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Alaska Subsistence Salmon Fisheries 2009 Annual Report

by

James A. Fall

Nicole Braem

Caroline Brown

Sarah Evans

Davin Holen

Theodore Krieg

Robbin La Vine

Terri Lemons

Meredith Marchioni

David Runfola

Lisa Hutchinson-Scarbrough

Lauren Sill

Alida Trainor

and

James Van Lanen

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Alaska Department of Fish and Game **Division of Subsistence**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the reports by the Division of Subsistence. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

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James A. Fall, Davin Holen, Lisa Hutchinson-Scarbrough, Robbin La Vine, Terri Lemons, Meredith Marchioni, and James Van Lanen
Alaska Department of Fish and Game, Division of Subsistence, Anchorage

Lauren Sill
Alaska Department of Fish and Game, Division of Subsistence, Juneau

Caroline Brown, Nicole Braem, David Runfola, and Alida Trainor
Alaska Department of Fish and Game, Division of Subsistence, Fairbanks

and

Theodore Krieg and Sarah Evans
Alaska Department of Fish and Game, Division of Subsistence, Dillingham

Alaska Department of Fish and Game
Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1599

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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.

Technical Paper series reports are available through the Alaska Resources Library and Information Services (ARLIS), the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone editorial and professional review.

James A. Fall, Davin Holen, Lisa Hutchinson-Scarbrough, Robbin La Vine, Terri Lemons, Meredith Marchioni, and James Van Lanen
Alaska Department of Fish and Game, Division of Subsistence
333 Raspberry Road, Anchorage, AK 99518-1599

Lauren Sill
Alaska Department of Fish and Game, Division of Subsistence
1255 W 8th Street, Juneau, AK 99811-2629

Caroline Brown, Nicole Braem, David Runfola, and Alida Trainor
Alaska Department of Fish and Game, Division of Subsistence
1300 College Road, Fairbanks, AK 99701-1599

and
Theodore Krieg and Sarah Evans
Alaska Department of Fish and Game, Division of Subsistence
546 Kenny Wren Road, PO Box 230, Dillingham, AK 99576-0230

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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. This report summarizes Alaska's 2009 subsistence fishing season based upon subsistence 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 appropriate, harvest information from "personal use" 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, sheefish, *Stenodus leucichthys*, whitefish, *Prosopium* spp., *Coregonus* spp., rainbow/steelhead trout, *Oncorhynchus mykiss*, Arctic char/Dolly Varden, *Salvelinus alpinus*, *Salvelinus malma*, northern pike, *Esox lucius*, Chinook salmon, *Oncorhynchus tshawytscha*, coho salmon, *Oncorhynchus kisutch*, sockeye salmon, *Oncorhynchus nerka*, pink salmon, *Oncorhynchus gorbuscha*, chum salmon, *Oncorhynchus keta*, Norton Sound, Port Clarence, Kotzebue, Yukon, Kuskokwim, Bristol Bay, Chignik, Alaska Peninsula, Aleutian Islands, Kodiak, Cook Inlet, Prince William Sound, Southeast Alaska, Yakutat

CHAPTER 1: INTRODUCTION

This is the eleventh report in a series of annual reports on Alaska's subsistence 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 5 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 3 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. Detailed annual reports about subsistence fisheries harvest assessment programs are prepared in the Northwest Alaska, Yukon River, and Kuskokwim River areas. However, until the Division of Subsistence annual subsistence fisheries report series began in 1999, there

was no single source that compiled subsistence fisheries harvest data from all management areas. That is the purpose of this 2009 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. 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 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 mostly, but not entirely, limited to fisheries classified as subsistence by regulation, which, especially for salmon, generally means fish taken with gillnets, beach seines, 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 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 harvests of salmon. Information for all areas of the state where noncommercial salmon fisheries occur is covered in this report. We have 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 have been classified as subsistence fisheries in the past, and because they are administered in programs that collect subsistence harvest data. We have not included data from the Cook Inlet Management Area personal use salmon fisheries in this statewide overview, primarily because most of these fisheries have relatively short histories and are administered separately from the Cook Inlet subsistence fisheries.

The data quality and quantity for other finfish and for shellfish are very uneven. For other finfish, if annual subsistence harvest information is collected, it is reflected 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) (Caylor and Brown 2006). The database is written for Microsoft Access software.[1] 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. The final product, projected to be available to the public in November 2012, 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 System,[2] 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 certain 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. However, one goal of this annual report series on Alaska's subsistence fisheries is to treat each fishery in a consistent, systematic manner, rather than reiterate previously published data.

It is important to note that the preparation of this annual report and the supporting database were 2 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 2000a); a final report with an overview of all the project activities is also available (ADF&G and AITC 2000b). 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

1. Product names are given for scientific completeness; they do not constitute product endorsement.
2. ADF&G Division of Subsistence, Community Subsistence Information System (CSIS): http://www.subsistence.adfg.state.ak.us/CSIS/.

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 (2009). Both date and numeric ranges are inclusive. The following list illustrates named-ranges used in this report and their meanings.

- 5-year average: 2004–2008
- 10-year average: 1999–2008
- 15-year average: 1994–2008
- Historical average: yyyy–2008, beginning of range varies depending on available data

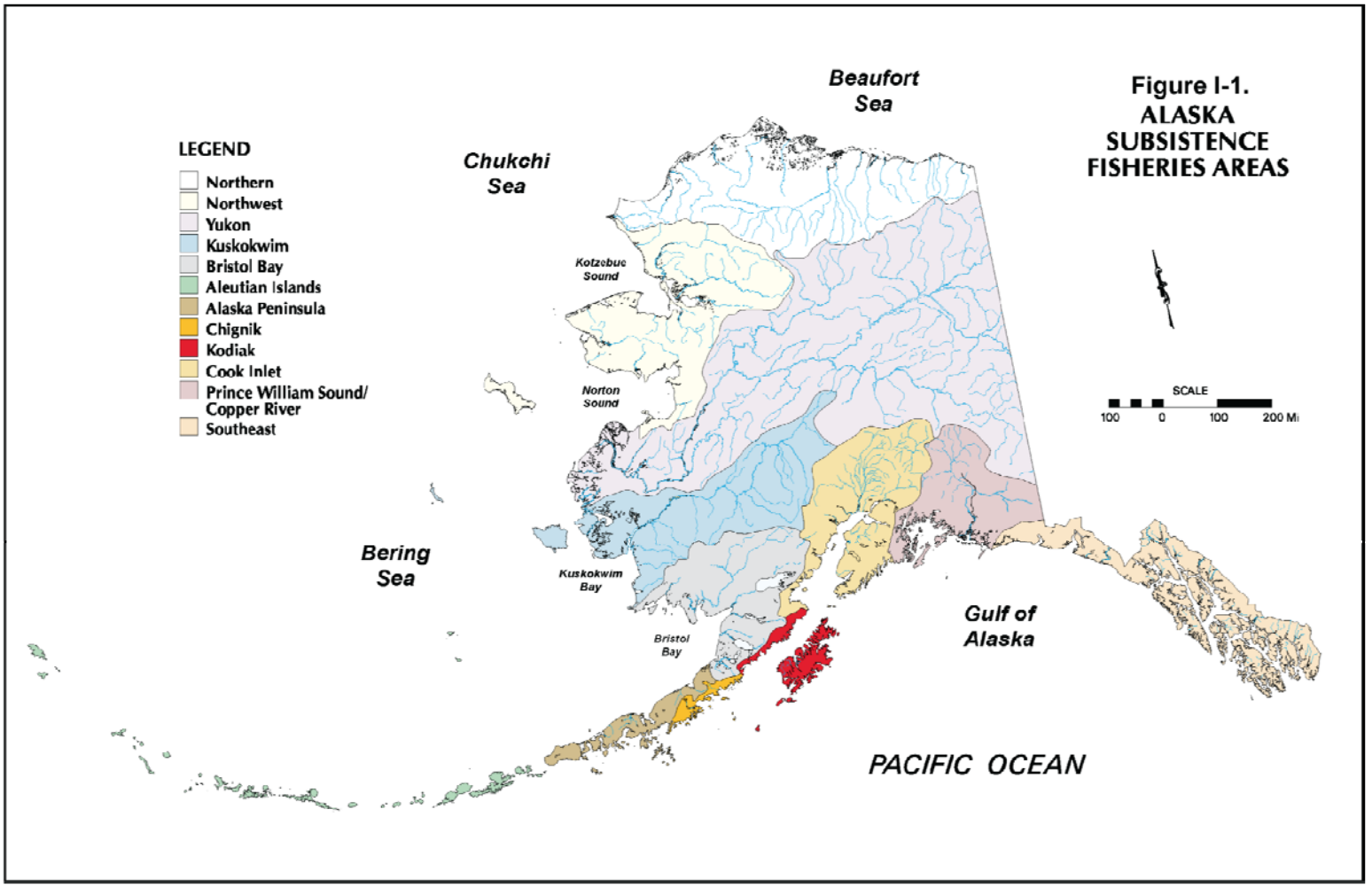

Figure 1-1.–Alaska subsistence fisheries areas.

CHAPTER 2: OVERVIEW OF SUBSISTENCE FISHERIES IN ALASKA

SUBSISTENCE HARVESTS IN RURAL ALASKA

Of the estimated 38.3 million pounds of wild foods annually harvested for subsistence purposes in rural Alaska communities, subsistence fisheries contribute about 55% from finfish and 3% from shellfish (Wolfe and Fall 2012:2,3) (Figure 2-1). On average, the subsistence fisheries harvest provides about 183 lb of food per person annually in rural Alaska (Wolfe and Fall 2012:2). 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 1.1% (fish, game, and other resources combined; this percentage includes personal use fisheries). Commercial fisheries take 98.3% of the wild resource harvest, and sport fisheries and hunts take about 0.6% (fish and game).

Subsistence Salmon Harvests in 2009

The estimated total subsistence harvest of salmon in Alaska in 2009, based on annual harvest assessment programs, was 879,185 fish (Table 2-1).[3] The estimated statewide harvest by species was as follows: 396,504 sockeye salmon *O. nerka* (45%), 214,145 chum salmon *O. keta* (24%), 141,563 Chinook salmon *O. tshawytscha* (16%), 88,307 coho salmon *O. kisutch* (10%), and 38,666 pink salmon *O. gorbuscha* (5%) (Figure 2-2). Table 2-2 reports subsistence harvests in 2009 by species and participants' place of residence, with harvests from all subsistence fisheries combined.

In 2009, fisheries in 7 management areas accounted for 93% of the total estimated statewide subsistence salmon harvest (Table 2-1; Figure 2-3). These were the Yukon Area (199,352 salmon; 23% of the statewide total); the Kuskokwim Area (197,921 salmon; 23%); the Bristol Bay Management Area (126,447 salmon; 14%); the Chitina Subdistrict of the Prince William Sound Management Area (combining the state personal use harvest and the federal subsistence harvest) (97,222 salmon; 11%); the Glennallen Subdistrict of the Prince William Sound Management Area (71,515 salmon; 8%); Northwest Alaska[4] (65,509 salmon; 7%); and Southeast Alaska (59,627 salmon; 7%).[5]

The Chitina Subdistrict fishery was classified by the BOF as a subsistence fishery prior to 1984, a personal use fishery in 1984, a subsistence fishery in 1985, personal use again from 1986 through 1999, subsistence again from 2000 through 2002, and personal use once again starting in 2003. Because Chitina was a personal use fishery in 1999, the first year of this report series, it was not included in that year's annual report. Chitina was added to the statewide report in 2000 because it had been reclassified as a subsistence fishery.[6] The 2 subdistricts of the Upper Copper River District, Chitina and Glennallen, accounted for 19% of the statewide harvest in 2009 (168,737 salmon), in combination, ranking third after the Yukon and Kuskokwim areas.

3. Personal use salmon harvests from Southeast Alaska, the Yukon Area, and the Chitina Subdistrict of the Upper Copper River are included. Personal use fisheries that take place in the nonsubsistence area of the Cook Inlet Management Area are not included. For background, see Chapter 1.
4. Subsistence harvest estimates for Northwest Alaska for 2003 and 2004 do not include the regional center of Kotzebue, which had been included in the harvest assessment program since 1994. No subsistence fisheries harvest data were collected in the Kotzebue area for 2005 through 2009. Therefore, the estimated harvest totals for Northwest Alaska as reported here since 2003 are incomplete. See also Chapter 3.
5. 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 (sport gear). Thus the Southeast region is particularly underrepresented in statewide overviews based on permit data.
6. In February 2003, the Alaska Board of Fisheries reversed its decision of December 1999 and reclassified the Chitina Subdistrict dip net fishery as a personal use fishery. Also, beginning in 2002, the National Park Service, on behalf of the FSB, began issuing federal subsistence permits for the Chitina and Glennallen subdistricts. Harvests reported from federal permit returns are included in the totals discussed in this chapter. For additional discussion, see Chapter 12.

The largest estimated subsistence harvests of Chinook salmon in 2009 occurred in the Kuskokwim Area (82,100 salmon; 58%), followed by the Yukon Area (33,932 salmon; 24%), Bristol Bay Area (14,020 salmon; 10%), the Northwest Area (5,171 salmon; 4%), and the Glennallen Subdistrict (3,341 salmon; 2%) (Figure 2-4). For sockeye salmon, the largest estimated subsistence harvests in 2009 were in the Bristol Bay Area (98,951 salmon; 25%), followed by the Chitina Subdistrict (state and federal fisheries combined) (95,288 salmon; 24%), the Glennallen Subdistrict (67,887 salmon; 17%), the Southeast-Yakutat region (49,507 salmon; 12%), the Kuskokwim Area (37,971 salmon; 10%), and the Kodiak Area (21,852 salmon; 6%) (Figure 2-5).

In 2009, as in past recent years, 3 areas dominated the subsistence chum salmon estimated harvest: the Yukon Area (147,044 salmon; 69% of the statewide harvest), Kuskokwim Area (45,199 salmon; 21%), and Northwest Area (13,659 salmon; 6%) (Figure 2-6). Of the statewide estimated subsistence harvest of coho salmon in 2009, the greatest share was taken in the Kuskokwim Area (32,090 salmon; 36%), followed by the Northwest Area (16,651 salmon; 19%), the Yukon Area (16,076 salmon; 18%), Bristol Bay Area (7,982 salmon; 9%), the Kodiak Area (4,570 salmon; 5%), the Southeast region (3,516 salmon; 4%, and the Alaska Peninsula Area (2,545 salmon; 3%) (Figure 2-7). Finally, the largest portion by far of the statewide estimated pink salmon subsistence harvest in 2009 occurred in the Northwest Alaska Area (27,997 salmon; 72%), followed by the Southeast region (3,290 salmon; 9%), and the Yukon Area (2,300 salmon; 6%) (Figure 2-8).

Statewide Subsistence Salmon Harvests, 1994–2009

Table 2-3 reports historical estimated subsistence and personal use salmon harvests for 1994 through 2009 based on annual harvest assessment programs. Harvest estimates for the Chitina Subdistrict have been included for all years, even though the state fishery was classified as personal use by the BOF in all years except 2000–2002. 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 16-year period reflected in Table 2-3 shows a general downward trend. Estimates from 2000 through 2008 suggested this trend might have been stabilizing. However, the 2009 estimate of 879,185 salmon was the lowest within the 16-year period. The 2009 estimate was lower than the 2008 estimate of 1,055,909 salmon, the recent 5-year average (1,047,845 salmon), the recent 10-year average (1,033,509 salmon), and the the historical average since 1994 (1,097,660 salmon).

Table 2-1.–Alaska subsistence salmon harvests, 2009.

Fishery[a]	Households or permits: Total[b]	Households or permits: Surveyed or returned	Estimated salmon harvest: Chinook	Sockeye	Coho	Chum	Pink	Total
Adak District	1	1	0	25	0	0	0	25
Alaska Peninsula Management Area	134	118	350	5,629	2,545	434	749	9,707
Batzulnetas Fishery	0	0	0	0	0	0	0	0
Bristol Bay Management Area	1,063	950	14,020	98,951	7,982	5,052	442	126,447
Chignik Management Area	95	82	104	6,785	1,174	137	707	8,907
Chitina Subdistrict (State[c])	7,958	6,908	229	93,766	1,667	0	0	95,662
Chitina Subdistrict (Federal)	68	34	15	1,522	22	0	0	1,560
Copper River Flats	323	293	232	1,916	23	1	0	2,173
Glennallen Subdistrict	1,364	1,138	3,341	67,887	287	0	0	71,515
Kenai and Kasilof rivers (Federal)	160	138	0	1,104	9	0	0	1,113
Kodiak Management Area	1,737	1,737	159	21,852	4,570	186	1,180	27,947
Kuskokwim Management Area	4,810	1,729	82,100	37,971	32,090	45,199	561	197,921
Northwest Alaska[d]	1,274	1,206	5,171	2,031	16,651	13,659	27,997	65,509
Port Graham and Koyuktolik subdistricts	44	44	44	3,497	528	140	914	5,123
Prince William Sound (General)	1	1	0	0	0	0	0	0
PWS Eastern District (Tatitlek)	12	4	0	170	131	0	0	301
PWS Southwestern District (Chenega Bay)	5	4	2	168	26	84	5	285
Seldovia Fishery	18	17	15	115	22	13	77	242
Southeast Region	3,421	3,097	1,208	49,507	3,616	2,006	3,290	59,627
Tyonek Fishery	89	69	636	184	258	2	1	1,081
Unalaska District	210	130	5	3,171	616	182	443	4,416
Upper Yentna Fishery	17	17	0	253	14	6	0	273
Yukon Management Area	2,853	1,508	33,932	0	16,076	147,044	2,300	199,352
Total	**25,657**	**19,225**	**141,563**	**396,504**	**88,307**	**214,145**	**38,666**	**879,185**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. Estimates for the Yukon and Southeast fisheries include both subsistence and personal use harvests.

b. 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.

c. Reclassified as a personal use fishery in 2003. It is still included in this table due to its historical classification as a subsistence fishery.

d. Does not include the Kotzebue Area.

Table 2-2.–Alaska subsistence salmon harvests by species and place of residence, 2009.

	Households or permits		Estimated salmon harvests					
Community	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak Station	1	1	0	25	0	0	0	25
Akhiok	3	3	0	82	4	0	4	90
Akiachak	141	56	7,023	2,390	1,581	2,822	0	13,816
Akiak	80	37	3,247	1,290	661	1,350	0	6,548
Alakanuk	117	46	634	0	194	5,268	24	6,120
Alatna	7	5	10	0	0	163	0	173
Aleknagik	27	22	539	2,019	22	66	0	2,646
Allakaket	47	18	90	0	43	5,496	0	5,629
Anchor Point	3	3	4	101	0	0	0	105
Anchorage	2,419	2,054	735	31,260	441	93	18	32,546
Anderson	8	6	0	141	2	0	0	142
Angoon	115	96	0	1,128	84	6	66	1,284
Aniak	183	168	2,062	941	2,264	2,626	2	7,895
Anvik	28	24	796	0	137	453	2	1,388
Atmautluak	67	32	1,615	641	66	1,708	0	4,030
Auke Bay	28	25	0	179	8	0	0	187
Barrow	16	13	72	338	20	0	0	430
Beaver	27	24	516	0	0	142	0	658
Bethel	2,008	702	26,302	11,344	13,037	10,480	70	61,233
Bettles	21	18	0	0	0	6	0	6
Big Lake	45	42	10	585	3	0	0	598
Birch Creek	16	12	15	0	0	0	0	15
Brevig Mission	40	40	27	537	375	1,263	785	2,987
Cantwell	6	4	0	63	0	0	0	63
Central	8	8	167	1	0	2	0	170
Chalkyitsik	27	20	0	0	0	45	0	45
Chefornak[b]	82	0	–	–	–	–	–	–
Chenega Bay	4	4	2	168	26	84	5	285
Chickaloon	15	13	1	196	2	0	0	199
Chignik Bay	15	12	16	1,228	172	6	21	1,444
Chignik Lagoon	12	11	28	1,232	5	0	0	1,265
Chignik Lake	20	17	39	2,577	172	4	80	2,871
Chiniak	22	22	0	213	168	13	2	396
Chistochina	6	5	17	608	0	0	0	625
Chitina	37	23	141	2,625	18	0	0	2,784
Chuathbaluk	37	25	888	572	97	948	0	2,505
Chugiak	150	137	16	1,565	27	3	0	1,612
Circle	21	19	372	0	13	110	0	495
Clark's Point	14	13	169	541	480	80	39	1,308
Clear	7	7	0	59	0	0	0	59
Coffman Cove	11	11	0	0	68	0	0	68
Cold Bay	21	16	1	612	33	30	0	676
Cooper Landing	79	71	13	836	9	0	0	858
Copper Center	115	91	328	6,603	28	0	0	6,958
Copperville	6	6	25	990	0	0	0	1,015
Cordova	268	245	218	1,791	11	1	0	2,021
Craig	204	172	7	3,222	292	98	254	3,873
Crooked Creek	41	28	586	323	282	522	0	1,713
Delta Junction	420	372	76	6,202	110	1	0	6,389

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Table 2-2.–Page 2 of 6.

Community	Households or permits		Estimated salmon harvests					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Denali National Park	21	20	0	378	5	0	0	383
Dillingham	326	290	7,167	15,385	3,908	2,240	234	28,934
Diomede	1	1	0	0	0	0	0	0
Dot Lake	2	1	0	30	0	0	0	30
Douglas	50	47	0	297	42	1	154	494
Dutch Harbor	118	77	3	1,816	300	43	125	2,287
Eagle	31	31	446	0	0	10,941	0	11,387
Eagle River	335	309	165	5,333	47	2	11	5,558
Eek	77	34	1,983	1,115	193	763	0	4,054
Egegik	9	9	10	280	163	3	5	461
Eielson AFB	43	38	0	597	0	0	0	597
Ekuk	1	1	10	30	0	10	0	50
Ekwok	19	18	757	706	687	195	0	2,345
Elfin Cove	1	1	0	0	0	0	0	0
Elim	74	74	545	13	2,422	591	1,509	5,080
Elmendorf AFB	20	19	7	363	0	0	0	370
Emmonak	150	71	1,634	0	401	10,627	5	12,667
Ester	67	59	20	1,366	52	0	0	1,437
Fairbanks	2,924	2,577	2,488	40,010	1,499	4,540	22	48,559
False Pass	4	3	15	69	11	39	253	387
Fort Greely	26	23	1	370	3	0	0	375
Fort Richardson	9	6	0	176	0	0	0	176
Fort Wainwright	36	34	1	346	16	0	0	363
Fort Yukon	171	58	846	0	2	3,104	0	3,952
Fritz Creek	1	1	0	0	0	0	0	0
Gakona	37	24	45	3,351	5	0	0	3,400
Galena	163	51	1,370	11	2,353	6,024	0	9,758
Gambell	1	1	0	0	0	0	0	0
Girdwood	40	39	6	227	30	0	0	263
Glacier View	1	1	0	11	0	0	0	11
Glennallen	86	70	148	3,404	12	0	0	3,564
Golovin	32	31	163	14	500	383	1,363	2,423
Goodnews Bay	66	28	566	885	259	137	9	1,856
Grayling	46	17	1,133	0	318	1,919	0	3,370
Gulkana	4	1	44	1,500	0	0	0	1,544
Gustavus	29	28	27	329	0	7	8	371
Haines	412	406	91	7,260	463	454	1,498	9,766
Healy	48	45	15	437	702	775	0	1,928
Hollis	2	2	0	40	20	0	20	80
Holy Cross	56	33	1,745	0	120	821	0	2,686
Homer	51	45	27	1,061	27	4	6	1,126
Hoonah	114	84	4	1,613	143	753	30	2,543
Hooper Bay	204	71	183	0	24	9,236	957	10,400
Hope	24	19	0	121	0	0	0	121
Houston	10	10	6	109	0	0	0	115
Hughes	23	19	101	0	89	2,011	0	2,201
Huslia	75	26	969	0	323	2,640	0	3,932
Hydaburg	56	33	0	2,279	0	0	20	2,299
Igiugig	8	6	11	1,457	0	0	0	1,468
Iliamna	28	27	7	5,232	0	0	0	5,239

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Table 2-2.–Page 3 of 6.

Community	Households or permits		Estimated salmon harvests					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Indian	7	6	0	68	0	0	0	68
Ivanof Bay	2	2	1	70	182	27	32	312
Juneau	721	672	62	5,734	294	30	167	6,286
Kake	124	118	13	1,268	50	113	104	1,547
Kaktovik	6	5	0	143	0	0	0	143
Kalskag (Upper)	66	30	1,615	355	225	305	0	2,500
Kaltag	65	18	1,970	0	40	250	0	2,260
Karluk	2	2	0	0	0	0	0	0
Kasaan	12	9	0	191	0	0	0	191
Kasigluk	95	43	2,296	927	617	1,618	0	5,458
Kasilof	4	4	0	80	0	1	0	81
Kenai	16	15	57	215	0	9	0	281
Kenny Lake	49	35	160	2,916	1	0	0	3,078
Ketchikan	316	293	3	2,951	69	221	265	3,510
King Cove	42	36	57	1,694	1,943	174	216	4,084
King Salmon	75	69	65	5,966	139	20	12	6,202
Kipnuk[c]	149	1	0	0	0	0	0	0
Klawock	168	130	0	4,554	51	9	90	4,704
Klukwan	3	3	0	78	1	0	7	86
Knik	3	3	0	0	0	0	0	0
Kodiak (city)	1,335	1,327	156	17,132	2,661	110	706	20,764
Kokhanok	28	24	8	16,074	1	6	0	16,090
Koliganek	15	15	857	1,697	349	797	0	3,700
Kongiganak	92	40	1,118	808	610	1,285	0	3,821
Kotlik	97	36	1,657	0	181	7,699	42	9,579
Kotzebue	6	4	0	260	0	0	0	260
Koyuk	86	78	286	13	982	3,509	2,765	7,556
Koyukuk	41	18	982	0	198	1,956	0	3,136
Kwethluk	157	58	6,601	2,228	4,113	3,410	152	16,504
Kwigillingok[b]	71	0	–	–	–	–	–	–
Lake Louise	1	1	0	92	0	0	0	92
Lake Minchumina	2	2	0	45	0	0	0	45
Larsen Bay	23	23	25	952	50	7	35	1,069
Levelock	3	3	16	759	20	16	0	811
Lime Village[a]	15	0	59	1,180	624	452	0	2,315
Lower Kalskag	71	26	2,439	1,009	307	899	5	4,659
Lower Tonsina	2	1	0	2	38	0	0	40
Manley	16	16	345	0	2,308	4,493	0	7,146
Manokotak	20	18	267	1,727	98	89	2	2,182
Marshall	75	31	1,201	30	245	2,362	0	3,838
McCarthy	32	9	21	1,050	22	0	0	1,093
McGrath	150	59	596	1,015	1,244	844	0	3,699
Meadow Lakes	1	1	1	5	0	0	0	6
Meiers Lake	1	1	0	191	0	0	0	191
Mekoryuk[b]	62	0	–	–	–	–	–	–
Mendeltna	2	2	0	20	0	0	0	20
Mentasta Lake	5	4	70	271	0	0	0	341
Metlakatla	8	7	0	99	10	0	0	109
Minto	27	26	0	0	0	1	0	1
Moose Creek	1	1	0	0	0	0	0	0

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Table 2-2.–Page 4 of 6.

Community	Households or permits		Estimated salmon harvests					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Moose Pass	1	1	0	2	0	0	0	2
Mountain Village	141	65	1,482	0	413	8,130	6	10,031
Nabesna	2	2	0	41	0	0	0	41
Naknek	101	88	209	10,097	407	45	18	10,776
Nanwalek	19	19	11	1,515	396	71	865	2,858
Napakiak	100	41	2,331	916	428	1,677	0	5,352
Napaskiak	98	43	5,618	1,655	821	1,532	234	9,860
Naukati Bay	4	3	0	83	0	0	0	83
Nelchina	2	2	4	46	0	0	0	50
Nelson Lagoon	4	1	0	8	188	0	4	200
Nenana	63	62	474	341	3,481	8,132	0	12,428
New Stuyahok	45	41	2,554	2,443	879	904	75	6,855
Newhalen	16	15	50	5,337	20	0	0	5,407
Newtok[b]	79	0	–	–	–	–	–	–
Nightmute[b]	55	0	–	–	–	–	–	–
Nikiski	3	3	0	33	15	2	0	50
Nikolaevsk	2	2	0	1	0	0	0	1
Nikolai	32	27	299	66	204	302	0	871
Ninilchik	67	57	4	302	0	0	0	306
Nome	414	410	60	867	1,646	1,083	1,423	5,079
Nondalton	20	19	8	5,846	0	0	0	5,854
North Pole	719	605	117	10,113	150	0	0	10,380
Northway	10	4	20	584	0	0	0	604
Nulato	80	22	1,551	0	171	685	0	2,407
Nunam Iqua (Sheldon)	31	28	200	0	71	2,321	61	2,653
Nunamiqua	1	1	10	200	0	0	0	210
Nunapitchuk	114	43	3,256	1,455	281	3,400	50	8,442
Old Harbor	25	25	0	585	589	39	242	1,455
Oscarville	17	10	754	334	67	534	0	1,689
Ouzinkie	29	29	7	1,095	499	14	54	1,669
Palmer	563	500	335	10,216	225	46	9	10,832
Paxson	3	3	4	140	1	8	1	154
Pedro Bay	21	18	0	7,802	0	0	0	7,802
Pelican	5	5	0	26	0	3	0	29
Perryville	23	21	9	688	632	100	570	1,998
Petersburg	88	80	3	580	393	40	54	1,071
Pilot Point	6	6	5	150	37	0	0	192
Pilot Station	106	54	1,258	0	203	5,153	3	6,617
Pitka's Point	27	23	265	0	45	1,070	0	1,380
Platinum	17	14	61	186	81	28	0	356
Point Baker	1	1	0	23	6	8	11	48
Point Hope	2	2	0	0	0	0	0	0
Point Lay	1	1	0	0	0	0	0	0
Port Alexander	4	4	0	50	0	0	0	50
Port Alsworth	38	36	5	3,246	0	0	0	3,251
Port Graham	25	25	33	1,982	132	69	49	2,265
Port Heiden	29	29	206	1,157	69	0	0	1,432
Port Lions	36	36	2	1,141	313	0	85	1,541
Port Moller	1	1	0	233	0	0	0	233
Port Williams	0	0	0	0	0	0	0	0

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Table 2-2.–Page 5 of 6.

Community	Households or permits		Estimated salmon harvests					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Portage Creek	1	1	57	4	0	6	0	67
Quinhagak	151	75	2,982	1,740	1,692	1,300	17	7,731
Rampart	5	5	528	0	0	1,112	0	1,640
Red Devil	14	5	226	417	111	214	0	968
Ruby	57	19	542	0	314	737	0	1,593
Russian Mission	67	32	978	0	96	1,054	0	2,128
Saint Mary's	119	45	1,929	0	151	5,937	5	8,022
Saint Michaels	100	91	907	26	1,196	1,012	186	3,326
Saint Paul Island	1	0	0	0	0	0	0	0
Salcha	45	40	22	586	11	2	0	622
Sand Point	23	21	45	1,391	301	186	275	2,198
Saxman	2	1	0	60	0	0	0	60
Scammon Bay	80	33	722	0	222	3,719	1,186	5,849
Seldovia	20	19	15	115	26	13	79	248
Seward	15	15	1	73	0	0	0	74
Shageluk	29	21	201	0	105	208	9	523
Shaktoolik	60	60	417	57	2,141	374	6,101	9,090
Shishmaref	1	0	0	0	0	0	0	0
Silver Springs	3	3	6	166	0	0	0	172
Sitka	634	612	11	12,161	53	35	198	12,458
Skagway	9	9	0	31	0	1	22	54
Skwentna	7	7	0	84	5	0	0	89
Slana	21	18	7	1,756	0	0	0	1,764
Sleetmute	38	29	702	692	384	375	6	2,159
Soldotna	23	22	38	526	39	0	0	603
Sourdough	3	3	0	133	0	0	0	133
South Naknek	27	12	32	1,141	41	2	0	1,215
Stebbins	136	103	941	0	1,471	1,929	433	4,775
Sterling	7	5	0	70	30	6	2	108
Stevens Village	26	20	405	0	90	776	0	1,271
Stony River	20	12	704	977	634	771	0	3,086
Sutton	63	58	0	647	38	0	0	685
Takotna[a]	25	0	0	0	0	0	0	0
Talkeetna	22	20	28	367	8	3	0	406
Tanacross	2	1	0	80	0	0	0	80
Tanana	98	51	2,950	0	2,373	24,260	0	29,583
Tatitlek	14	8	0	170	131	0	0	301
Tazlina	33	29	248	2,890	16	0	0	3,154
Telida[b]	2	0	–	–	–	–	–	–
Teller	50	49	5	286	400	1,429	902	3,022
Tenakee Springs	2	2	0	0	0	0	0	0
Thorne Bay	36	35	0	114	92	0	66	271
Togiak	39	37	827	2,220	262	365	5	3,679
Tok	83	55	28	3,031	0	0	0	3,059
Tok Cutoff	1	1	0	51	0	0	0	51
Toksook Bay[b]	114	0	–	–	–	–	–	–
Tolsona	3	3	5	172	0	0	0	177
Tonsina	4	3	4	41	3	0	0	48
Trapper Creek	9	8	0	192	0	0	0	192
Tuluksak	86	35	3,032	1,601	839	1,488	10	6,970

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Table 2-2.–Page 6 of 6.

Community	Households or permits		Estimated salmon harvests					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Tuntutuliak	82	33	3,141	954	368	3,411	6	7,880
Tununak[b]	61	0	–	–	–	–	–	–
Two Rivers	15	14	4	242	4	0	0	250
Tyonek	62	50	489	178	258	2	0	927
Uganik Bay	1	1	0	0	6	0	0	6
Ugashik	8	8	18	711	94	4	41	868
Unalakleet	223	211	1,764	196	5,118	1,084	10,808	18,970
Unalaska	82	49	2	1,364	296	139	318	2,119
Valdez	289	249	134	6,196	24	0	1	6,354
Venetie	58	15	622	0	0	2,516	0	3,138
Ward Cove	35	32	0	205	2	87	97	391
Wasilla	975	871	423	17,137	263	4	29	17,857
Whale Pass	4	4	0	0	0	0	0	0
White Mountain	49	49	56	16	360	976	1,721	3,129
Whittier	3	3	0	3	0	0	0	3
Willow	54	48	3	690	5	3	0	702
Wiseman	1	0	0	0	0	0	0	0
Wrangell	87	70	26	827	24	135	53	1,066
Yakutat	116	86	950	4,266	1,439	5	69	6,729
Other USA	27	25	0	132	50	0	0	182
Unknown community	108	104	612	622	92	202	5	1,533
Total	**25,657**	**19,225**	**141,563**	**396,504**	**88,307**	**214,145**	**38,666**	**879,185**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. These communities were not contacted during the 2009 study period, therefore the total harvest was estimated using Bayesian multiple imputation method.

b. These communities were not contacted during the 2009 study period. Not enough data were available.

c. Only 1 permit was issued and returned from the Bristol Bay fishery. The remaining 148 were from the Kuskokwim fishery and were not contacted during the 2009 study period. Not enough data were available to estimate harvest.

– Data not available.

Table 2-3.–Historical Alaska subsistence and personal use salmon harvests, 1994–2009.

	Households or permits		Estimated salmon harvests					
Year	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	22,553	16,492	188,134	445,109	138,101	417,199	94,469	1,283,012
1995	22,358	15,770	186,422	386,034	125,909	499,992	54,908	1,253,264
1996	23,708	18,751	161,976	416,467	124,786	498,525	80,928	1,282,682
1997	26,754	21,782	182,174	525,417	99,043	347,808	41,543	1,195,985
1998	27,774	22,264	177,017	466,386	95,211	302,037	74,216	1,114,867
1999	27,854	22,993	161,333	511,044	91,896	339,242	33,253	1,136,768
2000	25,365	20,983	134,270	422,002	103,212	248,598	52,710	960,791
2001	28,641	21,907	165,039	487,570	101,291	242,035	44,501	1,040,436
2002	24,497	19,189	144,777	398,134	94,365	229,922	86,754	953,952
2003	25,018	19,096	166,593	420,579	109,172	239,648	67,929	1,003,920
2004	27,046	20,923	176,416	453,201	103,772	241,022	92,281	1,066,692
2005	25,060	18,513	155,658	461,804	100,095	257,977	77,031	1,052,564
2006	25,881	18,558	142,658	452,477	96,024	291,971	74,320	1,057,451
2007	25,736	17,851	157,813	459,372	80,685	273,951	34,787	1,006,608
2008	25,920	18,762	176,158	406,621	116,105	270,688	86,337	1,055,909
2009	25,657	19,225	141,563	396,504	88,307	214,145	38,666	879,185
5-year average (2004–2008)	25,929	18,921	161,741	446,695	99,336	267,122	72,951	1,047,845
10-year average (1999–2008)	26,102	19,878	158,072	447,280	99,662	263,505	64,990	1,033,509
Historical average (1994–2008)	25,611	19,589	165,096	447,481	105,311	313,374	66,398	1,097,660

Source ADF&G Division of Subsistence, ASFDB 2009 (ADF&G 2010).

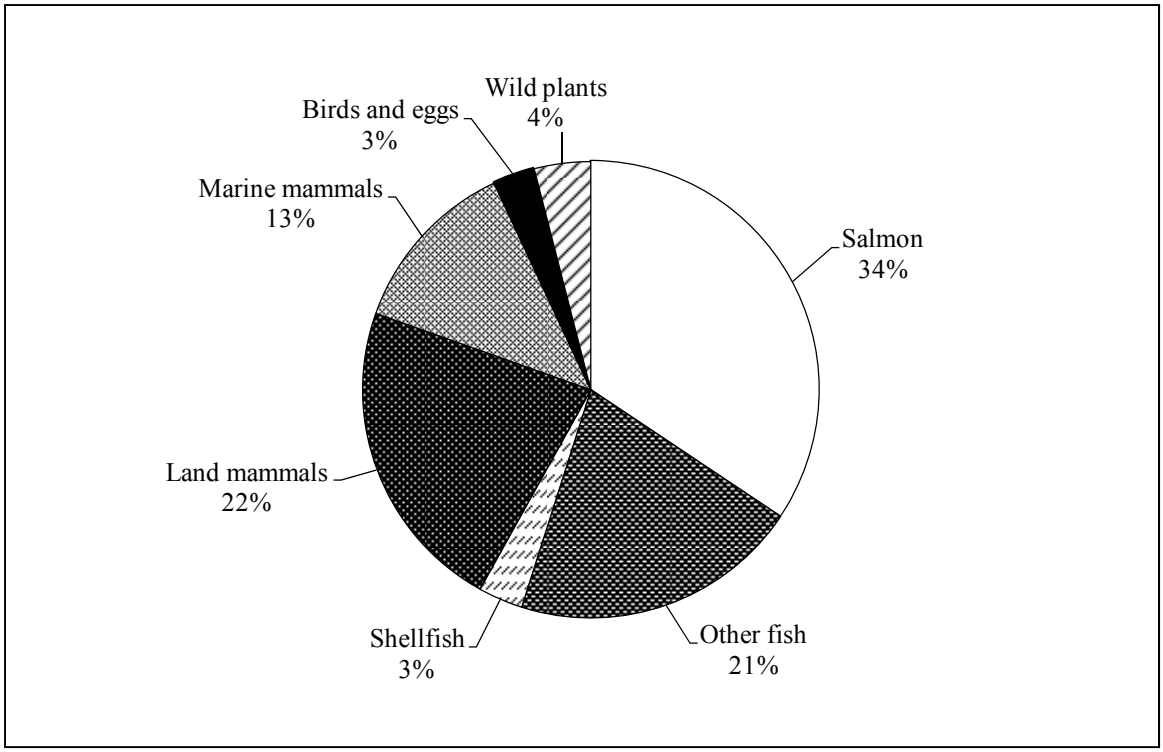

Figure 2-1.–Composition of subsistence harvest by rural Alaska residents, 2010.

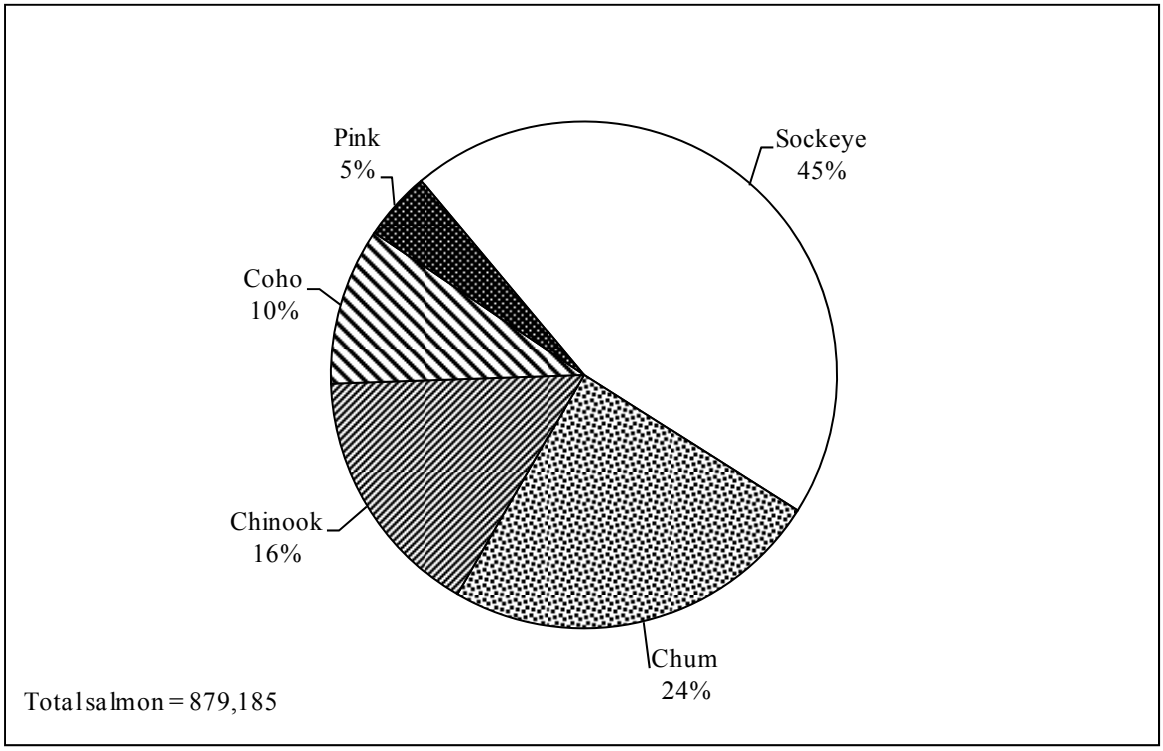

Figure 2-2.–Alaska subsistence salmon harvest by species, 2009.

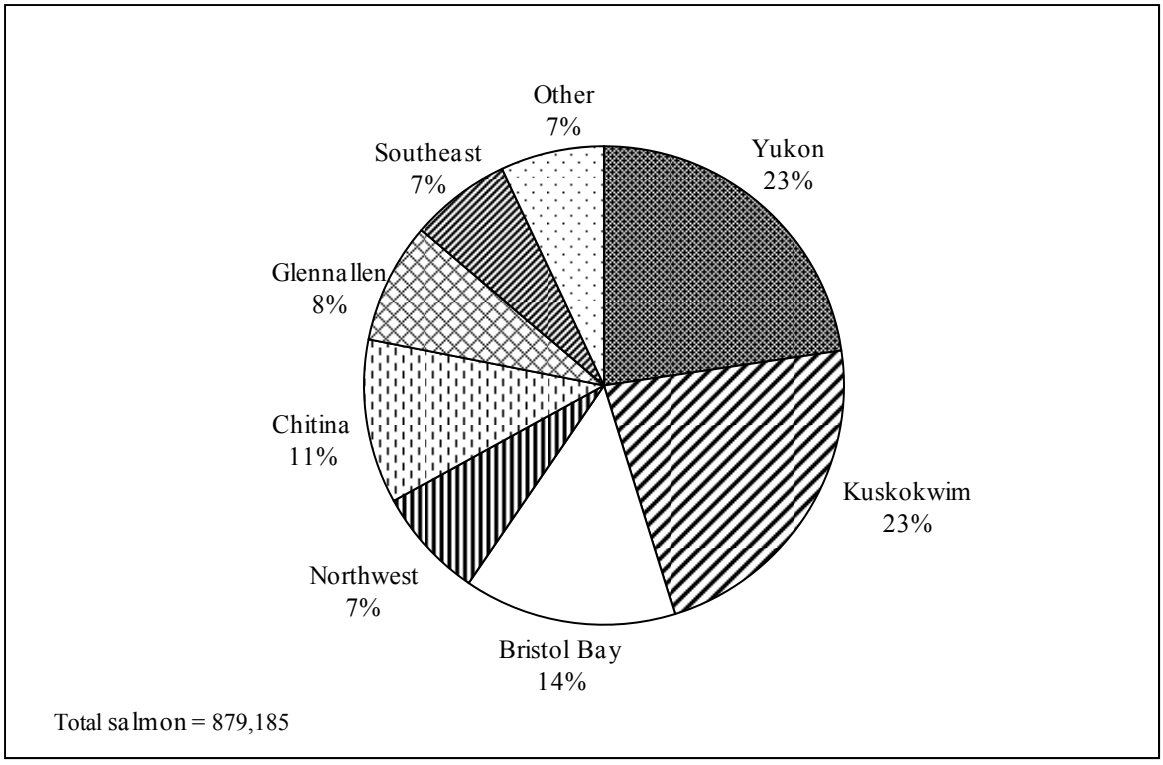

Figure 2-3.–Alaska subsistence salmon harvest by area, 2009.

