsistence salmon harvests by community, Kuskokwim Area, 2018.

Community	Households		Estimated salmon harvest					Total
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	
Kipnuk ^a	--	--	--	--	--	--	--	--
Kwigillingok ^a	--	--	--	--	--	--	--	--
Kongiganak ^a	90	--	--	--	--	--	--	--
North Kuskokwim Bay	90	0	0	0	0	0	0	0
Tuntutuliak	118	60	2,178	1,978	329	2,739	13	7,237
Eek	108	49	706	1,138	298	809	2	2,953
Kasigluk	131	66	843	1,448	422	2,312	66	5,091
Nunapitchuk	130	73	1,389	1,532	412	4,058	17	7,408
Atmautluak	80	43	661	1,621	81	2,509	4	4,876
Napakiak	106	48	842	1,336	597	1,959	0	4,734
Napaskiak	111	48	1,079	1,980	614	2,402	2	6,077
Oscarville	16	16	123	234	58	553	4	972
Bethel ^b	1,865	527	5,469	8,127	8,978	9,385	366	32,325
Kwethluk	189	90	1,518	2,233	1,475	2,994	51	8,271
Akiachak	191	98	2,520	2,848	1,343	3,897	38	10,646
Akiak	95	44	1,249	2,757	683	3,299	343	8,331
Tuluksak	106	52	705	1,231	529	2,623	2	5,090
Lower Kuskokwim	3,246	1,214	19,282	28,463	15,819	39,539	908	104,011
Lower Kalskag	95	44	474	695	430	1,081	9	2,689
Kalskag (Upper)	68	33	638	516	419	883	34	2,490
Aniak	183	81	803	3,500	2,107	1,822	738	8,970
Chuathbaluk	35	28	216	466	138	872	0	1,692
Middle Kuskokwim	381	186	2,131	5,177	3,094	4,658	781	15,841
Crooked Creek	35	26	144	297	138	295	0	874
Red Devil	8	7	10	137	50	72	0	269
Sleetmute	35	28	76	511	400	142	0	1,129
Stony River	17	13	53	92	23	0	0	168
Lime Village	7	6	10	224	0	175	0	409
McGrath	136	53	239	507	411	706	4	1,867
Takotna	25	23	2	0	0	0	0	2
Nikolai	34	31	317	40	46	331	2	736
Telida ^a	2	--	--	--	--	--	--	--
Upper Kuskokwim	299	187	851	1,808	1,068	1,721	6	5,454
Kuskokwim River^c	4,016	1,587	22,264	35,448	19,981	45,918	1,695	125,306
Quinhagak	184	101	3,592	2,622	1,486	1,575	47	9,322
Goodnews Bay	82	36	555	777	201	147	8	1,688
Platinum	20	17	67	210	254	203	26	760
South Kuskokwim Bay	286	154	4,214	3,609	1,941	1,925	81	11,770
Total	4,302	1,741	26,478	39,057	21,922	47,843	1,776	137,076

-continued-

Table 5-1.—Page 2 of 2.

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Includes harvests using rod and reel and the removal of salmon from commercial harvests as well as subsistence nets.

a. These communities were not contacted during the 2018 study period. Harvest was not estimated due to lack of recent data.

b. The Bethel estimate contains permit numbers from Bethel and the seasonal village of Napaimute.

c. Kuskokwim River Total includes the Lower, Middle, Upper Kuskokwim areas and North Kuskokwim Bay.

-- Data not available.

Table 5-2.—Subsistence salmon harvests in seven coastal Kuskokwim communities, 2011.

Community	Households		Percent surveyed	Estimated salmon harvest						Total
	Total	Surveyed		Chinook	Sockeye	Coho	Chum	Pink	Other ^a	
Chefornak	83	69	83.1%	161	261	61	338	13	5	839
Kipnuk	131	49	37.4%	479	1,160	781	716	11	0	3,147
Mekoryuk	59	54	91.5%	0	2	201	3670	47	0	3,920
Newtok	63	58	92.1%	144	394	262	103	46	0	949
Nightmute	50	40	80.0%	98	289	64	475	13	3	942
Toksook Bay	104	94	90.4%	365	1834	1040	1637	433	4	5,313
Tununak	68	36	52.9%	51	499	455	287	183	8	1,483
Total	558	400	71.7%	1,298	4,439	2,864	7,226	746	20	16,593

Source Wolfe et al. (2012:17–18).

a. Unidentified species of salmon.

Table 5-3.—Historical subsistence salmon harvests, Kuskokwim Area, 1989–2018.

Year	Households		Estimated salmon harvest					Total
	Total	Surveyed	Chinook	Sockeye	Coho	Chum	Pink ^a	
1989	3,422	2,135	85,322	37,088	57,786	145,106	--	325,302
1990	3,317	1,448	114,219	48,752	63,084	157,335	--	383,390
1991	3,340	2,033	79,445	50,383	44,222	89,008	--	263,058
1992	3,308	1,308	87,490	45,972	57,088	119,483	--	310,033
1993	3,269	1,786	92,129	53,464	31,632	61,280	--	238,506
1994	3,169	1,801	107,540	44,080	39,524	78,446	--	269,590
1995	3,638	1,907	105,598	32,121	39,407	71,958	--	249,084
1996	3,630	1,524	100,417	41,669	44,964	101,975	--	289,025
1997	3,501	1,919	82,975	39,773	31,157	38,477	--	192,382
1998	3,497	1,940	85,535	38,137	26,546	63,561	--	213,780
1999	4,165	2,512	77,181	49,672	29,451	47,103	--	203,406
2000	3,317	1,448	71,312	48,309	43,618	57,708	--	220,948
2001	4,469	2,215	82,271	54,770	32,850	57,246	--	227,137
2002	4,804	2,687	84,695	34,901	42,704	88,618	--	250,917
2003	4,513	2,292	71,152	34,547	36,771	42,860	--	185,330
2004	4,638	2,398	102,336	41,558	48,693	65,805	--	258,392
2005	4,603	1,593	90,311	44,933	35,170	59,762	1,343	231,519
2006	4,671	1,439	96,733	47,763	43,211	93,091	2,710	283,507
2007	4,620	1,279	100,297	49,613	35,890	76,281	1,259	263,339
2008	4,734	1,002	92,977	56,205	47,476	66,275	1,341	264,274
2009	4,810	1,729	83,838	38,795	31,933	46,047	561	201,174
2010	4,215	2,247	70,576	41,722	35,695	46,797	758	195,548
2011	4,241	2,265	65,850	46,290	33,943	55,990	739	202,811
2012	4,294	2,010	25,353	50,781	30,086	82,030	2,160	190,410
2013	4,314	1,832	50,708	42,834	27,841	55,828	741	177,952
2014	4,229	1,862	15,434	53,030	52,587	70,687	2,620	194,358
2015	4,349	1,615	19,437	38,791	36,816	41,776	1,233	138,053
2016	4,073	1,820	36,268	54,627	39,388	46,026	4,527	180,836
2017	4,087	1,580	22,151	53,521	40,084	54,460	2,291	172,507
2018	4,302	1,741	26,478	39,057	21,922	47,843	1,776	137,076
5-year average (2013–2017)	4,210	1,742	28,800	48,561	39,343	53,755	2,282	172,741
10-year average (2008–2017)	4,335	1,796	48,259	47,660	37,585	56,592	1,697	191,792
15-year average (2003–2017)	4,426	1,798	62,895	46,334	38,372	60,248	1,714	209,334
Historical average (1989–2017)	4,043	1,849	75,847	45,314	39,987	71,759	1,714	233,675

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Prior to 2008, harvest estimates for pink salmon were calculated by ADF&G Division of Subsistence.

-- Data not available.

Table 5-4.-Number of households that own dogs, fed salmon to dogs, and total number of salmon fed to dogs, Kuskokwim Area, 2018.

Community	Households		Households		Total number of dogs	Reported salmon fed to dogs					Total
	Total	Contacted	Own dogs	Fed salmon		Chinook	Sockeye	Coho	Chum	Pink	
Kipnuk ^a	--	--	--	--	--	--	--	--	--	--	--
Kwigillingok ^a	--	--	--	--	--	--	--	--	--	--	--
Kongiganak ^a	90	--	--	--	--	--	--	--	--	--	--
North Kuskokwim Bay	90	0	0	0	0	0	0	0	0	0	0
Tuntutuliak	118	60	68	2	166	0	2	0	0	2	4
Eek	108	49	62	2	83	0	21	0	0	0	21
Kasigluk	131	66	97	0	153	0	0	0	0	0	0
Nunapitchuk	130	73	95	7	170	0	30	0	13	2	45
Atmautluak	80	43	51	1	218	0	0	0	0	4	4
Napakiak	106	48	59	0	118	0	0	0	0	0	0
Napaskiak	111	48	69	0	130	0	0	0	0	0	0
Oscarville	16	16	10	2	23	0	0	0	37	2	39
Bethel	1865	527	771	21	1,439	0	0	18	0	7	25
Kwethluk	189	90	162	1	455	0	0	0	0	5	5
Akiachak	191	98	101	6	253	0	64	412	76	0	552
Akiak	95	44	51	4	179	0	562	292	357	338	1,549
Tuluksak	106	52	59	3	170	0	0	0	180	0	180
Lower Kuskokwim	3,246	1,214	1,655	49	3,557	0	679	722	663	360	2,424
Lower Kalskag	95	44	65	6	193	0	23	0	253	0	276
Kalskag (Upper)	68	33	31	8	96	0	0	0	461	30	491
Aniak	183	81	98	6	258	0	1,460	985	1,030	730	4,205
Chuathbaluk	35	28	23	0	53	0	0	0	0	0	0
Middle Kuskokwim	381	186	217	20	600	0	1,483	985	1,744	760	4,972
Crooked Creek	35	26	20	1	37	0	0	0	50	0	50
Red Devil	8	7	7	1	12	0	0	0	8	0	8
Sleetmute	35	28	17	2	35	0	0	0	69	0	69
Stony River	17	13	2	0	2	0	0	0	0	0	0

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Table 5-4.-Page 2 of 2.

Community	Households		Households		Total number of dogs	Reported salmon fed to dogs						
	Total	Contacted	Own dogs	Fed salmon		Chinook	Sockeye	Coho	Chum	Pink	Total	
Lime Village	7	6	1	0	1	0	0	0	0	0	0	0
McGrath	136	53	61	4	140	0	134	150	345	0	0	629
Takotna	25	23	16	0	33	0	0	0	0	0	0	0
Nikolai	34	31	23	6	63	50	9	17	82	2	2	160
Telida ^a	2	--	--	--	--	--	--	--	--	--	--	--
Upper Kuskokwim	299	187	147	14	323	50	143	167	554	2	2	916
Kuskokwim River	4,016	1,587	2,019	83	4,480	50	2,305	1,874	2,961	1,122	1,122	8,312
Quinhagak	184	101	117	6	215	20	18	0	39	0	0	77
Goodnews Bay	82	36	50	3	119	0	45	0	0	0	0	45
Platinum	20	17	17	1	25	0	0	0	0	0	20	20
South Kuskokwim Bay	286	154	184	10	359	20	63	0	39	20	20	142
Mekoryuk ^a	--	--	--	--	--	--	--	--	--	--	--	--
Newtok ^a	--	--	--	--	--	--	--	--	--	--	--	--
Nightmute ^a	--	--	--	--	--	--	--	--	--	--	--	--
Toksook Bay ^a	--	--	--	--	--	--	--	--	--	--	--	--
Tununak ^a	--	--	--	--	--	--	--	--	--	--	--	--
Chefornak ^a	--	--	--	--	--	--	--	--	--	--	--	--
Bering Sea Coast	--	--	--	--	--	--	--	--	--	--	--	--
Total	4,302	1,741	2,203	93	4,839	70	2,368	1,874	3,000	1,142	1,142	8,454

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Includes harvests using rod and reel and the removal of salmon from commercial harvests as well as subsistence nets.

a. These communities were not contacted during the 2018 study period.

-- Data not available.

Table 5-5.—Gear types used for subsistence fishing, Kuskokwim Area, 2018.

Community	Total households ^c	Estimated households using gear ^a					
		Set gillnet	Drift gillnet	Fish wheel	Rod and reel	Dip net	Other
Kipnuk ^b	--	--	--	--	--	--	--
Kwigillingok ^b	--	--	--	--	--	--	--
Kongiganak ^b	--	--	--	--	--	--	--
North Kuskokwim Bay	0	0	0	0	0	0	0
Tuntutuliak	118	14	70	0	0	0	0
Eek	108	2	52	0	0	0	0
Kasigluk	131	0	82	0	0	0	0
Nunapitchuk	130	2	85	0	0	0	0
Atmautluak	80	5	51	0	0	0	0
Napakiak	106	8	48	0	0	0	0
Napaskiak	111	1	72	0	0	0	0
Oscarville	16	2	10	0	0	0	0
Bethel	1,865	26	583	4	33	0	0
Kwethluk	189	6	93	0	3	0	0
Akiachak	191	2	125	0	0	0	0
Akiak	95	5	67	0	0	0	0
Tuluksak	106	11	44	0	2	0	0
Lower Kuskokwim	1508	84	1382	4	38	0	0
Lower Kalskag	95	3	36	16	0	0	0
Kalskag (Upper)	68	6	31	0	0	0	0
Aniak	183	12	58	5	37	0	0
Chuathbaluk	35	0	20	3	7	0	0
Middle Kuskokwim	234	21	145	24	44	0	0
Crooked Creek	35	4	12	0	0	0	5
Red Devil	8	3	3	0	0	0	0
Sleetmute	35	0	6	11	1	0	0
Stony River	17	0	6	1	1	0	0
Lime Village	7	5	0	0	0	0	0
McGrath	136	7	3	37	5	0	0
Takotna	25	0	0	0	2	0	0
Nikolai	34	4	0	7	13	0	0
Telida ^b	2	--	--	--	--	--	--
Upper Kuskokwim	136	23	30	56	22	0	5
Kuskokwim River	1,878	128	1,557	84	104	0	5
Quinhagak	184	12	80	0	60	0	0
Goodnews Bay	82	24	17	0	17	0	0
Platinum	20	6	1	0	4	0	0
South Kuskokwim Bay	221	42	98	0	81	0	0

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Table 5-5.–Page 2 of 2.

Community	Total households ^c	Estimated households using gear ^a					
		Set gillnet	Drift gillnet	Fish wheel	Rod and reel	Dip net	Other
Mekoryuk ^b	--	--	--	--	--	--	--
Newtok ^b	--	--	--	--	--	--	--
Nightmute ^b	--	--	--	--	--	--	--
Toksook Bay ^b	--	--	--	--	--	--	--
Tununak ^b	--	--	--	--	--	--	--
Chefornak ^b	--	--	--	--	--	--	--
Bering Sea Coast	--	--	--	--	--	--	--
Total	2,099	170	1,655	84	185	0	5

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Only data regarding the primary gear type from each household was collected.

b. Community was not contacted during the 2018 study period.

c. Number of households in the community

-- Data not available.

Table 5-6.—Estimated number of salmon retained from commercial harvest for subsistence use, Kuskokwim Area, 2018.

Community	Households		Estimated salmon					
	Total	Responding	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk ^a	--	--	--	--	--	--	--	--
Kwigillingok ^a	--	--	--	--	--	--	--	--
Kongiganak ^a	90	--	--	--	--	--	--	--
North Kuskokwim Bay	90	0	0	0	0	0	0	0
Tuntutuliak	118	66	0	0	0	0	0	0
Eek	108	54	0	0	0	0	0	0
Kasigluk	131	64	0	0	0	0	0	0
Nunapitchuk	130	69	0	0	0	0	0	0
Atmautluak	80	42	0	0	0	0	0	0
Napakiak	106	53	0	0	0	0	0	0
Napaskiak	111	50	0	0	0	0	0	0
Oscarville	16	16	0	0	0	0	0	0
Bethel	1,865	521	0	0	0	0	0	0
Kwethluk	189	95	0	0	0	0	0	0
Akiachak	191	102	0	0	0	0	0	0
Akiak	95	52	0	0	0	0	0	0
Tuluksak	106	57	0	0	0	0	0	0
Lower Kuskokwim	3,246	1,241	0	0	0	0	0	0
Lower Kalskag	95	46	0	0	0	0	0	0
Kalskag (Upper)	68	36	0	0	0	0	0	0
Aniak	183	84	0	0	0	0	0	0
Chuathbaluk	35	28	0	0	0	0	0	0
Middle Kuskokwim	381	194	0	0	0	0	0	0
Crooked Creek	35	27	0	0	0	0	0	0
Red Devil	8	7	0	0	0	0	0	0
Sleetmute	35	29	0	0	0	0	0	0
Stony River	17	13	0	0	0	0	0	0
Lime Village	7	6	0	0	0	0	0	0
McGrath	136	55	0	0	0	0	0	0
Takotna	25	24	0	0	0	0	0	0
Nikolai	34	31	0	0	0	0	0	0
Telida ^a	2	--	--	--	--	--	--	--
Upper Kuskokwim	299	192	0	0	0	0	0	0
Kuskokwim River	4,016	1,627	0	0	0	0	0	0
Quinhagak	184	101	0	0	0	0	0	0
Goodnews Bay	82	38	0	0	0	0	0	0
Platinum	20	17	0	0	0	0	0	0
South Kuskokwim Bay	286	156	0	0	0	0	0	0

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Table 5-6.—Page 2 of 2.

Community	Households		Estimated salmon					
	Total	Responding	Chinook	Sockeye	Coho	Chum	Pink	Total
Mekoryuk ^a	--	--	--	--	--	--	--	--
Newtok ^a	--	--	--	--	--	--	--	--
Nightmute ^a	--	--	--	--	--	--	--	--
Toksook Bay ^a	--	--	--	--	--	--	--	--
Tununak ^a	--	--	--	--	--	--	--	--
Chefornak ^a	--	--	--	--	--	--	--	--
Bering Sea Coast	--	--	--	--	--	--	--	--
Total	4,302	1,783	0	0	0	0	0	0

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note There were no commercial openers in the Kuskokwim River in the 2018 study period.

a. These communities were not contacted during the 2018 study period.

-- Data not available.

Table 5-7.--Subsistence nonsalmon fish harvests by community, Kuskokwim Area, 2018.

Community	Households			Reported salmon harvest										Rainbow trout		Total
	Total	Contacted		Humpback whitefish	Broad whitefish	Cisco	Sheefish	Burbot	pike	Grayling	Varden	Char/Dolly	Herring	Smelt		
Kipnuk ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kwigillingok ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kongiganak ^a	90	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
North Kuskokwim Bay	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tuntutuliak	118	60	1,119	1,194	0	288	607	7,882	8,179	89	84	0	650	18	--	--
Eek	108	49	264	410	423	7	498	3,381	1,995	65	7	1,228	3,108	4	11,390	--
Kasigluk	131	66	2,983	3,642	70	24	221	10,158	63,844	0	0	0	2,725	0	83,667	--
Nunapitchuk	130	73	4,485	3,377	206	115	180	14,246	25,764	0	0	0	9,314	0	57,687	--
Atmautluak	80	43	967	1,449	0	139	260	3,724	34,033	0	2	0	4,670	0	45,244	--
Napakiak	106	48	425	636	0	84	186	6,893	3,108	0	0	0	7,161	0	18,493	--
Napaskiak	111	48	1,041	697	0	102	403	4,738	4,420	0	0	0	12,605	0	24,006	--
Oscarville	16	16	165	235	6	42	8	941	2,170	0	2	195	1,025	3	4,792	--
Bethel	1,865	527	3,028	1,718	208	384	795	11,423	14,851	181	131	726	34,602	262	68,309	--
Kwethluk	189	90	1,515	1,118	89	148	562	10,230	19,929	151	71	0	19,646	246	53,705	--
Akiachak	191	98	1,311	919	274	487	859	5,063	20,116	30	31	0	15,335	81	44,506	--
Akiak	95	44	1,712	756	977	147	445	2,772	4,087	14	29	0	9,288	72	20,299	--
Tuluksak	106	52	262	537	42	149	94	1,321	152	2	0	22	13,716	0	16,297	--
Lower Kuskokwim	3,246	1,214	19,277	16,688	2,295	2,116	5,118	82,772	202,648	532	357	2,171	133,845	686	468,505	--
Lower Kalskag	95	44	449	573	326	112	411	152	3,035	0	0	0	7,910	0	12,968	--
Kalskag (Upper)	68	33	330	196	226	87	79	31	0	1	4	0	2,425	2	3,381	--
Aniak	183	81	1,725	1,005	4300	231	168	218	0	70	128	0	1,644	42	9,531	--
Chuathbaluk	35	28	69	35	0	73	0	15	0	113	36	0	1,337	13	1,691	--
Middle Kuskokwim	381	186	2,573	1,809	4,852	503	658	416	3,035	184	168	0	13,316	57	27,571	--
Crooked Creek	35	26	118	75	0	143	3	7	0	25	0	0	0	0	371	--
Red Devil	8	7	46	74	0	7	1	6	0	78	0	0	0	0	212	--
Sleetmute	35	28	154	113	6	41	0	35	0	203	1	0	0	0	553	--
Stony River	17	13	65	65	0	7	0	2	0	32	0	0	0	0	171	--
Lime Village	7	6	0	330	0	4	0	109	0	174	0	0	0	0	617	--
McGrath	136	53	168	137	351	514	24	451	0	646	0	0	0	0	2,291	--
Takotna	25	23	0	0	1	1	0	52	0	124	0	0	0	0	178	--
Nikolai	34	31	93	29	399	61	0	139	700	11	10	0	0	0	1,442	--
Telida ^a	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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Table 5-6.-Page 2 of 2.

Community	Households		Reported salmon harvest													
	Total	Contacted	Humpback		Broad		Cisco	Sheefish	Burbot	Northern		Char/Dolly Varden	Herring	Smelt	Rainbow trout	Total
			whitefish	whitefish	Blackfish	Grayling										
Kuskokwim River	4,016	1,587	22,494	19,320	7,904	3,397	5,804	83,989	206,383	2,009	536	2,171	147,161	743	501,911	
Upper Kuskokwim	299	187	644	823	757	778	28	801	700	1,293	11	0	0	0		
Quinhagak	184	101	89	29	1155	0	21	1,111	3,382	311	4,770	551	15,890	375	27,684	
Goodnews Bay	82	36	0	0	193	2	0	0	79	59	2,007	186	1,234	25	3,785	
Platinum	20	17	0	0	22	0	0	0	0	125	263	1,014	300	0	1,724	
South Kuskokwim Bay	286	154	89	29	1,370	2	21	1,111	3,461	495	7,040	1,751	17,424	400	33,193	
Mekoryuk ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Newtok ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nightmute ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toksook Bay ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tununak ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chefornak ^a	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bering Sea Coast	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	4,302	1,741	22,583	19,349	9,274	3,399	5,825	85,100	209,844	2,504	7,576	3,922	164,585	1,143	535,104	

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. These communities were not contacted during the 2018 study period.

-- Data not available.

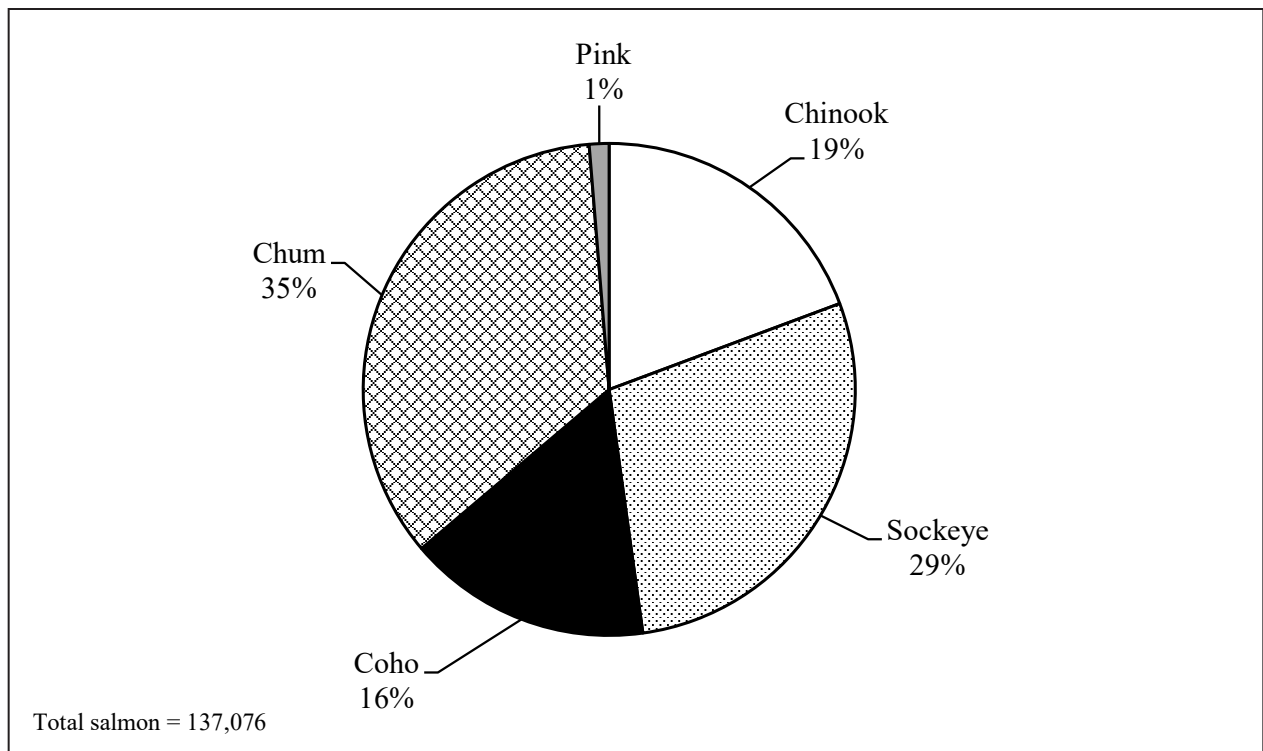


Figure 5-1.—Kuskokwim Area subsistence salmon harvest composition, 2018.

CHAPTER 6: BRISTOL BAY AREA

BACKGROUND

In spite of numerous social, economic, environmental, and technological changes, Bristol Bay residents continue to depend on salmon and other fish species as an important source of food. Subsistence harvests still provide important nutritional, economic, and sociocultural benefits to most Bristol Bay households. The five species of salmon found in Alaska are utilized for subsistence purposes in Bristol Bay, but the most heavily harvested are sockeye, Chinook, and coho salmon. Many residents continue to preserve large quantities of fish through traditional methods, such as drying and smoking, and fish are also frozen, canned, salted, pickled, fermented, and eaten fresh.

STATE REGULATIONS

Permits are required to harvest salmon for subsistence purposes in Bristol Bay. Since 1990, under state regulations, all Alaska state residents have been eligible to participate in subsistence salmon fishing in all Bristol Bay drainages. The BOF determined that all finfishes of the Bristol Bay Management Area support customary and traditional uses (5 AAC 01.336). In 1993 the BOF determined that a range of 157,000–172,171 salmon are the amount necessary to provide a reasonable opportunity for subsistence. From 1998 through 2006, with three exceptions, only gillnets were recognized as legal subsistence gear. There is no seasonal or annual limit for salmon harvested in Bristol Bay. The first exception occurred in the Togiak District, where spear fishing was also allowed. Second, in 1998 the BOF adopted new regulations for the taking of “redfish” (postspawn sockeye salmon) in portions of the Naknek District. The BOF amended these regulations in December 2015, effective in 2016. Gillnets, spears, beach seine, and dip nets may be used along a 100 yd length of the west shore of Naknek Lake near the outlet to the Naknek River and at Johnny’s Lake from August 30 through December 31, and at the mouth of the Brooks River at Naknek Lake from September 18 through December 31. Nets are limited to five fathoms in the special “redfish” harvest areas in the Naknek Lake. Thirdly, at their 2006 meeting, the BOF adopted regulations allowing the use of beach seines in Iliamna Lake, Six Mile Lake, and Lake Clark. Standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

In the Bristol Bay Area, gillnet lengths are limited to 10 fathoms in the Naknek, Egegik, and Ugashik rivers, Dillingham beaches, and within the Nushagak commercial district during emergency openings. A 25-fathom net may be used in waters of the Wood River and the Nushagak River located upstream from a regulatory line from an ADF&G marker at Nushagak Point to another ADF&G marker located at Snag Point. On the north shore of Naknek River, approximately 300 feet upstream from the north commercial fishing boundary to 1,300 ft upstream from the north commercial section boundary, salmon may be taken only by a person 60 years of age or older from June 23 through July 17. According to 5 AAC 01.310(a–b), subsistence fishing is allowed at any time unless fishing occurs inside a commercial fishing district, in which case there are restrictions to when subsistence fishing may occur depending on the date. Along the Dillingham beaches subsistence fishing was limited to several fishing periods per week during the peak of the sockeye salmon run.¹ All commercial districts were open for subsistence fishing during commercial openings. In addition, all commercial districts were open for subsistence fishing in May and October, from Monday to Friday. A weekend subsistence open time allowed for subsistence fishing from 9:00 am Saturday to 9:00 am Sunday.

INSEASON MANAGEMENT IN 2018

From June 1 through September 30, in all waters of a commercial salmon district within the Bristol Bay region, subsistence salmon could be taken only during commercial fishing periods. For a list of 2018 commercial fishing emergency orders for Bristol Bay in commercial districts, see Salomone et al. (2019:33). In 2018, the Nushagak District sockeye salmon runs were 59% above the preseason forecast; due to concerns of over

1. In 2018, the Alaska Board of Fisheries voted to repeal limits to subsistence fishing periods in the Nushagak District and allow salmon to be taken at any time (5 AAC 01.310(d)).

escapement salmon fishing in the Nushagak District was provided for by emergency order during periods of extended commercial fishing closures.

FEDERAL REGULATIONS

Throughout Alaska and including within the Bristol Bay region, federal regulations apply to salmon harvested within federal public waters. The original 1999 federal fisheries regulations duplicated state subsistence fishing regulations with the rural priority in Title VIII of ANILCA applied to federal public lands and waters. The initial goal was to keep the regulations on federal public waters consistent with state regulations, as much as possible, with the understanding that through the Federal Subsistence Board federal regulations could be changed (Norris 2002).

Federal fishing regulations apply to qualified rural residents of communities having a positive customary and traditional use determination. In federal public waters, the allowable maximum length of gillnets to catch salmon is 50 fathoms, a subsistence net cannot block more than one-half the width of a stream, and harvesters may not fish for subsistence within 300 feet of any dam, fish ladder, weir, culvert, or other artificial obstruction. There is no harvest limit, and a state Bristol Bay subsistence salmon fishery permit is required for harvesting salmon.

In May 2001, the National Park Service (NPS) announced that it would begin enforcing the prohibition of subsistence fishing with nets in Lake Clark National Park and Preserve, including all of Lake Clark, except by federally qualified area rural residents. This was a new enforcement action of an existing NPS regulation and was applied to individuals who were not permanent residents of Iliamna, Lime Village, Newhalen, Nondalton, Pedro Bay, or Port Alsworth, or who did not have a Section 13.44 subsistence use permit issued by the park superintendent.

ADF&G has continued to issue Bristol Bay subsistence salmon permits to those Alaska residents who request them. However, ADF&G informs permit applicants that unless they live in one of the above-named communities or have a Section 13.44 permit, they need to take this NPS closure into account when they subsistence fish in waters of the park and preserve. ADF&G also informs permittees that waters outside of national park and preserve boundaries remain open for subsistence salmon fishing to all permit holders.

SALMON HARVEST ASSESSMENT PROGRAM

A permit program was gradually introduced throughout the Bristol Bay region in the late 1960s to document the harvest of salmon for subsistence uses. Initially compliance was low in the Bristol Bay region until people learned more about the permit process. The Division of Subsistence assumed responsibility for subsistence permitting shortly after it was established in 1978, resulting in a substantial increase in the number of people who obtained and reported on subsistence salmon permits in the region. Much of the increase in the number of permits issued during these years reflects: 1) a greater compliance with the permitting and reporting requirements, 2) an increased level of effort expended by ADF&G in making permits available (including issuance by area vendors), 3) efforts to contact individuals to remind them to return the harvest forms, and 4) a growing regional population. Most fishers are obtaining permits and reporting their harvests, and overall permit returns have averaged between 85% and 90%. However, fish removed for home uses from commercial catches are not included in most reported subsistence harvest totals. Also, fish caught later in the season, such as coho salmon and spawning sockeye salmon, are probably not documented as consistently as Chinook and prespawn sockeye salmon.

In 2018, a total of 1,105 permits were issued for the Bristol Bay Management Area; of those, 925 (84%) were returned (Table 6-1; Table 6-2). The largest number of permits were issued for the Nushagak (589 permits) and Naknek–Kvichak (452 permits) districts (Table 6-1). The number of permits issued in 2018 was lower than the 5-year (1,154 permits) and 10-year averages (1,132 permits), and about the same as the historical average (1,102 permits) (Table 6-2).

SUBSISTENCE SALMON HARVESTS IN 2018

Estimated total Bristol Bay subsistence salmon harvest in 2018 was 104,502 fish. Despite the record number of returning sockeye salmon to Bristol Bay, the 2018 salmon harvest was below the most recent 5-year average (124,617 salmon), the 10-year (124,702 salmon), and the historical average (1983–2017) of 143,062 salmon (Table 6-2).

Chinook salmon harvests were estimated at 13,758 in 2018, an increase from the previous year's harvest of 12,985. Estimated sockeye salmon harvests for 2018 were 78,666 which was a decrease from the previous year's harvest of 89,704 fish. The 2018 sockeye salmon harvest was also lower than recent 5-year average of 94,600 fish and below the 10-year average of 96,773 fish. The historical average (1983–2017) was 111,738 fish. Because the return of pink salmon to Bristol Bay is higher in even-numbered years than odd-numbered years, the number of pink salmon was higher in 2018 (1,135 fish) than in 2017 (553 fish). The estimated harvest of chum salmon in 2018 (4,030 fish) was lower than the previous year's harvest of 4,907 fish. The 2018 chum salmon harvest was also lower than the recent 5-year average (5,115 fish), the 10-year (4,883 fish) average, and the historical average (1983–2017) of 8,137 fish. The coho salmon harvest in 2018 (6,913 fish) was lower than the previous year (8,154 fish), the 5-year average at 7,937 fish, the 10-year average at 7,125 fish, and the historical average (1983–2017) at 8,137 fish (Table 6-2).

In 2018, the Bristol Bay subsistence salmon harvest was composed of 75% sockeye salmon, 13% Chinook salmon, 7% coho salmon, 4% chum salmon, and less than 1% pink salmon (Figure 6-1). Of the entire Bristol Bay Area subsistence salmon harvest in 2018, 83% was harvested by residents of Bristol Bay communities (86,555 salmon) while 17% (17,947 salmon) was harvested by other Alaska residents (Table 6-3).

In 2018, as over the last several decades, most of the Bristol Bay Area subsistence harvest was taken in the Naknek–Kvichak (49%) and the Nushagak (45%) districts (Figure 6-2). The remaining portion was taken in the Togiak District (3%), the Ugashik District (2%), and the Egegik District (1%) (Figure 6-2). However, as noted above, despite record number of returning sockeye salmon to these areas, subsistence harvests have continued to decline. The Naknek–Kvichak total harvest of 51,230 salmon in 2018 (Table 6-1) was lower than in 2017 (54,125 salmon) (Fall et al. 2020), and lower still than the 2016 harvest (55,508 salmon) (Fall et al. 2019). Kvichak River drainage residents within the Kvichak River–Iliamna Lake Subdistrict and other permit holders fishing in the Kvichak drainage portion of the Naknek–Kvichak District harvested an estimated 9 Chinook salmon and 25,764 sockeye salmon in 2018 while those fishing in the Naknek River Subdistrict harvested 930 Chinook salmon and 22,956 sockeye salmon (Table 6-1). The 2018 subsistence harvest of 25,764 sockeye salmon in the Kvichak drainage (Table 6-1) was lower than the 2017 harvest of 27,847 (Fall et al. 2020), and lower than the 2016 harvest of 30,231 sockeye salmon (Fall et al. 2019). Subsistence sockeye salmon harvests by communities in the Kvichak River drainage have declined since the early 1990s (Salomone et al. 2019:96). From 2000 to 2018, estimated harvests were below the range of 55,000 to 65,000 sockeye salmon established by the BOF in 1993 as the amount reasonably necessary for subsistence uses (5 AAC 01.336 (b)(1)). The decline of Kvichak River drainage harvest amounts in light of increased sockeye abundance in the greater Bristol Bay area warrants further investigation.

In the Nushagak District, the 2018 total estimated subsistence salmon harvest was 46,963 salmon (Table 6-1), a decrease from the previous year (52,434 salmon). The Nushagak District Chinook salmon harvest in 2018 was 12,206 (Table 6-1) and was an increase from 2017 harvests of 11,122 but was a decrease from the 2016 harvest of 16,502 Chinook salmon. The 2018 Nushagak District sockeye salmon harvest of 25,547 fish (Table 6-1) was lower than the 2017 harvest of 31,310 fish.

The estimated total subsistence salmon harvest for the Togiak District in 2018, 3,264 fish (Table 6-1), was significantly lower than the previous year's estimate of 7,341 fish (Fall et al. 2020), as well as the 2016 season (6,017 salmon) (Fall et al. 2019). The lower estimated salmon harvests for the Togiak District in 2018 likely reflects at least in part the result of postseason household surveys in Togiak and Twin Hills for 2016 and 2017 calendar years. Postseason household surveys included more harvesters in the estimate because fishers who did not turn in their harvest permits, or obtain permits, were contacted.²

2. For more detailed information about the 2016 household survey results see Jones, B. et al. (2019).

The estimated subsistence salmon harvest in the Ugashik District in 2018 was 1,883 fish, which was higher than the previous year at 581, and the 2016 season (1,432 fish) (Table 6-1). The 2018 harvest was above the 10-year average (2008–2017) of 1,099 fish (Salomone et al. 2019:94). In the Egegik District, the 2018 estimated subsistence salmon harvest of 1,161 fish (Table 6-1) was much higher than the 2017 estimate of 1,821 and slightly higher than the 2016 estimate of 563 fish. The 2018 estimate was lower than the 4,711 fish estimated for 2004 (the second highest estimate since 1984), and was less than the 10-year (2008–2017) average of 1,660 salmon (Salomone et al. 2019:93).

OTHER SUBSISTENCE FISHERIES

The vast majority of households in the Bristol Bay Area use fish other than salmon for subsistence purposes. The harvest and use of nonsalmon fish for home use occurs throughout the entire year. Spring fishing begins when river and lake ice break up. During this transition, Bristol Bay residents shift from fishing through the ice for rainbow smelt, northern pike, and Dolly Varden to harvesting these freshwater fish with nets in river sloughs and lake outlets. Spring is important for harvesting Pacific herring and herring spawn on kelp. As early summer approaches, Pacific halibut are targeted in marine waters. In June, preparations begin for commercial and subsistence salmon fishing, and these activities dominate until August or September. The overall effort to harvest nonsalmon fish is generally lower in the summer compared to the rest of the year because residents tend to focus on salmon fishing activities instead. In the fall, fishing for freshwater fish using nets resumes. In years with safe ice conditions, harvests of nonsalmon fish occur through the ice in winter. “Smelting” is a popular fishing activity after freeze-up, in early November when smelt can be caught by jigging through the ice. Ice fishing for Dolly Varden and northern pike is a favored winter activity by many Bristol Bay residents (Jones et al. 2021; Wright et al. 1985:34).

Subsistence Regulations

In addition to the ANS for salmon, the BOF determined that approximately 250,000 usable pounds of finfish other than salmon (about 41 lb per person) was the amount reasonably necessary to provide for these uses. This amount was based on estimates of fish harvests derived from systematic household surveys conducted by the Division of Subsistence. Amounts for specific species or more specific stocks were not established.

For the most part, subsistence fishing for species other than salmon and rainbow/steelhead trout is open year-round in the Bristol Bay Area with gear listed in 5 AAC 01.010 (a). There are no seasonal limits established by regulation. The following regulations apply to subsistence fishing for species other than salmon in the area:³

Rainbow/steelhead trout taken incidentally in other subsistence net fisheries and through the ice are lawfully taken and may be retained for subsistence uses (5 AAC 01.310 (g)).

Subsistence fishing with a line attached to a rod or pole is prohibited except when fishing through the ice (5 AAC 01.320 (l)).

Subsistence fishing with nets is prohibited in 18 waters of the Kvichak–Iliamna Lake drainage and within one-quarter mile of the terminus of those waters from September 1 through June 14.

In May 2003, new federal regulations authorizing subsistence fishing for Pacific halibut came into effect. A harvest assessment program for the subsistence halibut fishery was implemented in 2004. Subsistence halibut harvest estimates for 2018 appear in Fall and Koster (2020).

Subsistence Harvests and Uses

Subsistence harvests of fish other than salmon are not annually monitored by ADF&G. A detailed description of subsistence uses of freshwater fishes in the Bristol Bay Area appears in Fall et al. (1996) and Holen and Lemons (2012). Holen et al. (2012a) and Wright and Chythlook (1985) describe the uses of herring spawn on kelp in the Togiak District. Harvests of fish other than salmon contribute about 10% of the annual

3. In 2004, the BOF eliminated a permit requirement for subsistence fishing for rainbow/steelhead trout and Arctic char/Dolly Varden in the Bristol Bay Area. ADF&G had not developed a program for issuing these permits.

subsistence harvests of wild foods in the Bristol Bay region, about 41 lb per person (Fall et al. 2009b; Holen and Lemons 2012). Harvest and use data are available for most communities through Division of Subsistence household harvest surveys (BBNA and ADF&G 1996; Coiley-Kenner et al. 2003; Evans et al. 2013; Fall et al. 2006; Holen et al. 2011; Holen, Stariwat, et al. 2012; Krieg et al. 2005, 2009). As part of an OSM project (02-034, Subsistence Fisheries Assessment: Kvichak River Watershed Resident Species), the Division of Subsistence and the Bristol Bay Native Association collected subsistence harvest data in Kvichak River watershed communities from October 2002 to September 2003. The final report for that project (Krieg et al. 2005) includes detailed information about uses of nonsalmon fish in eight study communities. Some of the findings of ADF&G research regarding nonsalmon fish are summarized in Table 6-4. Harvests, as measured in pounds usable weight per person for available study years, vary from community to community and from year to year, but generally make important contributions to annual subsistence harvests. Fish other than salmon generally rank third behind salmon and land mammals in their contribution to the total subsistence harvests in Bristol Bay communities.

Harvests and uses of the nonsalmon fish listed in Table 6-5 have been documented in Bristol Bay communities through Division of Subsistence research. Uses of other species may occur: fish taken in the largest quantities in the area as a whole include smelt, whitefishes, Dolly Varden, Arctic grayling, and northern pike (see CSIS for harvest data) (Schichnes and Chythlook 1988:127).

Maps of areas used by Bristol Bay communities to harvest nonsalmon fish appear in the *Alaska Habitat Management Guide Reference Atlas* series (ADF&G 1985), and in Wright et al. (1985). Updated maps of harvest locations for eight communities in the Kvichak watershed appear in Krieg et al. (2005) and Hazell et al. (2015). Harvest activities occur throughout the region in most rivers and lakes as well as along shorelines. It is likely that most effort occurs near each community and near seasonal camps such as Kulukak. See Wright and Chythlook (1985) and Schichnes and Chythlook (1988) for maps of herring camps at Kulukak Bay. For frequency of uses of various areas for freshwater fishing by Nushagak River communities, see Schichnes and Chythlook (1991) and by Togiak and Manokotak, see BBNA and ADF&G (BBNA and ADF&G 1996).

The Division of Subsistence has compiled a traditional ecological knowledge (TEK) database, “From *Neqa* to *Tepa*,” about the fish of Bristol Bay based on interviews with area residents in 2003 as part of OSM project 01-109.⁴ An expanded version of the database incorporating findings from eight Kvichak watershed communities was renamed “From *Neqa* to *Tepa*, *Luq’a* to *Chuqilin*” to reflect the addition of Dena’ina Athabascan TEK (BBNA and ADF&G 1996; Krieg et al. 2005). Additional research documenting traditional knowledge of the subsistence uses of nonsalmon fish in the Bristol Bay Area described the Yup’ik taxonomic classification system for freshwater fish species (Fall et al. 1996; 2009b).

Finally, a recent report conducted in collaboration between the Division of Subsistence and BBNA outlines harvest patterns of whitefish and other freshwater nonsalmon fish by the communities around Lake Clark and Iliamna Lake for 2012 and 2013 (Hazell et al. 2015). The report presents the results of a study of whitefish and other freshwater nonsalmon fish harvest patterns and trends by communities around Lake Clark and Iliamna Lake, Alaska; the study focuses on climate change in context with harvesting patterns and trends. The results of this study indicate the continued significance of whitefish and other nonsalmon freshwater fish subsistence harvests to inhabitants of the study communities. Freshwater nonsalmon fish resources are particularly vital to residents in the spring and fall when salmon and other resources are not available in abundance. Additionally, local residents consistently reported a climate characterized by a warming trend in recent decades (i.e., at least 20–25 years), which has affected their ability to obtain nonsalmon fish resources.

4. Coiley-Kenner, P. 2003. From *Neqa* to *Tepa*: a database with traditional knowledge about the fish of Bristol Bay and the northern Alaska Peninsula. Version 2.0. Alaska Department of Fish and Game Division of Subsistence, Juneau.

Table 6-1.—Estimated subsistence salmon harvests by district and location fished, Bristol Bay Area, 2018.

Area and river system	Number of permits issued ^a	Estimated salmon harvest					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek-Kvichak District	452	943	48,775	1,155	174	183	51,230
Naknek River Subdistrict	273	930	22,956	1,151	172	178	25,387
Kvichak River/Iliamna Lake Subdistrict	176	9	25,764	0	0	5	25,778
Alagnak (Branch) River	1	0	0	0	0	0	0
Igiugig	4	0	323	0	0	0	323
Iliamna Lake-general	37	0	5,228	0	0	0	5,228
Kijik	1	0	133	0	0	0	133
Kokhanok	19	9	4,382	0	0	5	4,396
Kvichak River	17	0	1,324	0	0	0	1,324
Lake Clark	49	0	3,707	0	0	0	3,707
Newhalen River	26	0	5,686	0	0	0	5,686
Pedro Bay	16	0	1,239	0	0	0	1,239
Pile Bay	1	0	162	0	0	0	162
Six Mile Lake	15	0	3,580	0	0	0	3,580
Naknek or Kvichak (site unknown)	4	4	55	4	2	0	65
Egegik District	22	48	540	548	16	9	1,161
Ugashik District	18	81	1,479	293	13	18	1,883
Nushagak District	589	12,206	25,547	4,735	3,635	840	46,963
Igushik/Snake River	11	113	734	79	15	2	943
Nushagak Bay-commercial	54	959	1,735	382	347	51	3,475
Nushagak Bay-noncommercial	215	3,435	9,449	1,781	1,626	492	16,783
Nushagak River	118	3,697	3,348	1,468	955	189	9,657
Site Unknown	16	388	484	179	76	24	1,152
Wood River	229	3,614	9,797	846	615	82	14,954
Togiak District	34	481	2,326	181	192	85	3,264
Total	1,105	13,758	78,666	6,913	4,030	1,135	104,502

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Harvests are extrapolated for all permits issued, based on those returned and on the area fished as recorded on the permit. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,105 permits issued for the management area, 925 were returned (83.7%).

a. Sum of sites may exceed district totals, and sum of districts may exceed area total, because permittees may use more than one site.

Table 6-2.—Estimated historical subsistence salmon harvests, Bristol Bay Area, 1983-2018.

Year	Permits		Estimated salmon harvest				
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink
1983	829	674	13,268	143,639	7,477	11,646	1,073
1984	882	698	11,537	168,803	16,035	13,009	8,228
1985	1,015	808	9,737	142,755	8,122	5,776	825
1986	930	723	14,893	129,487	11,005	11,268	7,458
1987	996	866	14,424	135,782	8,854	8,161	673
1988	938	835	11,848	125,556	7,333	9,575	7,341
1989	955	831	9,678	125,243	12,069	7,283	801
1990	1,042	870	13,462	128,343	8,389	9,224	4,455
1991	1,194	1,045	15,245	137,837	14,024	6,574	572
1992	1,203	1,028	16,425	133,605	10,722	10,661	5,325
1993	1,206	1,005	20,527	134,050	8,915	6,539	1,051
1994	1,193	1,019	18,873	120,782	9,279	6,144	2,708
1995	1,119	990	15,921	107,717	7,423	4,566	691
1996	1,110	928	18,072	107,737	7,519	5,813	2,434
1997	1,166	1,051	19,074	118,250	6,196	2,962	674
1998	1,234	1,155	15,621	113,289	8,126	3,869	2,424
1999	1,219	1,157	13,009	122,281	6,143	3,653	420
2000	1,219	1,109	11,547	92,050	7,991	4,637	2,599
2001	1,226	1,137	14,412	92,041	8,406	4,158	839
2002	1,093	994	12,936	81,088	6,565	6,658	2,341
2003	1,182	1,058	21,231	95,690	7,816	5,868	1,062
2004	1,100	940	18,012	93,819	6,667	5,141	3,225
2005	1,076	979	15,212	98,511	7,889	6,102	1,098
2006	1,050	904	12,617	95,201	5,697	5,321	2,726
2007	1,063	917	15,444	99,549	4,880	3,991	815
2008	1,178	1,083	15,153	103,583	7,627	5,710	2,851
2009	1,063	950	14,020	98,951	7,982	5,052	442
2010	1,082	979	10,852	90,444	4,623	4,692	2,627
2011	1,122	1,039	14,106	101,017	7,493	3,794	333
2012	1,107	932	12,136	100,728	3,837	4,007	1,874
2013	1,162	986	12,858	98,765	8,635	5,173	333
2014	1,158	1,031	17,417	99,008	8,984	6,677	2,689
2015	1,169	1,072	13,874	99,535	7,659	3,573	458
2016	1,172	1,057	18,712	85,989	6,255	5,243	4,945
2017	1,110	1,000	12,985	89,704	8,154	4,907	553
2018	1,105	925	13,758	78,666	6,913	4,030	1,135
5-year average (2013–2017)	1,154	1,029	15,169	94,600	7,937	5,115	1,795
10-year average (2008–2017)	1,132	1,013	14,211	96,773	7,125	4,883	1,710
Historical average (1983–2017)	1,102	967	14,718	111,738	8,137	6,212	2,256

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 6-3.—Estimated subsistence salmon harvests by community, Bristol Bay Area, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Aleknagik	26	22	846	1,484	48	30	0	2,409
Clarks Point	13	9	140	306	159	130	13	748
Dillingham	323	265	6,385	13,603	2,726	2,049	524	25,287
Egegik	8	5	5	51	134	0	0	190
Ekwok	13	12	482	138	134	192	20	965
Igiugig	5	2	2	819	0	0	0	820
Iliamna	22	18	0	5,630	0	0	0	5,630
King Salmon	78	68	187	6,219	539	33	34	7,012
Kokhanok	20	16	19	5,275	0	0	5	5,299
Koliganek	17	15	1,202	809	431	348	17	2,807
Levelock	4	3	0	401	0	0	0	401
Manokotak	7	6	76	628	12	7	0	722
Naknek	89	78	406	9,622	386	89	71	10,574
New Stuyahok	40	25	2,270	1,325	1,013	454	168	5,230
Newhalen	14	13	0	2,938	0	0	0	2,938
Nondalton	14	8	0	4,228	0	0	0	4,228
Pedro Bay	16	12	0	1,228	0	0	0	1,228
Pilot Point	3	1	12	1,050	225	6	18	1,311
Port Alsworth	45	45	0	3,939	0	0	1	3,940
South Naknek	18	16	71	1,087	89	18	16	1,280
Togiak	33	23	481	2,326	181	192	85	3,264
Ugashik	6	5	48	175	46	1	0	270
Subtotal, Bristol Bay	814	667	12,632	63,280	6,123	3,550	971	86,555
Anchor Point	2	2	0	297	0	0	0	297
Anchorage	152	135	537	9,254	395	212	37	10,436
Big Lake	2	1	0	12	0	0	0	12
Chugiak	8	8	52	473	0	17	12	554
Cooper Landing	1	1	0	15	0	0	0	15
Copper Center	1	0	0	0	0	0	0	0
Cordova	1	1	3	87	0	0	0	90
Delta Junction	2	1	24	63	0	3	0	90
Eagle River	7	7	27	128	12	21	11	199
Fairbanks	18	13	111	1,079	26	47	50	1,313
Fritz Creek	1	1	0	26	71	10	18	125
Galena	1	1	0	14	0	0	2	16
Girdwood	1	1	1	25	0	0	0	26
Glennallen	1	1	0	0	0	0	0	0
Haines	1	1	0	0	0	0	0	0
Healy	1	1	1	12	0	0	0	13
Homer	16	15	74	894	6	29	2	1,005
Hoonah	1	1	0	0	0	0	0	0

-continued-

Table 6-3.– Page 2 of 2.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Juneau	7	5	41	49	80	18	0	188
Kasilof	1	1	2	158	1	3	12	176
Kenai	5	5	14	137	12	0	0	163
Kodiak City	6	5	11	281	0	1	0	293
Kotzebue	1	1	0	15	3	0	0	18
Moose Pass	1	1	0	12	4	0	8	24
Nikiski	3	3	0	62	15	3	1	81
North Pole	1	1	0	41	0	0	0	41
Palmer	11	11	54	407	60	13	7	541
Seldovia	1	0	0	0	0	0	0	0
Sitka	1	1	0	25	1	0	0	26
Soldotna	4	4	32	72	0	17	0	121
Sterling	1	1	0	87	0	0	0	87
Talkeetna	1	1	25	15	0	23	0	63
Unalaska	1	1	3	38	0	0	0	41
Wasilla	29	26	115	1,608	104	62	3	1,893
Subtotal, other Alaska	291	258	1,126	15,386	790	480	164	17,947
Total	1,105	925	13,758	78,666	6,913	4,030	1,135	104,502

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 6-4.—Uses and harvests of fish other than salmon, Bristol Bay communities.

Community	Year ^a	Percentage of households ^a					Average pounds harvested	
		Use	Fish for	Harvest	Receive	Give	Per household	Per person
Aleknagik	2008	78	69	66	50	44	95	26
Clark's Point	2008	100	100	100	73	73	71	34
Dillingham	2010	69	42	42	53	29	23	7
Egegik	2014	40	30	25	20	15	4	1
Ekwok	1987	76	72	62	62	38	229	69
Igiugig	2013	94	78	61	83	61	14	5
Iliamna	2013	79	69	69	59	31	79	30
King Salmon	2007	57	55	49	16	12	15	5
Kokhanok	2005	74	66	66	51	57	137	36
Koliganek	2005	96	93	93	75	68	323	90
Levelock	2005	86	86	86	50	57	71	40
Manokotak	2008	93	80	80	84	56	173	44
Naknek	2007	76	68	65	48	32	47	18
New Stuyahok	2005	88	78	78	67	47	123	28
Newhalen	2013	88	70	67	73	33	38	12
Nondalton	2013	84	73	73	62	60	147	45
Pedro Bay	2013	73	64	46	55	36	41	17
Pilot Point	2014	65	29	29	41	0	4	2
Port Alsworth	2013	41	37	37	14	8	14	4
Port Heiden	2018	41	26	26	26	26	9	3
South Naknek	2007	86	52	52	67	43	16	8
Togiak	2008	94	85	84	81	73	264	62
Twin Hills	1999	92	92	92	75	92	303	101
Ugashik	2014	100	100	100	25	50	18	14

Sources CSIS; BBNA and ADF&G 1996; Coiley-Kenner (2003); Krieg et al. (2005); Fall et al. (2006); Krieg et al. (2009); Holen et al. (2011); Holen et al. (2012); Fall et al. (2013), Evans et al. (2013), and Hazell et al. (2015).

a. Most recent year for which data are available.

Table 6-5.—Nonsalmon finfish used for subsistence purposes in the Bristol Bay Area.

Common English name	Scientific name	Yup'ik name	Dena'ina name
Arctic grayling	<i>Thymallus arcticus</i>	<i>Nakrullugpak</i> <i>Culugpauk</i>	<i>Ch'dat'an</i>
Alaska blackfish	<i>Dallia pectoralis</i>	<i>Can'giiq</i>	<i>Huzhegh</i>
Burbot	<i>Lota lota</i>	<i>Manignaq</i> ^a <i>Atqiaq</i> ^b <i>Yugyaq</i> ^d	<i>Ch'unya</i>
Dolly Varden ^c	<i>Salvelinus malma</i>	<i>Anerrluaq</i> <i>Anyuk</i>	<i>Qak'elay</i>
Lake trout	<i>Salvelinus namaycush</i>	<i>Cikignaq</i>	<i>Zhuk'udghuzha</i>
Longnose sucker	<i>Catostomus catostomus</i>	<i>Cungartak</i>	<i>Duch'ehdi</i>
Northern pike	<i>Esox lucius</i>	<i>Cuukvak</i>	<i>Ghelguts'i</i>
Rainbow smelt	<i>Osmerus mordax</i>	<i>Iqalluaq</i>	
Rainbow/steelhead trout	<i>Oncorhynchus mykiss</i>	<i>Talaariq</i>	<i>Tuni</i>
Broad whitefish ^e	<i>Coregonus nasus</i>	<i>Akakiik</i>	<i>Telay</i>
Humpback whitefish ^e	<i>Coregonus pidschian</i>	<i>Uraruq</i>	<i>Q'untuq'</i>
Round whitefish ^e	<i>Prosopium cylindraceum</i>	<i>Uraruq</i>	<i>Hesten</i>
Least cisco	<i>Coregonus sardinella</i>	<i>Cavirrutnaq</i>	<i>Ghelguts'i k'una</i>
Herring, Pacific	<i>Clupea harengus pallasii</i>	<i>Iqalluarpak</i>	
Herring spawn on kelp		<i>Melucuaq</i>	
Starry flounder	<i>Platichthys stellatus</i>	<i>Naterna</i>	
Halibut, Pacific	<i>Hippoglossus stenolepis</i>	<i>Naternarpak</i>	
Pacific cod	<i>Gadus macrocephalus</i>	<i>Ceturtnaq</i>	
Sculpin	Various species	<i>Kayutaq</i>	
Capelin	<i>Mallotus villosus</i>	<i>Cikaaq</i>	
Yellowfin sole	<i>Limanda aspera</i>	<i>Sagiq</i>	

Source Fall et al. (1996).

a. Nushagak River villages.

b. Manokotak, Aleknagik, Twin Hills, Togiak.

c. Also includes the closely related Arctic char.

d. At Togiak, Manokotak, and Aleknagik, and perhaps elsewhere, there are three Yup'ik names for Arctic char/Dolly Varden. *Yugyak* probably refers to resident char/Dolly Varden. *Anerrluaq*, called "Togiak trout" in the local English dialect, probably refers to anadromous fish taken in fresh water. Finally, *anyuk* or "sea run dollies" are Dolly Varden or Arctic char taken in salt water. See Fall et al. (1996:16-20) for further discussion of these distinctions.

e. Broad whitefish are rare to absent in the Bristol Bay region. *Akakiik* is the word used at Aleknagik and Manokotak to refer to whitefish they receive from Kuskokwim River communities, where broad whitefish are common. Humpback whitefish are caught in the Iliamna Lake subregion and called *uraruq*. *Uraruq* is also used for round whitefish in the Togiak and Nushagak drainages.

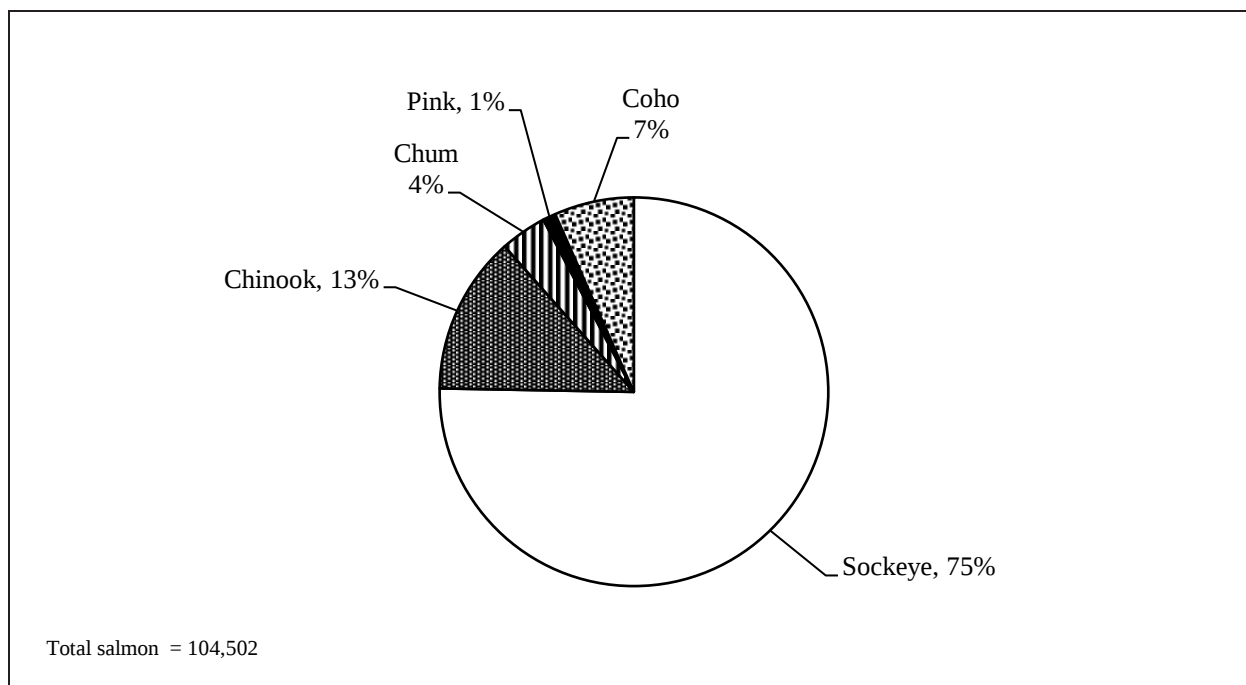


Figure 6-1.—Composition of Bristol Bay area subsistence salmon harvest by species, 2018.

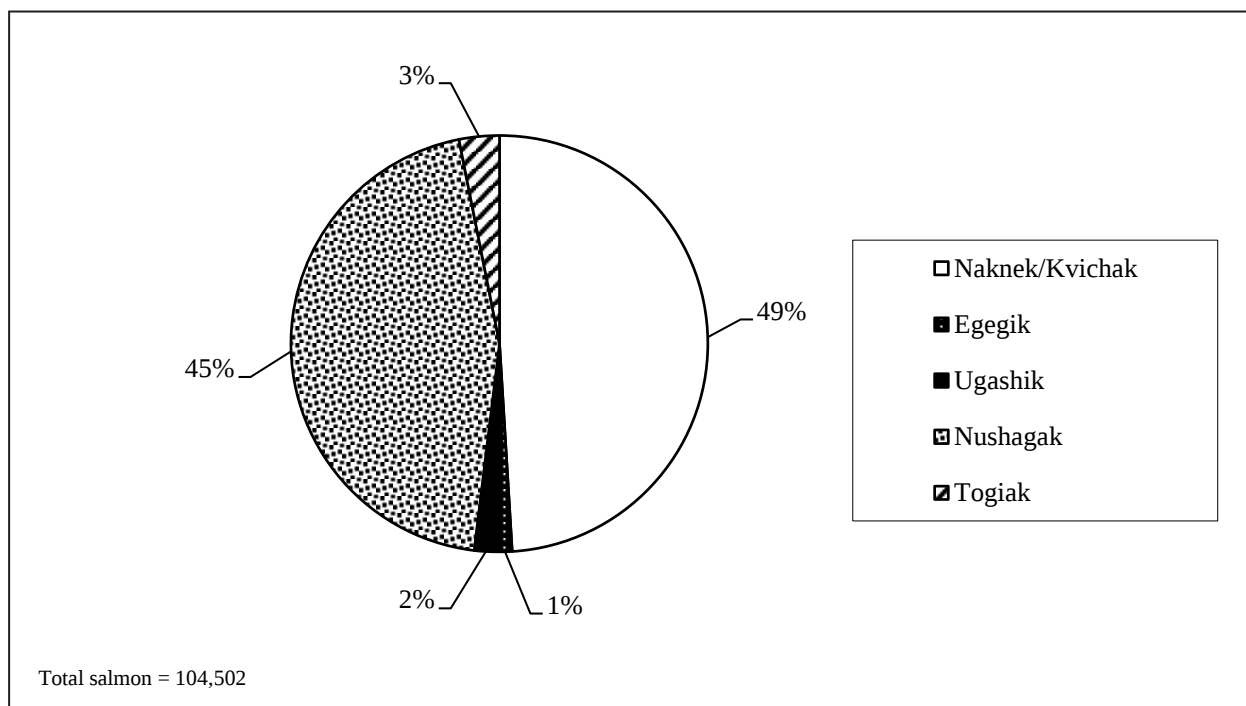


Figure 6-2.—Subsistence salmon harvests by district, Bristol Bay Area, 2018.