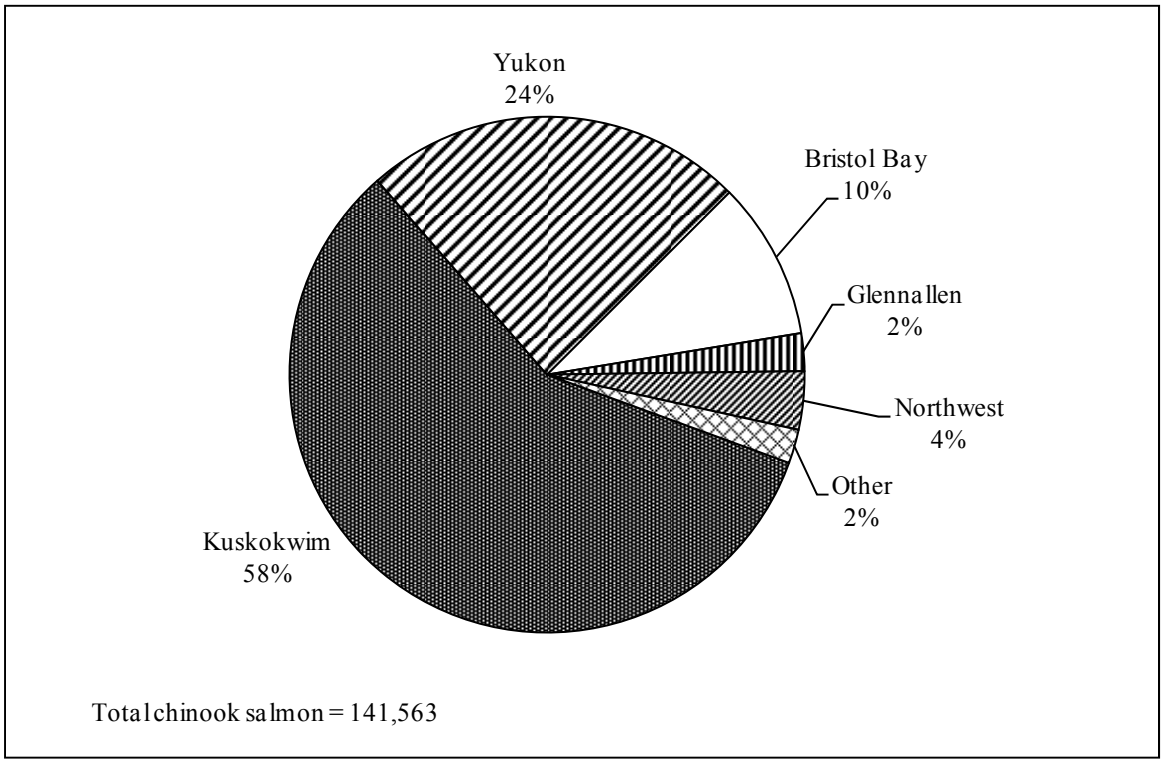

Figure 2-4.–Subsistence Chinook salmon harvest by area, 2009.

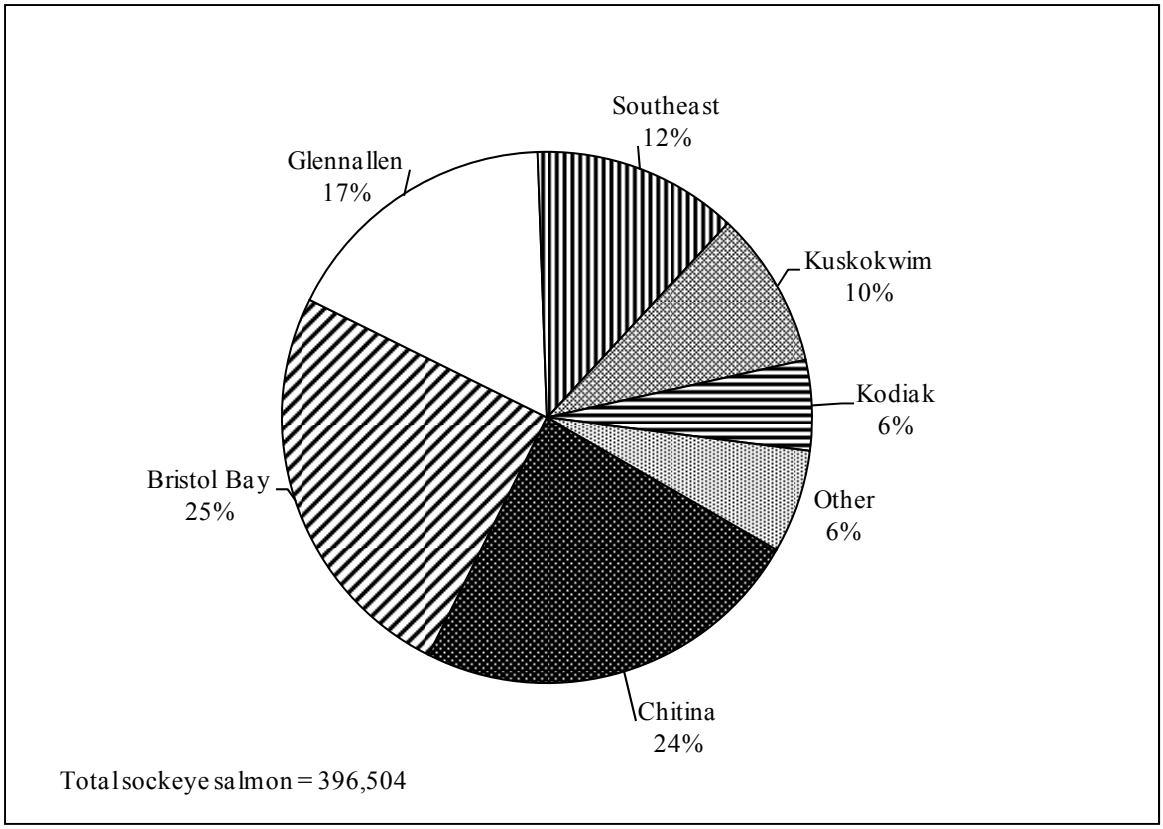

Figure 2-5.–Subsistence sockeye salmon harvest by area, 2009.

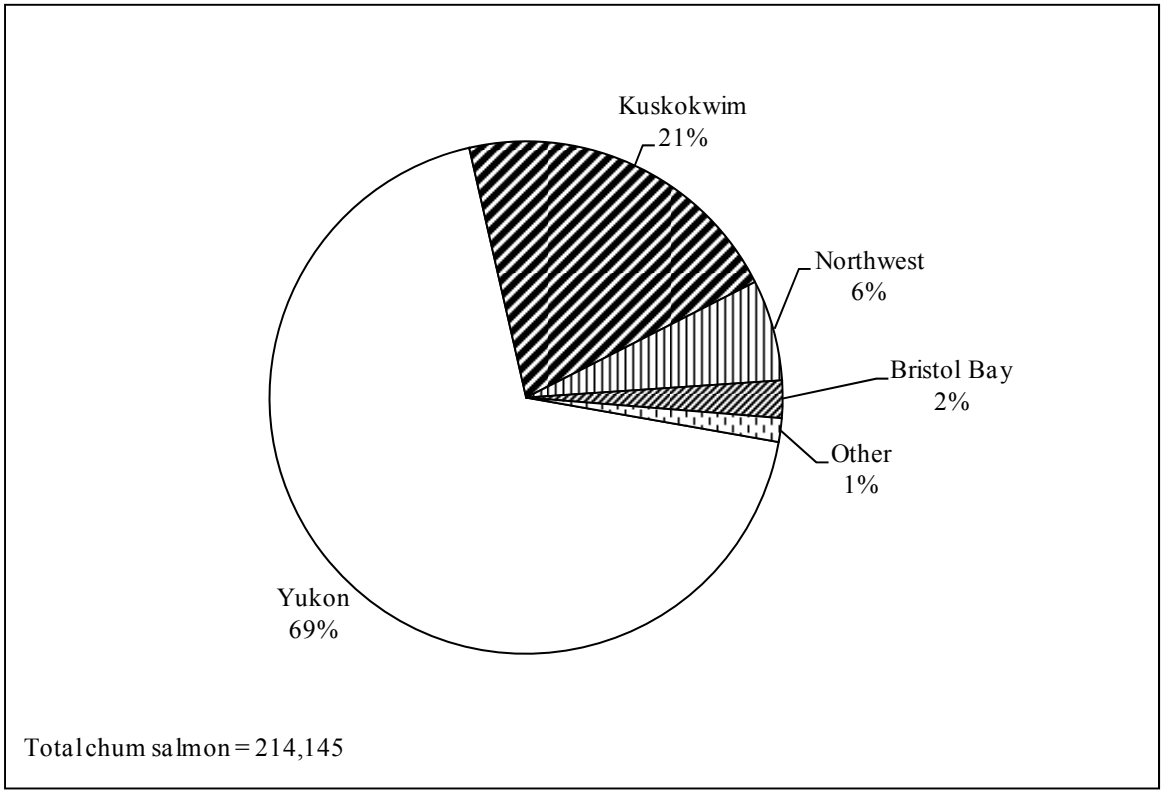

Figure 2-6.–Subsistence chum salmon harvest by area, 2009.

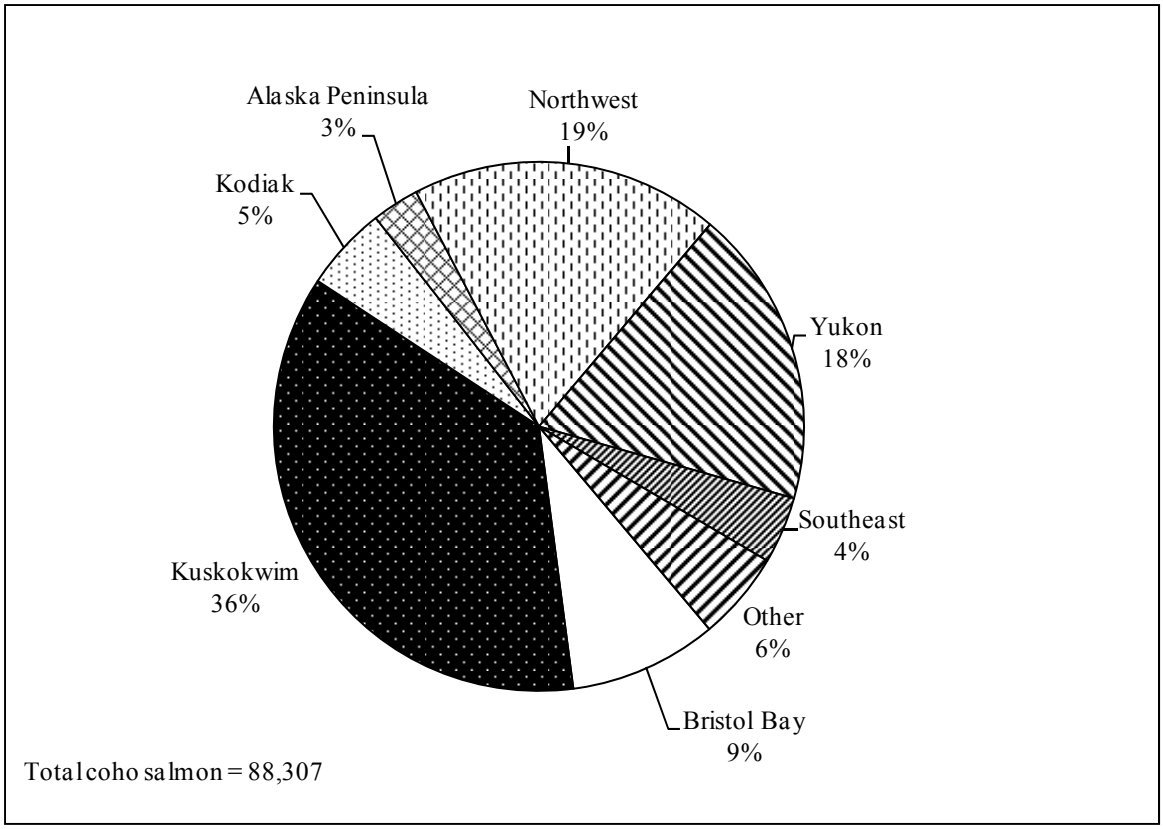

Figure 2-7.–Subsistence coho salmon harvest by area, 2009.

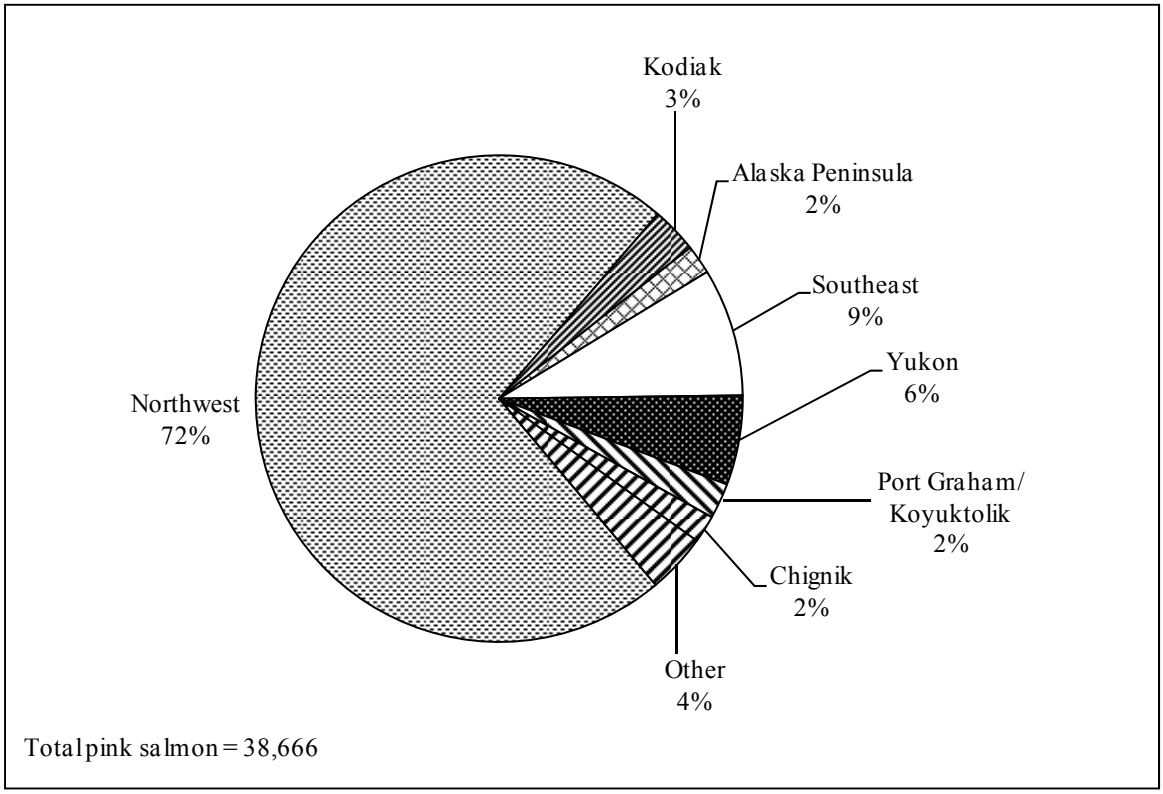

Figure 2-8.–Subsistence pink salmon harvest by area, 2009.

CHAPTER 3: NORTHWEST ALASKA

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. (Smith and Vreeman 1995; Harritt 2010). The area includes the regional center of Nome, with a 2009 population of 3,610, and 13 smaller communities ranging in size from 118 (Little Diomede) to 685 (Unalakleet) (ADLWD 2009). Overall, 76% of the residents of the Nome Census area are Alaskan Native, with an additional 6% reporting two or more racial backgrounds. More than 90% of the region's population outside of Nome is Alaskan Native, with Inupiaq, Yupik and Siberian Yupik peoples present. Most residents of the region continue to participate in a mixed subsistence-cash economy, and to 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 to many of its inhabitants.

In summer, subsistence fishers harvest salmon with gillnets or seines in the main Seward Peninsula rivers and coastal marine waters. Beach seines are 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 found in a few Seward Peninsula streams.

Regulations

The Port Clarence District includes all waters from Cape Douglas north to Cape Prince of Wales, including Salmon Lake and the Pilgrim River drainage. 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. This area includes fishing areas used by residents of Teller, Brevig Mission and Nome (the area is accessible via road from Nome) (Magdanz 1992:27). Since 2004, subsistence salmon permits have been required in all Port Clarence waters. In addition, in the Pilgrim River drainage, including Salmon Lake and the Kuzitrin drainage, harvests are limited, and specified areas are closed to subsistence salmon fishing. No fishing occurred in Salmon Lake in 2009 due to a crash of the sockeye population—managers had opened a portion of the lake to fishing for the previous 3 years. Prior to that, it had been closed since 1972.

The Norton Sound District encompasses all waters from Point Romanof north to Cape Douglas. It is divided into 6 subdistricts: 1) Nome, 2) Golovin, 3) Moses Point, 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 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 meet 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 2 largest communities in the area are located.

In Subdistrict 1 (Nome), subsistence harvests consist primarily of chum salmon and pink salmon. Chum salmon runs have been depressed since the mid-1980s, leading to increasing restrictions on all types of

harvest. Upstream portions of most rivers are closed to protect spawning salmon, and harvests are limited in all subdistrict rivers. For 16 years, subsistence fishing was prosecuted primarily by emergency order, with openings much less frequent than in regulation. Fishing periods in marine waters were also limited.

From 1991–2005, the Nome Subdistrict managed primarily by emergency order and frequently closed to subsistence fishing for chum salmon each year on June 15 until ADF&G judged escapement goals were likely to be met. This closure, even if of short duration, impacted subsistence fishing because fishing often reopened during a wetter part of the summer, which made it difficult, if not impossible, to dry and process fish harvested for subsistence uses. From 1999 through 2005, chum salmon fishing in Subdistrict 1 was managed as Tier II, the only such fishery in the state.[7] 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). Chum salmon returns since then have gradually improved, allowing ADF&G to manage the fishery as Tier I between 2006 and 2009, and generally observe the fishing schedule provided for by regulation.[8] In subdistricts 2 through 4, salmon may be taken at any time, with no harvest limits. However, restrictions exist on commercial fishers' participation in subsistence salmon fishing. Both the escapement and the commercial harvest of chum salmon have experienced sharp declines since 1990 (Menard and Bergstrom 2006:2). In Subdistrict 2 (Golovin), both commercial and subsistence chum salmon harvests have dropped significantly since the 1990s; subsistence restrictions were in place in 2003. Chum salmon stocks in subdistricts 2 and 3 have been classified as a "yield concern" since 2000.

In subdistricts 5 and 6 (Shaktoolik and Unalakleet, respectively), continuing poor Chinook salmon runs have led to restrictions on commercial, sport, and subsistence fishing. The Shaktoolik and Unalakleet subdistricts are typically managed together because actions in one subdistrict are believed to affect the movement of fish in the other. Only 1 commercial Chinook salmon fishery has occurred since 2001. Restrictions were placed upon the subsistence and sport fisheries in 2003, 2004, 2006, 2008, and 2009 (Menard 2010; Menard et al. 2011). The Chinook salmon management plan adopted by the BOF in February 2007 (5 AAC 04.395), limits subsistence gillnet salmon fishing to two 48-hour fishing periods per week in marine waters from mid June to mid July. On the Unalakleet River, subsistence fishing is limited to two 36-hour fishing periods per week. Fishing time could be increased only if ADF&G were to project that the lower end of the sustainable escapement goal (SEG) range would be reached.

In 2007, the BOF changed the classification of Subdistrict 1 chum salmon from a "stock of management concern" to a "stock of yield concern." Subdistricts 2 and 3 chum salmon, as well as subdistricts 5 and 6 Chinook salmon, continued as stocks of yield concern (Soong et al. 2008:34).

New state regulations governing customary trade of fish caught in the Norton Sound and Port Clarence areas became effective July 1, 2007. The 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 permit 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).

Subsistence Salmon Harvest Collection Methods

Two methods were used to assess subsistence salmon harvests in the Norton Sound and Port Clarence districts in 2009: 1) fishing permits in Subdistrict 1 (Nome), the Cape Woolley Area, Subdistrict 2 (Golovin), Subdistrict 3 (Moses Point), and the Port Clarence District (Brevig Mission and Teller); and 2) postseason household surveys in 5 communities: Koyuk (Subdistrict 4), Shaktoolik (Subdistrict 5) and

7. 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 amount necessary to provide for subsistence uses. Individuals are scored based on their history of uses of the particular resource and the ability to obtain food; those with the highest scores receive Tier II permits.
8. In a "Tier I" subsistence fishery, all interested Alaska residents may participate. Other fishers (commercial, sport, and personal use) are prohibited or restricted.

Unalakleet (Subdistrict 6) as well as St. Michael and Stebbins, which are not within a subdistrict's boundaries.

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

Permits have been required for subsistence salmon fishing in Norton Sound Subdistrict 1 (Nome) since 1974. Beginning in 1999, Tier II chum salmon fishing permits were also issued to a limited number of Nome households with the intent that these households would have first priority over other subsistence fishers if only a small number of chum salmon were available for harvest. This priority would allow 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 run strength was determined to be adequate. In 2009, because of an average to below average forecasted run of chum salmon, Tier II was not in effect. The Nome ADF&G office issued 426 subsistence (Tier I) salmon permits; 416 were returned. A total of 261 households fished their permits, with most effort on the Nome and Snake rivers. Harvests largely came from those rivers and marine waters (Menard et al. 2011).While less than in 2004 and 2008, when ADF&G issued 491 (and 461) permits, the number issued in 2009 was the third highest since permits were enacted. The higher numbers of permits issued for the subdistrict in 2009 may indicate a shift in fishing effort from the Port Clarence area due to the sockeye salmon decline (2008) and crash (2009) and a response to continuing high gasoline prices that make fishing in other subdistricts less economical.

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.

Subsistence fishing permits were also issued for the Cape Woolley Area, a traditional camp and fishing area for King Island households, who, although they settled in Nome over 40 years ago, maintain a distinct community identity. Located in the Norton Sound District west of Nome, this area lies outside Subdistrict 1 but within the boundaries of the area for which fishing permits are required (Rocky Point to Cape Douglas). In 2009, 11 permits were issued for the Cape Woolley Area; all were returned to ADF&G. Only two households fished their permits.

Subsistence permits have been required for salmon fishing in Subdistrict 2 (Golovin) and Subdistrict 3 (Moses Point) since 2004. In 2009, 161 permits were issued for Subdistrict 2; fewer than in 2005 (174) and 2004 (199). One hundred fifty-nine permits were returned; 96 households reported fishing. The number of Subdistrict 2 permits issued to Nome residents has dropped by 25 percentage points since 2004 (Menard et al. 2010). Fishery managers have attributed the decline to the easing of fishing restrictions in the Nome Subdistrict and rising fuel costs. The number of permits issued to residents of White Mountain and Golovin has held steady. In 2009, ADF&G issued 73 permits for Subdistrict 3, the highest number since the permit system began. All permits were returned. Sixty households reported fishing.

Port Clarence District: Salmon Lake and Pilgrim River Fishing Permits

Permits have been required to fish the Pilgrim River since 1974 (Magdanz 1992:27). This requirement was expanded to all Port Clarence waters in 2004. In 2009, 328 Port Clarence and Pilgrim River permits were issued, compared to 405 in 2008, 363 in 2007 and 345 in 2006. Of the permits issued in 2009, 190 were to fish the Pilgrim River only; 5 were issued for Salmon Lake; and 135 were issued for other waters in the district. 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. The decline in permits issued may, in turn, be a response to a poor run in 2008 followed by the crash in 2009. All Pilgrim River and Salmon Lake permits were returned, as were 133 of the 135 permits issued for the other waters of the Port Clarence District.

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. No salmon fishing was allowed in Salmon Lake in 2009 due to the crash of the sockeye salmon run.

Household Surveys

In 2009, ADF&G conducted household surveys in Koyuk, Shaktoolik, Unalakleet, St. Michael, and Stebbins. Researchers attempted to contact all of the households in each of the surveyed communities. Actual sample rates varied: 211 of 223 Unalakleet households (95%) were contacted, as were 60 of 60 Shaktoolik households (100%), 78 of 86 Koyuk households (91%), 91 of 100 St. Michael households (91%), and 103 of 136 households in Stebbins (76%). The salmon survey data were expanded by community to account for the households not contacted.

The goals of the postseason household survey were to

1. collect harvest data that would result in a total harvest estimate for subsistence salmon by species and by community;
2. compile information on harvest by gear types, participation rates, household size, use of salmon for dog food, and participation in customary barter and trade; and
3. assess the quality of chum salmon fishing and what affected it.

2009 Subsistence Salmon Harvests

Norton Sound District Subsistence Salmon Harvest

The estimated 2009 subsistence harvest of salmon by communities in the Norton Sound District was 58,080 fish (Table 3-1, Table 3-2). This was the lowest total harvest for the district on record since 1994, lower by a small margin than the previous odd-numbered year, 2007 (Table 3-2). Pink salmon abundance commonly follows an even–odd year cycle. Their abundance in Norton Sound is usually significantly higher in even-numbered years (2004, 2006, 2008, etc.) with districtwide harvests usually reflecting this difference. Between 1994 and 2009, even-year harvests of all salmon have ranged from a low of 76,770 in 2000, to a high of 134,050 in 1996, with an average of 98,884 salmon. Odd-year harvests have ranged from the low in 2009 to a high of 113,612 in 1994, with an average of 76,426 salmon.

This new low, even for an odd-numbered year, is largely due to a chum salmon harvest that was the third lowest on record since 1994. However, an unexpectedly strong Chinook salmon return in the eastern subdistricts resulted in the highest harvest of Chinook salmon since 2003.

Chum salmon runs were below average to nearly record lows in Northern Norton Sound in 2009 (Menard et al. 2011). Escapements counted at weir projects were among the poorest since counting projects began at the Nome, Eldorado, Snake, Kwiniuk, and Niukluk rivers. The lower end of sustainable escapement goals were not met on the Nome, Eldorado, and Snake rivers; the return to the Kwiniuk River is believed to be the worst since 1976 (Menard et al. 2011). In the Unalakleet and Shaktoolik subdistricts, however, escapements were above average. Coho salmon runs in most of Norton Sound were average to above average in 2009, with the exception of the Nome Subdistrict, which had poor returns. Sockeye salmon crashed unexpectedly in 2009. Preseason projections for sockeye salmon returning to Salmon Lake predicted a run of at least 40,000 sockeye salmon, but preliminary reports indicate a run of less than one-tenth of that (Menard et al. 2011).

Subdistrict 1 Harvest

For the fourth year in a row, Subdistrict 1 opened on June 15 for subsistence salmon fishing as per regulation. The chum salmon fishing schedule (72 hours in marine waters and two 48-hour fishing periods in fresh waters per week) was observed from mid-June to mid-July. By mid-July, however, ADF&G projected that the lower end of the biological escapement goal would not be reached and all

chum salmon fishing and net fishing closed on July 16. Regulations call for a shift to coho salmon management on July 25, which typically increases the fishing period to 5 days a week in marine waters. In 2009, however, ADF&G did not reopen marine waters to subsistence gillnet fishing until August 3. Fresh waters remained closed to the taking of chum salmon until September 1. Subsistence fishing with gillnets (presumably targeting coho salmon) in fresh waters reopened on August 10, with two 48-hour fishing periods per week. However, due to very poor coho salmon escapements, subsistence gillnet fishing in both marine and fresh waters closed on August 22. Sport fishing for coho salmon closed on August 24. On August 29, subsistence hook and line fishing for coho salmon closed. A portion of the subdistrict reopened on September 8 to subsistence hook and line fishing for coho salmon with a 3 fish per household per day limit. ADF&G reopened subsistence gillnet fishing in marine waters east of the Nome river on September 16, after most of the coho salmon run had returned to the spawning grounds. The estimated 2009 subsistence salmon harvest in the Nome subdistrict was the lowest since 2003 and the fourth lowest since 1994. An estimated total of 2,102 salmon were harvested in 2009, the majority of which (l,132 or 54%) were coho. Subsistence fishers caught an estimated 487 pink (23%), 387 chum (18%), 64 sockeye (3%) and 32 Chinook salmon (2%).

Subdistricts 2 and 3 Harvest

No subsistence catch limits are in place in subdistricts 2 and 3. Most salmon harvested there are caught by residents of the communities of White Mountain, Golovin, and Elim. Pink and coho salmon made up the majority of salmon harvest, followed by chum, Chinook, and a few sockeye salmon. In 2009, a total of 7,128 salmon were harvested in Subdistrict 2, the fewest since 2003, another odd-numbered year (Table 3-3). Pink salmon comprised 53% of the number harvested, with 24% chum, 19% coho, 3% Chinook, and 0% sockeye salmon making up the rest. Preseason forecasts by ADF&G predicted average to above average returns of pink and coho salmon to the district, with no restrictions on subsistence fishing. Subdistrict 2 harvests, as noted earlier, largely reflect those of communities within the subdistrict. Residents of Golovin harvested an estimated 2,423 salmon in 2009, of which more than half, 1,363, were pink salmon. Coho salmon (500) made up 21% of the total, with chum (383) at 16%, Chinook at (163) 7%, and sockeye (14) at less than 1%. White Mountain residents harvested an estimated 3,129 salmon, 1,721 (55%) of which were pink salmon. The reminder were chum (976) at 32%, coho (360) at 12%, Chinook (56) at 2% and sockeye salmon at less than 1% of the annual total.

In Subdistrict 3, the chum salmon return to the Kwiniuk River was one of the poorest on record; however, the coho salmon run was very strong. Subsistence fishers harvested an estimated 5,114 salmon, 48% of which were coho salmon. The remainder were 30% pink, 12% chum, 11% Chinook, and less than 1% sockeye salmon (Table 3-3). Harvests by Elim residents totaled 5,080 salmon, 2,422 (48%) of which were coho. An estimated 1,509 pink (30%), 591 chum (12%), and 545 Chinook salmon (11%) made up the remainder of the harvest, with sockeye salmon making up less than 1%.

Subdistrict 4 Harvest

2009 was the second year since 2003 in which subsistence salmon surveys were conducted in Koyuk. Households caught an estimated 7,556 salmon, the fewest since 1994, with most of the harvest being made up of pink and chum salmon (37% and 46%). Of the remainder, 13% were coho, and 4% were Chinook, and less than 1% sockeye salmon. By comparison, in 2008, the community harvested an estimated 9,092 salmon, 49% of which were pink salmon (4,489) and 37% chum (3,330). Coho salmon made up 12% of that year's subsistence salmon harvest, with 2% coming from Chinook and less than 1% sockeye salmon.

Subdistrict 5 and 6 Harvests

Preseason forecasts by ADF&G called for another very poor Chinook salmon run to subdistricts 5 and 6. Restrictions were put in place on subsistence fishing per the management plan. Fishery managers limited fishing time with set gillnets to two 48-hour periods per week in marine waters and two 36-hour periods

per week in the Unalakleet River drainage. Beach seining was not permitted. In order to protect larger female Chinook salmon entering the Unalakleet River, on June 29, ADF&G enacted mesh size restrictions of 6 inches or less for subsistence gillnets on the river. While local fishers indicated that they quit fishing for Chinook salmon early because their needs had been met, ADF&G managers were uncertain if this was due to a stronger run than expected or other factors relating to fishing conditions (Menard et al. 2011). Due to low escapement observed at the North River counting tower, ADF&G closed subsistence salmon fishing for Chinook salmon in marine waters of both subdistricts on July 4; subsistence salmon fishing on the Unalakleet River closed the same day. Sport fishing for Chinook salmon closed on the Unalakleet and Shaktoolik rivers as well. Beach seining opened 7 days a week after the closure to allow fishers to fish for chum and pink salmon, with all Chinook salmon to be released. At the conclusion of the season, however, the Chinook salmon return to the Unalakleet River, as enumerated at the North River counting tower, turned out to be the strongest since 1999.

Shaktoolik households caught an estimated 9,090 salmon in 2009, the bulk of which (6,101 or 67%) were pink salmon. Coho salmon (2,141) comprised 24% of the total harvest; Chinook salmon (417) and chum (374) each were 5% and 4% of the total. Less than 1% of the harvest was made up of sockeye salmon. The 2009 harvest total compared favorably to the 2007 harvest, when the community harvested 5,159 fish in total.

In Unalakleet, subsistence fishers caught an estimated 18,970 salmon, more than half of which (57%) were pink salmon. Coho salmon (5,118) made up 27% of the annual harvest, Chinook (1,764) were 9%, and chum (1,084) were 6%. One percent of the total harvest was sockeye salmon.

Norton Sound Harvest Overall

Of the total subsistence 2009 salmon harvest in Norton Sound, less than 1% were sockeye salmon, 9% were Chinook salmon, 18% were chum salmon, 27% were coho salmon, and 45% were pink salmon (Figure 3-1).

Combined harvest estimates for the Norton Sound District, Port Clarence District, and Kotzebue Area for 1975–2009 are presented in Table 3-4. However, the methods used to determine harvests prior to 1994 are substantially different from those used since 1994. As a consequence, the data are not directly comparable. Methods changed again in 2004 when permits replaced surveys in Norton Sound Subdistrict 2 (Golovin and White Mountain) and Norton Sound Subdistrict 3 (Elim). The combined total for Northwest Alaska in Table 3-4 includes limited Kotzebue Area harvest information collected between 1994–2004, however, no data have been collected in the area since 2004.

Very little of the documented 2009 subsistence salmon harvest was taken by residents from outside the district (Table 3-5). Just 9 subsistence permits were issued to residents of Anchorage and Fairbanks; their combined total salmon harvest was 36 salmon.

Port Clarence District Subsistence Salmon Harvest

The estimated 2009 subsistence harvest of salmon by Teller, Brevig Mission, and Nome households in the Port Clarence District was 7,429 fish (Table 3-1, Table 3-2). This was the lowest harvest since 2000, ranking among the lowest on record since 1994. Of the total salmon harvest, less than 1% were Chinook salmon, 11% were coho salmon, 41% were chum salmon, 25% were pink salmon, and 22% were sockeye salmon (Figure 3-2).

KOTZEBUE AREA SALMON

Background

Kotzebue Sound residents have relied on fish for cultural and nutritional sustenance 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 Area 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 affected primarily by salmon abundance. Communities that harvest few salmon typically harvest large numbers of nonsalmon fish, such as sheefish *Stenodus leucichthys*, whitefishes *Prosopium* and *Coregonus* spp, and Arctic char *Salvelinus alpinus*/Dolly Varden *S. 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, comprising 90% of the subsistence salmon harvest. Small numbers of other salmon species are present in the district.

Regulations

In the Kotzebue Area, subsistence salmon fishing has few restrictions, other than the general statewide provisions. 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 district at any time with no harvest limits and no required permits

Harvests

From 1994 through 2004, with funding from the Division of Commercial Fisheries, the Division of Subsistence conducted household surveys in selected Kotzebue Sound communities to collect subsistence salmon harvest data (Fall et al. 2007a:23–38). Since funding for that effort has not been available since 2004, no annual surveys have been conducted; therefore, no subsistence salmon harvest estimate is available for 2009.[9] The average yearly subsistence harvest between 1994 and 2004 was 59,650 salmon, the majority of which were chum salmon. This average may be low due to incomplete datasets resulting in low harvest totals for several years during that period. Harvest estimates for 1994, 2002, 2003, and 2004 do not include the city of Kotzebue. Because Kotzebue is the largest community in the region, residents typically harvest as much salmon as residents from all other communities in the region combined (Menard and Kent 2007:1). No harvest information is available for Ambler, a Kobuk River village, for 2001. Data for 2002 include only harvest information from Noatak and Noorvik.

KOTZEBUE AREA SHEEFISH, WHITEFISH, AND ARCTIC CHAR/DOLLY VARDEN

In addition to salmon, major subsistence fisheries take place in Northwest Alaska for sheefish, whitefishes, and Arctic char/Dolly Varden. Where salmon are not abundant, these nonsalmon fish often replace salmon in local diets. In the Kotzebue Area, subsistence fishing for these species has few restrictions, other than the general statewide provisions. Fish may be taken at any time with no harvest limits and no required permits. Gillnets used to take sheefish have length, depth, and mesh size restrictions.

Past household surveys to collect harvest information for subsistence salmon harvests in Kotzebue Sound communities also collected harvest data for sheefish, whitefishes, and Arctic char/Dolly Varden (Fall et al. 2007a:28). Since the loss of Division of Commercial Fisheries funding in 2004, these postseason salmon surveys have not been conducted in this area.

In 2004, the last year Kotzebue Area was surveyed, nonsalmon harvest information was collected in Ambler, Kiana, Kobuk, Noatak, Noorvik and Shungnak. Those 6 communities harvested an estimated 10,835 sheefish, 50,501 whitefishes, and 11,697 char (which residents call "trout") in that year (Fall et al. 2007a:33). Kotzebue Area's total harvest of those species is probably higher, but subsistence fish surveys are not usually conducted in other villages.

9. Although the subsistence salmon harvest surveys were eliminated in 2004, information on subsistence fish harvests has been collected occasionally since then during comprehensive subsistence harvest surveys in some Northwest Alaska communities.

The Division of Subsistence collected fish harvest data for 2008 in the villages of Noatak and Kivalina as part of comprehensive community harvest surveys associated with a supplemental environmental impact statement for the Red Dog Mine. Kivalina harvested more than 54,000 fish in 2007; just over 610 were salmon species. Of the estimated 79,000 edible pounds of fish and shellfish harvested, the majority (86%) were Dolly Varden. Saffron cod, known locally as "tomcod," comprised just 2% of the total fish harvest; salmon made up only 1% of the total. No other fish species provided even 1% of the total community harvest (Magdanz et al. 2010:26–27). Noatak harvested nearly 23,500 fish in 2007, which provided an estimated 78,454 edible pounds of food to that community. Fish (both salmon and nonsalmon species) made up 41% of the total subsistence harvest by edible pounds. Three species were particularly important: Dolly Varden (33,771 lb), chum salmon (25,002 lb), and whitefish (14,234 lb) (Magdanz et al. 2010:48).

Table 3-1.–Subsistence salmon harvests by district, Northwest Alaska, 2009.

District	Households surveyed or permits returned	Estimated salmon harvests[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Norton Sound District[b]	1,200	5,131	388	15,852	10,599	26,110	58,080
Port Clarence District[c]	328	40	1,643	799	3,060	1,887	7,429
Kotzebue Area[d]	ND	ND	ND	ND	ND	ND	ND
Total[e]	1,206	5,171	2,031	16,651	13,659	27,997	65,509

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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, Shaktoolik, St. Michael, and Stebbins. Permits issued for Cape Woolley, Nome Subdistrict (Tier I), Golovin Subdistrict, and Elim Subdistrict.

c. Permits issued for Port Clarence Subdistrict, Pilgrim River, and Salmon Lake.

d. Due to lack of funding, no collection of subsistence salmon harvest data took place in Kotzebue Sound communities for 2009. The average yearly subsistence harvest of salmon in the Kotzebue area between 1994 and 2004 was 59,650 fish. ND = No data.

e. Households surveyed or permits returned column does not add up to the total shown above due to individual households fishing in multiple districts.

Table 3-2.–Historical subsistence salmon harvests by district, Northwest Alaska, 1994–2009.

	Norton Sound District						
Year	Number of households	Chinook	Sockeye	Coho	Chum	Pink	Total
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

	Port Clarence District						
Year	Number of households	Chinook	Sockeye	Coho	Chum	Pink	Total
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
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

-continued-

Table 3-2.–Page 2 of 2.

Year	Kotzebue Area[b] Number of households	Chinook	Sockeye	Coho	Chum	Pink	Total
1994[c]	557	135	33	478	48,175	3,579	52,400
1995[d]	1,327	228	935	2,560	102,880	2,059	108,662
1996	1,187	550	471	317	99,740	951	102,029
1997	1,122	464	528	848	57,906	1,181	60,925
1998	1,279	383	392	461	48,979	2,116	52,330
1999	1,277	9	478	1,334	94,342	841	97,004
2000	1,227	211	75	2,557	65,975	75	68,893
2001[e]	1,149	11	14	768	49,014	36	49,844
2002[f]	216	3	9	56	16,880	8	16,955
2003[g]	488	40	53	1,042	19,201	583	20,918
2004[g]	440	54	18	1,502	23,348	1,259	26,181
2005[h]	ND	ND	ND	ND	ND	ND	ND
2006[h]	ND	ND	ND	ND	ND	ND	ND
2007[h]	ND	ND	ND	ND	ND	ND	ND
2008[h]	ND	ND	ND	ND	ND	ND	ND
2009[h]	ND	ND	ND	ND	ND	ND	ND

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. Includes Gambell and Savoonga.

b. Normally includes Ambler, Kiana, Kobuk, Kotzebue, Noatak, Noorvik, and Shungnak.

c. Includes Deering and Wales; does not include Kotzebue.

d. Includes Shishmaref.

e. Does not include Ambler.

f. Includes only Noatak and Noorvik.

g. Does not include Kotzebue.

h. Due to lack of funding, no collection of subsistence salmon harvest data took place in Kotzebue area communities from 2005–2009 as part of an annual monitoring program. The average yearly subsistence harvest of salmon in the Kotzebue area between 1994 and 2004 was 59,650 fish.

ND = No data.

Table 3-3.–Subsistence salmon harvests by Norton Sound subdistricts, Northwest Alaska, 2009.

Subdistrict	Households surveyed or permits returned	Estimated salmon harvests[a] Chinook	Sockeye	Coho	Chum	Pink	Total
Cape Woolley	11	2	1	1	9	21	34
Golovin	159	237	33	1,377	1,694	3,787	7,128
Moses Point	73	545	13	2,434	600	1,522	5,114
Nome	416	32	64	1,132	387	487	2,102
Norton Bay	78	286	13	982	3,509	2,765	7,556
Shaktoolik	60	417	57	2,141	374	6,101	9,090
St. Michael	91	907	26	1,196	1,012	186	3,326
Stebbins	103	941	0	1,471	1,929	433	4,775
Unalakleet	209	1,764	181	5,118	1,084	10,808	18,955
Total	1,200	5,131	388	15,852	10,599	26,110	58,080

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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

Table 3-4.–Historical subsistence salmon harvests, Northwest Alaska, 1975–2009.

	Households or permits		Estimated salmon harvests[a]					
Year	Total	Surveyed or 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	1,547	1,169	7,713	3,414	24,494	75,489	78,954	190,063
1995[b]	2,329	1,445	8,070	6,639	27,314	151,905	43,947	237,874
1996	2,177	1,454	7,999	4,287	27,879	139,032	67,911	247,108
1997[c]	2,398	1,645	9,620	5,597	18,153	86,808	29,135	149,314
1998[c]	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[d]	2,192	1,259	5,671	4,473	16,617	71,138	31,480	129,378
2002[e]	1,327	1,204	5,624	4,504	17,838	37,396	67,756	133,119
2003[f]	1,670	1,488	5,505	5,289	16,580	35,540	54,365	117,279
2004[g]	1,915	1,814	3,534	9,159	11,585	31,386	70,841	126,506
2005[g,h]	1,129	1,104	4,239	9,306	14,622	14,486	59,829	102,481
2006[g,h]	1,125	1,099	3,431	10,763	20,533	14,273	53,689	102,689
2007[g,h]	1,122	1,073	3,829	10,407	14,269	22,624	23,182	74,312
2008[h]	1,247	1,172	3,212	5,543	19,451	14,004	63,723	105,933
2009[h]	1,274	1,206	5,171	2,031	16,651	13,659	27,997	65,509
5-year average (2004–2008)	1,308	1,252	3,649	9,036	16,092	19,355	54,253	102,384
10-year average (1999–2008)	1,633	1,285	4,569	6,710	16,885	44,072	48,701	120,937
Historical average (1975–2008)	914	683	2,640	2,707	9,107	31,375	26,537	72,366

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Note Since 1994 ADF&G has conducted an annual subsistence salmon harvest assessment effort in Northwest Alaska that provides more extensive and reliable estimates. Harvest estimates prior to 1994 cannot be directly compared.

a. Includes selected communities in the Norton Sound District, Port Clarence District, and Kotzebue Area.

b. Includes Shishmaref.

-continued-

c. Includes Gambell and Savoonga.

d. Does not include Ambler.

e. For the Kotzebue Area, includes only Noatak and Noorvik.

f. Does not include Kotzebue.

g. Does not include Koyuk.

h. Does not include Kotzebue Area.

Table 3-5.–Subsistence salmon harvests by community, Northwest Alaska, 2009.

	Households or permits		Estimated salmon harvests[a]					
Community[b]	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	5	5	0	0	3	0	0	3
Brevig Mission	40	40	27	537	375	1,263	785	2,987
Diomede	1	1	0	0	0	0	0	0
Elim	73	73	545	13	2,422	591	1,509	5,080
Fairbanks	4	4	0	6	1	25	1	33
Gambell	1	1	0	0	0	0	0	0
Golovin	32	31	163	14	500	383	1,363	2,423
Koyuk	86	78	286	13	982	3,509	2,765	7,556
Nome	413	409	60	867	1,646	1,083	1,423	5,079
Shaktoolik	60	60	417	57	2,141	374	6,101	9,090
St. Michael	100	91	907	26	1,196	1,012	186	3,326
Stebbins	136	103	941	0	1,471	1,929	433	4,775
Teller	50	49	5	286	400	1,429	902	3,022
Unalakleet	223	211	1,764	196	5,118	1,084	10,808	18,970
Unknown community	1	1	0	0	36	0	0	36
White Mountain	49	49	56	16	360	976	1,721	3,129
Total	**1,274**	**1,206**	**5,171**	**2,032**	**16,651**	**13,659**	**27,997**	**65,509**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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.

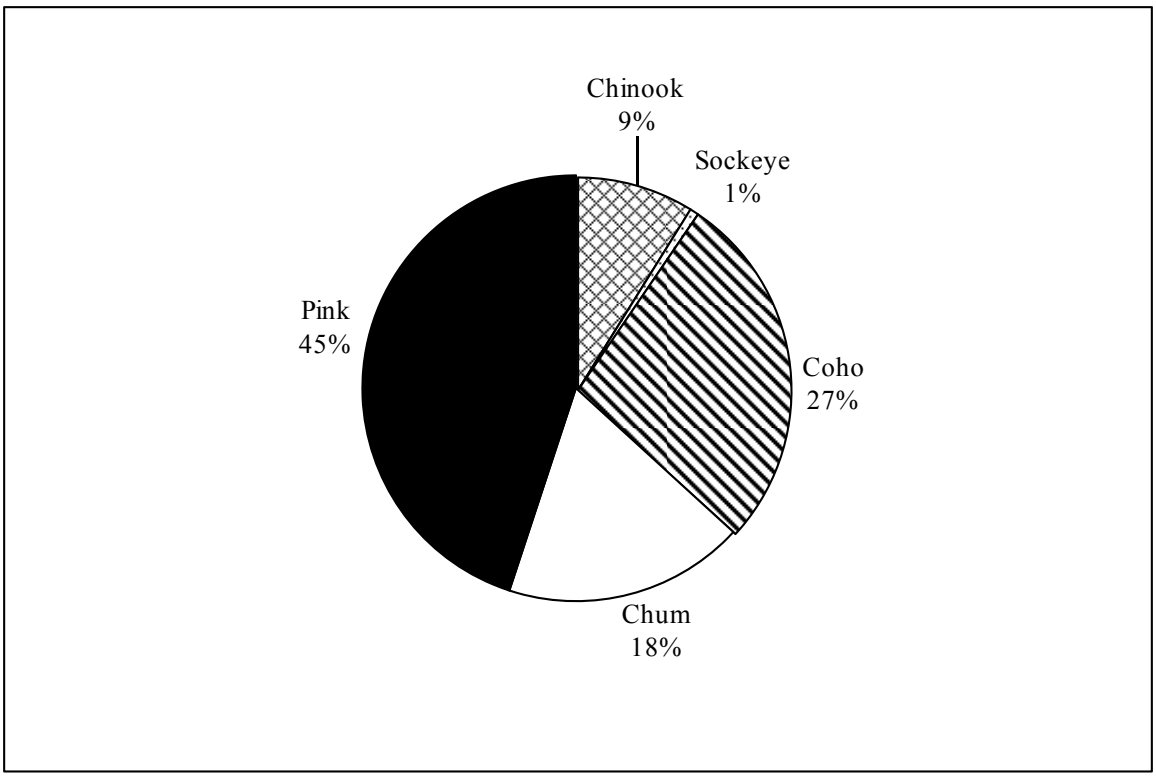

Figure 3-1.–Species composition of estimated subsistence salmon harvests, Norton Sound District, 2009.