CHAPTER 7: CHIGNIK MANAGEMENT AREA

BACKGROUND

The Chignik Management Area (CMA) is also referred to as Area L as defined for the state-managed fisheries. It encompasses all coastal waters and inland drainages on the south side of the Alaska Peninsula from Kilokak Rocks at the southern entrance to Imuya Bay at 57 degrees 10.34' N. lat., 156 degrees 20.22' W. long., then due south to Kupreanof Point at 55 degrees 33.98' N. lat. 159 degrees 35.88' W. long. (5 AAC 15.100).¹ There are five communities in Alaska Department of Fish and Game's (ADF&G) salmon Chignik Management Area: Chignik (commonly referred to as Chignik Bay) with a 2018 estimated population of 98 people, Chignik Lagoon (population 83), Chignik Lake (population 67), Perryville (population 98) and Ivanof Bay (population 7) (Figure 7-1).² All of these communities are within the Lake and Peninsula Borough, and virtually all area residents participate in harvesting salmon in the CMA.

Published Division of Subsistence reports for the CMA include Alaska Statewide Subsistence and Personal Use Salmon Fisheries Annual reports (i.e.: Fall et. al: 2020); periodic household surveys (Fall 2006; Fall et al. 1995; Hutchinson-Scarborough et al. 2020; Hutchinson-Scarborough and Koster 2021; Morris 1987); subsistence salmon ethnographic studies (Hutchinson-Scarborough et al. 2016; Hutchinson-Scarborough and Fall 1996); and a report outlining findings about the subsistence salmon fisheries in the CMA to the Alaska Board of Fisheries (Hutchinson-Scarborough et al. 2010)

Comprehensive subsistence harvest surveys conducted by the Division of Subsistence show that salmon compose approximately 45% of all resources harvested, by weight, for subsistence in these communities (Fall et al. 1995). Chignik subsistence salmon permits are issued annually by CMA vendors, with harvest reports due to the department by December 31. The 2018 estimated total subsistence salmon harvest was 6,128 salmon; 74% sockeye salmon, 16% coho salmon, 7% pink salmon, 2% chum salmon, and 1% Chinook salmon (Table 7-1; Figure 7-2).

In 1993, the BOF made a positive determination that salmon in the CMA are customarily and traditionally taken or used for subsistence (a "positive C&T finding") and specified amounts of salmon are reasonably necessary for subsistence (ANS) in each CMA district. In 2002, the BOF modified the original finding for the ANS (5 AAC 01.466 (a) and (b)). The current ANS for Chignik Bay, Central, and Eastern districts combined are 5,200–9,600 early-run sockeye salmon; 2,000–3,800 late-run sockeye salmon; 100–150 Chinook salmon; and 400–700 salmon other than sockeye or Chinook salmon. In the Perryville and Western districts combined, the ANS findings are 1,400–2,600 coho and 1,400–2,600 salmon other than coho salmon. The BOF has also set an ANS for rainbow/steelhead trout *O. mykiss* at 200–300 fish and for finfish other than salmon and rainbow trout at 15,200–22,800 pounds of usable weight.

The CMA contains both state-managed and federally managed subsistence salmon fisheries. ADF&G Division of Commercial Fisheries manages commercial, sport and subsistence fishing in the CMA. The Chignik Salmon Management Plan allows for traditional salmon fisheries in the CMA while achieving the established escapement goal for early-run and late-run sockeye salmon as well as other salmon species stocks (5AAC 15.357). Harvest data are acquired and utilized by from both state and federal permits to help assess if subsistence needs are being met. These data are also important in contributing to estimating annual run escapements of both early and late-run sockeye salmon and Chinook salmon (Wilburn and Renick 2018; Wilburn personal communication 2019). Overviews of both state and federal regulations for the Chignik Management are presented below.

1. Alaska Department of Fish and Game. 2011–2014 Chignik and Kodiak Areas, commercial salmon fishing regulations, 89. Alaska Department of Fish and Game, Juneau. <http://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/ChigKod-2011-14.pdf>
2. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Alaska Population Estimates by borough, Census Area, City, and Census Designated Place (CDP), 2010 to 2019. Accessed March 23, 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>

STATE SUBSISTENCE FISHERY AND CURRENT REGULATIONS (2017–2018)

State of Alaska regulations governing subsistence salmon fishing in the Chignik Management Area require that to fish, an individual must obtain an annual subsistence salmon permit and must be an Alaska resident (5 AAC 01.480). Annually, permits are available locally at the ADF&G Chignik weir facility, from local CMA community vendors, or from the ADF&G Kodiak office. The permit holder must carry the permit while subsistence fishing, record daily salmon harvests directly on the permit and return it to the Alaska Department of Fish and Game by December 31 of that harvest year. Catch information obtained from subsistence permits is compiled annually and used to assess regional subsistence salmon fisheries.

Under state regulations, all waters within the CMA are open year-around for subsistence fishing except for the following areas or conditions:

- Only Alaska residents are eligible to obtain a CMA subsistence salmon permit and may fish in the areas open to subsistence at any time.
- There is an annual limit of 250 salmon per permit, per individual fisher. An additional permit may be obtained if more fish are needed (5 AAC 01.480(b)(c)).
- Legal gear includes seines and gillnets. Purse seines may not be used in Chignik Lake (5 AAC 01.470(a)). Additionally, any gillnet that is fixed, anchored, or otherwise held in place may not obstruct more than one half of the width of any stream open to subsistence fishing.
- All subsistence salmon fishing gear must be marked with a buoy listing the first initial and last name as well as the address of the person operating the gear (5 AAC 01.010(h)).
- Subsistence salmon fishing is permitted in the Chignik River; however, salmon may not be taken from a point 300 feet upstream from the ADF&G weir to the outlet of Chignik Lake from July 1–August 31 (5 AAC 01.475(1)), which is closed to protect the spawning Chinook salmon. The Chignik River, beginning 300 feet below the weir, is open to subsistence salmon fishing year round, unless closed by emergency order.
- Subsistence fishing is closed in the Chignik River within 300 feet above or below the Chignik weir when it is operational (5 AAC 01.470).
- Subsistence fishing is closed year-round in Black Lake or any tributary to Black Lake or Chignik Lake, except the waters of Clark River and Home Creek from each of their confluences with Chignik Lake to a point one mile upstream (5 AAC 01.475(2)).
- Subsistence fishing may be closed by emergency order by the commissioner, or an authorized designee of ADF&G based on local stock abundance and escapement objectives (AS 16.05.060).
- An Alaska resident Chignik Area commercial salmon fishing license holder (includes CFEC Permit and crewmember license holder) may subsistence fish at any time during a commercial salmon fishing period, except for 12 hours preceding and 12 hours following the end of a commercial salmon fishing period (5 AAC 01.485). Commercial fishers may also retain fish from lawfully taken commercial catches for personal use, including use for bait, which is known as “home pack” (5 AAC 39.010(a)). Salmon retained for home pack are required to be reported on the commercial fish ticket at the time of landing (5 AAC 39.010(b)).

FEDERAL SUBSISTENCE FISHERY AND CURRENT REGULATIONS IN CMA

Although participation in this fishery is small, Federal subsistence fisheries are authorized in portions of the CMA for federally qualified residents, who must reside in one of the CMA communities as their permanent place of residence. Federal regulations in the CMA apply to waters within or adjacent to the Alaska Peninsula National Wildlife Refuge, Aniakchak National Monument and Preserve, and the Alaska Maritime National Wildlife Refuge.

Federal and state subsistence regulations in the CMA generally parallel each other; however, federal regulations authorize additional gear, harvest locations, and harvest seasons in portions of the CMA not authorized by the state. As one example, under federal regulations for qualified rural residents, salmon may be taken without a permit by snagging (by hand line or rod and reel), by using a spear or bow and arrow, or by capturing by bare hand (36 CFR 242.27(e)(8)(vi)). Prior to 2013, the federal program did not monitor harvests from federally managed areas. However, in 2013, it established a limited harvest assessment program that required obtaining a federal permit to harvest salmon in specific locations and seasons by specific methods on federal lands and waters of the CMA.

The following is a list of the 2017–2019 federal subsistence regulations for the harvest of salmon within the Chignik Area:³

- Within the Chignik Area, you may take fish (except salmon, Rainbow Trout/steelhead and char) at any time unless restricted under the terms of subsistence fishing permit. If you take Rainbow Trout/steelhead incidentally in other subsistence net fisheries, you may retain them for subsistence purposes.
- You may take salmon by seines, gillnets, rod and reel, or with gear specified on a subsistence fishing permit, except that in Chignik Lake, you may not use purse seines. You may also take salmon without a permit by snagging (by handline or rod and reel), using a spear, bow and arrow, or capturing by bare hand.
- You may take fish other than salmon by gear listed in this part unless restricted under the terms of a subsistence fishing permit.
- If a permit is required, you must keep record of subsistence-caught fish on your permit. You must complete the record immediately upon taking subsistence-caught fish and must return it no later than the due date listed on the permit.
- If you hold a commercial fishing license, you may only subsistence fish for salmon as specified on a state subsistence fishing permit.
- Within the Chignik watershed, depending upon the area that you may fish, in addition to a State subsistence fishing permit, you may be required to also have a Federal subsistence permit.
- You may take salmon in the Chignik River, with rod and reel, from a point 300 feet upstream of the ADF&G weir to Chignik Lake from January 1 through August 9, with no daily harvest or possession limit under the authority of the Federal subsistence fishing permit.
- You may take salmon by gillnet in Black Lake or any tributary to Black or Chignik lakes with a federal subsistence fishing permit.
- You may take salmon by gillnet in the waters of Clark River and Home Creek from their confluence with Chignik Lake upstream 1 mile.
- You may take salmon without a permit in the open waters of Clark River and Home Creek by snagging (handline or rod and reel), spear, bow and arrow, or capture by hand. The daily harvest and session limits using these methods are 5 per day and 5 in possession.

Participation in the Federal fishery in the Chignik area is small with less than 10 permits issued annually from 2014–2018 to residents of the Chignik Area.⁴ In 2018, there were no federal permits issued. In addition, due to unprecedented low early and late sockeye salmon runs to the CMA, and federal subsistence fisheries

3. The following regulations are taken from U.S. Fish and Wildlife Service, Office of Subsistence Management. 2019. Federal Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska: Effective 1 April 2017–31 March 2019. Anchorage: Federal Subsistence Board, Office of Subsistence Management, 2019. Accessed October 20, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/2017-2019_fisheries_regulations-web_reduced.pdf.

4. Jon Gerken, Branch Chief-Fisheries, U.S. Fish and Wildlife Service, Anchorage, personal communication 2021.

in all federal public waters of the Chignik River Drainage were restricted by the Federal Subsistence Board (FSB) to allow the harvest of sockeye salmon only by federally qualified subsistence users with a Social and Cultural harvest permit from June 22 through July 31. The FSB then reopened the Chignik River for the harvest of sockeye salmon by all state subsistence users beginning August 1 (Wilburn and Renick 2018). While there were three Social and Cultural harvest permits issued to the communities of Chignik Lagoon, Chignik Lake, and Perryville, the communities did not report using these permits and no individual federal permits were issued (tables 7-5 and 7-6).⁵

REGULATORY HISTORY

Since at least the 1980s, residents of the CMA have expressed concerns about subsistence salmon fishing and opportunities. Much of the regulatory history can be characterized by the linked issues of the use of customary and traditional areas, connections between subsistence and commercial fishing, and changes to early-run and late-run sockeye and Chinook escapement goals. Since 1998, the Alaska Board of Fisheries (BOF) has made several changes to address these concerns to improve subsistence opportunities. Following is an overview of some of these key changes. A detailed regulatory history for the CMA relevant to subsistence fisheries can be found in Hutchinson-Scarborough et al. (2016) and Fall et al. (2020).

Early subsistence regulations prior to 1985 closed waters to some areas that were customarily used by residents for obtaining salmon for subsistence in order to protect spawning fish. These areas were important for harvesting sockeye salmon, particularly late run sockeyes referred to as “redfish” and “spawnouts”. Residents of the CMA took their concerns to the BOF and in 1995 regulations were changed to allow subsistence fishing in Chignik Lake, and in 2004, the BOF opened the Chignik River to subsistence fishing (Morris 1987:185; Stichert 2007:15). In 2008, they allowed subsistence salmon fishing in the Chignik Lake tributaries of Clark River and Home Creek from their confluences with Chignik Lake (Morris 1987:185; Stichert 2008:4). Finally in 2011, the Chignik Lake Village Council submitted a proposal to open subsistence fishing in the only areas in the CMA closed under state regulations—Chignik Lake, Black Lake, and all tributaries to both lakes (Hutchinson-Scarborough et al. 2010). Although the BOF took no action on the proposal,⁶ the FSB took up a similar proposal (FP11-10) and adopted it into federal regulations applicable to qualified residents of the CMA (U.S. Fish and Wildlife Service 2011:169). Importantly, all of these changes came with gear specifications that acknowledged the customary and traditional use practices of the area. No subsistence fishing was allowed upstream from the ADF&G weir site or counting tower in the Chignik River, in Chignik Lake, Black Lake, or any tributary to these lakes; but, regulations were changed in 1985 to provide for subsistence fishing in Chignik Lake by gillnets or hand seines (Morris 1987:185).

State regulations for subsistence salmon fishing are often tied to commercial fishing operations in the CMA. Commercial salmon license holders and crew members have been and continue to be subject to subsistence fishing participation restrictions (Fall et al. 2019: 122; 5 AAC 01.485). Prior to 1993, commercial salmon fishery license holders including those with crew licenses, were not allowed to fish for subsistence during the commercial salmon season which spanned much of the summer. This created hardship for subsistence families where commercial license holders were also key subsistence providers. In 1994, the BOF allowed commercial license holders to participate in spring subsistence salmon fishing in May and June up until 48 hours before the first commercial salmon fishing opening (Hutchinson-Scarborough and Fall 1996:11). Commercial fishermen were allowed to remove fish from their commercial harvests for home use if desired. ADF&G management staff added special provisions to the 2003 and 2004 subsistence salmon permits that increased subsistence harvest opportunities for commercial fishing license holders (Bouwens 2004:100–101; Bouwens et al. 2006:12, 92–93; Fall et al. 2009a:83) and the BOF amended regulations to reduce the windows of subsistence restrictions around commercial salmon openings to 12 hours before or the 12 hours

5. Personal communication with Jon Gerken, Manager for the Alaska Peninsula National Wildlife Refuge, U.S. Fish and Wildlife Service, February 1, 2019.

6. Alaska Department of Fish and Game. 2011. “Alaska Board of Fisheries Meeting Information: Chignik Finfish – January 16–19, 2011, Meeting Documents (Actions Taken),” <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo&date=01-16-2011&meeting=anchorage> (accessed June 2020).

following a commercial salmon fishing period; however, commercial salmon license holders may choose to subsistence fish instead of commercial fish for salmon during a commercial salmon fishing period (5 AAC 01.485).

Subsistence and commercial fishing regulations are both guided by escapement goals as ADF&G strives towards sustainable management of salmon in the CMA. Since the 1990s, the Alaska Board of Fisheries (BOF) has made several changes to the August sockeye salmon escapement objective to address subsistence concerns from subsistence fishers having difficulty obtaining late-run sockeye salmon. The Chignik River watershed annually has two seasonal sockeye runs that generally overlap June/July. Progress toward meeting escapement goals is assessed by comparing daily escapements to protected daily escapements required to meet goals for each run (Templin et al. 1999). In response to concerns from subsistence fishers having difficulty obtaining late-run sockeye salmon, also noted above, the BOF amended the escapement management objective for the Chignik River drainage in 1998 by adding a minimum escapement goal for September.

In 2002, the BOF recognized different subsistence patterns by species throughout the CMA and amended the 1997 amount necessary for subsistence (ANS) and the CMA commercial salmon fishery was managed based on two management plans: the Chignik Area Management Plan (“competitive fishery”) and the Chignik Area Cooperative Purse Seine Salmon Management Plan (“cooperative fishery” or “co-op”; Stichert 2007). However, by 2005, the BOF recognized that this management strategy was prohibiting subsistence users from harvesting enough late-run salmon to meet their needs. In 2013, the BOF codified a management measure to increase the IRRG (in river run goal) to ensure inriver harvest opportunities above the Chignik River weir to satisfy late-run subsistence harvests. Then, in addressing a 2016 proposal submitted by the tribal councils of Chignik Bay, Chignik Lake, Chignik Lagoon, Perryville, and Port Heiden because of challenges subsistence users were experiencing in obtaining enough redfish in the fall and winter (Wilburn and Stumpf 2017), the BOF again increased the August and September escapement IRRG of 20,000 sockeye salmon that was added to the lower bound of the late-run goal. 5AAC 15.357(b)(3)(B)) (Johnson 2021:4).

OVERVIEW OF 2018 MANAGEMENT STRATEGIES

In 2018, subsistence fishing opportunities were impacted due to both early and late sockeye salmon runs to the Chignik River Watershed, being below recent and historical averages, and the total run including escapement and harvest was the lowest on record since 1969. Due to the poor escapement and lack of harvestable surplus of fish, there were no commercial fishing openings targeting sockeye, and only two other commercial openings occurred the entire season resulting in only 6 permits of 91 that made deliveries. (Wilburn and Renick 2018).

In early July 2018, Hutchinson-Scarborough from the Division of Subsistence made 10 informal calls to subsistence fishers in each of the CMA communities to assess whether or not the communities were having difficulty catching enough salmon to meet their subsistence needs. Many residents indicated shock and grave concerns over the dismal runs not only for the economic loss of the commercial fishery—their primary source of annual income—but also for their inability to harvest subsistence fish. They worried that by subsistence fishing they might damage present and future escapement, and some admitted they did not fish due to either peer pressure, a reluctance to appear greedy during a time of shortage, or both. People who tried to fish, particularly in Perryville, had difficulty catching what they needed because fish simply did not return. The primary frustration heard from the residents of the communities at this time was that ADF&G did not clearly communicate whether subsistence fishing was to remain open, and many residents felt that the decision should be made by ADF&G and not left to residents to decide.⁷

In mid-July 2018, due to the unprecedented poor returns of the early sockeye run, the department issued two separate emergency orders under AS 16.05.060 to reduce commercial fishing times in select areas of the neighboring commercial fishing district (Area M) in an effort to increase the number of sockeye salmon returning to the Chignik Area. State subsistence fishing was open for all species of salmon all season except

7. L. Hutchinson-Scarborough, ADF&G Subsistence Resource Specialist. Interview notes. July 2018.

for Chinook Salmon which was also experiencing low escapement. Starting July 13 through the end of the year the retention of Chinook salmon in the state subsistence fishery was prohibited by EO (4-FS-L-SUB-18-1). In addition, as described above in the Federal Subsistence Fisheries overview, the subsistence fisheries in all federal public waters of the Chignik River Drainage were open, except that fishing for sockeye salmon was restricted by the Federal Subsistence Board to only federally qualified subsistence users with a Social and Cultural harvest permit from June 22 through July 31. (Wilburn and Renick 2018: 11; 72). The federal closure primarily affected fishing in Chignik River, Chignik Lake, and their tributaries but had the most severe impact was on the residents of Chignik Lake⁶, where many residents harvest their summer and fall fish in fresh water, after they return from the marine environment (Hutchinson-Scarborough et al. 2016:73, 80).

The BOF met in Anchorage on July 17, 2018, for an Emergency Petitions meeting requested by the Chignik Advisory Committee and Chignik Regional Aquaculture Association asking the BOF to take emergency action to close certain Alaska Peninsula fisheries to allow increased escapement of Chignik's early-run sockeye salmon to Black Lake. During this meeting the BOF declared an emergency for the Chignik River sockeye salmon run and established an emergency regulatory action to maintain the Department's existing closures of certain Alaska Peninsula fishing areas through the season but did not take any action to limit or close state subsistence fisheries in the CMA., Chinook were already closed by an earlier department emergency order (Wilburn and Renick 2018:11).^{8,9}

In August 2018, the Governor of Alaska declared an economic disaster for the Chignik area due to historically low sockeye salmon returns within the Chignik watershed.^{10,11} Early-run sockeye salmon arrived late, lagged interim escapement objectives, and the final counts ended well below the overall escapement goal. The late run of sockeye was also weak, but in the end, returns fell within the lower bound of the escapement goal range. Chinook salmon, chum salmon, and pink salmon runs in this area were also far below escapement goal ranges.

In October of 2018, Hutchinson-Scarborough returned to Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville with Cody Larson of BBNA and Drew Gerkey and Shane Skaggs of Oregon State University to conduct data review meetings for an existing and unrelated subsistence research project. After the meetings, researchers took the opportunity to ask resident attendees to fill out a voluntary questionnaire designed to further understand the impacts the low 2018 sockeye salmon runs had on subsistence harvest opportunities. A total of 27 questionnaires were filled out in the 4 communities. Most respondents said that they did fish for subsistence in 2018 but that sockeye and other salmon harvests were low. More than half of the respondents said they received fish in 2018 but fewer than in previous years. Roughly 75% said they did not get enough fish and did not get enough to share. About 25% said they were able to harvest enough for themselves and did have enough to share. Most respondents observed that sockeye salmon were clearly less abundant than in prior years. Some residents elected not to harvest any salmon or harvested less than needed because they did not want to further affect the low escapement of both runs. Chignik Lake residents said the biggest detriment to fishing was the federal closure that occurred in the waters they typically fish the most. Further, sockeye salmon were not the only fish that residents reported having difficulty getting in

8. Alaska Board of Fisheries, Emergency Petitions Meeting, "Summary of Actions," July 17, 2018, Anchorage. Accessed April 9, 2020. http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/july_petitions/soa.pdf

9. See also Alaska Board of Fisheries Meeting Information, Emergency Petitions, July 17, 2018. <http://www.adfg.alaska.gov/index.cfm?adfg=fisheriesboard.meetinginfo&date=07-17-2018&meeting=anchorage>

10. KTUU. "Citing failed sockeye runs, Gov. Walker declares economic disaster for Chignik fisheries," Anchorage, August 23, 2018, Accessed April 13, 2020. <https://www.ktuu.com/content/news/Citing-failed-sockeye-runs-Gov-Walker-declares-economic-disaster-for-Chignik-fisheries-491606541.html>

11. Elizabeth Earl, "Disaster declarations, relief in limbo for multiple fisheries," Alaska Journal of Commerce, January 15, 2019, Accessed April 13, 2020. <https://www.alaskajournal.com/2019-01-15/disaster-declarations-relief-limbo-multiple-fisheries>

2018. For example, two representatives of Perryville stated that most people did not catch enough salmon of any species to make it through the winter and that there was little surplus to share.¹²

HARVEST ASSESSMENT PROGRAM

Estimates of annual CMA subsistence salmon harvests are based on annual permit returns combined with periodic post permit household surveys in the CMA communities. The Division of Commercial Fisheries has conducted subsistence harvest assessments for salmon in the CMA annually since 1976. In 1980, ADF&G began requiring permits for subsistence fishing; the Division of Subsistence assumed responsibility of the harvest assessment program from 1993–2011. Since 1993, harvest data from returned permits have been expanded by community of residence to estimate the harvest by all permit holders. Data from returned permits were and continue to be tabulated by species and fishing area. In 2012, the Division of Commercial Fisheries resumed the responsibility of the permit program for distribution of permits to vendors and individuals, and tabulation of permit data which is then sent to the Division of Subsistence for analysis and distribution to the CMA commercial fishery manager. Final estimates of harvests are stored in the ASFDB, maintained by the Division of Subsistence.

The method of permit issuance in the communities varies by community and year, depending on the availability of vendors or by other arrangements with area organizations. Permits are also issued upon request at the Chignik River fish weir by Division of Commercial Fisheries' seasonal staff. Chignik subsistence salmon permits must be returned by mail to the Alaska Department of Fish and Game by December 31 of the year issued, even if unused. The permit includes a harvest report requiring the fisher to document dates fished, specific locations fished, and the number of each species of salmon caught on each day. Permit holders who do not respond are sent reminder letters, and those that return their permit are automatically issued a new permit the following year. In addition, in years when funding was available, from 1993–2008, 2011, and 2014–2016, the Division of Subsistence staff worked with trained local research assistants from each community to administer face-to-face household subsistence salmon harvest surveys in each of the CMA communities. These surveys augmented the permit system, collecting harvest information from households that subsistence fished but did not obtain a permit, or did obtain a permit, but had not returned their permit to the department at the end of the year. Surveys were generally conducted after the fishing season, between January and March of the following year. Respondents were asked questions included on the permit as well as additional questions regarding late season harvests and whether their subsistence needs were met.

Comparisons of household survey data and permit data collected for 1984, and 1989 suggested that permit data underestimated subsistence harvests in the Chignik Area subsistence salmon fishery (Hutchinson-Scarborough et al. 2016; Hutchinson-Scarborough and Fall 1996:27). Beginning in 1993, ADF&G started using vendors to issue permits and conducting postseason surveys and during post season surveys, researchers gathered permit data that permit holders hadn't reported as well as harvests that occurred by individuals fishing without a permit. The addition of area permit vendors, ADF&G Chignik weir staff, hired local research assistants, and outreach by area governmental entities has resulted in better participation by subsistence fishers in the reporting process thus improving the accuracy of harvest estimates.

CMA 2018 SUBSISTENCE SALMON HARVESTS

In 2018, the number of subsistence permits issued by ADFG for the Chignik Area totaled 84 permits, and 69 (82%) were returned to ADF&G with harvest information or collected during postseason household surveys (Table 7-1). The previous year, in 2017, 97 permits were issued and 73 were returned, a return rate of 75%. Since 1977, the number of subsistence salmon permits issued for the Chignik Area has averaged 105 per year, with 75 permits (71%) returned. The permits issued over the last 10 years (2008–2017),

12. Lisa Hutchinson-Scarborough, Subsistence salmon fishery in Chignik Management Area (Area L), Microsoft PowerPoint presentation delivered at the Alaska Board of Fisheries Alaska Peninsula/Chignik/Bering Sea-Aleutian Islands Finfish: February 21–26, 2019, www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2018-2019/akpen/rc3_or7.pdf

averaged 107 permits with 89 permits (83%) returned, and the recent 5-year average (2013–2017) shows 113 permits issued with 96 returned (86%) (Table 7-1).

The 2018 harvest estimate shows a continuing trend of declining harvests; the total estimated CMA salmon harvest was 6,128 fish; the lowest estimated subsistence harvest on record. The 2018 harvest was 28% lower than the previous year of 8,504 fish and 36% less than the recent 5-year (2013–2017) average of 9,635 fish; 38% less than the 10-year (2008–2017) average of 9,887 fish; and nearly half or 45% less than the historical (1977–2017) average of 11,057 fish (Table 7-1).

Sockeye salmon harvests in 2018 totaled 4,538 fish which was the lowest harvest since 1983; 28% lower than the previous year of 6,346 fish and 42% less than the 5-year (2013–2017) average of 7,759 fish; 41% less than the 10-year (2008–2017) average of 7,710 fish; and 47% less than the historical (1977–2017) average of 8,620 fish; and as much as 69% less than in the mid-1990s when, for example in 1993, 14,710 sockeye salmon were estimated harvested (Table 7-1).

In 2018, sockeye accounted for 74% of the total salmon harvest, although that was less than past averages (81% in 2013–2017; 78% in 2008–2017; and 78% in 1977–2017 (Figure 7-2; Figure 7-3; Figure 7-4; Figure 7-5). Over time, by numbers of fish harvested, sockeye salmon has been the primary salmon species harvested in the CMA, with coho salmon harvested second most, followed by pink salmon, chum salmon and Chinook salmon. In 2018, the subsistence salmon harvest was composed of 74% sockeye salmon (4,538 fish), 16% coho salmon (966 fish), 7% pink salmon (399 fish), 2% chum salmon (157 fish), and 1% Chinook salmon (68 fish) (Table 7-1; Figure 7-2).

Coho salmon represented the second largest component of the 2018 salmon harvest with 966 fish, which was 34% less than the previous year of 1,470 fish and also less than historical averages: 16% lower than the 5-year (2013–2017) average of 1,146 fish, and 24% lower than the historical average (1977–2017) of 1,278 fish. Pink salmon harvests in 2018 totaled 399 fish which was 22% less than the previous year's harvest of 510. Although pink salmon runs are stronger in odd years, the harvest in 2018 was less than all past averages: 12% less than the 5-year average 2013–2017 of 453 fish; and 52% less than the historical (1977–2017) average of 830 fish. Chum salmon was the only species that was harvested in greater numbers in 2018 with 157 harvested, an increase of 48% from 106 chum harvested in 2017; yet was similar (only 5% decrease) to the recent 5-year (2013–2017) average of 166 fish, and 35% lower than the historical (1977–2017) average of 242 fish.

Chinook salmon harvests in 2018 totaled 68 fish, 7% less than the previous year of 73 fish, and also less than past averages; 39% lower than the recent 5-year (2013–2017) average of 111 fish; 36% less than the 10-year (2008–2017) average of 106 fish but within 20 fish of the historical (1977–2017) average (22% less). (Table 7-1).

CMA Subsistence Salmon Harvests by Community

In 2018, out of a total of 84 permits issued in the CMA, 60 (71%) were issued to residents of the Chignik Area communities of Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Ivanof Bay, who returned 53 (77%) of the permits issued in these communities. The remaining 24 permits issued (29% of the total permits issued for the area) were issued to residents of 8 other Alaska communities and 16 (23%) were returned (Table 7-2).

The three Chignik communities and Perryville in 2018 each had estimated populations of less than 100 residents, and Ivanof Bay 7. Perryville and Ivanof Bay do not have close access to the terminal sockeye runs in the Chignik River Watershed, and depend more heavily on coho, chum and pink salmon for subsistence that are available in local area streams and along the beachfront. Perryville residents that commercial salmon fish often bring back most of the sockeye salmon harvested in Perryville from Chignik during commercial salmon closures. Residents of the three Chignik communities, particularly Chignik Lagoon and Chignik Lake residents have relatively easy access to the sockeye runs. Permit vendors are established in all of the CMA communities except for Ivanof Bay; however, in 2018, Perryville and Chignik Lagoon vendors appeared to make more effort distributing permits to their residents that intended to fish, and their

residents in addition to being issued the most permits compared to the other communities, also reported harvesting the most salmon. Chignik Lagoon situated central to the Commercial fishery of Chignik Lagoon often swells with seasonal residents some that often combine their efforts to obtain subsistence fish with relatives that reside year around in the community. (Hutchinson-Scarborough et al 2016).

The data in Table 7-2; and Figure 7-7 reflects a similar harvest relative to community population among these five communities. Of the local communities, Chignik Lagoon residents acquired the most permits and harvested most of the salmon; with a total of 18 (21% of all permits issued), followed by Perryville, 16 permits (19%); Chignik Bay, 13 permits (16%); Chignik Lake, 10 permits and Ivanof Bay 2 permits (Table 7-2). Although 71% of permits issued to residents of the five communities in the CMA their salmon harvested represented 91% of all salmon harvested in 2018. Residents harvested a combined total of 5,583 fish; 22% fewer than the year prior (7,167 fish) harvested. In 2018, most salmon harvested by residents of the CMA communities consisted of sockeye, 3,998 fish or 88% of all sockeye salmon harvested. Coho was second most harvested species; 99% (962 fish) harvested by residents of these local communities followed by pink salmon 398 fish (99%); chum salmon 157 (100%); and Chinook salmon 68 (100%) (Table 7-2; Figure 7-7).

Perryville residents harvested 1,734 fish (28%) and Chignik Lagoon residents harvested 1,467 fish (24%) (Figure 7-6). Chignik Lagoon residents harvested the most sockeye salmon in 2018, with a total of 1,360 fish or 30% of total CMA sockeye salmon harvest, followed by Chignik Lake 1,106 (24%). Perryville harvested the most coho salmon with a 597 fish or 62%; followed by Ivanof Bay, 182 fish (19%); Perryville also harvested more pink salmon and chum salmon than all communities, combined; Of all Chinook salmon harvested, Perryville also harvested the most, 22 (32%). (Table 7-2; Figure 7-7).

Residents of the nine communities outside the CMA that subsistence fished in 2018 harvested a total of 545 salmon, or 9% of all salmon harvested in CMA, most of which was sockeye (540 fish or 12% of all sockeye salmon harvested). (Table 7-2; Figure 7-7).

With the exception of Perryville, the estimated populations of all the CMA communities have declined since the 2000 census, which could account for some of the reduction in harvests, along with estimated declines of the sockeye and Chinook runs to the Chignik watershed, notable changes in climate related effects on fish and spawning habitat, and warming of oceans, lakes and streams. (Hutchinson-Scarborough et al 2006; Hutchinson-Scarborough et al 2021).

- Additionally, many households only fish using one permit. If additional fish are needed, an additional permit can be issued, but many residents assume the permit is a household permit rather than issued to a single individual. Therefore, the number of permits per household, and per community, can vary each year and may not necessarily represent a change in population or household size. A regulatory change request could amend the CMA permit from an individual permit to that of a household permit, thus eliminating confusion and protecting subsistence users from being in violation of area regulations for fishing with a household member who has a permit but without an individual permit of their own..

Location of Harvests

Table 7-3 shows 2018 estimated subsistence salmon harvests by species and general locations within the CMA categorized by the Division of Subsistence where most subsistence fishing takes place - Chignik Bay and Lagoon Subarea, Chignik Lake Subarea, and Perryville Subarea. The Chignik Bay and Lagoon subarea includes the Central, Eastern, and Chignik Bay commercial management districts (CMD), excluding areas above Mensis Point, at the mouth of Chignik River, at high tide in Chignik Lagoon. The Chignik Lake subarea includes all waters of the Chignik River drainage above Mensis Point in Chignik Lagoon, including the Chignik River, Chignik Lake, and Chignik Lake tributaries. The Perryville subarea corresponds to the Perryville and Western CMA commercial fishing districts. There were no reports of subsistence harvests that occurred in 2018 from the Central or Eastern districts of the CMA.

Out of a total of 6,128 salmon harvested, nearly two-thirds (61%) (3,734 salmon) were harvested from the Chignik Bay and Lagoon subarea. By species harvested, out of 6,128 total salmon harvested in the CMA, including 4,538 sockeye salmon, most 61% (3,734 salmon) total salmon and, 74% (3,335) sockeye harvests occurred in the Chignik Bay and Lagoon subarea. Within this subarea, 45% (2,763) of all salmon and 54% (2,466) of sockeye salmon were harvested in Chignik Lagoon. In the Chignik Lake subarea, 16% (959) of total salmon and 20% (918) of sockeye salmon were harvested. In the Perryville subarea, 23% (1,435) total salmon, and 6% (285) of sockeye salmon were harvested

The Perryville subarea accounted for 23% of the harvest (1,435 salmon), and the Chignik Lake subarea 16% (959 salmon). Though the Perryville subarea had the least amount of sockeye harvested in the CMA, in 2018 most of the other four species of salmon were harvested from this area: 77% of coho salmon (741 fish); 56% of pink salmon (224 fish); 78% of chum salmon (122 fish); and 93% of Chinook salmon (63 fish). Second to the Perryville subarea, most of the remainder of other salmon were harvested from the Chignik Bay and Lagoon subareas; with 22% coho salmon (214), 37% pink salmon (147); 20% chum salmon (32); and 7% Chinook salmon (5) (Table 7-3).

Harvest Timing by Location

According to genetic sampling at the Chignik River Weir, early-run sockeye transitioned to late-run around July 11 in 2018. This is the recent average when the proportion of early and late run sockeye salmon passing through the weir is generally about 50/50; although in 2018 both runs arrived later than average (Wilburn and Renick 2018). Table 7-4 shows the estimated subsistence salmon harvests by species, fishing location, and date in 2018. Harvest dates shown in this table are divided into two periods of time, harvests on or before July 11 and harvests after July 11.

In the CMA in 2018, 40% (2,440) of all salmon, and 45% (2,026) of sockeye salmon occurred on or before July 11; and 60% (3,654) all salmon, and 55% (4,538) sockeye salmon were harvested after July 11. Considered by subarea, Chignik Bay and Lagoon residents harvested 45% (2,026 fish) of all sockeye salmon before July 11, with 51% (1,040) harvested in Chignik Lagoon, and 24% (480) in Chignik Bay. After July 11, 55% (2,512) of sockeye harvests occurred. Most of the harvests of sockeye salmon that occurred after July 11 were also taken in Chignik Lagoon (57%; 1,426), and in near equal amounts in Chignik Bay (15%; 389), Chignik River (14%; 351), and Chignik Lake (14%; 343). (Table 7-4).

Of the total of 966 coho harvested, 100% occurred after July 11, with most (53%; 508) harvested in the Perryville area, 24% (233) in Ivanof Bay or Humpback Bay, and 22% (208) from Chignik Lagoon. Of total Chinook salmon harvested (68), all were harvested before July 11, most of which came from Ivanof Bay or Humpback Bay 87% (59). (Table 7-4).

GEAR TYPE

Purse seines, hand seines, and gillnets are all allowable gear types for the harvesting of salmon for subsistence in the CMA under state regulations. CMA subsistence salmon permits do not require that fishers record their gear type. Rod and reel or hook and line are sometimes used to harvest subsistence salmon under federal subsistence regulations (Hutchinson-Scarbrough and Fall 1996; Hutchinson-Scarbrough et al. 2010).

SALMON REMOVAL FROM COMMERCIAL HARVESTS FOR HOME USE

Commercial fishers may retain finfish from lawfully taken commercial catches for their home use, under 5 AAC 39.010. These fish, often referred by CMA fishermen as “homepack” are required to be reported on their commercial fish ticket and not on a subsistence salmon permit. Reported harvests are included in the ADF&G Division of Commercial Fisheries CMA annual finfish management reports. In 2018, due to poor escapements of both sockeye runs that were below harvestable surplus levels Chignik commercial fishermen were limited to two short openings in which only six boats fished, and none of these boats reported homepack on their commercial fish tickets (Wilburn and Renick 2018). The recent 5-year average 2013–2017 for fish retained from commercial harvests for home pack were: 1,146 total salmon which

included: 141 Chinook salmon, 319 sockeye salmon, 170 coho salmon, 23 chum salmon, and 494 pink salmon (Table 7-7).

PERSONAL USE FISHERY

There is no personal use fishery for salmon, non salmon fish or shellfish in the CMA. (5 AAC 77.400-5AAC 77.416). Sport fishing by Alaska residents and nonresidents who have a sport fishing license is allowed according to regulations in 5 AAC 65.001-5 AAC 65.051 for the Alaska Peninsula and Aleutian Islands area.

OTHER CHIGNIK AREA SUBSISTENCE FISHERIES

Residents of the Alaska Peninsula communities in the CMA harvest a large variety of marine resources besides salmon. Comprehensive household surveys were conducted in Chignik Bay and Chignik Lake in 1984, 1989, 1991 and 2003; in Chignik Lagoon in 1984, 1989 and 2003; and in Ivanof Bay in 1984 and 1989. The most comprehensive effort to gather harvest and use information for all resources including fish other than salmon and shellfish in the CMA occurred in early 2004. The Division of Subsistence and the Bristol Bay Native Association, in a project funded by the *Exxon Valdez* Oil Spill Trustee Council, conducted household surveys addressing all resources used in Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville. This effort did not include Ivanof Bay because it had no permanent year-round population at the time. There was also a comprehensive survey conducted for study year 2003 researching nonsalmon finfish harvested and used by residents in the five CMA communities. Nonsalmon finfish generally rank second or third to salmon in terms of edible contributed to the total resource harvest, and most households indicated using this resource during the study periods and at least 17 kinds of fish other than salmon were harvested and used for subsistence purposes including halibut, grey cod, eulachon (candlefish), and Dolly Varden trout. The reader should consult Morris (1987), Fall et al. (1995), Hutchinson-Scarborough and Fall (1996), and Fall et al. (2006) for more background on these subsistence fisheries for nonsalmon finfishes and for shellfish. Limited nonsalmon subsistence resource use and harvest information was observed and documented during the Division of Subsistence 2010–2013 Chignik Management Area Subsistence Salmon Ethnography study (Hutchinson-Scarborough et al. 2016). Harvest estimates based on systematic household interviews are available in the CSIS.

Finfish

Although state regulations require a subsistence permit for the harvest of rainbow/steelhead trout and Arctic char/Dolly Varden, there are no annual harvest assessment programs for the other subsistence fisheries of the Chignik Area. The BOF, in an update of its C&T finding in January 2002, identified positive subsistence uses of all finfishes in the Chignik Area. Table 7-8 lists the finfishes other than salmon for which subsistence uses have been documented through systematic household interviews conducted by the Division of Subsistence. Table 7-9 updates this information for 2003 from the 2004 study.

Other than salmon, Pacific halibut is the only other species with a subsistence harvest monitoring program in the CMA. Subsistence fishing for halibut is managed by the National Marine Fisheries Service. Halibut may also be taken for subsistence by qualified residents by obtaining a federal subsistence halibut registration certificate. Subsistence Pacific halibut fishing harvest estimates for communities and tribes in the Chignik Management Area are available for 2003–2012, 2014, 2016, and 2018 (Fall and Koster 2020). Due to a reduction in funding, subsistence Pacific halibut fishing harvest estimates are collected biannually. The primary method used for obtaining subsistence halibut harvest estimates statewide is mail-out surveys administered by the Division of Subsistence.

Marine Invertebrates

For purposes of subsistence shellfish management, the Chignik Finfish Management Area is within the ADF&G Alaska Peninsula–Aleutian Islands Area. The BOF identified positive subsistence uses of all shellfish stocks in the Alaska Peninsula–Aleutian Islands Area (5 AAC 02.566). There are no subsistence harvest assessment programs for these shellfish stocks in the Chignik Area. Table 7-10 lists the marine invertebrates for which subsistence uses have been documented through systematic household interviews.

Table 7-11 updates this information for 2003 from the 2004 study. For shellfish, species are jointly regulated by the National Marine Fisheries Service and State of Alaska. In the CMA permits are not required for taking Dungeness Crab, King Crab or Tanner Crab State or Federal waters however size, possession and harvest limits are required. All other shellfish can be taken without a permit, with no harvest limits. Regulations concerning subsistence shellfish fisheries can be found at 5 AAC 02.500–5 AAC 02.566.

Table 7-1.—Historical state subsistence salmon harvests, Chignik Area, 1977–2018.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1977	NA	NA	50	9,700	2,400	600	1,800	14,550
1978	NA	NA	50	6,000	500	600	2,100	9,250
1979	NA	NA	14	7,750	34	0	262	8,060
1980	82	37	6	12,475	32	169	478	13,160
1981	29	7	0	2,049	0	0	0	2,049
1982	59	15	3	8,532	12	0	2	8,548
1983	32	21	0	3,078	1,319	850	1,250	6,497
1984	77	64	23	8,747	464	204	330	9,768
1985	59	48	1	7,177	50	25	26	7,279
1986	74	38	4	10,347	205	77	98	10,730
1987	NA	NA	10	7,021	278	261	204	7,774
1988	80	34	9	9,073	1,455	142	54	10,733
1989	68	23	24	7,551	384	147	81	8,187
1990	72	23	103	8,099	210	115	470	8,996
1991	95	58	42	11,483	13	81	275	11,893
1992	98	19	55	8,648	709	145	305	9,862
1993	201	141	122	14,710	3,765	642	1,265	20,503
1994	219	122	165	13,978	4,055	382	1,720	20,300
1995	111	95	98	9,563	1,191	150	723	11,726
1996	119	104	48	7,357	2,126	355	2,204	12,089
1997	126	103	28	13,442	2,678	840	2,035	19,024
1998	104	72	91	7,750	1,390	186	1,007	10,424
1999	106	88	243	9,040	1,679	136	1,191	12,290
2000	130	112	163	9,561	1,802	517	1,185	13,227
2001	135	122	171	8,633	1,859	213	2,787	13,663
2002	120	86	74	10,092	1,401	23	390	11,980
2003	146	127	267	10,989	2,256	286	1,597	15,394
2004	104	57	88	7,029	1,981	202	1,047	10,347
2005	119	100	224	8,171	2,112	353	730	11,590
2006	113	79	259	8,079	1,539	275	1,035	11,187
2007	128	83	84	10,191	1,936	165	996	13,372
2008	89	69	41	7,189	877	57	619	8,783
2009 ^a	95	82	104	6,785	1,174	137	707	8,907
2010 ^a	124	90	188	8,148	1,820	222	656	11,034
2011	95	76	52	10,578	1,458	355	1,289	13,732
2012 ^a	106	87	116	5,607	1,488	220	810	8,242
2013 ^a	112	96	79	6,588	916	164	686	8,433
2014	113	101	148	7,855	1,401	207	339	9,950
2015	123	119	160	9,854	1,393	233	481	12,121
2016	118	93	97	8,150	552	118	251	9,168
2017 ^a	97	73	73	6,346	1,470	106	510	8,504
2018 ^a	84	69	68	4,538	966	157	399	6,128

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Table 7-1.—Page 2 of 2.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
5-year average (2013–2017)	113	96	111	7,759	1,146	166	453	9,635
10-year average (2008–2017)	107	89	106	7,710	1,255	182	635	9,887
Historical average (1977–2017)	105	75	87	8,620	1,278	243	829	11,057

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020); Quimby and Owen (1994) for 1976–1979 and 1987.

Note NA indicates data not available. Information regarding the number of permits issued and returned was collected; however, the records containing this information no longer exist. Harvest data for these years are also recorded in ADF&G Division of Commercial Fisheries and Division of Sport Fish area management reports.

a. From 1993–2008, 2011, 2014, 2015, and 2016 postseason household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administering the surveys for 2009–2010, 2012–2013, and 2017–2018 likely resulting in an underestimate of subsistence harvests since not all subsistence fishing households obtained a permit. To compensate for this underestimate, the average annual harvest for postseason surveys was added to harvests to estimate the total subsistence harvest for 2009–2010, 2012–2013, and 2017–2018.

Table 7-2.—Estimated state subsistence salmon harvests by community, Chignik Area, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	13	9	16	785	71	14	20	905
Chignik Lagoon	18	15	19	1,360	73	3	11	1,467
Chignik Lake	10	10	9	1,106	39	2	9	1,165
Ivanof Bay	2	2	1	70	182	27	32	312
Perryville	16	16	22	677	597	111	326	1,734
Subtotal, Chignik Area residents	60	53	68	3,998	962	157	398	5,583
Anchorage	5	4	0	184	0	0	0	184
Big Lake	4	0	0	0	0	0	0	0
Craig	1	1	0	0	0	0	0	0
Fairbanks	1	1	0	23	0	0	0	23
Homer	2	2	0	90	2	0	1	93
Kodiak	9	6	0	95	0	0	0	95
Unalaska	1	1	0	73	2	0	0	75
Wasilla	1	1	0	76	0	0	0	76
Subtotal, other Alaska residents	24	16	0	540	4	0	1	545
Total	84	69	68	4,538	966	157	399	6,128

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 7-3.—State subsistence salmon harvests by species and subarea of harvest, Chignik Area, 2018.

Subarea of harvest ^a	Estimated salmon harvest ^b					Total
	Chinook	Sockeye	Coho	Chum	Pink	
<i>Chignik Bay and Lagoon</i>	5	3,335	214	32	147	3,734
Chignik Bay	0	869	7	15	80	971
Chignik Lagoon	5	2,466	208	17	67	2,763
<i>Chignik Lake</i>	0	918	11	3	28	959
Chignik Lake	0	343	4	3	0	349
Chignik River	0	576	7	0	28	610
<i>Perryville</i>	63	285	741	122	224	1,435
Perryville	4	30	508	0	0	542
Ivanof Bay to Humpback Bay	59	256	233	122	224	893
Total	68	4,538	966	157	399	6,128

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. The Chignik Bay-Lagoon Subarea corresponds to the portion of the Central District and the Chignik Bay District, not including any of the Chignik River from the outlet of Chignik Lake (“FRI Point” to the River’s outlet at Mensis Point in Chignik Lagoon). The Chignik Lake Subarea includes subsistence harvests in the Chignik River from Mensis Point in Chignik Lagoon up to Black Lake. The Perryville Subarea corresponds to the Perryville and Western districts, including Ivanof Bay, Mitrofan Bay, the Kametolook River and other streams near Perryville and Ivanof Bay. In recent years there have been no subsistence harvests reported for the Eastern District.

Table 7-4.—Chignik Area state subsistence salmon harvests by species, fishing location, and date, 2018.

	Estimated salmon harvest ^a					
Subarea	Chinook	Sockeye	Coho	Chum	Pink	Total
<i>Harvest before 7/11</i>						
Chignik Bay	0	480	0	0	0	480
Chignik Lagoon	5	1,040	0	0	0	1,045
Chignik River	0	225	0	0	0	225
Perryville	4	27	0	0	0	31
Ivvanof Bay to Humpback Bay	59	253	0	122	224	659
Subtotal, early harvest	68	2,026	0	122	224	2,440
<i>Harvest on or after 7/11</i>						
Chignik Bay	0	389	7	15	80	491
Chignik Lagoon	0	1,426	208	17	67	1,718
Chignik Lake	0	343	4	3	0	350
Chignik River	0	351	7	0	28	385
Perryville	0	2	508	0	0	510
Ivanof Bay to Humpback Bay	0	2	233	0	0	234
Subtotal, late harvest	0	2,512	966	35	175	3,688
Total	68	4,538	966	157	399	6,128

Source ADF&G Division of Subsistence, ASFDB 2018 (ADF&G 2019).

Table 7-5.—Federal subsistence salmon harvests by community, Chignik Management Area, 2018.

Community	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Chignik Lagoon ^a	1	1	0	0	0	0	0	0
Chignik Lake ^a	1	1	0	0	0	0	0	0
Perryville ^a	1	1	0	0	0	0	0	0
Total	3	3	0	0	0	0	0	0

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. In 2018, only community social and cultural permits were issued. No individual permits were issued.

Table 7-6.—Historical federal subsistence salmon harvests, Chignik Area, 2013–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2013	0	0	0	0	0	0	0	0
2014	10	10	2	138	10	0	6	156
2015	2	2	14	6	0	0	0	20
2016	0	0	0	0	0	0	0	0
2017	3	3	2	0	0	0	0	2
2018 ^a	3	3	0	0	0	0	0	0
Historical average (2013–2017)	3	3	4	29	2	0	1	36

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. In 2018, only community social and cultural permits were issued. No individual permits were issued.

Table 7-7.—Chignik area salmon removed from commercial catch for home use, 1994–2018.

Year	Salmon harvest					Total
	Chinook	Sockeye	Coho	Chum	Pink	
1994	0	0	0	0	0	0
1995	64	0	913	5	0	982
1996	40	40	20	21090	5262	26,452
1997	88	664	0	0	0	752
1998	108	267	27	155	0	557
1999	211	26	200	3	0	440
2000	20	0	0	0	0	20
2001	90	217	7	129	7	450
2002	77	1,371	164	0	0	1,612
2003	309	2,411	74	0	407	3,201
2004	158	1690	0	0	0	1,848
2005	271	1,364	5	115	234	1,989
2006	68	267	175	0	0	510
2007	16	205	56	1	0	278
2008	15	0	0	0	0	15
2009	75	93	0	1	0	169
2010	118	973	0	0	7	1,098
2011	142	323	16	0	0	481
2012	51	513	0	240	22	826
2013	85	587	28	0	0	700
2014	35	6	0	0	0	41
2015 ^a	236	887	48	10	12	1,193
2016 ^a	312	5	485	40	2,137	2,978
2017	38	108	287	65	322	820
2018	0	0	0	0	0	0
5-year average (2013–2017)	141	319	170	23	494	1,146
10-year average (2008–2017)	111	349	86	36	250	832
Historical average (1977–2017)	109	501	104	911	350	1,975

a. The harvest includes reported salmon from both commercial fish tickets as well as household surveys.

Table 7-8.—Subsistence uses of nonsalmon finfishes by community, Chignik Area, 1989.

Common English name	Scientific name, if not previously given	Percentage of households using in				
		Chignik Bay	Chignik Lagoon	Chignik Lake	Ivanof Bay	Perryville
Pacific herring		23	47	29	29	15
Pacific herring spawn on kelp		14	0	5	0	4
Walleye pollock	<i>Theragra chalcogramma</i>	3	0	0	0	0
Rainbow smelt ^a		11	0	48	0	0
Pacific halibut		89	100	67	100	96
Rainbow trout		3	0	24	57	7
Dolly Varden		23	7	38	86	56
Eulachon (candlefish)	<i>Thaleichthys pacificus</i>	23	40	33	100	78
Pacific cod (gray cod)		29	60	48	86	63
Sculpin	<i>Hemilepidotus sp.</i>	11	0	5	0	30
Starry flounder		6	0	19	14	0
Kelp greenling	<i>Hexagrammos decagrammus</i>	11	0	10	0	30
Arctic grayling		0	0	0	14	0
Sablefish (black cod)	<i>Anoplopoma fimbria</i>	0	7	5	0	0
Steelhead trout		0	13	5	0	0
Black rockfish	<i>Sebastes melanops</i>	0	7	0	0	22
Red (yelloweye) rockfish	<i>Sebastes ruberrimus</i>	3	0	0	0	4
Any nonsalmon fish		89	100	86	100	96

Source CSIS; Hutchinson-Scarborough and Fall (1996).

a. Most likely harvested outside the Chignik Management Area; Chignik area households receive gifts of rainbow smelt from relatives and friends in Pilot Point, Ugashik, and Naknek, among other communities.

Table 7-9.—Subsistence uses of nonsalmon finfishes by community, Chignik Area, 2003.

Common English name	Scientific name	Percentage of households using in			
		Chignik Bay	Chignik Lagoon	Chignik Lake	Perryville
Pacific herring	<i>Clupea pallasii</i>	0	6	0	0
Eulachon (candlefish)	<i>Thaleichthys pacificus</i>	0	13	0	81
Pacific cod (gray cod)	<i>Gadus macrocephalus</i>	36	44	48	44
Walleye pollock	<i>Theragra chalcogramma</i>	5	0	0	0
Lingcod	<i>Ophiodon elongatus</i>	27	38	0	4
Unknown greenling	Various species	0	0	0	11
Pacific halibut	<i>Hippoglossus stenolepis</i>	95	94	90	81
Unknown sculpin	Various species	0	0	0	7
Unknown Irish lord	<i>Hemilepidotus</i> spp.	0	0	0	11
Starry flounder	<i>Platichthys stellatus</i>	0	0	5	4
Unknown flounder	Various species	0	0	5	4
Sablefish (black cod)	<i>Anoplopoma fimbria</i>	18	19	0	19
Black rockfish	<i>Sebastes melanops</i>	27	25	19	19
Red (yelloweye) rockfish	<i>Sebastes ruberrimus</i>	23	25	0	4
Skates	Various species	0	6	0	4
Unknown Sole	Various species	0	6	0	0
Dolly Varden	<i>Salvelinus malma</i>	36	6	19	26
Rainbow trout	<i>Oncorhynchus mykiss</i>	36	13	10	0
Steelhead trout	<i>Oncorhynchus mykiss</i>	5	6	10	0
Any nonsalmon fish		95	94	90	93

Source CSIS

Note Ivanof Bay was not surveyed in 2003.

Table 7-10.—Subsistence uses of marine invertebrates by community, Chignik Area, 1989.

Common English name	Scientific name, if not previously given	Percentage of households using in				
		Chignik Bay	Chignik Lagoon	Chignik Lake	Ivanof Bay	Perryville
Alaska razor clam	<i>Siliqua patula</i>	14	33	24	43	37
Butter clam	<i>Saxidomus giganteus</i>	71	67	52	71	41
Gaper clam	<i>Tresus capax</i>	11	0	0	0	4
Nuttall cockle	<i>Clinocardium nuttallii</i>	37	7	48	100	70
Pinkneck clam (redneck)	<i>Spicula polynuma</i>	0	0	0	71	4
Pacific littleneck (steamer) clam	<i>Protothaca staminea</i> ^a	11	0	0	29	11
Chiton, black (leather)	<i>Katharina tunicata</i>	49	27	57	100	93
Chiton, red (gumboot)	<i>Cryptochiton stelleri</i>	0	0	0	86	11
Mussel (blue)	<i>Mytilus trossulus</i>	9	7	0	14	15
Octopus	<i>Octopus</i> spp	43	20	48	71	52
Sea urchin	<i>Strongylocentrotus</i> spp	29	0	48	100	89
Sea cucumber	<i>Varius</i> spp	0	0	0	0	4
Shrimp	<i>Pandalus</i> spp	9	0	5	0	0
Giant Pacific scallop	<i>Pecten caurinus</i>	3	0	0	0	0
Red king crab	<i>Paralithodes camtschatica</i>	40	20	33	43	0
Dungeness crab	<i>Cancer magister</i>	37	40	48	100	52
Tanner crab	<i>Chionoecetes bairdi</i>	63	67	14	0	4
Snail	<i>Neptunea</i> spp	3	0	0	0	4
Limpet	<i>Acmaeidae</i> spp	3	0	0	0	4
Any marine invertebrates		89	87	81	100	96

Source CSIS; Hutchinson-Scarbrough and Fall (1996).

a. May also include smaller-sized individuals of other species and softshell clams of the genus *Mya*.

Table 7-11.—Subsistence uses of marine invertebrates by community, Chignik Area, 2003.

Common English name	Scientific name	Percentage of households using in			
		Chignik Bay	Chignik Lagoon	Chignik Lake	Perryville
Alaska razor clam	<i>Siliqua patula</i>	32	63	29	22
Butter clam	<i>Saxidomus giganteus</i>	77	88	90	85
Gaper clam	<i>Tresus capax</i>	0	0	0	7
Pinkneck clam (redneck)	<i>Spicula polynuma</i>	5	6	0	19
Pacific littleneck (steamer) clam	<i>Protothaca staminea</i> ^a	27	44	19	37
Chiton, black (leather)	<i>Katharina tunicata</i>	55	19	81	85
Chiton, red (gumboot)	<i>Cryptochiton stelleri</i>	18	0	10	41
Mussel (blue)	<i>Mytilus trossulus</i>	0	7	0	0
Unknown clams	Various species	5	0	0	0
Unknown cockles	Various species	27	0	33	67
Unknown mussels	Various species	0	0	0	26
Octopus	<i>Octopus</i> spp.	64	25	76	63
Sea urchin	<i>Stronglyocentrotus</i> spp.	45	13	52	74
Giant Pacific scallop	<i>Pecten caurinus</i>	0	0	0	7
Red king crab	<i>Paralithodes camtschatica</i>	0	13	0	7
Unknown king crab	Various species	0	6	0	0
Dungeness crab	<i>Cancer magister</i>	59	25	0	59
Tanner crab	<i>Chionoecetes bairdi</i>	77	75	57	67
Unknown Tanner crab	<i>Chionoecetes</i> spp.	5	6	0	0
Snail	<i>Neptunea</i> spp.	0	0	0	11
Limpet	<i>Acmaeidae</i> spp.	5	0	0	7
Any marine invertebrates		91	100	90	96

Source CSIS

Note Ivanof Bay was not surveyed in 2003.

a. May also include smaller-sized individuals of other species and softshell clams of the genus *Mya*.

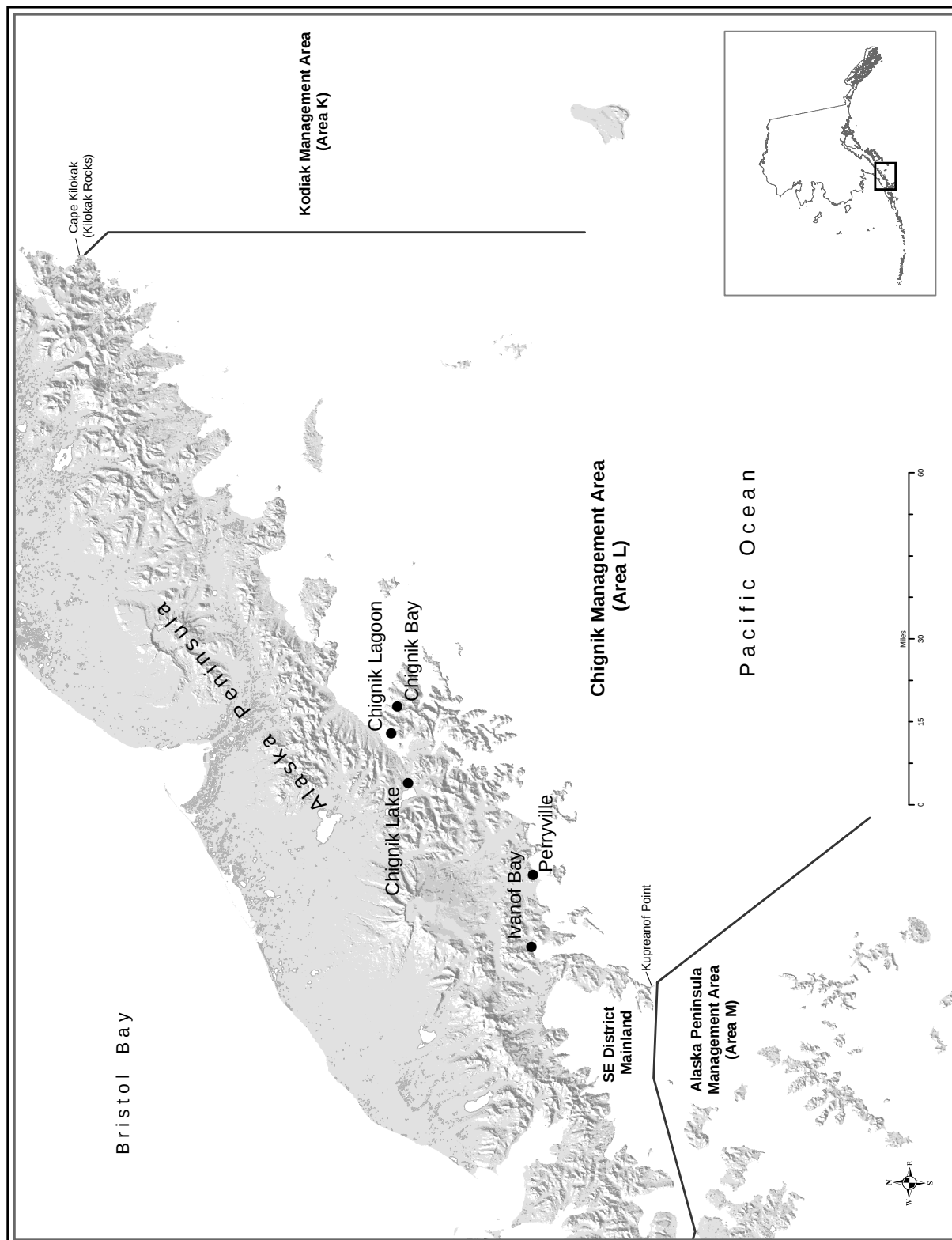


Figure 7-1.—Location of Chignik Management Area (CMA) and communities within the CMA on Alaska Peninsula.

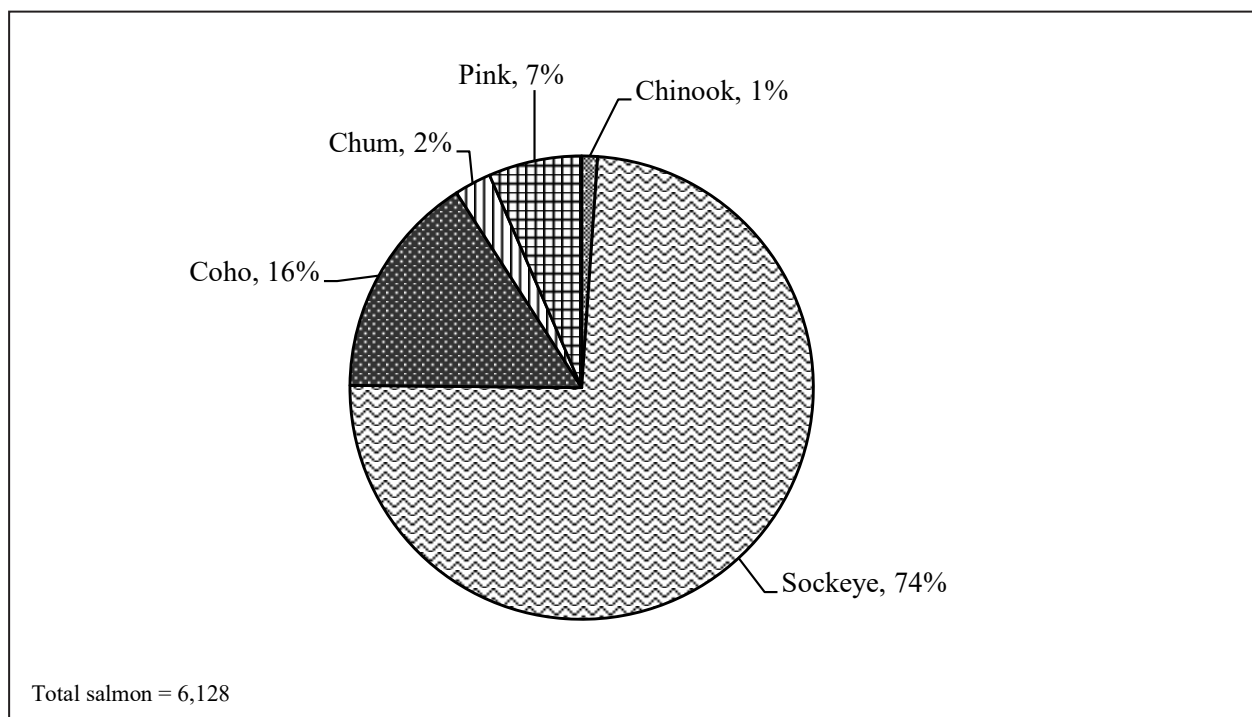


Figure 7-2.—Composition of Chignik Area subsistence salmon harvest by species, 2018.

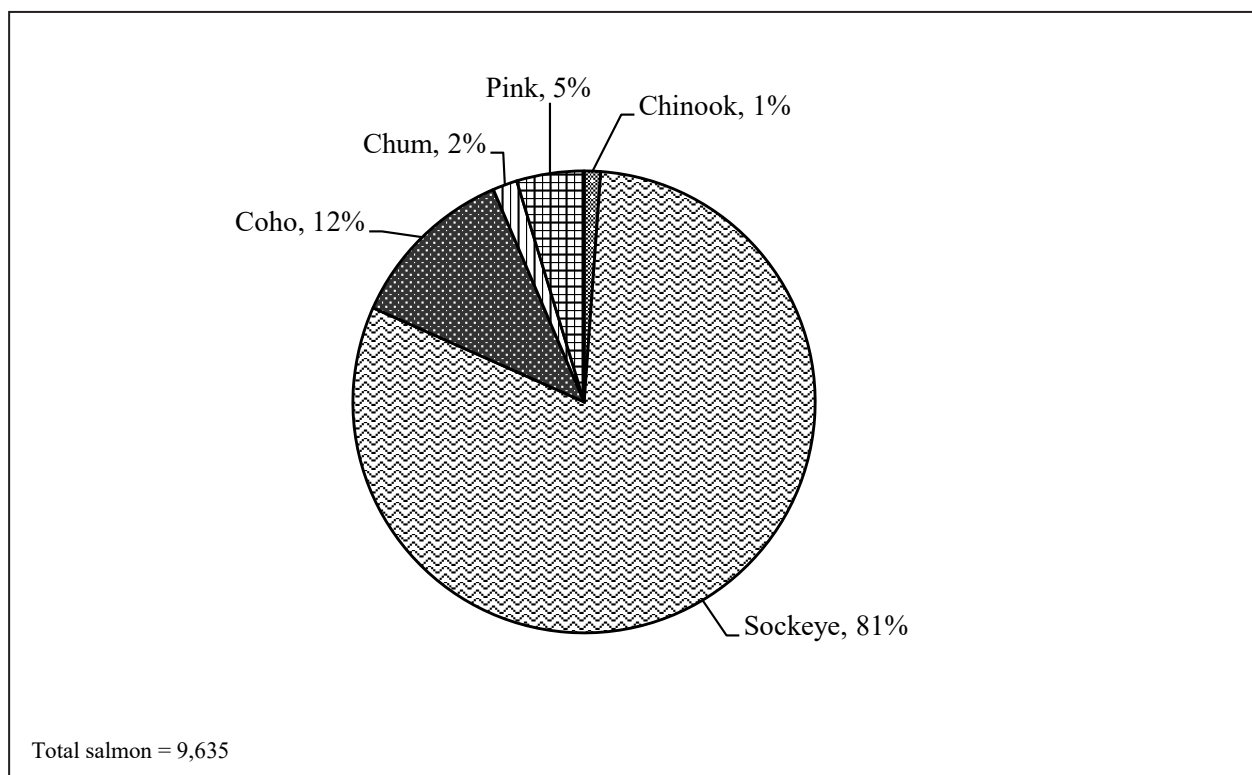


Figure 7-3.—Species composition of Chignik Area subsistence salmon harvests, 2011–2018.

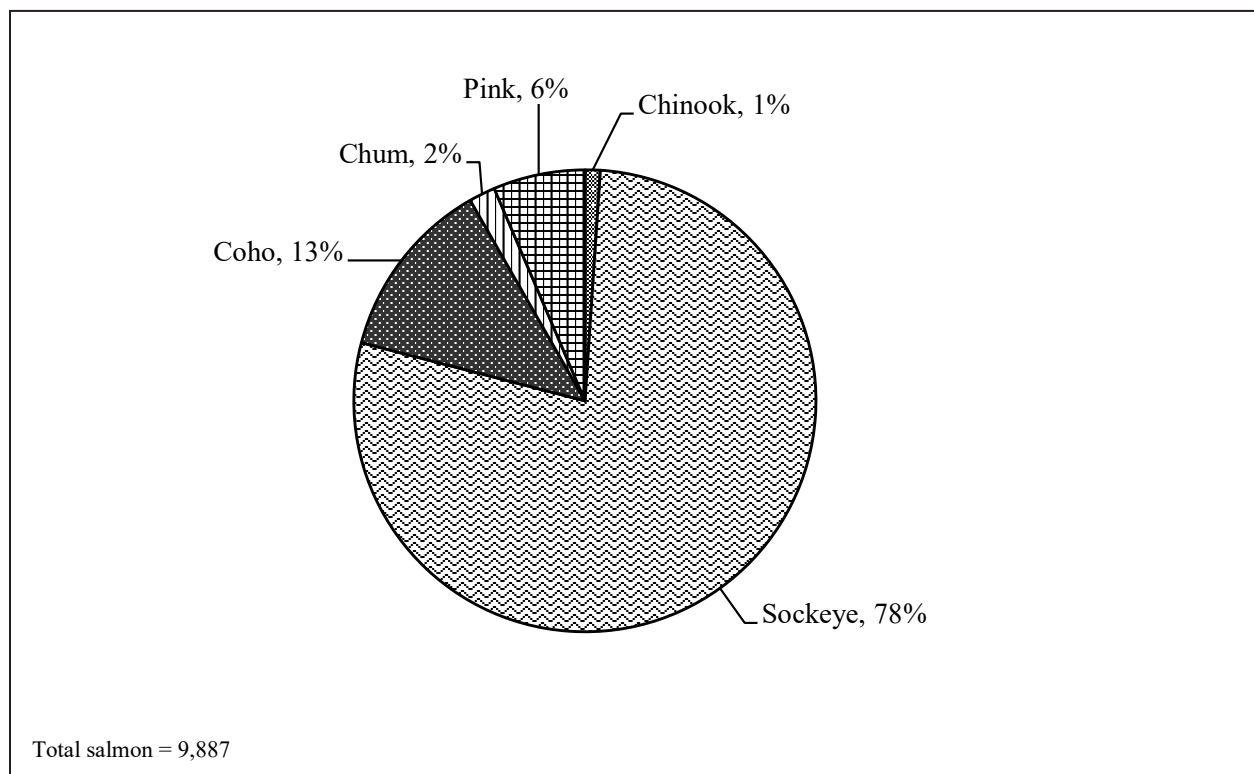


Figure 7-4.—Species composition of Chignik Area subsistence salmon harvests, 2006–2018.

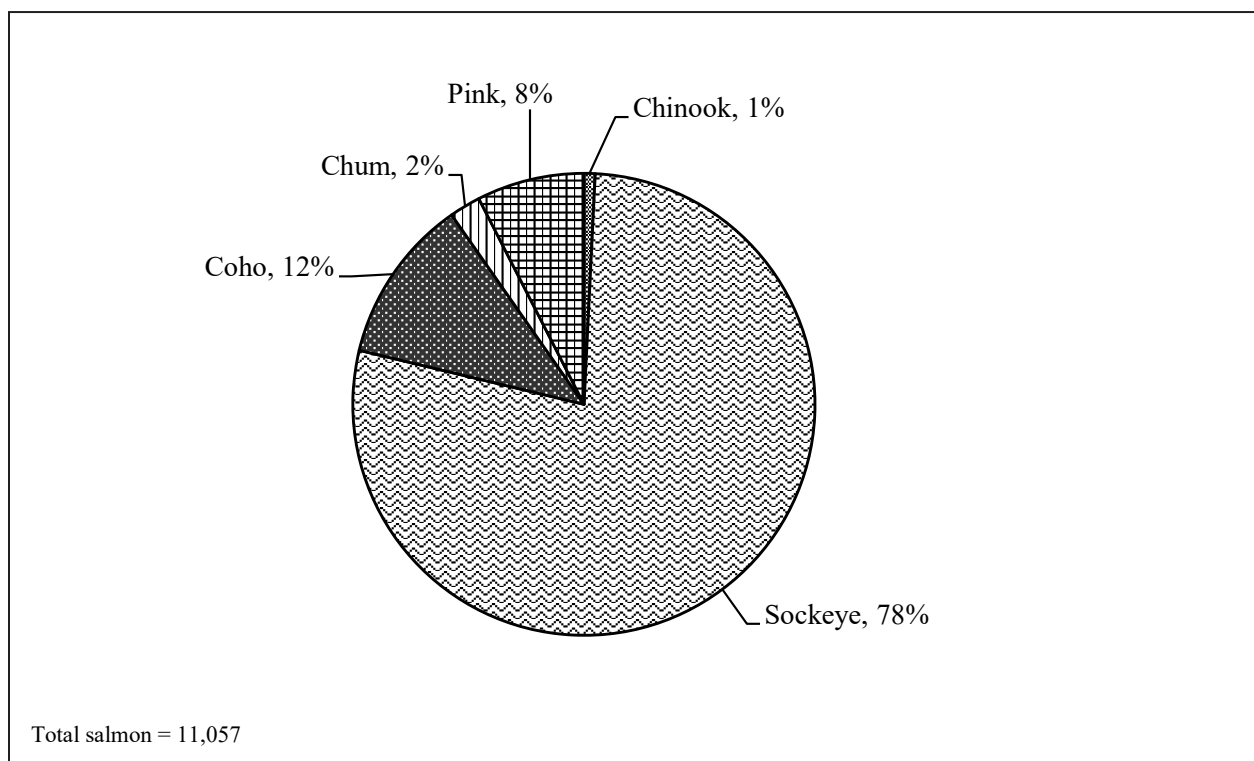


Figure 7-5.—Species composition of Chignik Area subsistence salmon harvests, 1977–2018.

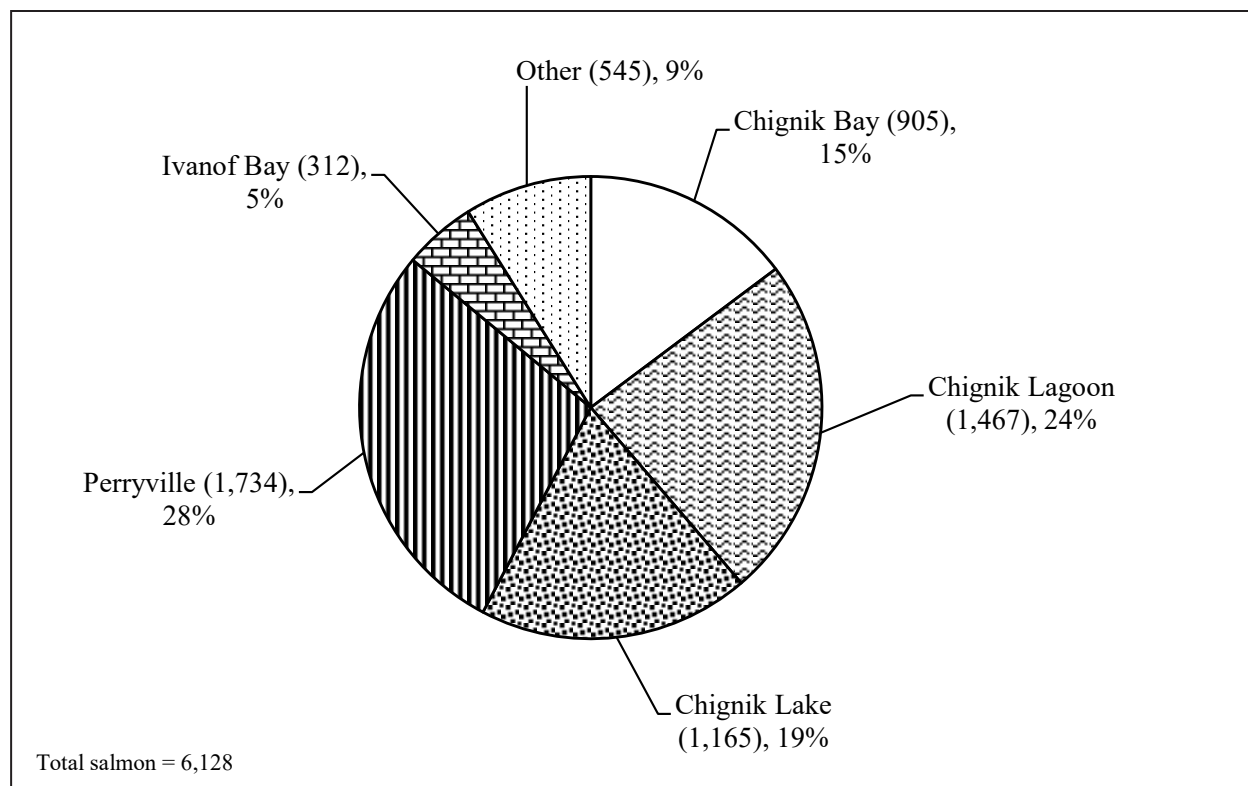


Figure 7-6.—Subsistence salmon harvests by community, Chignik Area, 2018.

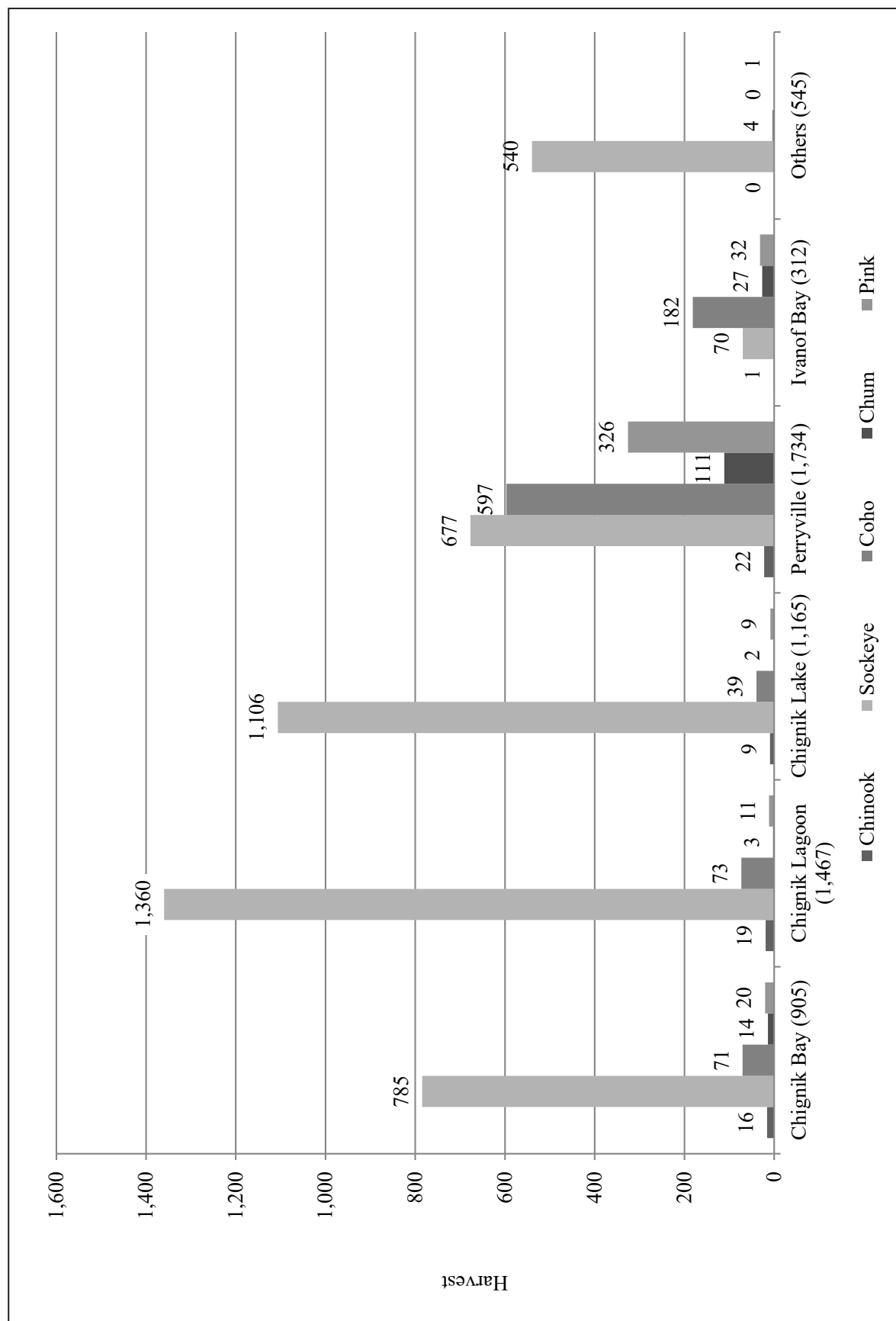


Figure 7-7.-Subsistence salmon harvests by community, Chignik Area, 2018.

CHAPTER 8: ALASKA PENINSULA AREA

BACKGROUND

The Alaska Peninsula Salmon Management Area (Area M) includes all the waters of Alaska on the north side of the Alaska Peninsula southwest of a line from Cape Menshikof to Cape Newenham and east of the longitude of Cape Sarichef Light and on the south side of the Alaska Peninsula from a line extending from Scotch Cap through the easternmost tip of Ugamak Island to a line extending 135 degrees southeast from Kupreanof Point (5 AAC 01.400). The area for salmon management purposes is divided into two portions: the North Alaska Peninsula portion includes the waters from Cape Menshikof west to Cape Sarichef, and the South Alaska Peninsula includes the waters from Kupreanof Point west to Scotch Cap on Unimak Island (Keyse and Fox 2015). The communities of the Alaska Peninsula Area and their respective estimated populations as of July 2018 are Port Heiden (population 118), Nelson Lagoon (population 32), False Pass (population 39), Cold Bay (population 63), King Cove (population 918, with 480 residing in households and 438 in group quarters), and Sand Point (population 909, with 559 residing in households and 350 in group quarters).¹ Port Moller has no year-round population and is only seasonally occupied from May–September. Port Heiden is in the Lake and Peninsula Borough; the other communities are in the Aleutians East Borough (which also includes Akutan in the Aleutian Islands Area).

REGULATIONS

A subsistence permit, which must be used to record daily harvests, is required for fishing in the Alaska Peninsula Area. There is an annual limit of 250 salmon per household, but a permit holder may obtain an additional permit from the department (5AAC 01.430). Legal gear includes seines and gillnets or as otherwise specified on a permit. In waters open to subsistence fishing, no set gillnet may exceed 100 fathoms in length, and no drift gillnet may exceed 200 fathoms in length. In areas open to commercial salmon fishing, salmon can only be taken with gillnets of not more than 50 fathoms in length (5AAC 01.420). Seines may not be longer than 250 fathoms or deeper than 375 meshes. Seine mesh size, other than mesh above the headline, may not be greater than three and one-half inches stretched measure. The first 25 meshes above the headline must be seven inches or less stretched measure. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. The Alaska Administrative Code (5 AAC 01.423) includes special provisions regarding subsistence gear for other areas, including Mortensens Lagoon, the False Pass vicinity, and Bear and Sandy rivers. Salmon may be taken at any time, except in those districts and sections that are open to commercial salmon fishing, salmon may not be taken during the 24 hours before and 12 hours following a commercial salmon fishing period. A few small areas closed to subsistence salmon fishing are listed in 5 AAC 01.425.

Federal regulations governing subsistence salmon fishing in waters under the jurisdiction of the Federal Subsistence Board are generally identical to the state regulations summarized above, with the exception that in addition to gillnet and seine, rod and reel, handline, spear, bow and arrow, and bare hand capture are all legal subsistence gear under federal rules for federally qualified rural residents. There is no separate federal subsistence permit; a state permit is required for subsistence fishing under the federal regulations. Additional information about the federal subsistence fishery is available by contacting the United States Fish and Wildlife Service, Office of Subsistence Management in Anchorage, Alaska.

HARVEST ASSESSMENT PROGRAM

The Division of Commercial Fisheries has issued subsistence permits for the Alaska Peninsula Area since 1979. Except for residents of Sand Point and Cold Bay, permits are mailed each year to fishers who returned their permits at the end of the previous fishing season. Sand Point and Cold Bay residents are issued permits upon request at the ADF&G offices in Sand Point and Cold Bay. Permits are also issued upon request at other ADF&G offices and by mail to people who telephone to request them. Regulations require that

1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed March 25, 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>

permits be returned to ADF&G by October 31. Reminder letters are sent around November 1 to people who have not yet returned their permits. If a person does not return the permit, his or her name is removed from the mailing list. Data from returned permits are tabulated by species and fishing area. Harvest data from returned permits are expanded by community of residence to estimate the harvest by all permit holders.

SUBSISTENCE SALMON HARVESTS IN 2018

From 1985 through 2017, the number of subsistence salmon permits issued for the Alaska Peninsula Area averaged 186 per year (Table 8-1). The recent 5-year average (2013–2017) was 160 permits. In 2018, 155 subsistence salmon fishing permits were issued for the Alaska Peninsula Area, which was an increase compared to the previous year when 127 permits were issued. This compares to the 249 Commercial Fishery Entry Commission (CFEC) permits that were actively fished for the commercial salmon fishery for the South Alaska Peninsula Area in 2018 (Fox et al. 2018:26). The response rate for subsistence permits was 72% in 2018 (111 of 155 permits were returned). Of all subsistence permits issued, 100 (65%) were issued to residents of Alaska Peninsula Area communities, and 55 (35%) were issued to residents of other Alaska communities (Table 8-2). Most nonlocal residents fish at Mortensens Lagoon, which is located approximately nine road miles southeast of Cold Bay, primarily because of easy road access from the Cold Bay airport which provides economically feasible transportation options (Tschersich and Russ 2008). In addition to Mortensens Lagoon, Thin Point Lagoon located 12 miles west of King Cove, and Leonard Harbor near the King Cove road system are some of the primary areas utilized for obtaining subsistence sockeye and coho salmon particularly for King Cove and Cold Bay residents (Johnson and Fox 2015).

The estimated total subsistence salmon harvest in the Alaska Peninsula Area in 2018 was 10,277 fish. This is a 10% decrease from the prior year (11,476 salmon in 2017), less than the recent 5-year (2013–2017) (14,118 salmon), less than the 10-year (2008–2017) (13,897 salmon) average, and less than the historical average (1985–2017) of 17,141 fish (Table 8-1). The 2018 subsistence harvest consisted of 54% sockeye salmon (5,503), 19% coho salmon (1,996), 14% chum salmon (1,474), 10% pink salmon (1,033), and 3% Chinook salmon (271), (Table 8-1; Figure 8-1).

The estimated sockeye salmon harvest was 5,503 fish in 2018, which is the lowest amount of sockeye salmon harvested in the Alaska Peninsula Area subsistence fishery since 1988 harvest of 5,501 fish. The estimated harvests of sockeye salmon in 2018 decreased compared to the 2017 harvest (7,548 salmon), previous 5-year (9,107 salmon), 10-year (8,755 salmon), and the 1985–2017 historical (9,667 salmon) averages, respectively (Table 8-1). The estimated coho salmon harvest in 2018 was 1,996 fish. This is a 7% increase from the prior year (1,865 fish in 2017), more than the recent 5-year average (1,973 salmon), but less than the 10-year average (2,395 salmon), and less than the historical average (1985–2017) of 3,979 salmon (Table 8-1). The chum salmon harvest (1,474 salmon) in 2018 was a 63% increase from 2017 harvest (905 salmon), a 33% increase from the 5-year average (983 salmon), a 31% increase from the 10-year average (1,017 salmon), but 16% lower than the historical average (1985–2017) of 1,706 chum salmon (Table 8-1). The 2018 pink salmon harvest (1,033 salmon) was a 105% increase from the prior year (503 salmon), but was less than the recent 5-year average (1,792 salmon), less than the 10-year average (1,439 salmon), and less than the historical average (1985–2017) of 1,479 salmon (Table 8-1). The 2018 Chinook salmon harvest (271 salmon) was a 58% decrease from the prior year (656 salmon), but was slightly greater than the recent 5-year average (263 salmon), and less than the 10-year average (291 salmon), and less than the historical average (1985–2017) of 311 fish (Table 8-1).

Of the total salmon harvested in 2018, the residents of Sand Point harvested 37% (3,812 fish); King Cove residents 34% (3,473); Cold Bay residents 4% (385); False Pass residents, 3% (345); Port Heiden 2% (182); Nelson Lagoon residents <1% (135); and Other Alaska residents not residing year around in any of the Alaska Peninsula Management Area communities, harvested 1,945 salmon, which represented 19% of the total harvest for this area in 2018 (Table 8-2; Figure 8-2).

Fish removed from commercial salmon harvests for personal use, referred to locally as “home pack”, can also be an important source of personal use salmon. For 2018, in the North Alaska Peninsula Area, no commercial salmon fishermen reported removing salmon for personal use from their commercial salmon

harvest.² Commercial salmon fishermen in the South Alaska Peninsula Area in 2018 reported removing a total of 2,144 salmon for personal use from their commercial salmon harvest, of which 49% (1,059) were Chinook salmon, 24% (508) chum salmon; 13% (287) coho salmon; 14% (290) sockeye salmon; and no pink salmon were removed.³

In 2017, The Division of Subsistence conducted an AKSSF funded research project “The subsistence salmon fishery harvest monitoring in Cold Bay, King Cove and Sand Point.” The project objectives included estimating salmon harvests in 2016, by location and by gear type (using subsistence methods, removal from commercial harvests, and rod and reel) by the residents of the study communities. Research methods included systematic household surveys and key respondent interviews with knowledgeable subsistence and commercial fishermen residing in the study communities and a mail out survey to Area M salmon license holders to learn about their harvest of home pack salmon.⁴

Although home pack reporting is required on commercial harvest tickets (5AAC39.130(c)12)), the harvest ticket data may not be accurate due to inconsistent reporting with some home pack salmon recorded on commercial fishers’ subsistence permits rather than commercial harvest tickets.⁵ The subsistence permit program for the Alaska Peninsula Area is not designed to account for salmon withheld from commercial catches for home uses. This number may be substantial, especially in years when commercial salmon prices are low. This is supported historically, with 1992 data from household harvest surveys estimating that 51% of the salmon harvested for home use in King Cove (Fall et al. 1993b), and in 2016, 27% (Hutchinson-Scarborough et al. *in prep*) were removed from commercial harvests. In 1992, 45% of the salmon harvested for home use in Sand Point were removed from commercial harvests (Fall et al. 1993a), and in 2016, 59% were removed from commercial harvests (Hutchinson-Scarborough et al. *in prep*).

In interviews with Division of Subsistence staff in 2000, fishery managers for the Alaska Peninsula Area expressed the view that the subsistence permit program did not completely document all subsistence salmon harvesting activities because some fishers did not obtain permits (Fall and Shanks 2000:30). A comparison of permit and household interview data for 1992 for King Cove found that about 31% of interviewed households that reported subsistence fishing did not have permits (Fall et al. 1993b:58–62). The estimated total subsistence salmon harvest for the community based on the interviews was 7,036 ($\pm 1,773$), compared to 5,856 based on permit returns (Fall et al. 1993b:58–62.). At Sand Point in the same year, 41% of interviewed households reported that they harvested salmon for subsistence but did not have permits. The estimated total subsistence salmon harvest for Sand Point based on the household interviews was 11,338 ($\pm 2,551$), compared to 7,833 based on estimates using permit return information (Fall et al. 1993a:61).

The Division of Subsistence collaborated with the Department of Anthropology at Oregon State University and BBNA to conduct a subsistence research project in 2017, funded by OSM. The project was called “Subsistence salmon networks in select Bristol Bay and Alaska Peninsula communities, 2016” and was conducted in the communities of Port Heiden, Chignik Bay, Chignik Lagoon, Chignik Lake, Perryville, and Egegik. The project documented subsistence salmon harvests and sharing networks of salmon in 2016 and furthered the understanding of salmon sharing and harvest practices in the region and surrounding area. Research methods included systematic household surveys, and key respondent interviews (Hutchinson-Scarborough et al. 2020).

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2. Reid Johnson, ADF&G Assistant Area Management Biologist, Alaska Peninsula and Aleutian Islands, Personal Communication, June 15, 2020.
 3. Tyler Lawson, ADF&G Assistant Area Management Biologist, Alaska Peninsula and Aleutian Islands, Personal Communication, May 22, 2020.
 4. Hutchinson-Scarborough, L., J. M. Van Lanen, and M. Cunningham. *In prep*. Harvest and Uses of Wild Resources in Cold Bay, King Cove, and Sand Point. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. NNN, Anchorage.
 5. Elizabeth Fox, ADF&G Area Management Biologist, Alaska Peninsula and Aleutian Islands, Personal Communication, October 17, 2018.

In 2018, The Division of Subsistence conducted an AKSSF funded research project “Port Heiden Subsistence Fishery Harvest Monitoring.” The project objectives included estimating wild resource harvests (including salmon and nonsalmon fish) harvests in 2018, by location and by gear type (using subsistence methods, removal from commercial harvests, and rod and reel) by the residents of Port Heiden. Research methods included systematic household surveys, key respondent interviews and participant observation with knowledgeable subsistence fishermen (Jones and Cunningham 2020).

OTHER SUBSISTENCE FISHERIES

Subsistence Pacific halibut fishing harvest estimates for communities and tribes in the Alaska Peninsula Area are available for 2003–2012, 2014, 2016, and 2018 (Fall and Koster 2020). Due to a lapse in funding, subsistence Pacific halibut fishing harvest estimates were not collected for 2013, 2015, and 2017. The primary method used for obtaining subsistence halibut harvest estimates statewide is through the use of mail-out surveys. In addition, in 2014 a special objective also included in person interviews with active subsistence halibut permit holders in the communities of King Cove and Sand Point (Fall and Lemons 2016).

There are no other annual harvest assessment programs for the other finfish and shellfish subsistence fisheries of the Alaska Peninsula Area. To date, the Division of Subsistence has conducted one systematic household harvest survey in each of the area’s communities and two in Port Heiden, Sand Point, and King Cove. The findings of these surveys, including species used, percentage of households harvesting each species in the study year, and estimated harvest quantities for the study year, appear in the CSIS. Table 8-3 reports the percentage of households in the surveyed communities that used selected nonsalmon finfish species in the available study year. Generally, Pacific cod, halibut, and Arctic char/Dolly Varden were the most frequently used by households in these communities. As part of the two AKSSF studies mentioned above, the division conducted systematic surveys that include harvest data for a comprehensive list of resources as well as salmon sharing practices for study year 2016 in Cold Bay, Sand Point, and King Cove and in Port Heiden for study year 2018.

Nonsalmon subsistence harvest data are also available for Port Heiden for 2018. A total of approximately 313 lb of nonsalmon fish were harvested in Port Heiden in 2018, equating to a per capita harvest of 3 lb. The nonsalmon fish harvest included a variety of species: rainbow trout composed 29% of the nonsalmon fish harvest, followed by Dolly Varden–freshwater (20%), unknown or unspecified species of trout (18%), Pacific halibut (15%), Dolly Varden–saltwater (6%), Pacific (gray) cod (5%), smelt (5%), rockfish (2%), and a nominal harvest of round whitefish. For more information, refer to Jones and Cunningham (2020).

Table 8-1.—Historical subsistence salmon harvests, Alaska Peninsula Area, 1985–2018.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	161	95	74	4,037	7,504	1,566	574	13,755
1986	147	84	101	5,396	2,996	1,455	1,779	11,727
1987	191	144	193	5,777	4,259	1,943	1,547	13,719
1988	183	114	257	5,501	5,646	1,692	1,666	14,762
1989	188	139	88	10,404	3,505	2,104	1,213	17,314
1990	201	157	246	8,588	4,029	1,589	736	15,188
1991	249	185	458	11,345	5,551	3,551	1,878	22,783
1992	229	177	385	10,739	4,267	2,574	1,840	19,805
1993	262	215	615	12,478	5,753	1,997	1,189	22,032
1994	256	213	674	11,884	6,086	4,406	2,206	25,256
1995	260	198	492	12,716	5,021	3,369	2,653	24,251
1996	234	178	362	12,176	7,743	2,728	2,569	25,578
1997	217	172	420	15,224	4,612	2,885	2,955	26,096
1998	233	153	407	12,920	5,820	1,326	2,286	22,759
1999	186	148	366	14,964	3,984	2,035	1,440	24,843
2000	178	152	232	9,924	5,434	1,558	984	18,185
2001	185	155	339	11,767	4,205	1,996	1,207	19,912
2002	156	133	326	9,553	3,308	1,593	555	15,052
2003	165	128	320	10,188	4,177	2,203	1,229	18,228
2004	146	135	205	8,903	3,680	820	632	15,049
2005	159	139	176	11,030	3,751	534	618	17,310
2006	153	131	130	8,353	2,608	1,097	1,194	12,280
2007	138	124	87	6,288	2,838	572	558	10,343
2008	199	164	261	8,025	4,610	857	1,553	15,022
2009	134	118	358	6,098	2,460	467	787	9,707
2010	183	138	288	9,530	2,578	1,202	1,001	14,959
2011	163	117	333	9,873	2,331	822	1,058	14,417
2012	172	138	230	9,402	1,843	1,609	912	14,231
2013	168	157	233	5,964	2,208	1,036	1,104	11,353
2014	173	156	50	8,620	1,513	708	1,657	12,927
2015	150	112	122	12,657	1,911	1,584	5,499	20,693
2016	158	126	210	10,198	2,094	620	580	14,139
2017	127	98	648	7,726	1,868	892	474	11,476
2018	154	111	271	5,582	1,990	1,444	1,000	10,287
5-year average (2014–2018)	155	130	253	9,033	1,919	968	1,863	14,118
10-year average (2009–2018)	163	132	273	8,809	2,342	980	1,463	13,892
Historical average (1985–2018)	185	145	294	9,644	3,945	1,678	1,459	17,126

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 8-2.—Subsistence salmon harvest estimates by community, Alaska Peninsula Area, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Cold Bay	13	11	0	304	6	48	0	358
False Pass	3	3	3	61	171	20	90	345
King Cove	32	22	4	2,049	1,052	297	71	3,473
Nelson Lagoon	2	2	8	118	30	0	2	158
Port Heiden	5	3	113	15	52	2	0	182
Sand Point	45	29	95	1,690	489	968	487	3,729
Subtotal, area residents	100	70	223	4,237	1,799	1,335	651	8,245
Anchor Point	2	2	0	49	0	0	0	49
Anchorage	7	5	11	129	59	30	155	385
Eagle River	1	1	0	0	0	0	0	0
Fritz Creek	2	1	0	0	0	0	0	0
Homer	19	12	12	373	72	66	186	709
Iliamna	1	1	0	199	0	12	0	211
Kenai	1	1	0	198	59	0	0	257
Kodiak	9	8	25	205	0	0	8	238
Kotzebue	1	1	0	138	0	0	0	138
North Pole	1	1	0	0	0	0	0	0
Seward	1	1	0	0	0	0	0	0
Sitka	1	1	0	28	0	1	0	29
Sutton	1	1	0	0	0	0	0	0
Unalaska	1	1	0	26	0	0	0	26
Wasilla	6	4	0	0	0	0	0	0
Subtotal, other Alaska residents	54	41	47	1,345	191	109	349	2,042
Total	154	111	271	5,582	1,990	1,444	1,000	10,287

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 8-3.—Percentage of households using selected nonsalmon finfishes, Alaska Peninsula Area.

Resource ^b	Percentage of households using in that study year ^a					
	Nelson Lagoon	False Pass	King Cove	Sand Point	Cold Bay	Port Heiden
Pacific cod	0	65	36	61	39	11
Sablefish	ND	15	2	11	4	0
Kelp greenling	ND	10	1	2	0	ND
Flounder	8	20	1	0	4	0
Halibut	0	95	63	84	70	26
Herring	ND	30	1	0	4	0
Herring spawn on kelp	ND	0	0	0	0	0
Smelt	ND	0	0	2	0	15
Rockfishes	ND	5	9	32	0	4
Sculpin	ND	35	2	4	0	0
Walleye pollock	ND	ND	3	3	0	ND
Lake trout	ND	ND	ND	ND	ND	ND
Arctic char/ Dolly Varden	54	75	43	26	52	11
Rainbow trout/Steelhead	ND	5	7	11	4	4

Source CSIS.

a. Study year = 1986–1987 for Nelson Lagoon; 1987–1988 for False Pass; 2016 for King Cove, Sand Point, and Cold Bay; and 2018 for Port Heiden.

b. Most commonly used types in the study year; uses of other species occurred, or may occur in other years.

ND No data for that resource.

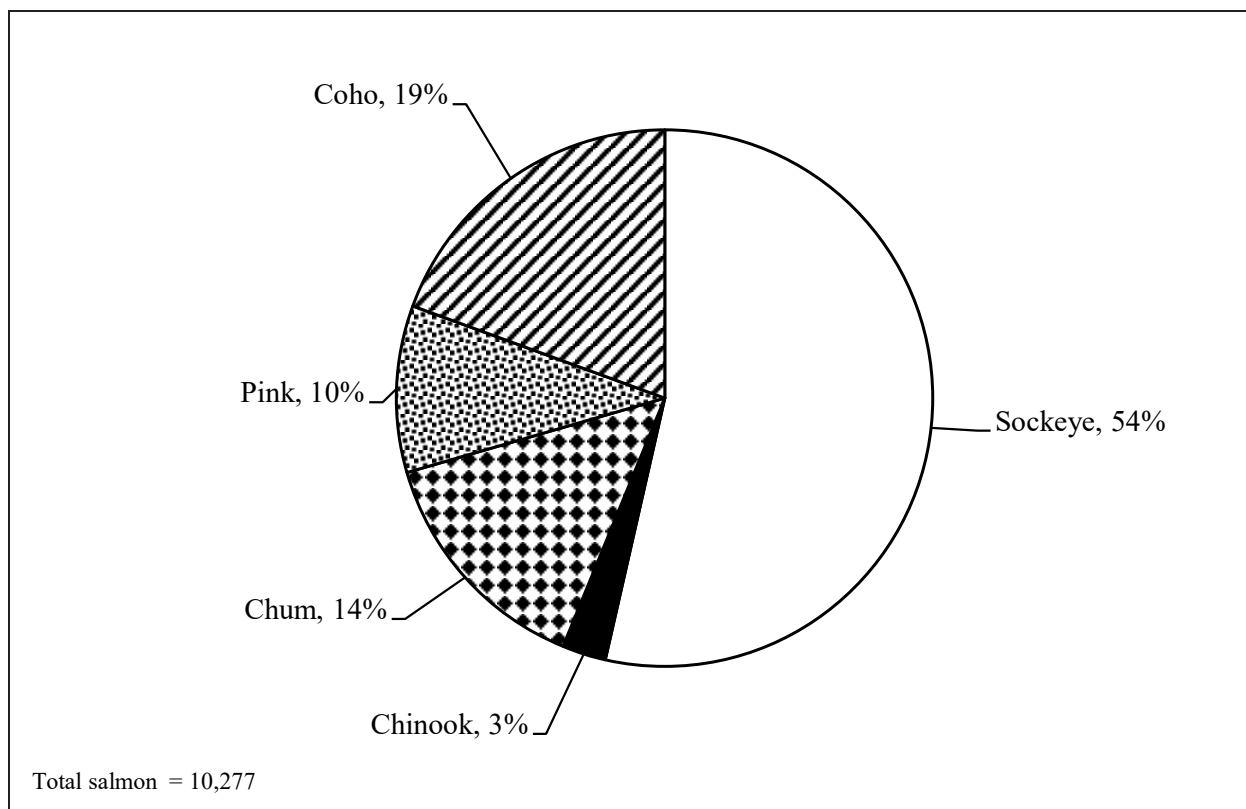


Figure 8-1.—Composition of Alaska Peninsula Area subsistence salmon harvest by species, 2018.

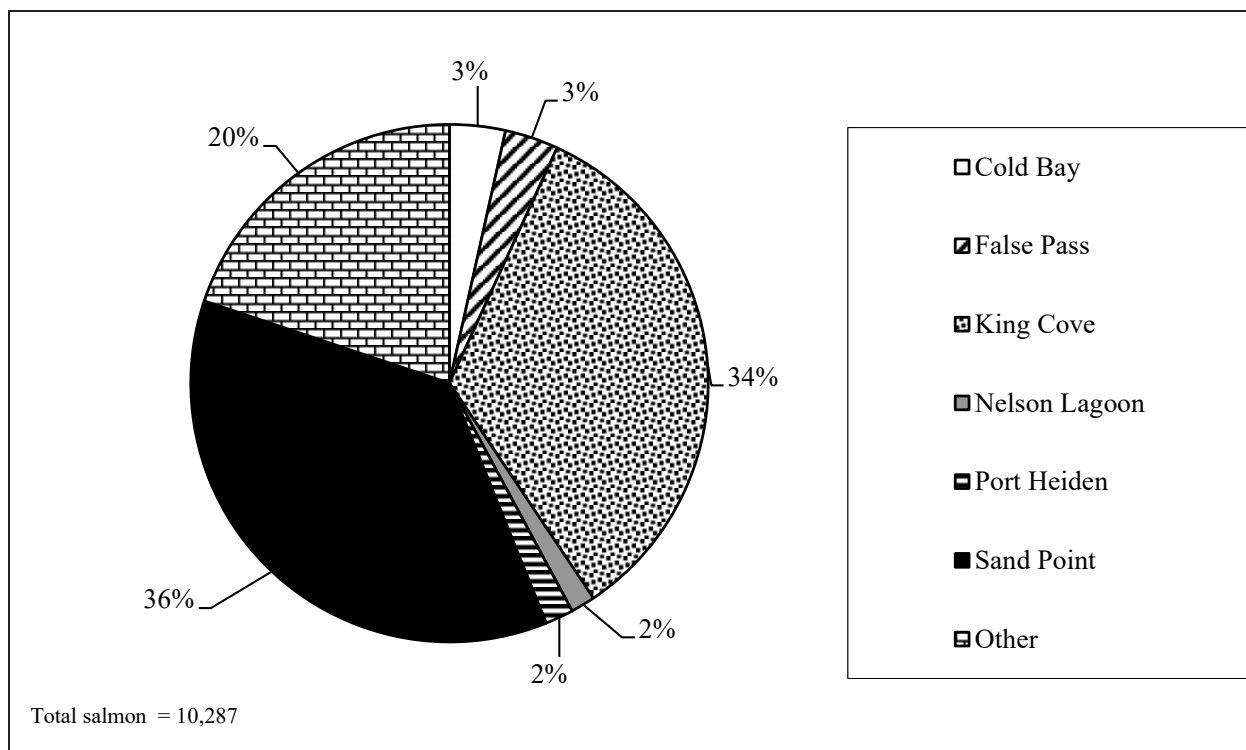


Figure 8-2.—Subsistence salmon harvests by community, Alaska Peninsula Area, 2018.

CHAPTER 9: ALEUTIAN ISLANDS AREA

INTRODUCTION

The Aleutian Islands Management Area includes all waters of Alaska in, and surrounding, the Aleutian Islands west of Cape Sarichef Light and west of a line extending from Scotch Cap through the easternmost tip of Ugamak Island, including the waters in and surrounding the Pribilof Islands (5 AAC 01.350). For subsistence purposes, the Aleutian Islands Area is divided into six management districts (5 AAC 01.355). From east to west, they are:

- Akutan District,
- Unalaska District
- Umnak District
- Pribilof Islands District,
- Atka–Amlia Islands District, and
- Adak District.

The major communities of the Aleutian Islands Area are Adak Akutan, Atka, Nikolski, St. George, St. Paul, and Unalaska–Dutch Harbor, Akutan is part of the Aleutians East Borough; the other communities are part of the Aleutians West Census Area, but they are not within an organized borough.

In 2018 according to the State of Alaska Department of Labor and Workforce Development, the estimated community populations in the Aleutian Islands Management Area were as follows. Adak had 296 people of which 217 resided in group quarters Akutan had 994 people; 57 resided in households, and the remainder in group housing. Atka had 47 people; Nikolski, had 18 people; and Unalaska–Dutch Harbor had 4,326 people; with 2,239 resided in households and the remainder in group quarters.¹ The two communities in the Pribilof Islands District, are St. George and St. Paul. In 2018, St. George, had 68 people; 4 of which resided in group quarters; and St. Paul had 388 people; 376 resided in households and the remainder in group quarters.²

In March 1988, the Alaska Board of Fisheries (BOF) made a positive customary and traditional use (C&T) finding for halibut only, for the Aleutian Islands and Alaska Peninsula Areas. The BOF in January 1998 made and adopted into regulation a positive C&T finding for salmon and all other finfish in the Aleutian Islands and Alaska Peninsula Areas. At the same meeting, the BOF made an ‘administrative finding’ for the amount necessary for subsistence (ANS) for Aleutian Islands and Alaska Peninsula salmon and other finfish including halibut but did not adopt the ANS findings into regulation until their February 2004 meeting. The board determined the ANS of 13,500–23,000 salmon (5 AAC 01.366(b)(1) and 200,000–330,000 usable pounds of finfish other than salmon 5 AAC 01.366(b)(2).³

In the Aleutian Islands Area, the Division of Commercial Fisheries annually monitors subsistence salmon harvests only in the Unalaska and the Adak districts, where a permit is required for harvest. Neither a permit or reporting requirement exists for subsistence salmon fishing in the waters off Akutan, Atka, Nikolski, Saint George and Saint Paul. Therefore, subsistence salmon harvests by these communities are not systematically monitored. From limited households surveys conducted by the Division of Subsistence, limited harvest data exists with the most current harvest estimates for Akutan for 2008 (Fall et al. 2012:13–92) and 2009 (Reedy-Maschner and Maschner 2012), Atka and Nikolski in 2005 (Davis 2005), Saint George (Mishler et al.

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1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed April 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>
 2. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed April 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>
 3. Alaska Department of Fish and Game. 2018–2019 Subsistence and personal use statewide fisheries regulations. Alaska Department of Fish and Game, Juneau.

1996a),x and Saint Paul in 1996 (Mishler et al. 1996b). Active commercial salmon fisheries in the Aleutian Islands Area are limited to a small commercial pink salmon fishery open July 10 through September 30 (5 AAC 12.310). The commercial harvest in the Aleutians has been inconsistent over the last few years with minimal participation. When participation is low, the department does not share harvest data publicly to insure fishing practice privacy for the fisher.⁴

Federal Fisheries

Federal subsistence fisheries are authorized for permanent residents residing in the Aleutian Islands Area; however, they are managed consistently with the state fisheries in the region.⁵ Federal fisheries in the Aleutian Islands Area apply on waters within and inland waters adjacent to the Alaska Maritime National Wildlife Refuge. Federal permits are not required for subsistence salmon or non-salmon fishing in any of Aleutian Island's region, though a state permit is required for taking of salmon, trout and char in the Adak, Unalaska Districts. Federal regulations generally mirror the state regulations with subtle differences i.e.: allowable gear and residency requirements. Federal subsistence salmon regulations for the Aleutian Islands Area are published in 36 CFR 242.27(e)(8). Additional information about the Federal subsistence fishery is available by contacting the U.S. Fish and Wildlife Service, Office of Subsistence Management in Anchorage, Alaska.

SALMON HARVESTS IN THE UNALASKA DISTRICT

Escapement

The limited escapement monitoring occurring in the Aleutian Island area is focused on Unalaska. In years when industry is interested in Unalaska District commercial fishing for pink salmon; ADF&G conducts aerial surveys to assess pink salmon abundance around Unalaska Island concentrating from Unalaska Bay to Makushin Bay. Sockeye salmon escapements in systems utilized for subsistence are also included if weather and time allows. Coho salmon arrive after these aerial surveys are conducted and are therefore unmonitored.⁶

The McLees Lake system, located on the northwest side of Unalaska Island supports most of the sockeye salmon harvested for subsistence in the Unalaska District⁷ (Lipka and Fox 2017). Beginning in 1985, an ADF&G fish counting weir at the outlet to McLees Lake has monitored sockeye salmon escapement, providing timely escapement information vital for managing the subsistence harvest. (Lipka and Fox 2017). McLees Lake has a sustainable escapement goal (SEG) of 10,000 sockeye salmon.⁸ Sockeye salmon escapements at McLees Lake were 39,892 in 2016 and 13,195 fish in 2017. In 2018, ADF&G was not able to obtain escapement data because the weir was not operational due to lack of funding.

Sockeye salmon returning from the Bering Sea enter Reese Bay on their way to McLees Lake. Salmon are only harvested for subsistence in Reese Bay. Fishing for salmon is not allowed in McLees Lake. This area and fishery are referred to locally and by ADF&G as “Wislow” or the “Reese Bay sockeye salmon fishery” (Lipka and Fox 2017).

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4. Elizabeth Fox, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 8, 2021.
 5. Additional information about the federal subsistence fishery is available by contacting the United States Fish and Wildlife Service, Office of Subsistence Management in Anchorage, AK (<http://www.doi.gov/subsistence/index.cfm>).
 6. Tyler Lawson, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 13, 2021.
 7. Tyler Lawson, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 13, 2021.
 8. Tyler Lawson, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 13, 2021.

Other sockeye and coho salmon systems that are fished for subsistence in the Unalaska District include Broad Bay, Wide Bay, Nateeken Bay, Captains Bay, Unalaska Lake vicinity, Unalaska Front Beach, Unalaska Bay, Summer Bay, and Volcano Bay. As mentioned earlier, these systems are only generally not monitored for escapement. Subsistence harvests close to town are informally self-policed by some local subsistence users in interest of sustainability of the salmon runs.⁹

Both Unalaska residents and ADF&G managers have voiced concerns about the lack of escapement data for sockeye, coho, and pink salmon in other areas where subsistence fisheries occur; particularly in Iliuliuk Bay, Summer Bay, Morris Cove, and Unalaska Lakes particularly where there is easy access from the road system. In 2018 and 2019, ADF&G funded an experimental project to estimate salmon escapement Unalaska roadside systems using a drone equipped with a video camera to fly the roadside streams. Video files were used to calculate indices of escapement by comparing prior escapement data with periodic aerial surveys. ADF&G determined the drone was successful at capturing reliable escapements in these small river and lake systems assessable by road. The project was also cost effective. ADF&G is working with the Qawalangin Tribe to secure grant funding to conduct drone surveys in 2020 including McLees Lake.¹⁰

State Salmon Harvest Regulations

A state permit is required for subsistence salmon fishing in the Unalaska District. Fishers must record their daily harvests on the permit and return it to ADF&G by October 31, even if no salmon were harvested (5 AAC 01.380). Permit holders may harvest up to 25 salmon per permit plus an additional 25 salmon for each member of the same household who is listed on the permit. A permit holder may obtain an additional permit from the department if more fish are needed.

Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Salmon may be taken from 6:00 AM until 9:00 PM beginning January 1 through December 31, except that from June 1 through September 15, a salmon seine vessel may not be used to take salmon for subsistence purposes 24 hours before, during, or 24 hours after an open commercial fishing period within a 50-mi radius of the area open to commercial fishing. Salmon may be taken by seine or gillnet, and from June 1 through September 15, a purse seine vessel may be used to take subsistence salmon only with a gillnet. Additionally, subsistence gillnets must be attended at all times while fishing (5 AAC 01.360–5 AAC 01.370). Waters within the Unalaska District that are closed to subsistence fishing for salmon are defined in 5 AAC 01.375.

State Salmon Harvest Assessment Program

The Division of Commercial Fisheries has issued subsistence salmon harvest permits for the Unalaska District since 1979. Permits are only issued in person at the ADF&G Dutch Harbor office and may be returned in person to the Unalaska office, or mailed back to the ADF&G, Kodiak office by October 31 of the year issued. Reminder letters are sent in early November to all permit holders who have not returned their permits. Reported data, including species, harvest amounts, and location of harvest from returned subsistence permits, are used to extrapolate catches for all permits issued, including those that did not return their permit. (Fox et al. 2018).

In 2000 interviews, the Division of Subsistence asked ADF&G fishery managers about the effectiveness of the permitting program. Managers expressed the view that the permit program captured most subsistence salmon harvests occurring in the Unalaska District (Fall and Shanks 2000). In their view, most subsistence fishers obtained and submitted permits, perhaps due to a self-regulation ethos and the presence of Alaska Wildlife Troopers. In 2021, ADF&G Aleutian Island subsistence managers remain confident in the reliability of the existing permit system while some residents have expressed concerns to ADF&G over a limited enforcement presence to monitor subsistence salmon harvests and the increased need to self-police. There

9. Elizabeth Fox, Division of Commercial Fisheries, Kodiak, personal communication via telephone, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 12, 2021.

10. Tyler Lawson, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 13, 2021.

is only one Alaska Wildlife Trooper stationed in Unalaska, but that trooper is sent to Bristol Bay each summer.¹¹

Subsistence Salmon Harvests in 2018

In 2018, 182 subsistence salmon permits were issued for the Unalaska District, most (170) of which were to Unalaska/Dutch Harbor residents, and 12 to other Alaska residents. This was similar to 2017, when 187 were issued, yet lower than the recent 5-year (2013–2017) average of 223 permits, lower than the 10-year (2008–2017) average of 219 permits issued, but nearly equal to the historical (1985–2017) average of 178 permits (Table 9-1). Fishers are required to record their harvest on the permit and return it at the end of the harvest season to ADF&G. In 2018, the return rate for the Unalaska District was 85%, with 154 permits returned. Dutch Harbor and other Unalaska residents accounted for 170 permits, or 93%, of all permits issued in the Unalaska District, and returned 144 permits out of 154 permits returned (94%) (Table 9-2) (Fox et al. 2020:143–146).

The estimated 2018 subsistence harvest of salmon in the Unalaska District was 2,563 fish, which was 11% less than the previous year (2,869), 38% less than the recent 5-year (2013–2017) average (4,160 fish), and 43% less than the 10-year (2008–2017) average (4,509 fish) (Table 9-1). The composition of the 2018 subsistence salmon harvest was 72% sockeye salmon (1,837), 19% coho salmon (483), 6% pink salmon (142), 3% chum salmon (74), and 1% Chinook salmon (27) (Figure 9-1). As described above, the primary subsistence salmon fishing location used in the Unalaska District in recent years is Reese Bay where sockeye salmon are targeted as they return to McLees Lake (Fox et al. 2019; 2020).

Removal of Commercial Salmon for Home Use

“Home pack”, the retention of commercially caught fish for home use, is permitted. Commercial salmon fishing in the Aleutian Islands occurs only in the Unalaska District. A survey conducted in 1994 found that only 4% of salmon harvested for home use were removed from commercial catches (CSIS; Fall and Shanks 2000). Aleutian Islands Area fishery managers state that few commercially caught salmon are retained for home uses in the Aleutian Islands Area because most commercial fishing activities in the area target shellfish and groundfish rather than salmon. Over the last 10 years or more, commercial salmon fishing effort has remained low with fewer than three vessels participating because fishing interest and fishing runs are both low. Records the number of salmon recorded on fish tickets that were removed from the commercial salmon fishery are small.¹²

SALMON HARVESTS IN THE ADAK DISTRICT

The Adak District of the Aleutian Islands Area consists of waters west of Atka Pass at 175°23.00' W. to the terminus of the Aleutian Islands. Adak Island hosted a U.S. Navy base and military community (population of 4,633 in 1990) that was phased out between 1993 and 1996. With the Navy base closure complete, the population was estimated at zero in 1997. However, for several years following the base closure, the Aleut Corporation worked with the Department of Interior and Department of the Navy to lease the base facilities and ultimately secure a land transfer to the corporation in 2004, with the intention of repurposing and privatizing the facility’s infrastructure to support the local fishery with processing, refueling, and housing services. During the lease period, the Aleut Corporation processed its first commercially caught fish in 1998 and has continued working with the Alaska seafood industry to further develop and maintain Adak as a commercially viable fish processing location. In 2000, the Alaska Boundary Commission approved Adak’s application to become a second-class city. In 2013, Aleut Enterprises and the Aleut Corporation owned

11. Miranda Westphal, Division of Commercial Fisheries, Unalaska, personal communication, in person with Lisa Hutchinson-Scarborough, Division of Subsistence, September 4, 2021.

12. Elizabeth Fox, Division of Commercial Fisheries, Kodiak, personal communication via telephone, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 12, 2021

and operated a seafood processing facility, and a few Adak residents held commercial fishing permits. In addition, Adak provides a fueling port and crew transfer facility for foreign fishing fleets.^{13,14}

The Board of Fisheries at their March 1988 meeting made a negative C&T finding for salmon in the Adak District. This was in response to a proposal from the Adak naval air station to close some of the waters to subsistence fishing. The board made the negative finding based mostly on the characteristics of Adak as a military community/base (this is before it closed); and additional information provided in a C&T worksheet prepared by the Division of Subsistence. In that same year, the BOF created a Personal Use fishery to replace the subsistence fishery. After the military based closed in 1997 and it transitioned into a fish processing community, some Aleut families relocated to Adak and the Aleut Corporation requested the BOF reverse their finding and allow for a subsistence fishery.¹⁵ In 1998, the Board of Fisheries reversed the negative finding for Adak, making a positive C&T finding for salmon and nonsalmon fish for the entire Aleutian Island Region (5 AAC 01.366).

Salmon Harvest Regulations

Prior to 1988, the noncommercial salmon net fishery at Adak was classified as a subsistence fishery, then a personal use fishery in 1988, followed by a return to a subsistence classification in 1998, with permits required. Since 2001 permits were required and issued by mail through the ADF&G Offices Dutch Harbor and Cold Bay (Shaul and Dinnocenzo 2004:7) Fishers must record their daily harvests on the permit and return it to ADF&G by October 31. Permit holders may harvest up to 25 salmon per permit, plus an additional 25 salmon for each household member listed on the permit. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Also, as specified in 5 AAC 01.380 (b)(2), “a permit holder may obtain an additional permit from the department to harvest more salmon.” Salmon may be taken at any time. All salt waters within 100 yards of a stream terminus, as well as all fresh waters of and around Adak Island and Kagalaska Island, are closed to subsistence fishing for salmon (5 AAC 01.375 (6)).

Salmon Harvest Assessment Program

ADF&G does not monitor for salmon abundance in the Adak District as there are no commercial salmon fisheries here. While the department does issue subsistence fishing permits, harvest assessment data is limited due to limited participation. In 2018, subsistence salmon permits were issued out of the ADF&G Cold Bay office and faxed or mailed upon request to Adak residents. Permits must be returned by mail or fax to the ADF&G Cold Bay office by October 31, with reminder letters sent to those who had not yet reported their harvests.

Subsistence Salmon Harvests in 2018

In 2018, two subsistence salmon permits were issued for the Adak District and one permit was returned. The estimated subsistence harvest of salmon in 2018 of 460 fish, was greater than the recent 5-year (2013–2017) average (45 fish), the 10-year (2008–2017) average (74 fish), and the historical (1988–2017) average (266 fish). The 2018 subsistence salmon harvest was entirely composed of sockeye salmon. Fifty sockeye salmon were reported as harvested in 2017; the 5-year (2013–2017) average of sockeye salmon harvested was 27; the 10-year average (2008–2017), was 63 and the historical average (1988–2017) was 240 sockeye salmon (Tables 9-3 and 9-4). In recent years, generally only one person obtained a permit. As a result,

13. Gen. Hansford T. Johnson, USAF. 2002. Statement of H.T. Johnson Assistant Secretary of the Navy (Installations and Environment) Before the Subcommittee on Public Lands and Forests of the Senate Committee on Energy and Natural Resources To Ratify an Agreement Between the Aleut Corporation And the United States of America. Washington, D.C. Accessed September 2014. http://www.navy.mil/navydata/people/assistsecnav/asn_ie/htjohnson020509.txt.

14. Adak Update: Adak Land Transfer Fact Sheet. 2004. Engineering Field Activity (EFA) Northwest, Naval Facilities Engineering Command. Accessed September 2014. <http://www.navfac.navy.mil/content/dam/navfac/PDFs/factsheets/adak-alaska.pdf>.

15. ADF&G Division of Subsistence, C&T and ANS BOF findings records on file in Anchorage office.

harvest estimates in 2018 may be skewed because the AMR calculations assumes non-returned permits harvest the average reported by returned permits. The 2018 harvest may be closer to 230 sockeye salmon, and similar to the 1988-2017 historical average.¹⁶

SALMON HARVESTS AT AKUTAN, NIKOLSKI, AND ATKA

As stated above, permits are not required for subsistence salmon harvests in the Akutan, Umnak, and Atka–Amlia islands districts, and there are no annual harvest assessment programs in place, and ADF&G does not monitor the salmon runs for abundance as there are no commercial salmon fisheries in these districts. In these districts, fish may be taken at any time with no more than 250 salmon per household to be taken annually for subsistence purposes (5 AAC 01.360 (1)(b); 5 AAC 01.380 (b)).

In the absence of regular harvest monitoring in these communities, existing harvest estimates are derived from subsistence household surveys documenting subsistence harvests by residents. However, many of these surveys are very old with the most recent surveys conducted over 13 years ago. The Division of Subsistence conducted postseason household surveys in Akutan (Akutan District) and Nikolski (Umnak District) for the 1990 subsistence harvests (all resources) (CSIS); in Akutan for the 2008 subsistence harvests (all resources) (Fall et al. 2012: 33-41); and in Atka (Atka–Amlia Islands District) for 1992 (salmon harvests only) (CSIS); and 1994 (all resources) (CSIS). Salmon harvest data were also collected for Akutan and Nikolski (2002 and 2003 harvests) and Atka (2003 harvests) (Davis 2005).