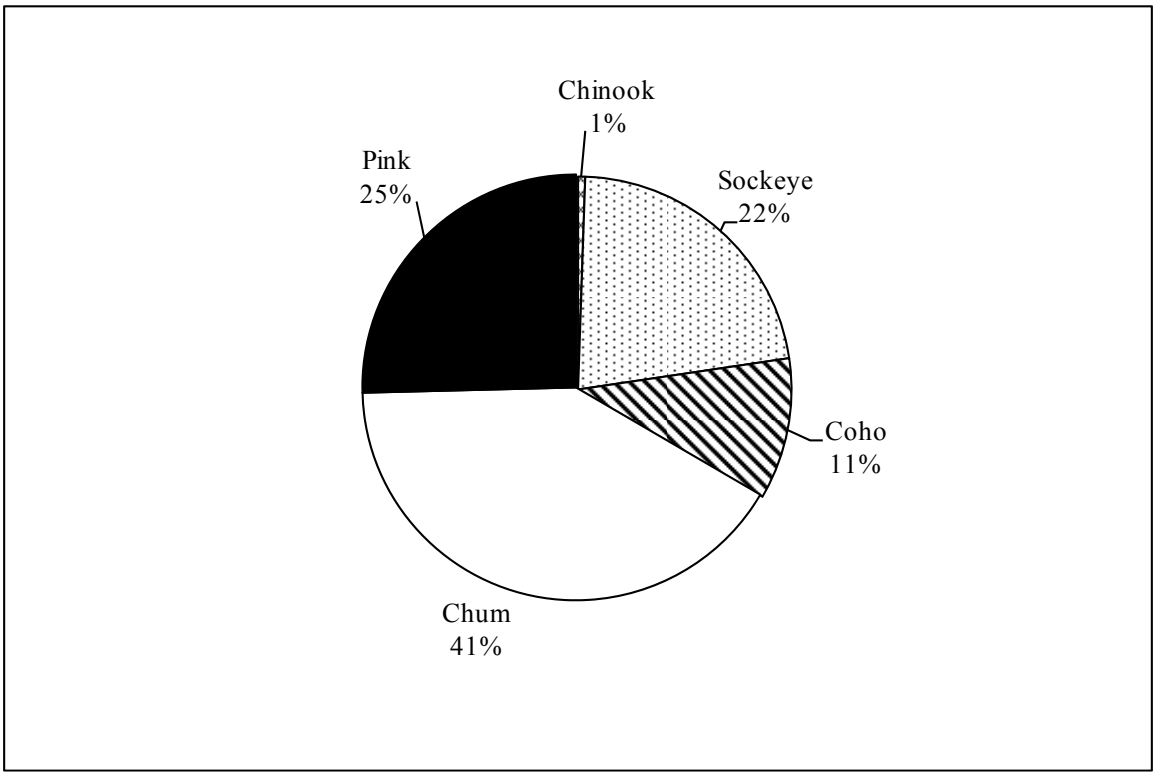

Figure 3-2.–Species composition of estimated subsistence salmon harvests, Port Clarence District, 2009.

CHAPTER 4: YUKON AREA

BACKGROUND

Residents of the Yukon River drainage have long relied on fish for human food and other subsistence uses. While nonsalmon fish species provide an important component of the overall fish harvest (Andersen et al. 2004; Brown et al. 2005a), salmon comprise the bulk of the fish harvested for subsistence. Chinook salmon, summer and fall chum salmon, and coho salmon comprise the majority of the salmon harvests in the Yukon River drainage; the number of salmon harvested for subsistence in this region is considerable. Unlike many marine and coastal fisheries in which commercial harvests predominate, subsistence salmon harvests within the Yukon drainage often exceed commercial, sport, and personal use harvests combined.

Drift gillnets, set gillnets, and fish wheels are used by Yukon Area fishers to harvest the majority of salmon. Set gillnets are utilized throughout the Yukon Area, often in the main rivers and coastal marine waters. Drift gillnets are used extensively in about half of the river. Under State regulations, drift gillnets are allowed from the mouth of the Yukon River to approximately 18 miles below Galena, and under federal permit in subdistricts 4B and 4C. Fish wheels are a legal subsistence gear type throughout the Yukon drainage, although due to river conditions and the availability of wood for building materials, they are used almost exclusively only on the middle and upper Yukon and Tanana rivers.

Depending on the area of the Yukon River drainage and salmon species' run timing, subsistence fishing occurs from late May through early October. Fishing activities are based either from fish camps or from the home villages; fishing patterns and preferred sites vary from community to community. Extended family groups, typically representing several households, often undertake subsistence salmon fishing together. Households and related individuals typically cooperate to harvest, process, preserve, and store salmon for subsistence uses. (For more detail on subsistence uses of Yukon River salmon, see ADF&G 1987a; 1987b, 1988).

The majority of the subsistence salmon harvest is preserved for later uses by freezing, drying, or smoking; the head, cut scraps, and viscera are often fed to dogs. Chinook salmon are harvested and processed primarily for human consumption, although those fish deemed not suitable for human consumption due to the presence of the fungus *Ichthyophonus hoferi* or some other disease or disfigurement are often fed to dogs. Small Chinook salmon ("jacks") or postspawn fish may also be fed to dogs. In addition, while chum and coho salmon are primarily taken for human consumption, relatively large numbers are harvested and processed to feed sled dogs. Fall chum salmon and coho salmon typically arrive in the upper portion of the drainage late in the season, coinciding with freezing weather, allowing fish to be "cribbed" for use as dog food. This method involves the natural freezing of whole (uncut) fish. The practice of keeping sled dogs is much more common in communities along the upper Yukon Area than in the lower river area.

REGULATIONS

Regulation and management of Yukon River drainage subsistence salmon fishing follows the Yukon River Drainage Subsistence Salmon Fishery Management Protocol, which provides a framework for coordinated subsistence fisheries management between ADF&G and the federal subsistence management programs in the Yukon River drainage. This protocol is applied through a Memorandum of Agreement between state and federal agencies which formalizes the working relationships between state and federal managers and fosters cooperation with federal regional advisory councils and fisheries interest groups. State managers are responsible for management of state subsistence, commercial, recreational, and personal use fisheries in all waters. Federal managers are responsible for management of subsistence fishing by qualified rural residents in applicable federal waters. The protocol also directs state and federal managers to solicit input from the Yukon River Drainage Fisheries Association (YRDFA), the Yukon River Coordinating Fisheries Committee (YRCFC), and other stakeholders during the decision-making process.

The majority of the United States' portion of the Yukon Area is open to subsistence fishing. However, the Joint Board 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.

Over the last 2 decades, several regulatory changes have affected the subsistence salmon fishery in the Yukon River drainage. In 1993, the BOF adopted regulations which separated subsistence and commercial salmon fishing times in districts 1, 2, and 3 and in the lower portion of District 4 (Subdistrict 4A) (Figure 4-1). In these areas, subsistence salmon fishing is allowed 7 days per week but may not occur 24 hours prior to and immediately following the commercial salmon fishing season. By regulation, once the commercial season is open, subsistence salmon fishing may not occur 18 hours immediately before, during, and 12 hours after each district 1, 2, or 3 summer season commercial fishing period. During the fall season in districts 1, 2, and 3, subsistence fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial fishing period. In Subdistrict 4A, subsistence salmon fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial salmon fishing period throughout the season. The general result was two shorter subsistence openings per week, instead of one longer period, which alternates with the commercial openings. In the upper portion of District 4 (subdistricts 4B and 4C) and in subdistricts 5A, 5B, and 5C, subsistence salmon fishing is allowed 7 days per week until 24 hours prior to and immediately following the commercial salmon fishing season. In these areas, subsistence salmon fishing periods coincide with commercial salmon fishing periods. Additional subsistence-only salmon fishing periods may be allowed during the commercial salmon fishing season. In Subdistrict 5D, subsistence salmon fishing is allowed 7 days per week, regardless of commercial activities. Since 1988, subsistence fishing in the Lower Tanana River drainage in subdistricts 6A and 6B has been allowed for two 42 hour periods per week unless altered by emergency order.[10] In the Upper Tanana River drainage upstream of the Volkmar (north bank) and Johnson (south bank)[11] rivers, subsistence fishing is allowed 7 days per week.

In 2005, the FSB established a drift gillnet fishery in subdistricts 4B and 4C, which includes the mainstem Yukon River villages of Galena and Ruby. Participation in this fishery was open to qualified rural residents under a federal subsistence permit, and limited to gillnets that were no longer than 150 ft and no deeper than 35 meshes. The mesh size was unrestricted so as to target Chinook salmon. In previous years, the regulation allowed drift gillnet fishing in the last 18 hours of each subsistence salmon fishing opening in the federal public waters of subdistricts 4B and 4C. However, in 2008, the Federal Subsistence Board liberalized the regulation to align it with the regulatory openings, usually two 42-hour periods per week. Fishers may use drift gillnets no more than 150 ft long and 35 meshes deep. In 2009 a total of 14 permits were issued to Galena, Ruby, and Koyukuk residents and of those, 5 reported fishing with a combined reporting of 58 Chinook salmon and 8 chum salmon harvested (F. Bue, Yukon area fisheries manager, USFWS, Fairbanks, personal communication, February 16, 2012).

Restrictions on subsistence fisheries occurred during the fall season in 1993, 1998, 2001, and 2002, with a complete closure in 2000. For the first time in regulatory history, restrictions were also imposed on the 2000 summer subsistence salmon fisheries to protect Chinook salmon and summer chum salmon populations. Because of the inability to maintain expected yields and harvestable surpluses above escapement needs for several years, the BOF classified the Yukon River Chinook salmon stock as a stock

10. In the Lower Tanana River drainage, the fishery to harvest salmon for home use in Subdistrict 6C is a personal use fishery. Its fishing schedule matches those of the 6A and 6B subsistence salmon fisheries; namely, that personal use fishing is allowed for two 42-hour periods per week unless altered by emergency order. In that portion of Subdistrict 6B from the downstream side of the upper Tolovana to 3 miles upstream of Totchaket Slough (the Old Minto area), subsistence fishing is allowed 5 days per week.

11. Salmon fishing is closed in that portion of the Tanana River drainage upstream of Subdistrict 6C, from the Salcha River upstream to the Volkmar River (north bank) and to the Johnson River (south bank). The area is closed to salmon fishing other than sport fishing and is included in the Fairbanks Nonsubsistence Area. Whitefishes and longnose suckers may be harvested upstream of the Salcha River under a personal use permit.

of yield concern (Lingnau and Salomone 2003). Restrictions have been implemented with both period closures and limited gear use in some districts. The BOF clarified the window schedule in 2003 to allow ADF&G to relax it if run abundance allowed commercial fishing.

In 2001, as a result of the declared disaster, the BOF instituted a new subsistence schedule on the Yukon River. The schedule was intended to fulfill several goals: 1) increase the quality of escapement, 2) distribute subsistence opportunity among users during years with no commercial fishing, and 3) reduce the impact of harvest on any one stock by spreading the harvest throughout the run, thereby providing windows of time that salmon may migrate upriver with reduced exploitation. The schedule, based on past fishing schedules, is initiated each year based on the historical average of Chinook salmon entry into the Yukon River. Once initiated, the schedule is implemented chronologically upriver. The BOF determined that the schedule provides reasonable opportunity for subsistence users to achieve their harvest goals when salmon runs are below average. Subsistence fishing is allowed 7 days per week in all areas prior to the established schedule dates. In 2003, the BOF clarified the window schedule to allow ADF&G to relax the schedule if run abundance allowed commercial fishing.

The 2009 subsistence fishing schedule is presented in Table 4-1. The 2009 season marked the eighth annual implementation of the windows schedule. Preseason outlooks for 2009 projected a below average to poor Chinook salmon run, especially Canadian-origin fish. Summer and fall chum salmon were projected to be average, and an average to above average run of coho salmon was also projected The low Chinook salmon projections led to preseason expectations of conservation methods beyond those implemented in 2008. Historically, the windows schedule began around May 28 in District 1, but in 2009 the reduced schedule implementation was delayed until June 8 due to persistent high water that affected early season fishing efforts; the June 8 date also allowed subsistence fishers more opportunity to harvest whitefish species and early-run salmon.

Before the season, YRDFA facilitated a series of regional teleconferences and meeting for managers, fishers and other stakeholders to discuss options and develop a preseason plan. A directed commercial Chinook fishery was considered unlikely given previous years' failures to meet minimum treaty escapement goals for Canadian Chinook salmon, and because of the likely restrictions on the subsistence fishery. Chinook salmon incidentally caught during a directed summer chum commercial fishery in districts Y-1 through Y-5 could be kept for subsistence purposes but could not be sold. This emergency regulation was implemented July 1 and was discontinued on July 16 after most Chinook salmon had passed through the lower river districts. While no commercial periods targeting Chinook salmon were offered, a total of 944 Chinook salmon were reported as caught but not sold in District 1; 2,596 in District 2; 200 in Subdistrict 4A; and 12 in District 6. A total of 316 Chinook salmon were incidentally harvested and commercially sold on the Alaska portion of the Yukon River after July 16. This number is down from 4,348 incidentally harvested Chinook salmon during the 2008 summer chum salmon commercial fishery on the river (Hayes and Newland 2008).

Beginning June 15, 2009, subsistence closures were initiated in District 1 to protect the first pulse of Chinook salmon, and were based on current inseason assessment and historical run timing information. State and federal managers closed 2 subsistence fishing periods were removed and took similar in upriver districts based on migratory timing. Following the pulse closures, each fishing district was returned to the windows schedule. Based on poor abundance observed at the time, gillnets were then restricted to a maximum of 6-inch mesh in districts 1, 2 and 3, with the goal of further conserving Chinook salmon while allowing the harvest of summer chum salmon. Additionally, the Federal Subsistence Board approved a special action to close federal public waters to the harvest of Chinook salmon by non-federally qualified subsistence users. As a result, only rural residents of Yukon River communities were allowed to harvest Chinook salmon in federal waters (Holder 2009). The Tanana River (District 6), and Koyukuk and Innoko rivers' subsistence fishing schedules were not reduced because there is no harvest of Canadian-bound Chinook salmon in these areas.

The fall chum salmon run was lower than expected but coho salmon were more abundant, prompting reductions in subsistence fishing time sequentially throughout Districts 1–5 beginning on August 18. These restrictions on fall chum salmon also affected the harvest of coho salmon in 2009. However, after the majority of fall chum salmon passed the lower Yukon River districts, commercial fishing was opened to allow harvest of the later running coho salmon.

SUBSISTENCE HARVEST ASSESSMENT METHODS

For the majority of villages within the Yukon Area, there are no regulatory requirements to report subsistence salmon harvests. For these villages, ADF&G utilizes a voluntary survey program to estimate the total subsistence salmon harvest. Harvest information is collected using a combination of subsistence harvest calendars mailed prior to fishing activities, postseason household interviews, postseason telephone interviews, and postseason postcard reminders. In road-accessible portions of the Yukon Area, including the majority of the Tanana River drainage (subdistricts 6A and 6B and the Upper Tanana River drainage), the Yukon River drainage between Hess Creek and the Dall River (known as the Yukon River Bridge Area), the upper portion of Subdistrict 5D between the upstream mouth of Twenty-two Mile Slough and the U.S.–Canada border, and, as of 2004, the Rampart Area (western end of Garnet Island to the mouth of Hess Creek), and the Middle and South Fork Area of the Koyukuk River, subsistence fishers are required to obtain an annual household permit prior to fishing, document their subsistence salmon harvests on the household permit, and return it to ADF&G at the end of the season.

Prior to salmon fishing activities, subsistence harvest calendars are mailed to all identified fishing households within the survey communities. The Lower Yukon Area calendars contain the months of May through September and the Upper Yukon Area calendars contain the months of June through October. Additional calendars are mailed to those households for which fishing activities are unknown, and are also made available to households upon request from ADF&G offices in Emmonak and Fairbanks. The calendars provide space for fishers to record their daily subsistence harvests of salmon by species. Calendars are return-postage-paid and are mailed to ADF&G or given to ADF&G research staff during postseason trips to the villages, especially during the postseason salmon survey. Posters sent to village post offices and announcements on area radio stations remind fishers to give their calendars to research staff. In 2009, Division of Commercial Fisheries staff distributed calendars to all households identified as participating in some level of fishing; households identified as nonfishing households did not receive calendars. Nine hundred and eleven calendars were sent to households in the Lower Yukon Area and 583 to Upper River households, for a total of 1,494 calendars. About 14% of these (209) were returned either by mail or through research staff during their fall surveys. Calendars provide additional Yukon Area run timing information that is not obtained by other data collection methods (Jallen and Hamazaki 2011).

In addition to the harvest calendars, ADF&G Division of Commercial Fisheries staff conduct postseason in-person interviews with a stratified random sample of all households within the Yukon River drainage. Survey questions focus on Chinook, summer chum, fall chum, and coho salmon, but households are also asked about other species as well, such as pink salmon (primarily taken by coastal communities), northern pike *Esox lucius*, 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.

A subsistence permit is required in the road-accessible portions of the Yukon River drainage. 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 permit applications are mailed to all who returned the prior year's permit, along with instructions on how to apply by mail. In addition, ADF&G staff travel to select villages so that applicants can be issued permits in person. Permits are also issued in several ADF&G offices or by mail throughout the season. Those who do not return permits are sent up to 2 reminder letters. Telephone contacts with households that do not respond to the reminder letters are attempted as a final measure.

Subsistence salmon permit holders in a portion of Subdistrict 6B (the Tanana River drainage above a point 3 miles upstream of Totchaket Slough to the boundary with Subdistrict 6C) and the personal use fishers in Subdistrict 6C are required to report their harvests weekly for in-season management purposes. To maximize the return of permits, ADF&G staff also send reminder letters to these households. A total of 487 subsistence and personal use permits were issued in 2009—472 [404 subsistence (96% of the total number of subsistence permits issued) and 68 personal use (100% of the total number of personal use permits issued)] were returned (Jallen and Hamazaki 2011) (Table 4-2). Most unreturned permits are considered to be unfished, since subsistence fishing households are not eligible to receive a permit the following year until the previous year's permit is returned.

In 2009, Division of Commercial Fisheries staff interviewed 919 households along the Yukon River concerning their subsistence salmon harvests. Finally, information for 23 households was collected from surveys returned by mail or calendars. Based on these different methods of collecting harvest data, it was estimated that approximately 1,174 Yukon Area households (out of a total of approximately 2,366 area households) participated in subsistence and personal use fishing in 2009 (Jallen and Hamazaki 2011) (Table 4-3).

SUBSISTENCE SALMON HARVESTS IN 2009

While low salmon abundance in 2001 closed commercial fishing in the Alaska portion of the Yukon River drainage, a small commercial fishery for Chinook and summer chum salmon was offered in every year until 2008. In 2009, 1,036 households (43% of the 2,366 total estimated households in districts 1–5) and 472 permit holders (404 subsistence permit holders, 96% of the 419 issued; and 68 personal use permit holders, 100% of the 68 issued) comprising 97% of the 487 total permits issued, provided harvest data for the Yukon Area subsistence–personal use salmon fishery (W.H. Busher, Yukon Area Fall Season Assistant Management Biologist, ADF&G, Fairbanks, personal communication). The species composition of the estimated 2009 subsistence–personal use salmon harvest for the entire Yukon Area included 33,932 Chinook salmon (17%), 80,847 summer chum salmon (41%), 66,197 fall chum salmon (33%), 16,076 coho salmon (8%), and 2,300 pink salmon (1%), for a total estimate of 199,352 salmon (Table 4-4; Figure 4-2). Note that this is an estimated total based on household surveys and returned permits and calendars, and it includes subsistence harvests, personal use harvests, commercial harvests retained for home uses, and fish distributed from ADF&G test fisheries. Since the disastrous harvest levels in 2000 (152,300 total salmon), subsistence Chinook and coho salmon harvests had generally been increasing until 2008 and 2009, while fall chum salmon harvests have largely rebounded. The 2009 Chinook salmon, summer chum, fall chum, pink, and coho salmon harvest estimates registered well below the 5-year averages. The 2009 harvest estimates of Chinook salmon, summer chum, coho and pink salmon have also fallen below recent 10-year averages, while fall chum salmon slightly exceeded the most recent 10-year average of 64,636 fish with an estimated 66,197 fish.

As shown in Table 4-5, the estimated subsistence and personal use harvest of 33,932 Chinook salmon in 2009 is 33% below the most recent Yukon Area 10-year average of 50,510 Chinook salmon, and 34% below the most recent 5-year average of 52,076 Chinook salmon. The estimated 2009 subsistence harvest of 80,847 summer chum salmon was 14% below the 5-year average of 93,581 salmon and was 7% below the 10-year average of 86,876 salmon. While summer chum salmon harvests have been relatively stable since 1990, they mark a significant decrease from the 1980s when harvests were higher, likely due to the then-existing commercial roe fishery in the middle Yukon River. In 2009, the fall chum salmon harvest of 66,197 fish registered below the 5-year average of 85,841 by 22% but slightly above the 10-year average of 64,636 (a 2% increase). It should be noted that regulatory restrictions were implemented so as to protect fall chum salmon stocks due to these poor runs in 1998, and 2000 through 2003. While 2009 harvests of fall chum salmon have climbed from earlier years' estimates, comparison with average fall chum salmon harvests for 1976–2006 begins to show the true magnitude of the harvest decline in this fishery between 2000 and 2003: the historical average (1976–2008) harvest of fall chum salmon was 116,614 fish (Table 4-5, Figure 4-3).

Subsistence harvests of coho salmon in 2009 were below average, at 16,076, compared to the 5-year average of 22,309 coho salmon and below the 10-year average of 21,283 coho salmon. Pink salmon harvest information is collected in several communities in the Lower Yukon Area. Although pink salmon can be abundant in coastal and near-coastal communities of the Lower Yukon Area, they are not typically targeted by fishers, and their harvest in the subsistence fishery remained low until 2002 (8,425 fish).[12] An estimated 2,300 pink salmon were harvested in 2009, primarily harvested by communities in the coastal district.

Every year, various environmental or social factors affect the subsistence fishery. Ice breakup in the lower river occurred on May 26, which was near average timing. However, water levels were recorded as higher than normal in the lower river, which resulted in conservative run estimates put forth by the Pilot Station sonar project through June 23 (Hayes and Newland 2008).

Figure 4-4 provides a breakdown of the number of dogs by fishing district. Of the estimated 1,293 households (drainage wide) owning dogs, about 9% (112 households) fed their dogs salmon in 2009. Of the 4,220 dogs owned by fishing households in 2009, upper Yukon households in districts 4, 5, and 6 owned 3,003 dogs (71%). In 2009, the Division of Commercial Fisheries collected species-specific information on the number of salmon retained for dog food from subsistence harvests in surveyed communities; in permit communities, only the number of whole salmon, not species-specific, was documented. In the Coastal District and in districts 1 through 5, an estimated 13,861 summer chum salmon, 23,549 fall chum salmon, and 4,296 coho salmon were retained for dog food from subsistence salmon harvests. Additionally, permit holders fed 22,502 whole salmon to dogs, including those users in District 6, which includes Manley, Minto, Fairbanks, Healy and other Upper Tanana villages. According to Division of Commercial Fisheries' data, 3,229 summer chum salmon, zero fall chum salmon, and zero coho salmon were retained from commercial harvests and used as dog food in districts 1–5 (Jallen and Hamazaki 2011:34) Low abundance and availability during migration are credited with the lack of coho and fall chum salmon retention (JTC 2010). Primary gear types used by fishing households in surveyed villages in 2009 included set gillnet (46%), drift gillnet (48%), and fish wheel (6%), largely the same as 2007 and 2008 (Figure 4-5).

Since 1992, ADF&G has inquired as to whether surveyed households were meeting their subsistence salmon needs for that 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). In 2003, ADF&G began asking this question in a species-specific manner, measuring responses by community and by species. Specifically, surveyed households were asked whether 100%, 75%, 50%, or less than 25% of their harvest needs were met for each species. Two checkboxes, "0%" and "no need," were added to the 2005 survey in order to distinguish those who had a need but no success in harvesting a species from those who had no need and therefore did not harvest any fish. According to 2009 data, fewer than one-quarter (16%) of all households reported meeting greater than 75% of their needs for Chinook salmon, 27% reported meeting greater than 75% of their needs for summer chum salmon, 11% reported meeting greater than 75% of their needs for fall chum salmon, and 10% of surveyed households reported meeting greater than 75% of their needs for coho salmon. This represents a decrease in households reporting that the majority of their needs were met since 2005 for Chinook salmon. Sixteen percent of households reported meeting less than one-half (<50%) of their needs for Chinook salmon; 14%, 9%, and 16% of households reporting meeting less than one-half their needs for summer chum salmon, fall chum salmon, and coho salmon, respectively (Jallen and Hamazaki 2011).

In 1993, the BOF made a positive C&T use finding for all salmon in the Yukon–Northern Area. The ANS determination was established at 348,000–503,000 salmon for all species combined. Under these

12. Note that pink salmon cycle in their abundance; even years generally yield higher abundance with higher harvest rates, while odd years generally yield lower abundance in the river. In some years, pink salmon do make up an important part of the subsistence harvest when other preferred salmon species are less available.

guidelines, 1992 marked the last year when total subsistence salmon harvests fell within the combined ANS range. Since 1990, the overall total subsistence salmon harvest in the Yukon Area has declined by approximately 30%. In 2001, the BOF determined species-specific amounts of salmon necessary for subsistence. A species-specific 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 a reasonable opportunity for subsistence harvests during the previous season. Harvests consistently lower than the lower bound of the ANS are an indication to the BOF to consider whether additional management actions are necessary to provide reasonable subsistence opportunities. All salmon species fell below the minimum ANS ranges in 2009; this is the second time since 2002 that Chinook salmon harvests have not been within the ANS range. This is the first year since 2004 that summer chum have fallen below the minimum ANS range. This is the second year in a row that Chinook, coho, and fall chum all have remained below the minimum ANS ranges. See Table 4-6 for a comparison of ANS ranges and recent years' subsistence salmon harvests.

NONSALMON FISH HARVESTS

Although salmon harvests dominate most of the regulatory actions in the Yukon Area, nonsalmon fish harvests remain significant components of the seasonal subsistence round for Yukon fishers. Salmon are only available seasonally, but most nonsalmon species are available year-round. Nonsalmon fish figure into the subsistence way of life for Yukon Area residents in biologically-, historically-, and culturally-significant ways. In 1987, and again in 1993, the BOF made a positive C&T finding for freshwater fish species in the Yukon Area, including sheefish, whitefish species, lamprey, burbot, suckers, Arctic grayling, northern pike, and Arctic char (see 5 AAC 01.236). Nonsalmon fishing is generally open by regulation 7 days per week, 24 hours per day, year-round. These state regulations also apply to subsistence fisheries on federal lands in the project study area (unless superseded on federal public lands by federal subsistence regulations, applicable only to federally qualified subsistence users). Under ANILCA, rural Alaskan residents of the Yukon–Northern Area (except those living in ADF&G Game Management Unit 26B) and residents of the Yukon River drainage have a customary and traditional use determination for nonsalmon fish and are therefore qualified to participate in subsistence activities on federal public lands, even if other uses and/or users have been prohibited from subsistence fishing in federal waters due to conservation concerns or user conflicts (USFWS 2008).

ADF&G Division of Commercial Fisheries collects nonsalmon harvest data on an annual basis as part of their postseason salmon survey. However, it is important to keep in mind that collection of nonsalmon harvest data is not the primary purpose for the postseason salmon survey. Furthermore, the implementation of this postseason survey immediately following the salmon season may not be timed to produce the most reliable and accurate results for nonsalmon harvests, nor is the stratified sample of salmon fishing households necessarily the best design for collecting nonsalmon harvest information. Nonetheless, while other single-year harvest data collection efforts suggest that the postseason survey may significantly underestimate harvests (Andersen et al. 2004; Brown et al. 2005a), these data remain the only annual estimate of nonsalmon fish harvests in the Yukon Area (Table 4-7).

Table 4-1.–2009 subsistence fishing schedule by district.

	District 1[a]	District 2	District 3[b]	Subdistrict 4A[b]	Subdistrict 4B/4C	Subdistricts 5A, B, C	Subdistrict 5D Lower[c]	Subdistrict 5D Upper[d]
6/7								
6/8	18-hr period							
6/9	All mesh							
6/10	Closed	18-hr period						
6/11	18-hr period	All mesh						
6/12	All mesh	Closed						
6/13	Closed	Closed						
6/14	Closed	18-hr period	18-hr period					
6/15	1st pulse	All mesh	All mesh					
6/16	Closure	Closed	Closed					
6/17	Closed	1st pulse	18-hr period	24-hr period				
6/18	1st pulse	Closure	All mesh	Close 6 PM				
6/19	Closure	Closed	Closed	Closed				
6/20	Closed	Closed	Closed	Closed				
6/21	Closed	1st pulse	1st pulse	24-hr period				
6/22	18-hr period	Closure	Closure	Close 6 PM				
6/23	6" mesh	Closed	Closed	Closed				
6/24	Closed	18-hr period	1st pulse	1st pulse	24-hr period			
6/25	18-hr period	6" mesh	Closure	Closure	Close 6 PM			
6/26	6" mesh	Closed	Closed	Closed	Closed			
6/27	Closed	Closed	Closed	Closed	Closed			
6/28	Closed	18-hr period	18-hr period	1st pulse	24-hr period			
6/29	18-hr period	6" mesh	6" mesh	Closure	Close 6 PM			
6/30	6" mesh	Closed	Closed	Closed	Closed	24-hr period		
7/1	Closed	18-hr period	18-hr period	24-hr period	1st pulse	Close 6 PM		
7/2	18-hr period	6" mesh	All mesh	Close 6 PM	Closure	Closed		
7/3	All mesh	Closed	Closed	Closed	Closed	24-hr period		
7/4	Closed	Closed	Closed	Closed	1st pulse	Close 6 PM		
7/5	Closed	18-hr period	18-hr period	36-hr period	Closure	Closed		
7/6	18-hr period	All mesh	All mesh		Closed	Closed	84-hr period	
7/7	All mesh	Closed	Closed	Close 6 AM	Closed	1st pulse		
7/8	Closed	18-hr period	18-hr period	24-hr period	24-hr period	Closure		
7/9	18-hr period	All mesh	All mesh	Close 6 PM	Close 6 PM	Closed	Close 6 AM	
7/10	All mesh	Closed	Closed	Closed	Closed	1st pulse	Closed	
7/11	Closed	Closed	Closed	Closed	Closed	Closure	Closed	
7/12	Closed	18-hr period	18-hr period	24-hr period	24-hr period	Closed		
7/13	18-hr period	All mesh	All mesh	Close 6 PM	Close 6 PM	Closed	1st pulse	84-hr period
7/14	All mesh	Open 9 AM	Open	Closed	Closed	24-hr period		
7/15	Closed	Open	7 days/week	24-hr period	24-hr period	Close 6 PM	Closure	
7/16	Open	Closed 3 AM		Close 6 PM	Close 6 PM	Closed		Close 6 AM
7/17	7 days/week	Open		Closed	Closed	24-hr period	Closed	Closed
7/18		7 days/week		Closed	Closed	Close 6 PM	Closed	Closed
7/19				Open	24-hr period	Closed		
7/20				7 days/week	Close 6 PM	Closed	84-hr period	1st pulse
7/21					Open	24-hr period		
7/22					7 days/week	Close 6 PM		Closure
7/23						Closed	Close 6 AM	
7/24						24-hr period	Closed	Closed
7/25						Close 6 PM	Closed	Closed
7/26						Closed	Open 6 PM	Open 6 PM
7/27						Closed	Open	Open

-continued-

Table 4.1–Page 2 of 3.

	District 1[a]	District 2	District 3[b]	District 4[b]	Subdistricts 5-A, B, C	Subdistrict 5D lower[c]	Subdistrict 5D upper[d]
8/15	Open	Open	Open	Normal closed	120-hr period	Open	Open
8/16	7 days/week	7 days/week	7 days/week	Open 6 PM	Close 6 PM	7 days/week	7 days/week
8/17	Open	Open	Open	Open	Normal closed	Open	Open
8/18	Close 6 PM	Open	Open	120-hr period	Open 6 PM	Open	Open
8/19	Closed	Open	Open	Open	Open	Open	Open
8/20	24-hr period	Close 6 PM	Close 6 PM	Open	120-hr period	Open	Open
8/21	Close 6 PM	Closed	Closed	Close 6 PM	Open	Normal	Normal
8/22	Closed	Closed	Closed	Normal closed	Open	Open	Open
8/23	Closed	24-hr period	24-hr period	Open 6 PM	Close 6 PM	7 days/week	7 days/week
8/24	24-hr period	Close 6 PM	Close 6 PM	Open	Normal closed	Open	Open
8/25	Close 6 PM	Closed	Closed	120-hr period	Open 6 PM	Open	Open
8/26	Closed	24-hr period	24-hr period	Open	Open	Open	Open
8/27	24-hr period	Close 6 PM	Close 6 PM	Close 6 PM	120-hr period	Open	Open
8/28	Close 6 PM	Closed	Closed	Closed	Open	Open	Open
8/29	Closed	Closed	Closed	Closed	Open	Open	Open
8/30	Closed	24-hr period	24-hr period	32-hr period	Close 6 PM	Open	Open
8/31	24-hr period	Close 6 PM	Close 6 PM	Close 6 PM	Normal closed	Open	Open
9/1	Close 6 PM	Closed	Closed	Closed	32-hr period	Open	Open
9/2	Closed	Closed	Closed	32-hr period	Close 6 PM	Open	Open
9/3	Open 6 PM	Open 6 PM	Open 6 PM	Close 6 PM	Closed	Open	Open
9/4	Open	Open	Open	Closed	32-hr period	Open	Open
9/5	Close midnight	Open	Open	Closed	Close 6 PM	Open	Open
9/6	Closed	7 days/week	7 days/week	32-hr period	Closed	Close 8 PM	Open
9/7	16-hr open 6 AM	Open	Open	Close 6 PM	Closed	Closed	Open
9/8	Closed	Open	Open	Closed	32-hr period	Closed	Open
9/9	15-hr open 6 AM	Open	Open	Open 10 AM	Close 6 PM	Open 8 AM	Open
9/10	Closed	Open	Open	Open	Closed	Open	Open
9/11	Open 7 AM	Open	Open	Open	32-hr period	108-hr period	Open
9/12	Open	Open	Open	7 days/week	Close 6 PM	Open	Open
9/13	Open	Open	Open	Open	Closed	Close 8 PM	Open
9/14	7 days/week	Open	Open	Open	Closed	Closed	Open
9/15	Open	Open	Open	Open	Open 6 PM	Closed	Close 8 PM
9/16	Open	Open	Open	Open	Open	Open 8 AM	Closed
9/17	Open	Open	Open	Open	120-hr period	Open	Closed
9/18	Open	Open	Open	Open	Open	108-hr period	Open 8 AM
9/19	Open	Open	Open	Open	Open	Open	Open
9/20	Open	Open	Open	Open	Close 6 PM	Close 8 PM	108-hr period
9/21	Open	Open	Open	Open	Normal closed	Closed	Open
9/22	Open	Open	Open	Open	Open 6 PM	Closed	Close 8 PM
9/23	Open	Open	Open	Open	Open	Open 8 AM	Closed
9/24	Open	Open	Open	Open	Open	Open	Closed
9/25	Open	Open	Open	Open	7 days/week	Open	Open 8 AM
9/26	Open	Open	Open	Open	Open	7 days/week	Open
9/27	Open	Open	Open	Open	Open	Open	Open
9/28	Open	Open	Open	Open	Open	Open	7 days/week

Note Shaded areas indicate fishery closures and gear restrictions implemented in-season. Unshaded fishing period closures follow regulations by district.

a. The coastal district remained open for subsistence fishing 24 hours per day, 7 days per week. Mesh size was restricted to 6-inch or smaller mesh from June 8 to July 15, 2009.

b. The Innoko River drainage remained open 7 days per week with no fishing restrictions.

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c. The Koyukuk River drainage remained upen 7 days per week with no fishing restrictions.

d. Subdistrict 5D was managed as upper and lower subdistricts, located above and below 22-mile slough upstream to Ft. Yukon

e. District 6 fisheries were managed separately based on in-river escapement monitoring projects on the Tanana River and tributaries.

Table 4-2.–Household subsistence and personal use permits, listed by fishery and community of residence, Yukon Area, 2009.

Community	Permits Issued	Permits Returned	Percent returned	Number of permits returned that fished
Subsistence permits				
Central	6	6	100%	5
Circle	21	19	90%	9
Eagle	31	31	100%	15
Rampart	5	5	100%	4
Fairbanks (FNSB)[a]	200	190	95%	104
Healy	5	5	100%	5
Manley	16	16	100%	14
Minto	27	26	96%	5
Nenana	40	40	100%	24
Stevens Village	5	5	100%	3
Upper Tanana villages[b]	50	48	96%	21
Other subsistence[c]	13	13	100%	8
Subsistence permit subtotal	**419**	**404**	**96%**	**217**
Personal use permits				
Fairbanks (FNSB)[a]	65	65	100%	25
Other personal use[d]	3	3	100%	3
Personal use permit subtotal	**68**	**68**	**100%**	**28**
Permit totals	**487**	**472**	**97%**	**245**

Source Jallen and Hamazaki 2011.

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

b. Upper Tanana River (UTV) residents from the communities of Delta Junction, Dot Lake, Northway, Tanacross, and Tok.

c. Includes residents from Anchorage, Anderson, Copper Center, Denali Park, Eagle River, Palmer, Tanana, Wasilla, and Wiseman who were issued a subsistence fishing permit for the Yukon, Tanana, Tolovana, Kantishna, and Upper Koyukuk rivers.

d. Includes residents of Nenana and Delta Junction who applied for a personal use permit.

Table 4-3.–Estimated number of subsistence fishing households in surveyed communities, with community and district totals, Yukon Area, 2009.

Community		Households		Estimated number of fishing households
		Total	Surveyed	
Hooper Bay		204	71	101
Scammon Bay		80	33	35
	Coastal District	**284**	**104**	**136**
Alakanuk		117	46	69
Emmonak		150	71	59
Kotlik		97	36	69
Nunam Iqua		31	28	24
	District 1	**395**	**181**	**221**
Marshall		74	30	48
Mountain Village		141	65	98
Pilot Station		106	54	50
Pitkas Point		27	23	15
Saint Mary's		119	45	77
	District 2	**467**	**217**	**288**
Holy Cross		55	33	35
Russian Mission		67	32	27
Shageluk		29	21	14
	District 3	**151**	**86**	**76**
Alatna		7	5	4
Allakaket		47	18	11
Anvik		28	24	18
Bettles		20	17	3
Galena		162	50	72
Grayling		46	17	41
Hughes		23	19	9
Huslia		75	26	20
Kaltag		65	18	49
Koyukuk		41	18	34
Nulato		80	22	41
Ruby		57	19	18
	District 4	**651**	**253**	**320**
Beaver		27	24	14
Birch Creek		16	12	1
Chalkyitsik		27	20	3
Fort Yukon		171	58	49
Stevens Village		21	15	8
Tanana		98	51	45
Venetie		58	15	13
	District 5	**418**	**195**	**133**
Total		**2,366**	**1,036**	**1,174**

Source Jallen and Hamazaki 2011.

Table 4-4.–Estimated subsistence salmon harvests by community, Yukon Area, 2009.

Community	Households or permits: Total	Households or permits: Surveyed or returned	Estimated salmon harvests[a]: Chinook	Coho	Summer chum	Fall chum	Pink	Total
Hooper Bay	204	71	183	24	9,195	41	957	10,400
Scammon Bay	80	33	722	222	3,602	117	1,186	5,849
Coastal District	**284**	**104**	**905**	**246**	**12,797**	**158**	**2,143**	**16,249**
Alakanuk	117	46	634	194	5,152	116	24	6,120
Emmonak	150	71	1,634	401	9,038	1,589	5	12,667
Kotlik	97	36	1,657	181	7,528	171	42	9,579
Nunam Iqua (Sheldon Point)	31	28	200	71	2,280	41	61	2,653
District 1	**395**	**181**	**4,125**	**847**	**23,998**	**1,917**	**132**	**31,019**
Marshall	74	30	1,201	245	2,172	190	0	3,808
Mountain Village	141	65	1,482	413	7,204	926	6	10,031
Pilot Station	106	54	1,258	203	4,888	265	3	6,617
Pitka's Point	27	23	265	45	994	76	0	1,380
Saint Mary’s	119	45	1,929	151	5,831	106	5	8,022
District 2	**467**	**217**	**6,135**	**1,057**	**21,089**	**1,563**	**14**	**29,858**
Holy Cross	55	33	1,745	120	194	627	0	2,686
Russian Mission	67	32	978	96	849	205	0	2,128
Shageluk	29	21	201	105	103	105	9	523
District 3	**151**	**86**	**2,924**	**321**	**1,146**	**937**	**9**	**5,337**
Alatna	7	5	10	0	163	0	0	173
Allakaket	47	18	90	43	4,924	572	0	5,629
Anvik	28	24	796	137	277	176	2	1,388
Bettles	20	17	0	0	6	0	0	6
Galena	162	50	1,370	2,353	1,718	4,306	0	9,747
Grayling	46	17	1,133	318	1,429	490	0	3,370
Hughes	23	19	101	89	1,723	288	0	2,201
Huslia	75	26	969	323	2,554	86	0	3,932
Kaltag	65	18	1,970	40	50	200	0	2,260
Koyukuk	41	18	982	198	1,378	578	0	3,136
Nulato	80	22	1,551	171	133	552	0	2,407
Ruby	57	19	542	314	603	134	0	1,593
District 4	**651**	**253**	**9,514**	**3,986**	**14,958**	**7,382**	**2**	**35,842**
Beaver	27	24	516	0	22	120	0	658
Birch Creek	16	12	15	0	0	0	0	15
Central	6	6	167	0	2	0	0	169
Chalkyitsik	27	20	0	0	0	45	0	45
Circle	21	19	372	13	0	110	0	495
Eagle	31	31	446	0	0	10,941	0	11,387
Fairbanks	265	255	2,027	660	721	3,767	0	7,175
Fort Yukon	171	58	846	2	275	2,829	0	3,952

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Table 4-4.–Page 2 of 2.

Community	Households or permits: Total	Households or permits: Surveyed or returned	Estimated salmon harvests[a]: Chinook	Coho	Summer chum	Fall chum	Pink	Total
Rampart	5	5	528	0	112	1,000	0	1,640
Stevens Village	26	20	405	90	6	770	0	1,271
Tanana	98	51	2,950	2,373	4,665	19,595	0	29,583
Venetie	58	15	622	0	143	2,373	0	3,138
District 5	**751**	**516**	**8,894**	**3,138**	**5,946**	**41,550**	**0**	**59,528**
Healy	5	5	15	691	2	773	0	1,481
Manley	16	16	345	2,308	367	4,126	0	7,146
Minto	27	26	0	0	1	0	0	1
Nenana	40	40	463	3,475	509	7,623	0	12,070
District 6	**154**	**151**	**894**	**6,474**	**884**	**12,619**	**0**	**20,871**
Other communities	66	64	612	7	34	168	0	821
Total	**2,853**	**1,508**	**33,932**	**16,076**	**80,847**	**66,197**	**2,300**	**199,352**

Source Jallen and Hamazaki 2011.

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

Table 4-5.–Historical subsistence salmon harvests, Yukon Area, 1976–2009.

Year	Households or permits[a]		Estimated salmon harvests[a]					
	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	Total
1976	NA	NA	17,530	12,737	NA	1,375	NA	31,642
1977	NA	NA	16,007	16,333	NA	4,099	NA	36,439
1978	NA	NA	30,785	7,965	213,953	95,532	NA	348,235
1979	NA	NA	31,005	9,794	202,772	233,347	NA	476,918
1980	NA	NA	42,724	20,158	274,883	172,657	NA	510,422
1981	NA	NA	29,690	21,228	210,785	188,525	NA	450,228
1982	NA	NA	28,158	35,894	260,969	132,897	NA	457,918
1983	NA	NA	49,478	23,905	240,386	192,928	NA	506,697
1984	NA	NA	42,428	49,020	230,747	174,823	NA	497,018
1985	NA	NA	39,771	32,264	264,828	206,472	NA	543,335
1986	NA	NA	45,238	34,468	290,825	164,043	NA	534,574
1987	NA	NA	55,039	46,213	300,042	226,990	NA	628,284
1988	2,700	1,865	45,495	69,679	229,838	157,075	NA	502,087
1989	2,211	983	48,462	40,924	169,496	211,303	NA	470,185
1990	2,666	1,121	48,587	43,460	115,609	167,900	NA	375,556
1991	2,521	1,261	46,773	37,388	118,540	145,524	NA	348,225
1992	2,751	1,281	47,077	51,980	142,192	107,808	NA	349,057
1993	3,028	1,397	63,915	15,812	125,574	76,882	NA	282,183
1994	2,922	1,386	53,902	41,775	124,807	123,565	NA	344,049
1995	2,832	1,391	50,620	28,377	136,083	130,860	NA	345,940
1996	2,869	1,293	45,671	30,404	124,738	129,258	NA	330,071
1997	2,825	1,309	57,117	23,945	112,820	95,141	NA	289,023
1998	2,986	1,337	54,124	18,121	87,366	62,901	NA	222,512
1999	2,888	1,377	50,515	19,984	79,250	83,420	NA	233,169
2000	3,209	1,341	36,844	16,650	77,813	19,402	1,591	152,300
2001	3,072	1,355	56,103	23,236	72,392	36,164	403	188,298
2002	2,775	1,254	44,384	16,551	87,599	20,140	8,425	177,100
2003	2,850	1,377	56,872	24,866	83,802	58,030	2,167	225,737
2004	2,721	1,228	57,549	25,286	79,411	64,562	9,697	236,506
2005	2,662	1,406	53,547	27,357	93,411	91,667	3,132	269,114
2006	2,833	1,473	48,682	19,985	115,355	84,320	4,854	273,196
2007	2,819	1,495	55,292	22,013	93,075	99,120	2,118	271,618
2008	3,030	1,664	45,312	16,905	86,652	89,538	9,529	247,936
2009	2,853	1,508	33,932	16,076	80,847	66,197	2,300	199,352
5-year average (2004–2008)	2,813	1,453	52,076	22,309	93,581	85,841	5,866	259,674
10-year average (1999–2008)	2,886	1,397	50,510	21,283	86,876	64,636	4,657	227,497
Historical average (1976–2008)	2,818	1,362	45,294	28,021	156,323	116,614	4,657	338,048

Source Jallen and Hamazaki 2011.