Based on these surveys, subsistence harvests of salmon in Akutan, Nikolski, and Atka, all five species of salmon are harvested in this area, though primarily composed of sockeye salmon, but coho and pink salmon also account for a relatively large proportion of annual harvests in these communities (Table 9-5). (Fall et al. 2012:30-33). For example, Akutan residents reported that salmon species combined made up the largest component of their annual subsistence harvest in 2008; they harvested approximately 3,363 salmon, 146 lb of salmon per person, which accounted for 45% of the total subsistence harvest that year (Fall et al. 2012:30–33,42, 69–71). The salmon harvests in Nikolski were 1,902 in 1991 and 604 in 2003. In Atka, the annual salmon harvest varied between 1,454 and 2,387 in the three years for which information is available (Table 9-5). (CSIS).

Salmon Harvests in Pribilof Islands, Saint George, and Saint Paul

Permits are not required for subsistence salmon fishing in the Pribilof Islands and ADF&G does not have a salmon harvest monitoring program in these communities. Saint Paul and Saint George Islands do not have streams large enough to support anadromous fish (Veltre and Veltre 1981); though salmon can be obtained from both islands off beaches and estuaries. The Division of Subsistence conducted a comprehensive survey in Saint Paul and Saint George for 1994 and 372 salmon comprising all five species were reported harvested in Saint Paul and 243 pink salmon only in Saint George (Mishler et al. 1996b; 1996a). In 2016, Saint Paul Island residents reported that occasionally a small number of salmon of all five species wash onshore or enter a salt water lagoon on Saint Paul Island and are harvested for subsistence. In 2016, the Saint Paul Tribal Council was investigating enhancement opportunities to increase the amount of salmon available for residents.¹⁷ No update on Saint Paul Tribal Council’s efforts to date are available as of this reporting.

PERSONAL USE

There are currently no personal use salmon fisheries in the Aleutian Islands Area. (5AAC 77.300–318).

16. Tyler Lawson, Division of Commercial Fisheries, Kodiak, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 13, 2021.

17. Alaska Public Media website article, “Subsistence fishing in St. Paul: Building a new subsistence resource, by Zoe Sobel, Alaska Energy Desk, Unalaska, November 1, 2016. <https://www.alaskapublic.org/2016/11/01/salmon-fishing-in-st-paul-building-a-new-subsistence-resource/>. Accessed online October 8, 2021.

OTHER SUBSISTENCE FISHERIES IN THE ALEUTIAN ISLANDS AREA

The Division of Subsistence conducted comprehensive subsistence harvest surveys for all resources in all of the Aleutian Islands communities except Adak in the 1990s. The most recent comprehensive study conducted was in Akutan for the 2008 study year (Fall et al. 2012:13–92). All harvest data for these communities listed by year of study are available on Community Subsistence Information System (CSIS).

Nonsalmon Fish Harvests

The communities in the Aleutian Islands Area rely on a variety of nonsalmon harvested from the Pacific Ocean and Bering Sea, for commercial and subsistence purposes. Division of Subsistence baseline resource surveys conducted in the 1990s note that residents harvested many types of finfishes including halibut, cod, rockfish, sablefish, Dolly Varden and greenling (Fall et al. 2012; CSIS). In a 2008 study in Akutan, nonsalmon fish accounted for 25% of the total subsistence harvest by weight, the second highest resource category after salmon (45%) (Fall et al. 2012: 42). Most of the nonsalmon fish harvested by weight was halibut, cod, and char. (Fall et al. 2012:33–34). In 2009, Akutan residents harvested 132 lb per person of nonsalmon fish and 74 lb per person of salmon (Reedy-Maschner and Maschner 2012:138–139). In 1990, Nikolski harvested 383 lb per person of nonsalmon fish, most of which was halibut (183 lb per person) (CSIS). In 1994, Saint Paul harvested 117 lb per person of nonsalmon fish which was mostly halibut (Mishler et al. 1996a).

A subsistence salmon permit is required for the harvest of rainbow/steelhead trout and Arctic char/Dolly Varden in Unalaska and Adak Districts only, although only salmon harvests must be reported on the permit.¹⁸ Fish other than salmon may be taken by gear specified in 5 AAC 01.010, except that under state regulations, halibut may be taken only by a single handheld line with no more than two hooks attached, while federal rules allow up to 30 hooks using a longline (skate), as well as rod and reel or handline.

The only regular harvest assessment program in the Aleutian region for fish other than salmon is for halibut. Since 2000, Halibut are harvested predominantly by longline and rod and reel in the subsistence fishery. Federal regulations (68 FR 18145) allow for qualified residents of the Aleutian Island communities to be eligible to participate in the federal subsistence halibut fishery. A Subsistence Halibut Registration Certificate (SHARC) issued by the National Marine Fisheries Service (NMFS) must be obtained to participate. Through annual grants provided by NMFS, the Division of Subsistence conducts an annual mail-out survey to SHARC holders to estimate the subsistence halibut harvests in Alaska. Harvest estimates of subsistence halibut for the Aleutian Islands Area are available for 2018 (Fall and Koster 2020).

Marine Invertebrate Harvests

The use of shellfish for subsistence is important for communities in the Aleutian Islands. Based on systematic household surveys conducted by the Division of Subsistence in Akutan in 2008, marine invertebrate harvests, mostly octopus (89%), accounted for 10% of the top ten resources harvested as measured in pounds usable weight per household harvested (Fall et al. 2012:13, 42, 45). In earlier studies conducted in the Aleutian Island communities the 1990's and in 2008, marine invertebrate harvests included a wide variety of shellfish such as Dungeness crab, king crab, Tanner crab, and variety of clams including butter and razor clams, and chitons (bidarkies) (CSIS; Fall et al. 2012:19, 39, 40, 45).

ADF&G, Division of Commercial Fisheries, manages all commercial and subsistence invertebrate and shellfish fisheries, occurring in the state waters of Alaska of the Bering Sea and Aleutian Islands. In 1999 the BOF found that king crab, Tanner crabs are customarily and traditionally used for subsistence in the Alaska Peninsula- Aleutian Islands Area. In 2000 the BOF amended that finding to include Dungeness crab and miscellaneous shellfish, and also made ANS determination for king crab, Tanner crab, Dungeness crab, and miscellaneous shellfish (5 AAC 02.566 (a)(b)(c)(d). The board also determined that all shellfish are

18. Miranda Westphal, Division of Commercial Fisheries, Unalaska personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 27, 2021

customarily and traditionally taken or used for subsistence in the Bering Sea Area, including those waters draining into the Bering Sea (5 AAC 02.608).¹⁹

In the Aleutian Islands, permits for the taking of shellfish for subsistence purposes are required for Akutan, Akun, and Unalaska Islands (between 168° W long and 164° 44.72' W long) for king and Tanner crabs (5 AAC 02.506). Subsistence harvests of king and Tanner crabs in 2018 are documented in Nichols et al. (2019). In 2018, king and Tanner crab were harvested with subsistence effort primarily focused in Unalaska Bay. Crab were taken with pot gear, though some users reported taking crab using SCUBA gear. ADF&G issued 182 subsistence permits, of which 127, or 70%, were returned. The returned permits account for a reported harvest of 685 Tanner crab and 22 red king crab. Harvest of Tanner crab ranged from 0 to 268 crab per permit holder and harvest of red king crab ranged from 0 to 10 crab per permit holder (Nichols et al. 2019:68–69). Most of the permits issued annually are for use on Unalaska Island. Although permits are required for Akutan, ADF&G rarely receives a request for a permit for this Island. ADF&G presumes that shellfish harvests occur there but have no record of current shellfish harvests.²⁰

19. ADF&G Division of Subsistence, Anchorage office, C&T and ANS BOF findings records on file.

20. Miranda Westphal, Division of Commercial Fisheries, Unalaska, personal communication via email, with Lisa Hutchinson-Scarborough, Division of Subsistence, October 25, 2021.

Table 9-1.—Historical subsistence salmon harvests, Unalaska District, 1985–2018.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	65	22	0	897	208	20	1,293	2,418
1986	121	28	0	3,449	847	375	2,468	7,139
1987	81	49	0	1,097	378	151	1,780	3,406
1991	77	45	3	966	390	83	2,627	4,069
1989	74	42	2	1,112	470	36	1,292	2,912
1990	94	37	4	2,357	681	100	1,428	4,570
1991	89	48	0	1,294	666	45	1,075	3,080
1992	144	102	7	2,739	587	11	1,723	5,067
1993	139	102	17	2,831	697	136	587	4,268
1994	150	120	1	2,759	774	48	1,053	4,635
1995	160	129	23	4,484	484	23	791	5,805
1996	189	123	5	1,107	1,033	49	492	2,686
1997	221	163	8	4,192	864	110	554	5,728
1998	206	161	4	3,317	731	26	729	4,807
1999	208	154	0	2,707	1,327	13	1,018	5,065
2000	212	167	7	3,077	570	24	325	4,003
2001	204	165	4	3,850	563	100	763	5,280
2002	231	180	2	5,267	643	63	277	6,252
2003	227	179	27	4,844	558	41	408	5,878
2004	209	170	4	4,373	792	26	343	5,538
2005	217	152	7	4,233	356	15	587	5,198
2006	199	159	10	1,722	363	92	745	2,932
2007	178	126	16	2,391	207	36	750	3,400
2008	204	161	2	1,833	726	115	567	3,243
2009	215	130	4	3,399	709	194	369	4,675
2010	217	170	2	3,959	307	26	388	4,682
2011	230	156	10	5,359	275	73	382	6,099
2012	211	169	16	4,911	431	35	196	5,589
2013	242	197	3	3,978	208	69	233	4,491
2014	249	173	2	2,960	400	12	319	3,693
2015	203	172	5	3,371	423	27	350	4,176
2016	236	177	35	4,947	289	32	268	5,571
2017	187	145	0	2,220	263	42	344	2,869
2018	182	154	27	1,837	483	74	142	2,563
5-year average (2013–2017)	223	173	9	3,495	317	36	303	4,160
10-year average (2008–2017)	219	165	8	3,694	403	63	342	4,509
Historical average (1985–2017)	178	129	7	3,091	552	68	804	4,522

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 9-2.—Estimated subsistence salmon harvests by community, Unalaska District, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Anchorage	7	5	0	0	20	0	0	20
Dutch Harbor	81	68	18	734	169	8	1	930
Eagle River	1	1	0	0	0	0	0	0
Homer	1	1	0	0	0	0	0	0
Palmer	1	1	0	0	0	0	0	0
Unalaska	89	76	9	1,007	294	66	140	1,516
Wasilla	1	1	0	36	0	0	0	36
Wrangell	1	1	0	60	0	0	0	60
Total	182	154	27	1,837	483	74	142	2,563

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 9-3.—Historical subsistence and personal use salmon harvests, Adak District, 1988–2018.

Year ^a	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1988	43	29	0	503	23	0	150	676
1989	64	47	0	382	0	0	117	499
1990	61	29	0	800	47	0	41	888
1991	37	31	0	281	6	0	34	321
1992	52	41	0	572	30	0	4	606
1993	36	26	0	638	12	0	26	676
1994 ^b	0	0	0	0	0	0	0	0
1995	4	3	0	156	0	0	0	156
1996	6	6	0	91	0	0	0	91
1997 ^c	18	12	0	229	0	4	0	233
1998	13	10	0	399	0	0	25	424
1999	5	5	0	164	4	0	0	168
2000	13	12	0	265	4	0	78	347
2001	17	14	0	474	19	0	17	510
2002	3	3	0	150	0	0	0	150
2003	6	5	0	363	0	0	0	363
2004	6	4	0	336	0	0	0	336
2005	2	2	0	188	0	0	0	188
2006	1	1	0	74	0	0	1	75
2007	9	6	0	488	3	0	38	529
2008	10	6	0	397	0	0	19	416
2009	1	1	0	25	0	0	0	25
2010	2	1	0	50	0	0	0	50
2011	0	0	0	0	0	0	0	0
2012	2	2	0	25	0	0	0	25
2013	4	3	0	30	12	0	80	122
2014	0	0	0	0	0	0	0	0
2015	5	1	0	55	0	0	0	55
2016	0	0	0	0	0	0	0	0
2017	2	1	0	50	0	0	0	50
2018	2	1	0	460	0	0	0	460
5-year average (2013–2017)	2	1	0	27	2	0	16	45
10-year average (2008–2017)	3	2	0	63	1	0	10	74
Historical average (1988–2017)	14	10	0	240	5	0	21	266

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Personal use fishery 1988 to 1997; subsistence fishery 1998 to present.

b. Navy presence at Adak was reduced beginning in 1994; no requests for permits that year.

c. In 1997, a number of civilians were hired to work on a clean-up effort at Adak.

Table 9-4.–Estimated subsistence salmon harvests by community, Adak District, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak	2	1	0	460	0	0	0	460
Total	2	1	0	460	0	0	0	460

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 9-5.–Estimated subsistence harvests of salmon by residents of Akutan, Atka, and Nikolski.

Community	Year	Estimated number of harvesting households	Estimated salmon harvest ^a						Total
			Chinook	Sockeye	Coho	Chum	Pink	Other/ unknown	
Akutan	1991	24	10	1,872	429	36	915	6	3,268
Akutan	2002	NA	0	809	147	44	70	0	1,070
Akutan	2003	NA	3	1,270	127	0	275	0	1,675
Akutan	2008	21	2	1,489	452	54	1,366	0	3,363
Atka	1992	18	4	502	465	24	459	0	1,454
Atka	1994	23	10	394	583	133	1,267	0	2,387
Atka	2003	NA	8	1,187	333	0	264	0	1,792
Nikolski	1991	12	0	957	547	54	327	17	1,902
Nikolski	2002	NA	0	312	643	0	182	0	1,137
Nikolski	2003	NA	12	287	270	0	35	0	604

Sources ADF&G Division of Subsistence household surveys, (ADF&G 2009), Davis (2005).

a. Includes harvests for home uses by all methods, including subsistence nets, rod and reel, and removal from commercial harvests.

NA The estimated number of harvesting households cannot be calculated using available data.

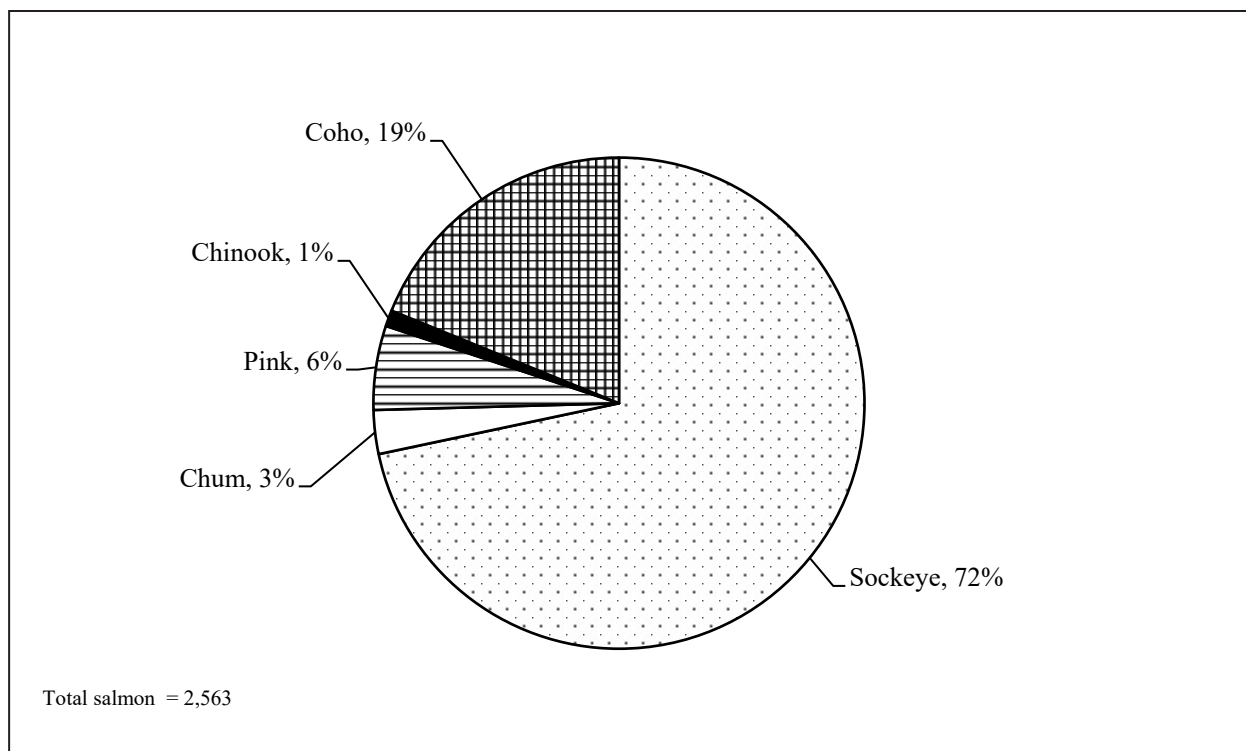


Figure 9-1.—Composition of Unalaska District estimated subsistence salmon harvest by species, 2018.

CHAPTER 10: KODIAK AREA

INTRODUCTION

The Kodiak Management Area (KMA or Kodiak Area) encompasses the waters of the Gulf of Alaska surrounding the Kodiak Archipelago and those waters along that portion of the Alaska Peninsula that drains into Shelikof Strait (Figure 10-1). The portion of the Kodiak Island Borough's population living along the island's road system is the largest rural community in Alaska (as defined by the Federal Subsistence Board [FSB]) and the largest community outside the nonsubsistence areas defined by the Alaska Joint Board of Fisheries and Game (Figure 10-1). The population of the Kodiak Island Borough according to the State of Alaska Department of Labor and Workforce Development (13,099 in 2018) comprises all individuals residing on Kodiak and nearby islands; however, this population is often distinguished by which communities have access to the road system. Communities along the Kodiak Island road system include Kodiak City (5,923), Kodiak Station (U.S. Coast Guard base; 1,295), Womens Bay (778), Chiniak (44), and the remainder of the road-accessible Kodiak Island Borough (this includes all residents of Kodiak Island who are on the road system but are not identified within the population of a census designated place [CDP] or city) (4,335). For the purposes of this report we include Chiniak as part of the Kodiak Road system because a road links it with Kodiak City, although Chiniak uses its own postal code. Communities (and their estimated populations in 2018) within the Kodiak Island Borough that are located off the road system include Akhiok (81), Aleneva CDP (16), Karluk (29), Larsen Bay (80), Old Harbor (223), Ouzinkie (153), and Port Lions (142).¹

SALMON HARVEST IN THE KODIAK AREA

Salmon Harvest Regulations

Permits have been required to harvest salmon for subsistence purposes in the Kodiak Area since 1962 (5 AAC 01.530(a)). Since 1990, all Alaska state residents, and only residents, have been eligible to participate in subsistence salmon fishing in the Kodiak Area under state regulations. Each year, a new permit is mailed to any household that returned a completed permit the previous year. Permits are also available by request in person, by phone, or by mail at the ADF&G Kodiak office. All permit holders are required to record their harvest on the permit, listing areas fished by date and salmon harvested by species, and return the permit, regardless of whether they fished, no later than February 1 of the year following when the permit was issued (5 AAC 01.530(c)). Permits may be returned in person or via mail, email, fax, or phone to the Kodiak ADF&G office. ADF&G sends reminder postcards in February to permit holders who have not returned their permits (Anderson et al. 2016b).

Legal gear for subsistence salmon fishing in the Kodiak Area under state regulations includes gillnets (maximum length 50 fathoms) and seines. Commercial purse seines may be used for subsistence fishing only before June 1 and after September 15. Salmon seine vessels cannot be used for subsistence salmon fishing 24 hours before, during, and 24 hours after any period open for commercial salmon fishing. Fishers are required to physically attend their net while fishing and have their valid subsistence salmon permit with them; they should also record the numbers of all fish harvested on the permit before concealing the fish from plain view or transporting them from the harvest area.

Generally, fishing is open year-round from 6:00 AM to 9:00 PM daily, and the entire Kodiak Management Area is open to subsistence salmon fishing. Specific closed waters include the freshwater systems of Afognak Island—because they are small, easily accessible, and at risk of overexploitation—and some areas near heavily exploited salmon systems are closed to subsistence fishing by regulation (5 AAC 01.525) (Anderson et al. 2016a).

1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed April 1, 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>.

In most of the Kodiak Management Area, there is no annual limit for subsistence salmon harvests. However, in the fresh waters of Kodiak Island, east of the line from Crag Point south to the westernmost point of Saltery Cove, including the waters of Woody and Long islands, and the salt waters bordering this area within a mile of Kodiak Island, excluding the waters bordering Spruce Island, 25 salmon may be taken by the permit holder annually plus an additional 25 salmon for each member of the same household whose names are listed on the permit. Fishers can obtain an additional permit if they can demonstrate that additional fish are needed.

The department has the authority to restrict or liberalize subsistence fishing opportunities in season, through emergency orders, in years when salmon runs to a particular system are weaker or stronger than expected. Regulations for the Karluk River specify that if the department projects that the biological escapement goal for Chinook salmon will not be met and the sport fishery is restricted, it may restrict, by emergency order, the retention of king salmon in the subsistence fishery in the Karluk watershed (5 AAC 01.548). Since the early 2000s, declining escapement levels of sockeye salmon to Afognak Lake have been a concern and have led to various emergency closures and restrictions on subsistence, sport, and commercial fisheries in the Afognak (Litnik) Lake drainage.² In 2018, an emergency order closed the waters of Afognak Bay and the Buskin River to subsistence salmon fishing from June 16–August 14. Additionally, the department issued an emergency order to increase closed waters for subsistence fishing in Pasgshak Bay and Saltry Cove from July 12–August 14.³

In 2018, federal regulations governing subsistence salmon fishing by eligible rural residents of the Kodiak Island Borough in federally managed public waters of the Kodiak Area were generally identical to the state regulations summarized above, except that rod and reel (in addition to gillnets and seines) was legal subsistence gear under federal rules. Another difference was that federal regulations allowed subsistence salmon fishing 24 hours a day. A list of federal public waters closed to subsistence salmon fishing in the Kodiak area is available in the 2017–2019 Subsistence Management and Regulations for the harvest of fish and shellfish on Federal Public Lands and Waters in Alaska published by the Federal Subsistence Management Program.⁴ According to Cinda Childers, Refuge Clerk in the Kodiak National Wildlife Refuge (KNWR), refuge staff have issued a separate subsistence salmon fishing permit for federally-qualified residents of the Kodiak Island Borough from the KNWR office in Kodiak since approximately 2010.

Salmon Harvest Assessment Program

ADF&G staff in the Division of Commercial Fisheries' Kodiak office manage the annual subsistence salmon harvest assessment program for the Kodiak Area. Over the years, a consistent challenge for the program has been the large number of permits that annually are returned to ADF&G by the U.S. Postal Service marked as “undeliverable.” No record is maintained regarding the number of “undeliverable” permits. As a result, the actual number of permits issued per year is unknown and harvest reports have not been expanded for this area since 1999 (Table 10-1). Results of the harvest monitoring program therefore reflect only the reported harvests of subsistence fishers who returned permits. Furthermore, the permit harvest assessment program does not collect noncommercial salmon harvests with rod and reel gear or retained commercial harvests. Rod and reel gear is legal subsistence gear under federal subsistence regulations and should be recorded on federal subsistence permits. Annual rod and reel harvests completed under state sport

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2. Alaska Department of Fish and Game Division of Commercial Fisheries, “Kodiak Subsistence News Release,” news release, June 14, 2018. Accessed April 20, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/915703063.pdf>
 3. Alaska Department of Fish and Game Division of Commercial Fisheries, “Kodiak Subsistence News Release,” news release, July 10, 2018. Accessed April 20, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/940765442.pdf>
 4. U.S. Fish and Wildlife Service. n.d. [2013], “Subsistence Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska, April 1, 2017–March 31, 2019.” Federal Subsistence Board, Office of Subsistence Management, Accessed April 1, 2020. https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_1/Tetlin/PDF/2017-2019_fisheries_regulations-web_reduced.pdf

fishing regulations are tracked through a statewide mail-out survey of a random sample of sport fish license holders, managed by the Division of Sport Fish. Commercial fishermen, both residents and non-residents, may retain legally harvested salmon for their own use including personal consumption or for bait but not for sale (AAC39.010b) and must be reported on an ADF&G fish ticket at the time of landing (5 AAC 18.355(b)). This is often referred to as “home pack.” More information on the harvest and use of “home pack” and rod and reel-caught salmon is needed for a better understanding of the household salmon harvest in the Kodiak Area.

Multiple efforts have been made to understand issues with salmon harvest permit reporting. During interviews in early 2001, Division of Subsistence staff and fishery managers within the Division of Commercial Fisheries expressed uncertainty regarding the accuracy of subsistence salmon harvest data collected through the Kodiak Area permit program. ADF&G staff suspected that a substantial amount of subsistence harvests occurred without permits, especially in areas off the Kodiak Island road system. In response, staff from the Division of Commercial Fisheries and the Division of Subsistence visited six communities off the road system in the Kodiak Island Borough (Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions) in June 2001 to implement an area permit vendor program. ADF&G Staff trained a resident in each community to issue subsistence fishing permits and conducted outreach activities to encourage subsistence fishers to obtain permits, record their harvests, and return the permits at the end of the season.

A separate review of the annual permit program by the Division of Subsistence in Kodiak Island communities during 2004–2006 concluded that unreturned or lost permits contributed to the ongoing underestimation of the annual subsistence salmon harvest, and that communication between fisheries managers and community residents about the importance of an accurate annual harvest estimate should be improved (Williams et al. 2010). Additional salmon harvest research conducted in Kodiak City, Larsen Bay, and Old Harbor between 2012 and 2014 came to a similar conclusion on the importance of communication between managers and residents: Division of Subsistence researchers showed that outreach on subsistence fishing regulations and permitting is a continuing need in Kodiak Island communities, and the final report for the study called for a revision of the language on the subsistence salmon permit to better reflect the actual language in the regulation book, which states that additional permits are available upon request (Marchioni et al. 2016:41).

Finally, additional information on salmon harvest is collected outside of the permit program through systematic in-person household harvest surveys conducted by the ADF&G Division of Subsistence. The Division has periodically collected subsistence harvest data in Kodiak Island communities for over 30 years (see for example (Fall 2006; Fall and Utermohle 1995; 1999; Williams et al. 2010; Sill et al. 2021). Results of these surveys are reported in the Community Subsistence Information System (CSIS), a depository of Alaska subsistence information maintained by the Division of Subsistence. The Division plans to conduct comprehensive household harvest surveys on the Kodiak road system in 2022 to produce current estimates of salmon and nonsalmon fish used for subsistence.

Subsistence Salmon Harvests in 2018

In 2018, a total of 1,311 subsistence permits with harvest information were returned to ADF&G (tables 10-1 and 10-2). Of these, 1,092 (83%) were returned by residents of the Kodiak Island Borough, 217 (or 17%) were returned by residents of other Alaska communities, and two (<1%) had been issued to Alaska residents who were serving in the military outside of the state (Table 10-2).

The total reported subsistence salmon harvest for the Kodiak Area in 2018 was 17,459 fish, less than the reported 2017 harvest and well below the recent 5-year (2013–2017) and 10-year (2008–2017) averages of 26,390 salmon and 28,364 salmon, respectively (Table 10-1). The lower reported harvest numbers correspond with the abnormally low return of sockeye salmon to the Buskin River system in 2018 (Polum et al. 2019:37). Residents of Kodiak Island Borough communities harvested 97% of the harvest from the Kodiak Area (16,929 salmon), and permit holders from other Alaska communities harvested the remaining 3% (530 salmon). Kodiak Island Borough residents harvested significantly less than the 24,352 salmon reported harvested in these communities in 2017. More specifically, residents living along the Kodiak

Island road system (Kodiak city and other road system residences including Chiniak) harvested 9,927 salmon (56% of total area harvest for Kodiak Island Borough Residents) (Table 10-2; Figure 10-2). In comparison, the six villages and other populated remote locations that do not have access to the road system surrounding Kodiak City harvested 7,002 salmon (41%) in 2018 (Table 10-2, Figure 10-2). Of the Kodiak Area harvest, Kodiak City harvested the most, 9,839 salmon (56%) followed by Ouzinkie at 24%, Larsen Bay at 8%, Akhiok at 5%, Port Lions and Old Harbor at 2% each, and road-accessible Chiniak at less than 1%. Residents of other Alaska communities reported a harvest of 530 salmon, 3% of the total (Figure 10-2).

In 2018, the Kodiak Area subsistence salmon harvest was composed of 13,549 (78%) sockeye salmon, 3,174 (18%) coho salmon, 449 (3%) pink salmon, 190 (1%) chum salmon, and 97 (1%) Chinook salmon (Table 10-1; Figure 10-3). The reported sockeye salmon harvest in 2018 was drastically less than the previous year's reported sockeye salmon harvest of 22,374 fish, and less than the 5-year average of 22,239 sockeye salmon and the recent 10-year average of 23,462 fish. The decline in sockeye salmon harvest corresponds with the abnormally low weir count on the Buskin River of 4,284 sockeye (Polum et al. 2019:37). The 2018 coho salmon harvest of 3,174 fish was 65% more than the 2017 reported harvest of 1,918 fish, and is 8% higher than the recent 5-year average of 2,937 fish, but 9% lower than the 10-year average of 3,479 fish. The chum salmon reported harvest in 2018 was 31% lower than the 2017 harvest of 274 fish, <1% lower than the recent 5-year average and 6% lower than the 10-year average. The pink salmon reported harvest in 2018 was very similar to the 2017 harvest of 446 fish, but 49% and 58% lower than the recent 5-year and 10-year averages. Chinook salmon reported harvests in 2018 were 17% higher than the 2017 harvest of 83 fish, but 28% and 34% lower than the recent 5-year and 10-year averages of 135 and 147 fish, respectively.

According to Anderson et al. (2016a), historically the most-utilized harvest areas for subsistence salmon fisheries in the Kodiak Management Area are the Buskin and Pasagshak rivers located in the north end of Kodiak Island and the southeast side of Afognak Island at Litnik. Additional harvest areas documented during the recent research by the Division of Subsistence researchers are presented in Marchioni et al. (2016).

Records received from the Kodiak National Wildlife Refuge office indicate that in 2018, a total of 36 federal permits were issued, a decrease of 20 permits from 2017. The total 2018 estimated harvest based upon 24 returned permits was 164 fish, 119 sockeye salmon and 45 pink salmon. Estimated sockeye harvests in 2018 decreased from the 487 harvested in 2017 (Table 10-4).

As discussed earlier, the subsistence salmon harvest estimates for the Kodiak Area based on household harvest surveys and reported in the CSIS have often been substantially higher than harvests reported through permit returns. Delivery of permits to subsistence fishers living in communities outside of the road system, including Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions, has proven problematic in the past and continues to be a challenge. As mentioned above, an outreach effort and an area permit vendor program were implemented in 2001 to address this issue. These actions appeared to result in increased participation in the permit program in these six communities. A total of 100 permits were returned in 2000; from 2001 through 2007 between 189 and 143 permits were returned (Table 10-3). The yearly reported subsistence salmon harvests during this time were generally higher. Since 2008, however, the number of returned permits from these communities has not exceeded 125. (Table 10-3). In 2018, the 87 permits returned by the six villages are the second fewest number of returned permits on record. During this year, a limited local vendor program with the Tribal Councils was in place in Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. The Kodiak office contacts the tribal councils each year to ensure they have enough permits, regulation booklets, and to obtain a list of individuals who received a permit the previous year.⁵ Other than the work conducted by Division of Subsistence researchers and project partners during an ethnographic study in 2012–2013 of subsistence salmon harvests and uses in Kodiak

5. Jacqueline Keating, Division of Subsistence, Subsistence Resource Specialist, personal communication with Amanda Dorner, Division of Commercial Fisheries, Kodiak office, April 20, 2020.

City, Larsen Bay, and Old Harbor (Marchioni et al. 2016), no formal outreach efforts have occurred in the small communities on Kodiak Island since 2014.

Retention of Salmon Taken in Commercial Fisheries in 2018

In 2018, 75 commercial fishermen in the Kodiak Management Area reported on fish tickets that they retained for personal or home use a total of 6,774 salmon from their commercial harvests (Table 10-5). This included 92 Chinook salmon, 3,802 sockeye salmon, 2,630 coho salmon, 214 pink salmon, and 36 chum salmon. Compared to 2017, commercial fisherman retained nearly 1,500 fewer coho salmon, 4,471 fewer pink salmon, 126 fewer sockeye salmon, 220 fewer Chinook, and 64 fewer chum salmon. The composition of retained harvests in 2018 was similar to the subsistence fishery in that sockeye salmon constituted the greatest percentage (56%), followed by coho salmon (39%), pink salmon (3%), Chinook salmon (1%), and chum salmon (<1%) (Table 10-5; Figure 10-4;). Commercial fishermen retained 49% less from their commercial harvests in 2018 than they did in 2017, 31% less fish than the recent 5-year average of 9,768 fish, and 20% less fish than the recent 10-year average of 8,491 fish (Table 10-5). This is likely related to the low sockeye salmon return in 2018 that also affected subsistence harvests.

OTHER SUBSISTENCE FISHERIES IN THE KODIAK AREA

Finfishes

In the Kodiak Area, a permit is also required to fish for herring, trout, char, or crab (5 AAC 01.530; 5 AAC 02.405); only one permit is issued through the Kodiak ADF&G office and applies to all the required species. The permit has space for a person to record harvests of salmon, herring, and crab, but reporting of trout and char is not required. In 2018, 1,302 lb of herring was reported on subsistence permits, which was less than the 2017 herring harvest of 2,263 lb and less than the recent 5-year average (2,027 lb) and only half of the recent 10-year average (2,654 lb from 2008–2017) (Table 10-6). Fish other than those listed above may be taken at any time for subsistence purposes without a permit; however there are bag limits and gear restrictions for the taking of halibut, lingcod, and rockfish in the Kodiak Area under state regulations (5 AAC 01.510; 5 AAC 01.520; 5 AAC 01.545). Halibut may also be taken for subsistence by qualified residents by obtaining a federal subsistence halibut registration certificate. Subsistence harvest data are currently available for communities and tribes in the Kodiak Area from 2003–2012 (Fall and Koster 2014); 2014 (Fall and Lemons 2016); 2016 (Fall and Koster 2018); and 2018 (Fall and Koster 2020). Due to a reduction in funding, since 2012 Pacific halibut subsistence harvest estimates are only collected biannually.

There are no annual harvest assessment programs for other subsistence finfish fisheries in the Kodiak Area. Harvest estimates based on comprehensive household surveys conducted by the Division of Subsistence are available in the CSIS for freshwater and marine species spanning multiple years for each Kodiak Island Borough community. Fish harvested in the largest quantities and used by the majority of households include Pacific cod, lingcod, various species of flounders, Pacific halibut, rockfishes, and Arctic char/Dolly Varden.

Shellfish

Kodiak Island residents harvest a variety of shellfish, including crabs, clams, cockles, mussels, chitons, octopuses, sea urchins, and others, but regulations only concern the harvest of Dungeness, Tanner, and king crab. Regulations require catch reporting on a subsistence permit and establish sex, size, bag and possession limits, and gear limits and requirements for all species of crabs as well as seasons for king crab fishing. In 2018, a total of 5,941 crab were reported on subsistence permits, of which 231 were king crab, 1,542 were Dungeness crab, and 4,168 were Tanner crab. The total crab harvest in 2018 was significantly greater than the 2017 combined harvest of 4,068 crab (Table 10-7). King crab harvests did not change substantially, but the harvest of Dungeness crab reported in 2018 was 191% more than the 529 reported in 2017, and the tanner crab reported in 2018 was 25% more than the 3,338 crab in 2017. The total number of reported crab harvest for 2018 is a 31% increase from the recent 5-year average of 4,521 crab, and a 12% decrease from the 10-year average of 6,759 crab.

Table 10-1.—Historical subsistence salmon harvests, Kodiak Area, 1986–2018.

Year	Permits		Reported salmon harvest ^a					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1986	1,244	1,002	90	14,391	6,998	605	2,371	24,455
1987	1,124	880	101	13,198	6,463	1,299	2,421	23,482
1988	1,098	699	108	10,081	4,291	377	1,320	16,177
1989	2,800	717	43	12,638	4,123	419	1,553	18,776
1990	2,900	1,167	131	17,959	8,627	655	1,605	28,977
1991	1,406	1,225	177	21,835	8,208	714	1,743	32,677
1992	1,561	1,195	318	20,684	8,643	643	1,646	31,934
1993	1,496	959	243	19,471	7,176	838	2,696	30,424
1994	2,550	1,464	205	17,962	7,491	440	1,758	27,856
1995	1,950	1,194	175	19,416	5,603	293	1,548	27,035
1996	1,567	1,390	253	28,287	5,117	381	1,125	35,163
1997	2,098	1,638	383	33,293	6,369	234	1,458	41,737
1998	1,841	1,126	350	20,459	5,348	214	1,412	27,783
1999	ND	1,438	397	26,497	4,932	388	1,266	33,480
2000	ND	1,376	273	24,873	5,399	341	742	31,628
2001	ND	2,153	273	33,833	5,920	427	1,158	41,611
2002	ND	2,271	593	32,977	6,057	350	1,665	41,642
2003	ND	2,275	500	32,104	6,096	384	1,484	40,568
2004	ND	2,240	379	30,217	5,819	261	1,395	38,071
2005	ND	1,900	431	27,002	7,447	592	2,343	37,815
2006	ND	1,906	280	22,905	6,640	441	1,827	32,093
2007	ND	1,879	207	24,556	4,630	240	1,532	31,165
2008	ND	1,637	151	20,809	4,336	168	1,128	26,592
2009	ND	1,737	159	21,852	4,570	186	1,180	27,947
2010	ND	1,890	158	22,170	4,200	273	1,266	28,067
2011	ND	1,996	122	34,037	2,367	198	1,199	37,923
2012	ND	1,866	54	23,865	2,920	166	1,154	28,159
2013	ND	1,688	119	27,757	2,528	175	826	31,405
2014	ND	1,666	183	22,617	3,915	184	573	27,472
2015	ND	1,544	186	16,053	3,057	271	1,168	20,735
2016	ND	1,512	135	20,902	2,267	160	715	24,179
2017	ND	1,448	83	22,374	1,918	274	446	25,095
2018	ND	1,311	97	13,549	3,174	190	449	17,459
5-year average (2013–2017)	ND	1,655	135	22,239	2,937	191	887	26,390
10-year average (2008–2017)	ND	1,742	147	23,462	3,479	202	1,074	28,364
Historical average (1986–2017)	ND	1,536	232	23,055	5,405	397	1,461	30,549

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. ADF&G sends permits to every permit holder who returned a permit in the previous year. The U.S. Postal Service returns a number of permits to ADF&G marked "undeliverable." No record is maintained regarding the number of "undeliverable" permits. As a result the actual number of permits issued remains unknown (ND). For this reason, harvest reports have not been expanded.

Table 10-2.—Reported subsistence salmon harvests by community and species, Kodiak Area, 2018.

Community	Permits returned	Reported salmon harvest ^a					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Akhiok	9	30	711	60	0	23	824
Chiniak	21	0	50	37	1	0	88
Kodiak (city)	984	37	6,940	2,491	121	250	9,839
Larsen Bay	17	1	1,267	20	1	22	1,311
Old Harbor	14	10	129	110	11	12	272
Ouzinkie	22	1	3,707	342	45	134	4,229
Port Lions	25	0	277	89	0	0	366
Subtotal, Kodiak Island Borough	1,092	79	13,081	3,149	179	441	16,929
Anchor Point	3	0	0	0	0	0	0
Anchorage	87	6	229	2	4	0	241
Big Lake	1	0	0	0	0	0	0
Chickaloon	1	0	0	0	0	0	0
Chugiak	4	0	0	0	0	0	0
Cold Bay	1	0	12	0	0	0	12
Cordova	3	0	0	0	0	0	0
Eagle River	12	0	34	10	0	0	44
Fairbanks	8	0	24	3	1	0	28
Fritz Creek	1	0	0	0	0	0	0
Girdwood	5	0	0	0	0	0	0
Homer	23	0	53	0	2	8	63
Juneau	4	0	56	0	4	0	60
Kasilof	3	0	0	0	0	0	0
Kenai	5	0	18	0	0	0	18
Nikiski	1	0	0	0	0	0	0
Ninilchik	4	0	0	0	0	0	0
North Pole	1	0	0	0	0	0	0
Palmer	11	12	0	10	0	0	22
Seldovia	4	0	12	0	0	0	12
Seward	1	0	0	0	0	0	0
Sitka	1	0	0	0	0	0	0
Soldotna	9	0	0	0	0	0	0
Sterling	2	0	0	0	0	0	0
Talkeetna	1	0	0	0	0	0	0
Valdez	1	0	0	0	0	0	0
Wasilla	20	0	30	0	0	0	30
Willow	0	0	0	0	0	0	0
Subtotal, other Alaska	217	18	468	25	11	8	530
Other USA ^b	2	0	0	0	0	0	0
Total	1,311	97	13,549	3,174	190	449	17,459

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. ADF&G sends permits to every permit holder who returned a permit in the previous year. The U.S. Postal Service returns a number of permits to ADF&G marked "undeliverable." No record is maintained regarding the number of "undeliverable" permits. As a result the actual number of permits issued remains unknown (ND). For this reason, harvest reports have not been expanded.

b. These are Alaska residents serving in the military who had a mailing address outside the state.

Table 10-3.—Permits returned and salmon harvests reported by the communities of Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions.

Year	Permits returned	Reported salmon harvest	Source
2000 ^a	100	6,299	Fall et al. 2002:105
2001	189	9,034	Fall et al. 2003a:117
2002	167	9,386	Fall et al. 2003b:121
2003	165	8,714	Brown et al. 2005b:123
2004	170	7,845	Fall et al. 2007a:118
2005	147	10,172	Fall et al. 2007b:105
2006	143	7,114	Fall et al. 2009a:113
2007	143	5,138	Fall et al. 2009b:105
2008	117	5,850	Fall et al. 2011:111
2009	118	5,824	Fall et al. 2012:119
2010	118	5,896	Fall et al. 2013a:129
2011	125	5,786	Fall et al. 2013b:132
2012	112	4,939	Fall et al. 2014:164
2013	98	4,798	Fall et al. 2015:173
2014	106	4,690	Fall et al. 2017:179
2015	95	4,286	Fall et al. 2018:173
2016	99	5,212	Fall et al. 2019:166
2017	84	5,073	Fall et al. 2020:169
2018	87	7,002	Table 10-2

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Local permit vendor program and outreach efforts implemented in 2000.

Table 10-4.—Federal subsistence salmon harvests by community, Kodiak Area, 2018.

Year	Community	Permits		Estimated salmon harvest					
		Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2012	Kodiak (city)	2	1	0	0	0	0	0	0
2013	Kodiak (city)	7	6	0	36	0	0	0	36
2014	Kodiak (city)	19	9	0	117	0	0	0	117
2015	Kodiak (city)	18	16	0	52	0	0	0	52
2016	Kodiak (city)	48	32	20	100	75	0	3	198
2017	Kodiak (city)	55	30	0	383	57	0	5	445
2017	Larsen Bay	1	1	0	104	0	0	0	104
2018	Kodiak (city)	35	24	0	119	0	0	45	164
2018	Larsen Bay	1	0	0	0	0	0	0	0
Historical average (2012–2017)		23	15	3	108	19	0	8	138

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 10-5.—Retention of salmon taken in commercial salmon fisheries but not sold, by species, for the Kodiak Management Area, 1997–2018.

Year	Permits	Salmon harvest ^a					Total
		Chinook	Sockeye	Coho	Chum	Pink	
1997	10	7	678	91	2	6	784
1998	4	8	26	9	0	0	43
1999 ^b							
2000 ^b							
2001	9	16	465	1,215	33	0	1,729
2002	33	57	5,447	7,542	0	566	13,612
2003 ^c	36	72	11,025	12,310	86	1,492	24,985
2004	13	8	3,052	290	10	253	3,613
2005	16	54	4,432	811	11	4,385	9,693
2006	31	100	1,442	2,786	128	1,140	5,596
2007	13	26	1,577	520	8	2,246	4,377
2008	19	76	2,513	681	0	0	3,270
2009	23	49	1,393	936	6	1,002	3,386
2010	42	160	2,330	2,976	15	6,267	11,748
2011	57	161	1,314	2,009	67	6,390	9,941
2012	57	195	4,116	1,971	31	1,413	7,726
2013	64	592	3,032	1,164	1,067	5,721	11,576
2014	77	189	3,371	2,230	18	3,035	8,843
2015	70	293	3,231	1,551	740	4,008	9,823
2016	63	239	3,270	1,175	172	571	5,427
2017	71	312	3,928	4,120	100	4,712	13,172
2018	75	92	3,802	2,630	36	214	6,774
5-year average (2013–2017)	69	325	3,366	2,048	419	3,609	9,768
10-year average (2008–2017)	54	227	2,850	1,881	222	3,312	8,491
Historical average (1997–2017)	37	138	2,981	2,336	131	2,274	7,860

Source ADF&G fish ticket database.

a. This is the number of salmon taken by CFEC permit holders with commercial gear during commercial fishing periods that was not sold, but instead was kept for the crew's own use. Prior to 1997 this data was not recorded on ADF&G fish tickets.

b. Confidential data

c. In 2003 there was concern that salmon taken as home pack were being custom processed for later sale for consumptive use. In response the Alaska Board of Fisheries passed a regulation clearly stating that these fish were not to be sold or bartered (5 AAC 39.010).

Table 10-6.—Historical subsistence crab harvests, Kodiak Area, 1995–2018.

Year	Permits		Reported pounds herring harvest ^a
	Issued	Returned	
2003	ND	16	2,180
2004	ND	24	4,173
2005	ND	37	5,385
2006	ND	33	5,199
2007	ND	37	5,167
2008	ND	21	4,024
2009	ND	36	3,966
2010	ND	26	2,773
2011	ND	27	2,385
2012	ND	24	3,260
2013	ND	24	2,393
2014	ND	17	2,164
2015	ND	13	1,515
2016	ND	15	1,800
2017	ND	11	2,263
2018	ND	8	1,302
5-year average (2013–2017)	ND	16	2,027
10-year average (2008–2017)	ND	21	2,654
Historical average (2003–2017)	ND	24	3,243

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. ADF&G sends permits to every permit holder who returned a permit in the previous year. The U.S. Postal Service returns a number of permits to ADF&G marked "undeliverable." No record is maintained regarding the number of "undeliverable" permits. As a result the actual number of permits issued remains unknown (ND). For this reason, harvest reports have not been expanded.

Table 10-7.—Historical subsistence herring harvests, Kodiak Area, 1995–2018.

Year	Permits		Reported crab harvest ^a			
	Issued	Returned	King	Tanner	Dungeness	Total
1995	1,935	1,191	2,603	2,478	1,817	6,898
1996	1,556	1,297	513	2,181	1,552	4,246
1997	2,081	1,572	292	2,764	1,667	4,723
1998	1,816	543	217	2,260	1,516	3,993
1999	ND	182	177	2,875	1,510	4,562
2000	ND	242	215	5,311	1,324	6,850
2001	ND	497	323	9,180	1,476	10,979
2002	ND	362	305	6,843	2,295	9,443
2003	ND	406	322	7,211	3,838	11,371
2004	ND	437	459	8,757	2,615	11,831
2005	ND	424	440	7,736	3,074	11,250
2006	ND	383	394	6,517	2,692	9,603
2007	ND	304	298	4,765	2,192	7,255
2008	ND	281	360	4,124	1,844	6,328
2009	ND	330	406	6,210	1,992	8,608
2010	ND	410	339	8,498	2,520	11,357
2011	ND	390	264	9,645	2,115	12,024
2012	ND	257	220	5,727	721	6,668
2013	ND	255	199	5,252	613	6,064
2014	ND	227	181	4,177	780	5,138
2015	ND	204	215	3,367	536	4,118
2016	ND	182	210	2,434	574	3,218
2017	ND	214	201	3,338	529	4,068
2018	ND	216	231	4,168	1,542	5,941
5-year average (2013–2017)	ND	216	201	3,714	606	4,521
10-year average (2008–2017)	ND	275	260	5,277	1,222	6,759
Historical average (1995–2017)	ND	460	398	5,289	1,730	7,417

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. ADF&G sends permits to every permit holder who returned a permit in the previous year. The U.S. Postal Service returns a number of permits to ADF&G marked "undeliverable". No record is maintained regarding the number of "undeliverable" permits. As a result the actual number of permits issued remains unknown (ND). For this reason, harvest reports have not been expanded.

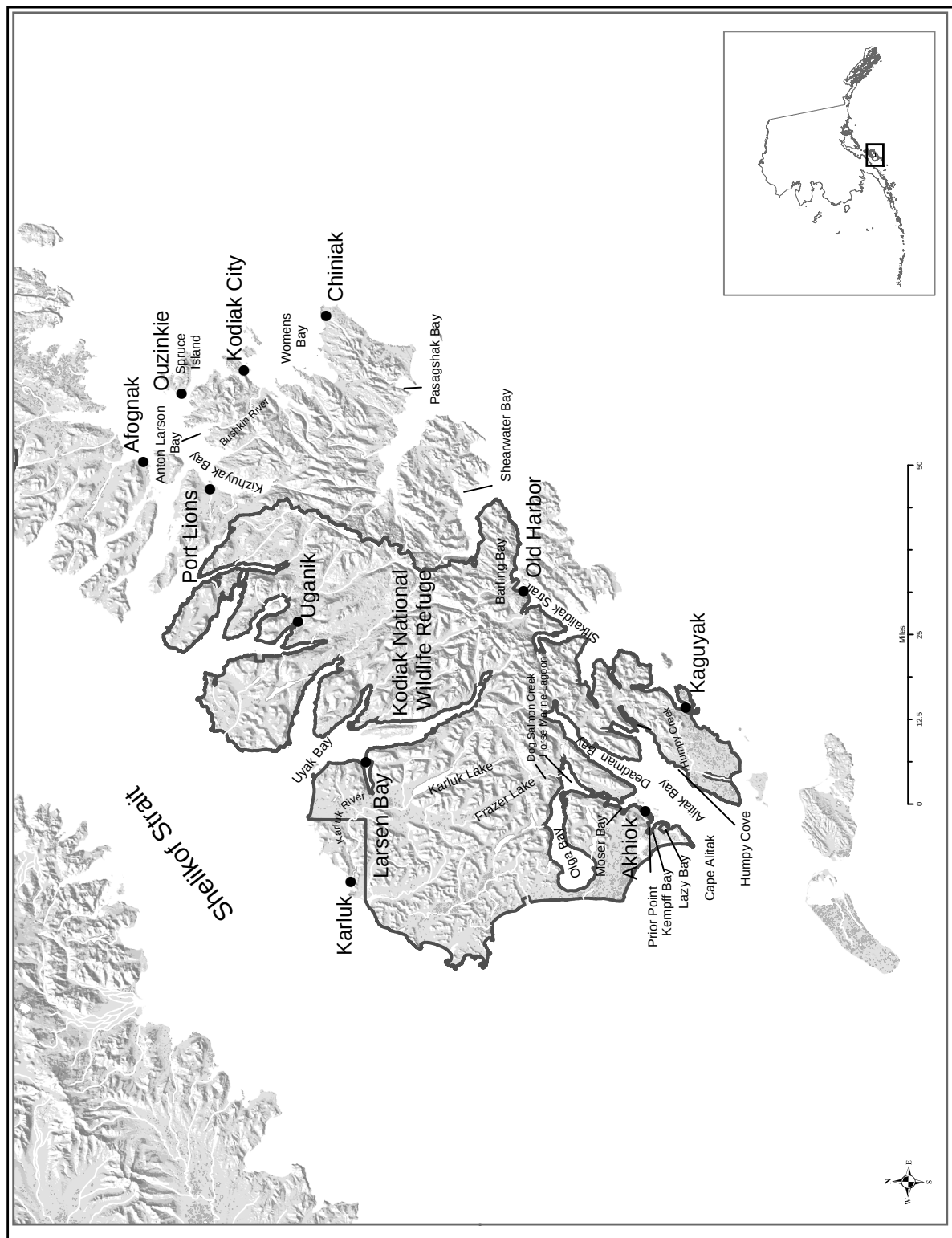


Figure 10-1.-Kodiak Area map.

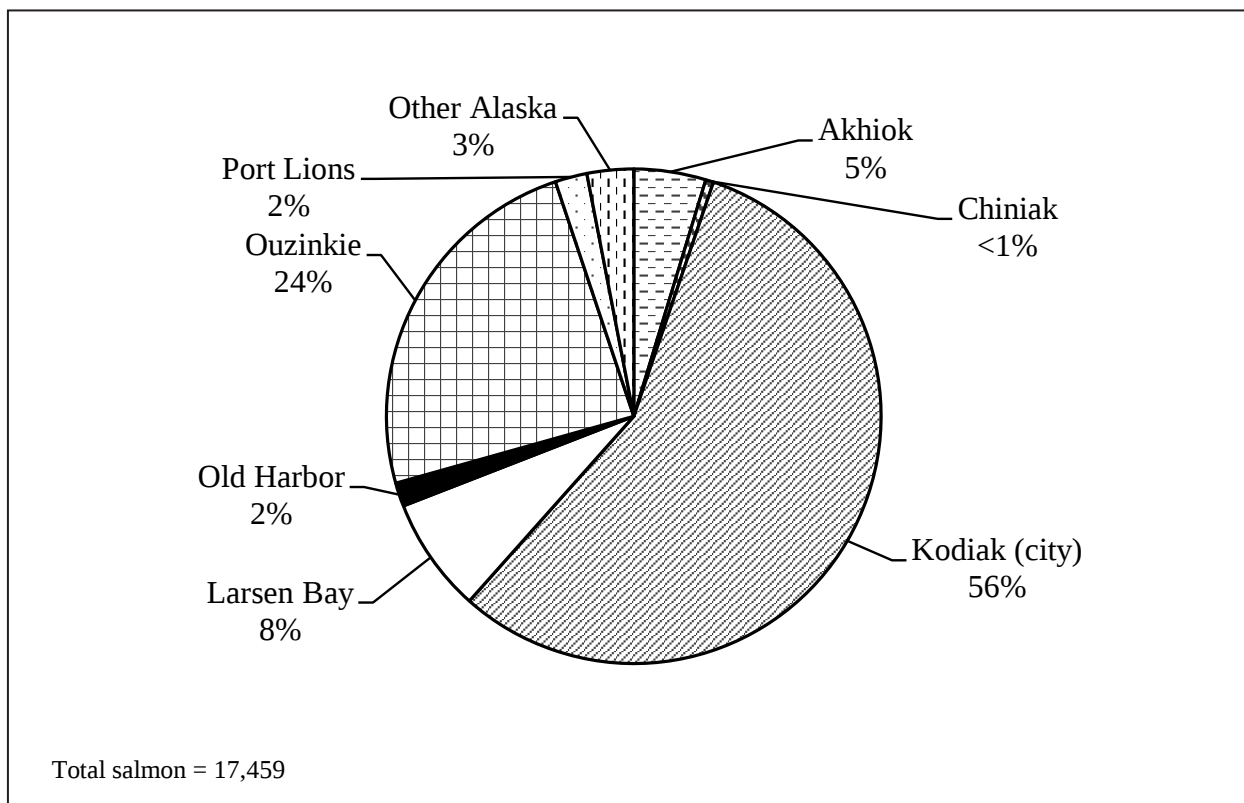


Figure 10-2.—Subsistence salmon harvests by community, Kodiak Area, 2018.

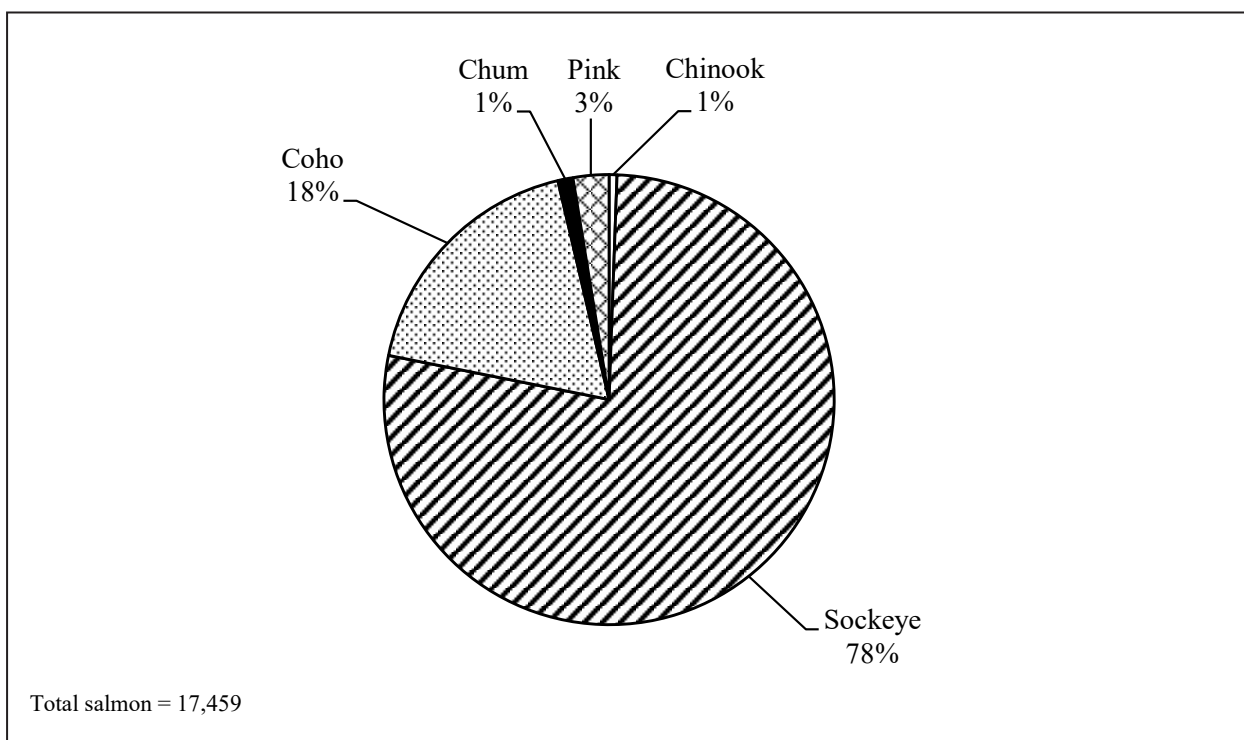


Figure 10-3.—Composition of Kodiak Area subsistence salmon harvest by species, 2018.

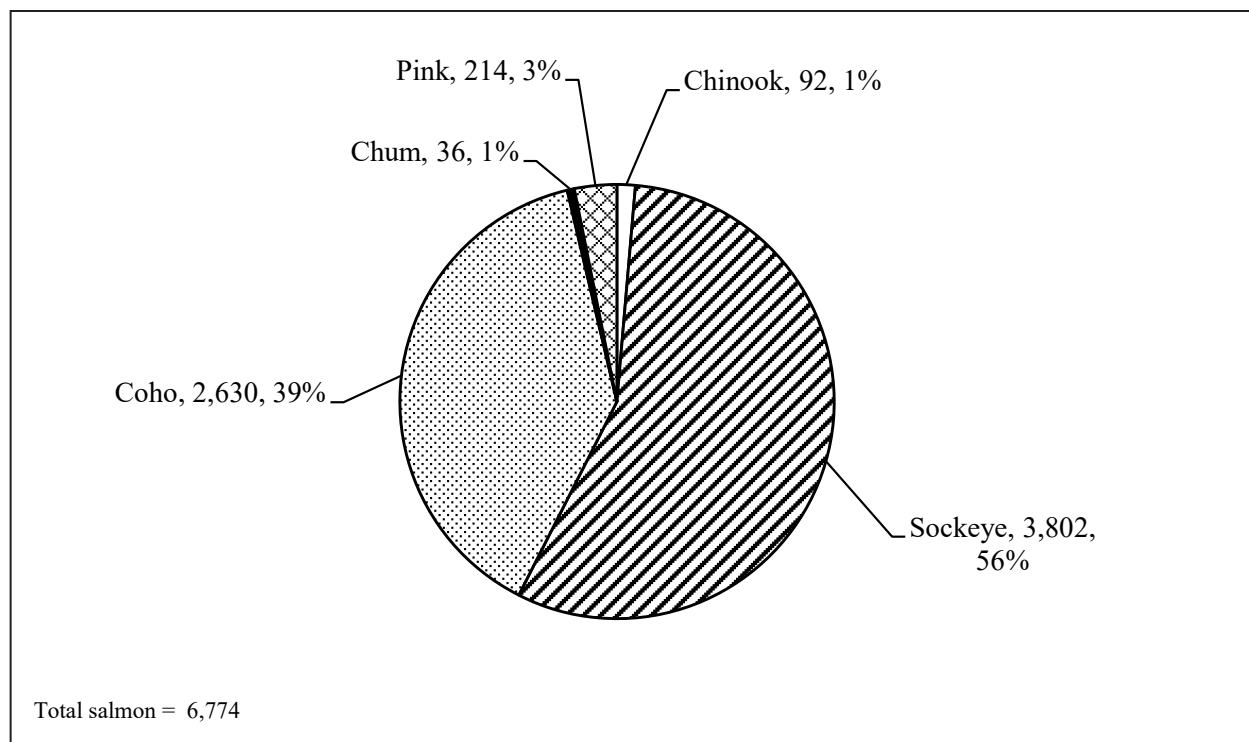


Figure 10-4.—Salmon retained from commercial harvests for home use, Kodiak Area, 2018.

CHAPTER 11: COOK INLET AREA

INTRODUCTION

As shown in Figure 11-1, most of the waters of the Cook Inlet Management Area are within the Anchorage–Matsu–Kenai Nonsubsistence Area as established by the Alaska Joint Board of Fisheries and Game [5 AAC 99.015 (3)]. However, portions of the Cook Inlet Management Area are excluded from the nonsubsistence area. The first half of this chapter outlines harvests in the eligible Cook Inlet subsistence fisheries. Areas excluded from the nonsubsistence area include the Tyonek Subdistrict; the western portion of the Susitna River drainage; waters north of Point Bede that are west of a line from the easternmost point of Jakolof Bay and north of the westernmost point of Hesketh Island, including Jakolof Bay, and that are south of a line west of Hesketh Island; and those waters south of Point Bede which are west of the easternmost point of Rocky Bay, in Lower Cook Inlet. In total, there are six Cook Inlet communities that fall outside of the Anchorage–Matsu–Kenai Nonsubsistence Area. Residents of Port Graham (population 179) and Nanwalek (formerly called English Bay, population 290) subsistence fish primarily under state regulations in the Port Graham and Koyuktolik Subdistricts. Further up Kachemak Bay, residents of Seldovia (population 400 in the city and village CDP) are eligible for a local subsistence set gillnet fishery. Residents of Tyonek (population 167) rely on subsistence salmon in the Tyonek Subdistrict. Skwentna (population 35 in 2018) and Beluga (population 19) also fall outside of the nonsubsistence area, and a subsistence fish wheel fishery exists in the mainstem of the Yentna River.

The population of the entire Cook Inlet area in 2018 was 458,187, including the Municipality of Anchorage (population 294,488), the Kenai Peninsula Borough (58,285), and the Matanuska-Susitna Borough (105,414). This represented 62% of the state's total population in 2018.¹ Because subsistence fisheries are not permitted within nonsubsistence areas, noncommercial harvesting opportunities occur under sport, personal use, and educational fishing regulations (as well as limited opportunity under federal subsistence regulations). Commercial harvesters may retain finfish from their lawfully taken commercial catch for home use (“home pack”). These fish are required to be reported on the commercial fish ticket, not on the subsistence salmon permit or personal use permit. In some parts of Alaska, in addition to gear authorized under subsistence fishing regulations, subsistence users report that substantial numbers of fish for home uses are taken with rod and reel (Fall et al. 2009), which, in the Cook Inlet Area, is allowable gear under sport fishing regulations. Detailed harvest summaries for the personal use, sport, educational, and commercial fisheries of the Upper Cook Inlet (UCI) Management Area can be found in annual management reports prepared by the ADF&G divisions of Sport Fish and Commercial Fisheries.

The second half of this chapter is a summary of federal subsistence salmon fisheries and state personal use salmon fisheries of the Cook Inlet Area.