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

NA = Data not available.

Table 4-6.–Comparison of amounts necessary for subsistence (ANS) and estimated subsistence salmon harvests, Yukon Area, 1998–2009.

ANS range	**Chinook** 45,500–66,704	**Coho** 20,500–51,980	**Summer chum** 83,500–142,192	**Fall chum** 89,500–167,900
Year	Estimated number of subsistence salmon harvested[a]			
1998[b]	52,910	**16,606**	**81,858**	**59,603**
1999[b]	50,711	**20,122**	**79,348**	**84,203**
2000[b]	**33,896**	**11,853**	**72,807**	**15,152**
2001	53,462	21,977	**68,544**	**32,135**
2002	**42,117**	**15,619**	**79,066**	**17,908**
2003	55,221	22,838	**78,664**	**53,829**
2004	55,102	24,190	**74,532**	**61,895**
2005	53,409	27,250	93,259	91,534
2006	48,593	**19,706**	115,093	**83,987**
2007	55,156	21,878	92,891	98,947
2008	**45,186**	**16,855**	86,514	**89,357**
2009	**33,805**	**16,006**	**80,539**	**66,119**

Source Jallen and Hamazaki 2011.

a. Estimates for 1998–2004 do not include personal use harvests, ADF&G test fishery distributions, or salmon removed from commercial harvests. Estimates for 2005–2009 include test fishery distributions because the amounts necessary for subsistence (ANS) are based on harvests from 1990–1999 and included test fishery distribution. Bold underlined cells indicate harvest amounts are below the minimum ANS.

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

Table 4-7.–Estimated subsistence harvest of nonsalmon fish by community, Yukon Area, 2009.

	Households		Estimated nonsalmon harvests				
Community	Total	Surveyed	Large whitefish[a]	Small whitefish	Northern pike	Sheefish	Total
Hooper Bay	204	71	1,504	741	143	20	2,408
Scammon Bay	80	33	234	245	80	0	559
Nunam Iqua (Sheldon Point)	31	28	256	1,651	86	510	2,503
Alakanuk	117	46	565	3,826	1,463	2,156	8,010
Emmonak	150	71	564	2,409	847	687	4,507
Kotlik	97	36	194	238	375	551	1,358
Mountain Village	141	65	2,511	113	668	243	3,535
Pitka's Point	27	23	802	108	70	42	1,022
Saint Mary's	119	45	6,183	71	475	508	7,237
Pilot Station	106	53	1,937	38	74	77	2,126
Marshall	74	30	1,753	0	437	198	2,388
Russian Mission	67	32	260	0	345	42	647
Holy Cross	55	33	1,578	0	226	144	1,948
Shageluk	29	21	2,908	0	115	94	3,117
Anvik	28	24	521	6	192	159	878
Grayling	46	17	562	250	225	308	1,345
Kaltag	65	18	31	0	10	92	133
Nulato	80	22	53	2	2	120	177
Koyukuk	41	18	245	0	126	66	437
Galena	162	50	7,827	0	162	104	8,093
Ruby	57	19	511	0	10	51	572
Huslia	75	26	876	98	826	265	2,065
Hughes	23	19	512	240	105	362	1,219
Allakaket	47	18	687	15	109	304	1,115
Alatna	7	5	83	50	30	8	171
Bettles	20	17	0	0	2	4	6
Tanana	98	51	5,723	1,988	172	474	8,357
Stevens Village	21	15	74	2	91	32	199
Birch Creek	16	12	40	0	80	13	133
Beaver	27	24	15	8	71	6	100
Fort Yukon	171	58	352	283	414	163	1,212
Venetie	58	15	20	0	0	5	25
Chalkyitsik	27	20	15	0	30	53	98
Total	**2,366**	**1,035**	**39,396**	**12,382**	**8,061**	**7,861**	**67,700**

Source Jallen and Hamazaki 2011.

a. Large whitefish are considered those that are greater than 4 lb in weight, and small whitefish are considered those that are less than 4 lb in weight.

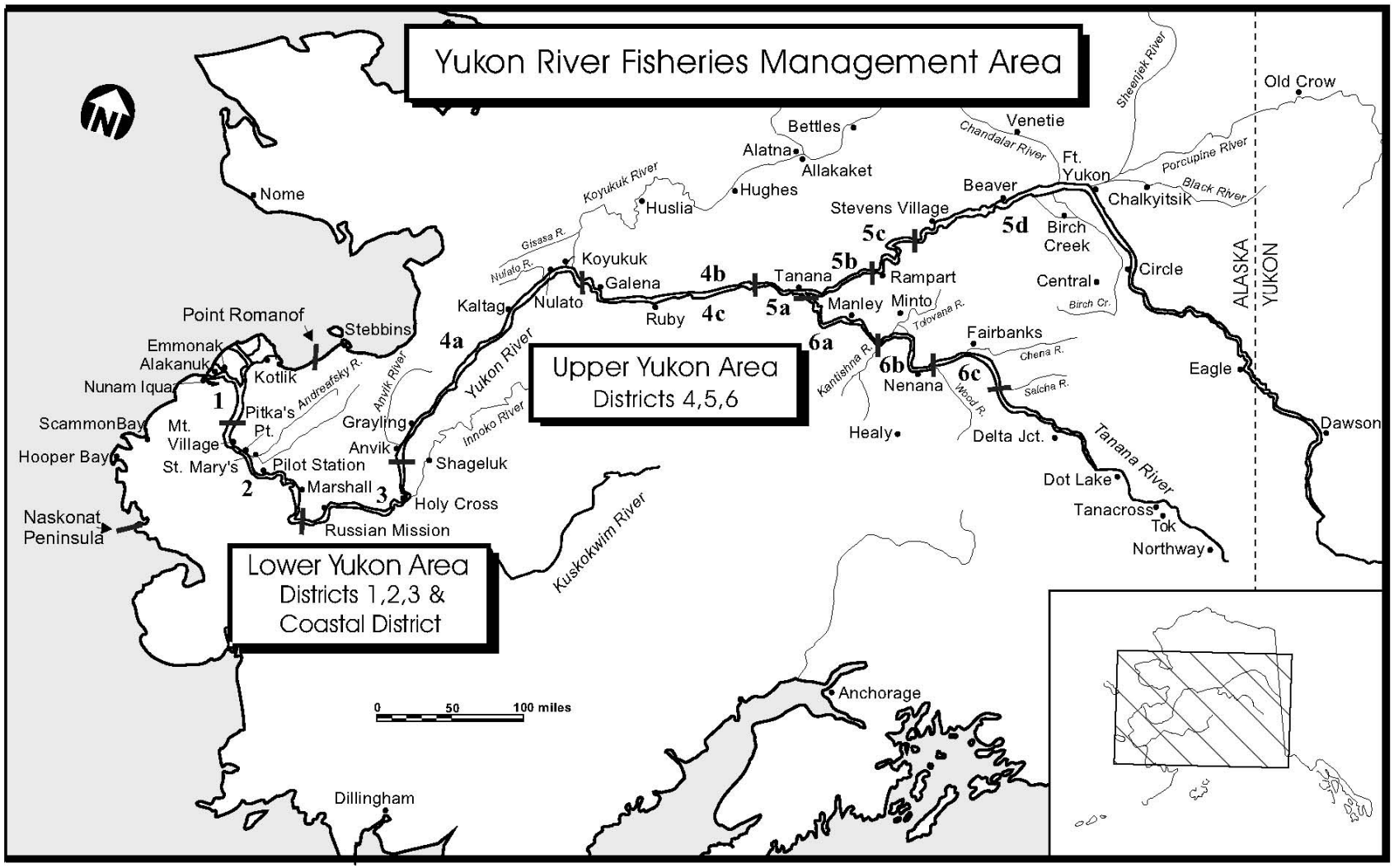

Figure 4-1.–Map of the Alaskan portion of the Yukon River drainage, showing communities and districts.

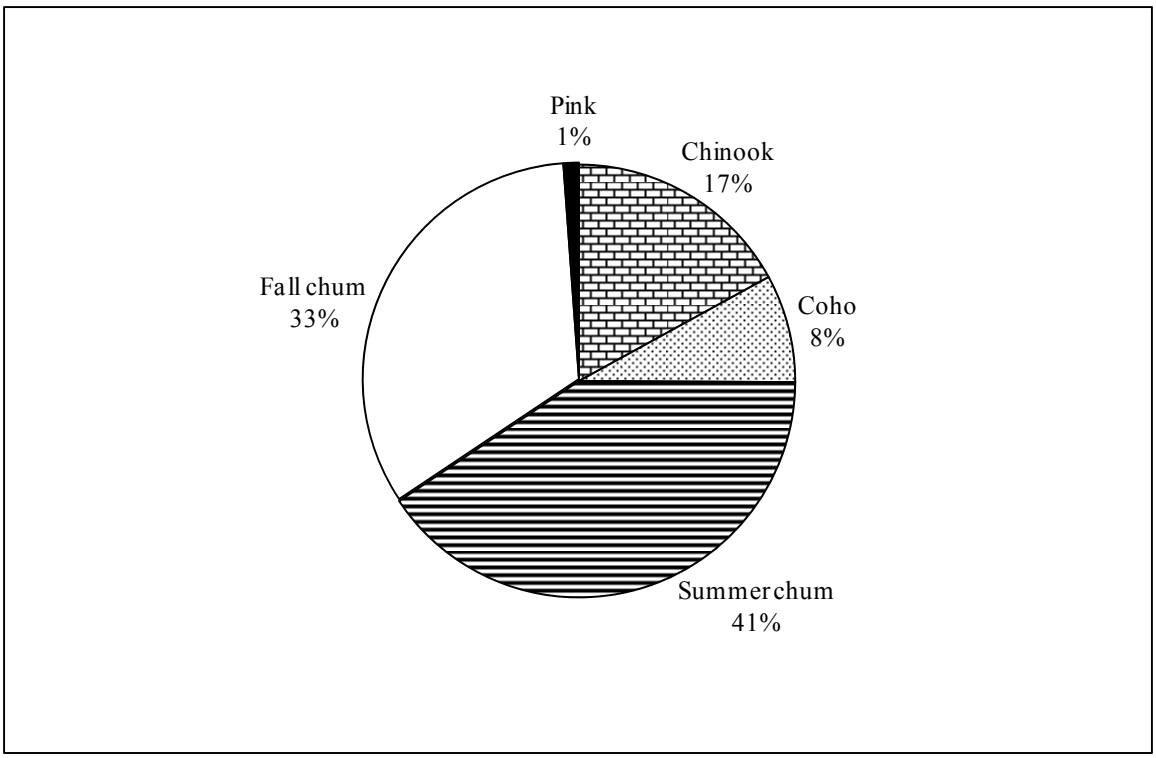

Figure 4-2.–Yukon Area estimated subsistence salmon harvests, 2009.

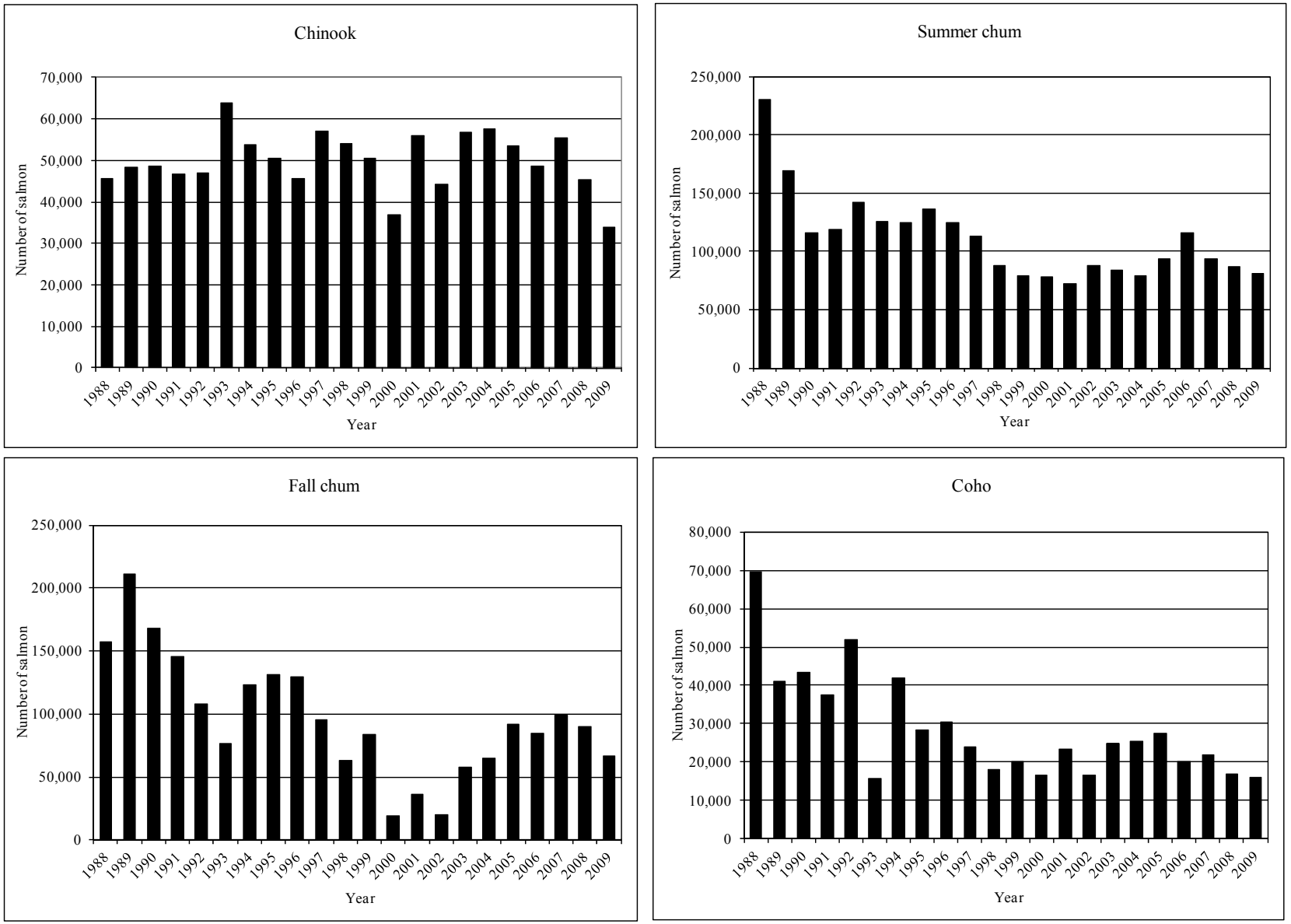

Figure 4-3.–Estimated subsistence salmon harvests by species, Yukon Area, 1988–2009.

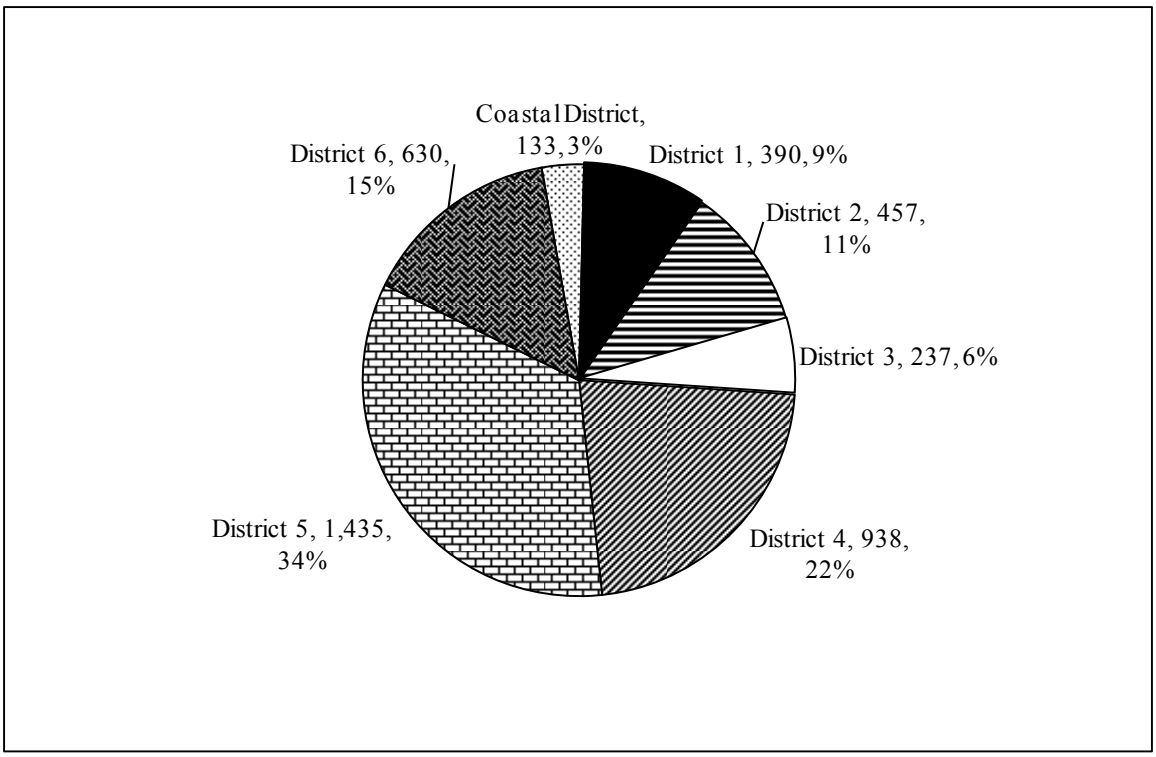

Figure 4-4.–Estimated number of dogs by district, Yukon Area, 2009.

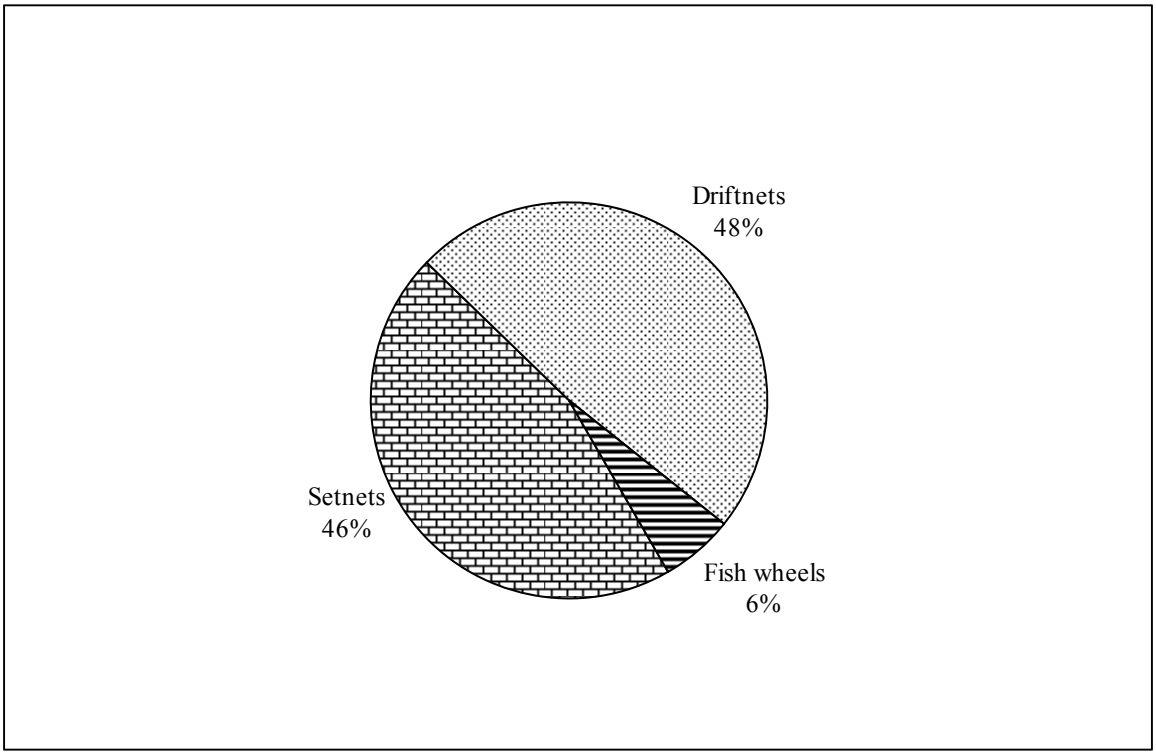

Figure 4-5.–Primary gear type utilized for subsistence salmon fishing, Yukon Area, 2009.

CHAPTER 5: KUSKOKWIM AREA

BACKGROUND

The Kuskokwim Area subsistence salmon fishery is one of the largest in the state. From June through October, the daily activities of many Kuskokwim Area households revolve around harvesting, processing, and preserving salmon for customary and traditional uses. The movement of families from permanent winter residences to summer fish camps situated along rivers and sloughs continues to be a significant element of the annual subsistence harvest effort, although substantial fishing efforts also take place directly from main communities along the river. The importance of salmon and other fishes harvested and used for subsistence in this area is well documented by ADF&G Division of Subsistence studies in the region, which indicate that fish contribute 68% to 85% of the total wild resource harvest (in pounds) in a community, and salmon contribute 49% to 53% of the total annual wild food harvest. The harvest of salmon for subsistence ranges from 241 lb usable weight per capita in some communities (e.g., Nunapitchuk, 1983) to 446 lb (e.g., Kwethluk, 1986) and 649 lb (e.g., Akiachak, 1998) per capita in other Kuskokwim River communities (Andrews 1989, 1994; Coffing 1991; Coffing et al. 2001, see also CSIS). 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, in addition to economic opportunities for commercial sales (Andrews and Coffing 1986; Andrews 1989:154; Barker 1993; Brown et al. 2012; Coffing 1991; Fienup-Riordan 1990:184ff; 1994:120, 123; Himmelheber 1987:32; Oswalt 1963a, 1963b, 1990; Pete 1993; Senecal-Albrecht 1990, 1998; Walker and Coffing 1993; Wolfe et al. 1984).

Annual subsistence surveys are aimed at gathering harvest data on Chinook, chum, sockeye, and coho salmon. Many people not directly involved in catching salmon assist family and friends with cutting, drying, and smoking fish, as well as with other preservation activities, such as salting, canning, and freezing.

In 2009, the postseason subsistence salmon harvest monitoring program was administered by the ADF&G Division of Commercial Fisheries, who assumed the program in 2008. There are more than 38 communities within the Kuskokwim Area; these consist of approximately 4,810 households in 2009, with the majority (85%) situated on or fishing along the Kuskokwim River drainage. Bethel is the largest community in the region, consisting of approximately 2,005 households in 2009. The north Kuskokwim Bay communities of Kwigillingok, Kongiganak, and Kipnuk are comprised of about 311 households, and while they are not located on the Kuskokwim River, many subsistence salmon fishing households from these 3 communities travel to the Kuskokwim River to fish, in addition to areas closer to their communities. Residents of Quinhagak, Goodnews Bay, and Platinum, located along the southern shore of Kuskokwim Bay (approximately 234 households), harvest salmon primarily from the Kanektok, Arolik, and Goodnews river drainages. The Bering Sea coastal communities of Mekoryuk (on Nunivak Island), Newtok, Tununak, Toksook Bay, Nightmute, and Chefornak are composed of approximately 453 households. Subsistence users from these communities harvest salmon from coastal waters as well as area tributaries. Relatively little documentation exists of subsistence salmon harvests of Bering Sea Coast communities because the communities are not included in either the Kuskokwim nor Yukon postseason subsistence salmon harvest monitoring programs.

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 on their own, or to assist family or friends with the harvesting or processing of salmon.

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 to be unconstitutional. As a result of the passage of ANILCA and in light of the Alaska Supreme Court decision, the federal government established the federal subsistence program, which provides subsistence opportunity for qualified rural residents on applicable federal public lands and in applicable federal public waters. Individuals must be Kuskokwim Area residents to participate in the Kuskokwim federal subsistence salmon fishery. Federal subsistence schedules, openings, closings, and fishing methods are generally the same as those for state subsistence salmon fisheries, unless superseded by federal special action.

Licenses and permits have not been required for subsistence salmon fishing in the Kuskokwim Area, nor were any required during 2009 (AS 16.05.330; 5 AAC 01.280). Standard conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Salmon may be harvested for subsistence uses by set and drift gillnet, beach seine, fish wheel, handline, and rod and reel; salmon may also be taken by spear in the Holitna, Kanektok, and Arolik river drainages and the drainages of Goodnews Bay. Set or drift gillnets may not exceed a total length of 50 fathoms, gillnet web in a gillnet used for subsistence salmon fishing must contain at least 30 filaments, and all filaments must be of equal diameter or the web must contain at least 6 filaments, each of which must be at least 0.20 millimeters in diameter. Each subsistence gillnet operated in tributaries of the Kuskokwim River must be attached to the bank, fished substantially perpendicular to the bank and in a substantially straight line. In that portion of the Kuskokwim River drainage from the north end of Eek Island upstream to the mouth of the Kolmakoff River, no part of a set gillnet located in a tributary to the Kuskokwim River may be set or operated within 150 ft of any part of another set gillnet. A stationary fishing device may obstruct not more than one-half the width of any salmon stream or slough. Gillnets used for harvesting salmon may be of any mesh size; however, nets with 6 in or smaller mesh may not be more than 45 meshes deep, and nets with mesh greater than 6 in may not be more than 35 meshes deep. Fishers are required to have their names and addresses attached to gillnets and fish wheels.

Subsistence fishers using rod and reel upstream of the Doestock River on the Aniak River from June 1 to August 31 had a combined daily bag limit of 3 salmon, of which no more than 2 could be Chinook salmon. Otherwise, there were no restrictions on the number of salmon allowed to be taken by individual fishers or households for subsistence uses in the Kuskokwim Area.

In 2009, subsistence salmon fishing was open 7 days per week, with the exception of closures around commercial fishing periods. In January 2004, the BOF granted ADF&G discretionary emergency order authority to close the subsistence salmon fishery around commercial salmon fishing periods in districts 1 and 2. Prior to this action, areas within commercial salmon fishing districts were closed to subsistence salmon net and fish wheel gear 16 hours before, during, and 6 hours after commercial fishing periods (Simon et al. 2007). Since 2004, areas within commercial salmon fishing districts were closed to subsistence salmon net and fish wheel gear 6 hours before, during, and 3 hours after commercial fishing periods, as described in 5 AAC 01.260. The purpose of these closures was to discourage illegal fishing activities, such as the sale of subsistence-caught salmon in the commercial fishery.

In 2009, subsistence fishing in the Kuskokwim River was allowed 7 days a week throughout the season, with the exception of closed periods 6 hours before, during, and 3 hours after commercial fishing periods in June and August. There were a total of 16 commercial fishing periods in District 1 of the Kuskokwim River in 2009 between June 23 and August 22. There was one local processor available to purchase harvested fish. Processing capacity limited all commercial openings to Subdistrict 1-B only, and further limited 3 commercial openings to the lower section of Subdistrict 1-B only.

Subsistence fishing in the Quinhagak and Goodnews Bay areas was allowed 7 days per week throughout the season (with the exception of closed periods 16 hours before, during, and 6 hours after commercial fishing periods in these districts). The District 4 commercial salmon fishing season opened June 15, and

District 5 opened on June 22. Both districts opened with management directed toward the harvest of Chinook salmon, with 2 commercial periods per week, provided abundance was adequate. Commercial fishing opportunity was reduced in both districts in late June to ensure adequate escapement of Chinook salmon. By July 6, management was directed toward the sockeye salmon harvest. On August 3 in District 4 and August 12 in District 5, both districts shifted to coho salmon management. This allowed 3 commercial periods per week, provided abundance was adequate.

Many of the fishers who participate in the Kuskokwim commercial fisheries are area residents who also subsistence fish. A total of 538,661 salmon were commercially harvested from the Kuskokwim Area in 2009. A total of 560 permit holders participated in the area commercial fisheries with an estimated ex-vessel value of $1,021,657.[13]

SUBSISTENCE SALMON HARVEST ASSESSMENT METHODS

Data on the harvest of salmon for subsistence uses are collected annually. The Division of Commercial Fisheries began conducting subsistence salmon harvest surveys in the Kuskokwim River drainage in 1960. Subsistence surveys were first performed in Quinhagak in 1967, while Goodnews Bay and Platinum surveys were initiated in 1979. The Division of Subsistence became responsible for collecting and analyzing the annual subsistence salmon harvest surveys in 1988 and continued this role through 2007 when funding cuts and human resource limitations necessitated turning this program over to the Division of Commercial Fisheries. More detailed descriptions of subsistence salmon harvest monitoring methods utilized in the Kuskokwim Area are found elsewhere (Simon et al. 2007; Walker and Coffing 1993). During the survey years prior to 1985, subsistence salmon harvest data were grouped into 2 primary categories: "king salmon" and "small salmon." The survey was refined in 1988 to collect harvest data for all species of salmon except pink salmon.

In 2009, subsistence salmon harvest data collection in Bethel was conducted by staff from the Orutsararmuit Native Council (ONC), which has been involved in subsistence salmon harvest monitoring in Bethel since 1999. Subsistence harvest data collection in Aniak was conducted by staff from the Kuskokwim Native Association (KNA), which has been involved in subsistence salmon harvest monitoring in Aniak since 2002 (Simon et al. 2007).

Household Harvest Surveys

Households in the Kuskokwim Area are assigned a "household identification number" (HHID) to aid in tracking a household's subsistence harvest over time. The 4 primary objectives of the 2009 Kuskokwim Area postseason subsistence salmon harvest monitoring program included: 1) estimating the number of salmon harvested for subsistence by residents of Bethel, 2) estimating the number of salmon harvested for subsistence by residents of Aniak, 3) placing the Bethel and Aniak estimates within the context of the harvest estimates for the entire Kuskokwim Fisheries Management Area, and 4) where applicable, generating estimated harvests for communities that were not contacted.

To aid community harvest estimation, households are stratified into 3 groups: 1) those that "usually fish," 2) those that "usually do not fish," and 3) "unknown." In 2009, 2 methods were used to gather subsistence salmon harvest data in the Kuskokwim Area: subsistence salmon harvest calendars and postseason household harvest surveys.

Estimating Bethel Salmon Harvests

Subsistence salmon harvest by Bethel residents was estimated by employing a simple random harvest survey method. Because it is the main hub city of Western Alaska, the population of Bethel is highly fluid: a high proportion of the population moves in and out of Bethel on a regular basis, and people often change dwellings. This makes it difficult to maintain an accurate and complete household list. Instead, the

[13]. Preliminary 2009 Kuskokwim Area Salmon Fishery Summary, ADF&G Division of Commercial Fisheries, 2009 Kuskokwim River Salmon Fishery News Release, September 29, 2009.

Bethel city planner's office/fire department occupant dwellings map/list was used to define the Bethel population. Surveyors updated the map/list by driving the community to confirm or update its accuracy. Based on the updated map, 30–50% of occupant dwellings were randomly selected for survey.

ADF&G Commercial Fisheries was responsible for designing and producing the survey instrument and selection of survey households, and ONC was responsible for conducting household surveys. Before the harvest survey, ADF&G oriented ONC technicians to the project and instructed them in the proper implementation of the survey. ONC technicians began surveys in Bethel in October and returned completed forms in December. Survey data were entered and analyzed by ADF&G Commercial Fisheries staff to generate subsistence salmon harvest estimates by species.

Estimating Aniak Salmon Harvests

Subsistence salmon harvest of Aniak residents was estimated by employing a stratified random harvest survey method. Compared to Bethel, Aniak is small and there is less change among households. This makes it possible to maintain more accurate household lists from year to year. In this stratified random survey method, households were stratified by 3 user types as described above. Households previously identified as "usually fish" or who reported fishing the previous year were assigned to "usually fish", and those previously identified as "usually do not fish" or did not harvest for the past 3 years were assigned to "usually do not fish." New households or households whose members have changed were assigned to "unknown." This household list update is received by KNA technicians before the survey takes place.

ADF&G Division of Commercial Fisheries was responsible for designing and producing the survey instrument and selection of survey households, and KNA was responsible for conducting household surveys in Aniak. Before the harvest survey, ADF&G oriented KNA technicians to the project and instructed them in the proper implementation of the survey. ADF&G generated a stratified random sample list of households to survey. KNA technicians began surveys in Aniak in October and returned completed forms to ADF&G. Survey data were entered and analyzed by ADF&G Commercial Fisheries staff to generate subsistence salmon harvest estimates by species.

Estimating Kuskokwim Area Community Subsistence Salmon Harvests

For the remaining 36 communities in the Kuskokwim Area, the goal was to collect subsistence harvest data through harvest surveys conducted by ADF&G Commercial Fisheries staff beginning in October and continuing through December. The survey crew consulted with community officials before arriving in the community to update community household lists. Other resources were also useful in updating household lists, including telephone and utility lists and the Alaska Permanent Fund Dividend application list. Communities were prioritized based on transportation scheduling, staff time, need for survey effort, and community willingness to participate in the program. Participation in the surveys was voluntary, and some community leaders requested that the surveys not take place in their communities.

The survey design in each community was either a census (100% survey) or stratified random sample, depending on community size. Surveyors attempted to contact each household in communities less than or equal to 40 households. For communities greater than 40 households, the 3-strata sampling scheme, as discussed above, was applied. Surveyors attempted to survey 100% of households in the "unknown" stratum and any stratum with 5 or fewer households. If a stratum size was larger than 5 households, then surveyors attempted to survey 30–50% of households in that stratum.

Survey data were collected, entered, cleaned, and analyzed by ADF&G Commercial Fisheries staff to generate subsistence salmon harvest estimates by species.

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. The calendar data continue to be instrumental for examination of subsistence salmon harvest

timing. The calendars are also used by some area fishers throughout the fishing season so that they can be referenced 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. In an effort to increase the use and return rate of subsistence salmon harvest calendars, public service announcements were broadcast on local radio stations during the fishing season reminding fishers to keep logging their catches on their calendars and describing the importance of calendars for documenting subsistence salmon uses.

Most subsistence salmon harvest data obtained from the returned calendars were not used to directly calculate Kuskokwim Area subsistence salmon harvest estimates, but these data were used to corroborate household survey data. Calendars were occasionally used as the primary source of harvest data when contact was not made with a particular household. Calendars often include harvests from multiple households that fished together, so reported harvests may represent the efforts of multiple households. In such cases, every effort was made to contact the head of household to verify harvest information when using the calendar data. Calendars also provided data for assigning households to the 3-user strata, especially in cases where households were not contacted as part of the household surveys. Calendar data are not provided in this report.

Data Correction and Archiving

ADF&G Commercial Fisheries staff 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 MS SQL data server. The database is structured to ensure data are entered completely and accurately, and there were periodic back-ups to prevent data loss.

Data Analysis

Stratified Random Survey Methodology

Beginning in 2008, the Division of Commercial Fisheries adopted a harvest estimation methodology similar to the Yukon River subsistence salmon monitoring program (Busher et al. 2007). The following section presents the formulas and methods used to derive subsistence salmon harvest estimates for Kuskokwim Area communities, where:

N_{kj} = number of households in jth (j = 1 … n) user group of the kth community;

n_{kj} = number of sample households in the jth user group of the kth community; and

y_{kji} = response (e.g., harvest) of ith sample household (i = 1 … n_{kj}) in the jth user group of the kth community.

Mean response of the jth user group of the kth community ($\bar{y}_{kj}$) is

$$\bar{y}_{kj} = \frac{\sum_{i=1}^{n_{kj}} y_{kji}}{n_{kj}} \tag{1}$$

and its standard error (SE_{kj}) is

$$SE_{kj} = \sqrt{\frac{s_{kj}^2}{n_{kj}}\left(\frac{N_{kj} - n_{kj}}{N_{kj}}\right)}\text{, where} \tag{2}$$

$$s_{kj}^2 = \frac{\sum_{i=1}^{n_{kj}} \left(y_{kji} - \bar{y}_{kj}\right)^2}{n_{kj} - 1} \tag{3}$$

The estimate of total responses of the *k*th community ($\hat{T}_k$) is

$$\hat{T}_k = \sum_{j=1} N_{kj} \bar{y}_{kj} \tag{4}$$

and its 95% confidence interval (95%CI_k) is

$$95\%\mathrm{CI}_k = 1.96 \cdot \sqrt{\hat{V}(T_k)} \text{ , where} \tag{5}$$

$$\hat{V}(T_k) = \sum_{j=1}^{5} N_{kj}^2 \left(\frac{N_{kj} - n_{kj}}{N_{kj}} \right) \left(\frac{s_{kj}^2}{n_{kj}} \right) \tag{6}$$

Because the estimates of the responses in each community are independent from each other, the estimate of surveywide total ($\hat{T}$) is

$$\hat{T} = \sum_{k=1} \hat{T}_k \tag{7}$$

and its 95% confidence interval (95%CI) is

$$95\%\mathrm{CI} = 1.96 \cdot \sqrt{\hat{V}(T)} \text{ , where} \tag{8}$$

$$\hat{V}(T) = \sum_{k=1} \hat{V}(T_k) \tag{9}$$

Harvest Estimation Procedures of Unsurveyed Communities

Harvest estimates are developed for communities that are missed in a particular study year but that have participated in the program in the past. For estimation of communities occasionally missing harvests, a multiple imputation method using the Bayesian Markov Chain Monte Carlo approach was used (Honaker and King 2010; King et al. 2001) (Jim Jasper, Biometrician II, ADF&G, personal communication), where:

D denotes a matrix in which element D_{kj} are harvest of *k*th community of the *j*th year; and

Assuming that *D* has a multinomial distribution with mean μ and variance Σ, $D \sim N(\mu,\Sigma)$.

Then, imputed missing harvests D_{kj}^{mis} have a multinomial normal posterior distribution:

$$D_{kj}^{mis} \sim P(\mu, \Sigma \mid D_{kj}^{obs}) \tag{10}$$

Where D_{kj}^{obs} are observed harvests. In Bayesian multiple imputations, μ is given an uninformative normal prior distribution, and Σ is given an uninformative Wishhart prior distribution.

Estimates were made for log-transformed mean harvest per household for each species and community for all available years from 1990 to 2009. Multiple imputations were conducted separately among communities within the Kuskokwim Area: 1) the lower Kuskokwim River and Kongiganak, 2) middle

Kuskokwim River, 3) upper Kuskokwim River, and 4) South Kuskokwim Bay. After throwing out 3,000 initial (i.e., burn-in) iterations, 100,000 imputations were made, from which a mean value was calculated.

The number of salmon harvested in a community was estimated by multiplying the imputed mean harvest per household with the number of households in the community.

The estimate of total harvest of the missing *k*th community of *j*th year ($\widetilde{T}_{kj}$) was calculated by back-transforming the imputed log-transformed mean harvest per household ($\widetilde{D}_{kj}^{mis}$) and multiplying it with the number of households N_{kj} in the community of the *j*th year:

$$\widetilde{T}_{kj} = N_{kj} \exp(\widetilde{D}_{kj}^{mis}) \tag{11}$$

Its 95% confidence interval was estimated as

$$95\%\text{CI} = N_{kj} \exp\left(1.96 \cdot \sqrt{V(\widetilde{D}_{kj}^{mis})}\right) \tag{12}$$

Where $V(\widetilde{D}_{kj}^{mis})$ is the standard deviation of the Bayesian estimate.

Expanded harvest estimates were made for most communities in 2009, except for Kipnuk and Kwigillingok of North Kuskokwim Bay; Telida of upper Kuskokwim River; and Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, and Chefornak. Those communities have been surveyed infrequently or not at all from 1990 to 2009, so there are insufficient data for the Bayesian imputation method.

2009 SAMPLING SUMMARY

From an estimated total of 4,810 households located in the Kuskokwim Area, contact was made with 1,729 unique households by household surveys among 27 Kuskokwim Area communities (Table 5-1). As noted above, a new method was developed for 2008 to estimate subsistence salmon harvests in communities in which no household surveys took place, if adequate harvest data for previous years existed. However, there are Kuskokwim Area communities for which there are insufficient historical data to develop annual harvest estimates. As a result, the Kuskokwim Management Area total should be viewed as a minimum estimate because data for some communities are not available.

Within the Kuskokwim river drainage (including North Kuskokwim Bay communities), 1,612 (39%) of the 4,123 households were contacted. Based upon 2009 data, this region represents 86% of the estimated total number of households in the Kuskokwim Area.

In the South Kuskokwim Bay region (Quinhagak, Goodnews Bay, and Platinum), 117 (50%) of the 234 households were contacted. The Bering Sea coastal communities of Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, and Chefornak have an estimated 453 total households, but none were surveyed in 2009 and data for previous years are incomplete. Participation in salmon harvesting activities by households in the Bering Sea coast communities is known to occur, is likely an important part of local subsistence activities, and is in need of further research.

2009 SUBSISTENCE SALMON HARVEST SUMMARY

A summary of the subsistence salmon harvest estimates by community and fishing area is presented in Table 5-1. In 2009, subsistence salmon harvest estimates for communities contacted in the Kuskokwim Area totaled 82,100 Chinook salmon (42%), 45,199 chum salmon (23%), 37,971 sockeye salmon (19%), 32,090 coho salmon (16%), and 561 pink salmon (<1%), for a total estimate of 197,921 salmon (Figure 5-

1). Except for Chinook salmon, these estimates are below recent averages for all species of salmon (Table 5-2), including pink salmon harvests, which ADF&G only recently began monitoring in the Kuskokwim Area. Historical comparisons are not yet possible for pink salmon. Also, because survey and analysis methods changed in 2008, should be made with caution until reanalysis of historical data is completed (Hamazaki In prep). Lower Kuskokwim River Area communities accounted for 77% of the 2009 estimated subsistence salmon harvests in the Kuskokwim Area and 82% of the entire estimated Chinook salmon subsistence harvest. Residents of Bethel accounted for 31% of the Kuskokwim Area subsistence salmon harvests and 32% of subsistence-caught Chinook salmon and 41% of the estimated total of subsistence-caught coho salmon.

Use of Salmon for Dog Food

Historically, salmon harvested for use as dog food were a large portion of the overall subsistence salmon harvest; specifically, chum and coho salmon. In recent years, the number of households harvesting salmon specifically for dog food has declined, likely due to decreased use of dog teams for transportation. In 2009, preliminary data show a reported harvest of 6,782 salmon for use as dog food (Table 5-3). The majority of the salmon harvested for dog food were chum salmon, at 3,438 fish, while coho salmon accounted for 2,509 fish. Sockeye salmon contributed 691 fish to the harvest for dog food. There were no reported harvests of pink salmon for use as dog food. Households do not target Chinook salmon for dog food; however, 151 Chinook salmon considered unfit for human consumption were reported to have been fed to dogs in an effort to avoid wasting the fish. It is common for most households to feed scraps—backbones, entrails, and salmon unfit for human consumption—to their dogs.

Gear Types

Subsistence fishing households often use more than one type of gear (e.g., set gillnet, drift gillnet, fish wheel, or rod and reel) when harvesting salmon (Table 5-4). Households that harvested salmon were asked to provide information on the types of gear they used. In 2009, out of 972 contacted fishing households, 723 reported using drift gillnets for subsistence salmon harvests, 140 reported using setnets, and 104 reported using subsistence rod and reel gear.

The most common gear type used in the Kuskokwim Area is the drift gillnet (74% of reporting households), which is the primary fishing gear used from Crooked Creek to Kuskokwim Bay. Many households throughout the area also use rod and reel for subsistence fishing. Rod and reel is used by households that may not have access to other gear types, by fishers in areas where other gear types are not as effective or efficient, and to harvest fewer fish when fewer are sought.

Salmon Retained from Commercial Fishing for Subsistence Uses

Households involved in commercial salmon fishing occasionally keep a small portion of their commercial harvest for subsistence uses; however, the number of salmon retained from commercial fishing activities for subsistence is usually relatively low. In 2009, few households reported retaining commercially-caught salmon for subsistence uses. Preliminary data show a reported total of 416 salmon were retained from commercial catches, including 119 Chinook, 25 chum, 98 sockeye, 173 coho, and 1 pink salmon (Table 5-5).

OTHER FISH

Nonsalmon harvest data are collected as part of the postseason salmon survey, but are not yet included in the ASFDB and therefore are not reported in this annual summary. These data will be added to the ASFDB for future annual reports. Nonsalmon harvest estimates have been provided for communities such as Kwethluk, Nunapitchuk, and Akiachak from community-based surveys conducted by the Division of Subsistence in the Kuskokwim region in the 1980s and 1990s, and for Bethel from 2001–2004 as part of the annual salmon harvest survey. Additionally, the Division of Subsistence conducted a 2-year nonsalmon harvest assessment project for Aniak and Chuathbaluk in spring 2002 and 2003 (Krauthoefer

et al. 2007), and a study of local knowledge and harvest assessment of nonsalmon subsistence fisheries among the residents of Eek, Nunapitchuk, and Tuntutuliak (Ray et al. 2010). Subsistence surveys about Pacific herring *Clupea pallasii* were conducted in the mid 1980s through the early 1990s in the Nelson Island region. These data are in the CSIS.

Table 5-1.–Subsistence salmon harvests by community, Kuskokwim Area, 2009.

Community	Households		Estimated salmon harvests					
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[b]	148	0	–	–	–	–	–	–
Kwigillingok[b]	71	0	–	–	–	–	–	–
Kongiganak	92	40	1,118	808	610	1,285	0	3,821
North Kuskokwim Bay	**311**	**40**	**1,118**	**808**	**610**	**1,285**	**0**	**3,821**
Tuntutuliak	82	33	3,141	954	368	3,411	6	7,880
Eek	77	34	1,983	1,115	193	763	0	4,054
Kasigluk	95	43	2,296	927	617	1,618	0	5,458
Nunapitchuk	114	43	3,256	1,455	281	3,400	50	8,442
Atmautluak	67	32	1,615	641	66	1,708	0	4,030
Napakiak	100	41	2,331	916	428	1,677	0	5,352
Napaskiak	98	43	5,618	1,655	821	1,532	234	9,860
Oscarville	17	10	754	334	67	534	0	1,689
Bethel	2,005	699	26,302	11,329	13,037	10,480	70	61,218
Kwethluk	157	58	6,601	2,228	4,113	3,410	152	16,504
Akiachak	141	56	7,023	2,390	1,581	2,822	0	13,816
Akiak	80	37	3,247	1,290	661	1,350	0	6,548
Tuluksak	86	35	3,032	1,601	839	1,488	10	6,970
Lower Kuskokwim	**3,119**	**1,164**	**67,199**	**26,835**	**23,072**	**34,193**	**522**	**151,821**
Lower Kalskag	71	26	2,439	1,009	307	899	5	4,659
Kalskag (Upper)	66	30	1,615	355	225	305	0	2,500
Aniak	183	168	2,062	941	2,264	2,626	2	7,895
Chuathbaluk	37	25	888	572	97	948	0	2,505
Middle Kuskokwim	**357**	**249**	**7,004**	**2,877**	**2,893**	**4,778**	**7**	**17,559**
Crooked Creek	41	28	586	323	282	522	0	1,713
Red Devil	14	5	226	417	111	214	0	968
Sleetmute	38	29	702	692	384	375	6	2,159
Stony River	20	12	704	977	634	771	0	3,086
Lime Village[a]	15	0	59	1,180	624	452	–	2,315
McGrath	149	58	594	985	1,244	842	0	3,665
Takotna[a]	25	0	0	0	0	0	–	0
Nikolai	32	27	299	66	204	302	0	871
Telida[b]	2	0	–	–	–	–	–	–
Upper Kuskokwim	**336**	**159**	**3,170**	**4,640**	**3,483**	**3,478**	**6**	**14,777**
Kuskokwim River	**4,123**	**1,612**	**78,491**	**35,160**	**30,058**	**43,734**	**535**	**187,978**
Quinhagak	151	75	2,982	1,740	1,692	1,300	17	7,731
Goodnews Bay	66	28	566	885	259	137	9	1,856
Platinum	17	14	61	186	81	28	0	356
South Kuskokwim Bay	**234**	**117**	**3,609**	**2,811**	**2,032**	**1,465**	**26**	**9,943**
Mekoryuk[b]	62	0	–	–	–	–	–	–
Newtok[b]	79	0	–	–	–	–	–	–

-continued-

Table 5-1.–Page 2 of 2.