PORT GRAHAM AND KOYUKTOLIK SUBDISTRICTS

History and Regulations

Subsistence regulations for this subsistence set gillnet fishery were first established by the BOF in 1980. The fishery is located along the southern shore of outer Kachemak Bay in the Port Graham and Koyuktolik subdistricts of the Southern District, and, beginning in 2002, the Port Chatham and Wind Bay subdistricts. Two predominately Alaska Native communities, Nanwalek and Port Graham, are located in the Port Graham Subdistrict. For a detailed description of this subsistence fishery and other subsistence harvests and uses in Nanwalek and Port Graham, see Stanek (1985).

The fishery is open in the Port Graham and Koyuktolik subdistricts from April 1 through September 30 and in the Port Chatham and Windy Bay subdistricts from April 1 through August 1, from 10:00 PM Thursday to 10:00 AM Wednesday. Cook Inlet subsistence regulations (5 AAC 01.580) specify that salmon may only

1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed March 2020. <http://live.laborstats.alaska.gov/pop/index.cfm>

be taken under the authority of a department issued subsistence fishing permit and that the permit holder shall record daily catches on forms provided by the department. The area open for the subsistence set gillnet fishery includes the entire shoreline of the subdistrict to a regulatory marker near the head of Port Graham Bay. There are no household bag or possession limits. The three primary species harvested are sockeye, pink, and coho salmon. Allowable gear includes set gillnets no longer than 35 fathoms, no deeper than 45 meshes, and no larger than a 6-inch stretched mesh. Sockeye salmon returns to the English Bay River have been monitored using a picket weir since 1993 (Hollowell et al. 2019). In the 27 years since, escapement for this species has fallen below the sustainable escapement goal (SEG) twice. The current SEG of 6,000–13,500 fish has been exceeded for the past three years with over 20,000 fish counted in 2017.

Harvest Assessment Methods

Prior to 2012, the Division of Subsistence issued household permits through cooperative agreements with the Port Graham and Nanwalek village councils. In the early years, salmon subsistence permits were paired with a subsistence calendar that recorded not only salmon, but a variety of shellfish, berries and wild game that were harvested as well. In later years, Division of Subsistence staff circulated a one-page permit with a table for recording daily salmon harvests. Staff responsible for subsistence permits in the past have noted that years of higher permit returns were almost exclusively the result of staff traveling to Port Graham and Nanwalek and going door to door to retrieve permits.²

Beginning in 2012, responsibility for the distribution, collection, and summarizing of subsistence permits for the communities of Seldovia, Port Graham, and Nanwalek was transferred from the Division of Subsistence to the Division of Commercial Fisheries, Homer Office. Similar to the permits issued by the Division of Subsistence the prior year, 2012 permits were a single sheet with a tear off upper portion that would be retained by the village council representative, and a lower portion that the user would take into the field and record daily catch. The lower portion could then be folded over, stamped, and mailed to the Homer Fish and Game office. Prior to 2012, permits were not available to members of the public from the Homer ADF&G office.

Sockeye salmon returns to the English Bay lakes have generally been good since the early 1990s when the reestablished English Bay Weir recorded return data (Hollowell et al. 2019). This weir is on the site of an earlier weir that was established by the Department of Commerce, Bureau of Fisheries in 1927, and was used from 1927–1941 to measure salmon returns to this system. During the 13 years when the weir was operated, an average of 22,200 sockeye salmon were counted. Beginning in 1989, ADF&G collected eggs from the English Bay Lake system, incubated them over the following winter at the Big Lake and Tutka hatcheries, and released them back in the lake the following spring. Releases of sockeye salmon fry occurred in most years from 1990 through 2015 with incubation later occurring at the Port Graham Hatchery from 1992 through 2007, and then at the Trail Lakes Hatchery. Inseason escapement monitoring of passage through the English Bay River weir has taken place since 1994, with openings and closures in the commercial fisheries based on actual salmon passage at the weir versus anticipated passage. During the summer, much of the waterflow associated with the English Bay River is derived from rainfall. The volume of water in the river can have a significant impact on salmon passage by the weir. Therefore, despite the enhancement efforts, the most recent 10-year average count (2009–2018) of 11,500 fish is much lower than returns recorded at the original weir from 1927–1941. Consequently, there have been a number of recent years where due to dry weather, the commercial fishery has been closed by emergency order inseason until passage at the weir built up to anticipated levels for that date. Subsistence fishing has a higher priority for department managers than commercial fishing. Managers strive to keep subsistence harvest open during periods of commercial closures in order to meet ANS requirements for those areas. Division of Commercial Fisheries staff have spent a great deal of time in Nanwalek discussing salmon management of the English Bay River.

2. Robbin LaVine, ADF&G Subsistence Resource Specialist, email to Glenn Hollowell, ADF&G Fishery Biologist, 2012.

Harvest Estimates for 2018

The change in responsibility for permit distribution and recording for Port Graham and Nanwalek included some change in methodology. Earlier, the Division of Subsistence contracted a local resident in each community to ensure distribution and collection of permits. In addition, the Division of Subsistence sent staff members to Nanwalek and Port Graham to collect harvest information. This approach was discontinued by the Division of Commercial Fisheries and instead the permits are sent to the Indian Reorganization Act councils for distribution. Completed permits should be returned to ADF&G at the end of the season showing a record of the harvest, as required in regulation.

In 2018, with 15 permits issued and only 2 returned, estimated salmon harvests for home uses in the Port Graham and Koyuktolik subdistricts totaled 118 salmon, including both subsistence set gillnet and reported rod and reel harvests (Table 11-1). The 2018 harvest was lower than the previous year (1,396 salmon) and a major decrease from the historical average of 5,056 salmon. Since 2012, the reported annual harvest in this fishery very likely under-represents the total harvests due to low compliance with subsistence permit harvest reporting regulations. Reported harvests began declining beginning in 2014, with approximately 3,200 salmon reported that year, versus 8,800 the previous year.

In both 2017 and 2018, 90 permits were mailed to tribal governments in Port Graham and Nanwalek (45 to each community) to issue to residents. In 2017, only 26 permits were issued to community residents: 13 permits to residents in Port Graham, and 13 permits to Nanwalek residents. Of these, 3 were returned by Port Graham residents with a reported harvest of 1,076 salmon, and 2 permits were returned from Nanwalek residents with a reported harvest of 320 salmon. In 2018, tribal governments issued only 10 permits to Port Graham residents, and 5 to Nanwalek residents. Of those, 1 permit was returned from a Port Graham resident reporting a harvest of 50 salmon, and 1 permit was returned from a Nanwalek resident with a reported harvest of 68 salmon (Table 11-2).

SELDOVIA SUBSISTENCE FISHERY

History and Regulations

The BOF established a subsistence set gillnet fishery in the Seldovia area beginning in 1995. The fishery is located on the south side of Kachemak Bay, near Seldovia, which is in the Southern District of the Lower Cook Inlet Fisheries Management Area. The subsistence fishery operates in a split season. The spring fishery, open April 1–May 30, targets natural Chinook salmon migrating through Lower Cook Inlet. The fall fishery, open the first two weekends of August, targets coho salmon.

In the spring season, fishing is allowed during two 48-hour periods each week, while in the fall season, fishing is open continuously during the two-day weekends. The BOF has set a guideline harvest level (GHL) of 200 Chinook salmon and an annual possession limit of 20 Chinook salmon per household. There are no seasonal limits for other salmon species.

The area open to subsistence set gillnetting includes those waters along the eastern shore of Seldovia Bay as well as a short stretch outside Seldovia Bay to the west of Point Naskowhak. Seasons and bag limits were designed in 1995 to reduce potential interceptions of enhanced Chinook salmon bound for the stocking site in the Seldovia small boat harbor (Hollowell et al. 2012:14). The gear allowed includes set gillnets no longer than 35 fathoms, no deeper than 45 meshes, and no larger than a 6-inch stretched mesh. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Methods

Household permits for this fishery have been available either from ADF&G offices or the Seldovia harbormaster's office since this fishery began. Harvest is reported directly on the permit. No calendars have ever been issued to accompany permits, and staff have never been dispatched to Seldovia to distribute or collect permits. Subsistence fishers are required to return their completed permits to the Homer office by

the end of November. In recent years, approximately 2/3 of the permits issued to users have been returned at the end of the season (Hollowell et al. 2019).

The 2018 Season

There were nine permits issued for the Seldovia subsistence fishery in 2018; six were returned (Table 11-3). The estimated harvest was 15 sockeye salmon (15% of the overall harvest), 15 Chinook salmon (15%), 71 pink salmon (70%), 1 chum salmon (<1%), and no coho salmon (Figure 11-3). In 2018, eight permits were issued to residents of Seldovia, and one to a Palmer resident (Table 11-3). Participation in this fishery has declined over the past 22 years from a high of 45 permits in 1996 to only 4 permits in 2016. Total salmon harvests in 1998 through 2005 were higher than the first two years of the fishery, the result of a longer season that began in 1998 when the BOF lengthened the season by 10 days in May. The additional fishing time resulted in increased harvests of both Chinook and sockeye salmon from 1998 through 2003 (Table 11-4). However, Chinook salmon harvests have declined since 2004.

TYONEK SUBDISTRICT

History and Regulations

Subsistence salmon fishing regulations for the Tyonek Subdistrict were established by court order in 1980 and subsequently permanently established by the BOF. This set gillnet fishery is located in the Tyonek Subdistrict of the Northern District of Upper Cook Inlet. The subdistrict includes the area from one mile south of the mouth of the Chuitna River south to the easternmost part of Granite Point and from the mean point of high tide to the mean point of lower low tide. The area is unique in that all the lands within the subdistrict are owned by the Tyonek Native Corporation. This feature often raises issues of trespass for those individuals living outside the Tyonek Area who do not seek prior permission to land their boats or set their nets on the privately-owned uplands. For a detailed discussion of this fishery and other subsistence uses at Tyonek, see Jones et al. (2015), Holen and Fall (2011), Stanek et al. (2007), and Fall et al. (1984).

In 2011, the Alaska Board of Fisheries modified the Northern District King Salmon Management Plan (5 AAC 21.366). This modification was in response to reduced abundance of Chinook salmon in the Northern District. The management action aligned commercial fishing closures in the Northern District with sport fishing closures on the Chuitna and Deshka rivers. In that year, only the Chuitna River experienced a closure (Shields and Dupuis 2012:10).³

The season in this subsistence fishery operates in two parts. The first part, which focuses on Chinook salmon, is open on Tuesdays, Thursdays, and Fridays from May 15–June 15. The second part is open Saturdays from June 16–October 15. In 2011, the Alaska Board of Fisheries specified the amounts of salmon reasonably necessary for subsistence in the Tyonek subdistrict as 700–2,700 Chinook salmon and 150–500 other salmon. A permit is required and 5 AAC 01.595 (a)(3) specifies that each permit holder may harvest 70 Chinook salmon in the Tyonek Subdistrict and 25 other salmon for the head of household and an additional 10 salmon for each dependent of the permit holder.

Allowable gear for the Tyonek Subdistrict subsistence fishery includes set gillnets 10 fathoms in length, no deeper than 45 meshes, and a stretched mesh sized no larger than six inches. When fishing, permit holders are required to be present at the net site. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Methods

Household permits are issued by ADF&G prior to fishing, and harvests are recorded on the permit. A Division of Subsistence staff person travels to Tyonek each April and issues approximately 40–50 permits

3. In 2020, the BOF further amended the Northern District King Salmon Management Plan to align commercial fishing opportunity with the different levels of sport fishing restrictions for the Deshka River (5 AAC 21.366 (10)).

within several hours. Permits are also available in the Anchorage ADF&G office or in the Tyonek village office.

Prior to the 2015 annual salmon report, the Tyonek Subdistrict salmon harvest numbers were based on reported permit data, partly due to the high return rate achieved from 1980–1990 when the fishery was limited to residents of Tyonek. Beginning in 2015 and continuing into the future, all salmon harvests are harvest estimates that are based on permit return rates by community. These estimated harvests replace the reported harvests that previously appeared in Table 11-6 in prior annual reports⁴.

The 2018 Season

In 2018, 65 permits were issued for the Tyonek Subdistrict subsistence salmon fishery, and 42 were returned. Tyonek residents received 49 permits (75%), and 16 permits were issued to other Alaska residents, including 12 to residents of Anchorage (18%; Table 11-5). Residents of Tyonek accounted for 79% of the estimated harvest total (1,074 of 1,362 salmon), including 81% of the estimated Chinook salmon harvest (839 of 1,042 Chinook salmon) (Table 11-5).

The 2018 estimated harvest of 1,362 salmon was lower than the 2017 harvest of 2,089 salmon and lower than the historical average of 1,814 salmon (Table 11-6). Of the total estimated subsistence salmon harvest in 2018, 1,042 were Chinook salmon (77%), 146 were sockeye salmon (11%), 155 were coho salmon (11%), 13 were pink salmon (1%), and 6 were chum salmon (<1%) (Figure 11-4). There were no emergency orders that directly affected the Tyonek Subdistrict subsistence salmon fishery in 2018. However, Emergency Order 2S-01-18 closed commercial Chinook salmon fishing on May 28, June 4, June 11, and June 18 in the area from a point at the wood chip dock located approximately three miles south of Tyonek to the Susitna River due to Chitna River Chinook salmon being a stock of management concern (Marston and Frothingham 2019:92).

UPPER YENTNA RIVER FISH WHEEL FISHERY

History and Regulations

This subsistence fish wheel fishery began in 1996 as a personal use fishery and was reclassified as a subsistence fishery by the BOF in 1998. It is located in the mainstem of the Yentna River from its confluence with Martin Creek upstream to its confluence with the Skwentna River. The fishery occurs from July 15 through July 31. Fishing periods are from 4:00 AM to 8:00 PM Mondays, Wednesdays, and Fridays. For a more detailed discussion of this fishery see Holen and Fall (2011).

Legal gear includes a fish wheel equipped with a live box. Permit holders must be present at the fish wheel while the wheel is fishing. A season limit of 2,500 salmon was established for the fishery. Chinook salmon and rainbow/steelhead trout must be returned alive to the water. Seasonal limits for households are 25 salmon for a household of one plus 10 salmon for each additional household member. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Methods

A permit issued by ADF&G is required prior to fishing. Permits are available through the Division of Sport Fish offices in Palmer and Anchorage. Permit holders must record their harvests on the permit and return it to ADF&G. Participants must also report their daily harvest of salmon to the Palmer ADF&G office by noon of the day following an open period. In the view of ADF&G, compliance with the permit requirement is high, and harvest estimates for this fishery are very reliable.

4. For more detailed information about reported and estimated harvest numbers see Jones, B. E. and D. Koster. 2018. Subsistence Harvests and Uses of Salmon in Tyonek, 2015 and 2016. Alaska Department of Fish and Game Division of Subsistence, Technical Paper No. 439, Anchorage. <http://www.adfg.alaska.gov/techpap/TP439.pdf>

Harvests in 2018

In 2018, 28 subsistence permits were issued for the Yentna River subsistence fish wheel fishery, and all 28 were returned (Tables 11-7 and 11-8). In 2018, 12 of the 28 permit holders resided in the Skwentna area (43%), with the remaining 16 permits held by residents of other Cook Inlet and Matanuska area communities (Figure 11-5). Permit holders living in the community of Skwentna in 2018 harvested 268 of the estimated 623 salmon, or 43% of the harvest (Table 11-7).

Of the total harvest of 623 salmon estimated for 2018, 419 were sockeye salmon (67%), 170 coho salmon (27%), 10 pink salmon (2%), and 8 chum salmon (1%), (Figure 11-6). There were 16 reported harvests of Chinook salmon (3%). It became legal to harvest Chinook salmon for subsistence in 2018 after the Board of Fisheries established a positive customary and traditional use finding for this fishery⁵. The 2018 harvest of 623 salmon was lower than the 2017 harvest of 670 salmon. The 2018 harvest was less than the 5-year average of 636 salmon, more than the 10-year average of 598 salmon, and more than the historical average of 581 salmon (Table 11-8). 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 (Marston and Frothingham 2019:32).

FEDERAL SUBSISTENCE SALMON FISHERIES IN COOK INLET

Since 2007, federal regulations allow for the harvest of salmon, trout, and Dolly Varden by residents of Cooper Landing, Hope, and Ninilchik in the Kenai National Wildlife Refuge and Chugach National Forest. This includes the harvest of salmon by dip net in the Kenai River. In 2018, the total harvest in the federal fishery on the Kenai and Kasilof rivers was 4,389 salmon, most (4,348) of which were sockeye salmon, 35 were coho salmon, and 6 were pink salmon (Table 11-9). There were a total of 368 permits issued to residents of these three communities, with 227 permits issued to residents of Ninilchik, 104 to residents of Cooper Landing and 37 to residents of Hope (Table 11-9).

Table 11-10 shows the harvest in this fishery since it was established in 2007. In all 12 years, sockeye salmon composed the majority of the harvest, with 2017 being the highest harvest (4,428 sockeye salmon), followed by 2018 at 4,348 sockeye salmon harvested by residents of the three Kenai Peninsula communities.

COOK INLET PERSONAL USE SALMON FISHERIES

Background

The BOF first established personal use salmon fisheries in the Cook Inlet Area in 1981 (Nelson et al. 1999:146). Since Alaska statehood in 1959, opportunities had been provided to harvest salmon for home uses with noncommercial set gillnets along various Cook Inlet beaches under subsistence regulations (Braund 1982rev.). In 1978, the new Alaska subsistence statute defined, for the first time, subsistence fishing as fishing for “customary and traditional” uses [AS 16.05.940(31, 33)]. In 1980, the BOF determined that only the noncommercial net fisheries in the Tyonek and Port Graham subdistricts met the criteria to qualify as customary and traditional subsistence fisheries. Therefore, the BOF created the “personal use” category of fishing regulations to continue providing opportunities for Alaskans to harvest salmon for home use with nets in areas of Cook Inlet that are generally accessible along the road system. In 1992, the Joint Board classified most of the Cook Inlet Area as a “nonsubsistence area,” where subsistence fishing may not be permitted. Thus, in these areas, personal use fisheries are the primary means by which Alaska residents may obtain salmon for home uses using set gillnets or dip nets.

Due primarily to court decisions and legislation, personal use fishing regulations for Cook Inlet changed frequently in the 1980s and early 1990s. In 1981, the BOF created personal use dip net fisheries targeting sockeye salmon in the Kasilof and Kenai rivers. Until 1996, these fisheries opened only after achievement of escapement goals was projected. Since then, they have taken place within a fixed season. In 1986, the BOF created a personal use dip net fishery at the mouth of Fish Creek (Knik Arm) focusing on sockeye

5. The BOF modified the C & T finding for this fishery to include a positive finding for Chinook salmon, thereby allowing the subsistence harvest of Chinook consistent with sustained yield management, beginning in 2018.

salmon. A fourth Upper Cook Inlet dip net fishery began in 2008 in the lower portion of the Beluga River on the western shore of Cook Inlet; this fishery is open only to Alaska residents 60 years of age or older. In most years since 1981, personal use set gillnet fisheries in the Cook Inlet Area have been limited to Kachemak Bay and an area at the mouth of the Kasilof River. For more detail on the history of subsistence and personal use salmon fisheries in the Cook Inlet Area, see Braund (1982rev.), Fall and Stanek (1990), Brannian and Fox (1996), Nelson (1994; 1995), Nelson et al. (1999), and Dunker (2010). Table 11-11 summarizes harvest data for selected Cook Inlet personal use and subsistence fisheries that are no longer authorized by state regulations.

Upper Cook Inlet Personal Use Salmon Fisheries

Presently, personal use salmon fisheries in the Upper Cook Inlet Area are governed by the provisions of the Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.540). Participants must possess an Alaska resident sport fishing license and obtain an Upper Cook Inlet Personal Use Fishing Permit for their household. Permit holders and household members may participate in any of the upper inlet personal use salmon fisheries (except, as noted, the Beluga River fishery is only open to Alaska residents 60 years of age or older). For all the fisheries combined, the annual limit is 25 salmon for the permit holder and 10 salmon for each additional household member. Permits must be returned to ADF&G at the end of the season with a record of the harvest.

In 2018, 24,722 permits were issued for Upper Cook Inlet personal use fisheries, excluding the Beluga River dip net fishery. For the four fisheries combined (described in more detail below and including unknown fishing locations), the estimated harvest was 311,140 salmon, including 292,196 (94%) sockeye salmon; there were lower totals for the other four species (Table 11-12). The estimated harvest in these fisheries in 2018 was lower than the previous year, and below the 5-year (2013–2017) average of 467,846 salmon and the 10-year average of 496,247 salmon. For 1996 through 2017, the average annual harvest was 361,680 salmon, although participation and harvest grew steadily until about 2013 (Table 11-13).

Table 11-14 reports the number of permits issued for these four Upper Cook Inlet personal use fisheries and the estimated harvest by place of residence of the permit holder. Residents of the Municipality of Anchorage (including Anchorage, Chugiak, Eagle River, JBER [Joint Base Elmendorf/Richardson], and Girdwood) held the most permits (52%) and accounted for 53% of the harvest, followed by Matanuska–Susitna Borough residents (19% of permits; 21% of harvest), Kenai Peninsula Borough residents (17% of permits; 15% of harvests), permit holders for whom a community of residence could not be established (7% of permits; 6% of harvest), and residents of other Alaska communities (4% of permits; 4% of harvest).

Kasilof River Personal Use Set Gillnet Fishery

This fishery takes place at the mouth of the Kasilof River between regulatory markers approximately one mile on either side of the river. Legal gear is a set gillnet no more than 10 fathoms in length, six inches in mesh size, and 45 meshes in depth. The fishery is open daily from 6:00 AM to 11:00 PM from June 15 through June 24. In 2018, the total estimated harvest in the fishery was 14,539 salmon, of which 14,390 (99%) were sockeye salmon. (Note that the harvests for this set gillnet fishery plus the dip net fisheries in the Kasilof River, the Kenai River, and Fish Creek are reported through a single permit system, the combined estimated totals are reported above.) The average annual harvest from 1996 through 2017 was 20,539 salmon (Table 11-15).

Kasilof River Dip Net Fishery

This dip net fishery takes place in the lower mile of the Kasilof River 24 hours per day from June 25 through August 7. Retention of Chinook salmon in this fishery is prohibited. The estimated harvest in 2018 was 96,311 salmon, of which 92,034 (96%) was sockeye salmon. From 1996 through 2017, the average annual harvest in this fishery was 55,262 salmon (Table 11-16).

Kenai River Dip Net Fishery

This dip net fishery takes place in the lower Kenai River downriver of the Warren Ames Bridge. Fishing is open from July 10 through July 31, seven days per week from 6:00 AM to 11:00 PM; when the abundance of sockeye salmon is greater than two million fish, the fishery may be open by emergency order 24 hours a day. No more than one Chinook salmon per permit may be retained in this fishery. Estimated harvests totaled 176,440 salmon in 2018, including 165,028 sockeye salmon (94%). The average annual harvest from 1996 through 2017 was 271,403 salmon, with harvest—along with participation—generally rising over that period (Table 11-17).

Fish Creek Dip Net Fishery

This dip net fishery opens by emergency order if the department projects an escapement into Fish Creek (Knik Arm) of more than 50,000 sockeye salmon. The season is July 10 through July 31. Open waters extend from the terminus of Fish Creek upstream to one-quarter of a mile above the Knik–Goose Bay Road. No Chinook salmon may be retained in this fishery. In 2018 the estimated harvest totaled 21,531 salmon, 18,659 (87%) of which was sockeye salmon, 8% coho salmon and 4% pink salmon, 2% Chinook salmon and 1% chum salmon. The fishery did not open from 2002 through 2008, from 2012–2013 and in 2016. The average annual harvest for those years with an open fishery was 10,466 salmon (Table 11-18).

Unknown Upper Cook Inlet Personal Use Dip Net Fishery

Because not all participants in the Upper Cook Inlet personal use dip net fisheries indicate the location of their fishing activities when they return their permits, an estimate of harvests in an “unknown” Upper Cook Inlet dip net fishery is produced annually. Harvests that could not be attributed to one of the four Upper Cook Inlet personal use fisheries (three dip net fisheries and one set gillnet fishery) (excluding the Beluga River fishery, which is discussed below) were estimated at 2,319 salmon in 2018, 90% of which was sockeye salmon (2,085 fish) (Table 11-19).

Beluga River Personal Use Salmon Fishery

Participation in this dip net fishery, which first took place in 2008, is limited to Alaska residents 60 years of age or older. The fishery is open 24 hours per day from July 10 to August 31 within the Beluga River, western Cook Inlet, from about one-quarter mile upstream of the Beluga River bridge to about one mile below the bridge. The fishery operates under the single seasonal limit for Cook Inlet Area personal use salmon fisheries (25 salmon for the permit holder and 10 additional salmon for each dependent), except only one Chinook salmon may be retained. Participants must report their harvest weekly to ADF&G, and the fishery closes when 500 salmon have been harvested (5 AAC 77.540(g)). Harvests totaled 54 salmon in 2018, compared to 66 salmon in 2017, 101 salmon in 2016, 82 salmon in 2015, 46 salmon in 2014, 88 salmon in 2013, 16 salmon in 2012, 159 salmon in 2011, 53 salmon in 2010, 225 salmon in 2009, and 66 salmon in 2008 (Table 11-20). Harvest data by place of residence are presently not available for this fishery, and totals for this fishery are not included with other Upper Cook Inlet personal use fisheries summarized in Table 11-14.

Lower Cook Inlet Personal Use Salmon Fisheries

Kachemak Bay Set gillnet Fishery

This set gillnet fishery along Kachemak Bay in the Lower Cook Inlet Management Area was a subsistence fishery before being reclassified as a personal use fishery in the early 1980s. By regulation, the fishery begins at 6:00 AM the first Monday or Thursday following August 15, and continues through the last Wednesday or Saturday before September 16 and only from 6:00 AM Monday until 6:00 AM Wednesday and from 6:00 AM Thursday until 6:00 AM Saturday. The fishery closes either on that final day or when a guideline harvest range of 1,000–2,000 coho salmon has been achieved. In addition to a valid Alaska resident sport fishing licence, participants must obtain a personal use permit from the Homer ADF&G office—this is separate from the permit program for the Upper Cook Inlet personal use fisheries and households may only hold a permit from one or the other PU fishery in a given year. Seasonal limits are 25 salmon for the permit

holder and 10 salmon for each additional household member (5 AAC 77.549). Fishers are encouraged to phone the Homer ADF&G office to report their daily harvests and are required to return their harvest information when the fishery closes each year. In 2018, the reported harvest, based on 187 returned permits (97% of the 192 permits issued), was 2,384 salmon, of which 1,947 (82%) were coho salmon. The recent 10-year average harvest for this fishery (2008–2017) was 2,040 salmon (Table 11-21). Harvest data by place of residence are presently not available for this fishery. Table 11-21 also provides historical harvests for this fishery for 1969 through 2018.

China Poot Dip Net Fishery

This personal use dip net fishery first opened in 1980. It takes place in China Poot Bay, approximately four miles southeast of the Homer Spit, on the south side of Kachemak Bay. This area is not accessible by road. The fishery targets hatchery-produced sockeye salmon (stocked by the Cook Inlet Aquaculture Association) that have escaped the commercial fishery. Personal use fishers must have a valid Alaska resident sport fishing license, but a permit is not required. The season is July 1 through August 7. Only sockeye salmon may be retained in this fishery, with a bag and possession limit of six fish (5 AAC 77.545). Since 1996, ADF&G has not estimated harvests in this fishery. Table 11-22 summarizes historical harvest data for this fishery for 1980–1995. During those years, sockeye salmon harvests ranged between 794 (in 1985) and 8,605 (in 1995) and averaged 3,373 sockeye salmon. The annual average participation in this fishery was 1,215 fishers.

OTHER SUBSISTENCE FISHERIES IN COOK INLET

Federal halibut subsistence harvest data are currently available for rural communities and tribes with traditional uses of halibut in the Cook Inlet area. Residents of Port Graham, Nanwalek, and Seldovia participate in this program, as well as tribal members living in other Cook Inlet Area communities. The most recent survey was conducted in 2018. For the findings for 2018, see Fall and Koster (2020). Due to lack of funding, no harvest estimate for the subsistence halibut fishery is available for 2013, 2015, or 2017.

There are no annual harvest assessment programs for other subsistence finfish fisheries in Cook Inlet. Harvest estimates based on comprehensive household surveys conducted by the Division of Subsistence are available in the CSIS for freshwater and marine species spanning multiple years for selected Cook Inlet communities. Of note in Lower Cook Inlet are rockfish (*Sebastes*) documented in Turek et al. (2009). Information on other fish species used in Upper Cook Inlet by Tyonek and Beluga residents can be found in Stanek et al. (2007), Holen et al. (2014), and Jones et al. (2015). For information for the Lower Cook Inlet communities of Seldovia, Port Graham, and Nanwalek, see Jones and Kostik (2016).

Table 11-1.—Historical subsistence salmon harvests, Port Graham and Koyuktolik subdistricts, 1981–2018.

Year	Permits		Reported salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	ND	57	140	2,769	939	169	919	4,936
1982	ND	61	124	2,354	1,493	220	2,932	7,123
1983	ND	46	67	2,480	471	95	187	3,300
1984	ND	24	45	3,262	510	6	673	4,496
1985	ND	24	146	1,177	621	26	345	2,315
1986	ND	44	125	647	481	14	1,062	2,329
1987	ND	55	21	901	914	114	714	2,664
1988	ND	48	104	1,021	844	110	1,756	3,835
1989	ND	44	51	157	1,155	74	1,495	2,932
1990	ND	60	265	1,162	1,417	151	2,960	5,955
1991	ND	63	163	688	2,053	221	4,587	7,712
1992	ND	71	200	535	1,150	236	1,421	3,542
1993	ND	56	277	1,148	913	257	2,663	5,258
1994	ND	70	300	830	1,370	504	1,979	4,983
1995	ND	87	585	1,795	538	376	1,273	4,567
1996	ND	75	310	1,744	939	276	749	4,018
1997	ND	26	202	325	203	153	511	1,394
1998	ND	19	169	289	243	240	459	1,400
1999	ND	53	485	3,157	1,747	1,104	2,023	8,516
2000	ND	67	259	4,664	1,831	954	1,606	9,314
2001	ND	49	133	1,085	1,295	228	1,454	4,195
2002	ND	79	346	10,620	1,057	488	1,831	14,342
2003	ND	52	465	5,534	1,006	532	1,572	9,109
2004	ND	80	312	3,525	1,303	213	1,600	6,953
2005	ND	68	292	2,126	1,193	180	1,608	5,399
2006	ND	53	275	2,559	1,200	296	2,131	6,461
2007 ^a	ND	24	92	532	0	63	74	761
2008	ND	48	124	4,352	1,448	269	2,682	8,875
2009	ND	44	44	3,497	528	140	914	5,123
2010 ^a	ND	36	30	1,630	1,448	308	1,054	4,470
2011	ND	53	53	5,702	1,491	511	2,632	10,389
2012	ND	8	24	961	414	31	482	1,912
2013	28	14	16	4,813	2,685	366	897	8,777
2014	35	12	22	1,492	166	492	1,087	3,259
2015	33	11	43	1,077	110	539	1,008	2,777
2016	34	24	40	1,072	722	72	389	2,295
2017	26	5	4	1,074	7	64	247	1,396
2018	15	2	3	76	7	2	30	118
5-year average (2013–2017)	18	13	25	1,906	738	307	726	3,701
10-year average (2008–2017)	-	26	40	2,567	902	279	1,139	4,927
Historical average (1981–2017)	-	46	1,204	1,604	622	839	3,231	5,056

Source Hollowell et al. (2019). ADF&G Division of Subsistence, 1981–2011.

Note There are no records indicating the numbers of permits issued for 1981–2012. Only the numbers of permits returned are recorded. For this reason, averages of the number of permits issued that cannot be calculated are indicated with "-".

a. Harvest reports are incomplete.

Table 11-2.—Subsistence salmon harvests by community, Port Graham and Koyuktolik subdistricts, 2018.

Community	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Nanwalek	5	1	3	65	0	0	0	68
Port Graham	10	1	0	11	7	2	30	50
Total	15	2	3	76	7	2	30	118

Source Hollowell et al. (2019)

Note This table includes reported data only as the returns weren't sufficient for expansion.

Table 11-3.—Subsistence salmon harvests by community, Seldovia, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Seldovia	8	6	15	15	0	1	71	102
Palmer	1	0	0	0	0	0	0	0
Total	8	6	15	15	0	1	71	102

Source Hollowell et al. (2019).

Table 11-4.—Historical subsistence salmon harvests, Seldovia, 1996–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1996	45	44	51	9	0	0	0	60
1997	20	17	52	22	0	0	0	74
1998	23	21	145	67	0	9	0	220
1999	16	15	150	130	0	38	0	318
2000	28	21	252	332	0	19	0	603
2001	19	17	151	140	0	0	0	290
2002	21	19	136	255	14	10	34	450
2003	20	14	91	299	1	75	18	483
2004	14	11	117	82	5	20	0	223
2005	18	15	53	74	14	13	100	254
2006	17	14	14	11	0	0	25	50
2007	19	16	23	61	11	32	96	223
2008	12	10	4	37	49	6	78	174
2009	18	14	18	100	13	18	57	206
2010	16	12	3	133	41	47	88	312
2011	7	4	0	96	0	0	18	114
2012 ^a	20	7	3	29	0	0	20	52
2013	15	10	3	123	1	14	63	204
2014	19	15	5	116	0	5	65	191
2015	8	6	19	82	0	5	0	105
2016	4	4	7	53	0	2	1	63
2017	13	9	11	92	0	0	3	105
2018	9	6	15	15	0	1	71	102
5-year average (2013–2017)	12	9	9	93	0	5	26	134
10-year average (2008–2017)	13	9	7	86	10	10	39	153
Historical average (1997–2017)	18	14	59	107	7	14	30	217

Source Hollowell et al. (2019); ADF&G Division of Subsistence, 1996–2011.

a. Reported data only. Sample size insufficient for expansion.

Table 11-5.—Subsistence salmon harvests by community, Tyonek Subdistrict, 2018.

Community	Permits		Estimated salmon harvests					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Anchorage	12	7	161	53	0	0	5	219
Kenai	1	1	39	7	4	0	0	50
Nikiski	2	0	0	0	0	0	0	0
Soldotna	1	1	3	16	0	0	0	19
Tyonek	49	33	839	70	151	6	7	1,074
Total	65	42	1,042	146	155	6	13	1,362

Source ADF&G Division of Subsistence, ASFDB 2018 (ADF&G 2019).

Table 11-6.—Historical subsistence salmon harvests, Tyonek Subdistrict, 1980–2018.

Year	Permits		Estimated salmon harvests					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
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 ^a	176	ND	1,967	163	91	10	0	2,231
1986 ^a	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	49	1,304	442	306	31	6	2,089
2018	65	42	1,042	146	155	6	13	1,362

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Table 11-6.–Page 2 of 2.

Year	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
5-year average (2013–2017)	81	61	1,130	380	397	14	12	1,933
10-year average (2008–2017)	90	66	1,103	298	296	10	10	1,717
Historical average (1981–2017)	79	60	1,408	195	190	11	10	1,814

Source ADF&G Division of Subsistence, ASFDB 2018 (ADF&G 2019).

a Harvests were not expanded due to unknown permit returns.

ND = no data

Table 11-7.–Subsistence salmon harvests by community, Upper Yentna River, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook ^a	Sockeye	Coho	Chum	Pink	Total
Anchorage	3	3	0	24	18	0	0	42
Chugiak	1	1	0	50	5	0	0	55
Palmer	1	1	0	0	0	0	0	0
Skwentna	12	12	6	173	83	2	4	268
Wasilla	10	10	10	157	60	4	4	235
Willow	1	1	0	15	4	2	2	23
Total	28	28	16	419	170	8	10	623

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Regulations prohibited the retention of chinook salmon in this fishery until 2018 (5 AAC 01.595).

Table 11-8.—Historical subsistence and personal use salmon harvests, Upper Yentna River, 1996–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook ^b	Sockeye	Coho	Chum	Pink	
1996 ^a	17	17	0	242	46	51	115	454
1997 ^a	24	21	0	549	83	10	30	672
1998	21	18	0	495	113	15	30	653
1999	18	16	0	516	48	13	18	595
2000	19	19	0	379	92	7	4	482
2001	16	15	0	545	50	4	10	608
2002	25	22	0	454	133	31	14	632
2003	19	15	0	553	67	8	2	630
2004	21	19	0	441	146	3	36	625
2005	18	17	0	177	42	25	24	268
2006	22	22	0	368	175	26	14	583
2007	22	22	0	367	66	18	17	468
2008	16	16	0	310	57	7	23	397
2009	17	17	0	253	14	6	0	273
2010	32	32	0	642	50	18	38	748
2011	25	25	0	598	90	21	337	1,046
2012	21	21	0	279	24	19	21	343
2013	22	19	0	160	92	32	128	412
2014	20	18	0	328	84	32	17	460
2015	29	27	0	578	151	69	47	845
2016	26	25	0	514	204	37	36	790
2017	26	26	0	454	185	10	21	670
2018	28	28	16	419	170	8	10	623
5-year average (2013–2017)	25	23	0	407	143	36	50	636
10-year average (2008–2017)	23	23	0	412	95	25	67	598
Historical average (1996–2017)	22	21	0	427	94	20	41	581

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. This fishery was classified as personal use in 1996 and 1997; it has been a subsistence fishery since 1998.

b. Regulations prohibited the retention of chinook salmon in this fishery until 2018 (5 AAC 01.595).

Table 11-9.—Federal subsistence salmon harvests by community, Kenai and Kasilof rivers, 2018.

Community	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Cooper Landing	104	100	0	1,478	3	0	0	1,481
Hope	37	34	0	517	0	0	0	517
Ninilchik	227	220	0	2,353	32	0	6	2,391
Total	368	354	0	4,348	35	0	6	4,389

Source Jeffrey Anderson, USFWS, Kenai Fish & Wildlife Field Office, personal communication.

Table 11-10.—Historical federal subsistence salmon harvests, Kenai and Kasilof rivers, 2007–2018.

Year	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2007	136	131	0	742	5	0	0	747
2008	160	151	2	1,716	12	0	0	1,730
2009	160	138	0	1,104	9	0	0	1,113
2010	169	151	0	943	0	0	0	943
2011	131	123	0	1,090	0	0	0	1,090
2012	133	121	0	1,438	0	0	0	1,438
2013	142	138	0	1,515	4	0	0	1,519
2014	153	145	0	1,941	2	0	0	1,943
2015	187	180	2	2,056	0	0	0	2,058
2016	227	219	2	2,500	12	0	0	2,514
2017	364	345	2	4,428	12	0	19	4,461
2018	368	354	0	4,348	35	0	6	4,389
5-year average (2013–2017)	215	205	1	2,488	6	0	4	2,499
10-year average (2008–2017)	183	171	1	1,873	5	0	2	1,881
Historical average (2007–2017)	178	167	1	1,770	5	0	2	1,778

Source Jeffrey Anderson, USFWS, Kenai Fish & Wildlife Field Office, personal communication.

Table 11-11.—Miscellaneous Upper Cook Inlet personal use and subsistence salmon harvests, 1981–1995.

Year ^a	Permits		Reported salmon harvest					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
<i>Noncommercial gillnet fishery</i>								
1981	1,108	NA	68	466	12,713	305	149	13,701
<i>Fall coho personal use/subsistence</i>								
1983	295	NA	0	0	712	0	0	712
1984	309	NA	1	2	2,261	7	10	2,281
1985	998	NA	50	805	11,265	53	108	12,281
1986	892	NA	0	0	2,422	0	0	2,422
1987	486	NA	8	9	2,213	37	2	2,269
1988	449	NA	2	19	2,662	10	38	2,731
1989	365	NA	0	0	2,376	0	0	2,376
1990	420	NA	0	0	2,290	0	0	2,290
1991 ^b	360	NA	0	0	2,703	8	0	2,711
1993	535	NA	0	0	1,168	0	23	1,191
<i>Northern/Central districts subsistence/personal use setnet^c</i>								
1985 ^d	638	NA	117	2,218	1,427	121	90	3,973
1991	7,065 ^e	NA	496	20,855	3,372	1,596	517	26,836
1992	9,200 ^e	NA	957	28,949	8,821	1,753	1,217	41,697
1994	10,127 ^e	NA	1,260	36,701	9,509	1,601	1,653	50,724
1995	9,300 ^e	NA	1,294	45,259	9,678	1,665	1,236	59,132
<i>Knik Arm subsistence</i>								
1985	405	NA	4	1,649	2,055	212	48	3,968

Source Ruesch and Fox (1996); Brannian and Fox (1996).

a. Years listed are only the years in which the fishery was open.

b. In 1991, the fall coho fishery operated as a personal use fishery separate from subsistence setnet fisheries (Ruesch and Fox 1992).

c. Summary data reported in Ruesch and Fox (1996) and in Brannian and Fox (1996) include dip net and setnet harvests. Here, only setnet harvests are included. See separate tables for the Kasilof River dip net fishery and the Kenai River dip net fishery for harvest data for those fisheries.

d. In 1985, this subsistence fishery was open in areas generally open to commercial fishing, except for the Upper Subdistrict, which had a separate season and permit (called the "fall coho fishery" in this table). The Knik Arm subsistence gillnet fishery was also administered separately in 1985 (Ruesch 1987).

e. For 1991, 1992, 1994, and 1995, the number of permits issued includes all Upper Cook Inlet dip net and setnet fisheries except the Tyonek subdistrict.

NA = Data not available.

Table 11-12.-Cook Inlet personal use salmon fisheries, 2018.

Year ^a	Permits		Estimated salmon harvest ^b					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
<i>Lower Cook Inlet</i>								
Kachemak Bay setnet	192	187	6	259	1,947	11	161	2,384
China Poot Bay dip net ^a								
Subtotal, Lower Cook Inlet	192	187	6	259	1,947	11	161	2,384
<i>Upper Cook Inlet</i>								
Kasilof River setnet ^c			120	14,390	2	5	22	14,539
Kasilof River dip net ^c			6	92,034	673	326	3,272	96,311
Kenai River dip net ^c			7	165,028	529	441	10,435	176,440
Fish Creek dip net ^c			5	18,659	1,779	208	880	21,531
Unknown Upper Cook Inlet ^c			0	2,085	21	4	209	2,319
Subtotal, common permit fisheries^c	24,722	18,536	138	292,196	3,004	984	14,818	311,140
Beluga River dip net	10	9	0	37	17	0	0	54
Subtotal, Upper Cook Inlet	24,732	18,545	138	292,233	3,021	984	14,818	311,194
Cook Inlet Total	24,924	18,732	144	292,492	4,968	995	14,979	313,578

Source ADF&G Division of Sport Fish

a. Permits are not issued for this fishery and harvest estimates are not produced.

b. Estimated harvests for all fisheries except Kachemak Bay setnet. Only reported harvests are available.

c. A single permit is issued for the Kasilof setnet, Kasilof dip net, Kenai dip net, and Fish Creek dip net fisheries. In some cases, returned permits did not indicate the area fished.

Table 11-13.—Estimated personal use salmon harvests, Upper Cook Inlet personal use fishery total, 1996–2018.

Year	Permits		Estimated salmon harvest					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1996	14,576	13,452	452	145,545	4,811	350	2,973	154,131
1997	14,919	13,756	464	148,940	777	88	844	151,113
1998	15,535	13,190	549	176,581	2,685	220	1,933	181,968
1999	17,197	14,216	1,108	208,589	1,413	168	2,078	213,356
2000	16,107	13,582	1,102	149,267	3,638	290	2,482	156,779
2001	16,915	14,398	1,138	218,688	2,637	276	1,821	224,560
2002	17,568	14,284	1,070	259,623	3,271	757	8,470	273,191
2003	19,110	15,726	1,711	298,831	2,250	371	2,082	305,245
2004	21,910	17,748	1,098	350,091	3,754	502	2,715	358,160
2005	21,905	19,081	1,132	369,776	3,415	428	2,520	377,271
2006	18,563	16,532	1,405	216,047	3,759	746	12,434	234,391
2007	23,046	20,312	1,924	356,717	2,727	614	2,352	364,334
2008	23,722	20,259	1,601	318,594	3,249	727	11,869	336,040
2009	29,619	25,029	1,384	457,539	4,204	559	6,969	470,655
2010	31,590	25,222	1,059	514,255	8,405	1,090	6,482	531,291
2011	34,515	27,193	1,453	630,242	6,754	1,169	4,879	644,497
2012	34,315	27,080	167	629,757	5,512	627	4,854	640,757
2013	35,211	26,772	84	454,315	5,119	1,053	4,424	464,995
2014	35,989	27,866	50	506,047	9,370	1,859	26,795	544,121
2015	34,916	27,115	127	521,985	10,648	1,926	7,256	541,942
2016	31,216	23,854	820	348,706	4,589	1,150	9,805	365,070
2017	29,981	22,325	1,346	406,890	1,664	1,962	11,240	423,102
2018	24,732	18,545	138	292,233	3,004	984	14,818	311,140
5-year average (2013–2017)	33,463	25,586	485	447,589	6,278	1,590	11,904	467,846
10-year average (2008–2017)	32,107	25,272	809	478,833	5,951	1,212	9,457	496,247
Historical average (1996–2017)	24,474	19,954	966	349,410	4,302	770	6,240	361,680

Source ADF&G Division of Sport Fish

Note Does not include the Beluga River dip net fishery.

Table 11-14.-Personal use salmon harvest estimates by community, Upper Cook Inlet, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchor Point	149	124	0	1,542	7	5	46	1,600
Clam Gulch	35	30	0	317	9	1	21	348
Cooper Landing	13	12	0	60	3	0	12	74
Fritz Creek	22	19	0	234	0	1	7	242
Homer	436	371	2	4,799	20	5	141	4,967
Hope	6	5	0	54	0	0	1	54
Kasilof	383	323	12	4,872	30	4	176	5,094
Kenai	1,154	912	9	12,410	76	19	688	13,202
Moose Pass	17	14	0	94	0	0	11	105
Nikiski	108	80	1	790	8	1	58	858
Nikolaevsk	7	7	0	25	0	0	2	27
Ninilchik	94	79	1	846	1	1	35	884
Seldovia	7	5	0	104	0	0	2	106
Seward	98	87	1	1,079	8	2	22	1,112
Soldotna	1,450	1,194	13	14,074	87	16	762	14,952
Sterling	345	293	6	3,718	35	6	134	3,900
Subtotal, Kenai Peninsula Borough	4,324	3,555	46	45,017	285	62	2,117	47,526
Anchorage	10,629	7,912	51	125,592	826	471	6,883	133,823
Chugiak	494	406	1	6,999	67	6	289	7,362
Eagle River	1,473	1,231	5	17,914	161	46	883	19,009
Girdwood	178	150	3	2,048	15	9	74	2,149
Joint Base Elmendorf Richardson	204	146	0	1,945	10	4	89	2,049
Subtotal, Anchorage Municipality	12,978	9,845	60	154,498	1,080	536	8,217	164,392
Big Lake	143	119	0	1,705	28	3	58	1,794
Chickaloon	10	6	0	131	0	0	2	134
Palmer	1,294	1,019	6	16,652	384	39	724	17,805
Sutton	47	29	0	474	2	4	27	507
Talkeetna	45	36	0	608	34	2	18	662
Trapper Creek	20	18	0	225	0	0	8	233

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Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Wasilla	3,127	2,425	16	40,137	986	187	1,817	43,144
Willow	115	90	0	1,640	17	9	50	1,716
Subtotal, Matanuska-Susitna Borough	4,801	3,742	22	61,571	1,452	245	2,705	65,995
Alakanuk	1	0	0	9	0	0	1	9
Ambler	3	1	0	37	0	0	1	38
Anaktuvuk Pass	3	2	0	14	0	0	1	14
Anderson	1	1	0	28	0	0	0	28
Angoon	1	0	0	9	0	0	1	9
Aniak	1	0	0	9	0	0	1	9
Arctic Village	2	2	0	23	0	0	0	23
Atkasuk	2	1	0	17	0	0	2	18
Barrow	41	21	0	583	3	2	23	611
Bethel	13	6	0	125	0	0	8	133
Cantwell	2	2	0	0	0	0	0	0
Chefomak	1	0	0	9	0	0	1	9
Chenega Bay	1	0	0	9	0	0	1	9
Chevak	1	0	0	9	0	0	1	9
Chicken	1	0	0	9	0	0	1	9
Chignik	2	1	0	52	0	0	8	59
Chignik Lagoon	1	1	0	0	0	0	0	0
Chiniak	1	1	0	0	0	0	0	0
Clear	3	1	0	36	0	0	1	37
Copper Center	5	5	0	63	0	0	0	63
Cordova	2	1	0	9	0	0	1	9
Craig	1	1	0	0	0	0	0	0
Deering	1	1	0	29	0	0	0	29
Delta Junction	43	37	0	556	5	0	35	597
Denali Park	23	22	0	291	1	0	6	297
Eagle	2	2	0	14	0	0	0	14
Eielson AFB	11	11	0	192	0	0	23	215

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Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Ester	8	5	0	71	2	0	13	86
Fairbanks	412	335	2	5,224	15	7	271	5,519
Fort Greely	3	1	0	31	0	0	1	32
Fort Wainwright	16	16	0	164	2	0	29	195
Gakona	1	1	0	0	0	0	0	0
Galena	3	2	0	46	0	0	1	46
Gambell	2	0	0	17	0	0	1	18
Glennallen	5	3	0	50	0	0	1	51
Haines	2	1	0	11	0	0	1	11
Healy	25	21	0	274	0	0	31	306
Hoonah	1	1	0	35	0	0	0	35
Hooper Bay	1	1	0	27	0	0	0	27
Huslia	1	0	0	9	0	0	1	9
Hydaburg	1	1	0	25	0	0	0	25
Juneau	45	31	0	600	1	1	20	621
Kake	1	1	0	33	0	0	0	33
Kalskag	1	1	0	16	0	0	1	17
Ketchikan	7	4	0	85	0	4	2	91
Kiana	1	0	0	9	0	0	1	9
Kivalina	2	0	0	17	0	0	1	18
Kobuk	1	1	0	0	0	0	0	0
Kodiak (city)	13	8	0	112	0	0	3	115
Kotzebue	16	9	0	171	0	0	4	175
Kwethluk	1	1	0	20	0	0	0	20
McGrath	2	0	0	17	0	0	1	18
Mountain Village	1	1	0	0	0	0	0	0
Nenana	13	11	0	178	3	7	6	194
Noatak	4	1	0	37	0	0	2	39
Nome	5	3	0	71	0	0	2	73
Noorvik	1	0	0	9	0	0	1	9
North Pole	99	76	0	1,360	3	2	80	1,446
Nuiqsut	1	1	0	50	0	0	0	50

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Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Old Harbor	1	0	0	9	0	0	1	9
Point Hope	1	0	0	9	0	0	1	9
Port Heiden	2	2	0	0	0	0	0	0
Quinhagak	1	0	0	9	0	0	1	9
Saint Paul Island	1	1	0	0	0	0	0	0
Salcha	3	2	0	43	0	0	5	47
Sand Point	1	1	0	0	0	0	0	0
Savoonga	2	1	0	64	0	0	1	64
Scammon Bay	2	2	0	0	0	1	0	1
Selawik	1	1	0	19	0	0	0	19
Shishmaref	1	1	0	16	0	0	0	16
Sitka	6	4	0	40	0	0	1	41
Skagway	4	2	0	62	1	0	3	66
Skwentna	2	2	0	3	0	0	0	3
Togiak	1	0	0	9	0	0	1	9
Tok	4	4	0	22	0	0	0	22
Two Rivers	3	3	0	30	0	0	4	34
Unalakleet	2	2	0	21	0	0	5	26
Unalaska	1	0	0	9	0	0	1	9
Valdez	21	16	0	269	0	0	6	275
Whittier	5	5	0	48	0	0	0	48
Yakutat	2	0	0	17	0	0	1	18
Subtotal, other Alaska	931	706	3	11,588	42	26	612	12,270
Other USA	66	55	0	789	12	5	22	828
Unknown Communities	1,622	633	7	18,733	133	110	1,145	20,128
Total	24,722	18,536	137	292,196	3,004	984	14,818	311,140

Source ADF&G Division of Sport Fish

Note Includes Kasilof River setnet fishery, Kasilof River dip net fishery, Kenai River dip net fishery, Fish Creek (Knik Arm) dip net fishery and unknown fishery.

Table 11-15.—Estimated personal use salmon harvests, Kasilof River setnet fishery, 1982–2018.

Year ^a	Permits		Estimated salmon harvest					Total
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1982	649	NA	372	7,543	24	NA	17	7,956
1983	684	NA	307	8,846	NA	NA	NA	9,153
1984	698	NA	165	12,926	NA	NA	NA	13,091
1985	692	NA	203	10,746	NA	NA	NA	10,949
1986	NA	NA	168	9,609	NA	NA	NA	9,777
1987	NA	NA	184	9,375	NA	NA	NA	9,559
1988	NA	NA	118	9,803	NA	NA	NA	9,921
1989	NA	NA	186	9,928	NA	NA	NA	10,114
1990	NA	NA	133	7,123	NA	NA	NA	7,256
1991 ^b	NA	NA	34	8,380	NA	NA	NA	8,414
1992	--	--	--	--	--	--	--	--
1993	NA	NA	47	7,942	NA	NA	NA	7,989
1994	--	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	--	--
1996 ^c	NA	NA	46	9,506	0	1	8	9,561
1997	NA	NA	65	17,997	1	3	102	18,168
1998	NA	NA	126	15,975	0	12	15	16,128
1999	NA	NA	442	12,832	25	10	10	13,319
2000	NA	NA	514	14,774	9	10	17	15,324
2001	NA	NA	174	17,201	6	7	11	17,399
2002	NA	NA	192	17,980	12	13	30	18,227
2003	NA	NA	400	15,706	107	4	9	16,226
2004	NA	NA	163	25,417	58	0	6	25,644
2005	NA	NA	87	26,609	326	1	16	27,039
2006	NA	NA	287	28,867	420	6	11	29,591
2007	NA	NA	343	14,943	68	0	2	15,356
2008	NA	NA	151	23,432	65	23	35	23,706
2009	NA	NA	127	26,646	165	11	14	26,963
2010	NA	NA	136	21,924	23	1	23	22,107
2011	NA	NA	167	26,780	47	3	23	27,020
2012	NA	NA	103	15,638	161	15	53	15,970
2013	NA	NA	46	14,439	129	5	3	14,622
2014	NA	NA	50	22,567	30	18	105	22,770
2015	NA	NA	61	27,567	191	2	20	27,841
2016	NA	NA	141	26,539	23	23	5	26,731
2017	NA	NA	118	21,927	5	43	48	22,141
2018	NA	NA	120	14,390	2	5	22	14,539
5-year average (2013–2017)	NA	NA	83	22,608	76	18	36	22,821
10-year average (2008–2017)	NA	NA	110	22,746	84	14	33	22,987
Historical average (1996–2017) ^d	NA	NA	179	20,239	85	10	26	20,539

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Source Ruesch and Fox (1996) for 1982–1995; Division of Sport Fish for 1996–2018.

- a. The fishery was closed 1992, 1994, and 1995.
- b. This fishery was administered separately from the subsistence setnet fisheries that operated in 1991 (Ruesch and Fox 1992).
- c. Current regulations in place since 1996. Permits since 1996 issued for 4 Upper Cook Inlet personal use salmon fisheries.
- d. Historical average based on years since 1996 when current regulations were adopted.

Table 11-16.—Estimated personal use salmon harvests, Kasilof River dip net fishery, 1981–2018.

Year ^b	Permits		Estimated salmon harvest ^a					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	NA	NA	NA	10,300	NA	NA	NA	10,300
1982	NA	NA	NA	1,800	NA	NA	NA	1,800
1983	NA	NA	NA	11,124	NA	NA	NA	11,124
1984	NA	NA	NA	12,771	NA	NA	NA	12,771
1985	NA	NA	NA	16,284	NA	NA	NA	16,284
1986	NA	NA	NA	38,674	NA	NA	NA	38,674
1987	NA	NA	NA	18,454	NA	NA	NA	18,454
1988	NA	NA	NA	3,547	NA	NA	NA	3,547
1989	--	--	--	--	--	--	--	--
1990	--	--	--	--	--	--	--	--
1991 ^{cd}	7,065	5,480	10	907	2	0	3	922
1992	9,500	4,104	24	1,230	24	0	3	1,281
1993	--	--	--	--	--	--	--	--
1994 ^e	10,127	4,823	54	6,414	137	14	59	6,678
1995	NA	NA	NA	4,160	NA	NA	NA	4,160
1996 ^f	NA	NA	50	11,197	334	17	103	11,701
1997	NA	NA	35	9,737	90	19	19	9,900
1998	NA	NA	134	45,161	731	74	610	46,710
1999	NA	NA	127	37,176	286	52	264	37,905
2000	NA	NA	134	23,877	1,004	34	841	25,890
2001	NA	NA	138	37,612	766	23	307	38,846
2002	NA	NA	106	46,769	1197	139	1862	50,073
2003	NA	NA	57	43,870	592	30	286	44,835
2004	NA	NA	44	48,315	668	90	396	49,513
2005	NA	NA	16	43,151	538	102	658	44,465
2006	NA	NA	55	56,144	1,057	105	992	58,353
2007	NA	NA	35	43,293	487	136	383	44,334
2008	NA	NA	46	54,051	509	143	787	55,536
2009	NA	NA	34	73,035	1,441	173	1,274	75,957
2010	NA	NA	31	70,774	1,768	279	974	73,826
2011	NA	NA	24	49,766	977	144	652	51,563
2012	NA	NA	16	73,419	1,170	147	896	75,648
2013	NA	NA	18	85,528	1,666	339	683	88,234
2014	NA	NA	0	88,513	2,606	342	2,769	94,230
2015	NA	NA	0	89,000	2,723	597	1,607	93,927
2016	NA	NA	26	58,273	1,255	329	1,733	61,616
2017	NA	NA	14	78,260	605	969	2,850	82,698
2018	NA	NA	6	92,034	673	326	3,272	96,311
5-year average (2013–2017)	NA	NA	12		1,771	515	1,928	84,141
10-year average (2008–2017)	NA	NA	21	72,062	1,472	346	1,423	75,324
Historical average (1996–2017) ^g	NA	NA	52	53,042	1,021	195	952	55,262

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Table 11-16.—Page 2 of 2.

Source Nelson et al. (1999) for 1981–1990 and 1993–1995; Brannian and Fox (1996) for 1991, 1992, and 1994; Division of Sport Fish for 1996–2018.

a. Personal use harvests are estimated based on the annual sport harvest survey conducted by the Division of Sport Fish prior to 1996, and are estimated based on permit returns since 1996. Only sockeye salmon harvests reported, 1981–1990.

b. Fishery closed 1989–1990, and 1993. Classified as a subsistence fishery in 1991 and 1992.

c. In 1991, 1992, and 1994, a single permit issued for all Upper Cook Inlet subsistence fisheries except Tyonek (Central dip net, central setnet, northern setnet) (Brannian and Fox 1996). Permit return rate for 1992 was approximately 43.2% (Ruesch and Fox 1993).

d. Harvests for 1991 and 1992, and subsistence harvests for 1994, are reported, not estimated.

e. In 1994 both a subsistence and a personal use dip net fishery took place in the Kasilof River (Nelson 1999). Sockeye harvests included 3,679 salmon in the personal use fishery and 2,735 salmon in the subsistence fishery. Harvest data for other species in the personal use fishery are not available.

f. Current regulations have been in place since 1996. Permits have been required since 1996 and are issued for 4 Upper Cook Inlet personal use fisheries.

g. Historical average based on years since 1996 when current regulations were adopted.

NA = Data not available.

Table 11-17.—Estimated personal use salmon harvests, Kenai River dip net fishery, 1981–2018.

Year ^b	Permits		Estimated salmon harvest ^a					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	--	--	--	--	--	--	--	--
1982 ^c	NA	NA	NA	NA	NA	NA	NA	0
1983	NA	NA	NA	7,562	NA	NA	NA	7,562
1984	--	--	--	--	--	--	--	--
1985	--	--	--	--	--	--	--	--
1986	--	--	--	--	--	--	--	--
1987	NA	NA	NA	24,086	NA	NA	NA	24,086
1988	NA	NA	NA	16,880	NA	NA	NA	16,880
1989	NA	NA	NA	48,976	NA	NA	NA	48,976
1990	--	--	--	--	--	--	--	--
1991 ^{de}	7,065	5,480	44	10,468	146	2	17	10,677
1992 ^f	9,500	4,104	158	28,429	1,475	74	598	30,734
1993	NA	NA	NA	33,467	NA	NA	NA	33,467
1994	10,127	4,823	187	13,897	2,535	114	1,263	17,996
1995	NA	NA	NA	14,352	NA	NA	NA	14,352
1996 ^g	NA	NA	295	102,821	1,932	175	2,404	107,627
1997	NA	NA	364	114,619	559	58	619	116,219
1998	NA	NA	254	103,847	1,011	85	1,032	106,229
1999	NA	NA	488	149,504	1,009	102	1,666	152,769
2000	NA	NA	410	98,262	1,449	193	1,457	101,771
2001	NA	NA	638	150,766	1,555	155	1,326	154,440
2002	NA	NA	606	180,028	1,721	551	5,662	188,568
2003	NA	NA	1,016	223,580	1,332	249	1,647	227,824
2004	NA	NA	792	262,831	2,661	387	2,103	268,774
2005	NA	NA	997	295,496	2,512	321	1,806	301,132
2006	NA	NA	1,034	127,630	2,235	551	11,127	142,577
2007	NA	NA	1,509	291,270	2,111	472	1,939	297,301
2008	NA	NA	1,362	234,109	2,609	504	10,631	249,215
2009	NA	NA	1,189	339,993	2,401	285	5,482	349,350
2010	NA	NA	865	389,552	2,870	508	3,655	397,450
2011	NA	NA	1,243	537,765	4,745	915	3,914	548,582
2012	NA	NA	40	526,992	4,008	425	3,770	535,235
2013	NA	NA	11	347,222	3,169	701	3,625	354,728
2014	NA	NA	0	379,823	4,710	1,194	19,140	404,867
2015	NA	NA	66	377,532	4,150	957	4,147	386,852
2016	NA	NA	638	259,057	3,277	717	7,834	271,523
2017	NA	NA	1,194	297,049	732	886	7,962	307,823
2018	NA	NA	7	165,028	529	441	10,435	176,440
5-year average (2013–2017)	NA	NA	382	332,137	3,208	891	8,542	345,159
10-year average (2008–2017)	NA	NA	661	368,909	3,267	709	7,016	380,563
Historical average (1996–2017) ^h	NA	NA	682	263,170	2,398	472	4,679	271,403

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Table 11-17.—Page 2 of 2.

Source Nelson et al. (1999) for 1981–1990 and 1993–1995; Brannian and Fox (1996) for 1991, 1992, and 1994; Division of Sport Fish for 1996–2018.

a. Personal use harvests are estimated based on the annual sport harvest survey conducted by the Division of Sport Fish prior to 1996, and are estimated based on permit returns since 1996. Only sockeye salmon harvests reported, 1981–1990.

b. Fishery closed 1981, 1984–1986, and 1990. Classified as a subsistence fishery in 1991, a portion of 1992 and 1994.

c. The 1982 harvest is reported as "unknown" but "insignificant" (Nelson 1999; Brannian and Fox 1996).

d. Subsistence harvests for 1991, 1992, and 1994 are reported, not estimated.

e. 1991, 1992, and 1994 permits: single permit issued for all Upper Cook Inlet subsistence fisheries except Tyonek.

f. Harvests for 1992 include 16,240 sockeye salmon in the subsistence fishery and 12,189 sockeye in the personal use fishery. Harvests for other species are for the subsistence fishery only. Personal use harvests are not available for the other species.

g. Current regulations have been in place since 1996. Permits have been required since 1996 and are issued for 4 Upper Cook Inlet personal use fisheries.

h. Historical average based on years since 1996 when current regulations were adopted.

NA = Data not available.

Table 11-18.—Estimated personal use salmon harvests, Fish Creek dip net fishery, 1987–2018.

Year ^b	Permits		Estimated salmon harvest ^a					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1987	NA	NA	0	2,200	0	0	2,200	4,400
1988	NA	NA	0	3,000	0	0	3,000	6,000
1989	NA	NA	0	5,000	0	0	5,000	10,000
1990	NA	NA	0	6,500	0	0	6,500	13,000
1991	NA	NA	0	14,369	0	549	567	15,485
1992	NA	NA	0	19,002	0	607	678	20,287
1993	NA	NA	0	37,224	973	503	2,068	40,768
1994	NA	NA	0	16,012	1,336	248	632	18,228
1995	NA	NA	0	9,102	2,640	99	290	12,131
1996	NA	NA	37	17,260	2,414	153	331	20,195
1997	NA	NA	0	3,277	63	4	53	3,397
1998	NA	NA	1	4,036	649	29	80	4,795
1999	NA	NA	0	1,083	17	0	12	1,112
2000	NA	NA	0	6,925	958	29	83	7,995
2001	NA	NA	0	436	18	1	2	457
2002	--	--	--	--	--	--	--	--
2003	--	--	--	--	--	--	--	--
2004	--	--	--	--	--	--	--	--
2005	--	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--	--
2009	NA	NA	10	9,898	53	33	66	10,060
2010	NA	NA	12	23,705	3,576	290	1,721	29,304
2011	NA	NA	2	5,236	905	72	155	6,370
2012	--	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	--	--
2014	NA	NA	0	5,829	1,895	227	4,218	12,169
2015	NA	NA	0	19,260	3,321	329	1,329	24,239
2016	--	--	--	--	--	--	--	--
2017	NA	NA	1	4,894	281	54	273	5,503
2018	NA	NA	5	18,659	1,779	208	880	21,531
Historical average (1996–2017)	NA	NA	5	8,487	1,179	102	694	10,466

Source Brannian and Fox (1996) for 1987–1994; Howe et al. (1996) for 1995; Division of Sport Fish for 1996–2011 and 2014–2017.

a. Estimates derived from statewide sport harvest survey prior to 1996. Permits required since 1996.

b. Fishery closed 2002–2008, 2012, 2013, and 2016.

Table 11-19.—Estimated salmon harvests, unknown Upper Cook Inlet personal use fisheryfishery, 1996–2018.

Year	Permits		Estimated salmon harvest					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1996	NA	NA	24	4,761	131	4	127	5,047
1997	NA	NA	0	3,310	64	4	51	3,429
1998	NA	NA	34	7,562	294	20	196	8,106
1999	NA	NA	51	7,994	76	4	126	8,251
2000	NA	NA	44	5,429	218	24	84	5,799
2001	NA	NA	188	12,673	292	90	175	13,418
2002	NA	NA	166	14,846	341	54	916	16,323
2003	NA	NA	238	15,675	219	88	140	16,360
2004	NA	NA	99	13,527	366	25	210	14,227
2005	NA	NA	32	4,520	39	4	40	4,635
2006	NA	NA	29	3,406	47	84	304	3,870
2007	NA	NA	37	6,729	61	6	28	6,861
2008	NA	NA	41	6,890	66	58	412	7,467
2009	NA	NA	25	7,968	144	57	133	8,327
2010	NA	NA	15	8,300	168	12	109	8,604
2011	NA	NA	17	10,695	80	35	135	10,962
2012	NA	NA	8	13,548	173	40	135	13,904
2013	NA	NA	9	7,126	155	8	113	7,411
2014	NA	NA	0	9,315	129	78	563	10,085
2015	NA	NA	0	8,626	263	41	153	9,083
2016	NA	NA	15	4,837	34	81	233	5,200
2017	NA	NA	19	4,760	41	10	107	4,937
2018	NA	NA	0	2,085	21	4	209	2,319
5-year average (2013–2017)	NA	NA	9	6,933	124	44	234	7,343
10-year average (2008–2017)	NA	NA	15	8,207	125	42	209	8,598
Historical average (1996–2017)	NA	NA	50	8,295	155	38	204	8,741

Source ADF&G Division of Sport Fish.

Table 11-20.—Beluga River senior personal use dip net fishery summary, 2008–2018.

Year	Permits		Reported salmon harvest					Total
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2008	20	20	0	31	35	0	0	66
2009	11	11	0	140	78	0	7	225
2010	14	14	0	47	1	5	0	53
2011	13	12	0	137	17	5	0	159
2012	7	7	0	9	7	0	0	16
2013	8	8	0	30	55	1	2	88
2014	10	10	0	32	12	1	1	46
2015	8	8	0	65	17	0	0	82
2016	11	10	0	52	45	2	2	101
2017	9	9	0	26	36	0	4	66
2018	10	9	0	37	17	0	0	54
5-year average (2013–2017)	9	9	0	41	33	1	2	77
Historical average (2008–2017)	11	11	0	57	30	1	2	90

Source ADF&G Division of Sport Fish.

Table 11-21.—Personal use/subsistence salmon harvests, Kachemak Bay setnet fishery (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery), Lower Cook Inlet, 1969–2018.

Year	Households or permits		Reported salmon harvest					Total
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1969	47	44	0	9	752	0	38	799
1970	78	73	0	12	1,179	13	143	1,347
1971	112	95	2	16	1,549	7	44	1,618
1972	135	105	1	11	975	69	48	1,104
1973	143	128	0	18	1,304	40	84	1,446
1974	148	118	0	16	376	77	43	512
1975	292	276	4	47	1,960	61	632	2,704
1976	242	221	16	46	1,962	56	1,513	3,593
1977	197	179	12	46	2,216	119	639	3,032
1978	311	264	4	35	2,482	34	595	3,150
1979	437	401	6	37	2,118	41	2,251	4,453
1980	533	494	43	32	3,491	25	1,021	4,612
1981	403	383	15	73	4,370	68	718	5,244
1982	395	372	41	49	7,398	154	956	8,598
1983	344	328	5	17	2,701	44	305	3,072
1984	368	346	3	25	3,639	105	804	4,576
1985	328	302	5	49	3,317	34	138	3,543
1986	349	310	7	68	3,831	56	3,132	7,094
1987	363	339	5	50	3,979	61	279	4,374
1988	439	417	14	73	5,007	75	1,445	6,614
1989	477	453	41	156	7,219	53	883	8,352
1990	578	543	12	200	8,323	69	1,846	10,450
1991	472	459	8	47	4,931	23	366	5,375
1992	365	350	5	63	2,277	21	643	3,009
1993	326	317	6	44	1,992	18	463	2,523
1994	286	284	66	80	4,097	18	1,178	5,439
1995	235	232	118	108	2,916	7	343	3,492
1996	299	293	302	102	3,347	24	1,022	4,797
1997	276	264	384	191	1,817	12	257	2,661
1998	227	214	135	20	1,461	5	167	1,788
1999	146	141	276	119	1,803	3	168	2,369
2000	213	206	104	28	2,064	4	304	2,504
2001	154	148	86	27	1,579	16	150	1,858
2002	122	113	61	33	1,521	12	251	1,878
2003	104	96	17	57	1,071	9	170	1,324
2004	91	83	7	56	1,554	16	172	1,805
2005	108	96	8	57	833	13	296	1,207
2006	89	82	15	41	1,295	5	221	1,577
2007	141	133	10	113	1,431	34	641	2,229
2008	146	142	2	92	1,844	14	687	2,639
2009	145	142	9	273	646	4	101	1,033
2010	128	122	14	149	875	17	251	1,306
2011	119	112	15	223	806	5	145	1,194
2012	98	95	5	137	1,471	6	275	1,894

-continued-

Table 11-21.–Page 2 of 2.

Year	Households or permits		Reported salmon harvest					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2013	123	118	9	122	1,732	3	135	2,001
2014	160	154	13	310	2,273	178	20	2,794
2015	136	131	10	509	1,373	22	152	2,066
2016	170	169	18	166	2,033	335	8	2,560
2017	148	145	6	298	2,388	212	11	2,915
2018	192	187	6	259	1,947	161	11	2,384
5–year average (2013–2017)	147	143	11	281	1,960	150	65	2,467
10–year average (2008–2017)	137	133	10	228	1,544	80	179	2,040
Historical average (1969–2017)	240	225	40	93	2,481	47	534	3,194

Source Hollowell et al. (2019).

Table 11-22.–Estimated personal use salmon harvests, China Poot dip net fishery, 1980–1995^a.

Year	Fishers	Estimated salmon harvest					
		Chinook	Sockeye	Coho	Chum	Pink	Total
1980	NA	0	1,000	0	0	0	1,000
1981 ^b	--	--	--	--	--	--	--
1982	NA	0	1,320	0	0	0	1,320
1983	1,956	0	5,910	0	0	0	5,910
1984	1,237	0	1,794	0	0	0	1,794
1985	398	0	794	0	0	12	806
1986	993	0	1,815	0	0	673	2,488
1987	1,016	0	1,231	0	0	0	1,231
1988	1,361	0	1,910	0	127	36	2,073
1989	1,428	0	5,416	0	0	239	5,655
1990	1,537	0	5,835	0	178	68	6,081
1991	395	0	1,528	0	0	33	1,561
1992	810	0	3,468	0	76	183	3,727
1993	1,036	0	4,260	0	0	45	4,305
1994	1,372	0	5,715	0	0	34	5,749
1995	2,261	0	8,605	0	0	77	8,682
Historical average (1980–1995)	1,215	0	3,373	0	25	93	3,492

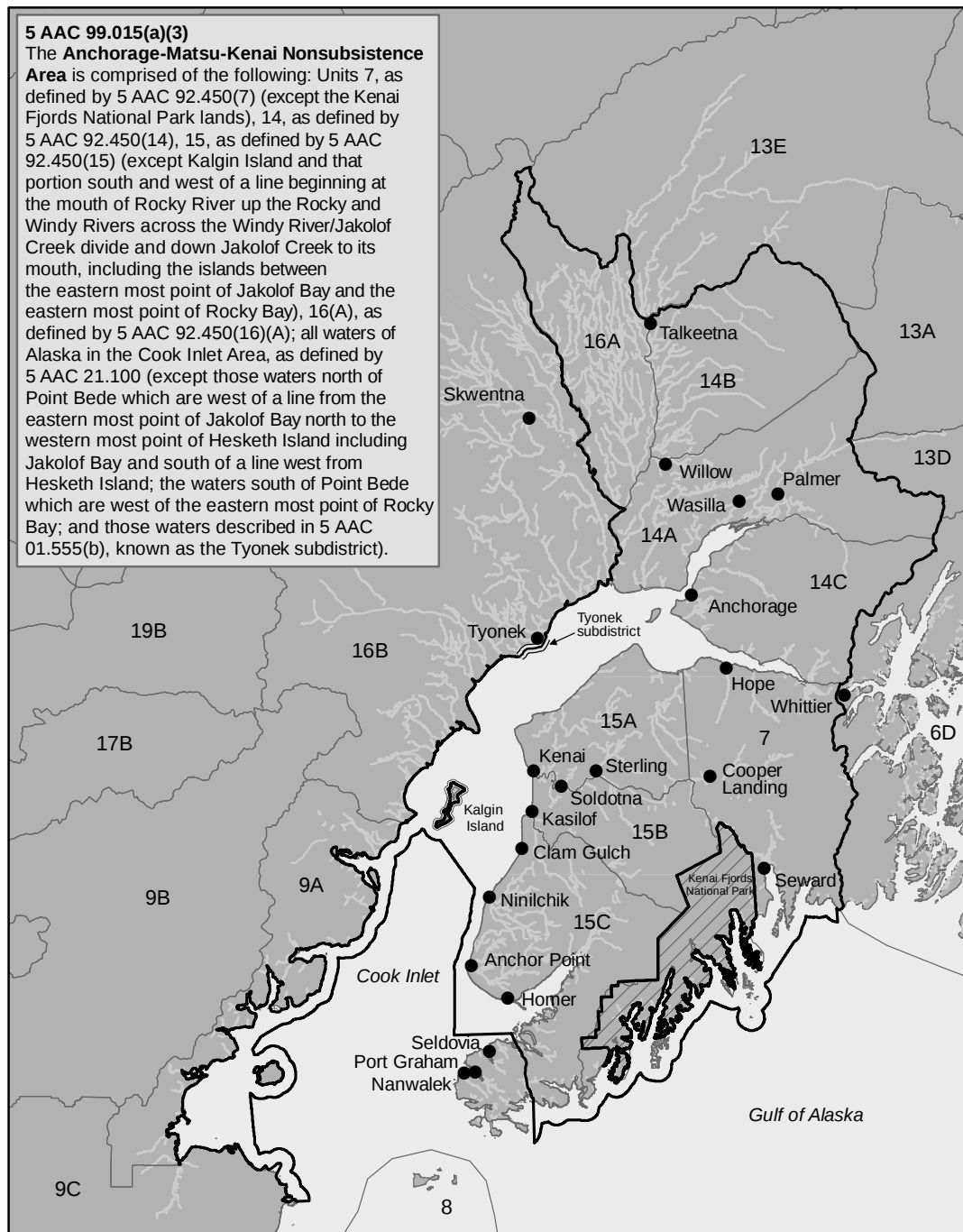
Source Fall and Stanek (1990), for 1980 to 1989, based on annual reports of the sport fish harvest survey. 1990 through 1995: annual sport fish angler survey report. Harvest data as reported in annual sport fish angler survey reports differ from data reported in Nelson (1995:222), which reports "sport and personal use harvests combined."

a. Harvest data not collected after 1995.

b. Fishery was closed in 1981.

NA = Data not available.

5 AAC 99.015(a)(3)
The Anchorage-Matsu-Kenai Nonsubsistence Area is comprised of the following: Units 7, as defined by 5 AAC 92.450(7) (except the Kenai Fjords National Park lands), 14, as defined by 5 AAC 92.450(14), 15, as defined by 5 AAC 92.450(15) (except Kalgin Island and that portion south and west of a line beginning at the mouth of Rocky River up the Rocky and Windy Rivers across the Windy River/Jakolof Creek divide and down Jakolof Creek to its mouth, including the islands between the eastern most point of Jakolof Bay and the eastern most point of Rocky Bay), 16(A), as defined by 5 AAC 92.450(16)(A); all waters of Alaska in the Cook Inlet Area, as defined by 5 AAC 21.100 (except those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north to the western most point of Hesketh Island including Jakolof Bay and south of a line west from Hesketh Island; the waters south of Point Bede which are west of the eastern most point of Rocky Bay; and those waters described in 5 AAC 01.555(b), known as the Tyonek subdistrict).



Anchorage-Matsu-Kenai Nonsubsistence Use Area



- Tyonek Subdistrict
- Nonsubsistence Use Area
- Game Management Unit
- Kalgin Island: Open to subsistence use
- Kenai Fjords Nat'l Pk (closed to all subsistence use)

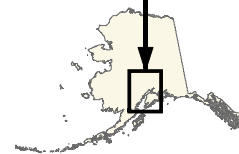


Figure 11-1.—Anchorage-Matsu-Kenai Nonsubsistence Use Area.

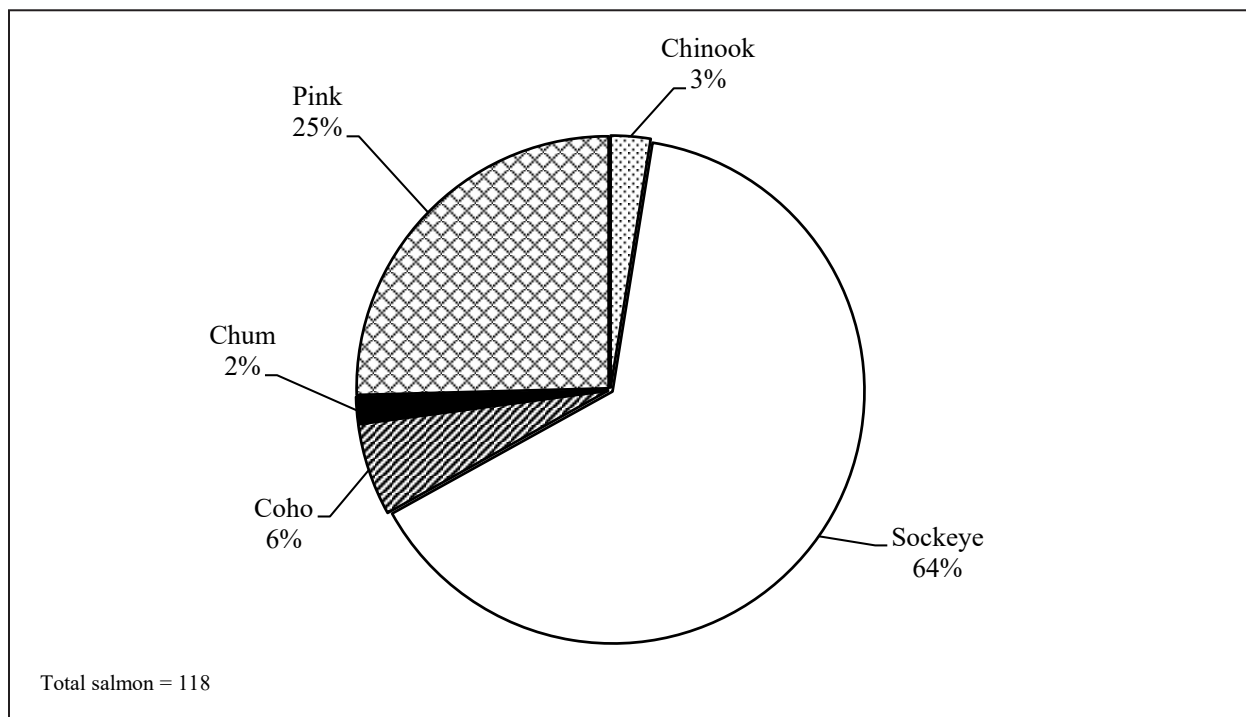


Figure 11-2.—Subsistence salmon harvests in the Port Graham and Koyuktolik subdistricts, 2018.

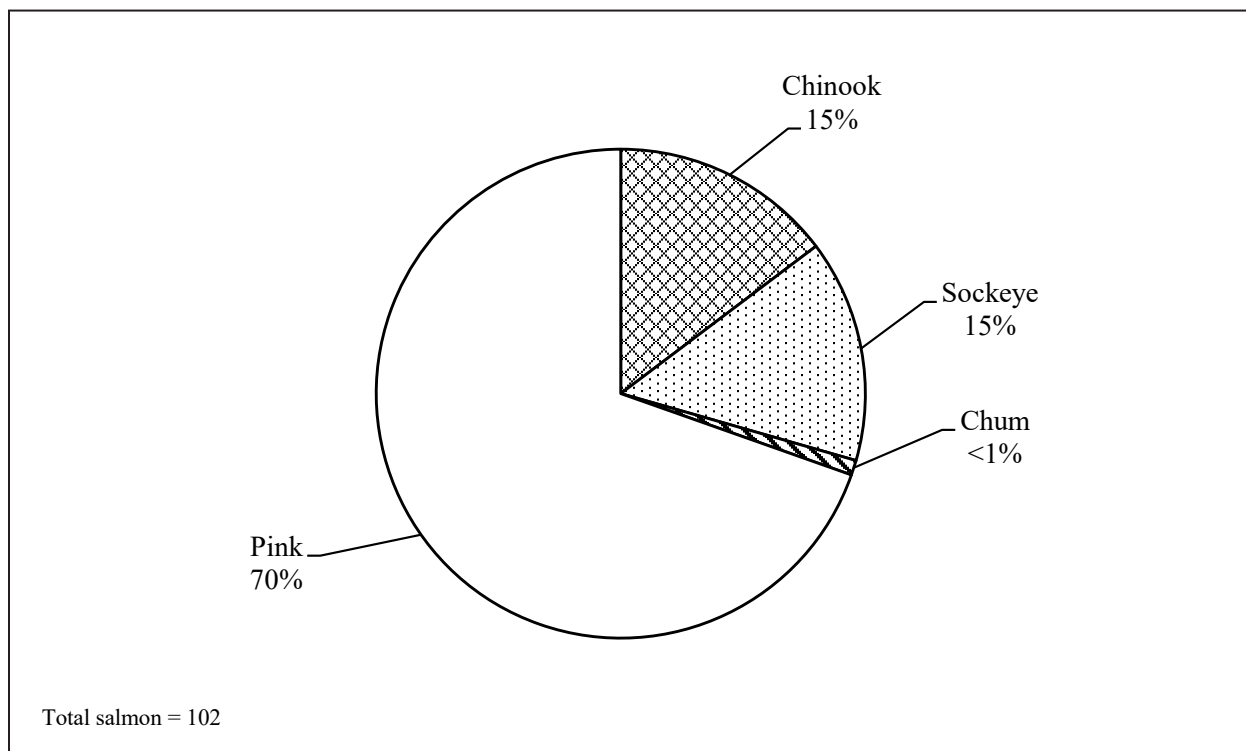


Figure 11-3.—Subsistence salmon harvests in Seldovia, 2018.

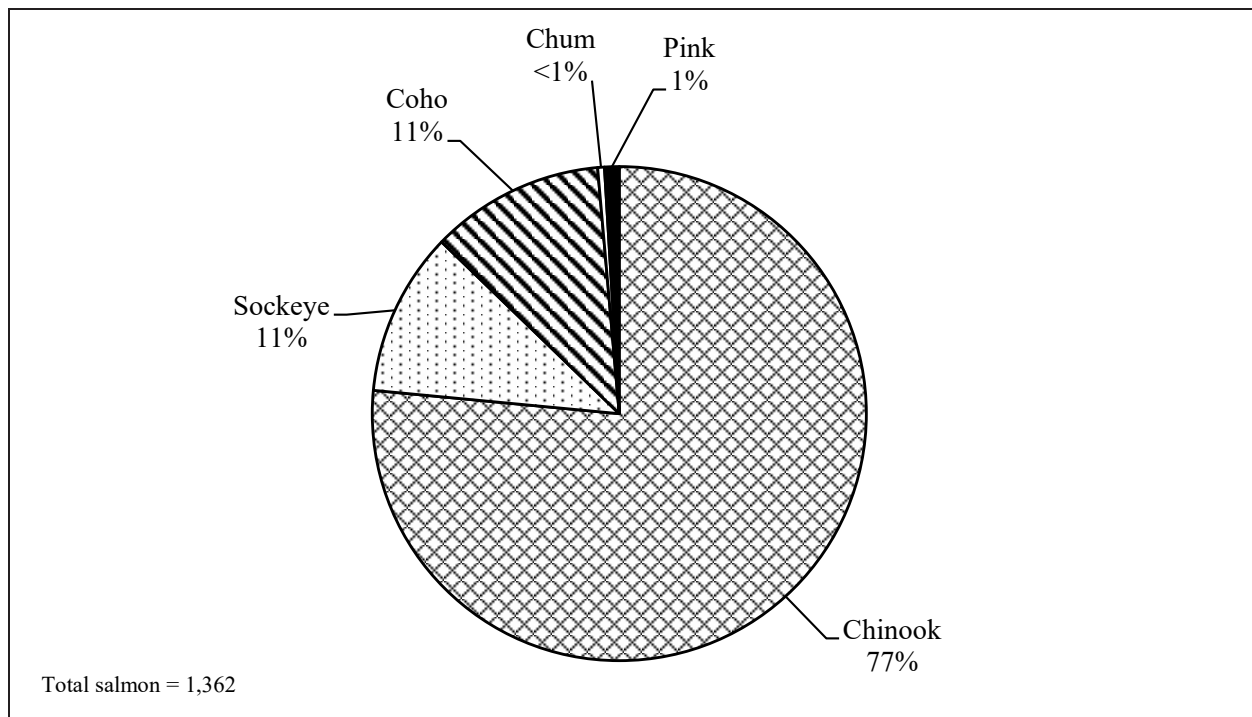


Figure 11-4.—Subsistence salmon harvests in the Tyonek Subdistrict, 2018.

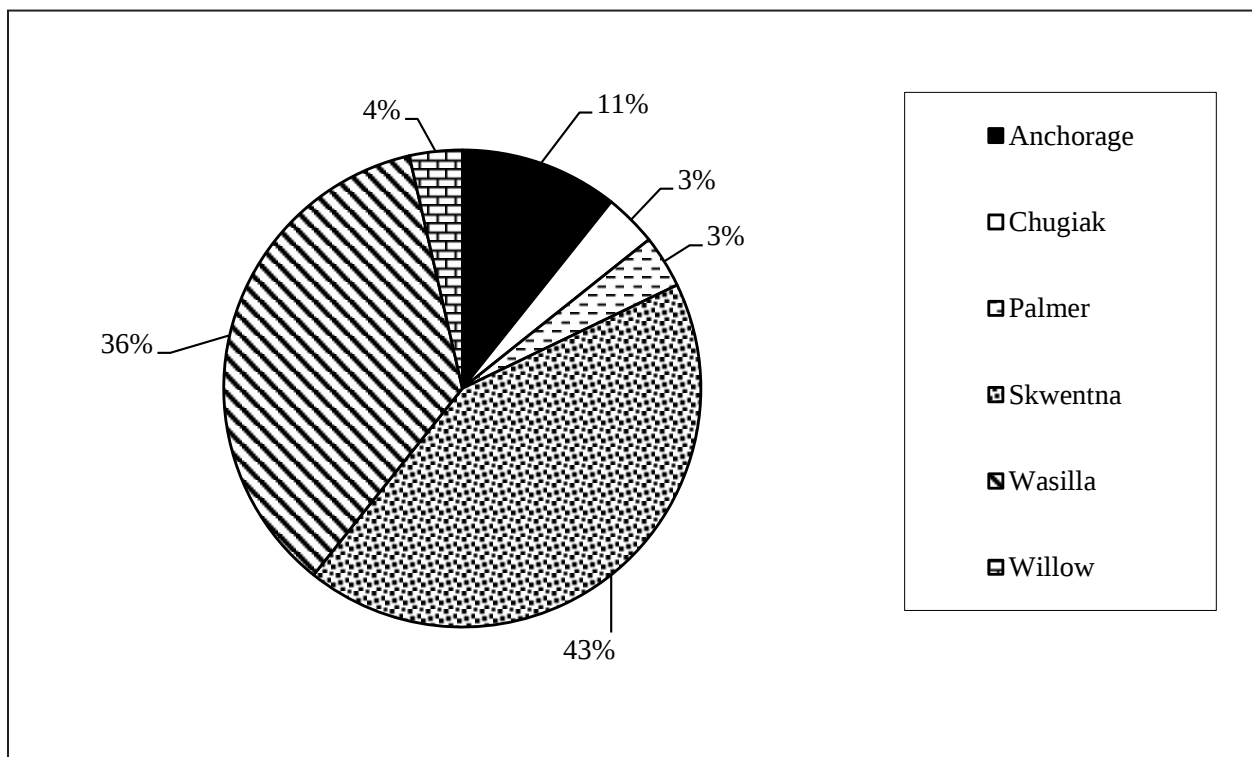


Figure 11-5.—Permits issued, by place of residence, for the Upper Yentna River fishery, 2018.

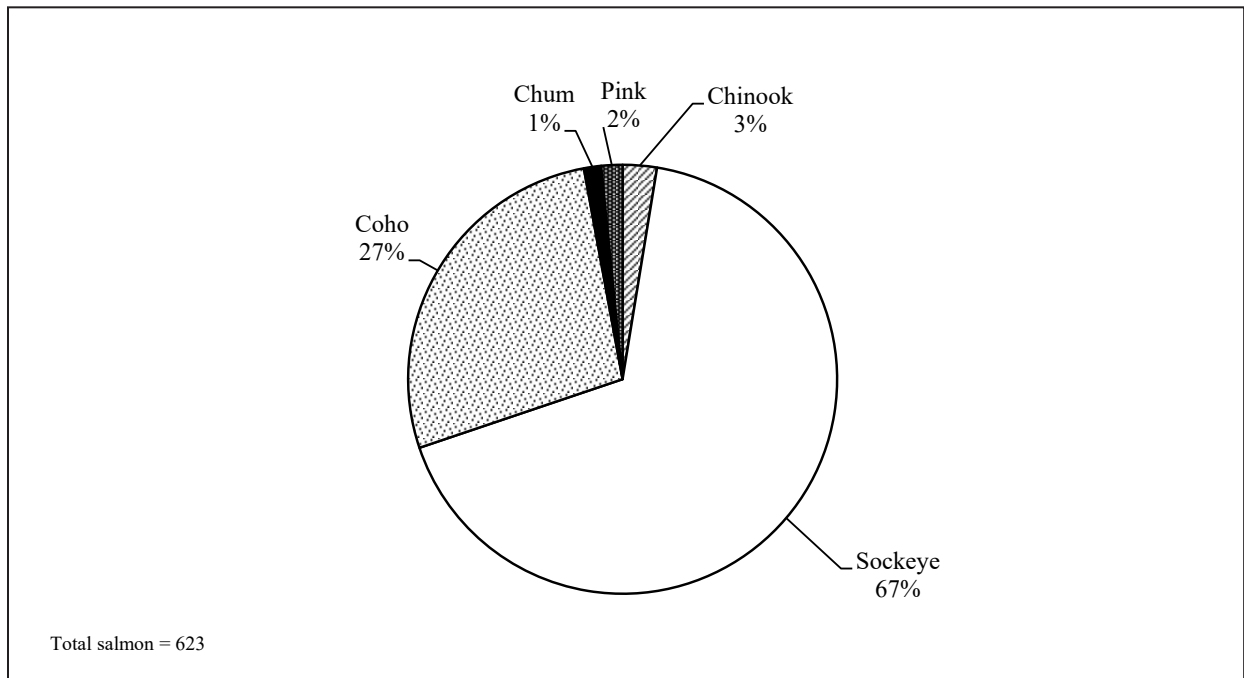


Figure 11-6.—Subsistence salmon harvests in the Upper Yentna River, 2018.

CHAPTER 12: PRINCE WILLIAM SOUND AREA

INTRODUCTION

The Prince William Sound (PWS) Management Area includes all waters of the Gulf of Alaska between the longitude of Cape Fairfield and the longitude of Cape Suckling south of the Yukon Area described in 5 AAC 05.100, and all waters of the upper Susitna River drainage upstream of the Susitna River's confluence with the Oshetna River. The PWS Management Area's main geographical features are the Copper River, its tributaries, and Prince William Sound. It has a total land area of 38,000 square miles.

The topography of the large and complex Prince William Sound system creates ecological conditions that support many salmon runs. The area supports both natural and enhanced runs of pink *Onchorhynchus gorbuscha*, sockeye *O. nerka*, chum *O. keta*, coho *O. kisutch*, and Chinook *O. tshawytscha* salmon.

State managed personal use and state and federal subsistence fisheries within these waters provide salmon to households within the Copper River Basin, Prince William Sound, and other communities across Alaska. Subsistence fisheries are not permitted in the Valdez Nonsubsistence Area (5 AAC 99.015(a) (5)). In 2018, approximately 7,937 personal use and subsistence permits for the Prince William Sound Management Area were issued to Alaska residents, with a total estimated harvest of 160,166 salmon.

In addition to subsistence and personal use fisheries, the area supports commercial gillnet and purse seine fisheries, as well as sport fisheries for all salmon types. Six hatcheries run by nonprofit aquaculture associations contribute pink, sockeye, and chum salmon to the area's fisheries. The Gulkana Hatchery in Paxson augments production of sockeye salmon to the Copper River.

In 2018 there were nine subsistence and one personal use salmon fisheries with annual harvest assessment programs in the Prince William Sound Management Area:

- In the Upper Copper River:
 - o Glennallen Subdistrict: state subsistence permit program,
 - o Glennallen Subdistrict: federal subsistence permit program
 - o Chitina Subdistrict: state personal use permit program,
 - o Chitina Subdistrict: federal subsistence permit program,
 - o Batzulnetas: federal subsistence permit program,
- In Copper River Flats–Prince William Sound: state subsistence permit program,
- In Prince William Sound's waters:
 - o Eastern District–Tatitlek: state subsistence permit program
 - o Southwestern District–Chenega Bay: state subsistence permit program
 - o Prince William Sound, general area: state subsistence permit program, and
 - o PWS/Chugach National Forest federal subsistence permit program.

The Upper Copper River area is accessible by the Richardson Highway and the Glenn Highway. The Copper River Delta and communities along the Prince William Sound shoreline are accessible primarily via boat or plane, except for Valdez, which is also accessible by the Richardson Highway. Besides Copper River and PWS communities, other communities show a high amount of use of some of the PWS fisheries, including Anchorage, Fairbanks, Palmer, Wasilla, and the Upper Tanana River area.

The 21 communities of the Copper River Basin range from fewer than 15 people to over 450 and had a total 2018 population of approximately 2,815 people.¹ More communities are situated in the Copper River Basin than along the coastline of the Prince William Sound Management Area. The coastline communities range in size from Valdez and Cordova (2018 population estimates of 3,891 and 2,353 residents, respectively) to Whittier (244 residents), Tatitlek (90 residents), and Chenega Bay (56 residents).²

HARVEST ASSESSMENT PROGRAMS

Annual subsistence-personal use salmon harvest assessments have been conducted in the PWS Management Area since at least 1960, conducted by either the Division of Commercial Fisheries or Division of Sport Fish for the state-managed fisheries. Harvest assessment programs for the federal subsistence fisheries are administered by the National Park Service in the Upper Copper River and the US Forest Service for Prince William Sound. For both state and federal subsistence and personal use fisheries, the harvest assessment programs are based on required fishing permits. Permits include a harvest record, and fishers are required to record at least the dates they fished and the number of each species harvested each day. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Any specific permit requirements for each fishery are detailed in the relevant sections below. Harvest estimates for the fisheries are made based on reported harvests expanded to all permit holders; harvest estimates are not made for all PWS Management Area fisheries.

UPPER COPPER RIVER DISTRICT

For both state and federal management purposes, the Upper Copper River District of the Prince William Sound Management Area consists of all waters of the mainstem Copper River from the mouth of the Slana River downstream to an east–west line crossing the Copper River approximately 200 yards upstream of Haley Creek as designated by ADF&G regulatory markers. There are two subdistricts: the Chitina Subdistrict, which consists of all waters of the Upper Copper River District downstream of the downstream edge of the Chitina–McCarthy Road Bridge, and the Glennallen Subdistrict, which consists of all remaining waters of the Upper Copper River District. The state also created the Batzulnetas fishery in 1987 through an emergency regulation to settle the federal district court case of *John vs. Alaska*. All tributaries to the Copper River are closed to subsistence salmon fishing. Under federal regulations, the total number of salmon per household taken within the Upper Copper River District exchanged in customary trade may not exceed 50% of the annual harvest limit per household and may not exceed the total cash value of \$500 annually. State regulations for the district do not allow exchange of subsistence-caught fish for cash.

The state established the Glennallen and Chitina subdistricts in 1977. Prior to that time, the Upper Copper River was treated as one unit for management purposes. In 2002, the Federal Subsistence Board (FSB) created a federal permit requirement for qualified rural residents (primarily residents of Copper River Basin and Upper Tanana communities), which is administered by the National Park Service (NPS). The Glennallen and Chitina subdistricts have had separate state and federal permit programs since 2002. The personal use dip net fishery that takes place in the Chitina Subdistrict under state regulations has in the past been classified as either subsistence or personal use. Historical data for this fishery, including years when it was classified as subsistence, are included in statewide summaries as personal use. For a detailed discussion of the history of these fisheries, see Simeone and Fall (1996).

The creation of a dual permit program for subsistence fishing in the Upper Copper River (Glennallen Subdistrict) creates challenges for the compilation of a single subsistence harvest estimate for this subsistence fishery, which is the goal of this annual report. Issues include the following:

- Federal permits allow fishing with multiple gear types, including rod and reel, but state permits allow fishing with only two gear types—dip nets or fish wheels. Thus while prior

1. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed August 20, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

2. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed August 20, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

to 2003, annual report summaries for the Glennallen Subdistrict showed the number of permits issued by gear type, this is not possible for the combined state and federal data summaries reported here.

- Some households obtain both the state and federal permit for the Glennallen Subdistrict. Of these “dual-permitted” households, some report harvest and effort only on their state permits (not returning the federal permit), some report harvest and effort only on their federal permits (not returning the state permit), some report identical harvests and efforts on both permits, and some return neither permit. It is not possible to identify duplicates in the permit data so the tables in this report reflect estimates based on all returned state and federal permits in the Glennallen Subdistrict.
- Until 2006, state permits collected only the permit holder’s city in terms of their mailing address, but federal permits collected this and the “community of primary residence.” Since the Copper River area has a number of smaller communities without their own post offices, state permits issued to residents of these communities prior to 2006 did not provide adequate information to assure analysis results accurately reflected the true community of residency of harvesters. But because of the precision of the federal permit regarding place of residence, the federal permit place of residence data were used to compile the harvest tables, in combination with the mailing address data from state permits. Since there were several dual-permitted households in the Glennallen Subdistrict fishery, the federal residence community was used as the default where this information differed.

Glennallen Subdistrict State and Federal Subsistence Fisheries

Regulations

The Glennallen Subdistrict is that portion of the mainstem Copper River upstream of the downstream edge of the Chitina-McCarthy Bridge to the mouth of the Slana River. The BOF has made two customary and traditional (C&T) use determinations that apply to the Glennallen Subdistrict: the board has found that all waters of the Glennallen Subdistrict support customary and traditional uses of salmon and that all waters of the Prince William Sound Area, outside the nonsubsistence area, support customary and traditional uses of freshwater finfish other than salmon.

ADF&G issues state permits at ADF&G offices (in Glennallen, Tok, Delta Junction, Fairbanks, Palmer, and Anchorage) under the authority of 5 AAC 01.630. Federal permits can be applied for in person at the NPS Wrangell-St. Elias Visitor’s Center in Copper Center or the Slana Ranger Station.

In the state fishery, households may participate in either the Glennallen Subdistrict subsistence fishery or the Chitina Subdistrict personal use fishery in any given year, but not both. In the Glennallen Subdistrict, fishers may use either fish wheels or dip nets, but not both. Federally-qualified rural resident households may hold permits for both federal subsistence fisheries in the Upper Copper District, or for the Glennallen subdistrict federal subsistence fishery and Copper River state subsistence or personal use fisheries but state and federal harvest limits are not additive. Federal subsistence permit holders may use rod and reel in addition to fish wheels and dip nets; all three types of gear may be used, but not at the same time.

The state season is June 1–September 30; the federal season is May 15–September 30. Annual limits are the same under state and federal regulations: 30 salmon for a household with one person or 60 salmon for a household of two persons, of which no more than five may be Chinook salmon if taken with a dip net. For a household of more than two, 10 salmon for each additional person may be added to the annual limit. Upon request, permits can be issued for additional salmon, with limits of 200 salmon for 1-person households and 500 for households of two or more persons. The number of Chinook salmon (5) taken by dip net does not increase with household size under state regulations; federal permit holders may take up to five additional Chinook salmon with rod and reel. ADF&G may issue emergency orders to establish a bag limit for Chinook salmon taken with a fish wheel and reduce the bag limit for Chinook salmon taken with either a dip net or a fish wheel when necessary to achieve escapement goals.

Under the provisions of 5 AAC 01.630 (h), a village council or other similarly qualified organization may obtain a permit to operate a fish wheel on behalf of its members upon approval of a harvest assessment plan submitted to ADF&G. These organizations may also issue household permits and register fish wheels. Since 1997 permits have been issued to tribal organizations from Chistochina, Gakona, Kluti-Kaah, Chickaloon, and Chitina. Table 12-1 summarizes data for the permits issued for village fish wheels by ADF&G from 1997 through 2015; no permits have been issued in the subsequent years.

Subsistence Salmon Harvests in 2018

As shown in Table 12-2, ADF&G and NPS issued a total of 1,995 subsistence salmon permits for the Glennallen Subdistrict for 2018 (Table 12-2). This total is higher than both the recent 5-year average (1,921 permits), 10-year average (1,740 permits), and the historical average (1989–2017; 1,256) and continues a relatively steady increase in issued permits since 1990. The growth in permits has not been equal between permits issued by ADF&G for dip netting and those issued for fish wheels; since 2000 the number of dip net permits issued and fished has increased while the number of permits for fish wheels issued and fished has decreased.³ Beginning in 1990, all residents of the state of Alaska could obtain state subsistence fishing permits anywhere subsistence fisheries are authorized; the majority of permits in the Glennallen subdistrict are issued to residents of Anchorage, the Mat-Su Valley, and Fairbanks.

The estimated total Glennallen Subdistrict subsistence salmon harvest in 2018 for both federal and state fisheries was 65,792 salmon, the majority of which were sockeye salmon (Table 12-2). The harvest was composed of 58,079 sockeye salmon (approximately 88% of the year's salmon harvest), 7,559 Chinook salmon, and 154 coho salmon. Pink and chum salmon are not present in the Upper Copper River. The 2018 harvest was similar to the 2017 harvest, though fewer sockeye salmon and more Chinook salmon were reported in 2018, and notably lower than the 5- and 10-year averages, as well as the historical average.

Table 12-3 reports subsistence salmon harvests in the Glennallen Subdistrict by place of residence of permit holders in 2018. Copper Basin residents caught 34% of the harvest (22,233 salmon) and other Alaska residents harvested 66% (43,559 salmon). Of all Glennallen Subdistrict permits (federal and state), residents of Copper Basin communities held 342 permits (approximately 17%) and other Alaska residents held 1,653 permits (83%) (Table 12-3). Anchorage residents were issued the most permits (498) but Wasilla residents harvested the most salmon with an estimated 13,513 fish. Eight communities accounted for 91% of the estimated salmon harvest by residents of communities outside of the Copper Basin: Wasilla (13,513 salmon), Anchorage (8,311), Fairbanks (7,361), Palmer (3,596), North Pole (2,259), Valdez (2,132), Delta Junction (1,232), and Eagle River (1,222). Estimated harvests from these communities in 2018 were generally similar to 2017. For communities within the Copper River basin, the majority of the harvest was taken by residents of Copper Center (8,247 salmon), Glennallen (4,206), and Tazlina (3,046). The number of permits issued to residents of the Copper River basin in 2018 was slightly less than in 2017, but the number of returned permits was the same. Estimated harvests for these communities increased approximately 4,250 fish between 2017 and 2018; approximately 2,500 more Chinook salmon were caught along with 2,000 more sockeye salmon.

Chitina Subdistrict State Personal Use Fishery

Regulations

The regulatory history of the Chitina Subdistrict is complex; in 1984, and from 1986 through 1999, the Chitina Subdistrict was closed to subsistence fishing. The dip net fishery was operated as a personal use fishery during this time. At its December 1999 meeting, the BOF reversed its earlier decision and determined that the Chitina Subdistrict supported customary and traditional (C&T) uses of salmon, returning the classification of the fishery to subsistence. In February 2003, the BOF reconsidered that decision, resulting in a negative C&T finding, which returned the classification to personal use.

3. Mark Somerville, ADF&G Fisheries Biologist, personal communication, April 23, 2020.

The Chitina Subdistrict personal use fishery is managed under the Copper River Personal Use Dip Net Salmon Fishery Management Plan (SAAC 77.591). The fishing season runs from June 7 to September 30. Inseason, this fishery is managed by emergency orders which set weekly fishing periods, based on actual in-river counts at the sonar station located at Miles Lake. A lower than expected return of sockeye salmon past the sonar in 2018 resulted in a closure of the personal use fishery from June 18 through July 12.^{4,5}

In the personal use fishery, a household permit and an Alaska state resident sport fishing license are required. Households may not possess both the Chitina state personal use permit and a Glennallen Subdistrict state subsistence permit in the same year. Under state regulations, dip nets are the only legal gear in the Chitina Subdistrict. Annual limits in this fishery are based on household size: 25 salmon for the head of household (permit holder) and 10 additional salmon per dependent of the permit holder. Only one Chinook salmon may be harvested annually. Rainbow/steelhead trout taken by dip net under the state fishery must be released immediately and returned to the water unharmed. Additional permit requirements are for the fisher to indicate whether they fished from a boat or from shore, and that the tail tips of personal use caught fish must be clipped immediately.

Personal Use Salmon Harvests in 2018

As reported in Table 12-4, the estimated total salmon harvest in the Chitina Subdistrict personal use fishery in 2018 was 82,955 fish, including 80,121 sockeye salmon (98%), 1,515 coho salmon, and 1,318 Chinook salmon. In 2018, 4,966 permits were issued and 4,033 were returned. The 2018 total estimated harvest was the lowest harvest since 1990, less than half the recent 5-year average (178,382 salmon), and well below the 10-year and historical averages (149,749 and 125,358 salmon, respectively). The number of permits issued in 2018 was also the lowest since 1989, well below the 5-year, 10-year, and historical averages. These low estimates of harvests and permits issued are likely related to the low return of sockeye salmon early in the season. Returns were low enough that fishing was closed for approximately a month, before improving sufficiently to allow open periods from the middle of July to the end of September. While harvests of sockeye salmon were less than half of the recent 5-year average, estimated harvests of Chinook salmon were higher than the recent 5- and 10-year averages of 1,201 salmon and 1,066 salmon. Coho salmon harvests in 2018 were more than double the 2017 harvest and on par with the recent 10-year average of 1,438 fish.

Table 12-5 reports estimated salmon harvests in the Chitina Subdistrict personal use fishery by community in 2018; most participants in this fishery lived in Fairbanks, Anchorage, or the Matanuska–Susitna Borough. Only 13 Copper Basin residents (<1%) obtained state personal use salmon permits for the Chitina Subdistrict in 2018 and harvested an estimated 160 salmon, nearly all sockeye salmon. Approximately 83,000 salmon were harvested by residents of communities outside the Copper Basin. The communities with the most permits issued and the most salmon harvested were Anchorage (1,512 permits and 22,713 salmon), Fairbanks (1,330 permits and 23,139 salmon), Wasilla (452 permits and 8,908 salmon), and North Pole (421 permits and 6,714 salmon).

Chitina Subdistrict Federal Subsistence Fishery

Regulations

In 2018, qualified Alaska rural residents could obtain federal subsistence permits for the Chitina Subdistrict from NPS. Legal gear included fish wheels, dip nets, and rod and reel. Federally-qualified rural resident households may hold permits for both federal subsistence fisheries in the Upper Copper District, or for the Chitina subdistrict federal subsistence fishery and Copper River state subsistence or personal use fisheries

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4. Alaska Department of Fish and Game Division of Sport Fish, “Copper River Personal Use Dip Net Salmon Fishing Closed Until Further Notice,” news release, June 13, 2018. Accessed September 15, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/915634393.pdf>
 5. Alaska Department of Fish and Game Division of Sport Fish, “Copper River Personal Use Dip Net Salmon Fishing Opens,” news release, July 9, 2018. Accessed September 15, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/915634393.pdf>

but state and federal harvest limits are not additive. Federal seasonal limits for the Chitina Subdistrict were the same as for the Glennallen Subdistrict, but could not be combined. The federal season opens on June 1 and remains open through September 30. Under federal regulations, rainbow/steelhead trout incidentally taken from fish wheels could be retained.

Federal Subsistence Harvests in 2018

As reported in Table 12-6, an estimated 3,388 salmon were harvested in the federal Chitina Subdistrict subsistence fishery in 2018. This is above the estimated harvest of 2017 as well as the recent 5-year average of 2,119 salmon, the recent 10-year average of 2,281 salmon and the historical average (2003–2017; 2,026 salmon).

The total harvest included 3,254 sockeye salmon (96%), 100 Chinook salmon, and 34 coho salmon. A total of 131 permits were issued, which was the second largest number of permits ever issued for this fishery. Table 12-7 reports 2018 harvest and permit numbers according to each permittee's community of residence. Kenny Lake, Copper Center, and Chitina accounted for 58% of the issued permits and 73% of the estimated harvest.

Native Village of Batzulnetas Subsistence Fishery

Regulations

For both state and federal subsistence fisheries in the Batzulnetas area, the open area is all waters from regulatory markers near the mouth of Tanada Creek and approximately one-half mile downstream from that mouth and all waters of Tanada Creek between regulatory markers. Legal gear includes fish wheels and dip nets in the Copper River and dip nets and spears in Tanada Creek. The state fishing season opens by regulation on June 1 and remains open through September 1. From June 1 through June 30 the fishery is open for 48 hours each week from noon Friday to noon Sunday. From July 1 through September 1 the fishery is open for 84 hours each week from noon Friday through 11:59 p.m. Monday. The federal fishing season is open continuously from May 15–September 30 or until the season is closed by special action.

Subsistence Harvests in 2018

Since 1987, either a state or federal subsistence permit has been issued in 17 of the 31 years (Table 12-8). Only federal permits for the Batzulnetas area have been issued since 2001. One permit was issued and returned every year from 1998 through 2004. No permits were issued for the years 2005 through 2009, or 2016 through 2018. From 2010 through 2015, two to four permits were issued each year with most permits being returned each year. The average harvest from years in which permits were issued was 214 fish, almost entirely composed of sockeye salmon. Estimated harvests ranged from a low of 0 in 2015 to 997 salmon in 1997.

COPPER RIVER DISTRICT

State Subsistence Fishery

Background and History

The Copper River District is defined as waters surrounding Hinchinbrook Island between the tip of Hook Point and Boswell Rock, including Boswell Bay waters south of a line from Boswell Rock to the radio tower at Whitshed Village, and waters between Whitshed Village and west of a line from a point on the mainland at 60° 10.21' N lat. 144° 35.57' W long. to the northernmost tip of Fox Island and then extending south from Fox Island along 144° 36.12' W long. All waters in this district have been determined to support customary and traditional uses of salmon. The subsistence fishery takes place in the Copper River District at the mouth of the Copper River (Copper River Flats) near the community of Cordova. Residents of Cordova are the primary participants in this fishery.

ADF&G, with the direction of the BOF, manages salmon runs to the Copper River District to assure sustained yield to meet all user group allocations as outlined in the Copper River District Salmon Management Plan (5 AAC 24.360).

Regulations

Permits are required to participate in subsistence fishing for salmon and freshwater fish species under the authority of 5 AAC 01.630. Fishers must declare their intent to fish in the Copper River Flats Area or in Prince William Sound, since the permit is valid for only one or the other location. Legal gear is set or drift gillnet no longer than 50 fathoms. The fishing season is May 15–October 31. Subsistence fishing is allowed seven days per week in the Copper River District from May 15 until two days before the opening of the commercial fishery. Once commercial fishing has commenced, subsistence fishing is allowed only during commercial fishing periods, generally lasting 12 to 36 hours, and on Saturdays from 6:00am to 10:00 pm. The Saturday openings for subsistence fishing are new in 2018, a result of Board of Fisheries action taken in 2017 to allow for more subsistence fishing opportunity.⁶ Commercial fishing periods began on May 17 in 2018 and subsistence first opened for a single 12-hour period on May 15; after the first subsistence open period, fishing days and times were allowed as discussed above.⁷ Regulations stipulate that two days following the closure of the Copper River District to commercial salmon fishing for the season, subsistence fishing is allowed seven days a week until October 31. The 2018 commercial salmon fishing season in the Copper River District closed on October 12.⁸ Annual limits for salmon are 15 for a household of one; 30 salmon for a household of two or more; and 10 salmon for each additional person in the household. There is a limit of five Chinook salmon per permit. In addition, there is also a state permitted educational drift gillnet fishery. An educational fishery program is a systematic program for educating persons concerning historic, contemporary, or experimental methods for locating, harvesting, handling, or processing fishery resources (5 AAC 93.200).

Subsistence Salmon Harvests in 2018

As reported in Table 12-9, 684 permits were issued for this fishery in 2018, and 637 (93%) were returned. More permits were issued in 2018 than any other year; twice as many permits were issued in 2018 as the recent 5- and 10-year averages and about three times as many permits as the historical average. Concurrent with the increased numbers of permits issued and returned, the estimated salmon harvest in 2018 of 7,313 salmon was well above the average 5-year, 10-year, and historical harvests. Only in 2007 were estimated harvests higher (7,694 salmon). The 2018 harvest was composed of 5,627 sockeye salmon (77%), 1,462 Chinook salmon (20%), 213 coho salmon (3%), and 6 pink and 5 chum salmon. Most (72%) of permits were issued to Cordova residents (491 permits) and Cordova residents harvested 63% of the total estimated harvest (Table 12-10). Residents of Homer, Anchorage, and Wasilla harvested an additional 26% of the total harvest. Harvest numbers for the educational fishery have not been reported in the Annual Salmon reports prior to 2015, but 2018 data indicated a reported harvest of 6 sockeye salmon and 40 Chinook salmon with the educational drift gillnet permits.⁹ This was below average for sockeye salmon harvests but consistent with the average Chinook salmon harvests; the 10-year (2008–2017) average harvest in the educational fishery was 117 sockeye salmon and 42 Chinook salmon (Vega et al. 2019:44, 46). Historically, no coho salmon have been harvested in this fishery (Vega et al. 2019:63).

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6. Alaska Department of Fish and Game Division of Commercial Fisheries, “Prince William Sound Salmon Fishery News Release #1, 2017, Alaska Board of Fisheries Actions: Prince William Sound Area,” news release, February 23, 2018. Accessed September 9, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/891393506.pdf>
 7. Alaska Department of Fish and Game Division of Commercial Fisheries, “Prince William Sound Salmon Fishery News Release #1,” news release, May 3, 2018. Accessed March 27, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/904805166.pdf>
 8. Alaska Department of Fish and Game Division of Commercial Fisheries, “Prince William Sound Salmon Fishery News Release #74,” news release, October 3, 2018. Accessed March 27, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/995255103.pdf>
 9. J. Botz, Fisheries Biologist, ADF&G, Cordova, Personal communication, March 30, 2020.

PRINCE WILLIAM SOUND

Eastern District (Tatitlek) Subsistence Salmon Fishery

Background and History

Although the Eastern District is defined as those waters of the eastern mainland shore from the radio tower at Whitshed Village to Point Freemantle, including Bligh Island, Goose Island, and other adjacent islands (5 AAC 24.200 (c)), salmon may be taken for subsistence purposes only in those waters north of a line from Porcupine Point near Goose Island to Granite Point near Glacier Island, and south of a line from Point Lowe to Tongue Point in Valdez Arm (5 AAC 01.648 (b)). The primary participants in this fishery are residents of Tatitlek. Prior to 1992, permits were issued only in Tatitlek, but since 1992, they have been issued at the Cordova ADF&G office as well. Permits may be returned in person to the Cordova ADF&G office or the Tatitlek Village IRA Council office or mailed at the end of the fishing season.

Regulations

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of four inches or gillnets up to 150 fathoms in length with a maximum mesh size of six and one-quarter inches. Pink salmon may be taken in fresh water with dip nets only. The open season is May 15–October 31, under the following fishing periods: seven days per week from May 15 until two days before the commercial opening of the Eastern District; during commercial openers and Saturdays from 6:00am until 10:00pm for the duration of the commercial fishing season; and seven days per week from two days after the closure of the commercial season through October 31. There are no bag or possession limits for this fishery.

Subsistence Harvests in 2018

In 2018, there were 16 permits issued for this fishery (Table 12-11) with a reported harvest of 147 salmon (143 sockeye and 4 coho). Comparisons with household harvest surveys suggest that the harvest assessment program for this fishery may underestimate harvests; harvest numbers from permit returns are substantially lower than those estimated through periodic household surveys. As shown in Table 12-12, household surveys in Tatitlek resulted in an estimate of 1,085 salmon taken with subsistence methods in 2014, compared to the 149 salmon taken that year or the 147 taken in 2018 (Table 12-11) based on returned permits. In Tatitlek, salmon for home use are also acquired with rod and reel and removal from commercial harvests.

Southwestern District (Chenega) Subsistence Salmon Fishery

Background and History

The Southwestern District is described as the mainland waters from the outer point of the north shore of Granite Bay to Cape Fairfield, as well as the waters surrounding Knight, Chenega, Bainbridge, Evans, Elrington, and Latouche islands and their adjacent islands (5 AAC 24.200 (i)). Under regulations in place since 1988, salmon may be taken in the Southwestern District as well as in waters along the northwestern shore of Green Island from the westernmost tip of the island to the northernmost tip (5 AAC 01.648 (a)). The primary participants in this fishery are residents of Chenega Bay. Prior to 1992, permits were issued only in Chenega Bay, but since 1992, they have also been issued at the Cordova ADF&G office. Permits may be returned in person to the Cordova ADF&G office, the Chenega IRA Council office, or mailed at the end of the fishing season.

Regulations

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of four inches, and gillnets up to 150 fathoms in length with a maximum mesh size of 6¼ in. Pink salmon may be taken in fresh water with dip nets only. The open season is May 15–October 31, under the following fishing periods: seven days per week from May 15 until two days before the commercial opening of the Eastern District; during commercial openers and Saturdays from 6:00am until 10:00pm for

the duration of the commercial fishing season; and seven days per week from two days after the closure of the commercial season through October 31. There are no bag or possession limits for this fishery.

Subsistence Harvests in 2018

In 2018, 22 permits were issued for this fishery but only 1 was returned. More permits were issued in 2018 than in 2016 or 2017, but fewer were returned. The 2018 reported harvest of 55 fish was well below the 2017 reported harvest, but similar to 2016. It is likely that the harvest assessment program for this fishery continues to underestimate harvests. As shown in Table 12-14, household surveys in Chenega Bay in 2014 (“Update on the Status of Subsistence Uses in Exxon Valdez Oil Spill Area Communities, 2014” 2016) provided an estimate of 979 salmon taken with subsistence methods, including sockeye, chinook, and chum salmon harvests which were absent from the reported permit harvests for that year.

Prince William Sound General Districts

Background and History

Subsistence fishing for salmon is allowed in the districts of the Prince William Sound Area that are outside of the Valdez Nonsubsistence Area and are not included in the above sections. Since the creation of separate regulations for the waters fished by Tatitlek and Chenega Bay residents in 1988, participation in the general Prince William Sound fishery has been low. Residents of Anchorage are the primary participants in this fishery.

Regulations

Subsistence fishing in the other districts of the Prince William Sound Area is open during the same periods as specified in the above sections. Permits are required and may be obtained from the Cordova ADF&G office. Annual limits are 15 salmon for a household of one, 30 salmon for a household of 2, and 10 salmon for each additional person in the household.

Subsistence Harvests in 2018

In the 30 years since 1988, the number of issued permits has been typically low, with a historical average of 10 issued and 7 returned. Recent 5-year and 10-year averages are similar at 12 permits issued (11 returned) and 9 permits issued (9 returned), respectively (Table 12-15). In 2018, 26 permits were issued and 24 were returned; the highest number of permits issued or returned since 1982. The estimated harvest for 2018 was 162 salmon, well above the recent and historical averages. In contrast to many other years, the 2018 harvest was composed of all species of salmon: 111 sockeye salmon, 22 coho salmon, 19 chum salmon, 9 pink salmon, and 1 Chinook salmon. The 2018 permit holders were mostly from Anchorage (14), Valdez (4), and Wasilla (3) (Table 12-16).

Prince William Sound/Chugach National Forest Federal Subsistence Fishery

Background and History

In 2005, the federal government through the US Forest Service began issuing permits for subsistence salmon fishing on federal lands in PWS and the lower Copper River area (Haught et al. 2017:44).

Regulations

Allowable gear types for the Prince William Sound/Chugach Subdistrict federal subsistence fishery include dip net, rod and reel, and spear. No other conditions were codified in regulations in 2018; specific conditions were listed on the federal permit.

Subsistence Harvests in 2018

In 2018, the total reported harvest of salmon was 354 salmon, including 255 coho salmon, 96 sockeye salmon, and 3 Chinook salmon (Table 12-17). The total number of issued permits was 97, with 92 returned. The same number of permits was issued in 2018 as in 2017 and slightly more were returned, however the reported harvest was close to half the amount reported in 2017 (Table 12-18).

Other Subsistence Fisheries in the Prince William Sound Area

There are several nonsalmon and shellfish subsistence fisheries that occur in PWS, under both federal and state regulations. During household subsistence harvest surveys conducted by the Division of Subsistence in Copper River and PWS communities between 2009 and 2014, the use of nonsalmon fish was estimated at 57% to 100% of households in these communities, with per capita harvests ranging from 4 lb to 53 lb. In the Upper Copper River watershed, resident species such as Arctic grayling, burbot, and whitefishes, among other species, are harvested for home use. In the marine communities of Prince William Sound, halibut and herring, along with a variety of shellfish are commonly harvested species. Detailed summaries of study methods and findings from these household surveys appear in Holen et al. (2015), Kukkonen and Zimpelman (2012), La Vine et al. (2013), and La Vine and Zimpelman, editors (2014).

Subsistence halibut harvest estimates for eligible communities and tribes in the Prince William Sound Area communities of Cordova, Chenega Bay, and Tatitlek are available for 2018 (Fall and Koster 2020). In 2018, a new permit requirement for subsistence herring fishing took effect, mandating harvest reporting, but no harvest limits. For the first year of this permit, only 40 fish were reported. This low harvest is likely a result of the newness of the permit requirement. There is also a subsistence permit requirement for the harvest of freshwater fish under both state and federal regulations. One freshwater federal fishery is managed from the NPS office in Copper Center; this permit is rarely requested and in 2018 no permits were issued. Under state regulations, a permit is available for the harvest of freshwater finfish species, which is issued out of the Glennallen ADF&G office.

In addition to finfishes, residents of PWS management areas harvest marine invertebrates. Many subsistence species do not require permits or reporting, but a few species do: shrimp, tanner crab, and king crab. Detailed summaries of shrimp harvest estimates and data from returned permits appear in Rumble et al. (2018) for 2010–2017. For the 2017/2018 tanner crab season, 179 permits were issued, 70 were fished, and 1,417 crab were caught and retained. The number of issued subsistence king crab permits is not available for the 2017/2018 season, but 47 golden king crab were retained in the fishery. Detailed harvest reports beginning with the 2008/2009 season for both tanner and golden king crab are available in Rumble et al. (2020).

Table 12-1.—Subsistence harvests by village fish wheel permits, Glennallen Subdistrict, 1997–2018.

Year	Village	Reported subsistence harvest					Total
		Chinook	Sockeye	Coho	Steelhead	Other	
1997	Chistochina	105	342	139	88	1	675
1997	Gakona	8	1,242	0	0	0	1,250
1997	Kluti-Kaah	12	61	0	0	0	73
1999	Chickaloon	1	5	0	0	0	6
1999	Gakona ^a	0	0	0	0	0	0
1999	Kluti-Kaah	46	85	0	0	0	131
2000	Chickaloon	73	200	0	0	0	273
2000	Chistochina	1	880	0	0	0	881
2000	Kluti-Kaah	20	110	0	0	0	130
2001	Chickaloon	20	120	0	0	0	140
2001	Chistochina	4	1,203	0	0	0	1,207
2001	Kluti-Kaah	3	259	114	0	0	376
2002	Chickaloon	0	91	0	0	0	91
2002	Chitina ^b	0	0	0	0	0	0
2003	Chickaloon	8	105	0	0	0	113
2004	Chickaloon	5	178	0	0	0	183
2004	Chistochina	17	1,563	0	0	0	1,580
2005	Chistochina	4	545	0	0	0	549
2005	Chickaloon	20	533	0	0	1	554
2005	Gakona	9	442	0	0	0	451
2006	Chistochina	8	559	0	0	0	567
2006	Chickaloon ^b	0	0	0	0	0	0
2006	Chitina	0	497	0	0	0	497
2007	Chitina ^b	0	0	0	0	0	0
2008	Chickaloon ^b	0	0	0	0	0	0
2008	Gakona	1	241	15	0	0	257
2009	Chickaloon ^b	0	0	0	0	0	0
2009	Kluti-Kaah	0	30	0	0	0	30
2010	Chickaloon	2	237	0	0	0	239
2010	Gakona ^a	0	0	0	0	0	0
2010	Kluti-Kaah ^b	0	0	0	0	0	0
2011	Gulkana	2	50	0	0	0	52
2011	Gakona	5	37	0	0	0	42
2013	Mentasta Lake	5	551	0	0	0	556
2014	Mentasta Lake	0	158	0	0	0	158
2015	Chickaloon	0	20	0	0	0	20

Source ADF&G Division of Subsistence, ASFDB 2018 (ADF&G 2019).

a. Did not fish

b. Did not return permit.