Community	Households		Estimated salmon harvests					
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Nightmute[b]	55	0	–	–	–	–	–	–
Toksook Bay[b]	114	0	–	–	–	–	–	–
Tununak[b]	61	0	–	–	–	–	–	–
Chefornak[b]	82	0	–	–	–	–	–	–
Bering Sea Coast	**453**	**0**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**4,810**	**1,729**	**82,100**	**37,971**	**32,090**	**45,199**	**561**	**197,921**

Source Carroll and Hamazaki *In prep*.

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 2009 study period, therefore the total harvest was estimated using a Bayesian multiple imputation method.

b. These communities were not contacted during the 2009 study period. Not enough data were available.

– Data not available.

Table 5-2.–Historical subsistence salmon harvests, Kuskokwim Area, 1989–2009.

Year	Households		Estimated salmon harvests				
	Total	Surveyed	Chinook	Sockeye	Coho	Chum	Total
1989	3,422	2,135	85,322	37,088	57,786	145,106	325,287
1990	3,317	1,830	92,675	39,659	50,708	131,470	314,513
1991	3,347	2,024	90,226	56,401	55,620	96,314	298,561
1992	3,314	1,724	68,685	34,158	44,494	99,576	246,914
1993	3,274	1,816	91,722	51,362	35,295	61,724	240,103
1994	3,179	1,821	98,378	39,280	36,504	76,949	251,111
1995	3,652	1,894	100,157	28,622	39,165	68,941	236,885
1996	3,643	1,837	81,597	35,037	34,699	90,239	241,572
1997	3,510	1,831	85,506	41,251	30,717	40,993	198,466
1998	3,495	1,849	86,113	37,579	27,240	67,664	218,595
1999	4,180	2,523	77,660	49,388	27,753	47,612	202,413
2000	4,441	2,750	68,841	44,832	35,670	55,371	204,714
2001	4,483	2,297	77,570	51,965	31,686	51,117	212,338
2002	4,339	2,798	70,219	27,733	34,413	73,234	205,599
2003	4,535	2,375	72,498	36,894	38,791	46,291	194,474
2004	4,670	2,432	85,086	34,892	39,406	55,575	214,959
2005	3,903	1,610	72,174	47,656	36,751	28,838	186,762
2006	4,657	1,514	68,041	34,849	32,809	68,812	204,510
2007	4,618	1,356	72,097	34,578	26,270	53,298	186,243
2008	4,734	992	103,713	64,183	52,742	71,649	292,287
2009	4,810	1,729	82,100	37,971	32,090	45,199	197,360
5-year average (2004–2008)	4,516	1,581	80,222	43,232	37,596	55,634	216,952
10-year average (1999–2008)	4,456	2,065	76,790	42,697	35,629	55,180	210,430
15-year average (1994–2008)	4,136	1,992	81,310	40,583	34,974	59,772	216,729
Historical average (1989–2008)	3,936	1,970	82,414	41,370	38,426	71,539	233,815

Source ADF&G Division of Subsistence CSIS.

Table 5-3.–Number of households that own dogs, fed salmon to dogs, and total number of salmon fed to dogs, Kuskokwim Area, 2009.

Community	Households		Households			Reported salmon fed to dogs					
	Total	Contacted	Own dogs	Fed salmon to dogs	Total number of dogs	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[a]	148	0	–	–	–	–	–	–	–	–	–
Kwigillingok[a]	71	0	–	–	–	–	–	–	–	–	–
Kongiganak	92	32	21	0	30	0	0	0	0	0	0
North Kuskokwim Bay	**311**	**32**	**21**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**0**
Tuntutuliak	82	29	22	0	58	0	0	0	0	0	0
Eek	77	34	25	0	55	0	0	0	0	0	0
Kasigluk	95	42	31	1	81	0	5	0	5	0	10
Nunapitchuk	114	39	28	1	58	0	0	0	0	0	0
Atmautluak	67	30	24	1	62	0	0	0	40	0	40
Napakiak	100	39	27	0	53	0	0	0	0	0	0
Napaskiak	98	42	23	2	71	0	0	0	75	0	75
Oscarville	17	10	4	0	9	0	0	0	0	0	0
Bethel	2,005	686	314	5	527	1	0	200	185	0	386
Kwethluk	157	56	40	5	162	0	15	1,060	270	33	1,378
Akiachak	141	56	31	4	178	83	25	110	75	0	293
Akiak	80	34	24	3	154	3	103	0	270	0	376
Tuluksak	86	33	21	2	59	30	0	0	10	0	40
Lower Kuskokwim	**3,119**	**1,130**	**614**	**24**	**1,527**	**117**	**148**	**1,370**	**930**	**33**	**2,558**
Lower Kalskag	71	25	18	3	63	15	0	0	105	0	120
Kalskag (Upper)	66	28	16	2	36	0	0	0	42	0	42
Aniak	183	165	84	15	264	5	50	632	1,482	0	2,169
Chuathbaluk	37	24	18	2	28	0	0	0	65	0	65
Middle Kuskokwim	**357**	**242**	**136**	**22**	**391**	**20**	**50**	**632**	**1,694**	**0**	**2,396**
Crooked Creek	41	26	15	2	41	0	0	0	70	0	70
Red Devil	14	5	1	0	1	0	0	0	0	0	0
Sleetmute	38	27	18	3	35	0	3	73	189	0	265
Stony River	20	12	3	2	5	0	5	105	180	0	290
Lime Village[a]	15	0	–	–	–	–	–	–	–	–	–
McGrath	149	52	34	2	87	0	225	315	300	0	840
Takotna[a]	25	0	–	–	–	–	–	–	–	–	–
Nikolai	32	27	21	3	62	0	50	0	60	0	110
Telida[a]	2	0	–	–	–	–	–	–	–	–	–
Upper Kuskokwim	**336**	**149**	**92**	**12**	**231**	**0**	**283**	**493**	**799**	**0**	**1,575**
Kuskokwim River	**4,123**	**1,553**	**863**	**58**	**2,179**	**137**	**481**	**2,495**	**3,423**	**33**	**6,529**

-continued-

Table 5-3.–Page 2 of 2.

Community	Households Total	Households Contacted	Households Own dogs	Households Fed salmon to dogs	Households Total number of dogs	Reported salmon fed to dogs Chinook	Sockeye	Coho	Chum	Pink	Total
Quinhagak	151	66	31	1	41	10	10	10	10	0	40
Goodnews Bay	66	26	15	1	30	4	200	4	5	0	213
Platinum	17	12	8	0	12	0	0	0	0	0	0
Toksook Bay[a]	114	0	–	–	–	–	–	–	–	–	–
Tununak[a]	61	0	–	–	–	–	–	–	–	–	–
Chefornak[a]	82	0	–	–	–	–	–	–	–	–	–
Bering Sea Coast	**453**	**0**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**4,810**	**1,657**	**917**	**60**	**2,262**	**151**	**691**	**2,509**	**3,438**	**33**	**6,782**

Source Carroll and Hamazaki *In prep*.

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

a. These communities were not contacted during the 2009 study period.

– Data not available.

Table 5-4.–Gear types used for subsistence fishing, Kuskokwim Area, 2009.

Community	Total households[c]	Gear types[a]			
		Setnet	Drift net	Rod and reel	Fish wheel
Kipnuk[b]	–	–	–	–	–
Kwigillingok[b]	–	–	–	–	–
Kongiganak	23	0	22	0	1
North Kuskokwim Bay	**23**	**0**	**22**	**0**	**1**
Tuntutuliak	24	0	23	1	0
Eek	22	7	15	0	0
Kasigluk	28	0	28	0	0
Nunapitchuk	25	1	24	0	0
Atmautluak	17	0	17	0	0
Napakiak	25	5	19	1	0
Napaskiak	31	9	22	0	0
Oscarville	7	2	5	0	0
Bethel	320	22	278	19	1
Kwethluk	46	15	29	2	0
Akiachak	45	9	36	0	0
Akiak	26	5	21	0	0
Tuluksak	22	8	13	1	0
Lower Kuskokwim	**638**	**83**	**530**	**24**	**1**
Lower Kalskag	16	0	16	0	0
Kalskag (Upper)	19	0	18	1	0
Aniak	110	13	45	52	0
Chuathbaluk	16	1	14	1	0
Middle Kuskokwim	**161**	**14**	**93**	**54**	**0**
Crooked Creek	13	0	13	0	0
Red Devil	3	1	2	0	0
Sleetmute	19	6	9	3	1
Stony River	7	5	1	1	0
Lime Village[b]	–	–	–	–	–
McGrath	18	10	1	6	1
Takotna[b]	–	–	–	–	–
Nikolai	17	13	0	4	0
Telida[b]	–	–	–	–	–
Upper Kuskokwim	**77**	**35**	**26**	**14**	**2**
Kuskokwim River	**899**	**132**	**671**	**92**	**4**
Quinhagak	47	1	37	8	1
Goodnews Bay	17	4	11	2	0
Platinum	9	3	4	2	0
South Kuskokwim Bay	**73**	**8**	**52**	**12**	**1**

-continued-

Table 5-4.–Page 2 of 2.

Community	Total households[c]	Gear types[a]			
		Setnet	Drift net	Rod and reel	Fish wheel
Mekoryuk[b]	–	–	–	–	–
Newtok[b]	–	–	–	–	–
Nightmute[b]	–	–	–	–	–
Toksook Bay[b]	–	–	–	–	–
Tununak[b]	–	–	–	–	–
Chefornak[b]	–	–	–	–	–
Bering Sea Coast	**–**	**–**	**–**	**–**	**–**
Total	**972**	**140**	**723**	**104**	**5**

Source Carroll and Hamazaki *In prep*.

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

b. Community was not contacted during the 2009 study period.

c. Number of households responding to the question about their primary gear type.

– Data not available.

Table 5-5.–Reported number of salmon retained from commercial harvest for subsistence use, Kuskokwim Area, 2009.

	Households		Reported salmon					
Community	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[a]	148	0	–	–	–	–	–	–
Kwigillingok[a]	71	0	–	–	–	–	–	–
Kongiganak	92	3	0	0	0	0	0	0
North Kuskokwim Bay	**311**	**3**	**0**	**0**	**0**	**0**	**0**	**0**
								0
Tuntutuliak	92	8	0	0	0	0	0	0
Eek	85	16	0	0	0	0	0	0
Kasigluk	98	8	0	0	22	0	0	22
Nunapitchuk	111	12	10	8	0	0	0	18
Atmautluak	66	4	0	0	0	0	0	0
Napakiak	90	10	0	0	14	2	0	16
Napaskiak	101	6	0	0	4	0	0	4
Oscarville	19	2	0	0	0	0	0	0
Bethel	1,981	28	1	6	1	0	0	8
Kwethluk	156	7	0	0	100	0	0	100
Akiachak	148	24	0	0	0	0	1	1
Akiak	75	3	0	0	0	0	0	0
Tuluksak	78	0	0	0	0	0	0	0
Lower Kuskokwim	**3,100**	**128**	**11**	**14**	**141**	**2**	**1**	**169**
Lower Kalskag	89	0	0	0	0	0	0	0
Kalskag (Upper)	52	0	0	0	0	0	0	0
Aniak	177	3	8	4	25	1	0	38
Chuathbaluk	38	0	0	0	0	0	0	0
Middle Kuskokwim	**356**	**3**	**8**	**4**	**25**	**1**	**0**	**38**
Crooked Creek	39	0	0	0	0	0	0	0
Red Devil	18	0	0	0	0	0	0	0
Sleetmute	31	0	0	0	0	0	0	0
Stony River	19	0	0	0	0	0	0	0
Lime Village[a]	12	0	–	–	–	–	–	–
McGrath	119	0	0	0	0	0	0	0
Takotna[a]	25	0	–	–	–	–	–	–
Nikolai	27	0	0	0	0	0	0	0
Telida[a]	2	0	–	–	–	–	–	–
Upper Kuskokwim	**292**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Kuskokwim River	**4,059**	**134**	**19**	**18**	**166**	**3**	**1**	**207**
Quinhagak	172	27	86	55	2	18	0	161
Goodnews Bay	69	9	6	11	5	0	0	22
Platinum	17	7	8	14	0	4	0	26
South Kuskokwim Bay	**258**	**43**	**100**	**80**	**7**	**22**	**0**	**209**

-continued-

Table 5-5.–Page 2 of 2.

	Households		Reported salmon					
Community	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Mekoryuk[a]	63	0	–	–	–	–	–	–
Newtok[a]	79	0	–	–	–	–	–	–
Nightmute[a]	50	0	–	–	–	–	–	–
Toksook Bay[a]	114	0	–	–	–	–	–	–
Tununak[a]	61	0	–	–	–	–	–	–
Chefornak[a]	79	0	–	–	–	–	–	–
Bering Sea Coast	**446**	**0**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**4,763**	**177**	**119**	**98**	**173**	**25**	**1**	**416**

Source Carroll and Hamazaki *In prep*.

a. These communities were not contacted during the 2009 study period.

– Data not available.

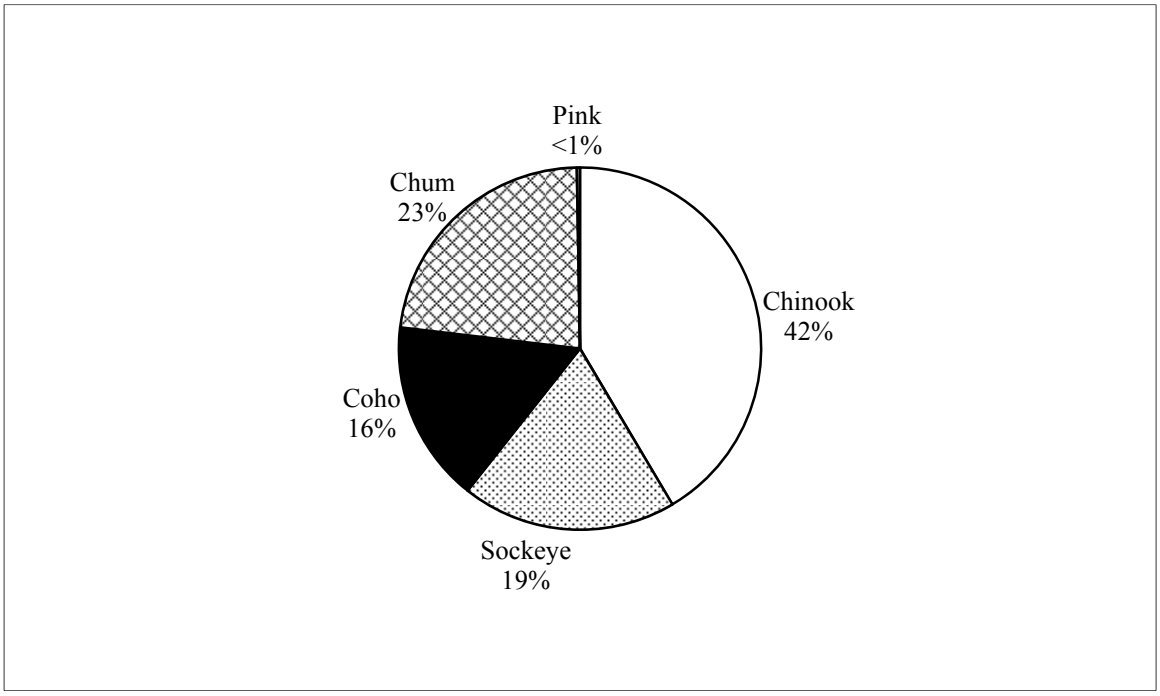

Figure 5-1.–Kuskokwim subsistence salmon harvest composition, 2009.

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 5 species of salmon found in Alaska are utilized for subsistence purposes in Bristol Bay, but the most popular 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.

REGULATIONS

Permits are required to harvest salmon for subsistence purposes in Bristol Bay. Standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Since 1990, under state regulations, all Alaska state residents have been eligible to participate in subsistence salmon fishing in all Bristol Bay drainages. From 1998 through 2006, with 2 exceptions, only gillnets were recognized as legal subsistence gear. 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. Gillnets, spears, 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 from August 20 through September 30, at Johnny's Lake from August 15 through September 25, and at the mouth of the Brooks River from October 1 through November 15. In the Bristol Bay Area in 2009, gillnet lengths were limited to 10 fathoms in the Naknek, Egegik, and Ugashik rivers; Dillingham beaches; and within the Nushagak commercial district during emergency openings. Up to 25 fathoms could be used in the remaining areas, except that nets were limited to 5 fathoms in the special "redfish" harvest areas in the Naknek District.

At its regulatory meeting in Dillingham in December 2006, the BOF adopted 3 changes to subsistence salmon fishing regulations that affected portions of the Bristol Bay Area. The first change allowed salmon to be taken with drift gillnets no more than 10 fathoms in length in the lower 2 miles of the Togiak River. The second change allowed spears to be used to take salmon in Lake Clark, and the third change allowed the use of beach seines and gillnets to take salmon in Iliamna Lake, Six Mile Lake, and Lake Clark.

Along the Dillingham beaches, and in the Naknek, Egegik, and Ugashik rivers, subsistence fishing was limited to several fishing periods per week during the peak of the sockeye salmon run. 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. In the late 1990s and early 2000s, declining Chinook salmon and coho salmon stocks resulted in longer commercial closures and some residents had difficulty obtaining fish for home uses. Since 2004, there have been improvements in abundance of all species (Jones et al. 2009:20). Since 1988, the Nushagak commercial district has been open to subsistence fishing by emergency order during extended commercial closures.

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.

INSEASON MANAGEMENT IN 2009

From June 1 through September 30 in all waters of a commercial salmon district within the Bristol Bay region, subsistence salmon may be taken only during commercial fishing periods. In the Nushagak District, subsistence salmon fishing was provided for by emergency order during periods of extended commercial fishing closures. For information on inseason management of the subsistence fishery in 2009 see Morstad et al. (2010:17).

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. 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) contacting 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 2009, a total of 1,063 permits were issued for the Bristol Bay Management Area, of those 950, or 89%, were returned (Table 6-2). The largest number of permits were issued for the Nushagak (530 permits) and Naknek–Kvichak (461 permits) districts (Table 6-1). The number of permits issued in 2009 was below the 5-year (1,093), 10-year (1,141), and historical (1,093) averages (Table 2-2).

SUBSISTENCE SALMON HARVESTS IN 2009

Estimated total Bristol Bay subsistence salmon harvests in 2009 were 126,447 fish (Table 6-1). The 2009 salmon harvest was above both the 5-year (127,369 fish) and 10-year (126,228 fish) averages and below the historical average (1983–2008) of 149,810 salmon (Table 6-2).

Chinook salmon harvests were estimated at 14,020 in 2009, a decrease from the previous year's harvest of 15,153, and lower than the 2003 record harvest of 21,231 fish. Estimated sockeye salmon harvests for 2009 were 98,951, below the recent 5-year average of 98,133 fish and the recent 10-year average of 97,381 fish and below the historical average (1983–2008) of 117,180 fish. Compared to the historical average (1983–2008), subsistence harvests of pink salmon were substantially lower in 2009 at 442 fish (returns of pink salmon to Bristol Bay are higher in even-numbered years than in odd-numbered years). The estimated harvest of chum salmon in 2009 (5,052 fish) was lower than both the recent 5-year (5,253 fish) and 10-year average (5,124 fish), different than the estimated harvest of coho salmon (7,982 fish) which was higher than both the 5-year (6,552) and 10-year average (6,968) (Table 6-2).

In 2009, the Bristol Bay subsistence salmon harvest was composed of 78% sockeye salmon, 11% Chinook salmon, 6% coho salmon, 4% chum salmon, and less than 1% pink salmon (Figure 6-1). Of the entire Bristol Bay Area subsistence salmon harvest in 2009, residents of Bristol Bay communities harvested 117,666 salmon (93%), and other Alaska residents harvested 8,781 salmon (7%) (Table 6-3).

In 2009, as over the last several decades, most of the Bristol Bay Area subsistence harvest was taken in the Naknek–Kvichak (55%) and the Nushagak (41%) districts (Figure 6-2). The Naknek–Kvichak total harvest of 69,235 salmon in 2009 (Table 6-1) was lower than in 2008 (73,184), 2007 (72,280 salmon) and 2006 (71,796 salmon). It was, however, higher than the 2003 harvest of 63,934 salmon (Salomone et al. 2011:109). 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 42 Chinook salmon, and 46,772 sockeye salmon, while those fishing in the Naknek River Subdistrict harvested 350 Chinook salmon, and 21,199 sockeye salmon (Table 6-1). The 2009 subsistence harvest of 46,772 sockeye salmon in the Kvichak drainage (Table 6-1) was lower than the 2008 harvest of 49,563 sockeye and the 2007 harvest of 47,473 sockeye (Fall et al. 2009c:69) and below historical levels (the 10-year average harvest from 1990 through 1999 was 63,444 sockeye salmon) (Salomone et al. 2011:113).[14]

Subsistence sockeye salmon harvests in the Kvichak District have declined since the early 1990s (Salomone et al. 2011:113). From 1998 to 2009, estimated harvests were below the range of 55,000 to 65,000 sockeye salmon established by the Alaska Board of Fisheries as the amount necessary for subsistence uses (5 AAC 01.336(b)(1)). Poor sockeye salmon returns, like those seen in 2000–2002, are likely one factor responsible for declining harvests, but socioeconomic and sociocultural factors may be partly responsible as well (Fall et al. 2001; Fall et al. 2003c; Stickman et al. 2003; Fall et al. 2006a; Fall et al. 2009c).

In the Nushagak District, the total estimated subsistence harvest in 2009 was 51,300 salmon (Table 6-1), and the total in 2008 was 51,395 salmon (Salomone et al. 2011:114)—these are the two highest totals since 2003 when the total harvest was 55,076 salmon. The 2009 and 2008 harvests were substantially higher than the 2007 harvest of 44,944 salmon and the 10-year (2000–2009) average of 47,209 salmon (Salomone et al. 2011:114). Comprehensive baseline household subsistence harvest surveys conducted in Aleknagikand Manokotak for the 2008 calendar year identified households that had not obtained subsistence permits during the fishing season but had harvested salmon in subsistence nets. These households were added to the permit database and their harvests included in the annual harvest estimate for 2008. No postseason surveys were conducted in these communities for 2009, which likely accounts for a drop in the number of household subsistence permits issued and, consequently, a decrease in total estimated salmon harvests in Aleknagik from 3,309 in 2008 to 2,646 in 2009 and in Manokotak from 5,429 in 2008 to 2,182 in 2009 (Table 6-3) (Fall et al. 2009c:71). The Nushagak District Chinook salmon harvest in 2009 was 12,737 (Table 6-1), slightly lower than the 2008 harvest of 12,960 fish and the 2007 harvest of 13,330 and down from the 2003 estimate of 18,686 fish (the highest estimate on record), and below the 10-year (1990–1999) average of 14,010 fish and the more recent 10-year average (2000–2009) of 12,833 (Salomone et al. 2011:110). The 2009 Nushagak District sockeye salmon harvest of 26,922 (Table 6-1) was only slightly higher than the 2008 harvest of 26,828 fish and higher than the 2007 estimate of 25,127 fish and the 2006 estimate of 20,773 fish and also higher than the previous 10-year average (2000–2009) of 24,072 fish (Salomone et al. 2011:110).

The estimated total subsistence salmon harvest for the Togiak District in 2009, 3,689 fish (Table 6-1), was substantially lower than the previous year's estimate of 6,463 fish and lower than the previous 10-year average (5,116 salmon) and the 20-year average (4,769 salmon) (Salomone et al. 2011:111). Estimated harvests in 2002 and from 2004 through 2007 were below those for 2001 and 2003; this likely reflects at least in part the result of postseason household surveys in Togiak and Twin Hills for 2001 and 2003. Postseason household surveys included more harvesters in the estimate because fishers who did

14. Note that the total Kvichak River drainage sockeye salmon harvest number listed in the 2010 Bristol Bay Area Annual Management Report (Salomone et al. 2011:113) was adjusted down to the total of 47,473 by the Division of Subsistence and the updated data has not been conveyed to the Annual Management Report. Additional harvest numbers compiled through household subsistence salmon harvest surveys in 4 Kvichak drainage communities increased the accuracy of the harvest numbers and reduced the expansion factor for the estimated subsistence salmon harvest in the Kvichak drainage in 2007.

not turn in their harvest permits were contacted. Comprehensive baseline household subsistence harvest surveys conducted in Togiak for the 2008 calendar year also increased participation in the 2008 harvest assessment program. The estimated subsistence salmon harvest in the Ugashik District in 2009 was 1,270 fish (Table 6-1), lower than the 2008 estimate of 1,955 fish, and higher than the previous 10-year average (2000–2009) of 1,586 fish (Salomone et al. 2011:110). In the Egegik District, the estimated subsistence salmon harvest of 953 fish (Table 6-1) was substantially lower than the 2008 estimate of 1,928 fish and, with the exception of the 2008 harvest, represents a continuance of the downward trend in harvest numbers since 2004. The 2009 estimate was notably lower than the 4,711 fish estimated for 2004 (the second highest estimate since 1984), and was less than the previous 10-year average of 2,550 salmon (Salomone et al. 2011:109).

OTHER SUBSISTENCE FISHERIES

In May 2003, new federal regulations authorizing subsistence fishing for halibut came into effect. A harvest assessment program for the subsistence halibut fishery was implemented in 2004 (Fall et al. 2007a; Fall et al. 2005; Fall et al. 2006a; Fall et al. 2004). Beginning in 2003, subsistence fishing for rainbow/steelhead trout *O. mykiss* and Arctic char/Dolly Varden in the Bristol Bay Area under federal subsistence regulations required a federal permit. No permits were issued (Michael Edwards, Fisheries Biologist, USFWS, King Salmon Field Office, personal communication, 2004). The permit requirement was dropped in 2005. In 2006, the only other annual harvest assessment program for nonsalmon subsistence fisheries in the Bristol Bay Area was for the subsistence halibut fishery. The following overview derives primarily from Fall and Chythlook (1997) and Fall et al. (2009d).

Subsistence Regulations

The BOF determined that all finfishes of the Bristol Bay Management Area support customary and traditional uses (5 AAC 01.336). In addition, the BOF determined that approximately 250,000 lb usable weight (about 41 lb per person) was the amount reasonably necessary to provide for these uses. This amount was based upon estimates of fish harvests derived from systematic household surveys conducted by the Division of Subsistence (CSIS 2008). Amounts for specific species or more specific stocks were not established.

For the most part, subsistence fishing for fishes 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 fishes other than salmon in the area:[15]

- 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.

Subsistence Harvests and Uses

A detailed description of subsistence uses of freshwater fishes in the Bristol Bay Area appears in Fall et al. 1996. Wright and Chythlook 1985 describe the uses of herring spawn on kelp in the Togiak District. Harvests of fishes other than salmon contribute about 10% of the annual subsistence harvests of wild

15. 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.

foods in the Bristol Bay region, about 41 lb per person (Fall and Chythlook 1997) and Fall et al. (Fall et al. 2009d)

Subsistence harvests of fishes other than salmon are not annually monitored by ADF&G. 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; Fall et al. 2006a; Krieg et al. 2005). 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 fishes in 8 study communities. Some of the findings of ADF&G research regarding nonsalmon fishes are summarized in Table 6-4. The vast majority of households in the Bristol Bay Area use fishes other than salmon for subsistence purposes. Most households also participate in the harvest of these fishes. 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. Fishes 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 fishes 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 *Thymallus arcticus*, and northern pike (see Fall et al. (1996) for a summary of harvest data).

In the Bristol Bay Area, harvests of nonsalmon finfishes occur throughout the year. Harvest effort for these fish is generally lower among Bristol Bay residents in the summer as attention is focused on salmon. Spring is important for herring, herring spawn on kelp, and rainbow smelt. Harvests of nonsalmon fishes occur through the ice in winter. “Smelting” is a popular activity in October and in late winter when these fish can be caught by jigging through the ice. Halibut are mostly taken in June and July (Wright et al. 1985:34).

Many gear types are used to harvest nonsalmon fishes for home uses in the Bristol Bay Area. Rod and reel is used for most fish; some, such as Arctic char/Dolly Varden and herring and other marine fishes, are removed from commercial catches. Other methods are used, including (but not necessarily limited to) the following:

- Traps: Alaska blackfish *Dallia pectoralis*, burbot *Lota lota,*
- Set hooks: burbot,
- Handline jigging through the ice: Arctic grayling, Arctic char/Dolly Varden, lake trout *S. namaycush*, rainbow smelt, rainbow/steelhead trout, whitefishes, northern pike,
- Set gillnets: Arctic grayling, Arctic char/Dolly Varden, lake trout, longnose suckers *Catostomus catostomus,* rainbow/steelhead trout, herring, northern pike, burbot, whitefishes,
- Beach seining: Arctic char/Dolly Varden, lake trout, rainbow smelt, herring, whitefishes,
- Hand line in open water: halibut, rainbow/steelhead trout, and
- Dip nets: rainbow smelt, herring.

Herring spawn on kelp is usually picked by hand, although rakes, knives, and *uluaqs* (women’s knives) are also used (Schichnes and Chythlook 1988:127).

Maps of areas used by Bristol Bay communities to harvest nonsalmon fishes 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 8 communities in the Kvichak watershed appear in Krieg et al. (2005). 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 (1996).

Bristol Bay residents use a wide variety of methods to process and preserve their harvests of fishes other than salmon. These vary by species and community. Some freezing of harvests of most species occurs. Some examples of other methods include the following:

- Arctic grayling: dried, half-dried, fresh frozen, aged frozen and eaten with seal oil (various species),
- Dolly Varden: dried, smoked, half dried (*egamaarrluk*),
- Northern pike: dried, half-dried, fresh frozen, aged frozen and eaten with seal oil,
- Rainbow/steelhead trout: dried, half dried, smoked, and
- Whitefishes: dried, fresh frozen, aged frozen and eaten with seal oil.

Dried fish product is eaten with seal oil. Fat from brown bears *Ursus arctos* with dry fish is also consumed. Rainbow trout smelt are fried, boiled, dried, or eaten frozen with seal oil (Fall et al. 1986:100 and Fall et al. 2009d). Herring are salted, or split, dried, and smoked (Schichnes and Chythlook 1988:126). The heads and stomachs of northern pike are boiled and eaten (Schichnes and Chythlook 1991:139). Freshwater fishes that are usually eaten frozen with seal oil form a category called *kumlaneq*. This includes Arctic grayling, whitefishes, lake trout, and northern pike (Fall et al. 1986:102 and Fall et al. 2009d).

There is much traditional knowledge of the subsistence uses of nonsalmon fishes in the Bristol Bay Area. For example, a Yup'ik taxonomic classification system for freshwater fish species has 3 entries, and thus 3 taxons, for the fish that Western science classifies in only 1: Dolly Varden. The Yup'ik distinctions are made depending upon the condition of the flesh for aging, freezing, and/or drying; harvest locations; and harvest methods (Fall et al. 1996 and Fall et al. 2009d).

The Division of Subsistence has compiled a traditional ecological knowledge (TEK) database, "From *Neqa* to *Tepa*," about the fishes of Bristol Bay based on interviews with area residents in 2003 as part of OSM project 01-109 (Coiley-Kenner 2003). An expanded version of the database incorporating findings from 8 Kvichak watershed communities was renamed "From *Neqa* to *Tepa*, *Łuq'a* to *Chuqilin*" to reflect the addition of Dena'ina Athabascan TEK (BBNA and ADF&G 1996; Krieg et al. 2005).

Table 6-1.–Estimated subsistence salmon harvests by district and location fished, Bristol Bay Area, 2009.

Area and river system	Number of permits issued[a]	Estimated salmon harvests					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek–Kvichak District	461	392	67,970	669	167	36	69,235
Naknek River Subdistrict	279	350	21,199	648	135	36	22,368
Kvichak River–Iliamna Lake Subdistrict	187	42	46,772	21	32	0	46,867
Igiugig	5	11	1,060	0	0	0	1,071
Iliamna Lake (general)	29	0	3,245	0	0	0	3,245
Kijik	3	0	381	0	0	0	381
Kokhanok	31	15	16,205	1	16	0	16,238
Kvichak River	19	0	1,682	0	0	0	1,682
Lake Clark	42	0	3,577	0	0	0	3,577
Levelock	2	16	597	20	16	0	649
Newhalen River	33	0	9,567	0	0	0	9,567
Pedro Bay	22	0	7,562	0	0	0	7,562
Pile Bay	1	0	270	0	0	0	270
Six Mile Lake	13	0	2,626	0	0	0	2,626
Egegik District	26	31	778	133	6	5	953
Ugashik District	15	33	1,061	131	4	41	1,270
Nushagak District	530	12,737	26,922	6,777	4,510	355	51,300
Wood River	155	2,250	7,145	759	390	16	10,560
Nushagak River	112	4,735	5,802	2,086	1,992	80	14,696
Nushagak Bay (noncommercial)	229	4,974	10,542	3,214	1,839	153	20,723
Nushagak Bay (commercial)	34	389	1,262	539	180	103	2,473
Igushik–Snake River	24	299	1,844	98	90	2	2,333
Site unknown	51	10	2	0	177	0	0
Togiak District	40	827	2,220	272	365	5	3,689
Total	**1,063**	**14,020**	**98,951**	**7,982**	**5,052**	**442**	**126,447**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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 1,063 permits issued for the management area, 950 were returned (89%).

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, 1983–2009.

	Permits		Estimated salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1983	829	674	13,268	143,639	7,477	11,646	1,073	177,104
1984	882	698	11,537	168,803	16,035	13,009	8,228	217,612
1985	1,015	808	9,737	142,755	8,122	5,776	825	167,215
1986	930	723	14,893	129,487	11,005	11,268	7,458	174,112
1987	996	866	14,424	135,782	8,854	8,161	673	167,894
1988	938	835	11,848	125,556	7,333	9,575	7,341	161,652
1989	955	831	9,678	125,243	12,069	7,283	801	155,074
1990	1,042	870	13,462	128,343	8,389	9,224	4,455	163,874
1991	1,194	1,045	15,245	137,837	14,024	6,574	572	174,251
1992	1,203	1,028	16,425	133,605	10,722	10,661	5,325	176,739
1993	1,206	1,005	20,527	134,050	8,915	6,539	1,051	171,082
1994	1,193	1,019	18,873	120,782	9,279	6,144	2,708	157,787
1995	1,119	990	15,921	107,717	7,423	4,566	691	136,319
1996	1,110	928	18,072	107,737	7,519	5,813	2,434	141,575
1997	1,166	1,051	19,074	118,250	6,196	2,962	674	147,156
1998	1,234	1,155	15,621	113,289	8,126	3,869	2,424	143,330
1999	1,219	1,157	13,009	122,281	6,143	3,653	420	145,506
2000	1,219	1,109	11,547	92,050	7,991	4,637	2,599	118,824
2001	1,226	1,137	14,412	92,041	8,406	4,158	839	119,856
2002	1,093	994	12,936	81,088	6,565	6,658	2,341	109,587
2003	1,182	1,058	21,231	95,690	7,816	5,868	1,062	131,667
2004	1,100	940	18,012	93,819	6,667	5,141	3,225	126,865
2005	1,076	979	15,212	98,511	7,889	6,102	1,098	128,812
2006	1,050	904	12,617	95,201	5,697	5,321	2,726	121,564
2007	1,063	917	15,444	99,549	4,880	3,991	815	124,679
2008	1,178	1,083	15,153	103,583	7,627	5,710	2,851	134,924
2009	1,063	950	14,020	98,951	7,982	5,052	442	126,447
5-year average (2004–2008)	1,093	965	15,288	98,133	6,552	5,253	2,143	127,369
10-year average (1999–2008)	1,141	1,028	14,957	97,381	6,968	5,124	1,798	126,228
Historical average (1983–2008)	1,093	954	14,930	117,180	8,507	6,704	2,489	149,810

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 6-3.–Estimated subsistence salmon harvests by community, Bristol Bay Area, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Aleknagik	27	22	539	2,019	22	66	0	2,646
Anderson	2	2	0	54	0	0	0	54
Clark's Point	14	13	169	541	480	80	39	1,308
Dillingham	325	290	7,167	15,385	3,908	2,240	234	28,934
Egegik	9	9	10	280	163	3	5	461
Ekuk	1	1	10	30	0	10	0	50
Ekwok	19	18	757	706	687	195	0	2,345
Igiugig	8	6	11	1,457	0	0	0	1,468
Iliamna	28	27	7	5,232	0	0	0	5,239
King Salmon	74	68	65	5,966	139	20	12	6,202
Kokhanok	28	24	8	16,074	1	6	0	16,090
Koliganek	15	15	857	1,697	349	797	0	3,700
Levelock	3	3	16	759	20	16	0	811
Manokotak	20	18	267	1,727	98	89	2	2,182
Naknek	101	88	209	10,097	407	45	18	10,776
New Stuyahok	45	41	2,554	2,443	879	904	75	6,855
Newhalen	16	15	50	5,337	20	0	0	5,407
Nondalton	20	19	8	5,846	0	0	0	5,854
Nunamiqua	1	1	10	200	0	0	0	210
Pedro Bay	21	18	0	7,802	0	0	0	7,802
Pilot Point	6	6	5	150	37	0	0	192
Port Alsworth	38	36	5	3,246	0	0	0	3,251
Portage Creek	1	1	57	4	0	6	0	67
South Naknek	27	12	32	1,141	41	2	0	1,215
Togiak	38	36	827	2,220	262	365	5	3,679
Ugashik	8	8	18	711	94	4	41	868
Subtotal, Bristol Bay	**895**	**797**	**13,657**	**91,121**	**7,607**	**4,849**	**431**	**117,666**
Anchorage	74	66	85	3,606	13	86	1	3,792
Barrow	2	2	70	10	20	0	0	100
Bethel	1	1	0	0	0	0	0	0
Big Lake	1	1	0	90	0	0	0	90
Chugiak	6	6	0	65	0	0	0	65
Copper Center	1	1	0	0	0	0	0	0
Delta Junction	1	1	0	62	0	1	0	63
Dutch Harbor	1	1	0	10	0	0	0	10
Eagle River	7	7	0	615	0	2	0	617
Fairbanks	12	12	59	525	230	22	4	840
Girdwood	1	1	4	40	30	0	0	74
Homer	8	7	23	690	1	3	1	719
Juneau	1	1	0	20	0	0	0	20
Kasilof	2	2	0	80	0	1	0	81
Kenai	2	2	33	106	0	9	0	148
King Cove	1	0	0	0	0	0	0	0
Kipnuk	1	1	0	0	0	0	0	0

-continued-

Table 6-3.–Page 2 of 2.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Kodiak (city)	11	8	1	160	6	7	0	173
McGrath	1	1	2	30	0	2	0	34
Nikiski	1	1	0	33	15	2	0	50
Ninilchik	1	1	4	33	0	0	0	37
Palmer	10	10	33	468	15	46	2	564
Paxson	1	1	2	43	1	8	1	55
Salcha	1	1	13	14	0	2	0	29
Seward	1	1	0	0	0	0	0	0
Soldotna	1	1	0	0	0	0	0	0
Sterling	2	1	0	70	30	6	2	108
Talkeetna	2	2	27	104	8	1	0	140
Trapper Creek	1	1	0	102	0	0	0	102
Wasilla	12	11	7	821	4	2	0	835
Willow	1	1	0	32	1	2	0	35
Subtotal, other Alaska	**168**	**153**	**363**	**7,829**	**374**	**203**	**11**	**8,781**
Total	**1,063**	**950**	**14,020**	**98,951**	**7,982**	**5,052**	**442**	**126,447**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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

		Percentage of households					Average pounds harvested	
Community	Year[a]	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	1984	75	56	55	40	20	52	17
Egegik	1984	64	60	60	24	40	37	16
Ekwok	1987	76	72	62	62	38	229	69
Igiugig	2005	100	83	83	92	58	188	59
Iliamna	2004	92	77	77	39	31	113	34
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	2004	88	88	88	56	52	128	32
Nondalton	2004	82	76	76	45	53	129	34
Pedro Bay	2004	89	61	61	83	39	50	15
Pilot Point	1987	94	94	94	35	59	56	16
Port Alsworth	2004	73	64	64	46	41	44	12
Port Heiden	1987	92	62	62	70	46	33	12
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	1987	100%	100	100	0	40	72	36

Sources Scott et al. 2001; 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; and Fall et al. *In prep*.

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

Source Fall et al. (1996).

a. Nushagak River villages.

b. Manokotak, Aleknagik, Twin Hills, Togiak.

-continued-

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. *Anerrluak*, 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.

CHAPTER 7: CHIGNIK AREA

BACKGROUND

The Chignik Management Area (CMA) includes all waters of Alaska on the south side of the Alaska Peninsula enclosed by 156°20.22′ west longitude (the longitude of the southern entrance to Imuya Bay near Kilokak Rocks) and a line extending 135° southeast from the tip of Kupreanof Point. The communities of the Chignik Area are Chignik (also called Chignik Bay), with a 2009 estimated population of 62, Chignik Lagoon (population 73), Chignik Lake (population 105), and Perryville (population 122). A fifth community, Ivanof Bay, did not have a year-round population in 2009; however, former residents have occupied it seasonally (ADLWD 2009). All of these communities are within the Lake and Peninsula Borough, and virtually all area residents participate in harvesting salmon in the Chignik area.

In the early 1990s, the Division of Subsistence conducted detailed research on the patterns of subsistence uses of fisheries resources in the CMA. The research findings are summarized in Hutchinson-Scarbrough and Fall 1996. More recent updates with more detail on subsistence uses of salmon by Perryville residents are also available (ADF&G (Alaska Department of Fish and Game) 2002; Fall et al. 1984; Fall et al. 2006a).

REGULATIONS

In 1993 the Alaska Board of Fisheries made a positive determination that salmon are customarily and traditionally taken or used for subsistence in the Chignik Area with specified amounts of salmon reasonably necessary for subsistence varying by the CMA districts (5 AAC 01.466 (a)(b)) (ADF&G 1994). Annually, a subsistence permit is required for fishing within the CMA, which must be used to record daily salmon harvests. Permits with harvest records must be returned to ADF&G Division of Subsistence by December 31. There is an annual limit of 250 salmon per permit. Legal gear includes seines and gillnets. Purse seines may not be used in Chignik Lake. There is no closed season for subsistence salmon fishing except from July 1 through August 31 in the Chignik River from a point 300 feet upstream from the Chignik weir to Chignik Lake; and 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.[16] Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Commercial salmon fishing license holders are allowed to fish for subsistence salmon, but they may not subsistence fish for salmon during the 12 hours before nor the 12 hours following a commercial salmon fishing period. However, a commercial salmon fishing license holder may subsistence fish for salmon during a commercial salmon fishing period (5 AAC 01.450–490).

Commercial fishers may also retain finfish from lawfully taken commercial catch for their home use, known as “home pack”, including use for bait. These fish, if taken, are required to be reported on the commercial fish ticket and not on the subsistence salmon permit. Home pack harvest information is reported by the ADF&G Division of Commercial Fisheries in Chignik annual management reports (Jackson and Anderson 2010). There is no “personal use” fishery for salmon in the CMA, but sport fishing is allowed under a sport fishing license. Rod and reel or hook and line are sometimes used to harvest subsistence caught salmon (Hutchinson-Scarborough and Fall 1996).

16. This regulation amendment was adopted by the BOF in 2008.

Recent Regulatory History

Prior to 2002, regulations governing subsistence fishing in the Chignik Area allowed the use of both seines and gillnets and required an individual permit with a seasonal limit of 250 salmon. Purse seines could be used to harvest subsistence salmon except in Chignik Lake. Also Chignik Area commercial salmon fishers could not subsistence fish between June 10 and September 30, although they were allowed to remove salmon caught during commercial openings for home use or "home pack." Subsistence salmon fishing was not allowed in the Chignik River upstream of the ADF&G weir site to Chignik Lake, in the tributaries to Chignik Lake, or in Black Lake (ADF&G 1991).

In 2002, the development of management strategies began for the commercial salmon cooperative fishery. Management staff initiated subsistence permit conditions in 2003 that increased subsistence harvest opportunities for commercial fishing license holders.[17] By regulation, commercial fishing license holders could not subsistence fish for salmon from 48 hours before the first commercial salmon fishing opening through September 30. The permit conditions allowed commercial license holders who were not engaged in commercial fishing during an opening for the cooperative or competitive fleets to subsistence fish during commercial openings, after registering with ADF&G.

ADF&G provided additional subsistence opportunities within the CMA in 2004. Regulations had closed the Chignik River to subsistence salmon fishing (5 AAC 01.475) until 2006. In 2004, through emergency order, the department allowed subsistence users to fish for salmon within the Chignik River, excluding the area 100 yd upstream and downstream of the Chignik weir, through June 30. The goal was to provide additional harvest opportunities for sockeye salmon while protecting spawning Chinook salmon. Effective in the 2006 season, the BOF adopted a modification to the regulation that stated "Salmon may not be taken from July 1 through August 31 in the Chignik River from a point 300 ft upstream from the Chignik weir to Chignik Lake."

In 2004, restrictions on commercial fishers' involvement in subsistence fishing were again relaxed through the provisions of the subsistence fishing permit. In addition to obtaining a subsistence permit, commercial fishers wishing to subsistence fish after the first commercial opening were required to register with ADF&G staff working at the weir. ADF&G established a subsistence fishing schedule for these commercial fishers depending upon whether they fished for the cooperative fleet or independently (Bouwens 2004).

At its 2004 meeting, the BOF adopted regulations to increase subsistence fishing opportunities for commercial salmon fishing license holders by allowing them, with certain restrictions (5 AAC 01.485), to harvest subsistence salmon during the commercial salmon fishing season. In addition, the BOF directed ADF&G to allow for an increased escapement of sockeye salmon during the August commercial fishery (from 50,000 to 75,000), in order to enhance late season subsistence opportunities in Chignik Lake. Although the commercial fishery was limited in August, the escapement was not achieved (Bouwens 2005). Also, the Chignik River was historically closed to subsistence fishing by regulation. In 2005, the BOF opened the Chignik River to subsistence fishing, except for the area 300 ft upstream and downstream of the ADF&G Chignik River weir, which remained closed. The remaining portions of the Chignik River could be fished for subsistence year-round, except the portion above the weir was closed from July 1 through August 31 annually to protect spawning Chinook salmon (Stichert 2007b).

In January 2008, at the Chignik Area Board of Fisheries meeting, the following regulatory changes to subsistence in the CMA were adopted. Subsistence salmon fishing in the Chignik Lake tributaries of Clark River and Home Creek from their confluence with Chignik Lake upstream one mile was legalized. Also, the use of subsistence gillnets anywhere in the CMA remains legal, but their use is restricted when

17. The regulations providing for the cooperative commercial salmon fishery in the Chignik Area were invalidated by a decision of the Alaska Supreme Court and have not been operative since 2005.

they are fixed, anchored, or otherwise held in place to obstruct no more than one-half of the width of the stream that is open to subsistence salmon fishing (Jackson 2009).

HARVEST ASSESSMENT PROGRAM

The Division of Commercial Fisheries conducted its first subsistence salmon harvest assessment in the CMA in 1976. Subsistence harvest assessments for salmon have been conducted annually since then. The Division of Subsistence assumed responsibility of the harvest assessment program in 1993. Permits are issued upon request in each community. The method of permit issuance in the communities varies by community and year, depending on the availability of vendors and other arrangements in place 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 Division of Subsistence office in Anchorage by December 31. Permits include a harvest report that fishers are required to complete. The report asks for the dates fished, the specific locations fished, and the number of each species of salmon caught on each day. Nonresponses are sent reminder letters, and telephone calls are made if further follow-up is required. Also, the Division of Subsistence has conducted face-to-face household interviews since 1997 in order to collect harvest information from households that do not obtain permits and to add late season harvest information not recorded on permits. Survey technicians hired from the communities attempt to contact all households in the CMA. The surveys are generally conducted during January, February, and March. Respondents are asked questions similar to those included on the permit, but additional questions regarding late season harvests and whether their subsistence needs were met are also asked.

In 1993, the Division of Subsistence obtained copies of all available subsistence permits for the CMA from the Division of Commercial Fisheries' archive in Kodiak. Permits issued prior to 1980 and for 1987 could not be located. All permit data were entered into a database. The estimated harvests developed in this database and reported in subsequent Division of Commercial Fisheries reports differ slightly from those reported in earlier reports for several reasons. There are small discrepancies in some years in the number of permits issued or returned. Estimated harvests in earlier reports were based on a simple expansion from harvests reported on returned permits to the total number of permits issued. 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 are tabulated by species and fishing area. Increases in permits issued and returned beginning in 1993, and consequently higher harvest estimates, reflect the use of area vendors to issue permits as well as postseason surveys conducted by ADF&G staff and area research assistants.

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 and Fall 1996:27). With the assistance of area permit vendors, ADF&G Chignik weir staff, research assistants, and area governments, subsistence salmon harvest assessments for most recent years, with some exceptions, have resulted in more reliable estimates of the total harvest.

SUBSISTENCE SALMON HARVESTS IN 2009

Since 1977, the number of subsistence salmon permits issued for the Chignik Area has averaged 103 per year, with 70 permits (68%) returned. Over the last 10 years, the average has been 119 permits issued and 92 permits (77%) returned. The recent 5-year average (2003–2008) is 111 permits issued and 78 (70%) returned. In 2008, 89 permits were issued, and 69 were returned (78%) (Table 7-1). This shows a slight decline in the number of permits issued, however the percentage returned is comparable to the recent 5-year and 10-year averages. In 2009, 95 permits were issued, and 82 (86%) were returned. Of all permits issued for 2009, 68 (72%) were issued to residents of Chignik Area communities, and 26 (28%) were issued to residents of other Alaska communities (Table 7-2).

In 2009, the estimated subsistence salmon harvest for the Chignik Area was 8,907 fish (Table 7-1). This was less than the historical average (1977–2008; 11,351 salmon) as well as below the recent 10-year average (12,183 salmon) and 5-year average (11,056 salmon).

The 2009 estimated subsistence harvest in the CMA was made up of 76% (6,785) sockeye salmon, 13% (1,174) coho salmon, 8% (707) pink salmon, 2% (137) chum salmon, and 1% (104) Chinook salmon (Figure 7-1). Of the total harvest, Chignik/Perryville area residents took 7,564 salmon (85%) and other Alaska residents harvested 1,343 salmon (15%) (Table 7-2; Figure 7-2).

In 2009, similar amounts of subsistence salmon were harvested in Chignik Lagoon, Chignik Lake, and Perryville: a combined total of 6,120; 69% of total area harvest. Additionally, 1,444 salmon (19% of the total harvest for the area) were harvested in Chignik Bay. Sockeye salmon comprised the largest portion of the Chignik Area's estimated harvest at 6,785 salmon (76%) (Table 7-2).

Subsistence harvests in the Perryville and Western districts in 2007 numbered 3,225 salmon (24%), with most of these coho salmon (1,184; 37% of total harvest) although a similar amount of sockeye salmon (967, 30%) were harvested. Estimated harvest numbers for this region in 2008 were nearly half what they were in 2007 with reported harvests of 1,486 salmon, a reduction of 46% from 2007. In 2009, the estimated subsistence harvest numbers have decreased again, with reported harvests of 529 salmon, a reduction of 36% from 2008. From 1993 through 2008, postseason household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administering the postseason household surveys for 2009, probably resulting in an underestimate of subsistence harvests since not all subsistence fishing households obtained a permit. To compensate for this potential underestimate, the average annual harvest for the period 1999–2008 reported during postseason surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009.

Coho salmon made up the largest percentage of this area's harvest with 213 salmon (40% of Perryville's total salmon harvest and 42% of total CMA coho salmon harvest). The harvest of pink salmon was the second highest salmon harvest in the Perryville region (158), and made up 62% of the total pink salmon harvests for the CMA.

Estimated subsistence harvests in Chignik Lake totaled 1,682 (29%) salmon, most of which were sockeye salmon 1,566 (32% of total CMA sockeye salmon harvests). This total includes spawning sockeye salmon, locally called "redfish," which are harvested in the fall and early winter (Table 7-3).

Estimated harvests of salmon taken in the Chignik Bay and Chignik Lagoon subregion totaled 3,640 salmon (62% of total CMA harvests). Sockeye salmon represented the largest portion of salmon harvested in this area with a total of 3,314 (67% of CMA sockeye salmon harvests).

Subsistence harvest patterns in the Chignik Management Area are often influenced by the Chignik commercial salmon fishery since many of those who commercial fish are also subsistence harvesters. Regulations for subsistence salmon fishing are tied to the Chignik commercial fishing operations. Prior to 2002, this fishery was managed by ADF&G as a competitive limited entry permit fishery. From 2002 to 2005, the Chignik commercial salmon fishery was managed based on 2 management plans: the Chignik Area Management Plan (competitive fishery) and the Chignik Area Cooperative Purse Seine Salmon Management Plan (cooperative fishery) (Stichert 2007a). The cooperative fishery plan was repealed by the Alaska Supreme Court in March 2005, but the BOF reestablished the cooperative management plan by emergency regulation and it occurred in 2005. In 2006, the Chignik commercial fishery was managed solely under the Chignik Salmon Management Plan as a competitive fishery. During the 2006 season, out of 96 total Chignik Commercial Fisheries Entry Commission (CFEC) permits issued, only 48 participated (Stichert 2007b). In 2009, 55 CFEC boats fished and made deliveries (Stichert et al. 2009).

Prior to 2002, the years before the Chignik cooperative commercial fishery, many families processed most of their spring salmon for subsistence uses just prior to the first commercial opening in early June. Salmon were caught in early June either by purse seine or beach seines. Many families from Chignik

Lake and Perryville would occupy fish camps across Chignik Lagoon. Chignik Lagoon and Chignik Bay families would, for the most part, put up their early subsistence fish as a family effort prior to the start of the first commercial fish opening. These early-run fish (sockeye salmon) are especially important to subsistence users because these fish are traditionally smoked and it is necessary to cure these fish before flies hatch and deposit eggs on the fish, which typically occurs in mid- to late June. Traditionally, subsistence users could maximize their early season subsistence harvests because of large pulses of early-arriving fish. Area subsistence fishers have also reported that the early-run fish taste better and freeze or salt better if harvested early in the season. The second run (late run) of sockeye salmon was traditionally taken either in Chignik Lagoon, Chignik Lake, or near the mouth of the Clark River. Gillnets and beach seines were typically used to harvest late-run salmon in Chignik Lake (Hutchinson-Scarborough and Fall 1996:49).

During the years of the cooperative fishery (2002–2005), some changes occurred within area subsistence fishing patterns. Since many of the permit holders for Chignik were also area families who relied on subsistence fishing to feed their families, they would often use their commercial fishing boats to fish prior to the commercial fishing season. During these years, ADF&G opened the cooperative commercial fishery in early June, when many participants would have been processing their subsistence fish, and the nature of the management of the cooperative fishery resulted in less, but more steady passage of fish in the lagoon, rather than the pulses of fish that historically arrived when the competitive-only fishery was in operation. The management of the cooperative fishery resulted in a decrease in efficiency and an increase in effort for harvesting subsistence salmon in Chignik Lagoon.

According to verbal testimony by some Chignik families to Division of Subsistence personnel, many families had to wait until later in the summer to subsistence fish, and then the flies created spoilage. Other area residents reported both positive and negative changes occurring with their subsistence harvests and cash economy as a result of the creation of the cooperative commercial fishery. The cooperative fishing years resulted in a regulatory change that removed the restrictions on subsistence fishing for commercial fishers who could fish for subsistence throughout the summer as long as it was not done at the same time as a commercial opening and a permit was obtained. Fishers without a commercial permit and who wished to subsistence fish as before could fish for subsistence at any time as long as they had a subsistence permit. In addition, there was a reported increase in the amount of fish removed from the cooperative boats for “home pack” that were given to area residents to supplement their subsistence harvests. At that time, subsistence users informed ADF&G that despite the adjustments to the CMA subsistence fishery which allowed for more opportunity for subsistence fishing, some were still having difficulty obtaining their subsistence salmon in 2004 and 2005.

In 2002 and 2004, the USFWS implanted radio transmitters in sockeye salmon in August and early September to determine when sockeye salmon targeted in the late season subsistence fishery passed the Chignik weir. The results of the 2002 studies are described in Anderson (2003). As stated in the regulations section of this chapter, in 2004 the BOF modified the commercial fisheries management plan for late-run sockeye salmon to allow more fish to pass into Chignik Lake in September, thus providing for subsistence harvests.Late-run sockeye salmon, which are dried, are harvested from Chignik Lake in the fall by many Chignik Area residents, including some Perryville families. In 2006, several residents, particularly from Chignik Lake, commented to ADF&G that despite the limits to the August commercial fishery, they still had difficulty acquiring their late run salmon, because they were not seeing as many fish as in prior years. They needed to fish more days to achieve harvest goals, or they harvested fewer late run salmon.

By 2006, the cooperative commercial fishery was abolished. Area subsistence patterns returned to the historical patterns used prior to the cooperative fishery, but on a reduced level. In 2008, there was a decrease in participation in the Chignik subsistence fisheries with 89 permits issued; 39 fewer permits issued than in 2007, and 32 fewer than the previous 10-year average of 121. This pattern has changed slightly with 85 permits issued in 2009; however, this number is still noticeably lower than the 10-year

average (1998–2008) of 119. Total salmon harvested in 2009 was 8,907, which was 3,276 fewer than the recent 10-year average of 12,183 (Table 7-1).

Fish camps located across from Chignik Lagoon village that were abundantly utilized in the 1990s were mostly abandoned by 2006. However, in 2007 there were still a few families from Perryville and Chignik Lake, as well as 1 family from Chignik Lagoon, that used their fish camps during a portion of the summer of 2007 (Delissa Jones, Administrator, Chignik Lagoon, personal communication, Anchorage, 2008). In 2007, beach seines and setnets were still used along the lagoon, but mostly at the mouth of the Chignik River by some Chignik Lake families. Late-run sockeye salmon were also utilized and harvested in Chignik Lagoon, as well as in Chignik Lake and the Clark River. Purse seines or beach seines were used to harvest these fish, which were typically dried since residents say they have less fat than early-run sockeye salmon. Chinook salmon were caught in Chignik River and often canned or smoked (Mark A. Stichert, Fishery Biologist, ADF&G, Kodiak, personal communication, 2008).

Perryville subsistence patterns have not changed greatly from historical times, though fewer families are going to fish camps in Chignik Lagoon. Fresh sockeye salmon are brought over to the village by commercial fishing families. Area streams and beaches are used extensively for the harvest of the area runs of coho, chum, and pink salmon, as well as the occasional sockeye salmon. Due to the fluctuations in river locations and stream flow, and fluctuations in salmon runs to these systems, Perryville subsistence fishers may have to use other streams to harvest their fish, sometimes as far as Ivanof Bay. Fish are smoked, dried, canned, salted, and frozen by Perryville residents. Some Perryville families have relatives in Chignik Lake, and so will travel to Chignik Lake in the fall to harvest late run sockeye salmon for drying. The village of Ivanof Bay has been abandoned as a year-round community; however, some Ivanof Bay families residing in Perryville return to Ivanof Bay to harvest a large portion of their subsistence salmon (Karen Kalmakoff, former Ivanof Bay resident, personal communication, Anchorage, 2007). Subsistence salmon harvest estimates for Perryville in 2008 were approximately one-half (54%) of what they were in 2007. In 2009, the subsistence salmon harvest estimates were 64% of what they were in 2008. While the reason for the apparent decline remains unknown, the absence of postseason surveys administered in 2009 may have affected the resulting data set. To compensate, the average annual harvest for the period of 1999–2008 reported during postseason surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009. However, given the decline in subsistence salmon harvest estimates from 2007 to 2008, it is also possible that more fish were harvested in recent years, but not captured on the harvest reports.

The subsistence permit program for the Chignik Area does not account for salmon removed from commercial catches for home uses under 5 AAC 39.010 (called “home pack” by area residents). Salmon removed for home pack are reported to ADF&G on the fish ticket. In 2009, Chignik commercial fishing boats reported a removal of 93 sockeye, 75 Chinook, and 1 chum salmon from their commercial harvest for home pack (Anderson 2011).

OTHER CHIGNIK AREA SUBSISTENCE FISHERIES

Estimates of subsistence halibut harvests for eligible communities and tribes, including those of the Chignik Management Area, are available for 2003–2009 (Fall et al. 2007a; Fall et al. 2005; Fall et al. 2006a; Fall et al. 2004; Fall and Koster 2008, 2010b).

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 subsistence uses of all finfishes in the Chignik Area. Table 7-4 lists the finfishes other than salmon for which subsistence uses have been documented through systematic household interviews conducted by the Division of Subsistence.

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

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 comprehensive household surveys in Chignik Bay, Chignik Lagoon, Chignik Lake, and Perryville that, among other things, collected updated harvest data for nonsalmon fishes and marine invertebrates. A summary of these findings appears in (Fall 2006a).

The reader should consult Morris (1987), Fall et al. (1995), Hutchinson-Scarbrough and Fall (1996), and ADF&G (2002) for more background on these subsistence fisheries for nonsalmon finfishes and for shellfish. For harvest estimates based on systematic household interviews, see the CSIS.

Table 7-1.–Historical subsistence salmon harvests, Chignik Area, 1977–2009.

	Permits		Estimated salmon harvests					
Year	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	204	261	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
5-year average (2004–2008)	111	78	139	8,132	1,689	211	885	11,056
10-year average (1998–2008)	119	92	161	8,897	1,744	223	1,158	12,183
Historical average (1977–2008)	103	70	80	8,859	1,272	254	885	11,351

Sources ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010); Quimby and Owen 1994 for 1976–1979, and 1987.

-continued-

Table 7-1.–Page 2 of 2.

Note NA = 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 through 2008, postseason household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administering the surveys for 2009, 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 the period 1999–2008 reported during postseason surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009.

Table 7-2.–Estimated subsistence salmon harvests by community, Chignik Area, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	15	12	16	1,228	172	6	21	1,444
Chignik Lagoon	12	11	28	1,232	5	0	0	1,265
Chignik Lake	20	17	39	2,577	172	4	80	2,871
Perryville	22	20	9	674	632	100	570	1,984
Subtotal, area residents	**68**	**59**	**91**	**5,711**	**980**	**110**	**672**	**7,564**
Anchorage	7	7	0	541	12	0	0	553
Fairbanks	1	1	0	46	0	0	0	46
Homer	2	1	0	48	0	0	0	48
Ivanof Bay	2	2	1	70	182	27	32	312
Kodiak	8	7	11	186	0	0	3	201
Palmer	1	1	0	150	0	0	0	150
Petersburg	1	0	0	0	0	0	0	0
Wasilla	4	3	0	33	0	0	0	33
Subtotal, other Alaska residents	**26**	**22**	**13**	**1,075**	**194**	**27**	**35**	**1,343**
Total	**95**	**82**	**104**	**6,785**	**1,174**	**137**	**707**	**8,907**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 7-3.–Subsistence salmon harvests by species and subarea of harvest, Chignik Area, 2009.

	Estimated salmon harvests[a, c]					
Subarea of harvest[b]	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay and Lagoon	27	3,314	217	6	77	3,640
Chignik Lake	19	1,566	73	1	22	1,682
Perryville	7	84	213	67	158	529
Total	**53**	**4,964**	**503**	**74**	**257**	**5,852**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. Estimated based on extrapolating harvests recorded on returned permits.

b. The Chignik Bay-Lagoon Subarea corresponds to the portion of the Chignik Bay District downstream of the ADF&G weir in the Chignik River, and the Central District. The Chignik Lake Subarea includes subsistence harvests above the weir. The Perryville Subarea corresponds to the Perryville and Western districts, including Ivanof Bay, Mitrofania 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.

c. Harvest estimates are from 2009 permit returns only.

Table 7-4.–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
Herring spawn on kelp		14	0	5	0	4
Walleye pollock	*Theragra chalcogramma*	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)	*Thaleichthys pacificus*	23	40	33	100	78
Pacific cod (gray cod)		29	60	48	86	63
Sculpin	*Hemilepidotus sp.*	11	0	5	0	30
Starry flounder		6	0	19	14	0
Kelp greenling	*Hexagrammos decagrammus*	11	0	10	0	30
Arctic grayling		0	0	0	14	0
Sablefish (black cod)	*Anoplopoma fimbria*	0	7	5	0	0
Steelhead trout		0	13	5	0	0
Black rockfish	*Sebastes melanops*	0	7	0	0	22
Red (yelloweye) rockfish	*Sebastes ruberrimus*	3	0	0	0	4
Any nonsalmon fish		89	100	86	100	96

Sources Scott et al. 2001, and Hutchinson-Scarbrough 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 7-5.–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	*Siliqua patula*	14	33	24	43	37
Butter clam	*Saxidomus giganteus*	71	67	52	71	41
Gaper clam	*Tresus capax*	11	0	0	0	4
Nuttall cockle	*Clinocardium nuttallii*	37	7	48	100	70
Pinkneck clam (redneck)	*Spicula polynuma*	0	0	0	71	4
Pacific littleneck (steamer) clam	*Protothaca staminea*[a]	11	0	0	29	11
Chiton, black (leather)	*Katharina tunicata*	49	27	57	100	93
Chiton, red (gumboot)	*Cryptochiton stelleri*	0	0	0	86	11
Mussel (blue)	*Mytilus trossulus*	9	7	0	14	15
Octopus	*Octopus* spp	43	20	48	71	52
Sea urchin	*Stronglyocentrotus* spp	29	0	48	100	89
Sea cucumber	Varius spp	0	0	0	0	4
Shrimp	*Pandalus* spp	9	0	5	0	0
Giant Pacific scallop	*Pecten caurinus*	3	0	0	0	0
Red king crab	*Paralithades camtschatica*	40	20	33	43	0
Dungeness crab	*Cancer magister*	37	40	48	100	52
Tanner crab	*Chionoecetes bairdi*	63	67	14	0	4
Snail	*Neptunea* spp	3	0	0	0	4
Limpet	*Acmaeidae* spp	3	0	0	0	4
Any marine invertebrates		89	87	81	100	96

Sources Scott et al. 2001, and Hutchinson-Scarbrough and Fall 1996.

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

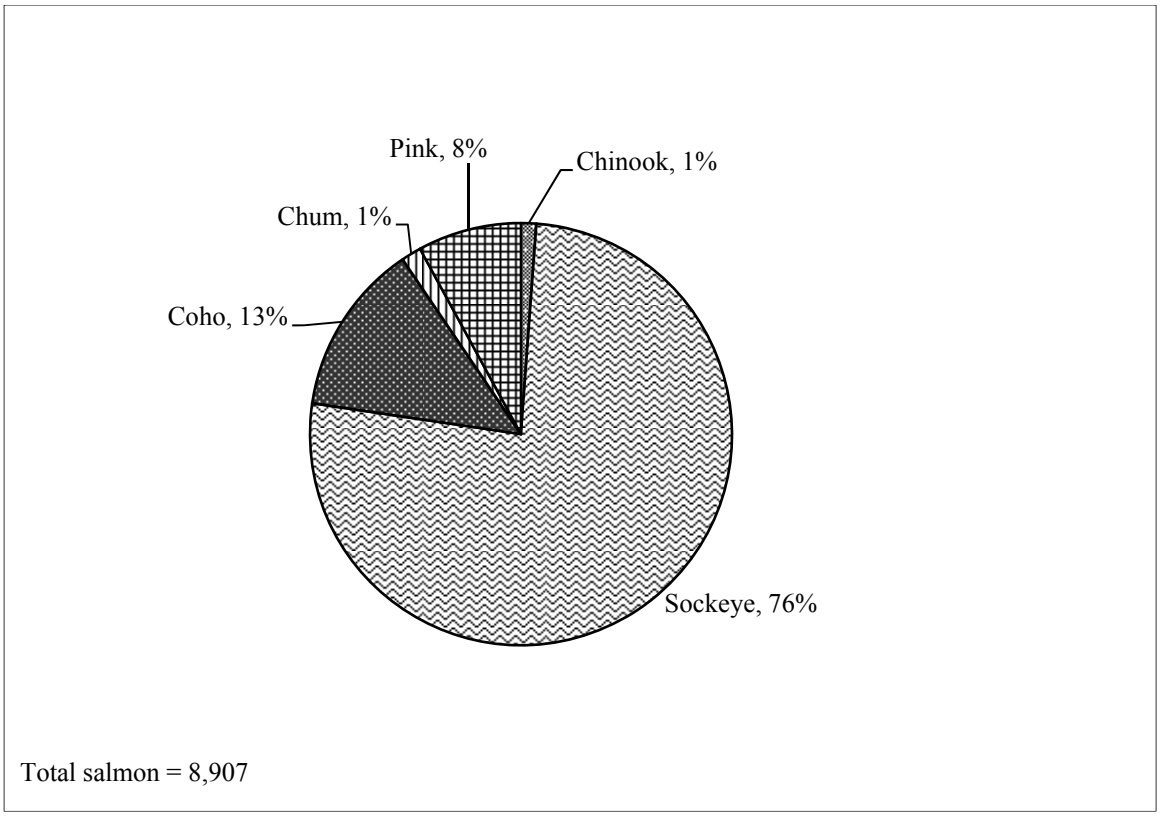

Figure 7-1.–Composition of Chignik Area subsistence salmon harvest by species, 2009.

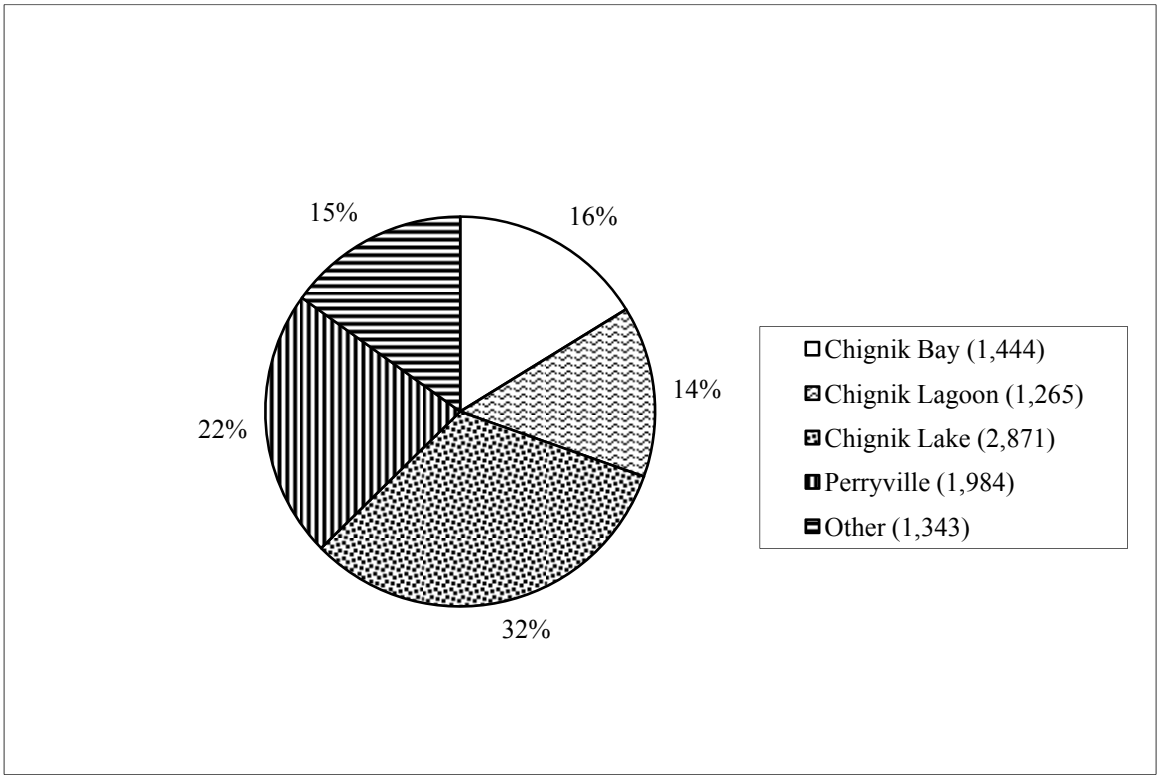

Figure 7-2.–Subsistence salmon harvests by community, Chignik Area, 2009.

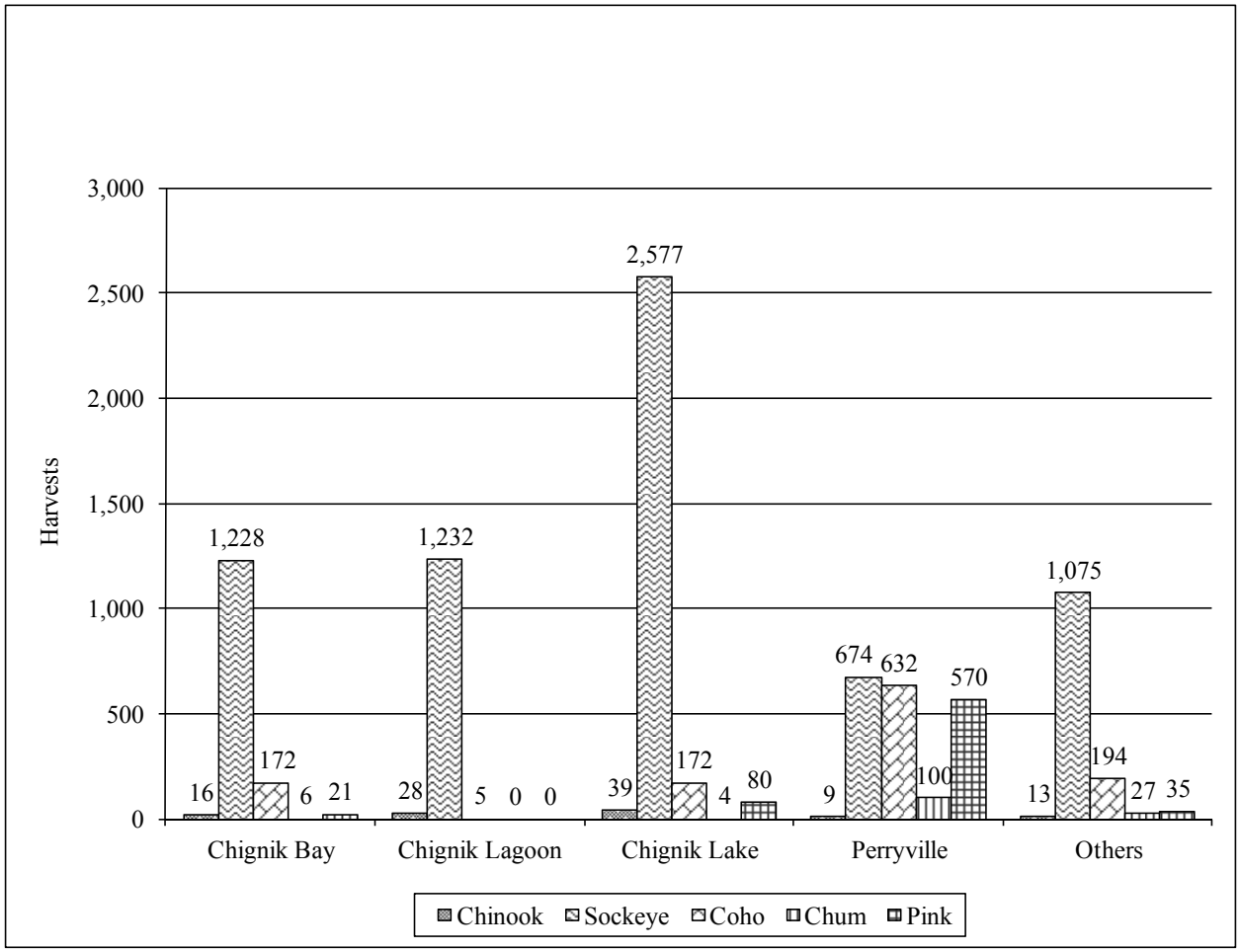

Figure 7-3.–Subsistence salmon harvests by community, Chignik Area, 2009.

CHAPTER 8: ALASKA PENINSULA AREA

BACKGROUND

The Alaska Peninsula Area includes all Pacific Ocean waters of Alaska between a line extending southeast from the tip of Kupreanof Point and the longitude of the tip of Cape Sarichef, and all Bering Sea waters of Alaska east of the longitude of the tip of Cape Sarichef and south of the latitude of the tip of Cape Menshikof. The communities of the Alaska Peninsula Area are Port Heiden (estimated population 83 in 2009), Nelson Lagoon (population 60), False Pass (population 41), Cold Bay (population 84), King Cove (population 744), and Sand Point (population 1,001) (ADLWD 2009). 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. Legal gear includes seines and gillnets. In waters open to commercial fishing, set and drift gillnets may not exceed 50 fathoms in length. In most other areas, set gillnets may not exceed 100 fathoms and drift gillnets may not exceed 200 fathoms. Purse seines may not exceed 250 fathoms in length. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. (5 AAC 01.423 includes special provisions regarding subsistence gear for other areas, including Mortensens Lagoon, the False Pass vicinity, the Bear River, and the Sandy River.) Salmon may be taken at any time, except that in those districts and sections 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 FSB are generally identical to the state regulations summarized above, with the exception that rod and reel, in addition to gillnet and seine, is legal subsistence gear under federal rules. There is no separate federal subsistence permit; a state permit is required for subsistence fishing under the federal regulations.

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 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 2009

From 1985 through 2008, the number of subsistence salmon permits issued for the Alaska Peninsula Area has averaged 196 per year (Table 8-1). The recent 5-year average (2004–2008) was 162 permits. In 2009, 134 subsistence salmon fishing permits were issued for the Alaska Peninsula Area, down from 199 issued in 2008. The response rate was 88% in 2009 (118 of 134 permits were returned). Of all permits issued, 123 (92%) were issued to residents of Alaska Peninsula Area communities, and 11 (8%) were issued to

residents of other Alaska communities (Table 8-2). Most nonlocal residents fish at Mortensens Lagoon on the Cold Bay road system.

The estimated subsistence salmon harvest in the Alaska Peninsula Area in 2009 was 9,707 fish. This is a decrease from the year before (15,022 salmon) and is less than the recent 5-year (14,094), and 10-year averages (16,669) (Table 8-1). The 2009 subsistence harvest was made up of 58% sockeye salmon, 26% coho salmon, 8% pink salmon, 4% chum salmon, and 4% Chinook salmon (Figure 8-1). Of the total harvest, the residents of Cold Bay took a little over 7%, False Pass residents 4%, Sand Point residents 23%, Port Heiden residents 15%, Port Moller residents 2%, Nelson Lagoon residents <2%, King Cove residents 42%. Other Alaska residents harvested 5% (Table 8-2; Figure 8-2).

Following historical peak harvest levels recorded in 1997, existing data indicate a general decline in the Alaska Peninsula Area subsistence salmon harvest. Subsistence salmon harvests reported from the Alaska Peninsula Area in 2009 were the lowest recorded since 1985 (Hartill and Keyse 2010).

In interviews with Division of Subsistence staff, fishery managers expressed the view that the subsistence permit program did not completely document all subsistence salmon harvesting activities because some fishers did not obtain permits. 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 (±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 (±2,551), compared to 7,833 based on estimates using permit return information (Fall et al. 1993a:61).

The subsistence permit program for the Alaska Peninsula Area does not account for salmon withheld from commercial catches for home uses. Fishery managers believe that this number is substantial, especially in years when commercial salmon prices are low. For 1992, it was estimated that 51% of the salmon harvested for home uses at King Cove (Fall et al. 1993b), and 45% at Sand Point (Fall et al. 1993a), were removed from commercial harvests.

In 2002 and 2003, the Division of Subsistence conducted the Subsistence Fisheries Harvest Assessment and Traditional Ecological Knowledge, Lower Alaska Peninsula and Aleutian Islands project, funded in part by OSM under project number 02-032. The goals of the project were to generate harvest data for salmon to supplement estimates produced through the subsistence permit program and to collect TEK about fisheries resources. Among other findings, the research documented that King Cove households removed 2,304 salmon from their commercial harvests for home uses in 2003, representing 24% of the total salmon harvest for home uses in the community (Davis 2005:116). Another product was a searchable TEK database called "The View from the Beach." For detailed study findings, consult Davis (2005).

OTHER SUBSISTENCE FISHERIES

Subsistence halibut fishing harvest estimates for communities and tribes in the Alaska Peninsula Area are available for 2003 through 2009 in Fall et al. (2004), Fall et al. (2005), Fall et al. (2006a), Fall and Koster (2008), Fall and Koster (2010a) and Fall and Koster (2011a).

There are no other annual harvest assessment programs for the other finfish and shellfish subsistence fisheries of the Alaska Peninsula Area. The Division of Subsistence has conducted 1 round of systematic household harvest surveys in each of the area's communities, except for Cold Bay. 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 study year. Generally, Pacific cod, halibut, and Arctic char/Dolly Varden were the most frequently used by households in these communities.

Table 8-1.–Historical subsistence salmon harvests, Alaska Peninsula Area, 1985–2009.

Year	Permits		Estimated salmon harvests					
	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	185	148	391	15,119	4,961	2,235	2,136	24,843
2000	180	152	341	9,955	5,239	1,699	950	18,185
2001	185	155	570	12,259	3,940	1,963	1,181	19,912
2002	157	133	345	9,384	3,188	1,603	532	15,052
2003	166	128	312	10,103	4,266	2,353	1,194	18,228
2004	147	135	218	9,484	3,787	951	609	15,049
2005	160	139	192	11,260	4,089	716	1,054	17,310
2006	153	131	110	7,847	2,452	910	961	12,280
2007	150	124	100	6,872	2,648	498	693	10,811
2008	199	164	280	7,623	4,355	1,078	1,687	15,022
2009	134	118	350	5,629	2,545	434	749	9,707
5-year average (2004–2008)	162	139	180	8,617	3,466	831	1,001	14,094
10-year average (1999–2008)	168	141	286	9,991	3,892	1,401	1,100	16,669
Historical average (1985–2008)	196	151	318	9,962	4,655	1,966	1,504	18,405

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 8-2.–Subsistence salmon harvest estimates by community, Alaska Peninsula Area, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Cold Bay	21	16	1	612	33	30	0	676
False Pass	4	3	15	69	11	39	253	387
King Cove	41	36	57	1,694	1,943	174	216	4,084
Nelson Lagoon	4	1	0	8	188	0	4	200
Port Heiden	29	29	206	1,157	69	0	0	1,432
Port Moller	1	1	0	233	0	0	0	233
Sand Point	23	21	45	1,391	301	186	275	2,198
Subtotal, area residents	**123**	**107**	**324**	**5,163**	**2,545**	**429**	**749**	**9,210**
Anchorage	3	3	0	50	0	0	0	50
Fairbanks	2	2	0	27	0	3	0	30
Kodiak City	1	1	26	25	0	0	0	51
Kotzebue	1	1	0	250	0	0	0	250
Talkeetna	4	4	0	114	0	2	0	116
Subtotal, other Alaska residents	**11**	**11**	**26**	**466**	**0**	**5**	**0**	**497**
Total	**134**	**118**	**350**	**5,629**	**2,545**	**434**	**749**	**9,707**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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

	Percentage of households using in that study year[a]				
Resource[b]	False Pass	King Cove	Nelson Lagoon	Port Heiden	Sand Point
Pacific cod	65	44	0	3	61
Sablefish	15	8	ND	ND	13
Kelp greenling	10	5	ND	ND	7
Flounder	20	4	8	11	4
Halibut	95	73	0	22	89
Herring	30	23	ND	3	14
Herring spawn on kelp	0	3	ND	3	1
Smelt	0	1	ND	49	5
Rockfishes	5	36	ND	ND	61
Sculpin	35	7	ND	ND	4
Walleye pollock	ND	3	ND	ND	2
Lake trout	ND	ND	ND	11	ND
Arctic char/ Dolly Varden	75	67	54	76	51
Rainbow trout/steelhead	5	4	ND	3	31

Source (CPDB).

a. Study year = 1987–1988 for False Pass; 1986–1987 for Nelson Lagoon and Port Heiden; 1992 for King Cove and Sand Point.

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.

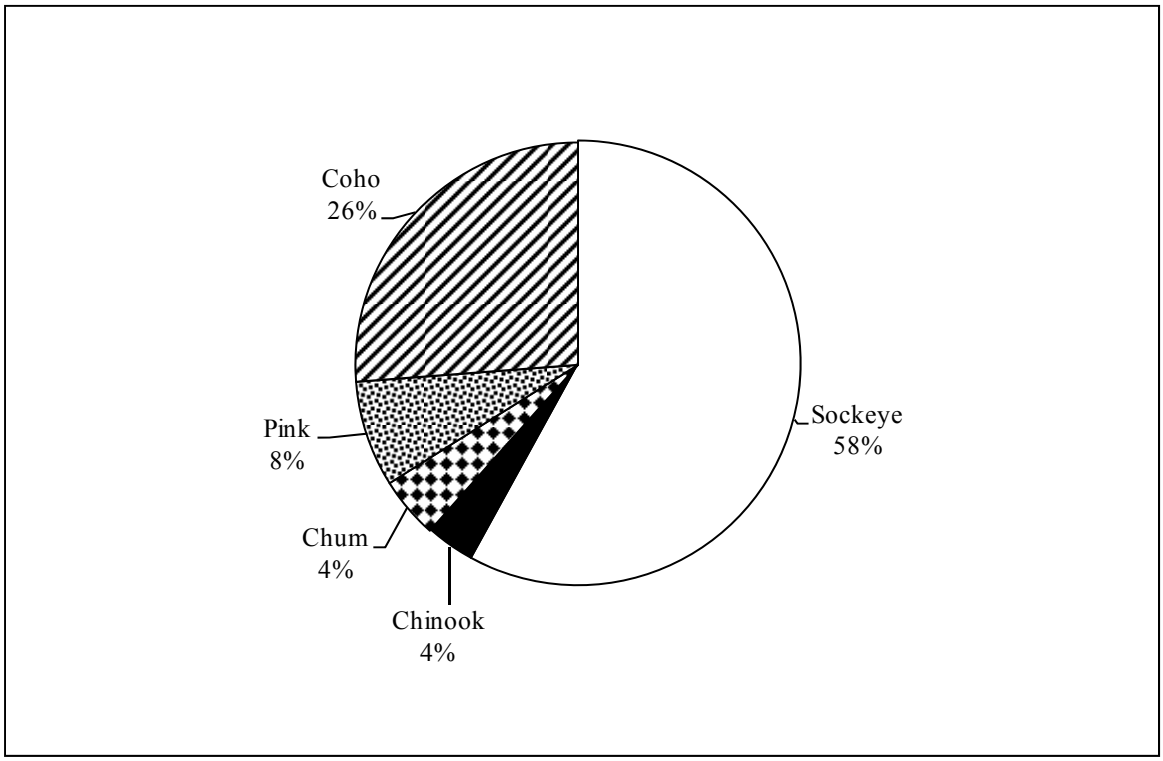

Figure 8-1.–Composition of Alaska Peninsula Area subsistence salmon harvest by species, 2009.

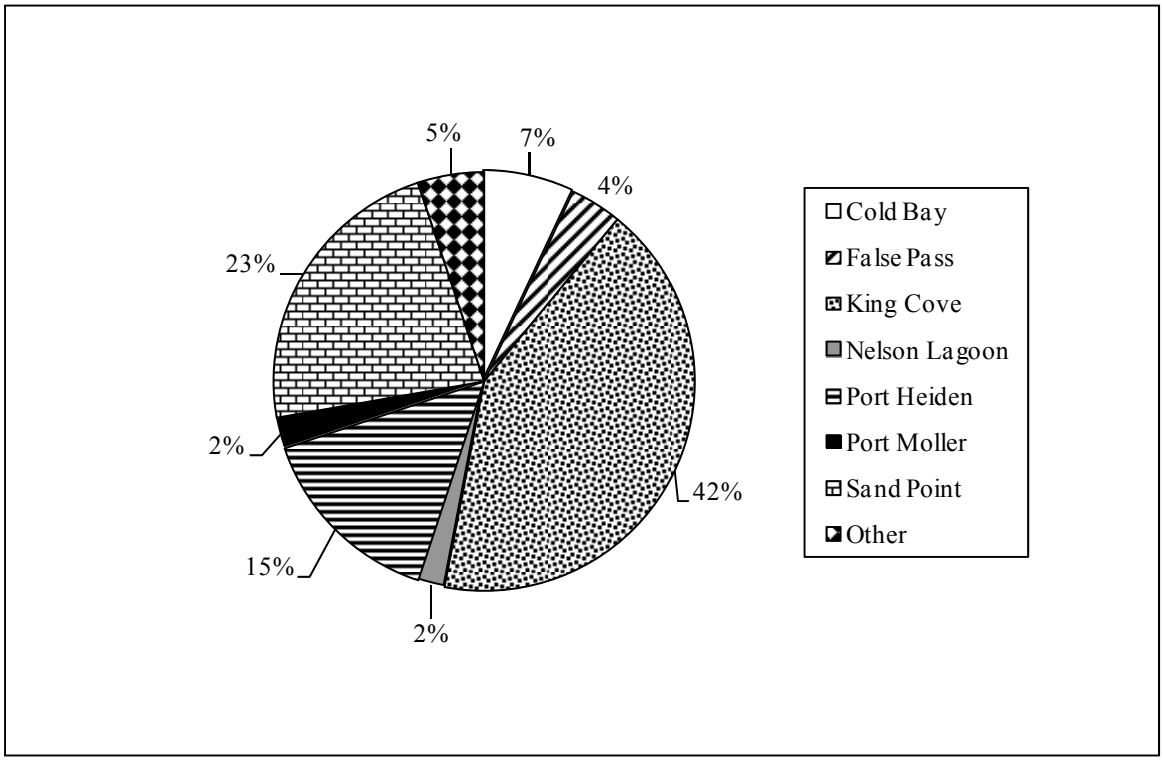

Figure 8-2.–Subsistence salmon harvests by community, Alaska Peninsula Area, 2009.

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 6 management districts. From east to west, they are the Akutan District, Unalaska District, Umnak District, Pribilof Islands District, Atka–Amlia Islands District, and the Adak District (5 AAC 01.355). The major communities of the Aleutian Islands Area are Akutan, Unalaska–Dutch Harbor, Atka, Nikolski, and Adak. Akutan's population in 2000 totaled 713, of which only 75 lived in households and the remaining 638 lived in group quarters, such as fish processing plants. In 2009, the total Akutan population was estimated at 846, however household surveys conducted for 2009 estimate the local village population of Akutan at 90;[18] the population of Unalaska–Dutch Harbor was 4,283 in 2000 with 2,091 in households and the remainder in group quarters; in 2009 the population was 3,662. In Nikolski, the population was 33 in 2000 and 15 in 2009; in Atka the population was 92 in 2000 and 71 in 2009; and in Adak the population was 165 in 2009. The population of St. Paul in 2000 was estimated at 532, and the 2009 population at 459. St. George in 2000 had an estimated population of 152, and 111 in 2009 (ADLWD 2010; ADLWD 2009; U.S. Census Bureau 2001). 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.

Subsistence salmon harvests are monitored annually only in the Unalaska and the Adak districts, where a permit is required for harvest. A permit is not required for subsistence salmon fishing in the waters fished by the communities of Akutan, Atka, Nikolski, or Adak; therefore, subsistence salmon harvests are not systematically monitored in these communities. Harvest estimates for Akutan are based upon data in Davis 2005 and from household surveys conducted in 2009. Estimates for Atka and Nikolski are based upon data in Davis (2005). There are no native populations of salmon in the Pribilof Islands, and therefore there are no subsistence salmon fisheries available for the communities of St. Paul and St. George.

SALMON HARVESTS IN THE UNALASKA DISTRICT

The Unalaska District includes all waters west of Akutan Pass up to, and including, Umnak Pass (5 AAC 12.200 (b)).

Salmon Harvest Regulations

A 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. 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. A record of subsistence-caught fish must be recorded on the reverse side of the permit and the permit must be returned to the department by October 31, even if no salmon were harvested (5 AAC 01.380).

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, but from June 1 through September 15, a purse seine vessel may be used

18. ADF&G Division of Subsistence, household surveys, 2009.

to take subsistence salmon only with a gillnet. In the Unalaska District, 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.