Table 12-2.—Historic subsistence salmon harvests, Glennallen Subdistrict, 1989–2018.

Year	Permits		Estimated salmon harvest ^a					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1989	386	360	796	28,724	67	0	0	29,587
1990	406	384	639	32,219	91	0	0	32,949
1991	712	645	1,314	39,364	241	0	0	40,919
1992	655	619	1,440	45,115	345	0	0	46,900
1993	773	696	1,443	54,003	76	0	0	55,523
1994	970	776	1,979	69,143	71	0	0	71,193
1995	858	726	1,968	54,336	975	0	0	57,280
1996	850	788	1,483	52,269	552	0	0	54,305
1997	1,136	1,058	2,608	83,692	183	0	0	86,483
1998	1,010	951	1,846	64,876	553	0	0	67,275
1999	1,102	1,040	3,234	76,456	1,145	0	0	80,835
2000	1,251	1,197	4,937	60,551	539	5	0	66,032
2001	1,239	1,176	3,480	81,960	1,142	20	0	86,601
2002	1,308	1,162	4,446	63,028	686	1	0	68,161
2003	1,227	1,101	3,344	64,618	650	0	0	68,612
2004	1,212	1,032	4,503	82,174	880	0	0	87,557
2005	1,234	1,070	2,785	91,715	252	0	0	94,752
2006	1,239	1,100	3,233	78,244	266	0	0	81,743
2007	1,458	1,277	4,125	86,678	308	0	0	91,110
2008	1,455	1,269	3,417	59,293	694	0	0	63,404
2009	1,364	1,138	3,341	67,887	287	0	0	71,515
2010	1,587	1,331	2,653	92,632	422	0	0	95,706
2011	1,586	1,328	3,649	81,216	1,131	0	0	85,996
2012	1,805	1,557	2,649	94,991	470	0	0	98,110
2013	1,616	1,400	2,663	96,573	154	0	0	99,390
2014	1,972	1,660	1,869	103,860	295	0	0	106,024
2015	1,956	1,650	2,762	112,937	188	0	0	115,887
2016	2,089	1,688	2,557	85,336	66	0	0	87,960
2017	1,970	1,604	3,488	61,395	72	0	0	64,955
2018	1,995	1,654	7,559	58,079	154	0	0	65,792
5-year average (2013–2017)	1,921	1,600	2,668	92,020	155	0	0	94,843
10-year average (2008–2017)	1,740	1,463	2,905	85,612	378	0	0	88,895
Historical average (1989–2017)	1,256	1,096	2,712	71,217	441	1	0	74,371

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Starting in 2002, estimates include salmon harvested under federal as well as state subsistence fishing regulations and permits.

Table 12-3.—Subsistence salmon harvests by community, Glennallen Subdistrict, 2018.

Community	Permits		Estimated salmon harvest ^a					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Chistochina	5	4	71	544	0	0	0	615
Chitina	18	17	364	829	0	0	0	1,193
Copper Center	109	96	652	7,595	0	0	0	8,247
Copperville	3	3	52	210	0	0	0	262
Gakona	25	22	641	1,191	0	0	0	1,832
Glennallen	64	62	422	3,784	0	0	0	4,206
Gulkana	3	2	0	84	0	0	0	84
Kennicott	1	1	0	0	0	0	0	0
Kenny Lake	35	29	237	935	0	0	0	1,172
Lake Louise	1	1	2	30	0	0	0	32
McCarthy	15	13	0	25	0	0	0	25
Mentasta Lake	2	2	0	0	0	0	0	0
Nabesna	3	3	6	145	0	0	0	151
Nelchina	2	2	0	114	0	0	0	114
Silver Springs	2	2	18	216	0	0	0	234
Slana	18	17	4	507	0	0	0	511
Tazlina	31	26	606	2,441	0	0	0	3,046
Tonsina	5	5	50	458	0	0	0	508
Subtotal, Copper Basin	342	307	3,125	19,108	0	0	0	22,233
Anchor Point	1	1	0	0	0	0	0	0
Anchorage	498	390	1,105	7,160	47	0	0	8,311
Barrow	4	3	7	65	0	0	0	72
Bethel	1	1	0	3	0	0	0	3
Big Lake	11	8	26	502	0	0	0	528
Bird Creek	2	1	2	16	0	0	0	18
Cantwell	2	2	0	0	0	0	0	0
Chickaloon	3	3	5	84	0	0	0	89
Chugiak	36	30	44	445	20	0	0	510
Clear	1	0	0	0	0	0	0	0
Cordova	1	1	1	0	0	0	0	1
Craig	1	1	0	6	0	0	0	6
Delta Junction	37	30	175	1,057	0	0	0	1,232
Dot Lake	1	1	0	8	0	0	0	8
Eagle River	82	73	194	1,028	0	0	0	1,222
Eielson AFB	7	4	9	11	0	0	0	19
Ester	6	5	58	168	0	0	0	226
Eureka	1	1	5	43	0	0	0	48
Fairbanks	270	217	649	6,708	4	0	0	7,361
Fort Wainwright	5	3	2	62	0	0	0	63
Girdwood	7	5	14	118	0	0	0	132
Homer	1	1	0	0	0	0	0	0
Houston	1	1	0	0	0	0	0	0
Indian	1	0	0	0	0	0	0	0

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Table 12-3.–Page 2 of 2.

Community	Permits		Estimated salmon harvest ^a					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Joint Base Elmendorf Richardson	4	2	2	56	0	0	0	58
Kenai	3	2	3	26	0	0	0	29
Ketchikan	1	1	5	2	0	0	0	7
Kiana	1	1	0	0	0	0	0	0
Kongiganak	1	1	2	5	0	0	0	7
Kotzebue	1	1	0	0	0	0	0	0
Lake Susitna	1	1	0	0	0	0	0	0
Nenana	2	2	0	0	0	0	0	0
North Pole	100	82	256	2,002	0	0	0	2,259
Northway	2	2	9	77	0	0	0	86
Nunapitchuk	1	0	0	0	0	0	0	0
Palmer	109	87	395	3,161	40	0	0	3,596
Peters Creek	1	1	0	0	0	0	0	0
Salcha	9	7	31	206	0	0	0	237
Seward	2	2	5	10	0	0	0	15
Sitka	1	0	0	0	0	0	0	0
Soldotna	6	5	17	229	16	0	0	262
Sterling	1	1	0	0	0	0	0	0
Sutton	8	8	14	131	0	0	0	145
Talkeetna	5	3	3	40	0	0	0	43
Tok	44	41	65	880	0	0	0	945
Trapper Creek	1	1	1	0	0	0	0	1
Two Rivers	1	1	1	0	0	0	0	1
Valdez	46	40	269	1,863	0	0	0	2,132
Wasilla	310	261	1,033	12,452	27	0	0	13,513
Willow	9	9	26	222	0	0	0	248
Other USA	2	2	1	126	0	0	0	127
Unknown community	1	1	0	0	0	0	0	0
Subtotal, other communities	1,653	1,347	4,434	38,970	154	0	0	43,559
Total	1,995	1,654	7,559	58,079	154	0	0	65,792

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Includes salmon harvested under federal as well as state subsistence fishing regulations and permits.

Table 12-4.—Historical subsistence and personal use salmon harvests, state Chitina Subdistrict permits, 1989–2018.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1989	4,584	4,353	2,269	56,547	865	0	0	59,681
1990	5,689	5,475	2,711	66,435	1,516	0	0	70,662
1991	6,222	5,990	4,092	78,412	3,378	0	0	85,882
1992	6,387	6,229	3,422	87,090	1,524	0	0	92,036
1993	7,914	7,914	2,729	89,629	1,358	0	0	93,716
1994	7,060	5,939	4,198	106,163	2,204	0	0	112,566
1995	6,762	5,442	5,617	94,494	5,861	0	0	105,972
1996	7,196	6,962	3,607	95,645	3,404	0	0	102,656
1997	9,086	8,919	5,470	149,020	160	0	0	154,650
1998	10,002	9,751	6,746	137,530	2,156	0	0	146,431
1999	9,941	9,607	5,964	142,682	2,199	0	0	150,845
2000	8,145	7,676	3,219	109,370	3,758	0	0	116,347
2001	9,458	8,356	3,171	137,047	2,687	0	0	142,905
2002	6,804	5,736	2,093	90,655	2,034	0	0	94,782
2003	6,440	5,438	1,962	84,790	2,579	0	0	89,332
2004	8,153	6,855	2,521	111,203	2,751	0	0	116,476
2005	8,232	6,768	2,155	129,506	1,885	0	0	133,546
2006	8,497	6,762	2,598	128,469	2,343	0	0	133,410
2007	8,378	7,187	2,782	131,460	1,747	0	0	135,990
2008	8,041	6,861	1,991	82,961	2,747	0	0	87,699
2009	7,958	6,908	229	93,766	1,667	0	0	95,662
2010	9,308	7,757	700	140,089	1,892	0	0	142,680
2011	9,167	7,566	1,118	138,089	1,866	0	0	141,073
2012	10,016	8,030	613	136,441	1,411	0	0	138,465
2013	10,424	8,482	762	185,970	882	0	0	187,614
2014	11,618	9,332	812	169,971	1,059	0	0	171,842
2015	12,571	10,509	1,631	232,266	953	0	0	234,850
2016	11,353	9,301	691	153,916	1,256	0	0	155,863
2017	9,436	7,665	2,109	138,989	644	0	0	141,742
2018	4,966	4,033	1,318	80,121	1,515	0	0	82,955
5-year average (2013–2017)	11,080	9,058	1,201	176,222	959	0	0	178,382
10-year average (2008–2017)	9,989	8,241	1,066	147,246	1,438	0	0	149,749
Historical average (1989–2017)	8,443	7,371	2,689	120,642	2,027	0	0	125,358

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Note Under state regulations, this fishery was classified as personal use from 1986 through 1999; in 2000, 2001, and 2002, it was classified as a subsistence fishery, in 2003, it was reclassified as personal use.

Table 12-5.—Personal use salmon harvests by community, state Chitina Subdistrict permits, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Copper Center	5	4	1	74	0	0	0	75
Gakona	1	1	0	0	0	0	0	0
Glennallen	6	5	1	71	0	0	0	72
McCarthy	1	1	0	12	1	0	0	13
Subtotal, Copper Basin	13	11	2	157	1	0	0	160
Anaktuvuk Pass	1	1	0	32	0	0	0	32
Anchor Point	1	0	0	0	0	0	0	0
Anchorage	1,512	1,197	499	21,874	340	0	0	22,713
Anderson	2	0	0	0	0	0	0	0
Auke Bay	1	1	0	0	0	0	0	0
Barrow	12	5	7	353	0	0	0	360
Bethel	1	0	0	0	0	0	0	0
Big Lake	19	14	7	360	18	0	0	384
Bird Creek	1	1	0	0	0	0	0	0
Cantwell	3	3	0	37	0	0	0	37
Central	1	1	0	25	0	0	0	25
Chickaloon	8	8	2	73	0	0	0	75
Chugiak	51	45	16	805	5	0	0	825
Clear	3	3	0	6	0	0	0	6
Coldfoot	1	1	0	0	0	0	0	0
Cordova	3	3	1	0	0	0	0	1
Craig	1	1	0	0	0	0	0	0
Delta Junction	232	197	68	5,195	58	0	0	5,321
Denali National Park	12	12	1	248	7	0	0	256
Eagle River	153	136	43	2,008	1	0	0	2,052
Eielson AFB	37	30	4	417	0	0	0	421
Ester	37	33	9	770	18	0	0	797
Fairbanks	1,330	1,059	269	22,322	548	0	0	23,139
Fort Greely	15	13	5	183	1	0	0	189
Fort Richardson	1	1	1	4	0	0	0	5

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Community	Permits		Estimated salmon harvest						
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total	
Fort Wainwright	64	49	17	799	0	0	0	816	
Girdwood	16	15	9	275	44	0	0	327	
Healy	11	10	1	131	0	0	0	132	
Homer	5	3	2	175	0	0	0	177	
Houston	6	6	0	125	0	0	0	125	
Indian	2	2	0	50	0	0	0	50	
Joint Base Elmendorf Richardson	17	10	2	274	0	0	0	275	
Juneau	6	3	2	154	0	0	0	156	
Kalskag	1	1	0	0	0	0	0	0	
Kasilof	1	1	0	0	0	0	0	0	
Kenai	4	4	2	19	0	0	0	21	
Ketchikan	1	1	1	20	0	0	0	21	
Kodiak (city)	3	2	0	2	0	0	0	2	
Kotzebue	3	2	2	92	0	0	0	93	
Lower Kalskag	1	1	0	0	0	0	0	0	
Manley Hot Springs	2	1	0	0	0	0	0	0	
McGrath	1	0	0	0	0	0	0	0	
Nenana	10	7	1	193	0	0	0	194	
Ninilchik	2	2	0	41	0	0	0	41	
North Pole	421	346	102	6,564	47	0	0	6,714	
Palmer	245	209	57	4,302	52	0	0	4,411	
Petersburg	1	1	0	5	0	0	0	5	
Salcha	33	26	1	598	41	0	0	640	
Seward	4	4	3	97	0	0	0	100	
Soldotna	4	3	0	47	0	0	0	47	
Sterling	2	2	1	24	0	0	0	25	
Sutton	35	33	10	535	3	0	0	547	
Talkeetna	10	9	4	282	0	0	0	287	
Tok	6	6	1	35	0	0	0	36	

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Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Trapper Creek	5	2	3	123	0	0	0	125
Two Rivers	9	7	4	172	0	0	0	176
Valdez	91	79	21	1,174	9	0	0	1,204
Wasilla	452	376	135	8,483	290	0	0	8,908
White Mountain	1	1	0	42	0	0	0	42
Willow	15	12	1	153	15	0	0	169
Other USA	14	10	4	244	8	0	0	256
Unknown community	11	11	0	25	11	0	0	36
Subtotal, other communities	4,953	4,022	1,316	79,965	1,514	0	0	82,795
Total	4,966	4,033	1,318	80,121	1,515	0	0	82,955

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-6.—Historical subsistence salmon harvests, federal Chitina Subdistrict permits, 2003–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2003	99	71	33	1,316	152	0	0	1,500
2004	109	83	9	1,631	28	0	0	1,668
2005	77	64	27	1,498	0	0	0	1,526
2006	76	62	16	1,681	26	0	0	1,723
2007	97	86	29	1,095	41	0	0	1,165
2008	81	65	26	939	97	0	0	1,062
2009	68	34	15	1,522	22	0	0	1,560
2010	92	38	36	5,352	88	0	0	5,476
2011	84	42	21	3,090	14	0	0	3,125
2012	90	80	5	981	9	0	0	996
2013	99	85	20	2,399	8	0	0	2,428
2014	113	102	15	1,709	74	0	0	1,797
2015	111	100	15	2,475	17	0	0	2,507
2016	128	95	20	1,979	45	0	0	2,044
2017	132	104	15	1,795	9	0	0	1,819
2018	131	117	100	3,254	34	0	0	3,388
5-year average (2013–2017)	117	97	17	2,071	31	0	0	2,119
10-year average (2008–2017)	100	75	19	2,224	38	0	0	2,281
Historical average (2003–2017)	97	74	20	1,964	42	0	0	2,026

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-7.—Subsistence salmon harvests by community, federal Chitina Subdistrict permits, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Cantwell	2	2	0	0	0	0	0	0
Chitina	14	13	18	753	11	0	0	782
Copper Center	31	28	17	711	0	0	0	727
Gakona	4	4	0	0	0	0	0	0
Glennallen	15	14	13	257	0	0	0	270
Kennicott	2	2	0	0	0	0	0	0
Kenny Lake	31	27	31	923	8	0	0	962
Kotzebue	1	1	0	0	0	0	0	0
Lake Susitna	1	1	0	15	0	0	0	15
McCarthy	19	14	15	303	15	0	0	333
Slana	1	1	0	0	0	0	0	0
Tazlina	5	5	0	52	0	0	0	52
Tok	2	2	3	15	0	0	0	18
Tonsina	3	3	3	226	0	0	0	229
Total	131	117	100	3,254	34	0	0	3,388

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-8.—Historic subsistence salmon harvests, Batzulnetas fishery, 1987–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1987	8	8	0	22	0	0	0	22
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	1	1	0	160	0	0	0	160
1994	4	4	0	997	0	0	0	997
1995	4	2	0	32	0	0	0	32
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	1	1	0	382	0	0	0	382
1999	1	1	0	55	0	0	0	55
2000	1	1	0	55	0	0	0	55
2001	1	1	1	61	0	0	0	62
2002	1	1	0	208	0	0	0	208
2003	1	1	0	164	0	0	0	164
2004	1	1	0	182	0	0	0	182
2005	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	3	3	0	106	0	0	0	106
2011	3	3	0	101	0	0	0	101
2012	3	3	1	136	0	0	0	137
2013	3	3	5	862	0	0	0	867
2014	2	2	0	116	0	0	0	116
2015	4	4	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0
2017	0	0	0	0	0	0	0	0
2018	0	0	0	0	0	0	0	0
5-year average (2013–2017)	2	2	1	196	0	0	0	197
10-year average (2008–2017)	2	2	1	132	0	0	0	133
Historical average (1987–2017)	1	1	0	117	0	0	0	118

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-9.—Historical subsistence salmon harvests, Copper River District (Copper River Flats), 1965–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1965	31	20	19	711	132	0	0	862
1966	45	31	68	254	0	0	0	322
1967	61	56	90	167	0	0	0	257
1968	17	15	12	41	0	0	0	53
1969	49	33	24	94	126	0	0	244
1970	32	27	78	212	0	0	0	290
1971	29	26	11	36	4	0	0	51
1972	104	79	196	749	70	0	0	1,015
1973	94	89	162	344	190	0	0	696
1974	9	5	9	7	4	0	0	20
1975	2	2	0	5	0	0	0	5
1976	27	14	2	19	0	0	0	21
1977	23	22	10	74	0	0	0	85
1978	34	28	45	22	15	0	0	81
1979	49	41	54	31	20	0	0	105
1980	39	35	21	30	19	0	0	70
1981	72	51	68	205	147	0	0	419
1982	108	90	72	761	127	0	0	960
1983	87	73	94	128	68	0	0	290
1984	118	104	77	368	153	0	0	598
1985	94	94	88	261	83	0	0	432
1986	88	85	89	360	49	0	0	498
1987	95	89	52	383	15	0	0	450
1988	114	97	69	266	49	0	0	384
1989	75	64	66	397	60	0	0	523
1990	88	76	69	543	95	0	0	707
1991	129	115	153	931	43	0	0	1,126
1992	126	113	158	875	47	0	0	1,080
1993	111	93	143	511	35	0	0	689
1994	101	97	171	494	70	0	0	734
1995	126	112	173	779	35	0	0	987
1996	176	157	309	1,086	53	0	0	1,448
1997	269	243	223	1,144	1,967	0	0	3,333
1998	245	230	314	905	724	0	0	1,944
1999	294	275	377	1,422	729	0	0	2,528
2000	416	400	717	4,534	46	18	3	5,318
2001	468	439	881	3,275	75	2	0	4,232
2002	355	331	589	3,289	30	2	0	3,910
2003	384	367	730	1,655	37	0	16	2,439
2004	511	487	1,163	1,910	48	5	3	3,129
2005	237	224	260	830	15	0	1	1,106
2006	421	399	779	4,355	1	0	0	5,135
2007	469	445	1,211	6,458	16	2	6	7,694
2008	506	482	495	4,161	55	0	21	4,732
2009	323	293	232	1,916	23	1	0	2,173

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Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2010	326	320	281	2,034	27	22	0	2,365
2011	273	263	220	1,839	35	2	0	2,096
2012	378	359	248	4,499	0	19	0	4,767
2013	531	497	916	6,073	1	2	18	7,010
2014	288	269	161	1,771	0	5	2	1,939
2015	243	234	178	1,531	0	0	0	1,709
2016	198	192	75	1,119	0	0	12	1,206
2017	451	442	813	2,608	44	3	2	3,470
2018	684	637	1,462	5,627	213	5	6	7,313
5-year average (2013–2017)	342	327	429	2,620	9	2	7	3,067
10-year average (2008–2017)	352	335	362	2,755	19	5	6	3,147
Historical average (1965–2017)	188	174	255	1,292	105	2	2	1,655

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-10.—Subsistence salmon harvests by community, Copper River District (Copper River Flats), 2018

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Anchor Point	1	0						
Anchorage	66	61	122	555	0	4	4	686
Bethel	1	1	0	0	0	0	0	0
Chugiak	2	1	6	4	0	0	0	10
Cordova	491	464	1,023	3,565	49	1	2	4,640
Delta Junction	3	3	6	2	0	0	0	8
Denali Park	1	0						
Eagle River	2	2	10	11	0	0	0	21
Fairbanks	4	4	9	2	0	0	0	11
Girdwood	7	7	7	54	0	0	0	61
Homer	26	24	88	501	111	0	0	699
Hope	1	0						
Juneau	2	2	5	16	0	0	0	21
Kasilof	3	3	0	0	0	0	0	0
Kodiak	1	0						
Moose Pass	2	2	9	47	0	0	0	56
Palmer	5	5	5	27	0	0	0	32
Petersburg	1	1	0	0	0	0	0	0
Port Alsworth	1	0						
Seward	12	11	39	80	0	0	0	119
Sitka	2	2	0	0	0	0	0	0
Soldotna	7	7	17	75	0	0	0	92
Sterling	4	3	20	196	0	0	0	216
Talkeetna	1	1	0	0	0	0	0	0
Tatitlek	4	4	13	3	0	0	0	16
Tok	1	1	0	15	0	0	0	15
Valdez	2	2	5	15	0	0	0	20
Wasilla	25	22	69	370	53	0	0	493
Willow	4	3	7	87	0	0	0	93
Wrangell	1	1	1	3	0	0	0	4
Other USA	1	0						
Total	684	637	1,462	5,627	213	5	6	7,313

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-11.—Historical subsistence salmon harvests, Prince William Sound, Eastern District, 1988–2018.

Year	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1988	17	NA	2	210	249	297	143	901
1989	14	NA	1	107	653	43	28	832
1990	13	NA	0	5	241	4	10	260
1991	19	NA	0	107	984	28	320	1,439
1992	15	NA	2	441	369	49	30	891
1993	18	NA	2	512	305	74	144	1,037
1994	14	NA	0	50	143	70	50	313
1995	15	0						
1996	6	NA	0	0	38	0	0	38
1997	6	NA	0	107	45	54	0	206
1998	11	NA	0	2	71	28	4	105
1999	17	NA	0	344	541	31	31	947
2000	12	3	0	140	468	40	40	688
2001	14	9	0	114	230	12	60	416
2002	19	8	6	437	278	66	71	858
2003	15	8	0	81	185	12	20	298
2004	18	12	2	358	505	28	105	998
2005	16	3	0	98	286	16	200	600
2006	11	1	0	3	18	25	35	81
2007	14	0						
2008	1	1	0	60	0	0	0	60
2009	12	4	0	170	131	0	0	301
2010	8	5	0	165	142	10	50	367
2011	10	4	0	922	536	22	0	1,480
2012	16	8	15	954	75	8	0	1,052
2013	22	11	0	613	277	129	0	1,019
2014	18	5	0	46	103	0	0	149
2015	16	4	0	110	143	8	0	261
2016	5	5	0	0	0	0	0	0
2017	7	5	0	45	55	0	0	100
2018	16	7	0	143	0	4	0	147
5-year average (2013–2017)	14	6	0	163	116	27	0	306
10-year average (2008–2017)	12	5	2	309	146	18	5	479
Historical average (1988–2017)	13	5	1	221	253	38	48	561

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

NA = Data not available.

Table 12-12.—Estimated harvests of salmon for home use, Tatitlek, 2014

Species	Estimated salmon harvest			
	Subsistence methods	Rod and reel	Removed from commercial harvests	All methods
Chinook	45	0	4	49
Sockeye	622	0	129	751
Coho	242	176	26	443
Chum	96	0	26	122
Pink	80	13	26	118
All salmon	1,085	189	210	1,484
Estimated number of households harvesting ^a	10 households	6 households	1 household	15 households (any method)

Source Fall et al. (2016).

a. Number of households in the community = 27; 21 (78%) were interviewed

Table 12-13.—Historical subsistence salmon harvests, Prince William Sound, Southwestern District, 1988–2018.

Year	Permits		Reported salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1988	10	NA	1	50	8	294	251	604
1989	8	NA	0	322	0	180	554	1,056
1990	7	NA	1	36	5	2	20	64
1991	12	NA	3	345	42	53	195	638
1992	14	NA	1	526	23	99	313	962
1993	22	NA	2	835	50	124	232	1,243
1994	16	NA	5	192	77	161	402	837
1995	10	NA	2	152	67	41	67	329
1996	7	NA	0	107	7	46	105	265
1997	5	NA	44	193	30	272	110	649
1998	4	NA	13	114	20	119	65	331
1999	14	NA	57	499	62	101	168	887
2000	12	8	24	39	229	143	211	646
2001	16	9	2	119	92	146	95	454
2002	10	5	10	142	123	60	83	418
2003	13	7	6	219	156	147	149	677
2004	8	5	3	535	44	84	56	722
2005	13	8	10	515	84	174	124	907
2006	7	6	0	159	1	111	28	299
2007	4	3	2	293	27	55	4	381
2008	15	3	4	97	75	30	70	276
2009	5	4	2	168	26	84	5	285
2010	9	5	0	55	0	87	6	148
2011	17	6	2	134	26	60	50	272
2012	23	14	0	603	20	77	0	700
2013	13	4	0	19	0	63	0	82
2014	10	5	0	0	0	0	10	10
2015	21	4	0	56	35	12	0	103
2016	7	6	0	32	1	15	0	48
2017	6	5	0	105	0	61	0	166
2018	22	1	0	13	2	40	0	55
5-year average (2013–2017)	11	5	0	42	7	30	2	82
10-year average (2008–2017)	13	6	1	127	18	49	14	209
Historical average (1988–2017)	11	6	6	222	44	97	112	482

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

NA = Data not available.

Table 12-14.—Estimated harvests of salmon for home use, Chenega Bay, 2014

Species	Estimated salmon harvest			
	Subsistence methods	Rod and reel	Removed from commercial harvests	All methods
Chinook	4	13	0	17
Sockeye	468	27	0	494
Coho	31	62	0	94
Pink	78	102	0	180
Chum	177	17	0	194
All salmon	758	221	0	979
Estimated number of households harvesting ^a	2 households	6 households	0 households	6 households (any method)

Source Fall et al. (2016).

a. Number of households in the community = 17; 12 (71%) were interviewed.

Table 12-15.—Historical subsistence salmon harvests, Prince William Sound general, 1960–2018.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1960	50	NA	1	139	505	27	1,292	1,964
1961	12	NA	3	41	123	3	732	902
1962	9	NA	0	0	119	142	214	475
1963	9	NA	0	0	406	24	298	728
1964	15	NA	0	11	0	0	900	911
1965	22	16	0	0	0	34	246	281
1966	3	3	0	3	19	50	20	92
1967	4	3	0	0	5	0	5	11
1968	4	3	0	0	27	0	208	235
1969	7	3	0	0	37	0	0	37
1970	1	1	0	0	0	0	0	0
1971	3	2	0	0	0	0	69	69
1972	0	0	0	0	0	0	0	0
1973	19	16	0	0	343	0	0	343
1974	3	1	0	0	0	0	0	0
1975	2	0						
1976	0	0	0	0	0	0	0	0
1977	4	4	0	0	0	0	0	0
1978	3	2	0	0	0	0	0	0
1979	15	2	0	0	0	0	0	0
1980	26	15	0	12	10	0	0	23
1981	12	8	0	5	44	3	0	51
1982	35	27	0	109	5	31	40	185
1983	26	21	0	27	45	98	11	181
1984	8	8	0	10	0	2	11	23
1985	22	16	1	37	22	36	19	116
1986	25	14	0	9	27	0	0	36
1987	18	17	5	33	6	17	0	61
1988	7	7	2	51	7	9	10	79
1989	11	7	0	0	0	5	0	5
1990	8	8	0	0	7	0	4	11
1991	9	5	0	4	0	0	0	4
1992	10	6	0	33	0	0	0	33
1993	6	6	1	104	10	0	0	115
1994	5	4	0	0	0	0	0	0
1995	4	2	0	0	0	0	0	0
1996	10	7	0	0	0	0	0	0
1997	4	3	0	4	0	0	0	4
1998	4	3	0	0	0	0	0	0
1999	3	3	0	0	0	0	0	0
2000	3	3	0	0	0	0	0	0
2001	5	5	0	0	0	0	0	0
2002	11	9	0	38	0	9	11	57
2003	11	11	0	48	0	3	0	51
2004	8	7	0	12	0	5	0	17

-continued-

Table 12-15.—Page 2 of 2.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
2005	14	13	0	4	0	0	0	4
2006	11	9	0	20	30	0	0	50
2007	3	3	0	30	0	0	0	30
2008	11	10	1	33	0	0	0	34
2009	1	1	0	0	0	0	0	0
2010	2	2	0	0	0	0	0	0
2011	4	4	29	40	1	10	5	85
2012	14	12	0	67	0	32	0	99
2013	8	8	0	12	0	24	0	36
2014	23	21	0	6	0	0	0	6
2015	23	21	0	71	0	3	0	74
2016	2	2	0	1	0	0	0	1
2017	6	5	0	16	0	0	0	16
2018	26	24	1	111	22	19	9	162
5-year average (2013–2017)	12	11	0	21	0	5	0	27
10-year average (2008–2017)	9	9	3	25	0	7	1	35
Historical average (1960–2017)	10	7	1	16	23	10	50	99

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

NA = Data not available.

Table 12-16.—Subsistence salmon harvests by community, Prince William Sound general, 2018.

Community	Permits		Estimated salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Anchorage	14	12	0	55	0	0	0	55
Cordova	1	1	0	0	20	0	0	20
Eagle River	2	2	0	8	0	15	0	23
Girdwood	1	1	0	5	0	4	9	18
Palmer	1	1	0	0	0	0	0	0
Valdez	4	4	0	43	0	0	0	43
Wasilla	3	3	1	0	2	0	0	3
Total	26	24	1	111	22	19	9	162

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-17.—Federal Subsistence salmon harvests by community, Prince William Sound/Chugach Subdistrict, 2018.

Community	Permits		Reported salmon harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Cordova	97	92	3	96	255	0	0	354
Total	97	92	3	96	255	0	0	354

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 12-18.—Historical Federal Subsistence salmon harvests, Prince William Sound/Chugach Subdistrict, 2015–2018.

Year	Permits		Reported salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2015	94	64	0	152	893	0	0	1,045
2016	110	93	0	234	555	0	0	789
2017	97	83	0	127	514	0	0	641
2018	97	92	3	96	255	0	0	354
Historical Average 2015–2017	100	80	0	171	654	0	0	825

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

CHAPTER 13: THE SOUTHEAST REGION

INTRODUCTION

The Southeast region is divided by subsistence regulations into two areas: the Southeastern Alaska Area and the Yakutat Area. The Southeastern Alaska Area includes all waters between a line projecting southwest from the westernmost tip of Cape Fairweather and Dixon Entrance, and the Yakutat Area includes all waters of Alaska between the longitude of Cape Suckling and the longitude of Cape Fairweather. Positive customary and traditional use (C&T) findings, which allow for subsistence fishing opportunity, have been made for most of the waters in the Southeast region (5 AAC 01.716) (Figure 13-1). In areas where no positive C&T finding exists, personal use fisheries may be authorized. In addition, the Joint Board identified two nonsubsistence areas in the Southeast region: the Juneau Nonsubsistence Area and the Ketchikan Nonsubsistence Area (Figure 13-1) (5 AAC 99.015). By statute, no subsistence fisheries may be authorized in nonsubsistence areas.

The Southeast region is divided into six areas for management purposes:

- Yakutat Management Area, which constitutes the entirety of the Yakutat Area mentioned above,
- Haines Management Area,
- Juneau Management Area,
- Sitka Management Area,
- Petersburg Management Area, and
- Ketchikan Management Area.

HARVEST ASSESSMENT PROGRAMS

Since 1990, any Alaska resident may harvest salmon under state subsistence or personal use regulations; in the Southeast region, a permit is required to harvest salmon under either set of regulations. Permits have been required since 1985 in the Southeastern Alaska Area and since 1989 in the Yakutat Area. The Division of Commercial Fisheries is responsible for administering the subsistence and personal use salmon permit programs in the Southeast region. Beginning in 2018, permits for both types of fisheries were available only online. Permits are valid for one calendar year and must be returned by November of each year. New permits are not issued to anyone who has failed to return a permit issued for the previous year. Permit information, including names, addresses, and details from the harvest calendars, such as locations and amount of harvest, species harvested, and date of harvest, is entered into *OceanAK*. The harvest information collected each year through returned permits composes the basis of the harvest assessment program in the Southeast region and this report has presented estimated salmon harvests for the Southeast region since 2001. However, because of unanticipated permit return problems stemming from the change to the online system, it is not possible to estimate the subsistence and personal use harvest in 2018. Therefore, this report will present reported numbers for these fisheries this year. The federally-managed Stikine River subsistence fishery is an exception in that harvest estimates were possible for 2018 and are included in this report.

REGULATIONS

Subsistence regulations are valid in areas where there are fish stocks with positive C&T determinations; outside of these areas, personal use regulations may apply. To participate in either a subsistence or personal use fishery in the Southeast Region, a person must obtain a harvest permit. In addition, for personal use fisheries, a valid resident sport fishing license is required, unless the fisher is a resident under the age of 18 or is over 60 years of age and has obtained a permanent ID card from the department. Beginning in 2016, annual and daily possession limits were specified in regulation and season dates were established on the permit. In addition, the department could issue emergency orders to change season length or open areas in season. Permits are issued at the household level; one permit is issued per household and the household may

not obtain or possess more than one permit. The permit recipient must be an Alaska resident. Subsistence and personal use permits include personal information about the permittee, rules and regulations governing harvesting methods and means, and a harvest calendar that details all the fish caught under each permit. Permits are not issued for the taking of coho salmon in the Taku or Stikine River drainages, or for Chinook salmon, trout, or char anywhere in the Southeast region; however, such fish taken incidentally under the conditions of a permit are legal to take and must be recorded on the permit. The personal use limits on Chinook and coho salmon are two and six fish, respectively. Other regulations concerning the subsistence and personal use fisheries can be found in 5 AAC 01 (*Subsistence Finfish*) and 5 AAC 77 (*Personal Use Fishery*). These regulations include:

- fishermen must record their harvests on a daily basis prior to leaving the immediate fishing area,
- the permit must be with the permittee, other authorized members of the household, or authorized proxy while taking or transporting subsistence salmon,
- the dorsal fins of subsistence salmon and both tips of the tail fin of personal use salmon must be removed immediately when taken,
- fishing is not allowed within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction,
- a person may not possess sport-caught and subsistence-caught/personal use-caught salmon on the same day,
- salmon taken under personal use or subsistence permits cannot be used for bait in commercial fisheries,
- salmon may not be harvested for subsistence or personal use by a line attached to a rod or pole, except in the Redoubt Bay and lake subsistence salmon fishery.

Regulations that apply to specific management areas are included in the relevant sections below.

SUBSISTENCE/PERSONAL USE SALMON HARVESTS IN 2018

In 2018, the total subsistence and personal use salmon harvest for the Southeast region reported on returned permits from state subsistence salmon fisheries and estimated from returned permits in the federal Stikine River subsistence fishery¹ was 51,674 fish (Table 13-1). This is below the total estimated harvest for 2017 (53,810 salmon) as well as the most recent 5-year (54,248 salmon), 10-year (55,520 salmon), and historical averages (56,380 salmon) (Table 13-2). In this report, unlike for previous years, the harvests reported on the returned permits are not expanded to account for unreturned permits, due to uncertainty in the number of unreturned permits. Only in the federal Stikine River fishery are harvests expanded in this report. Prior to 1996, only permits returned with harvest data were included in the database and reported harvests were not expanded to account for permits not returned. Sockeye salmon usually make up the largest proportion of subsistence/personal use salmon catches in Southeast Alaska, in contrast to the commercial fishery, which has been dominated by pink salmon harvests since the early 1900s (Conrad and Gray 2019). As expected, in 2018, sockeye salmon contributed the greatest amount to the overall subsistence harvest at 45,256 fish (88%), followed by 3,299 coho salmon (6%), 1,572 pink salmon (3%), 1,193 chum salmon (2%), and 354 Chinook salmon (1%) (Table 13-1; Figure 13-2). While the number of each species of salmon harvested differed from the 2017 harvest, the overall contribution of each species to the total harvest did not change significantly for most species: the 2018 harvest was weaker in pink salmon and stronger in sockeye salmon. Reported harvests of sockeye and coho salmon increased over 2017 estimates while slight decreases were observed in chum and Chinook salmon. A large drop was seen in pink salmon harvests from the 2017 estimate of 4,962 pink salmon. In comparison, the 2018 total commercial harvest in Southeast Alaska was 44% of the 2017 harvest, well below the 10-year average, and approximately half the long-term average commercial harvest; sockeye, coho, and Chinook salmon harvests were between 47% and 74% of their 10-year and long-term averages, while harvests of chum salmon were above (Conrad and Gray 2019).

1. There is also a general federal permit for subsistence fisheries in Southeast. Harvests under these permits are not included in the general harvest tables. These harvests are summarized in Table 13-8.

Commercial pink salmon harvests were 21% and 26% of their 10-year and long-term averages. Pink salmon have exhibited a strong odd-year, weak even-year return to the commercial fisheries since 2006, and this pattern appears visible in the subsistence/personal use harvests of 2018 as well.

The reported subsistence/personal use salmon harvests by management area were as follows: Sitka 17,141 (33%), Juneau 10,451 (20%), Haines 10,386 (20%), Ketchikan 6,556 (13%), Petersburg 5,418 (11%), and Yakutat 1,722 (3%) (Table 13-3, Figure 13-3). Compared to 2017 estimated harvests, reported harvests in the Juneau, Ketchikan, Petersburg and Yakutat management areas decreased and in the Sitka Management Area harvests increased by 5,000 fish, while harvests were approximately the same in the Haines management area.

The number of permits issued per year, on average, for the 10-year time period of 2008–2017, is 3,202 with a range of 2,217 permits to 3,564. (Table 13-2). In 2018, a higher than average number of permits was issued, with a total of 3,697 permits issued and 2,050 returned. This corresponds to a regionwide response rate of 55%, which is the 2nd lowest response rate documented for this region and compares poorly to the 5-year average of 85%, the 10-year average of 87%, and a historical average (1985–2017) of 71%. The low response rate is likely in part a factor of difficulties encountered with the new online harvest reporting system. For the same reason, return rates for each management area were low in 2018 compared to recent averages.

YAKUTAT MANAGEMENT AREA

Yakutat Area Subsistence Fisheries

Background and History

The Yakutat Management Area stretches from Cape Fairweather to Cape Suckling and encompasses the Yakutat area subsistence fisheries. Fishing areas used by Yakutat residents are under the management responsibility of the Division of Commercial Fisheries' Yakutat Area office. The Alaska Board of Fisheries (BOF) identified the freshwaters upstream from the terminus of streams and rivers from the Doame River to the Tsiu River, the waters of Yakutat Bay and Russell Fjord, and the waters of Icy Bay as customarily and traditionally used for subsistence salmon fishing (5 AAC 01.666 (a)(3)). Unlike the other management areas, in the Yakutat Management Area subsistence salmon fishing locations are not restricted to specific streams, nor are there daily or annual limits on the number of fish harvested. In 2018, sockeye salmon escapement in the Situk River, the river that normally supports the largest concentration of fishing effort for all fisheries, was poor.

Yakutat is the only community within the Yakutat Management Area. The population of the Yakutat City and Borough continued a slightly decreasing trend and was estimated at 521 in 2018.²

Regulations

The Yakutat Management Area was the only one in the Southeast Region that did not include any personal use salmon fisheries. In the Yakutat area, regulations did not specify daily or annual limits or restrictions to allowable subsistence gear. The weekly subsistence fishing period during the commercial salmon net season was from 6:00 AM Friday to 6:00 PM Saturday; in 2018 the commercial fishing season began on June 10.³ On the Situk River and in Yakutat Bay, subsistence fishers were required to attend their nets when being used to harvest salmon.⁴ To reduce the harvest of Chinook salmon, an emergency order was released on April 26, 2018 that closed subsistence fishing for Chinook salmon in the Situk-Ahrnklin Inlet and closed

2. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

3. ADF&G Division of Commercial Fisheries, "Yakutat Subsistence Fishery Announcement," news release, June 7, 2018. Accessed May 27, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/912508445.pdf>

4. Alaska Department of Fish and Game Division of Commercial Fisheries, "2018 Regulatory Changes To The Yakutat Bay Salmon Subsistence Fishery," news release, April 27, 2018. Accessed September, 16 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/903746253.pdf>

the mouth of the Situk River and Johnson Slough to all subsistence fishing.⁵ Any live Chinook salmon harvested incidentally were requested to be released. Due to low sockeye returns, on June 28 the department closed the commercial set gillnet fishery in the Yakutat district and retained subsistence fishers on the 6:00 AM Friday to 6:00 PM Saturday schedule through the end of the season.⁶ With continued low returns that were not anticipated to achieve the lower end of the biological escapement goal (BEG), the department closed subsistence fishing on July 3.⁷

Harvest Assessment Program

The reported total subsistence salmon harvest for the Yakutat Management Area in 2018 was 1,722 salmon, including 967 sockeye salmon (56%), 599 coho salmon (35%), 136 Chinook salmon (8%), 18 pink salmon (1%), and 2 chum salmon (<1%) (Table 13-3). A reported 52 permits were fished (Table 13-3). Compared to 2017 estimates, the reported harvest in 2018 was significantly less. In 2017, an estimated 81 permits were fished and 4,442 salmon were harvested. Sockeye salmon composed a smaller percentage of the harvest in 2018: 56% compared to 70% in 2017.

Residents of Yakutat were issued 109 subsistence permits, with 91 returned (83%) (Table 13-4). The number of permits issued and returned was similar to 2017. The reported total subsistence salmon harvest for the community of Yakutat in 2018 was 1,458 fish, down from an estimated 3,950 salmon in 2017. The composition of harvests changed, with sockeye salmon composing a smaller percentage of the harvest and coho salmon a greater proportion. The 2018 harvest composition was 740 sockeye salmon (51%), 579 coho salmon (40%), 119 Chinook salmon (8%), 18 pink salmon (1%), and 2 chum salmon (<1%) (Table 13-4). Not all permits were necessarily fished in the Yakutat area.

HAINES MANAGEMENT AREA

Haines Area Subsistence/Personal Use Fisheries

Background and History

The Haines Management Area, encompassing the Haines area subsistence fisheries and a personal use fishery on the Taiya River, stretches from Little Island in Lynn Canal north to Chilkat Inlet, and includes the waters of the Chilkat River, as well as the waters in the Chilkoot Inlet to Skagway. Subsistence salmon fisheries in the waters traditionally used by the residents of the Haines area are under the management responsibility of the Division of Commercial Fisheries' Haines Area office. Positive C&T findings for salmon identify all the waters of the Chilkat River and Chilkat Inlet north of the latitude of Glacier Point, and in the Chilkoot River, Lutak Inlet, and Chilkoot Inlet north of the latitude of Battery Point, excluding waters of Taiya Inlet north of the latitude of the tip of Taiya Point (5 AAC 01.716 (a)(13)(A)). Sockeye salmon escapement to Chilkat Lake was within the BEG for that run in 2018 and for several years prior. In the Chilkoot Lake, sockeye salmon escapements have consistently achieved or exceeded the sustainable escapement goal for this system since 2010; escapement in 2018 was greater than in 2017.⁸

5. Alaska Department of Fish and Game Division of Commercial Fisheries, "2018 Situk River Chinook Salmon Forecast and Management Restrictions," news release, April 26, 2018. Accessed May 5, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/903224178.pdf>
6. Alaska Department of Fish and Game Division of Commercial Fisheries, "Yakutat Commercial Set Gillnet and Subsistence Fisheries Announcement," news release, June 28, 2018. Accessed May 5, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/926635751.pdf>
7. Alaska Department of Fish and Game Division of Commercial Fisheries, "Situk River Subsistence Fishing Closed Until Further Notice," news release, July 3, 2018. Accessed September 30, 2021. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/933232713.pdf>
8. Heintz et al. (2017) provides escapement estimates to the Chilkoot and Chilkat Lake systems for years prior to 2016. 2017 escapement information is presented in "Salmon Stock Status and Escapement Goals in Southeast and Yakutat" presented to the Board of Fisheries in January 2018 and available at <http://www.adfg.alaska.gov/static/regulations/regprocess/fisheriesboard/pdfs/2017-2018/se/tab15.pdf>. 2018 escapement information was retrieved from OceanAK.

There are several communities in the Haines Management Area: the city and borough of Haines, which includes the settlements of Covenant Life, Lutak, Mosquito Lake, Mud Bay, and Excursion Inlet, as well as Klukwan on the Chilkat River and Skagway at the head of Chilkoot Inlet. In 2018, the combined population of these communities was 3,651, approximately the same as the 2017 population estimates.⁹ The populations of the Haines Borough and Skagway are predominantly non-Native, while Klukwan has a predominantly Alaska Native population.

Regulations

Regulations for the Haines Management Area limited where salmon could be taken for subsistence uses to portions of the Chilkat River, Chilkat Inlet, Lutak Inlet, and Chilkoot River. These areas combined had the following possession and annual limits: for sockeye salmon, a possession limit of 25 fish and an annual limit of 50 fish; for coho salmon, a possession limit of 20 fish and annual limit of 40; and for pink and chum salmon, combined, a possession limit of 75 fish and an annual limit of 100 (5 AAC 01.745(i)). Permits are not issued for the harvest of Chinook salmon, but any Chinook salmon incidentally harvested under the terms of the permit could be legally retained. The subsistence permit provided for an open season of June 1–September 30 but not all areas of the Chilkat River subsistence fishery were open during this time. Fishing time was restricted to Wednesday through Saturday on a portion of the Chilkat River from June 15 to July 31. Salt water subsistence fishing season started June 17 with staggered openings of different locations, and ended September 30, or when the commercial fishing season ended. Subsistence salmon fishing was closed in the salt waters of Lynn Canal during closed periods of the commercial salmon net fishery, except subsistence fishing was allowed in a portion of these waters the Saturday before and the day before any commercial drift gillnet openings in the waters of Section 15-A. Preseason, a news release announced a variety of measures intended to reduce the incidental harvest of Chinook salmon in the marine and in-river subsistence fisheries, including time and area closures, due to a low preseason forecast for Chilkat River king salmon abundance.¹⁰ Department managers requested that subsistence fishermen release Chinook salmon caught incidentally. The personal use fishery for pink and chum salmon in the Taiya River had a combined possession limit of 10 fish and a combined annual limit of 20 fish. No season was specified.

Allowable gear types in the Haines Management Area subsistence fishery were set and drift gillnets. This gear could be used to take salmon in the mainstem and side channels, but not in the tributaries of the Chilkat River from Mile 4 of the Haines Highway to one mile upstream of Wells Bridge. Drift and set gillnets could not exceed 50 ft in length when fishing in the Chilkat River, and drift gillnets fished in marine waters could not exceed 50 fathoms in length.

Harvest Assessment Program

The reported subsistence salmon harvest in the Haines Management Area in 2018 was 10,386 salmon, including 9,114 sockeye salmon (88%), 545 pink salmon (5%), 366 chum salmon (4%), 340 coho salmon (3%), and 21 Chinook salmon (<1%) (Table 13-3). The reported salmon harvest was approximately the same as the 2017 estimated harvest. Sockeye salmon composed substantially more of the harvest and pink salmon composed substantially less. Harvests of coho, chum, and Chinook salmon did not change substantially. A reported 370 permits were fished in the Haines Management Area in 2018, similar to the 384 estimated permits fished in 2017.

In the Haines Borough, 449 permits were issued to residents with Haines addresses, and 320 were returned (71%) (Table 13-4). In 2017, 93% of 418 issued permits were returned. Permits issued to residents of the city of Haines, Mud Bay, Mosquito Lake, Covenant Life, or Lutak are included in the Haines totals Three permits were issued to Excursion Inlet residents—the only other community within the Haines borough—

9. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

10. Alaska Department of Fish and Game Division of Commercial Fisheries, “Closure of subsistence salmon fishing areas to conserve Chilkat River King salmon,” news release, May 25, 2018. Accessed May 5, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/909365911.pdf>

and one was returned. In Klukwan, 12 permits were issued and 10 were returned (83%). Forty-one residents of Skagway were issued permits and 24 returned them (59%). Not all permits were necessarily fished in the Haines area. The reported salmon harvest by Haines, Klukwan, Excursion Inlet, and Skagway residents combined (9,592 salmon total) included 8,382 sockeye salmon (87%), 501 pink salmon (5%), 359 chum salmon (4%), 331 coho salmon (3%), and 19 Chinook salmon (<1%) (Table 13-4). Compared to the 2017 estimate, the total reported harvest in 2018 was 500 more fish. Reported harvests of sockeye salmon increased the most, by nearly 3,000 fish, and harvests of pink salmon decreased by almost 2,500 fish. Harvests of other salmon species changed little.

JUNEAU MANAGEMENT AREA

The Juneau Management Area encompasses subsistence fisheries in the Angoon area and the Hoonah area, as well as personal use fisheries in the Juneau area. Subsistence and personal use harvests by residents of Elfin Cove, Tenakee Springs, Gustavus, and Pelican occur primarily, but not exclusively, in the Juneau Management Area. Management responsibility for the area rests with both the Division of Commercial Fisheries' Juneau and Sitka area offices. Overall, in 2018 there were a reported 455 permits fished in the Juneau Management Area with a harvest of 10,451 salmon (Table 13-3). Compared to 2017 estimates, approximately 100 fewer permits were fished and 1,300 fewer fish were harvested. Sockeye salmon harvests constituted 94% of the total harvest.

Angoon Area Subsistence Fisheries

Background and History

Subsistence salmon fisheries in the waters traditionally used by the residents of Angoon are under the management responsibility of the Division of Commercial Fisheries' Juneau and Sitka area offices. In 1989, the BOF adopted a positive C&T finding for salmon in the waters of District 12 in Basket Bay west of 134 53.88° W. long (5 AAC 01.716 (a)(10)(A), in the waters of District 12 south of a line from Fishery Point to South Passage Point and north of the latitude of Point Caution (5 AAC 01.716 (a)(10)), and in waters of Section 13C (5 AAC 01.716 (a)(11)).

The residents of Angoon are the principal subsistence fishers in this area. In 2018, Angoon had a population of 409, similar to the 2017 population estimate.¹¹ Angoon Tlingit have traditionally used most of the west coast of Admiralty Island, from Hawk Inlet to the southern tip of Admiralty Island, and lands and waters of the east coasts of Chichagof and Baranof islands. Based on permit data from 1996 through 2006, as well as interviews with local fishers, the waters of Kootznahoo Inlet, Favorite Bay, and Hood Bay to the south; Mitchell Bay, Salt Lake, and Kanalku bays further east; and Chatham Strait to the west continue to provide the people of Angoon with salmon and other marine resources. In 2017, escapement of sockeye salmon into the Kanalku system was lower than the 2012–2016 average (Vinzant and Heintz 2018); no sockeye salmon stock assessment project was conducted in this system in 2018. The USFS maintained a weir on Sitkoh Lake in 2018 and counted many fewer sockeye salmon than in 2017 or 2016.¹²

Regulations

Possession and annual limits for Angoon area subsistence sockeye salmon fisheries were specified in regulation (5 AAC 01.745 (h) and (g)) and range from a low of 15 fish in possession at Basket Bay to the most liberal areas of Sitkoh Bay and Hasselborg River-Salt Lake with 50 fish in possession and annually. Kanalku, Basket, and Sitkoh bays all opened to subsistence sockeye salmon fishing on June 1, closing first in Kanalku and Basket bays on July 31 and then at Sitkoh Bay on August 31. Hasselborg River-Salt Lake system was open from July 1–August 15. The subsistence coho salmon fishery in Hasselborg River–

11. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

12. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 2 – September 8, 2018." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_2-sept_8_2018.pdf

Salt Lake was open from July 1–October 31 with a possession and annual limit of 20 fish. Coho salmon harvested in other streams within the Angoon area could be taken from June 1–October 31, with limits of 20 in possession and 40 annually from all combined streams. Pink salmon could be harvested from June 1–September 30, with a possession and annual limit of 150 fish. The season for chum salmon in all streams of the area was from June 1–October 31, and the possession and annual limit was 50 fish. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained. Gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets were the allowable subsistence gear types. Drift gillnets could not exceed 50 fathoms in length.

Harvest Assessment Program

The reported salmon harvest in the Angoon area subsistence fisheries in 2018 was 899 salmon, including 808 sockeye salmon (90%), 40 coho salmon (4%), 36 chum salmon (4%) and 15 pink salmon (2%) (Table 13-3). While the harvest reported in 2018 was less than the harvest estimated in 2017, the overall composition of the harvest was very similar in both years. A reported 35 permits were fished in the area, compared to an estimated 83 permits fished in 2017.

The reported salmon harvest for the community of Angoon in 2018, from 32 returned permits (59 permits were issued; 54%), totaled 830 salmon, a decrease of approximately 1,400 fish from the 2017 estimate. The 2018 harvest comprised 736 sockeye salmon (89%), 46 coho salmon (6%), 40 chum salmon (5%), 7 pink salmon (1%), and 1 Chinook salmon (<1%) (Table 13-4). Not all permits were necessarily fished in the Angoon area. Harvest composition of the reported harvest in 2018 and the estimated harvest in 2017 was similar.

Hoonah Area Subsistence Fisheries

Background and History

Subsistence salmon fisheries in the waters traditionally used by the residents of Hoonah are under the management responsibility of the Division of Commercial Fisheries' Juneau and Sitka area offices. In 1989, the BOF adopted a positive C&T finding for sockeye salmon in waters of District 13 that are along the western shore of Yakobi Island east of a line from Cape Spencer light to Surge Bay light (5 AAC 01.716 (a)(11)(B)(i); and a positive C&T finding for salmon other than sockeye salmon in the waters of District 13 (5 AAC 01.716 (a)(11)(A)) and in the waters of sections 14B and 14C (5 AAC 01.716 (a)(12)(B)). In the Hoonah area, sockeye salmon stocks are only monitored at Neva Lake; 2018 escapement of sockeye salmon was similar to 2017 escapements.^{13,14}

The residents of Hoonah are the principal subsistence users of the waters in the area. In 2018, Hoonah had a population of 786, similar to the 2017 estimated population.¹⁵

Regulations

Possession and annual limits for subsistence sockeye salmon fishing in Hoonah area streams ranged from 10 fish in possession and annually at Neva Creek to 50 fish in possession and annually at Surge and Hanus bays and Hoktaheen Cove (5 AAC 01.745(g)(1)(B) and (h)(1)(B)). The permit specified open seasons for sockeye salmon at the following locations: Surge Bay, Hanus Bay (Lake Eva), and Neva Creek from June 1–August 15; Hoktaheen Cove from June 1–July 20; and Berg Bay from June 1–July 31. Coho salmon could be taken in streams in the areas with positive C&T findings from June 1–October 31, with limits of 20

13. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 2 – September 8, 2018." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_2-sept_8_2018.pdf

14. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 3 – September 9, 2017." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_3-9_2017_0.pdf

15. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

in possession and 40 annually. Pink salmon could be harvested under a subsistence permit in all streams in the Hoonah area from June 1–September 30, with a possession and annual limit of 150 fish. Chum salmon could be harvested in the same waters from June 1–October 31, with a possession and annual limit of 50 fish. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained. Gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets were the types of subsistence gear allowed in the Hoonah area subsistence fisheries. Drift gillnets could not exceed 50 fathoms in length.

Harvest Assessment Program

The reported salmon harvest in the Hoonah area subsistence fisheries in 2018 was 228 salmon, approximately 10% of the 2017 estimated harvest of 2,210 salmon but on par with the 2016 estimate of 293 fish. Variable annual harvests have been occurring since approximately 2014. The 2018 harvest included 129 sockeye salmon (57%), 97 coho salmon (43%), and two chum salmon (1%) (Table 13-3). Compared to 2017 estimated harvests, sockeye salmon made up a smaller proportion of the 2018 reported harvest and coho salmon made up a larger percentage. In 2017, sockeye salmon composed 90% of the harvests and coho salmon composed 5%. A reported 22 permits were fished in the Hoonah area in 2018 in comparison to an estimated 91 permits fished in 2017.

For the community of Hoonah, in 2018, 86 permits were issued and 35 were returned (41%) with a total reported harvest of 564 salmon (Table 13-4). The harvest consisted of 497 sockeye salmon (88%), 64 coho salmon (11%), two chum salmon (<1%), and one Chinook salmon (<1%) (Table 13-4). Permits may not have been fished in the Hoonah area. Fewer permits were issued and returned to Hoonah residents than in 2017 and the reported harvest was less than half of the estimated 2017 harvest.

Elfin Cove, Gustavus, Pelican, and Tenakee Springs Subsistence and Personal Use Salmon Fisheries

Background

Subsistence and personal use salmon fisheries in the waters traditionally used by the residents of Elfin Cove, Gustavus, Pelican, and Tenakee Springs are under the management responsibility of the Division of Commercial Fisheries' Juneau and Sitka area offices. Traditionally, fishers from these communities fish primarily in districts 11, 12, 13, and 14; harvests are included in the Angoon area subsistence fisheries, Hoonah area subsistence fisheries, and Juneau area personal use fisheries categories in Table 13-3. Elfin Cove fishers harvest salmon from Hoktaheen Cove and Surge Bay in District 13. Gustavus fishers harvest salmon primarily from Surge Bay and Hoktaheen Cove in District 13, but also from the Taku River in District 11, the Berg River and Neva Creek in District 14, and the Chilkat River in District 15. Residents of Pelican and Tenakee Springs harvest salmon at Kook Creek and Kook Lake Outlet in Basket Bay, Taku River and Sweetheart Creek in District 11, and Hoktaheen Cove in District 13. Most of the salmon stocks in these areas have positive C&T findings as described in other sections of this report.

In 2018, Gustavus was the largest community with 552 residents. The combined population of the other three communities was 223. The populations of all four communities changed little from their 2017 estimates.¹⁶

Regulations

Permit regulations applying to fishers in this area can be found under the Hoonah, Angoon, Haines, and Juneau subsections.

Harvest Assessment Program

In 2018, few salmon were reported on permits issued to residents of Elfin Cove, Gustavus, Pelican, and Tenakee Springs (Table 13-4). Twenty-one permits were issued to Gustavus residents, seven permits were issued to Pelican residents, seven were issued to residents of Tenakee Springs, and four permits were issued

16. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

to residents of Elfin Cove. About half (51%) of these permits were returned. The majority of the harvest was sockeye salmon: Gustavus permits recorded 338 sockeye salmon; 183 were reported on Pelican permits; 35 sockeye salmon were recorded on Tenakee Springs permits, and 15 in Elfin Cove. In addition, Tenakee Springs residents harvested 7 Chinook salmon, and Gustavus permits recorded 43 coho, 14 pink, and 4 chum salmon harvests. Not all permits were necessarily fished in the Juneau Management Area.

Juneau Area Personal Use Fisheries

Juneau fishers primarily harvest sockeye salmon from the Taku River and Sweetheart Creek in District 11, which is in the Juneau Nonsubsistence Area (Figure 13-1). These waters are under the management responsibility of the Division of Commercial Fisheries' Juneau Area office. In 2018, the estimated abundance of sockeye salmon in the Taku River was lower than the previous three years (Pestal et al. 2020). No run information is available for Sweetheart Creek sockeye salmon for 2018. Personal use regulations apply to salmon fishing for home uses in this area. Juneau area residents are the principal participants in the designated personal use fisheries in District 11. In 2018, the city and borough of Juneau had a population of 32,177, a decrease of slightly more than one hundred residents since 2017.¹⁷

Regulations

Regulations specifying annual and possession limits under personal use regulations can be found at 5 AAC 77.682. In the Juneau area, the limit for sockeye salmon in possession in Sweetheart Creek was 25 fish with no annual limit, and in the Taku River the total annual limit was 10 sockeye salmon for a household of one person and 20 sockeye salmon for a household of two or more people. The Taku River was open to personal use fishing upstream of the Taku River Lodge to the United States/Canada border and only from July 16 through August 15. Sweetheart Creek was open from June 1 through October 31. In all streams in the Juneau Management Area, except along the Juneau road system, the open season for pink salmon was June 1–September 30 with a 150 fish limit annually and in possession; for chum salmon, the open season was June 1–October 31 with an annual and possession limit of 50 fish. There was a possession limit of six fish for any coho salmon and two fish for any Chinook salmon taken incidentally under the terms of a personal use permit.

In the Taku River only set gillnets could be used, and they could not exceed 15 fathoms in length. The permit holder had to be present at the net while it was in use. In Sweetheart Creek, the use of spearguns and hook and line fishing for salmon was prohibited. Salmon could be taken for personal use only upstream from the ADF&G regulatory marker located near the stream mouth.

Harvest Assessment Program

The total reported salmon harvest for the Juneau area personal use fisheries in 2018 was 9,324 salmon, an increase from the 2017 estimated harvest of 7,320 salmon. The 2018 harvest consisted of 8,836 sockeye salmon (95%), 287 coho salmon (3%), 183 pink salmon (2%), 13 Chinook salmon (<1%), and five chum salmon (<1%) (Table 13-3). The 2018 harvest continues a trend of increasing harvests in this area since 2015. The composition of the harvest in 2018 was similar to that of 2017. A reported 398 permits were fished in the Juneau area personal use fisheries in 2018, compared to an estimated 382 permits fished in 2017.

In 2018, 901 permits were issued to residents of Juneau (including the communities of Douglas and Auke Bay) and 517 were returned (57%) (Table 13-4). The reported personal use and subsistence salmon harvest totaled 10,294 salmon, including 9,776 sockeye salmon (95%), 304 coho salmon (3%), 185 pink salmon (2%), 21 Chinook salmon (<1%), and eight chum salmon (<1%) (Table 13-4). Not all permits were fished solely in the Juneau area. More permits were issued and fewer were returned than in 2017. Reported salmon harvests in 2018 were higher than estimated harvests in 2017, though the overall composition of the harvest was similar.

17. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

SITKA MANAGEMENT AREA

Sitka Subsistence and Personal Use Salmon Fisheries

Background and History

Subsistence and personal use salmon fisheries in the waters traditionally used by the residents of Sitka are under the management responsibility of the Division of Commercial Fisheries' Sitka Area office. In 1989, the BOF adopted a positive C&T finding for sockeye salmon in those waters of Section 13-A south of the latitude of Cape Edward and the waters along the western shore of Yakobi Island east of a line from Cape Spencer light to Surge Bay light, in waters of Section 13-B north of the latitude of Redfish Cape, and in waters of Section 13-C (5 AAC 01.716(a)(11)(B)). At the March 1997 BOF meeting in Sitka, this finding was extended to include all other salmon species in all waters of District 13 (5 AAC 01.716 (a)(11)(A)). Sockeye salmon stocks without a positive C&T finding in this area can only be fished under personal use regulations. Principal salmon waters and streams used by Sitka fishers include Klag Bay–Lake Anna, Lake Stream–Ford Arm, Necker Bay, Redoubt Bay, Salmon Lake, and Redfish Bay. Sockeye salmon run information is available for Redoubt Bay and Klag Bay. In 2018, the sockeye salmon run into Redoubt Bay was strong, similar to 2017.¹⁸ For Klag Bay, the sockeye salmon run in 2018 was below average with poorer returns than in 2017.¹⁹

The residents of Sitka are the principal subsistence users of the salmon stocks in the area; residents of Port Alexander in southern Baranof Island also use these stocks. In 2018, the city and borough of Sitka had a population of 8,607, continuing a slightly decreasing trend.²⁰ In Port Alexander, the 2018 population estimate was for 55 residents, similar to previous years. The Sitka Tlingit have traditionally used most of the Pacific coast of Baranof and Chichagof islands from Point Urey to Cape Ommaney, including the myriad islands lying off the coast, and up Peril Strait between Chichagof and Baranof islands into Hoonah Sound as far as Patterson Bay. Sitkans share the use of Yakobi Island and the sockeye salmon fisheries at Hoktaheen Cove and Surge Bay with the residents of Hoonah. Sitka residents' territory touches that of Angoon residents in Peril Strait and Sitkoh Bay.