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. Unalaska District permits are required by regulation to be returned by October 31; they may be retuned in person or mailed to the ADF&G Dutch Harbor office. Reminder letters are sent on approximately November 1 to all permit holders who have not returned their permits. Data from returned permits are tabulated by species and fishing area. Harvest estimates are calculated by expanding reported harvest numbers from successfully and unsuccessfully fished permits to represent fish taken by all permit holders, including those who did not return their permits (Hartill and Keyse 2010).

Subsistence Salmon Harvests in 2009

In 2009, 210 subsistence salmon permits were issued for the Unalaska District. This number is slightly higher than the previous year, 2008, when 204 were issued, and was also only slightly higher than the recent 5-year (201 permits issued) and 10-year (209 permits) averages. This number was also higher than the historical average (1985–2008) of 162 permits issued yearly since 1985. Harvest numbers are recorded on the permit and returned at the end of the harvest season to the Department of Fish and Game. In 2009, the return rate for the Unalaska District, was 62%, with 130 permits returned out of 210 permits issued. Dutch Harbor and Unalaska residents accounted for 199, or 95% of all permits issued in the Unalaska District, and returned 125 permits out of 130 permits, or 96% of permits returned (Hartill and Keyse 2010) (Table 9-2).

The estimated subsistence harvest of salmon in the Unalaska District in 2009 was 4,416 fish, which was higher than the recent 5-year average (4,239 fish) but lower than the 10-year average (4,990 fish) for the district (Table 9-1). The composition of the 2009 subsistence salmon harvest was sockeye (72%, up from 52% in 2008), pink (10%, down from 20% in 2008), coho (14%, down from 25% in 2008), chum (4%), and Chinook (<1%) salmon (Figure 9-1). Permit holders with Unalaska–Dutch Harbor addresses harvested nearly all the Unalaska District total subsistence harvest (>99%) in 2009 (Hartill and Keyse 2010) (Table 9-2).

In interviews with Division of Subsistence personnel, ADF&G fishery managers expressed the view that the permit program captured most subsistence salmon harvests occurring in the Unalaska District. In their view, most subsistence fishers likely obtained permits, perhaps due to the presence of Alaska Wildlife Troopers from the Alaska Department of Public Safety as well as a population that is self-enforcing (likely to report violators). Fishery managers in the Unalaska District believe that few commercially caught salmon are retained for subsistence purposes in the Aleutian Islands Area since most commercial fishing activities in the area target shellfish and groundfish rather than salmon. A 1994 survey of randomly selected Unalaska households conducted by the Division of Subsistence supports this view: it found that 4% of all salmon harvested for home uses were removed from commercial catches, 62% were harvested with noncommercial nets, and 34% with rod and reel (CSIS).

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’ west longitude 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 0 in 1997; however, since the navy subsequently hired a number of civilians to work on cleanup efforts, a new civilian community has been established. In 2000, the Alaska Boundary Commission approved Adak’s application to become a second-class city.

Adak's estimated population was 316 in 2000 U.S. Census Bureau 2001 and 165 in 2009 (ADLWD 2010).

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.

Subsistence regulations in place since 2001 require that fishers obtain a permit from ADF&G. 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

Subsistence salmon permits are issued by the ADF&G Cold Bay office and are faxed upon request to Adak residents. Permits must be returned by mail or fax to the ADF&G Cold Bay office by October 31, after which reminder letters are sent to those who have yet to report their harvests. ADF&G fishery managers believe that the program provides reliable data on subsistence salmon fishing effort and harvests at Adak.

Subsistence Salmon Harvests in 2009

One subsistence salmon permit was issued for the Adak District in 2009. This was less than the 5-year (6) and 10-year (7) averages, and also lower than the historical 1988–2008 average (19) (Table 9-3). The total harvest in 2009 was 25 salmon (Table 9-4). This was much less than 2008 (400), the recent 5-year (267) and the 10-year (296) averages, and the historical average (1988–2008) of 355 total salmon. For the period 1988–1993, during the navy's occupation of their base at Adak, an average of 49 personal use permits were issued annually and the average estimated harvest was 611 salmon annually (Table 9-3). Since the establishment of the civilian population at Adak in 1997, an average of 9 personal use–subsistence permits have been issued and the average annual harvest has been 300 salmon (Table 9-3).

SALMON HARVESTS AT AKUTAN, NIKOLSKI, AND ATKA

Permits are not required for subsistence salmon harvest in the Akutan, Umnak, and Atka–Amlia islands districts, and there are no annual harvest assessment programs in place. In these districts, no more than 250 salmon may be taken annually for subsistence purposes (5 AAC 01.380).

The Division of Subsistence conducted postseason household interviews in Akutan (Akutan District) and Nikolski (Umnak District) pertaining to 1991 subsistence harvests (all resources); again in Akutan pertaining to 2008 subsistence harvest (all resources); and in Atka (Atka–Amlia Islands District) pertaining to harvests in 1992 (salmon only), and 1994 (all resources). Salmon harvest data were also collected for Akutan and Nikolski (2002 and 2003 harvests) and Atka (2003 harvests) as part of the project reported in Davis 2005. Subsistence harvests of salmon in Akutan, Nikolski, and Atka are primarily composed of sockeye salmon, but coho and pink salmon also account for a relatively large proportion of yearly harvests (Table 9-5). Subsistence salmon harvests in Akutan totaled 3,268 fish in 1991, decreasing to 1,070 fish in 2002 and 1,675 fish in 2003. In 2008, Akutan harvests totaled nearly the same as in 1991 with a total of 3,363 salmon; with sockeye (1,489) and pink salmon (1,366) harvests being near equivalent. Yearly salmon harvests in Nikolski also presented an apparent decreasing pattern, with 1,902 fish caught in 1991 and 604 fish in 2003; further data collection and analysis is necessary to

confirm the trend. In Atka, the yearly salmon harvest varied between 1,454 and 2,387 in the 3 years for which information is available (Table 9-5).

OTHER SUBSISTENCE FISHERIES IN THE ALEUTIAN ISLANDS AREA

Finfishes

Harvest estimates of subsistence halibut for the Aleutian Islands Area are available for 2003–2009 (Fall et al. 2007a; Fall et al. 2005; Fall et al. 2006a; Fall et al. 2004; Fall and Koster 2008, 2010b, 2011a).

There are no annual harvest assessment programs for other subsistence finfish fisheries of the Aleutian Islands Area. Permits are required for the taking of rainbow/steelhead trout and Arctic char/Dolly Varden, but no harvest reporting program is in place. 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 2 hooks attached, while federal rules allow up to 30 hooks. The Division of Subsistence has conducted systematic household surveys pertaining to a single year's harvests in Akutan (1991; 2008), Atka (1994), Nikolski (1991), Saint George (1994), Saint Paul (1994), and Unalaska–Dutch Harbor (1994). Results, including harvest estimates for finfishes, are available in the CSIS.

Shellfish

Permits for the taking of shellfish for subsistence purposes are required only for king and Tanner crabs in that portion of the Alaska Peninsula–Aleutian Islands Area west of Scotch Cap Light and east of 168° west longitude. Estimates of subsistence harvests of all marine invertebrates for single study years, based on systematic household surveys, are available in the CSIS.

Table 9-1.–Historical subsistence salmon harvests, Unalaska District, 1985–2009.

	Permits		Estimated salmon harvests					
Year	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	2,485	1,234	16	1,044	4,779
2000	212	167	10	3,935	603	26	580	5,154
2001	204	165	6	4,202	724	77	784	5,793
2002	231	180	3	5,678	707	65	385	6,837
2003	227	179	25	5,124	572	40	378	6,139
2004	208	170	7	4,713	955	26	437	6,139
2005	217	152	8	4,066	424	14	527	5,038
2006	199	159	15	2,007	422	74	675	3,193
2007	178	126	14	2,575	254	42	683	3,569
2008	204	161	2	1,676	828	90	660	3,257
2009	210	130	5	3,171	616	182	443	4,416
5-year average (2004–2008)	201	154	9	3,007	576	49	596	4,239
10-year average (1999–2008)	209	161	9	3,646	672	47	615	4,990
Historical average (1985–2008)	162	116	7	2,878	647	70	1,002	4,604

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 9-2.–Estimated subsistence salmon harvests by community, Unalaska District, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	2	2	0	1	0	0	0	1
Dutch Harbor	117	76	3	1,806	300	43	125	2,277
Kodiak City	4	1	0	0	20	0	0	20
Kotzebue	1	1	0	0	0	0	0	0
Ninilchik	1	0	0	0	0	0	0	0
Palmer	1	0	0	0	0	0	0	0
Unalaska	82	49	2	1,364	296	139	318	2,119
Unknown City	1	0	0	0	0	0	0	0
Wrangell	1	1	0	0	0	0	0	0
Total	**210**	**130**	**5**	**3,171**	**616**	**182**	**443**	**4,416**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 9-3.–Historical subsistence and personal use salmon harvests, Adak District, 1988–2009.

	Permits		Estimated salmon harvests					
Year[a]	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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	13	0	270	4	0	75	349
2001	17	15	14	489	18	0	16	537
2002	3	3	0	150	0	0	0	150
2003	6	5	0	338	0	0	0	338
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	8	0	367	2	0	29	398
2008	10	8	0	386	0	0	14	400
2009	1	1	0	25	0	0	0	25
5-year average (2004–2008)	6	5	0	270	0	0	9	279
10-year average (1999–2008)	7	6	1	276	3	0	13	294
Historical average (1988–2008)	19	14	1	324	7	0	25	358

Source ADF&G Division of Subsistence, ASFDB 2020 (ADF&G 2010).

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.–Subsistence salmon harvests by community, Adak District, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak Station	1	1	0	25	0	0	0	25
Total	**1**	**1**	**0**	**25**	**0**	**0**	**0**	**25**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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

Community	Year	Estimated number of harvesting households	Estimated salmon harvests[a]						
			Chinook	Sockeye	Coho	Chum	Pink	Other–Unknown	Total
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.

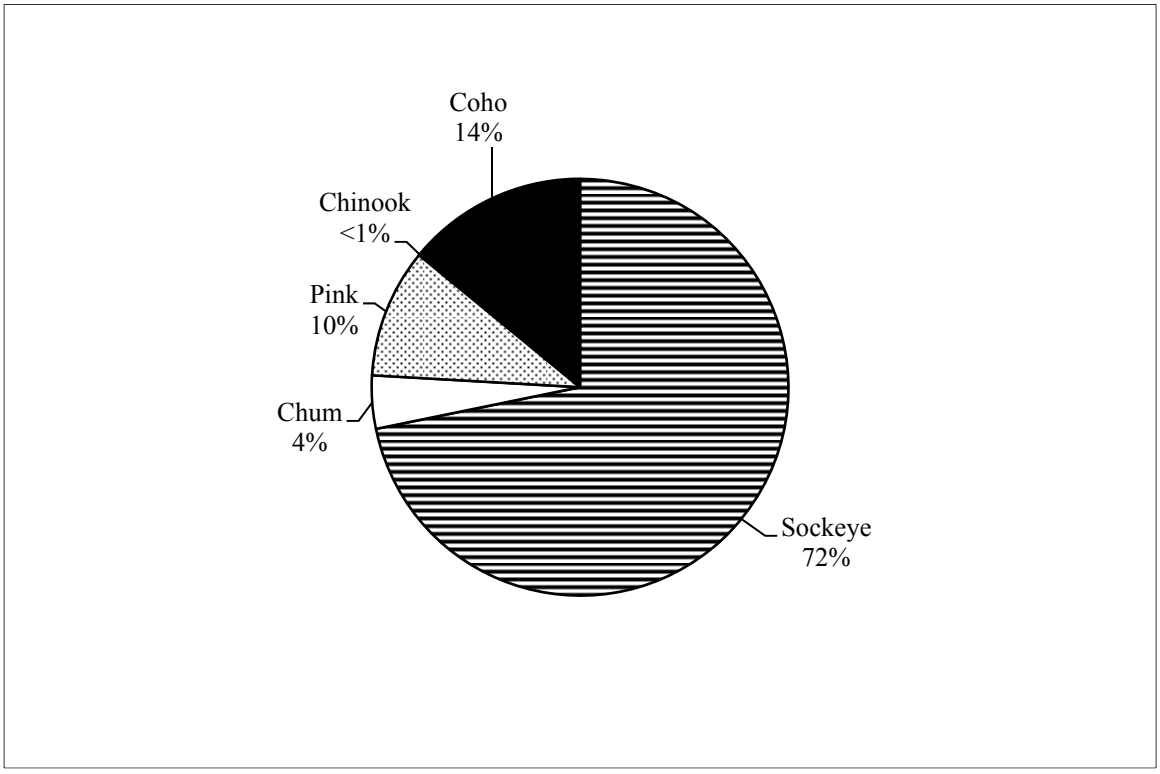

Figure 9-1.–Composition of Unalaska District estimated subsistence salmon harvest by species, 2009.

CHAPTER 10: KODIAK AREA

INTRODUCTION

The Kodiak Management Area encompasses the waters of the Gulf of Alaska surrounding the Kodiak Archipelago and those waters along that portion of the Alaska Peninsula that drain into Shelikof Strait (Figure 10-1). With an estimated population of about 13,129 in 2009 (ADLWD 2010), 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) and the largest community outside the nonsubsistence areas defined by the Alaska Joint Board of Fisheries and Game. This population includes the City of Kodiak (6,626), the Kodiak Station Census Designated Place (CDP) (1,321), Womens' Bay CDP (740), the small community of Chiniak (48) (at the end of the road system), and the remainder of the Kodiak Island Borough (4,327). Other communities include Akiak (51), Aleneva CDP (67), Karluk (38), Larsen Bay (79), Old Harbor (193), Ouzinkie (170), and Port Lions (200).

SALMON HARVEST IN THE KODIAK MANAGEMENT AREA

Salmon Harvest Regulations

Permits have been required to harvest salmon for subsistence purposes in the Kodiak Management Area since 1962. Since 1990, all Alaska state residents have been eligible to participate in subsistence salmon fishing in the Kodiak Management Area. In 2009, legal gear for subsistence salmon fishing under state regulations included gillnets and seines. Fishers were required to physically attend their net while fishing. Generally, fishing was open year-round from 6:00 AM to 9:00 PM daily. From June 1 through September 15, salmon seine vessels could not be used for subsistence salmon fishing 24 hours before, during, and 24 hours after any period open for commercial salmon fishing and only gillnets could be operated for subsistence purposes from purse seine vessels. Permits allowed fishers to harvest 25 salmon plus 25 additional salmon for each member of the permit holder's household. An additional permit could be obtained if the fisher could demonstrate a need for more fish. Permit holders were required to keep a record of their harvests on the permit. A list of waters closed to subsistence fishing within the Kodiak Management Area appears in 5 AAC 01.525. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Information on 2009 emergency orders and run strength can be found in Dinnocenzo et al. (2010).

In 2009, federal regulations governing subsistence salmon fishing in waters under jurisdiction of the FSB were generally identical to the state regulations summarized above, except that rod and reel (in addition to gillnets and seines) was a legal subsistence gear under federal rules. Another difference was that federal regulations allowed subsistence salmon fishing 24 hours per day, while state regulations limited subsistence fishing to the hours of 6:00 AM to 9:00 PM daily. There was no separate federal subsistence permit; a state permit was required for subsistence fishing in waters under federal jurisdiction.

Salmon Harvest Assessment Program

Staff in the Division of Commercial Fisheries' Kodiak office manage the subsistence Salmon Harvest Assessment Program for the Kodiak Area. Permits are mailed each year to people who turned in their permits at the end of the previous fishing season. People may request subsistence permits by mail or in person at the Kodiak ADF&G office. In June 2001, staff from the Division of Commercial Fisheries and the Division of Subsistence visited 6 communities off the road system in the Kodiak Island Borough (Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions) to implement an area permit vendor program. A resident in each community was trained to issue subsistence fishing permits. Outreach activities were conducted in each community to encourage subsistence fishers to obtain permits, record their harvests, and return the permits at the end of the season. The area vendor program has been active

since 2001, including during the 2009 fishing season. Subsistence fishers mail permits with their harvest record to ADF&G at the end of the season or return them in person at the Kodiak ADF&G office. ADF&G sends reminder letters in February to permit holders who have not returned their permits.

Subsistence Salmon Harvests in 2009

In the Kodiak Management Area, 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. For this reason, harvest reports have not been expanded for this area since 1999 (Table 10-1). Results of the harvest monitoring program reflect only the reported harvests of subsistence fishers who returned permits.

In 2009, 1,737 subsistence permits with harvest information were returned to ADF&G (Table 10-2). Of these, 1,448 (84%) had been issued to residents of Kodiak Island Borough and 276 (16%) had been issued to residents of other Alaska communities. Following a well established trend, permit holders with addresses in Kodiak Island Borough accounted for 1,307 (90%) of all permits returned in 2009.

The total reported subsistence salmon harvest in 2009 was 27,947 fish, which is lower than the recent 5-year average of 33,147 salmon, and the 10-year average of 35,467 salmon (Table 10-1). Of the total harvest, 26,545 salmon (95%) were harvested by residents of Kodiak Island Borough communities and 1,313 salmon (5%) were harvested by permit holders in other communities (Table 10-2). Of the 26,545 salmon harvested by Kodiak Island Borough residents, 20,319 (77%) fish were taken by residents of the Kodiak road system area, including Kodiak City, Kodiak Station CDP, Womens' Bay CDP, and most of the "remainder of the Kodiak Island Borough" population living outside the 7 communities off the road system and Chiniak (figures 10-1 and 10-2). This is consistent with the pattern between 2000 and 2009 when 70% to 76% of all salmon harvested in the Kodiak Island Borough area for subsistence purposes was taken by residents of Kodiak City and the adjacent road connected area

In 2009, the Kodiak area subsistence salmon harvest was composed of 78% sockeye salmon, 16% coho salmon, 4% pink salmon, 1% chum salmon, and 1% Chinook salmon (Figure 10-3). The retention of commercial harvest for home use was different in 2009 in terms of the percentage of species. As shown in Figure 10-4 in 2009, 4,469 salmon, including 2,726 coho (61%), 883 pink (20%), 805 sockeye (18%), 49 Chinook (1%), and 6 chum salmon (>1%), were retained from commercial harvests for home use (Dinnocenzo et al. 2010). Chinook salmon harvests have declined in recent years and in 2009 several rivers were closed, including the Ayakulik and Karluk rivers, due to poor runs and the necessity to conserve fish for escapement (Dinnocenzo et al. 2010:12).

In 2001, in interviews with Division of Subsistence staff, fishery managers within the Division of Commercial Fisheries expressed uncertainty about the extent to which subsistence salmon harvests in the Kodiak Management Area are accurately documented by the permit program. They suspected that a substantial amount of subsistence harvest occurred without permits, especially in areas off the island road system. Subsistence salmon harvest estimates for the area based on household harvest surveys and reported in the CSIS were substantially higher than harvests reported in the FMRs. Delivery of permits to subsistence fishers living in Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions had been problematic in the past. As mentioned above, an outreach effort and an area permit vendor program were implemented in 2001 to address this issue. These actions appeared to have resulted in increased participation in the permit program in these 6 communities. A total of 100 households returned permits in 2000 and this number was between 189 and 143 households from 2001 through 2006 (Table 10-3). Accordingly, the yearly reported subsistence salmon harvest also increased from 6,299 fish in 2000 to 7,114 to 10,172 fish from 2001 through 2006. In 2009, both the number of permits returned by the 6 villages (118 permits) and the number of harvested salmon reported (5,824 fish) were comparable to year 2000 data, prior to the implementation of the local permit vendor program and the outreach effort (Table 10-3). Additional research and outreach are needed to assess the most recent harvest data.

Household surveys (with results reported in the CSIS) have documented noncommercial salmon harvests with rod and reel gear, which is legal subsistence gear under federal subsistence regulations but not under state regulations. Household surveys also documented numbers of salmon removed from commercial harvests for personal use. Information on these 2 types of harvests not documented by the permit program is needed for a better understanding of the household salmon harvest in the Kodiak Area.

In early 2004, the Division of Subsistence and the Kodiak Area Native Association (KANA) conducted comprehensive household surveys in Akhiok, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions in the context of a project funded by the *Exxon Valdez* Oil Spill Trustee Council. Among other objectives, this project provided updated harvest data for salmon, nonsalmon finfishes, and marine invertebrates (Fall 2006a).

OTHER SUBSISTENCE FISHERIES IN THE KODIAK AREA

Finfishes

Federal halibut subsistence harvest data are currently available for communities and tribes in the Kodiak Management Area (Fall et al. 2005; Fall et al. 2004; Fall and Koster 2008, 2010b, 2011b; Fall et al. 2006b; Fall et al. 2007c).

There are no annual harvest assessment programs for other subsistence finfish fisheries in the Kodiak Management Area. Harvest estimates based on comprehensive household surveys conducted by the Division of Subsistence are available in the CSIS for freshwater and marine species for 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 *Ophiodon elongatus*, various species of flounders, halibut, rockfishes, and Arctic char/Dolly Varden.

Shellfish

Subsistence permits are required for the harvest of king, Tanner, and Dungeness crabs in the Kodiak Area (5 AAC 02.410). Regulations establish sex, size, and bag and possession limits for these species of crabs. Only male crabs may be taken. Other marine invertebrates used for subsistence purposes in the Kodiak Area include clams, cockles, mussels, chitons, octopuses, sea urchins, and more.

Table 10-1.–Historical subsistence salmon harvests, Kodiak Area, 1986–2009.

	Permits		Reported salmon harvests[a]					
Year	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	2,118	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
5-year average (2004–2008)	ND	1,960	290	25,098	5,774	340	1,645	33,147
10-year average (1999–2008)	ND	1,931	348	27,577	5,728	359	1,454	35,467
Historical average (1986–2008)	ND	1,499	271	23,230	6,124	459	1,583	31,668

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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, 2009.

Community	Permits returned	Reported salmon harvests[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Kodiak Island Borough							
Akhiok	3	0	82	4	0	4	90
Karluk	2	0	0	0	0	0	0
Kodiak (city)	1,307	117	16,761	2,635	103	703	20,319
Larsen Bay	23	25	952	50	7	35	1,069
Old Harbor	25	0	585	589	39	242	1,455
Ouzinkie	29	7	1,095	499	14	54	1,669
Port Lions	36	2	1,141	313	0	85	1,541
Chiniak	22	0	213	168	13	2	396
Uganik Bay	1	0	0	6	0	0	6
Subtotal, Kodiak Island Borough	**1,448**	**151**	**20,829**	**4,264**	**176**	**1,125**	**26,545**
Other Alaska							
Anchor Point	0	0	0	0	0	0	0
Anchorage	99	2	338	64	5	13	422
Bethel	2	0	15	0	0	0	15
Bettles	1	0	0	0	0	0	0
Big Lake	3	0	25	0	0	0	25
Central	1	0	0	0	0	0	0
Chickaloon	1	0	0	0	0	0	0
Chugiak	6	0	0	0	0	0	0
Copper Center	1	0	0	0	0	0	0
Cordova	1	0	0	0	0	0	0
Craig	1	0	21	0	2	4	27
Delta Junction	1	0	0	0	0	0	0
Douglas	1	0	23	0	0	0	23
Eagle River	18	1	6	15	0	11	33
Fairbanks	20	4	88	5	2	9	108
Girdwood	8	1	7	0	0	0	8
Gustavus	1	0	0	0	0	0	0
Homer	20	0	151	14	1	5	171
Juneau	3	0	71	0	0	0	71
Kasilof	1	0	0	0	0	0	0
Kenai	7	0	0	0	0	0	0
Ketchikan	1	0	0	0	0	0	0
Nikiski	2	0	0	0	0	0	0
Ninilchik	3	0	0	0	0	0	0
North Pole	3	0	0	0	0	0	0
Palmer	18	0	37	9	0	3	49
Perryville	1	0	14	0	0	0	14
Port Williams	0	0	0	0	0	0	0
Seldovia	2	0	0	4	0	2	6
Seward	9	0	28	0	0	0	28
Sitka	3	0	53	0	0	2	55
Soldotna	11	0	0	39	0	0	39

-continued-

Table 10-2.–Page 2 of 2.

Community	Permits returned	Reported salmon harvests[a] Chinook	Sockeye	Coho	Chum	Pink	Total
Sterling	2	0	0	0	0	0	0
Talkeetna	1	0	0	0	0	0	0
Sterling	2	0	0	0	0	0	0
Talkeetna	1	0	0	0	0	0	0
Unknown community	0	0	95	46	0	5	146
Valdez	2	0	0	4	0	1	5
Wasilla	21	0	12	56	0	0	68
Wrangell	1	0	0	0	0	0	0
Subtotal, other Alaska	**276**	**8**	**984**	**256**	**10**	**55**	**1,313**
Other USA[b]	13	0	39	50	0	0	89
Total	**1,737**	**159**	**21,852**	**4,570**	**186**	**1,180**	**27,947**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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 villages 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. 2009c:105
2008	117	5,850	Fall and Koster 2011b:111
2009	118	5,824	Table 10-2

a. Local permit vendor program and outreach efforts implemented in 2000.

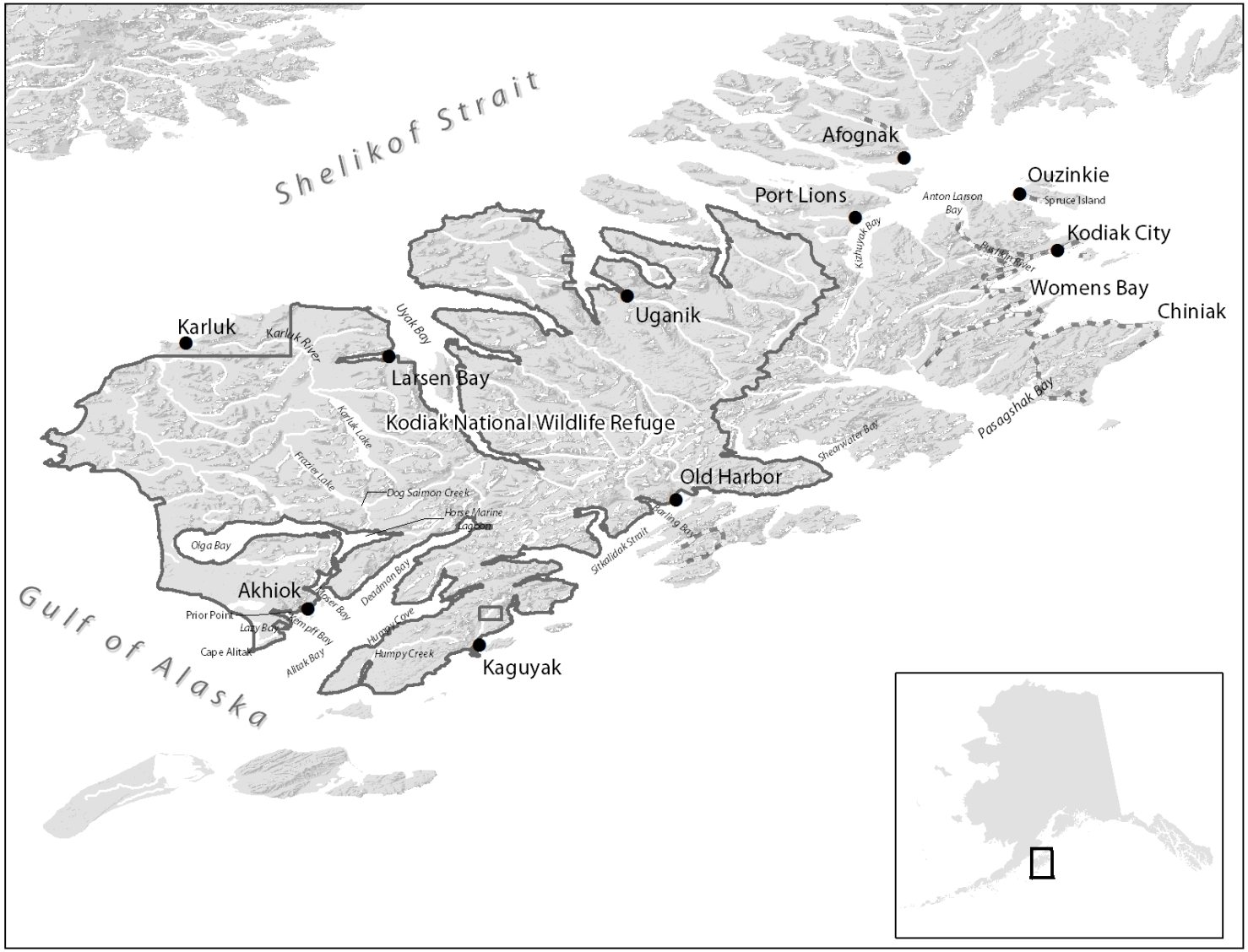

Figure 10-1.–Kodiak Management Area map, 2009.

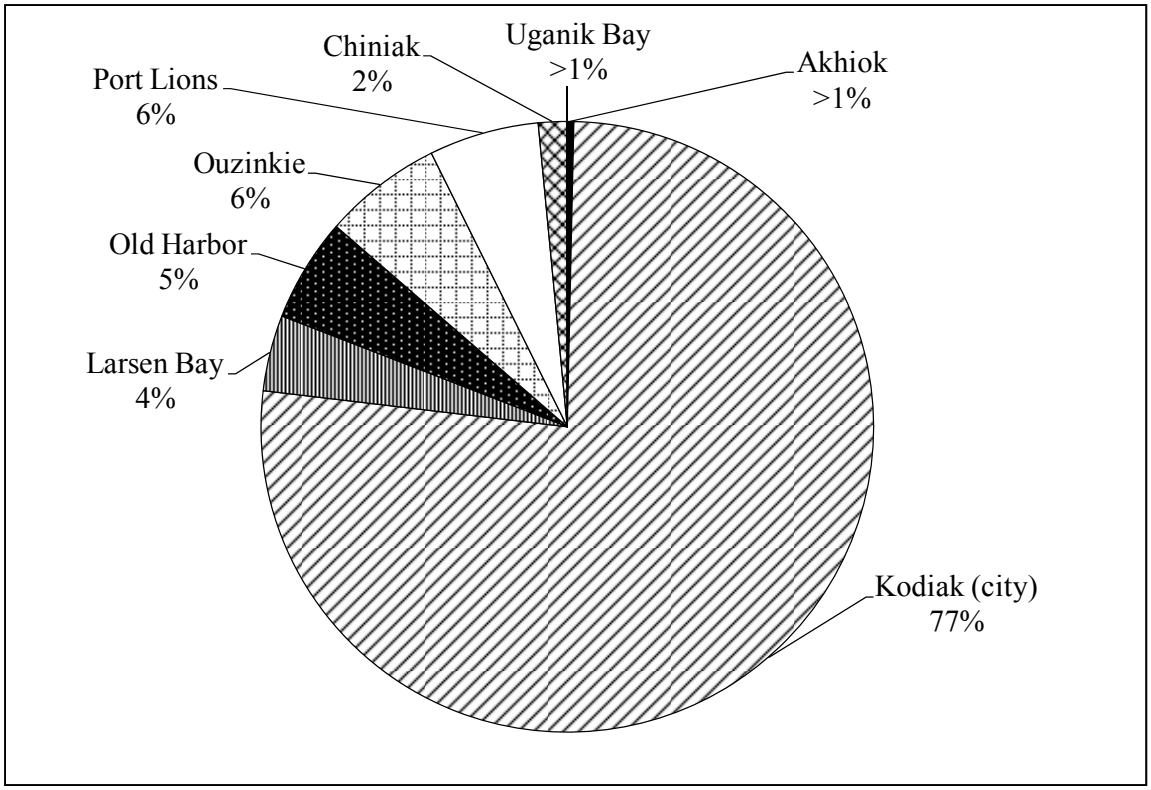

Figure 10-2.–Subsistence salmon harvests by community, Kodiak Area, 2009.

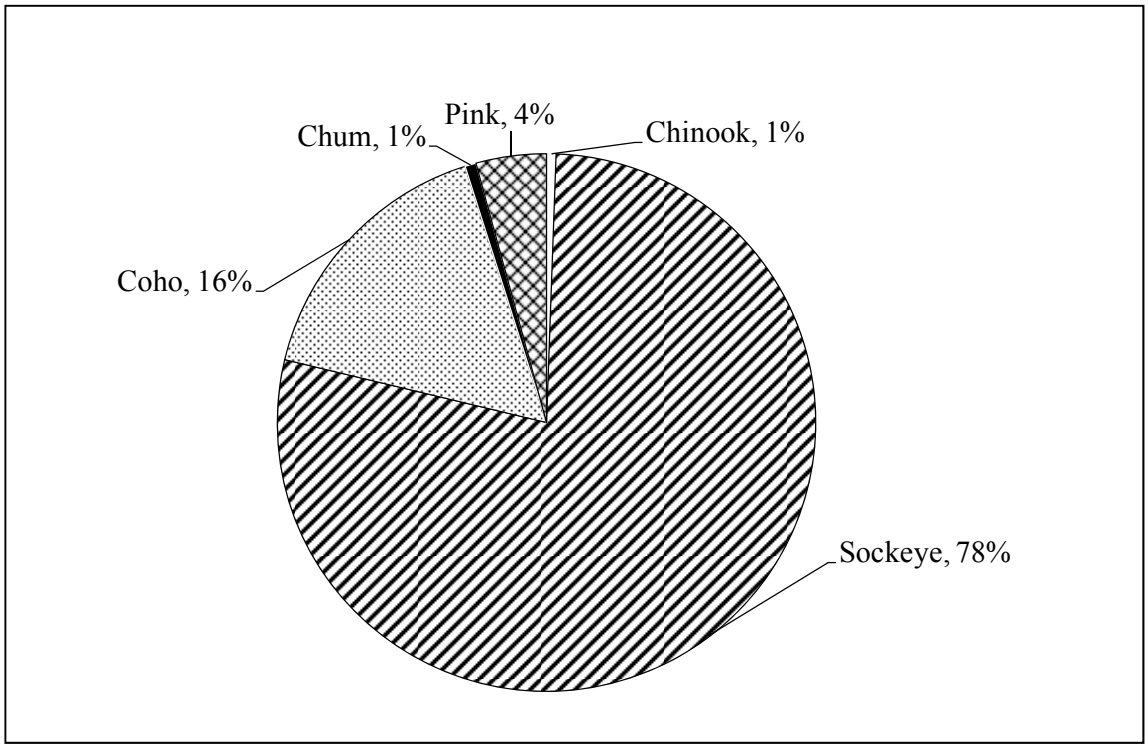

Figure 10-3.–Composition of Kodiak Area subsistence salmon harvest by species, 2009.

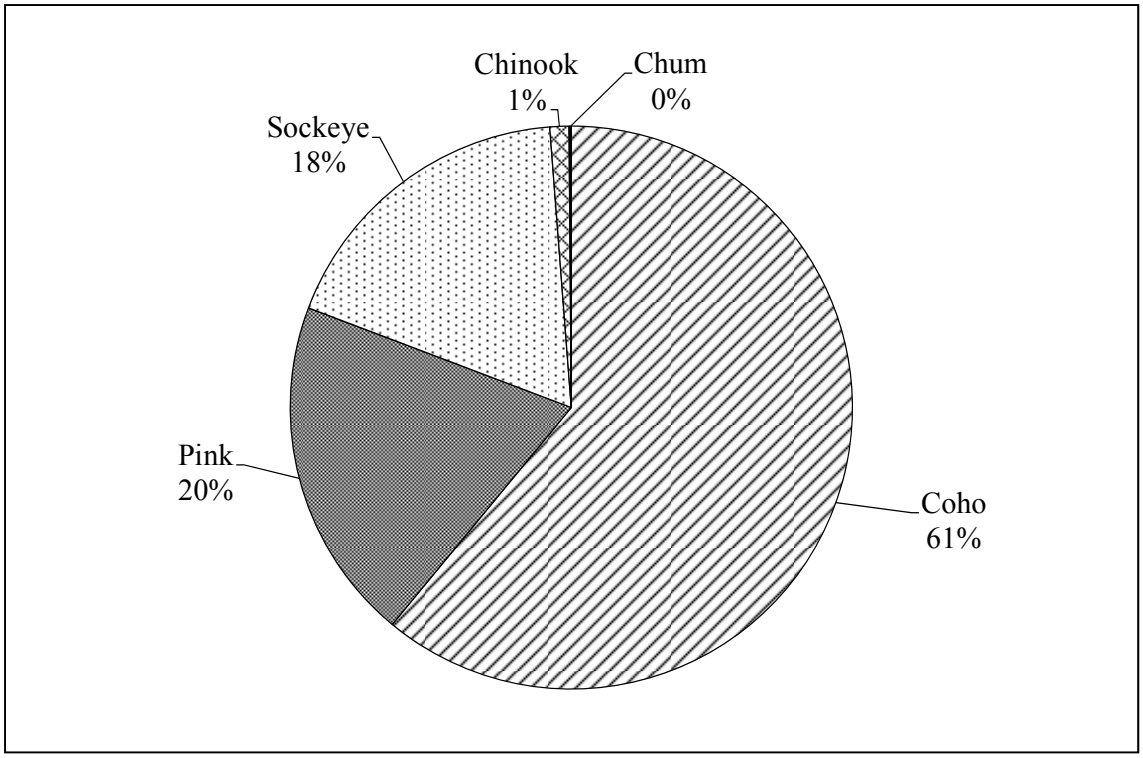

Figure 10-4.–Salmon retained from commercial harvests for home use, Kodiak Area, 2009.

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 Joint Board [5 AAC 99.015 (3)]. Because subsistence fisheries are not permitted within nonsubsistence areas, noncommercial harvesting opportunities occur under sport, personal use, and educational fishing regulations. Commercial harvesters may retain finfish from 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. 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. 2009b), which is allowable gear under sport fishing regulations. 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.

Waters outside 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.

Communities within the areas excluded from the nonsubsistence area include Skwentna (population 73 in 2009), Tyonek (population 166), Beluga (population 24), Seldovia (population 407 in the city and village CDP), Port Graham (population 137), and Nanwalek (formerly called English Bay, population 226). The population of the entire Cook Inlet area in 2009 was 422,941, including the Municipality of Anchorage (population 290,588), the Kenai Peninsula Borough (48,039), and the Matanuska-Susitna Borough (84,314). This represented 61% of the state's total population in 2009 (ADLWD 2010).

PORT GRAHAM AND KOYUKTOLIK SUBDISTRICTS

History and Regulations

Subsistence regulations for this subsistence setnet 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 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. The area open for the subsistence setnet 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 3 primary species harvested include sockeye, pink, and coho salmon. The gear allowed includes set gillnets no longer than 35 fathoms, no deeper than 45 meshes, and no larger than a 6-in stretched mesh. In 2009, returns of natural runs of pink salmon, usually the dominant species in Lower Cook Inlet were good (Hammarstrom and Ford 2010). For a second consecutive year, runs of hatchery stocks of sockeye salmon were poor, yet natural sockeye salmon runs in the area ranged from fair to outstanding, with 5 out of 6 major systems achieving or exceeding their sustainable escapement goals (Hammarstrom and Ford 2010:5). Of particular interest in the Lower Cook Inlet subsistence fishery is the sockeye salmon run to English Bay lakes, which was good for a fourth

consecutive year, meeting inriver goals. This run provides harvest opportunities for subsistence set gillnetters in Nanwalek and Port Graham (Hammarstrom and Ford 2010:5) and is the major species harvested harvested in the subsistence fishery.

Harvest Assessment Methods

The Division of Subsistence issues household permits through cooperative agreements with the Port Graham and Nanwalek village councils. When permits are issued, a separate monthly harvest calendar is also issued for recording daily household harvests. Home use salmon harvests by the 2 communities occur with the use of setnets and rod and reel gear. While the recording of harvests in the setnet fishery is mandatory, it is not in the rod and reel fishery. Therefore, fishers are asked to voluntarily record their rod and reel harvests on their harvest permits. In order to accommodate the recording of harvests in both fisheries, the recording device has 2 pages, 1 for each gear type, and is issued separately from the permit. Area assistants hired by each village council collect the calendars periodically throughout the season. Arctic char/Dolly Varden harvests are also recorded on the calendars.

The sockeye salmon run to the English Bay lakes was severely depressed for much of the late 1980s and early 1990s, with runs failing to achieve minimum escapement goals for 9 consecutive years between 1985 and 1993. Returns in the late 1990s were enhanced as a result of a rehabilitation enhancement project initiated by ADF&G and subsequently run by the Nanwalek Salmon Enhancement Project in association with the Chugach Regional Resources Commission (CRRC) and the village of Nanwalek (Hammarstrom and Dickson 2006:62). Inseason escapement monitoring has taken place since 1994, with openings and closures in the subsistence and commercial fisheries controlled by emergency order. Inconsistent runs in recent years have been the result of disease outbreaks in the lake-rearing portion of the program and erratic adult behavior that caused difficulty in capturing broodstock (Hammarstrom and Dickson 2006:41). A newer hatchery at Port Graham, run by the Port Graham Hatchery Corporation, contributed 6% to the subsistence harvest in Lower Cook Inlet (Hammarstrom and Ford 2008:2).

Harvest Estimates for 2009

In 2009, estimated subsistence salmon harvests in the Port Graham and Koyuktolik subdistricts totaled 5,123 salmon, including both setnet and reported rod and reel harvests (Table 11-1). The 2009 harvest was slightly lower than the historical average of 5,230 salmon.

In 2009, residents of Port Graham returned 25 permits and harvested 2,265 salmon (Table 11-2). Nanwalek residents returned 19 permits and harvested a total of 2,858 salmon. As shown in Table 11-1 and Figure 11-2, the combined harvest of the two communities of Nanwalek and Port Graham included 3,497 sockeye salmon, the species with the highest harvest (68%), followed by pink salmon (914; 18%), coho salmon (528; 10%), chum salmon (140; 3%), and Chinook salmon (44; 1%).

SELDOVIA SUBSISTENCE FISHERY

History and Regulations

The BOF established this subsistence set gillnet fishery 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 Chinook salmon migrating through Lower Cook Inlet and a separate enhanced Chinook salmon stock returning to Seldovia Bay. The fall fishery, open the first 2 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 2-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. The gear allowed includes set gillnets no longer than 35 fathoms, no deeper that 45 meshes, and no larger than a 6-in 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 are issued by ADF&G prior to fishing, and harvests are recorded on the permits. Permits are also available from the harbormaster in Seldovia. Fishers are required to telephone daily harvest numbers to ADF&G or the harbormaster as well as to return their permits after each of the 2 fisheries. ADF&G sends reminder letters to permit holders if harvest records have not been returned in a timely manner, and telephone calls are also made to enhance permit returns. ADF&G considers the harvest data for this fishery to be very reliable.

The 2009 Season

There were 18 permits issued for the Seldovia subsistence fishery in 2009; 17 were returned (Table 11-3). The estimated harvest was 115 sockeye salmon (48%), 77 pink salmon (32%), 22 coho salmon (9%), 15 Chinook salmon (6%), and 13 chum salmon (5%), for a total of 242 salmon (Table 11-3 and Figure 11-3). All 18 permits were issued to residents of Seldovia (Table 11-3).

Total salmon harvests in 1998 through 2005 were higher than the first 2 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, with 53 harvested in 2005, 23 harvested in 2006, 24 in 2007, 4 harvested in 2008, and 15 harvested in 2009. Since the extension of fishing time in 1998, the 2006 season resulted in the lowest harvest estimate on record for total salmon harvested. The 5-year average for the fishery is 198 salmon (Table 11-4), with the 2009 harvest slightly above the 5-year average.

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 setnet fishery is located in the Tyonek Subdistrict of the Northern District of Upper Cook Inlet. The subdistrict includes the area from 1 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 Fall et al. (1984).

The season in this subsistence fishery also operates in 2 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. The BOF has set a GHL of 4,200 Chinook salmon for the early season. If this level has been reached, the second season does not open until July 1. In the more than 30 years of operation of this fishery, the Chinook salmon GHL has never been reached.

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 6 in. 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 permits. Two separate permits are required, 1 for the early season and 1 for the late season. A Division of Subsistence staff person travels to Tyonek each May and issues approximately 40–50 permits within several hours. Permits are also available in the Anchorage ADF&G office or in the Tyonek village office. Reported harvests are not expanded in this fishery. Because of the high compliance with the permit requirement and the strong support of the Tyonek village government, ADF&G views the harvest estimates for this fishery as very reliable.

The 2009 Season

In 2009, 89 permits were issued for the Tyonek Subdistrict subsistence salmon fishery, including 62 permits issued to Tyonek residents (70%) and 27 permits issued to other Alaska residents (30%), mostly residents of Anchorage (19 permits; Table 11-5). Residents of Tyonek accounted for 86% of the reported harvest total (927 salmon), including 77% of the reported Chinook salmon harvest (489 salmon).

The 2009 reported harvest of 1,081 salmon was well below the historical average of 1,563 salmon, as well as the 5-year average of 1,371 salmon and the 10-year average of 1,366 salmon (Table 11-6). Of the total reported subsistence salmon harvest in 2009, 636 were Chinook salmon (59%), 258 were coho salmon (24%), 184 were sockeye salmon (17%), 2 were chum salmon (<1%) , and 1 was a pink salmon (<1%; Figure 11-4).

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.

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 1 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.

Harvests in 2009

Seventeen subsistence permits were issued for the Yentna River subsistence fish wheel fishery in 2009 and all were returned (Table 11-7). In 2009, 7 of the 17 permit holders resided in the Skwentna area (41%), with the remaining 10 permits held by residents of other Cook Inlet area communities, particularly Wasilla (5 permits). Permit holders living in the community of Skwentna in 2009 harvested 89 of the reported 273 salmon, or 33% of the harvest (Table 11-7).

The total harvest as reported on permit returns in 2009 was 273 salmon, including 253 sockeye salmon (93%), 14 coho salmon (5%), and 6 chum salmon (2%). There were no reported harvests of Chinook or pink salmon. The 2009 harvest of 273 salmon was well below the 5-year average of 468 salmon, the 10-year average of 529 salmon, and the historical average of 544 salmon (Table 11-8 and Figure 11-5).

FEDERAL 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 2009, the total harvest in the federal fishery on the Kenai and Kasilof rivers was 1,113 salmon, of which almost all (1,104) were sockeye salmon (Table 11-9). There were a total of 160 permits issued to residents of these 3 communities with 77 permits issued to residents of Cooper Landing, 24 to residents of Hope, and 59 to residents of Ninilchik (Table 11-9).

Table 11-10 shows the harvest over time which only includes the years 2007, 2008, and 2009 as this is a new fishery. In all 3 years sockeye salmon are a majority of the harvest with 2008 being the highest harvest at 1,716 sockeye salmon harvested by residents of the 3 Kenai Peninsula communities.

Table 11-1.–Historical subsistence salmon harvests, Port Graham and Koyuktolik subdistricts, 1981–2009.