Regulations

In 2018, the season for sockeye salmon for all Sitka locations opened June 1 and closed between July 20 and August 31 as typically occurs. As stated on the permit, Falls Lake and Bay closed on July 13, but was open again from July 23 to August 15. On July 20, Hoktaheen Cove, Takanis Bay, and Gut Bay closed to sockeye salmon fishing. On July 31, Small Arm Whale Bay (Politofski Lake) and other unlisted areas with positive C&T findings closed to subsistence/personal use fishing. On August 15, Klag and Surge bays, Lake Anna and Ford Arm, and Hanus Bay (Lake Eva) closed. The last areas closed on August 31 and included Necker, Redfish, Redoubt, and Sitkoh bays.

Possession and annual limits for sockeye salmon varied from 10 fish in possession and 20 fish annually at Gut Bay to 100 fish in possession and no annual limit at Necker Bay (5 AAC 01.745 (g)(1)). Sitkoh, Takanis, Surge, Klag, and Hanus bays, Hoktaheen Cove, and Whale Bay had possession and annual limits of 50 sockeye salmon. Lake Anna, Ford Arm and Ford Arm Lake, and Falls Lake and Bay had possession and annual limits of 25 fish. Redfish Bay had limits of 50 in possession and 100 fish annually. For subsistence/personal use locations not listed on the permit, the possession limit and annual limit was 10 sockeye salmon.

18. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 2–September 8, 2018." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_2-sept_8_2018.pdf

19. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 2–September 8, 2018." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_2-sept_8_2018.pdf

20. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

In January 2003, the BOF adopted the *Redoubt Bay and Lake Sockeye Salmon Management Plan* (5 AAC 01.760). The plan provided a management approach for subsistence, sport, and commercial fisheries that target Redoubt Lake sockeye salmon based on an optimal escapement goal of 7,000–25,000 fish. As specified in regulation, by default the fishery was open from June 1–August 31 with a possession limit of 10 fish and an annual limit of 50 fish. If the projected run fell below 7,000 fish or above 10,000 fish, the season or limits would change inseason. In 2018, an emergency order on July 9 liberalized harvest limits in the Redoubt Bay and Lake subsistence fishery to 25 sockeye salmon in possession and 100 sockeye salmon annually.²¹

Salmon streams flowing across or adjacent to the Sitka road system were closed to subsistence/personal use fishing for coho and chum salmon. The season for chum salmon in other waters with positive C&T findings within the Sitka Management Area, except for the listed sockeye salmon streams, was July 15–October 31, with a possession limit of 50 fish and no annual limit. Pink salmon could be harvested from the same waters under subsistence fishing permit conditions from July 15–September 30, with a possession limit of 100 fish and no annual limit. Coho salmon within the Sitka Management Area could be taken under subsistence fishing permit conditions from August 16–October 31 and in Redoubt, Necker, Redfish, and Sitkoh bays from September 1–October 31 with a possession limit of 20 fish and an annual limit of 40 fish for any combination of streams. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained.

Allowable subsistence gear for all areas except for Redoubt Bay included hand purse seines, beach seines, drift gillnets, dip nets, cast nets, gaffs, and spears. In Redoubt Bay only, the use of rod and reel gear was allowed as subsistence gear along with gaff, spear, and dip net. Limitations listed in sport regulations concerning rod and reel gear also applied in this fishery. Portions of Falls Lake, Gut Bay, Silver Bay, and Indian River had closed areas and/or restricted gear types specified on the permit.

Harvest Assessment Program

The total reported salmon harvest in the Sitka Management Area subsistence and personal use fisheries in 2018 was 17,141 salmon, consisting of 16,561 sockeye salmon (97%), 419 coho salmon (2%), 79 chum salmon (<1%), 67 pink salmon (<1%), and 15 Chinook salmon (<1%) (Table 13-3). This was an increase from the 2017 harvest estimate of 12,152 fish. Contributions of each species to the overall harvest remained similar. A reported 476 permits were fished in the Sitka Management Area in 2018, compared to an estimated 405 permits in 2016.

The total salmon harvest for the community of Sitka in 2018 as reported on 419 returned permits, was 14,882 salmon, including 14,407 sockeye salmon (97%), 356 coho salmon (2%), 54 pink salmon (<1%), 51 chum salmon (<1%), and 14 Chinook salmon (<1%) (Table 13-4). Not all permits were necessarily fished solely in the Sitka Management Area. The number of permits issued, as well as overall harvests, increased from 2017. In 2018, 797 permits were issued compared to 567 (71%) in 2017, and harvests were approximately 3,000 fish more. Most of the increased harvest was of sockeye salmon. Four permits were issued to residents of Port Alexander and none were returned.

PETERSBURG MANAGEMENT AREA

The Petersburg Management Area includes the Kake area subsistence fisheries, the Petersburg–Wrangell area personal use fisheries, the federal Stikine River subsistence fishery, and the Point Baker–Port Protection area subsistence fisheries. Overall, 173 state subsistence permits and 85 federal Stikine River permits were fished in the Petersburg Management Area in 2018. The total salmon harvest (reported from state permits and estimated from federal permits) was 5,418, with 70% of the harvest coming from sockeye salmon (Table 13-3). The reported number of permits fished was about 50 fewer than the 2017 estimate, and over 1,000 fewer fish were harvested.

21. Alaska Department of Fish and Game Division of Commercial Fisheries, “Redoubt Bay and Lake subsistence and sport sockeye salmon limits increased,” news release, July 9, 2018. Accessed May 12, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/939638671.pdf>

Kake Area Subsistence Fisheries

Background and History

Subsistence salmon fisheries in the waters traditionally used by the residents of Kake are under the management responsibility of the Division of Commercial Fisheries' Petersburg Area office. In 1989, the BOF adopted a positive C&T finding for salmon in the waters of District 9 north of the latitude of Swain Point (5 AAC 01.716 (a)(8)(A)), in the waters of District 10 west of a line from Pinta Point to False Point Pybus (5 AAC 01.716 (a)(9)(A)), and in the waters of District 5 north of a line from Point St. Albus to Cape Pole (5 AAC 01.716 (a)(4)). Principal salmon waters and streams used predominately by Kake fishers include Gut Bay and Falls Lake Creek on the southwest coast of Baranof Island, as well as Saginaw, Security (Salt Lake), Pillar (Kutlaku Creek), and Tebenkof (Alecks Creek) bays on Kuiu Island.

In 2018, Kake had an estimated population of 599, compared to the 2017 estimate of 606.²² Kake residents shared the use of the southern coastal waters of Admiralty Island with residents of Angoon and Petersburg. In recent years, principal subsistence salmon fishing by Kake residents has occurred in Gut Bay and Falls Creek on Baranof Island, and at Kutlaku Creek in Pillar Bay. The Falls Lake sockeye salmon run was poorer in 2018 than in 2017.^{23,24} Information about the strength of runs to other area streams is not available.

Regulations

The 2018 permit provided for an open season for sockeye salmon in Alecks Creek and Shipley Bay, Bay of Pillars, Falls Lake, and Gut Bay. The season opened in each of these systems on June 1 and closed between July 20 and August 15. Falls Lake had a closed period between July 14 and 22. Any systems not listed on the permit open to subsistence sockeye salmon fishing had a season of June 1 to July 31. In all of these systems, possession limits ranged from 10 to 50 fish and annual limits from 20 to 50 fish (5 AAC 01.745(f)).

Pink, chum, and coho salmon could be harvested in all streams in the Kake area, except for the sockeye salmon streams identified on the permits. The open season for pink salmon was July 15–September 15, and there was a possession limit of 100 pink salmon and no annual limit. Chum salmon could be harvested from July 1–October 31, and there was a possession limit of 50 fish and no annual limit. The coho salmon season lasted from August 16–October 31, and there was a limit of 20 fish in possession and 40 fish annually. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained.

Permitted subsistence gear included gaffs, spears, hand operated beach seines, dip nets, drift and set gillnets, and cast nets. Set gillnets could be used only in Shipley Bay within 100 yd of the terminus of Shipley Creek, and the permit holder was required to be physically present at the net while in operation. Gillnets could not exceed 50 fathoms in length.

Harvest Assessment Program

As reported in Table 13-3, the reported salmon harvest in the Kake area subsistence fisheries in 2018 was 718 salmon, including 489 sockeye salmon (68%), 121 chum salmon (17%), 87 coho salmon (12%), 18 Chinook salmon (3%), and 3 pink salmon (<1%). A reported 35 permits were fished in the Kake area subsistence fisheries in 2018. This compares to an estimated 71 permits fished in 2017 with a total harvest of 1,802 salmon. In 2018, sockeye salmon composed a smaller percentage of the harvest than in 2017, when

22. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2021. <http://live.laborstats.alaska.gov/pop/index.cfm>

23. USFWS Office of Subsistence Management. "Fisheries Update for the Week of September 2–September 8, 2018." Report #15. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_15_sept_2-sept_8_2018.pdf

24. USFWS Office of Subsistence Management. "Fisheries Update for the Week of August 26–September 2, 2019." Report #14. Accessed September 30, 2021. https://www.doi.gov/sites/doi.gov/files/uploads/fisheries_updates_no_14_aug_26-sept_2_2019.pdf

it was 83% of the harvest, and chum salmon harvests increased from 6% of the harvest in 2017. Harvests of coho, chum, and Chinook salmon increased, and harvests of sockeye and pink salmon decreased.

Residents of the community of Kake obtained 101 permits in 2018 and returned 55 of those (54%) (Table 13-4). On those returned permits, a total of 688 salmon were reported. The harvest comprised 489 sockeye salmon (71%), 117 chum salmon (17%), 70 coho salmon (10%), nine Chinook salmon (1%), and three pink salmon (<1%). Not all permits were necessarily fished solely in the Kake area. Fewer permits were issued and returned in 2018 than in 2017 and the reported harvest in 2018 is less than half the estimated 2017 harvest of 1,658. Reported harvests of sockeye salmon decreased from an estimated 1,362 salmon in 2017. More chum and coho salmon were reported in 2018 and fewer Chinook and pink salmon were reported.

Petersburg–Wrangell Area Subsistence/Personal Use State Fisheries

Background and History

Subsistence and personal use salmon fisheries in the waters traditionally used by the residents of Wrangell and Petersburg are under the management responsibility of the Division of Commercial Fisheries' Petersburg Area office. In 2002, the BOF made a positive C&T finding for salmon stocks (excluding enhanced Chinook, chum, and coho salmon within the waters of the Anita Bay THA) in District 7 (5 AAC 01.716 (a)(6)) and District 8 (5 AAC 01.716 (a)(7)). These waters include Thoms Place, Harding River, Mill Creek, and the Stikine River. The 2018 Stikine River sockeye salmon run was below average (PSC TTC 2021). Personal use fisheries are authorized on some salmon stocks in this area that do not have a positive C&T finding.

Petersburg and Wrangell residents are the principal users of the salmon stocks of Salmon Bay on Prince of Wales Island, as well as Crystal Creek, Thoms Creek, Earl West Cove, Mill Creek, and the Stikine River. In 2018, the population of the Petersburg borough (including Hobart Bay CDP and Kupreanof) was 3,190 and that of Wrangell was 2,418.²⁵ Both estimates are similar to the 2017 estimates.

Regulations

Shipley, Salmon, and Red bays, along with Thoms Place and Mill Creek were open for subsistence sockeye salmon fishing from June 1 to July 31. Limits for sockeye salmon were 25 in possession and 50 annually from Shipley Bay and 30 in possession and annually from Salmon Bay and Red Bay, combined (5 AAC 01.745(f)). Thoms Place and Mill Creek had a combined possession limit of 20 fish and an annual limit of 40 fish.

For all streams in the Wrangell and Petersburg areas with positive C&T findings, except the sockeye salmon locations listed on the permit, subsistence fishing for pink, chum, and coho salmon was permitted. The open season for subsistence pink salmon fishing was July 15–September 15, with a daily possession limit of 100 pink salmon and no annual limit. The open season for subsistence chum salmon fishing was July 1–October 31, with a daily possession limit of 50 fish and no annual limit. Subsistence coho salmon was permitted from August 16–October 31, with a limit of 20 fish in possession and 40 annually. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained.

Allowed subsistence and personal use gear included gaffs, spears, beach seines, dip nets, drift and set gillnets, and cast nets. Drift gillnets could not exceed 50 fathoms in length. Set gillnets could be used only in Shipley Bay within 100 yards of the terminus of Shipley Creek, and the permit holder was required to be physically present at the net while in operation. A federal subsistence permit was needed to fish the Stikine River.

The personal use sockeye fishery at Hatchery Creek, which drains into Sweetwater Lake, was open Thursdays through Sundays from June 1–June 30. Harvest limits were set at six fish daily and 18 annually. Personal use pink salmon fishing was open in Windham Bay from July 15–August 31 with a possession limit of 100 fish and no annual limit. Personal use coho salmon fishing was open in Blind Slough and North

25. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

Wrangell Narrows on Fridays from 6:00 AM to 8:00 PM from August 10 to September 6 with possession and annual limits of 25 fish. The Anita Bay personal use permit allowed the harvest of Chinook, chum, and coho salmon May 15–October 31 with possession and annual limits of 25 fish in any combination. On May 9, 2018, the department issued a news release modifying the area of the terminal harvest area (THA) open to personal use fishing from May 15–June 1 and extending the season through November 10.²⁶ Outside of Anita Bay THA and Blind Slough, the possession limit for coho salmon was six fish. Salmon could be taken only by drift gillnets in the Anita Bay THA.

Harvest Assessment Program

The reported salmon harvest in the Petersburg area state subsistence/personal use fisheries in 2018 was 1,808 salmon, including 1,229 sockeye salmon (68%), 472 coho salmon (26%), 84 pink salmon (5%), 20 chum salmon (1%), and three Chinook salmon (<1%) (Table 13-3). Compared to the 2017 estimate, the reported overall harvest in 2018 was greater. At the species level, sockeye salmon composed a smaller proportion of the harvest than in 2017 and coho salmon a greater proportion. A reported 85 permits were fished in 2018, the same as the 86 estimated permits fished in 2017.

As reported in Table 13-4, in 2018, Petersburg residents were issued 188 permits and returned 111 (59%). The reported subsistence/personal use salmon harvest for the community of Petersburg in 2018 was 2,331 salmon, including 1,543 sockeye salmon (97%), 669 coho salmon (29%), 52 chum salmon (2%), 49 pink salmon (2%), and 18 Chinook salmon (<1%). Not all permits were necessarily fished solely in the Petersburg area. A few more permits were issued but fewer were returned in 2018, and the overall salmon harvest was about 300 fish more than the estimated 2017 harvest. Fewer sockeye salmon were reported harvested in 2018 than estimated in 2017. Over 500 more coho salmon were harvested, fewer pinks were harvested, and approximately the same number of chum and Chinook salmon were harvested in 2018. Two permits were issued to residents of Kupreanof but none were returned.

As shown in Table 13-3, the reported salmon harvest in the Wrangell area subsistence/personal use fisheries in 2018 was 809 salmon, which included 369 sockeye salmon (46%), 226 coho salmon (28%), 110 chum salmon (14%), 70 pink salmon (9%), and 34 Chinook salmon (3%). Compared to the 2017 harvest estimate of 836 salmon, the reported overall harvest changed little. Reported harvests of sockeye salmon were lower in 2018 and accounted for 46% of the harvest, compared to 2017 estimates of 551 salmon which composed 66% of the harvest. Harvests of all other species were increased except Chinook salmon. A reported 53 permits were fished in 2018 compared to an estimated 64 permits in 2017.

As shown in Table 13-4, 202 permits were issued to residents of Wrangell in 2018 and 141 of them were returned (70%). The reported subsistence salmon harvest was 2,284 salmon, including 1,754 sockeye salmon (77%), 173 pink salmon (8%), 145 chum salmon (6%), 120 Chinook salmon (5%), and 92 coho salmon (4%). Not all permits were necessarily fished solely in the Wrangell area. While the reported harvest in 2018 was similar to the estimated 2017 harvest, sockeye salmon composed a slightly larger percentage of the overall harvest.

2018 Federal Stikine River Subsistence Salmon Fishery: Regulations

In January 2004, the U.S. and Canada negotiated a modified Pacific Salmon Treaty that allowed for a U.S. subsistence salmon fishery on the Stikine River. The Federal Subsistence Board implemented a Stikine River subsistence sockeye salmon fishery in 2004, followed by directed Chinook and coho salmon subsistence fisheries authorized in 2005. Regulatory changes implemented for the 2006 season included an increase in the mesh size of gillnets during the Chinook salmon fishery and an earlier starting date for the sockeye salmon fishery. In 2008, two additional regulatory changes were made: subsistence fishing permits became valid for the entire season (May 15–October 1); and the start date of the coho salmon fishery was moved up to August 1. The latter change allowed a continuous subsistence fishery throughout

26. Alaska Department of Fish and Game Division of Commercial Fisheries, “Anita Bay Personal Use Salmon Fishery Announcement,” news release, May 9, 2018. Accessed May 13, 2020. <http://www.adfg.alaska.gov/static/applications/dcfnewsrelease/906019100.pdf>

the season. Effective for the 2015 season, the Federal Subsistence Board adopted a new regulation requiring subsistence fishers to check their nets at least twice daily. A regulatory change in 2017 provided expanded delegation of authority from the Federal Subsistence Board (FSB) to the Wrangell District Ranger to close and reopen the fishery based on Pacific Salmon Treaty requirements. Preseason, the Federal Subsistence Board approved an emergency special action request to close the Stikine River Chinook salmon subsistence fishery due to a low pre-season abundance estimate.²⁷ For more information about this fishery see Ream and Merriam (2017).

Current Federal Regulations

The federal subsistence fisheries regulatory year begins April 1. Regulations are detailed in Subpart C and D of the *Code of Federal Regulations* (36 CFR part 242 and 50 CFR part 100). The sections relevant to the Stikine River are as follows:

50 CFR 100.24 Customary and traditional use determinations.

(2) Fish determinations. The following communities and areas have been found to have a positive customary and traditional use determination in the listed area for the indicated species:

Southeastern Alaska Area: All fish. Residents of Yakutat and Southeastern Alaska Fishery Management Areas.

36 CFR 242.27 Subsistence taking of fish.

(e) Fishery management area restrictions.

(13) Southeastern Alaska Area.

(xiii) You may take Chinook, sockeye, and coho salmon in the mainstem of the Stikine River only under the authority of a Federal subsistence fishing permit. Each Stikine River permit will be issued to a household. Only dip nets, spears, gaffs, rod and reel, beach seine, or gillnets not exceeding 15 fathoms in length may be used. The maximum gillnet stretched mesh size is 8 inches during the Chinook salmon season and 5-1/2 inches during the sockeye salmon season. There is no maximum mesh size during the coho salmon season.

(A) You may take Chinook salmon from May 15 through June 20. The annual limit is five Chinook salmon per household.

(B) You may take sockeye salmon from June 21 through July 31. The annual limit is 40 sockeye salmon per household.

(C) You may take coho salmon from August 1 through October 1. The annual limit is 20 coho salmon per household.

(D) You may retain other salmon taken incidentally by gear operated under terms of this permit. The incidentally taken salmon must be reported on your permit calendar.

(E) Fishing nets must be checked at least twice each day.

Seasons, harvest limits, and the C&T determinations enumerated in regulations are also included on the federal subsistence fishing permit for the Stikine River. In addition, the permit specifies several other limitations:

- allowable gear—Gillnets not exceeding 15 fathoms in length may be used. The maximum gillnet mesh size is five and one-half inches, except during the Chinook season when the maximum gillnet mesh size is eight inches;

27. Paul Robbins Jr. Public Affairs Officer, Tongass National Forest, “Stikine River Federal subsistence Chinook Salmon fishery closed,” U. S. Department of the Interior, Federal Subsistence Management Program, Accessed May 28, 2020. <https://www.doi.gov/subsistence/news/general/stikine-river-federal-subsistence-chinook-salmon-fishery-closed>

- size—"Jack" Chinook salmon are defined as less than 28 inches. Only Chinook salmon equal to or greater than 28 inches are included in the annual harvest limit. Fishers must indicate the number of Chinook salmon taken that are greater than and less than 28 inches separately.
- harvest recording—Fishers may retain other salmon taken incidentally; however, they must be recorded on the permit.

The total annual harvest level for the Stikine River is controlled by the inseason manager and may be closed or expanded by special action.

Harvest Assessment Program

For Chinook, coho, and sockeye salmon fisheries harvest assessment, a telephone-based monitoring program with a random subset of permit holders was used in season, with permits and harvest reporting used for overall harvest assessment postseason. Similar to past years, in 2018, 117 fishing permits were issued, with 75% going to Wrangell households and 25% to Petersburg households (Table 13-5). All 117 issued permits were returned, and 85 permits recorded fishing activity. The Stikine River subsistence harvest totaled 2,083 salmon, about 300 fish fewer than the 2017 harvest, slightly below the 5-year average harvest, but above the 10-year and historical averages (Table 13-6). The 2018 harvest consisted of 1,732 sockeye salmon (83%), 126 pink salmon (6%), 94 Chinook salmon (5%), 74 chum salmon (4%), and 57 coho salmon (3%) (Table 13-6). Harvests of sockeye salmon were similar to 2017; harvests of pink, chum, and coho decreased, and harvests of Chinook salmon increased.

Residents of Petersburg were issued 29 federal Stikine River permits in 2018 and all were returned. Based on the permit data, residents of Petersburg harvested 509 salmon in the federal fishery, approximately 25% of the entire harvest. The catch comprised 464 sockeye salmon (91%), 24 pink salmon (5%), 14 chum salmon (3%), 6 Chinook salmon (1%), and 1 coho salmon (<1%) (Table 13-5). In Wrangell, based on 88 permits issued and returned, 1,574 salmon were harvested. The catch consisted of 1,268 sockeye salmon (81%), 102 pink salmon (7%), 88 Chinook salmon (6%), 60 chum salmon (4%), and 56 coho salmon (4%) (Table 13-5). Compared to 2017, Petersburg residents harvested 85 fewer fish while Wrangell residents harvested 86 more fish. In Petersburg, harvest composition changed only slightly. In Wrangell, the harvest composition did change; the harvest of sockeye salmon accounted for 67% of the harvest in 2017. The biggest decrease in percentage of harvest was from pink salmon harvests which contributed 17% of the catch in 2017.

Point Baker–Port Protection Subsistence Fisheries

Background and History

The Division of Commercial Fisheries' Petersburg Area office manages subsistence and personal use salmon fisheries in the waters used by fishers from the communities of Point Baker and Port Protection. These fishers rely especially on the Salmon Bay and Red Bay sockeye salmon stocks at the northern end of Prince of Wales Island. In 1997, the BOF adopted a positive C&T finding for salmon and other fishes in the waters of District 5 north of a line from Point St. Albans to Cape Pole (5 AAC 01.716 (a)(4)), in the waters of Section 6-A west of a line from Macnamara Point to Mitchell Point and in the waters of Section 6B west of the longitude of Macnamara Point (5 AAC 01.716 (a)(5)). Harvests in these waters are included in the Petersburg area subsistence-personal use fisheries category in Table 13-3.

In 2018, Point Baker had the same population as 2017 (13 residents) and Port Protection had a population of 31, down from an estimated 35 residents in 2017.²⁸

Regulations

The Point Baker drift gillnet subsistence sockeye salmon fishery occurs in the waters of Sumner Strait within three miles of the Prince of Wales Island shoreline north of Hole-in-the-Wall and west of the western

28. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

side of Buster Bay. The fishery was open Wednesdays at 12:00 PM to Sundays at 12:00 PM, from June 6–July 29. Only drift gillnet gear, not to exceed 50 fathoms in length, was allowed. Harvest was limited to 25 sockeye salmon in possession and annually. Pink and chum salmon subsistence harvests were allowed in all streams within the Point Baker–Port Protection area for stocks with positive C&T findings, except for the sockeye salmon streams identified on the permit. There was a 100-fish possession limit for pink salmon, with no annual limit. For chum salmon, 50 fish were allowed in possession with no annual limit. Coho salmon could be harvested under subsistence regulations for stocks with positive C&T findings in all streams in the Point Baker–Port Protection area with a possession limit of 20 fish and annual limit of 40 fish. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained.

Harvest Assessment Program

Port Protection households maintain either a Ketchikan or Point Baker post office address and can also receive mail via private carrier from Ketchikan. Port Protection harvests can be included in either the Point Baker or Ketchikan harvest estimates. In 2018, one permit was issued to Port Protection and one to Point Baker households. Both were returned with a harvest of 5 sockeye and 2 chum salmon in Port Protection and 57 pink, 11 chum and 1 coho salmon on the Point Baker permit (Table 13-4).

KETCHIKAN MANAGEMENT AREA

The Ketchikan Management Area includes subsistence fisheries in the Hydaburg area, the Craig-Klawock area, the Kasaan area, and two small systems in the Ketchikan area, and personal use fisheries in the Ketchikan area. All of these areas are under the management responsibilities of the Division of Commercial Fisheries' Ketchikan Area office. There were 204 permits fished in the Ketchikan Management Area in 2018, less than the estimated 294 permits fished in 2017. The total reported salmon harvest was 6,556, approximately 1,900 fewer salmon than in 2017 (Table 13-3). Sockeye salmon harvests contributed 77% of this harvest; in 2017 sockeye salmon contributed 83% to the overall salmon harvest.

Craig, Klawock, and Hydaburg Subsistence Fisheries

Background and History

Hydaburg area waters with a positive C&T finding for salmon include Section 3-A (5 AAC 01.716(a)(3)(A)) and the waters of District 2 in Nichols Bay north of 54° 42.12' N lat. (5 AAC 01.716 (a)(2)(B)). Craig-Klawock area waters with a positive C&T finding for salmon include Section 3-B east of a line from Point Ildefonso to Tranquil Point and the waters of Warm Chuck Inlet north of a line from a point on Heceta Island at lat. 55° 44' N, long. 133° 25' W to Bay Point (5AAC 01.716 (a)(3)(B)(iii)); and Section 3-C in the waters of Karheen Passage north of 55° 48' N lat. and east of 133° 20' W long. and in the waters of Sarkar Cove and Sarkar Lake (5 AAC 01.716 (a)(3)(C)).

Residents of the communities of Hydaburg, Craig, and Klawock on the west coast of Prince of Wales Island primarily use the salmon stocks of sections 3A and 3B, with the main harvest locations at Hetta Inlet–Sukkwana Strait (Eek Creek), Big Salt–Trocadero Bay (Klawock River), and Sea Otter Sound (Sarkar River). 2018 counts of sockeye salmon through the weir at Hetta Lake were substantially higher than in previous years.²⁹

In 2018, Craig had a population of 1,091, Klawock had a population of 774, and Hydaburg had a population of 397.³⁰ Compared to 2017, Craig's population stayed the same, Klawock's declined, and Hydaburg's increased slightly.

29. OceanAK: The integrated data system for the Alaska Department of Fish and Game. Accessed September 30, 2021 <http://oceanak.dfg.alaska.local>

30. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. "Research and Analysis Homepage." Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

Regulations

The subsistence sockeye salmon fishery in the Klawock River ran from July 7-August 7, Mondays at 8:00 AM to Fridays at 5:00 PM, with a 20 sockeye salmon possession limit and no annual limit (5 AAC 01.710(e) and 5 AAC 01.745(1)(C)). In Hetta Inlet, Eek Creek, Klakas Lake, and Sarkar Cove, the season opened on June 1. The first two systems closed on August 31, and the latter two closed on July 31. The possession limit in each of these systems was 20 fish; only Sarkar Cove had an annual limit of 40 fish. Other systems in the Ketchikan Management Area with positive C&T findings for salmon were open to sockeye salmon fishing June 1–July 31, with a 10 sockeye salmon possession limit and a 20 sockeye salmon annual limit. Such streams had to be approved by ADF&G and listed on the permit. All streams in the Ketchikan Management Area with positive customary and traditional use findings were open for pink salmon July 1–September 30 with a 150 fish possession limit and no annual limit. Chum and coho salmon fishing was open in the same waters July 1–October 31 with a possession limit of 25 chum and 20 coho salmon. There was no annual limit for chum salmon, but there was a 40 coho salmon limit annually. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained. Additional conditions on the 2018 subsistence/personal use salmon permit for the Ketchikan Management Area stipulated that hand purse seines, beach seines, gillnets, spears, gaffs, cast nets, and dip nets were allowable subsistence/personal use gear. A beach seine could not obstruct more than one-half the width of any fish stream and any channel or side channel of a fish stream, including the estuary leading to a fish stream. Sockeye salmon could not be retained as incidental catch.

Harvest Assessment Program

The reported salmon harvest for the Craig–Klawock–Hydaburg area subsistence fisheries in 2018 was 3,814 salmon, including 3,419 sockeye salmon (90%), 297 coho salmon (8%), 89 pink salmon (2%), seven chum salmon (<1%), and two Chinook salmon (<1%) (Table 13-3). The 2018 reported harvest was about 300 salmon fewer than the 2017 estimate. Sockeye and coho salmon harvests decreased, and pink, chum, and Chinook salmon harvests slightly increased. A reported 89 permits were fished in the area in 2018, compared to the estimated 96 permits fished in 2017.

As reported in Table 13-4, 103 permits were issued to residents of Craig and 38 (37%) were returned; 92 permits were issued in Klawock and 51 were returned (55%); and 32 permits were issued to Hydaburg residents, of which 15 (47%) were returned. Fewer permits were issued to Klawock residents and more permits issued in the other two communities than in 2017; permit return rates were higher in Hydaburg and Klawock in 2018 but lower in Craig. The total reported salmon harvest of Craig residents was 1,203 fish, nearly double the 2017 estimate. By species, the reported harvest consisted of 994 sockeye salmon (83%), 139 coho salmon (12%), 58 pink salmon (5%), 10 chum salmon (1%), and 2 Chinook salmon (<1%). More of every species of salmon was harvested in 2018. The total reported salmon harvest for Klawock was 2,379 fish, a decrease from the 2017 harvest estimate of 3,795 salmon. The 2018 harvest consisted of 2,110 sockeye salmon (89%), 201 coho salmon (9%), and 59 pink salmon (2%). Sockeye salmon composed a greater percentage of the harvest in 2018 than in 2017 (83%) and coho salmon a smaller percentage (16%). The total reported salmon harvest for Hydaburg was 971 salmon, the majority of which were sockeye salmon (948; 98%). Hydaburg residents also harvested 23 coho salmon (2%). Reported sockeye salmon harvests in 2018 were higher than the 2017 estimate of 437 fish. Not all harvests by residents of these three communities necessarily occurred in the Craig-Klawock-Hydaburg area.

Kasaan Area Subsistence Fisheries

Background and History

There is a positive C&T finding for salmon in waters on the east coast of Prince of Wales Island for the Kasaan area waters of District 2 north of the latitude of the northernmost tip of Chasina Point then west of a line from the northernmost tip of Chasina Point to the easternmost tip of Grindall Island to the easternmost tip of the Kasaan Peninsula (5 AAC 01.716 (a)(2)(A)). Salmon fishing in all other marine waters along the east coast of Prince of Wales Island occurs under personal use and sport regulations. The principal waters used for personal use salmon fishing along the eastern coast of Prince of Wales Island are Kegan Lake,

the Thorne River, and Hatchery Creek–Sweetheart Creek. The personal use fisheries are described in the Ketchikan Area Personal Use Fisheries section.

In 2018, Coffman Cove had a population of 167, Edna Bay’s population was 43, Hollis had a population of 123, Kasaan’s population was 81, the population of Naukati Bay was 123, Thorne Bay’s population was 522, and the population of Whale Pass was 57.³¹ Little population change occurred in most of these communities since 2017; roughly 30 fewer people were estimated in Coffman Cove in 2018.

Regulations

The season for subsistence sockeye fishing in Karta Lake and Kasaan Bay was from June 1 to July 31. Combined possession limits in these systems was 20 sockeye salmon with no annual limit (5 AAC 01.745(e) (1)(B)). All streams in the Ketchikan Management Area with positive C&T findings not otherwise listed on the permit were open for subsistence sockeye salmon fishing June 1–July 31, with a 10 fish possession limit and a 20 fish annual limit. All streams with a positive C&T determination were open to pink salmon fishing July 1–September 30, with a limit of 150 fish in possession and no annual limit. Coho and chum salmon fishing was also open in these waters July 1–October 31, with a limit on coho salmon harvests of 20 fish in possession and 40 fish annually. The limit on chum salmon harvests was 25 fish in possession and no annual limit. While permits were not issued for the harvest of Chinook salmon, any Chinook salmon that were harvested incidentally could be retained.

Allowable gear in the subsistence fishery included hand purse seines, beach seines, spears, gaffs, cast nets, and dip nets. Salmon could not be taken with a line attached to a rod or pole. Sockeye salmon could not be retained as incidental catch.

Harvest Assessment Program

As reported in Table 13-3, in 2018, 56 permit holders fished in the Kasaan area subsistence fisheries with a reported salmon harvest of 1,554 salmon. In 2017, an estimated 87 permits were fished in the area with an estimated harvest of 1,332 fish. The 2018 harvest included 1,053 sockeye salmon (68%), 317 coho salmon (20%), and 184 pink salmon (12%). Compared to 2017 estimates, the reported sockeye salmon harvest in 2018 composed a smaller percentage of the total harvest (91% in 2017) and coho and sockeye salmon a larger percentage (4% and 5% in 2017, respectively).

As reported in Table 13-4, 11 permits were issued to residents of Kasaan and 6 were returned (55%). A reported 253 salmon were harvested, comprised of 173 sockeye salmon (68%) and 80 coho salmon (32%). Thorne Bay residents were issued 20 permits, 4 of which were returned (20%), with a reported harvest of 14 coho salmon and 1 sockeye salmon. Ten permits were issued to Naukati Bay residents and one was returned which reported no salmon harvest. In Hollis, 24 permits were issued and 14 were returned (58%). A reported 334 salmon were harvested, including 193 sockeye salmon (58%), 115 pink salmon (34%), and 26 coho salmon (8%). Four permits were issued to residents of Coffman Cove and three were returned (75%), reporting a harvest of 40 coho and 20 sockeye salmon. Four permits were issued in Whale Pass but none were returned. One permit was issued and returned to Edna Bay residents with a reported harvest of eight coho salmon. Reported harvests in Kasaan, Thorne Bay and Naukati Bay were all smaller than the estimated harvests in 2017. Reported harvests in Hollis, Coffman Cove, and Edna Bay were higher than the 2017 estimates. Not all permits were fished solely in their respective areas.

Ketchikan Area Personal Use/Subsistence Fisheries

Background and History

The Division of Commercial Fisheries’ Ketchikan Area office is responsible for oversight of the subsistence and personal use salmon fisheries in districts 1, 2, 3, and 6. Some waters within sections 1A, 1C, 1D, 1E, 1F, and District 2 fall within the Ketchikan Nonsubsistence Area (Figure 13-1). The BOF made a positive C&T finding for salmon stocks in the waters traditionally used by the Tongass Tlingit of Saxman. These

31. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed August 9, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

waters include the Naha River, Boca de Quadra in the waters of Sockeye Creek, and within 500 yards of the terminus of Sockeye Creek, and in Hugh Smith Lake (5 AAC 01.716 (a)(1)(B)).³²

The communities of Ketchikan and Saxman are the principal users of the fisheries in the Ketchikan area. In 2018, the population of the Ketchikan borough, excluding Saxman, was 13,379. Saxman, located within the Ketchikan Gateway Borough, had a population of 419.³³ 2018 estimates show a slight decrease of 30 residents in Saxman and a similar population in the rest of the borough as compared to 2017.

Regulations

The 2018 subsistence/personal use salmon permit for the Ketchikan Management Area provided for a July 1–August 30 open season for sockeye salmon at McDonald Lake (Yes Bay), with a possession and annual limit of 20 fish. Kegan Lake and Thorne River were open from June 1–July 31, with a possession limit of 12 sockeye salmon and an annual limit of 50 sockeye salmon. Hatchery Creek was open June 1–June 30, Thursdays through Sundays, with a limit of 6 sockeye salmon in possession and 18 annually. Hugh Smith Lake and Naha River subsistence sockeye salmon fishing was open June 22–July 31 with a 12-sockeye salmon possession limit and no annual limit. Other streams in the Ketchikan Management Area that were open to personal use fishing were open June 1–July 31 with a limit of 10 sockeye salmon in possession and a 20 fish annual limit. Leask Creek and Mahoney creek and lake, and marine waters within 500 yards of the terminus of these streams, remained closed. For pink and chum salmon, all stocks in streams with no positive C&T finding within the Ketchikan Management Area, except the Ketchikan road system, were open to personal use fishing. The season for pink salmon ran from June 1–September 30 with a limit of 150 fish in possession and no annual limit. For chum salmon, the open season was from June 1–October 31 with a possession limit of 25 and no annual limit. The season for Chinook salmon ran from July 1 to August 30 in the Herring Bay THA only; the possession limit was 50 fish with no annual limit. Sockeye salmon could not be retained as incidental catch. The legal gear types specified under the terms of this permit included hand purse seines, beach seines, gillnets, spears, gaffs, cast nets, and dip nets. Gillnets were allowed only in Yes Bay, Kendrick Bay, Nakat Inlet, and Neets Bay; they could not exceed 50 fathoms in length. Herring Bay gillnets could not exceed 10 fathoms in length, with no mesh size restrictions. A beach seine could not obstruct more than one-half the width of any fish stream and any channel or side channel of a fish stream, including the estuary leading to a fish stream.

Harvest Assessment Program

The total reported salmon harvest in the Ketchikan area personal use/subsistence fisheries in 2018 was 1,188 fish, including 550 sockeye salmon (46%), 371 chum salmon (31%), 188 pink salmon (16%), 61 coho salmon (5%), and 18 Chinook salmon (2%) (Table 13-3). A reported 59 permits were fished. In comparison, the 2017 estimated harvest was of 2,587 salmon, with a larger percentage of the harvest comprising sockeye salmon and a smaller percentage coming from all other species.

As reported in Table 13-4, 247 permits were issued to Ketchikan residents, 3 were issued to addresses in Ward Cove, and 88 in total were returned. The reported harvest on these returned permits was 1,529 fish including 813 sockeye salmon (53%), 372 chum salmon (24%), 230 pink salmon (15%), 96 coho salmon (6%), and 18 Chinook salmon (1%). In Saxman, 19 permits were issued and 10 returned (53%), resulting in a total of 172 salmon harvested. Of the total, 131 fish (76%) were sockeye salmon, 28 fish (16%) were coho salmon, with an additional 12 pink and 1 chum salmon. Five permits were issued to Metlakatla residents. One permit was returned with a harvest of 22 sockeye salmon. More permits were issued in each of these communities than in the prior year. Reported harvests in each community were less than the estimated harvests in 2017.

32. The positive C&T findings in District 1 include salmon stocks found within the Ketchikan Nonsubsistence Area.

33. Alaska Department of Labor and Workforce Development (ADLWD), Juneau. n.d. “Research and Analysis Homepage.” Accessed July 6, 2019. <http://live.laborstats.alaska.gov/pop/index.cfm>

Retention of Salmon Taken in Commercial Fisheries in 2018

Commercial fishermen, both residents and non-residents, may retain legally harvested salmon for their own use including personal consumption or for bait but not for sale (5 AAC 39.010(b)), a practice commonly referred to as “home pack”. Any retained fish must be reported on an ADF&G fish ticket at the time of landing (5 AAC 18.355(b)). For some households in Southeast Alaska, “home pack” is the primary source of salmon.

In 2018, commercial fishermen in the Southeast Region reported on fish tickets that they retained for personal or home use a total of 25,294 salmon from their commercial harvests (Table 13-7). This included 14,007 pink salmon (55%), 4,249 coho salmon (17%), 4,160 sockeye salmon (16%), 1,533 chum salmon (6%), and 1,345 Chinook salmon (5%). Compared to 2017, pink and coho salmon composed a smaller percentage of home pack and sockeye, chum and Chinook salmon composed a higher percentage.

Federal Subsistence Fisheries of the Southeast Region

Federal regulations apply on inland waters within or adjacent to Admiralty Island National Monument, Misty Fjords National Monument, the Tongass National Forest, and Wrangell-St. Elias National Park and Preserve, excluding marine waters except the Makhnati Island Area. Federal C&T determinations have been made for salmon in all waters of the Southeast Region. Residents of Juneau and Ketchikan are non-federally qualified users and may not participate in federal subsistence salmon fisheries. A federal permit is required to harvest salmon from federal waters under federal regulations; permits are available from area U.S. Forest Service offices and National Park Service. Regulations concerning the harvest of salmon from federal waters are generally similar to, but in some cases more permissive than, state subsistence regulations. For example, rod and reel is a recognized subsistence gear type under federal regulation. Harvest limits in the federal salmon fishery mirror harvest limits in adjacent state subsistence or personal use fisheries, except for the Stikine River, as detailed above.

In 2018, a total of 338 federal permits were issued and 89 permits were fished (Table 13-8). In total, 984 fish were reported harvested under federal subsistence permits, not including the Stikine River harvest earlier reported. The federal subsistence harvest included 408 sockeye salmon, 372 coho salmon, 94 pink salmon, and nine chinook salmon. The federal nonsalmon fish harvest was composed of 37 steelhead trout, 40 cutthroat trout, 2 rainbow trout, and 22 Dolly Varden. Fewer permits were fished in 2018 than in 2017 with approximately 500 fewer fish harvested. Most of the decrease in fish harvest stems from a reduction in sockeye salmon harvest from 1,053 fish in 2017.

OTHER SUBSISTENCE FISHERIES IN THE SOUTHEAST REGION

Residents of Southeast Alaska and Yakutat harvest a diverse assortment of marine species for subsistence uses. Along with salmon, residents harvest many types of finfishes including halibut, sablefish, lingcod, herring, and herring eggs, plus many species of marine invertebrates. Halibut, herring eggs, sablefish, eulachon, trout, and crab have permit programs or harvest assessments in place. For those species that do not, the only estimates of subsistence harvests come from periodic household surveys conducted by the Division of Subsistence and are available in an online database, the Community Subsistence Information System (CSIS)³⁴. Subsistence fishing for halibut is managed by the National Marine Fisheries Service. Halibut may also be taken for subsistence by qualified residents by obtaining a federal subsistence halibut registration certificate. Subsistence harvest data are currently available for communities and tribes in the Southeast Alaska region from 2003–2012 (Fall and Koster 2014); 2014 (Fall and Lemons 2016); 2016 (Fall and Koster 2018); and 2018 (Fall and Koster 2020). Due to a reduction in funding, since 2012 Pacific halibut subsistence harvest estimates are only collected biannually. While a permit is not required to harvest herring eggs on substrate besides kelp (for which a permit is required), a harvest monitoring program has been in place since 2002 for the harvest of herring eggs from Sitka Sound. Results from that monitoring program can be found in Sill and Lemons (2020). For shellfish, under specific situations, permits are required for

34. <http://www.adfg.alaska.gov/sb/CSIS/>

taking king crab; all other shellfish can be taken without a permit. Regulations concerning subsistence shellfish fisheries can be found at 5 AAC 02.100.

Table 13-1.--Subsistence and personal use salmon harvests by district, Southeast region, 2018.

Fishing location	Name	Permits fished		Reported salmon harvest ^a						
		Reported	Chinook	Sockeye	Coho	Chum	Pink	Total		
District 1	Ketchikan-Behm Canal	59	18	550	61	371	188	1,188		
District 2	Clarence Strait-East Prince of Wales Island	56	0	1,053	317	0	184	1,554		
District 3	Inside Waters-West Prince of Wales Island	89	2	3,419	297	7	89	3,814		
District 5	Sumner Strait	1	0	0	8	0	0	8		
District 6	East Sumner Strait-North Frederick Sound	84	3	1,229	464	20	84	1,800		
District 7	East Etolin Island-Wrangell Island-Ernest Sound	42	34	369	62	85	67	617		
District 8	Stikine River	11	0	0	164	25	3	192		
District 9	South Chatham Strait-West Frederick Sound	34	18	464	87	121	3	693		
District 10	East Frederick Sound	1	0	25	0	0	0	25		
District 11	Juneau-Taku Inlet-Stephens Passage	398	13	8,836	287	5	183	9,324		
District 12	Angoon-North Chatham Strait-East Chichagof	35	0	928	40	36	15	1,019		
District 13	Sitka-Outer Baranof and Chichagof-Peril Strait	479	15	16,447	421	79	67	17,029		
District 14	Icy Strait-Glacier Bay	21	0	123	95	2	0	220		
District 15	Lynn Canal-Chilkat Inlet	370	21	9,114	340	366	545	10,386		
Yakutat Bay-Troll	Yakutat Bay-Troll	37	64	909	593	0	14	1,580		
Yakataga	Yakataga	15	72	58	6	2	4	142		
Subtotal, state permit fisheries		–	260	43,524	3,242	1,119	1,446	49,591		
Stikine River	Stikine River Federal Fishery	85	94	1,732	57	74	126	2,083		
Total		–	354	45,256	3,299	1,193	1,572	51,674		

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

Table 13-2.—Historical subsistence and personal use salmon harvests, Southeast region, 1985–2018.

Year ^a	Permits		Estimated salmon harvest ^b					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	ND	1,271	19	20,006	360	2,951	2,136	25,472
1986	ND	1,353	29	21,974	277	2,840	971	26,091
1987	ND	1,322	34	25,430	117	3,881	1,491	30,953
1988	ND	998	94	20,011	97	3,013	1,145	24,360
1989	ND	1,474	580	33,008	1,393	3,132	3,718	41,831
1990	ND	1,502	524	36,421	1,615	3,438	3,750	45,748
1991	ND	1,522	262	38,325	868	3,358	1,830	44,643
1992	ND	1,801	614	53,131	4,939	3,201	2,942	64,827
1993	ND	2,044	537	56,249	3,515	2,583	2,143	65,027
1994	ND	2,158	800	57,097	3,607	4,211	3,639	69,354
1995	ND	1,931	1,203	45,089	3,700	3,370	3,215	56,577
1996	4,172	3,341	1,170	69,216	3,090	5,553	3,204	82,233
1997	4,211	3,529	780	58,782	2,701	4,515	4,080	70,858
1998	4,273	3,629	1,082	62,551	3,264	6,442	3,910	77,250
1999	4,308	3,717	1,393	56,618	1,933	5,557	3,280	68,782
2000	3,771	3,170	1,359	52,867	2,151	3,414	2,619	62,411
2001	3,605	3,116	1,457	55,157	3,266	3,968	4,230	68,080
2002	3,326	2,732	1,857	56,379	3,176	2,183	3,210	66,804
2003	3,595	2,924	1,543	64,670	3,052	6,275	3,894	79,434
2004	3,703	3,235	1,583	61,419	2,446	3,151	3,164	71,763
2005	3,304	2,772	887	39,694	2,283	1,831	4,959	49,655
2006	3,406	2,809	1,356	54,862	1,873	1,731	3,603	63,425
2007	3,156	1,621	1,199	43,119	1,444	721	3,273	49,756
2008	3,153	2,820	1,052	41,548	3,555	1,421	1,897	49,472
2009	3,421	3,097	1,208	49,507	3,616	2,006	3,290	59,627
2010	2,217	1,829	1,828	52,258	3,885	878	3,721	62,571
2011	3,315	2,918	916	41,733	3,060	1,147	5,494	52,350
2012	3,397	2,983	816	51,729	3,322	1,233	2,838	59,938
2013	3,564	3,170	983	49,547	3,799	1,417	3,597	59,343
2014	3,438	3,035	1,013	44,786	3,353	986	2,368	52,507
2015	3,148	2,694	493	38,738	2,990	1,202	4,908	48,331
2016	3,175	2,664	508	47,727	3,598	1,660	3,754	57,248
2017	3,192	2,488	552	44,161	2,880	1,255	4,962	53,810
2018 ^c	3,697	2,050	354	45,256	3,299	1,193	1,572	51,674
5-year average (2013–2017)	3,303	2,810	710	44,992	3,324	1,304	3,918	54,248
10-year average (2008–2017)	3,202	2,770	937	46,174	3,406	1,321	3,683	55,520
Historical average (1985–2017)	3,493	2,475	901	46,782	2,583	2,864	3,250	56,380

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Table 13-2.—Page 2 of 2.

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. For years prior to 1996, only permits returned with harvest data were included, and harvests reported in these years were not expanded into estimates. Caution should be used if comparing pre-1996 data with later data.

b. The only federal harvest data included in this table is from the Stikine River subsistence salmon fishery. Other federal subsistence salmon data is available, but not included in this table.

c. Stikine River Federal Fishery is the only fishery with expanded harvest estimates in 2018. All other harvest data was not expanded into estimates.

ND = no data.

Table 13-3.—Estimated subsistence and personal use salmon harvests by management and use areas, Southeast region, 2018.

Area	Reported permits fished	Reported salmon harvest ^a					Total
		Chinook	Sockeye	Coho	Chum	Pink	
Yakutat Management Area	52	136	967	599	2	18	1,722
Haines Management Area	370	21	9,114	340	366	545	10,386
Juneau Management Area	499	15	10,946	456	50	200	11,667
Juneau Personal Use Area	398	13	8,836	287	5	183	9,324
Angoon Subsistence Area	49	1	1,120	46	42	15	1,224
Hoonah Subsistence Area	52	1	990	123	3	2	1,119
Sitka Management Area	434	13	15,388	387	72	65	15,925
Petersburg Management Area	258	149	3,819	842	325	283	5,418
Petersburg Subsistence- Personal Use Area	85	3	1,229	472	20	84	1,808
Wrangell Subsistence-Personal Use Area	53	34	369	226	110	70	809
Kake Subsistence Area	35	18	489	87	121	3	718
Stikine River Federal Subsistence Fishery	85	94	1,732	57	74	126	2,083
Ketchikan Management Area	204	20	5,022	675	378	461	6,556
Ketchikan Personal Use Area	59	18	550	61	371	188	1,188
Kasaan Subsistence Area	56	0	1,053	317	0	184	1,554
Craig-Klawock-Hydaburg Subsistence Area	89	2	3,419	297	7	89	3,814
Total	—	354	45,256	3,299	1,193	1,572	51,674

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Stikine River Federal Fishery is the only fishery with expanded harvest estimates in 2018. All other harvest data was not expanded into estimates.

— Fishers with permits may fish at more than one location. As a result, the total number of permits cannot be derived simply by adding column values.

Table 13-4.—Subsistence and personal use salmon harvests by community, Southeast region, 2018.

Community	Permits		Reported salmon harvest ^a					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Angoon	59	32	1	736	46	40	7	830
Auke Bay	10	4	0	125	0	0	0	125
Coffman Cove	4	3	0	20	40	0	0	60
Craig	103	38	2	994	139	10	58	1,203
Douglas	64	42	1	702	39	5	2	749
Edna Bay	1	1	0	0	8	0	0	8
Elfin Cove	4	1	0	15	0	0	0	15
Excursion Inlet	3	1	0	1	0	0	0	1
Gustavus	21	14	0	338	43	4	14	399
Haines	449	320	19	7,538	292	340	469	8,658
Hollis	24	14	0	193	26	0	115	334
Hoonah	86	35	1	497	64	2	0	564
Hydaburg	32	15	0	948	23	0	0	971
Juneau	827	471	20	8,949	265	3	183	9,420
Kake	101	55	9	489	70	117	3	688
Kasaan	11	6	0	173	80	0	0	253
Ketchikan	247	88	18	813	96	372	230	1,529
Klawock	92	51	0	2,110	210	0	59	2,379
Klukwan	12	10	0	253	35	10	1	299
Kupreanof	2	0	0	0	0	0	0	0
Metlakatla	5	1	0	22	0	0	0	22
Naukati Bay	10	1	0	0	0	0	0	0
Pelican	7	4	7	183	0	0	0	190
Petersburg	188	111	18	1,543	669	52	49	2,331
Point Baker	1	1	0	0	1	11	57	69
Port Alexander	4	0	0	0	0	0	0	0
Port Protection	1	1	0	5	0	2	0	7
Saxman	19	10	0	131	28	1	12	172
Sitka	797	419	14	14,407	356	51	54	14,882
Skagway	41	24	0	590	4	9	31	634
Tenakee Springs	7	2	0	35	0	0	0	35
Thorne Bay	20	4	0	11	14	0	0	25
Ward Cove	3	0	0	0	0	0	0	0
Whale Pass	4	0	0	0	0	0	0	0
Wrangell	202	141	120	1,754	92	145	173	2,284
Yakutat	109	91	119	740	579	2	18	1,458
Ambler	1	1	2	3	1	0	1	7
Anchorage	63	15	0	348	0	4	13	365
Barrow	1	1	0	80	0	0	0	80
Bethel	1	0	0	0	0	0	0	0
Chugiak	1	0	0	0	0	0	0	0
Clear AFB	1	0	0	0	0	0	0	0
Delta Junction	1	0	0	0	0	0	0	0
Eagle River	3	1	0	23	0	0	2	25
Eielson Air Force Base	1	1	0	0	0	0	0	0

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Table 13-4.—Page 2 of 2.

Table 13-4. Page 2 of 12.

Community	Permits		Reported salmon harvest ^a					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Ester	1	0	0	0	0	0	0	0
Fairbanks	8	6	0	261	0	0	1	262
Homer	1	0	0	0	0	0	0	0
Joint Base Elmendorf Richardson	1	0	0	0	0	0	0	0
Kasilof	1	0	0	0	0	0	0	0
Kenai	1	1	0	20	2	0	1	23
Kodiak City	1	0	0	0	0	0	0	0
Kotzebue	2	0	0	0	0	0	0	0
Nome	1	0	0	0	0	0	0	0
North Pole	2	0	0	0	0	0	0	0
Palmer	12	5	1	137	7	13	19	177
Seward	4	0	0	0	0	0	0	0
Soldotna	2	1	0	0	0	0	0	0
Sterling	1	1	0	0	0	0	0	0
Valdez	1	1	0	20	20	0	0	40
Wasilla	13	4	2	24	50	0	0	76
Willow	2	1	0	25	0	0	0	25
Total	3,697	2,050	354	45,256	3,299	1,193	1,572	51,674

Source ADF&G Division of Subsistence, ASFDB 2019 (ADF&G 2020).

a. Stikine River Federal Fishery is the only fishery with expanded harvest estimates in 2018. All other harvest data was not expanded into estimates.

Table 13-5.—Subsistence salmon harvests by community for the Federal Stikine River subsistence salmon fishery, Southeast region, 2018.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Petersburg	29	29	6	464	1	14	24	509
Wrangell	88	88	88	1,268	56	60	102	1,574
Total	117	117	94	1,732	57	74	126	2,083

Source Reeves (2019).

Table 13-6.—Historic subsistence salmon harvests for the Federal Stikine River subsistence salmon fishery, Southeast region, 2004–2018.

Year	Permits issued	Estimated salmon harvest					Total
		Chinook	Sockeye	Coho	Chum	Pink	
2004	40	12	243	0	11	22	288
2005	35	15	252	53	22	69	411
2006	48	37	390	21	20	23	491
2007	44	36	244	23	11	59	373
2008	50	25	428	42	12	18	525
2009	80	31	723	21	46	66	887
2010	107	61	1,653	135	37	60	1,946
2011	129	66	1,741	40	74	189	2,110
2012	130	53	1,302	112	47	32	1,546
2013	124	101	1,655	186	87	156	2,185
2014	125	86	1,527	143	60	82	1,898
2015	125	71	1,844	131	46	171	2,263
2016	136	59	2,166	73	23	65	2,386
2017	130	60	1,727	117	150	303	2,357
2018	117	94	1,732	57	74	126	2,083
5-year average (2013–2017)	128	75	1,784	130	73	155	2,218
10-year average (2008–2017)	114	61	1,477	100	58	114	1,810
Historical average (2004–2017)	93	593	607	62	70	749	1,405

Source Reeves (2018).

Table 13-7.—Salmon removed from commercial catch for home use, Southeast region, 2018.

Year	Salmon harvest					Total
	Chinook	Sockeye	Coho	Chum	Pink	
2018	1,345	4,160	4,249	1,533	14,007	25,294

Source ADF&G fish ticket database.

Table 13-8.--Subsistence salmon harvests, other Southeast Alaska federal subsistence fisheries, 2018.

Year	Permit	Permits issued	Permit used	Dolly Varden	Cutthroat trout	Steelhead	Rainbow trout	Chinook	Sockeye	Coho	Chum	Pink
2018	SE General	262	89	22	27	2	2	9	408	372		94
2018	POWKI ^a - Spring	56	15		13	30						
2018	POWKI ^a - Winter	20	6			5						

Source Federal Subsistence Management System Permits Database.

a. Prince of Wales and Kosciusko Islands steelhead trout fishery.

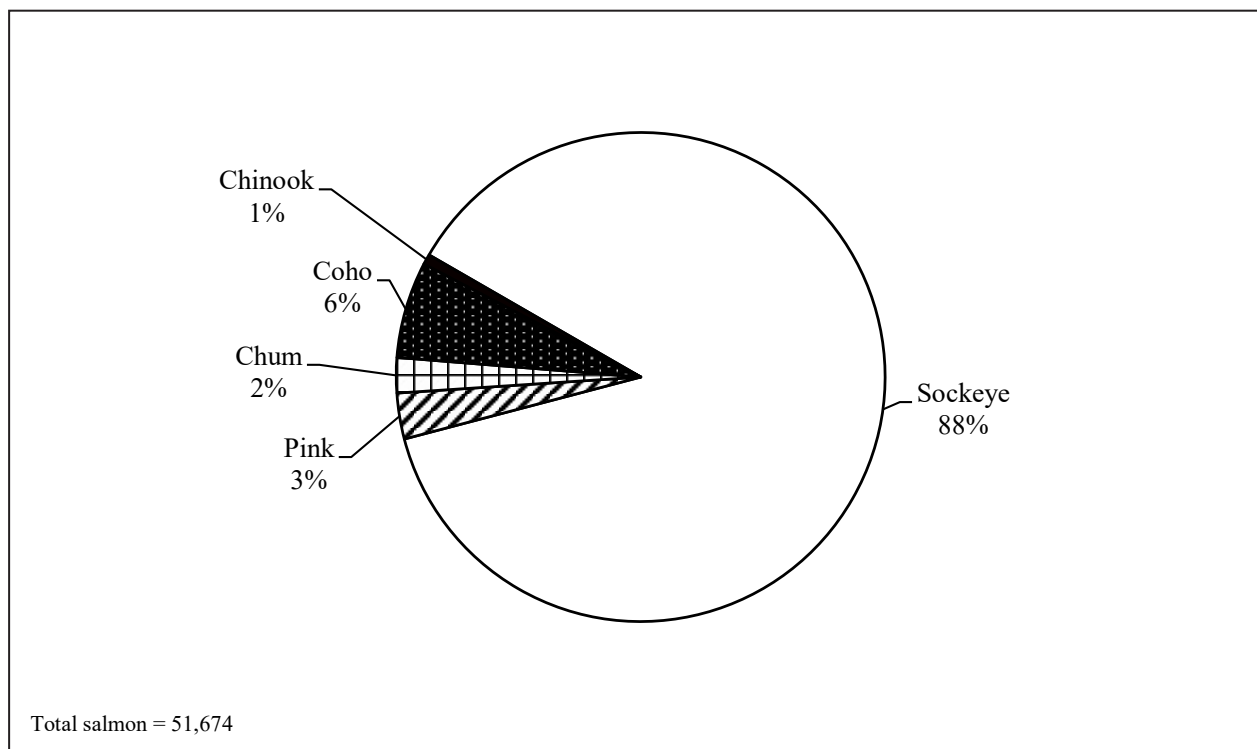


Figure 13-1.—Southeast region subsistence and personal use harvests by species, 2018.

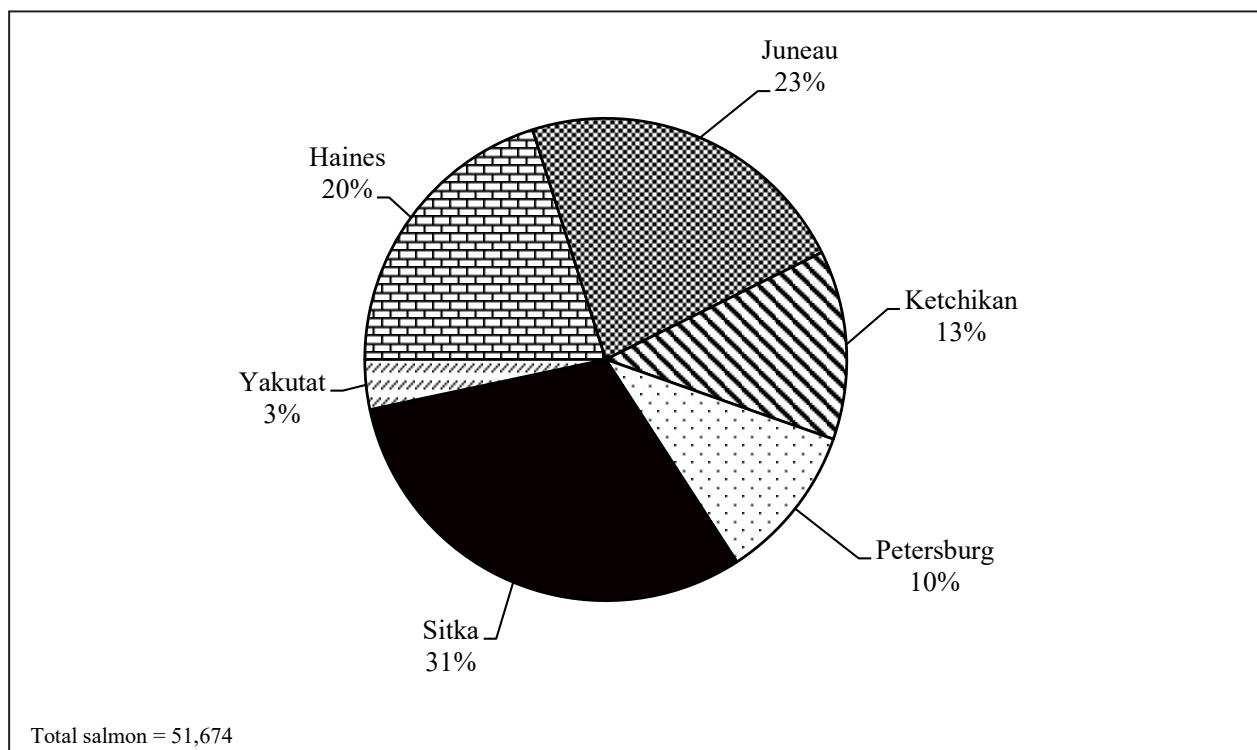


Figure 13-2.—Total salmon harvested by management area, Southeast region, 2018.

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Many ADF&G personnel generously made time to allow Division of Subsistence staff to interview them about subsistence databases and harvest assessment programs. We have relied upon their numerous insights about these programs to develop the Alaska Subsistence Fisheries Database, as well as to evaluate the data that appear in this report. We sincerely appreciate their help.

This annual report for 2018 is the result of the work of a number of Division of Subsistence staff. Former division employees Dave Caylor, Jeannie Heltzel, and Brian Davis, and current employee David Koster helped design and update the Alaska Subsistence Fisheries Database. Data for 2018 were compiled by Terri Lemons with edits and review from Dave Koster and Gayle Neufeld. Division personnel who authored report chapters were James A. Fall, Caroline Brown, Anna Godduhn, Lisa Hutchinson-Scarborough, Jacqueline M. Keating, Bronwyn Jones, Chris McDevitt, Elizabeth Mikow, Lauren A. Sill, Brooke McDavid, and Jeff Park. We also acknowledge the contributions of Lisa Olson and Adam Knight, who reviewed and edited the report.

As noted in the report itself, this is the 20th in a series of statewide summaries of subsistence and personal use fisheries harvest data. We encourage those who use this report to offer ideas and suggestions to improve future volumes in this series.

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