Year	Permits		Reported salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	ND	57	138	2,670	825	177	874	4,684
1982		61	124	2,354	1,493	220	2,932	7,123
1983		46	67	2,480	471	95	187	3,300
1984		24	45	3,262	510	6	673	4,496
1985		24	146	1,177	621	26	345	2,315
1986		44	125	647	481	14	1,062	2,329
1987		55	21	901	914	114	714	2,664
1988		48	104	1,021	844	110	1,756	3,835
1989		44	51	157	1,155	74	1,495	2,932
1990		60	265	1,162	1,417	151	2,960	5,955
1991		63	163	688	2,053	221	4,587	7,712
1992		71	200	535	1,150	236	1,421	3,542
1993		56	277	1,148	913	257	2,663	5,258
1994		70	300	830	1,370	504	1,979	4,983
1995		87	585	1,795	538	376	1,273	4,567
1996		75	310	1,744	939	276	749	4,018
1997		26	202	325	203	153	511	1,394
1998		19	169	289	243	240	459	1,400
1999		74	485	3,157	1,747	1,104	2,023	8,516
2000		67	259	4,664	1,831	953	1,606	9,313
2001		49	133	1,085	1,295	228	1,454	4,195
2002		79	346	10,620	1,057	488	1,831	14,342
2003		52	465	5,534	1,006	532	1,572	9,109
2004		80	312	3,525	1,303	213	1,600	6,953
2005		68	292	2,126	1,193	180	1,608	5,399
2006		53	275	2,559	1,200	296	2,131	6,461
2007[a]		24	92	532	0	63	74	761
2008		48	124	4,352	1,448	269	2,682	8,875
2009		44	44	3,497	528	140	914	5,123
5-year average (2004–2008)	–	55	219	2,619	1,029	204	1,619	5,690
10-year average (1999–2008)	–	59	278	3,815	1,208	433	1,658	7,392
Historical average (1981–2008)	–	54	217	2,191	1,008	271	1,544	5,230

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Note There are no records indicating the numbers of permits issued for any year. Only the numbers of permits returned are recorded. For this reason, averages of the number of permits issued cannot be calculated (indicated with "–").

a. Harvest reports are incomplete.

Table 11-2.–Subsistence salmon harvests by community, Port Graham and Koyuktolik subdistricts, 2009.

	Permits		Reported salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Nanwalek	ND	19	11	1,515	396	71	865	2,858
Port Graham	ND	25	33	1,982	132	69	49	2,265
Total	**–**	**44**	**44**	**3,497**	**528**	**140**	**914**	**5,123**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Note There are no records indicating the numbers of permits issued for any year. Only the numbers of permits returned are recorded. For this reason, averages of the number of permits issued cannot be calculated (indicated with "–"").

Table 11-3.–Subsistence salmon harvests by community, Seldovia, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Seldovia	18	17	15	115	22	13	77	242
Total	**18**	**17**	**15**	**115**	**22**	**13**	**77**	**242**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 11-4.–Historical subsistence salmon harvests, Seldovia, 1996–2009.

	Permits		Estimated salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1996	43	42	51	9	0	0	0	60
1997	20	17	52	22	0	0	0	74
1998	22	20	143	65	0	8	0	216
1999	16	16	136	130	0	38	0	304
2000	22	22	179	252	0	16	0	447
2001	19	16	149	142	0	0	0	290
2002	20	20	124	234	13	11	31	413
2003	18	15	117	290	2	66	22	496
2004	14	12	102	69	5	18	65	258
2005	18	16	53	74	14	11	100	251
2006	17	11	23	12	0	0	31	66
2007	19	15	24	66	12	35	103	239
2008	11	9	4	38	50	6	79	177
2009	18	17	15	115	22	13	77	242
5-year average (2004–2008)	16	13	41	52	16	14	76	198
10-year average (1999–2008)	17	15	91	131	10	20	43	294
Historical average (1997–2008)	20	18	89	108	7	16	33	253

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 11-5.–Subsistence salmon harvests by community, Tyonek Subdistrict, 2009.

	Permits		Reported salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	19	13	103	6	0	0	1	110
Big Lake	2	1	3	0	0	0	0	3
Eagle River	2	2	4	0	0	0	0	4
Elim	1	1	0	0	0	0	0	0
Kenai	1	1	24	0	0	0	0	24
Palmer	2	1	13	0	0	0	0	13
Tyonek	62	50	489	178	258	2	0	927
Total	**89**	**69**	**636**	**184**	**258**	**2**	**1**	**1,081**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 11-6.–Historical subsistence salmon harvests, Tyonek Subdistrict, 1981–2009.

	Permits		Reported salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	70	NA	2,002	269	64	32	15	2,382
1982	69	NA	1,590	310	113	4	14	2,031
1983	75	NA	2,665	187	59	6	0	2,917
1984	75	NA	2,200	266	79	23	3	2,571
1985	76	NA	1,472	164	91	10	0	1,737
1986	65	NA	1,676	203	223	46	50	2,198
1987	64	61	1,610	166	149	24	10	1,959
1988	47	42	1,587	91	253	12	8	1,951
1989	49	47	1,250	85	115	1	0	1,451
1990	42	37	781	66	352	12	20	1,231
1991	57	54	902	20	58	0	0	980
1992	57	44	907	75	234	19	7	1,242
1993	62	54	1,370	57	77	17	19	1,540
1994	58	49	770	85	101	22	0	978
1995	70	55	1,317	45	153	15	0	1,530
1996	73	49	1,039	68	137	7	21	1,272
1997	70	42	639	101	137	8	0	885
1998	74	49	1,027	163	64	2	1	1,257
1999	77	54	1,230	144	94	11	32	1,511
2000	60	59	1,157	63	87	0	6	1,313
2001	84	58	976	172	49	6	4	1,207
2002	101	71	1,080	209	115	4	9	1,417
2003	87	74	1,183	111	44	10	7	1,355
2004	97	75	1,345	93	130	0	0	1,568
2005	78	66	982	61	139	2	0	1,184
2006	82	55	943	20	14	1	0	978
2007	84	67	1,281	200	123	2	3	1,609
2008	94	77	1,178	121	194	9	13	1,515
2009	89	69	636	184	258	2	1	1,081
5-year average (2004–2008)	87	68	1,146	99	120	3	3	1,371
10-year average (1999–2008)	84	66	1,136	119	99	5	7	1,366
Historical average (1981–2008)	71	56	1,291	129	123	11	9	1,563

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

NA = Information regarding the number of permits returned in 1981–1986 does exist; however, it was not available at the time this report was written.

Table 11-7.–Subsistence salmon harvests by community, Upper Yentna River, 2010.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook[a]	Sockeye	Coho	Chum	Pink	Total
Anchorage	2	2	0	35	0	0	0	35
Chugiak	1	1	0	46	6	3	0	55
Skwentna	7	7	0	84	5	0	0	89
Wasilla	5	5	0	17	0	2	0	19
Willow	2	2	0	71	3	1	0	75
Total	**17**	**17**	**0**	**253**	**14**	**6**	**0**	**273**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. Regulations prohibit the retention of Chinook salmon in this fishery (5 AAC 01.593).

Table 11-8.–Historical subsistence and personal use salmon harvests, Upper Yentna River, 1996–2009.

	Permits		Estimated salmon harvests					
Year	Issued	Returned	Chinook[b]	Sockeye	Coho	Chum	Pink	Total
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
5-year average (2004–2008)	20	19	0	333	97	16	23	468
10-year average (1999–2008)	20	18	0	411	87	14	16	529
Historical average (1996–2008)	20	18	0	415	86	17	26	544

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

a. This fishery was classified as personal use in 1996 and 1997; it has been a subsistence fishery since 1998.

b. Regulations prohibit the retention of Chinook salmon in this fishery (5 AAC 01.593).

Table 11-9.–Federal subsistence salmon harvests by community, Kenai and Kasilof rivers, 2009.

	Permits		Reported salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Cooper Landing	77	69	0	752	9	0	0	761
Hope	24	19	0	121	0	0	0	121
Ninilchik	59	50	0	231	0	0	0	231
Total	**160**	**138**	**0**	**1,104**	**9**	**0**	**0**	**1,113**

Source Doug Palmer, USFWS, Kenai Field Office, personal communication.

Table 11-10.–Historical federal subsistence salmon harvests, Kenai and Kasilof rivers, 2007–2009.

	Permits		Reported salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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

Source Doug Palmer, USFWS, Kenai Field Office, personal communication.

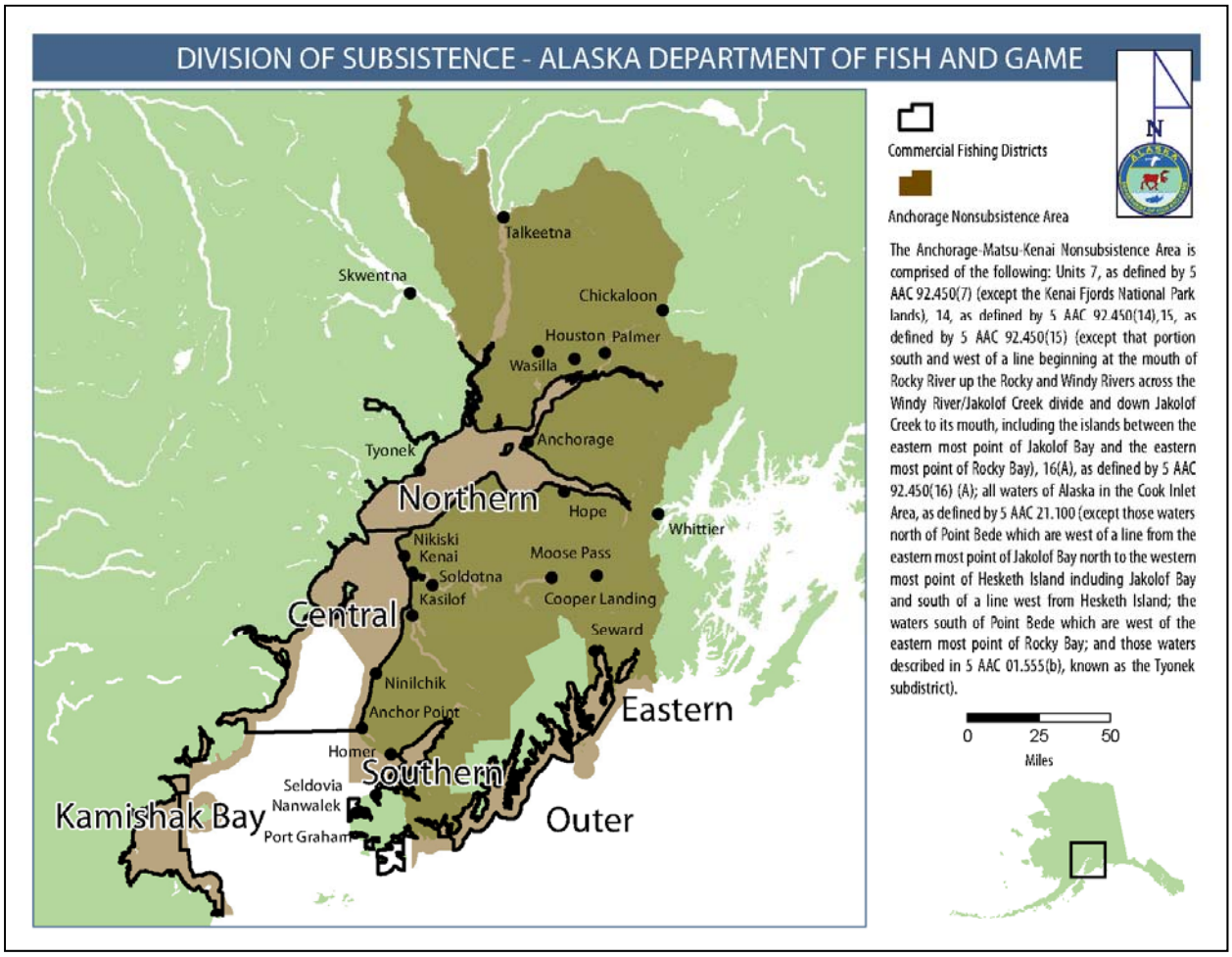

Figure 11-1.–Anchorage Nonsubsistence Area map.

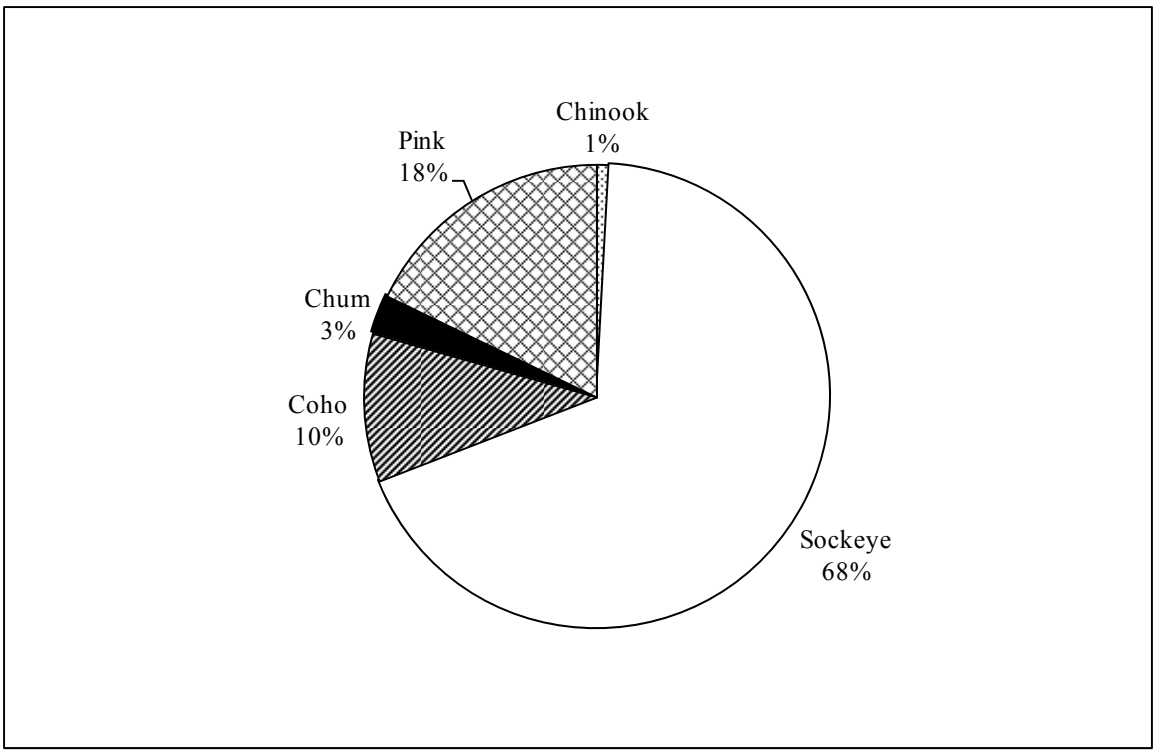

Figure 11-2.–Subsistence salmon harvests in the Port Graham and Koyuktolik subdistricts, 2009.

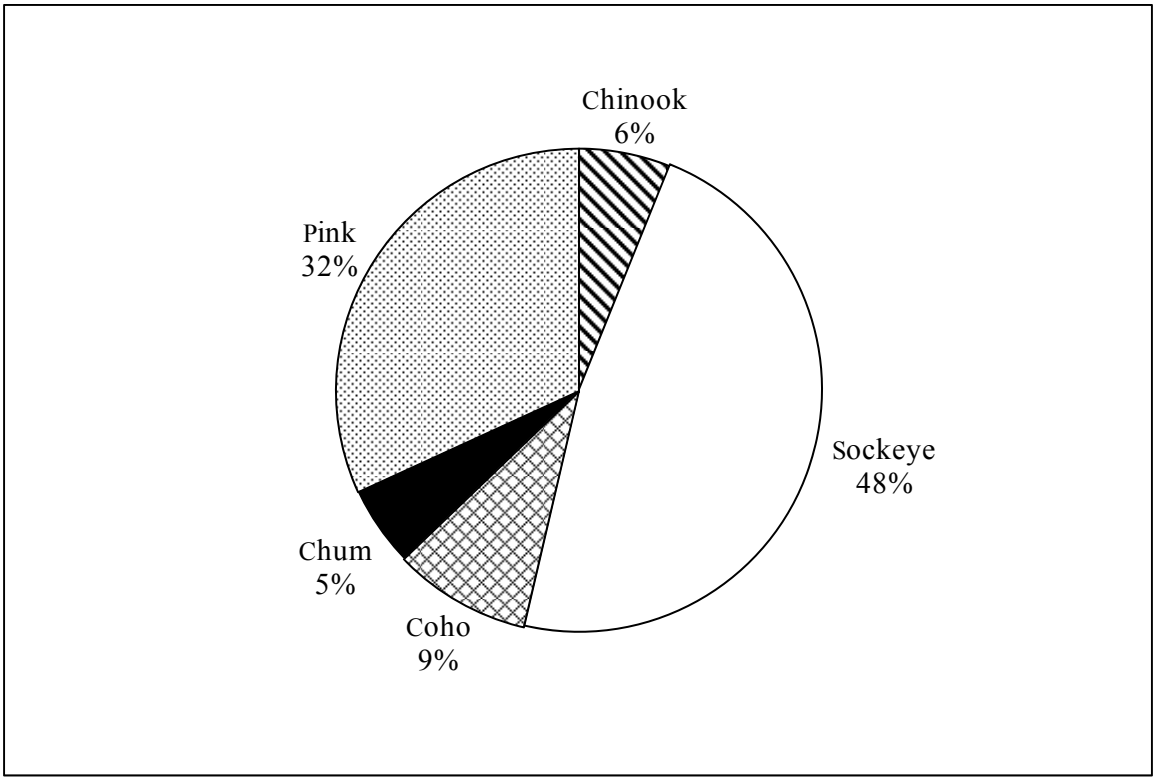

Figure 11-3.–Subsistence salmon harvests in Seldovia, 2009.

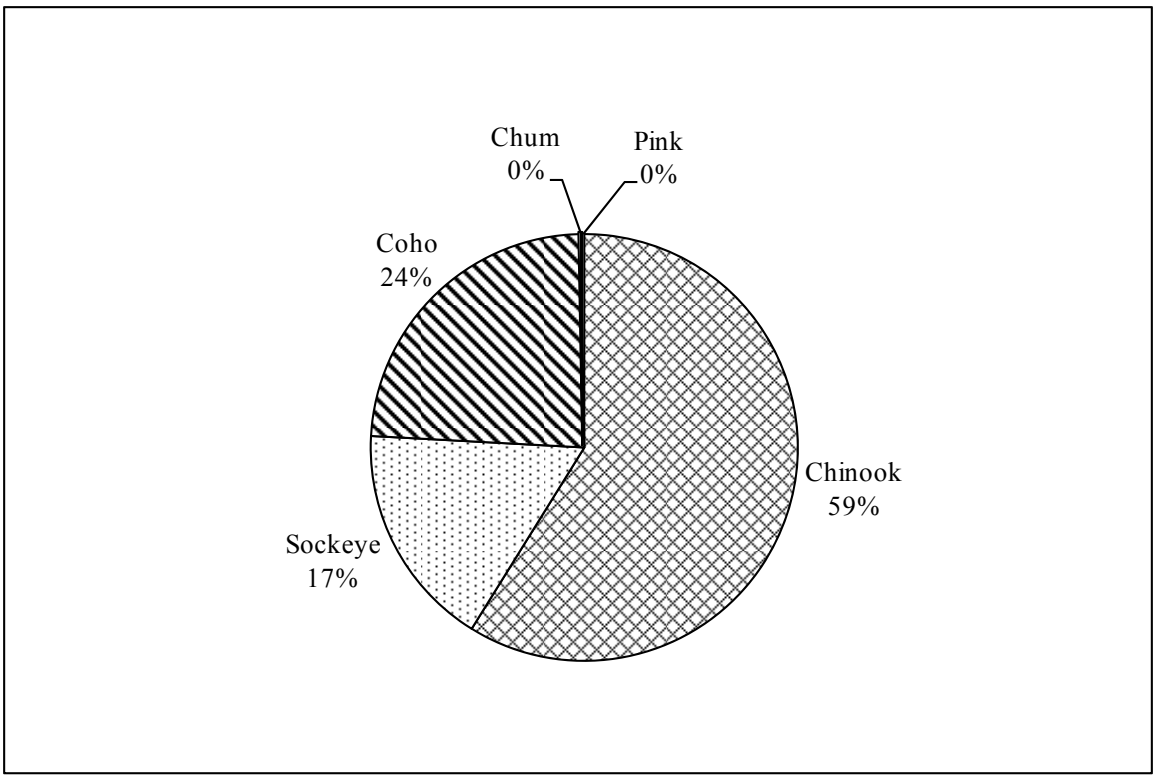

Figure 11-4.–Subsistence salmon harvests in the Tyonek Subdistrict, 2009.

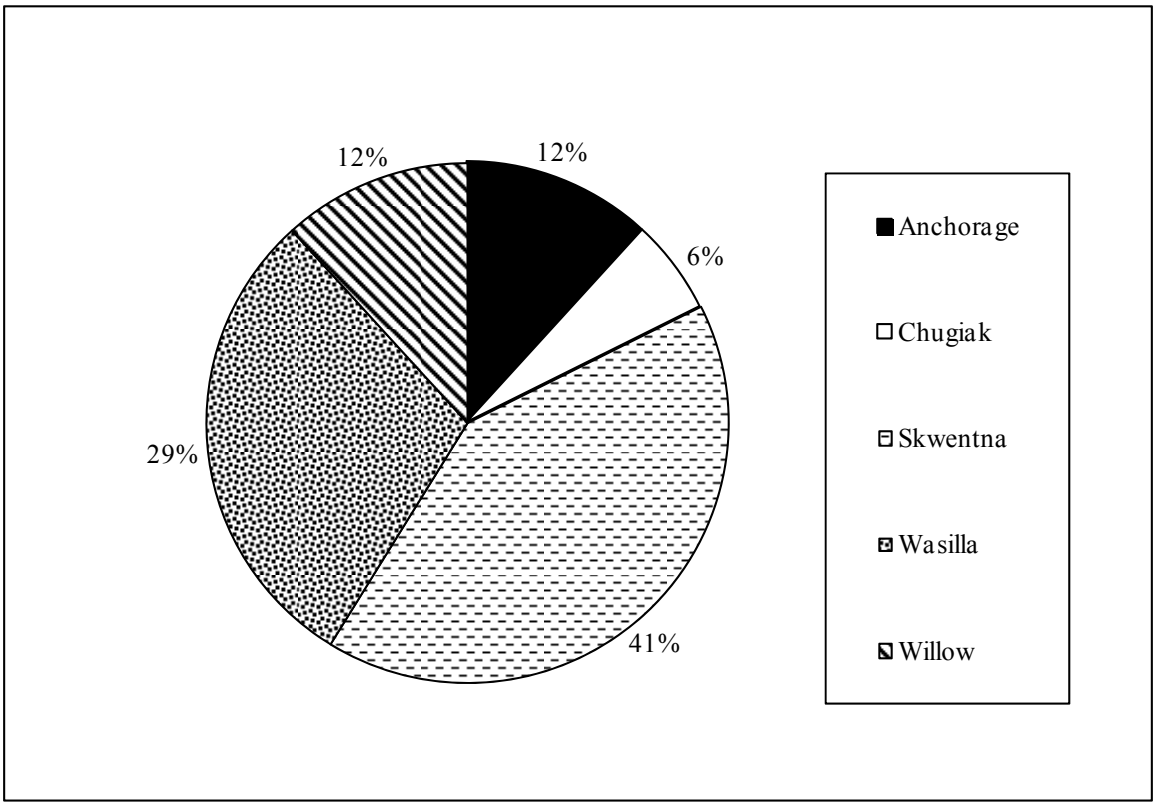

Figure 11-5.–Permits issued, by place of residence, for the Upper Yentna River fishery, 2009.

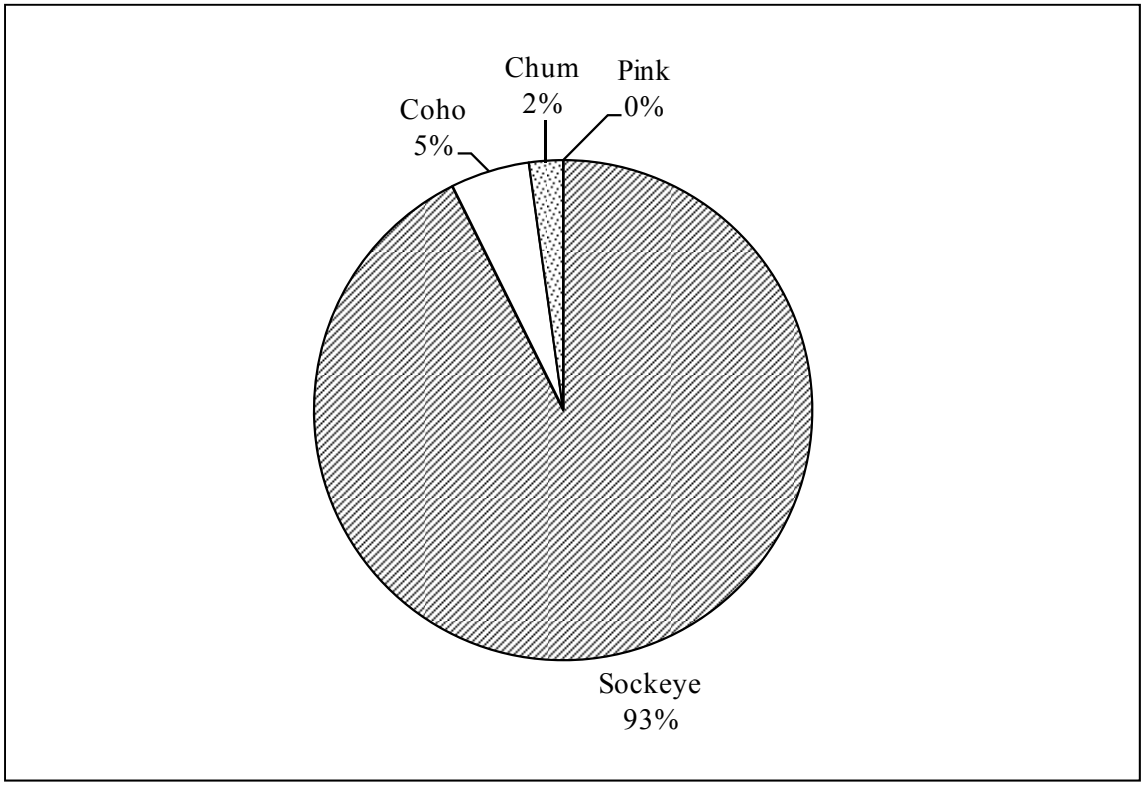

Figure 11-6.–Subsistence salmon harvests in the Upper Yentna River, 2009.

CHAPTER 12: PRINCE WILLIAM SOUND AREA

INTRODUCTION

The Prince William Sound Management Area includes all waters of Alaska between the longitude of Cape Fairfield and the longitude of Cape Suckling. Subsistence fisheries are not permitted in the Valdez Nonsubsistence Area (5 AAC 99.015(a)(5). In 2009, there were 9 subsistence or personal use salmon fisheries with annual harvest assessment programs in the Prince William Sound Management Area:

1. Upper Copper River, Glennallen Subdistrict: state subsistence permit program
2. Upper Copper River, Glennallen Subdistrict: federal subsistence permit program
3. Upper Copper River, Chitina Subdistrict: state personal use permit program
4. Upper Copper River, Chitina Subdistrict: federal subsistence permit program
5. Batzulnetas: a federal subsistence permit program
6. Copper River Flats–Prince William Sound: state subsistence permit program
7. Prince William Sound, Eastern District–Tatitlek: state subsistence permit program
8. Prince William Sound, Southwestern District–Chenega Bay: state subsistence permit program
9. Prince William Sound, general area: state subsistence permit program

The year 2009 was the eighth in which there were separate state and federal permit programs for the Glennallen and Chitina subdistricts. It should also be noted that the dip net fishery that takes place in the Chitina Subdistrict of the Upper Copper River District under state regulations was classified as a personal use fishery through 1999. The BOF reclassified this fishery as subsistence in 2000, and again as personal use in 2003 (with no other regulatory changes). Therefore, the Chitina dip net fishery is discussed in this report. Historical data for this fishery, including years when it was classified as personal use, are also included.

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 2 subdistricts:

1. The Chitina Subdistrict consists of all waters of the Upper Copper River District downstream of the downstream edge of the Chitina–McCarthy Road Bridge; and
2. The Glennallen Subdistrict consists of all remaining waters of the Upper Copper River District.

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. For a detailed discussion of the history of these fisheries, see Simeone and Fall (1996).

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. Table 12-1 summarizes data for the permits issued for village fish wheels by ADF&G from 1997 through 2009. Harvests for village fish wheels are also included in the subdistrict totals.

UPPER COPPER RIVER STATE AND FEDERAL SUBSISTENCE FISHERIES: GLENNALLEN SUBDISTRICT

Regulations

In the Glennallen Subdistrict, permits are required to participate in the state and federal subsistence salmon fisheries. ADF&G issues state permits upon request at ADF&G offices under the authority of 5 AAC 01.630. In 2002, the 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. While the state subsistence permits limit fishers to either fish wheels or dip nets, federal permit holders may use fish wheels, dip nets, and rod and reel. In the state fishery, fishers may participate in either the Chitina Subdistrict personal use fishery or the Glennallen Subdistrict subsistence fishery in any given year, but not both. Federally-qualified rural resident households may hold permits for both the federal and state Glennallen Subdistrict fisheries, or for the Glennallen federal fishery and the Chitina state personal use fishery, although state and federal harvest limits are not additive. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

In the Glennallen Subdistrict under state regulations, fishers may use either fish wheels or dip nets, but they may not use both types of gear. Federal subsistence permit holders may use rod and reel in addition to fish wheels and dip nets, and they may use all 3 types of gear, just 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 1 person or 60 salmon for a household of 2 persons, of which no more than 5 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 2 or more persons. The number of Chinook salmon (5) taken by dip net does not increase under state regulations; federal permit holders may take up to 5 additional Chinook salmon with rod and reel.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been conducted for Upper Copper River since 1960, originally by the Division of Commercial Fisheries, but currently by the Division of Sport Fish. Permits include harvest reports, and fishers are required to record the dates they fished and the number of each species harvested each day. Total harvest estimates for the fishery are made based on reported harvests expanded to all permit holders. Beginning in 2002, the National Park Service, on behalf of the FSB, has compiled the data from federal permit returns in a program separate from that administered by ADF&G.

The creation of a dual permit program for subsistence fishing in the Upper Copper River 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:

1. As noted above, federal permits allow fishing with multiple gear types, including rod and reel, but state permits allow fishing with only 2 gear types—dip nets or fish wheels. Thus while past years' 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.
2. 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. Editing the data to compensate for double-reporting of salmon harvest and effort requires 2 assumptions: 1) permittees returning only 1 permit did not report harvest or

effort on the other, and 2) permittees reporting identical harvests and efforts on both permits reported identical harvests twice rather than split their harvests between permits. These assumptions were employed in the analysis only after discussing the dual-permitted households with the program administrators in the Division of Sport Fish and the National Park Service. All households obtaining both state and federal permits were counted as receiving only 1 permit in the summary tables for the Glennallen Subdistrict included here.

3. 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 reflect the true community 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.

Subsistence Salmon Harvests in 2009

As shown in Table 12-2, ADF&G and NPS issued a total of 1,364 subsistence salmon permits for the Glennallen Subdistrict for 2009. This total is higher than both the recent 5-year average (1,276 permits) and 10-year average (1,251 permits). Of all Glennallen Subdistrict permits issued, both federal and state, residents of Copper Basin communities held 350 (26%) and other Alaska residents held 1,014 (74%) (Table 12-3).

As reported in Table 12-2, the estimated total subsistence salmon harvest in the Glennallen Subdistrict in 2009 was 71,515 salmon, including 67,887 sockeye salmon (95%), 3,341 Chinook salmon (5%), and 287 coho salmon (<1%). Pink and chum salmon are not generally available in the Upper Copper River, although a few chum salmon are sometimes reported. This total includes fish wheel and dip net harvests in the state-administered fishery, and fish wheel, dip net, and rod and reel harvests in the federally-administered fishery. The 2009 harvest was lower than the recent 5-year average (83,323 salmon), 10-year average (78,686 salmon), but higher than the historical average (1989–2008; 66,464 salmon). Table 12-3 reports subsistence salmon harvests in the Glennallen Subdistrict by place of residence of permit holders in 2009. Copper Basin residents caught 39% of the harvest (28,066 salmon) and other Alaska residents harvested 61% (43,449 salmon).

UPPER COPPER RIVER STATE PERSONAL USE FISHERY: CHITINA SUBDISTRICT

Background and History

The Chitina Subdistrict consists of all waters of the Upper Copper River District downstream of the downstream edge of the Chitina–McCarthy Road Bridge to an east–west line crossing the Copper River approximately 200 yd upstream of Haley Creek. In 1984, and from 1986 through 1999, the Chitina Subdistrict was closed to subsistence fishing, and the dip net fishery was operated as a personal use fishery. At its December 1999 meeting, the BOF reversed an earlier decision, determined that the Chitina Subdistrict supported customary and traditional uses of salmon, and returned the classification to subsistence. In February 2003, the BOF reconsidered the subsistence classification of the Chitina dip net fishery, reversed its decision of 1999, made a negative C&T finding, and returned the classification to personal use. No other regulatory changes were made. For a detailed discussion of the history of these fisheries, see Simeone and Fall (1996) and ADF&G (2003).

Regulations

There are state and federal permit programs for the Chitina Subdistrict. Under state regulations, a household permit and an Alaska state resident sport fishing license, both issued by ADF&G, are required for personal use fishing in the Chitina Subdistrict. Households may not possess both the Chitina state personal use permit and the Glennallen state subsistence permit in the same year. Under state regulations, dip nets are the only legal gear in the Chitina Subdistrict. Annual limits are 15 salmon for a 1-person household and 30 salmon for households of 2 or more. Only 1 Chinook salmon may be harvested annually. If ADF&G authorizes a supplemental harvest period by emergency order, permit holders who have already filled their original limit may take 10 additional sockeye salmon during each announced supplementary period. Rainbow/steelhead trout taken by dip net under the state fishery must be released immediately and returned to the water unharmed. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Program

Annual subsistence–personal use salmon harvest assessments have been conducted by ADF&G, currently by the Division of Sport Fish, in the Upper Copper River Area since 1960. Chitina Subdistrict permits include harvest reports, and fishers are required to record the dates they fish, the number of each species harvested each day, whether they fished from a boat or from shore, and if they fished during a supplemental harvest period. Total harvest estimates for the state personal use fishery are made based on reported harvests expanded to all permit holders.

Personal Use Salmon Harvests in 2009

As reported in Table 12-4, the estimated total salmon harvest in the state-administered Chitina Subdistrict personal use fishery in 2009 was 95,662 fish, including 93,766 sockeye salmon (98%), 229 Chinook salmon (<1%), and 1,667 coho salmon (2%), by 7,958 permit holders. The 2009 total estimated harvest for the Chitina Subdistrict was the fourth lowest harvest since 1991, and well below the recent 5-year (121,424 salmon) and 10-year averages (120,133 salmon), as well as the historical average (1989–2008; 111,279 salmon).

Table 12-5 reports estimated salmon harvests in the Chitina Subdistrict personal use fishery by city of mailing address of state permit holders in 2009; most participants in this fishery lived in Fairbanks, Anchorage, or the Matanuska–Susitna Borough. Only 25 Copper Basin residents (<1%) obtained state personal use salmon permits for the Chitina Subdistrict in 2009. Non-area residents harvested all but 292 of the salmon harvested in this fishery in 2009 (>99%).

UPPER COPPER RIVER FEDERAL SUBSISTENCE FISHERY: CHITINA SUBDISTRICT

Regulations

In 2009, qualified Alaska rural residents could obtain federal subsistence permits for the Chitina Subdistrict from the National Park Service. Legal gear included fish wheels, dip nets, and rod and reel. Federally-qualified rural resident households may hold permits for both the federal and state Chitina Subdistrict fisheries, or for the Chitina federal fishery and the Glennallen state subsistence fishery, although state and federal harvest limits are not additive. Federal seasonal limits for the Chitina Subdistrict were the same as for the Glennallen Subdistrict, but were also not additive. Under federal regulations, rainbow/steelhead trout incidentally taken from fish wheels could be retained. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Federal Subsistence Harvests in 2009

As reported in Table 12-6, an estimated 1,560 salmon were harvested in the federal Chitina Subdistrict subsistence fishery in 2009, well above the 2008 harvest of 1,062 and the 2007 harvest of 1,065, and

moving toward the 1,723 estimated for 2006. The total harvest included 1,522 sockeye salmon (98%), 22 coho salmon (1%), and 15 Chinook salmon (1%). A total of 68 permits were issued, which is less than the 81 issued in 2008 and fewer compared to any other year since 2003. Table 12-7 reports harvest and permit numbers according to each permittee's community of residence in 2009 for the Chitina Subdistrict.

NATIVE VILLAGE OF BATZULNETAS SUBSISTENCE FISHERY

The state created the Batzulnetas fishery in 1987 through an emergency regulation to settle the federal district court case of *John vs. Alaska*. There is also a federal permit program for a federal fishery in this area. Participants in this fishery are largely from the community of Mentasta. Legal gear includes fish wheels and dip nets in the Copper River and dip nets and spears in Tanada Creek. For both state and federal fisheries, the open area is all waters of the Copper River 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. The state fishing season is open June 1–September 1 or until the season is closed by emergency order; fishing periods are established by emergency order and are 2 days per week during June and 3½ days per week for the remainder of the season. The federal fishing season is May 15–September 30 or until the season is closed by special action.

Since 1987, subsistence permits have been issued in 11 years (Table 12-8). One permit was issued and returned every year from 1998 through 2004. No permits were issued for the years 2005 through 2009. The historical average (1987–2008) harvest for this fishery is 105 sockeye salmon, with the highest harvest occurring in 1994 with a take of 997 sockeye salmon.

COPPER RIVER DISTRICT SUBSISTENCE FISHERY

Background and Regulations

This fishery takes place in the Copper River District at the mouth of the Copper River (Copper River Flats) near the community of Cordova. Permits are required to participate in subsistence fishing for salmon and freshwater fish species under the authority of 5 AAC 01.630. Permits are issued upon request either in person or by telephone to the Cordova ADF&G office. 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; open season is May 15–September 30, with additional restrictions during times of commercial fishing activity. Annual limits for salmon are 15 salmon for a household of one; 30 salmon for a household of 2 or more; and 10 salmon for each additional person in the household. There is a limit of 5 Chinook salmon per permit. Other standard permit conditions include prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Program

A permit program with annual subsistence salmon harvest assessments has been in place for Prince William Sound at least since 1960. Permits are returned to the Cordova ADF&G office either in person or by mail at the end of the fishing season. Permits include a harvest report, and fishers are required to record the dates fished and the number of each species of fish harvested each day.

Subsistence Salmon Harvests in 2009

As reported in Table 12-9, 323 permits were issued for this fishery in 2009, and 293 (67%) were returned, which was fewer than the 506 permits issued for this fishery in 2008, of which 482 (95%) were returned. This represents a decline from the number of permits issued in 2004 (511) and 2006 (421); however, it represents an increase from the number of permits issued in 2005 (237). The number of permits issued in 2009 was lower than the recent 5-year (429 permits) or 10-year averages (406 permits). The estimated harvest in 2009 of 2,173 salmon was a decrease from previous years. The 2009 harvest was composed

mainly of 1,916 sockeye salmon (88%), 232 Chinook salmon (11%), 23 coho salmon (1%), and 1 chum salmon (<1%). Most permit holders lived in Cordova (266; 82%) (Table 12-10).

EASTERN DISTRICT SUBSISTENCE SALMON FISHERY

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)), under regulations in place since 1988, 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 Council office, or mailed at the end of the fishing season. Permits include a harvest report, and fishers are required to fill in the dates fished and the number of each species of salmon caught each day.

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of 4 in, or gillnets up to 150 fathoms in length with a maximum 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: 7 days per week from May 15 until 2 days before the commercial opening of the Eastern District; during the commercial fishing season, but only during commercial openers; and 7 days per week from 2 days after the closure of the commercial season through October 31. There are no bag or possession limits for this fishery.

In 2009, there were 12 permits issued for this fishery (Table 12-11). The permitees reported a harvest of 170 sockeye salmon. It is likely that the harvest assessment program for this fishery has consistently and substantially underestimated harvests. As shown in Table 12-12, household surveys in Tatitlek provided an estimate of 1,075 salmon taken with subsistence methods in 2003, compared to 298 based on returned permits for that year. In Tatitlek, salmon for home use have also been acquired via rod and reel and removal from commercial harvests. However, all salmon that were reported harvested in the 2003 surveys were taken with subsistence nets or seines (Fall 2006a).

SOUTHWESTERN DISTRICT SUBSISTENCE SALMON FISHERY

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 or the Chenega Village Council office, or mailed at the end of the fishing season. Permits include a harvest report, and fishers are required to fill in the dates fished and the number of each species of salmon caught each day.

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of 4 in and gillnets are permitted up to 150 fathoms in length with a maximum size of 6¼ in. The open season is May 15–October 31under the following fishing periods: 7 days per week from May 15 until 2 days before the commercial opening of the Eastern District; during the commercial fishing season at the time of commercial openers; and 7 days per week from 2 days after the closure of the commercial season through October 31. There are no bag or possession limits for this fishery.

In 2009, 5 permits were issued for this fishery and 4 were returned. Because permit return rates for this fishery have been low in the past, data in Table 12-13 reflects reported harvests only. The reported

harvest for 2009 was 285 salmon, consisting of 168 sockeye salmon, 84 chum salmon, 5 pink salmon, 26 coho salmon and 2 Chinook salmon. The 2009 harvest was well below the recent 5-year average (517 salmon) and 10-year average (567 salmon). It is likely that the harvest assessment program for this fishery consistently underestimates harvests. As shown in Table 12-14, household surveys in Chenega Bay in 2003 provided an estimate of 1,690 salmon taken with subsistence methods compared to 677 (Table 12-13) based on returned permits for that same year.

PRINCE WILLIAM SOUND: GENERAL DISTRICTS

Subsistence fishing for salmon in the other districts of the Prince William Sound Area (other than the Upper Copper River, Copper River, Eastern, and Southwestern districts; also, the Valdez Nonsubsistence Area is closed to subsistence fishing) is open in conformance with regulations regarding gear, open areas and open periods. 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.

Since the creation of separate regulations for the waters fished by Tatitlek and Chenega Bay residents in 1988, it appears that participation in this fishery has been limited. However, further collection and analysis of data is necessary to support this hypothesis. Since 1994, there have been only 8 years when harvests were reported. In 2009, 1 permit was issued and 1 was returned. The one permit holder was from Whittier and that person did not harvest any salmon (tables 12-5 and 12-16).

OTHER SUBSISTENCE FISHERIES IN THE PRINCE WILLIAM SOUND AREA

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 2003–2009 (Fall et al. 2007a; Fall et al. 2005; Fall et al. 2006a; Fall et al. 2004; Fall and Koster 2008, 2010b).

In 2009, harvest assessment programs did not exist for other subsistence finfish fisheries in the Prince William Sound Area. However, there is a personal use permit available for land locked fresh water lakes and is issued out of the Glennallen office. Also, In the Upper Copper River watershed, resident species such as Arctic grayling, burbot, and whitefishes, among other species, are harvested for home use. Harvest estimates based on household surveys are available in the CSIS.

The Division of Subsistence in collaboration with the Copper River Native Association, the Cheesh'Na Tribal Council, the Mentasta Tribal Council, and the Chitina Tribal Council, conducted a household survey to collect nonsalmon fish harvests and use information in Copper Basin communities for a 12-month period from October 2000–September 2001. In total, 472 households were interviewed, 42% of the estimated 1,193 households living in Copper Basin communities. The study produced estimated harvests by study community and gear type for burbot, Arctic char/Dolly Varden, lake trout, Arctic grayling, northern pike, longnose suckers, rainbow/steelhead trout, and whitefishes. Detailed summaries of study methods and findings appear in Simeone and Kari *n.d.* [2004].

Residents of Cordova, Chenega Bay, Tatitlek, Valdez, and Whittier take a variety of shellfish and marine finfishes for subsistence uses. Harvest estimates are available in the CSIS based upon systematic household surveys. Subsistence fishing for shrimp is open April 15–September 15, with no more than 5 pots per person and 5 pots per vessel, and no bag or possession limits. The year 2006 was the first year in which a permit was not required. In March 2009, BOF adopted a Prince William Sound Pot Shrimp Management Plan that allocated 40% of the harvestable surplus of shrimp to commercial users and 60% to noncommercial users. Harvestable surplus is estimated annually prior to the start of the fishing season (15 April) with a surplus production model that requires more timely and precise estimates of noncommercial harvest than are provided by the statewide harvest survey (SWHS). This made it necessary to reinstate the noncommercial shrimp permit prior to the start of the 2009 shrimp pot fishery season. The Prince William Sound noncommercial shrimp permit requires all

noncommercial users to report the date, location, duration, number of pots, and harvest of shrimp (gallons) for each set of pot gear made throughout the fishing season (15 April–15 September). Detailed summaries of harvest estimates and data from returned permits appear in Hochhalter and Hansen. 2011. Subsistence fishing for Dungeness, Tanner, and king crab in the Prince William Sound Management Area was closed, either by regulation or by emergency order, due to low stock status.

Table 12-1.–Subsistence harvests by village fish wheel permits, Glennallen Subdistrict, 1997–2009.

Year	Village	Reported subsistence harvests					
		Chinook	Sockeye	Coho	Steelhead	Other	Total
1997	Chistochina	105	342	139	88	1	675
1997	Gakona	8	1,242	0	0	0	1,250
1997	Kluti-Kah	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-Kah	46	85	0	0	0	131
2000	Chickaloon	73	200	0	0	0	273
2000	Chistochina	1	880	0	0	0	881
2000	Kluti-Kah	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-Kah	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-Kah	0	30	0	0	0	30

Source Mark Somerville, ADF&G, Division of Sport Fish, Glennallen, personal communication.

a. Did not fish.

b. Did not return permit.

Table 12-2.–Historical subsistence salmon harvests, Glennallen Subdistrict, 1989–2009.

	Permits		Estimated salmon harvests[a]					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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	1,021	889	3,154	76,190	258	0	0	79,794
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
5-year average (2004–2008)	1,276	1,107	3,597	79,210	478	0	0	83,323
10-year average (1999–2008)	1,251	1,121	3,743	74,266	655	3	0	78,686
Historical average (1989–2008)	1,013	911	2,647	63,320	485	1	0	66,464

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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, 2009.

	Permits		Estimated salmon harvests[a]					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chistochina	6	5	17	608	0	0	0	625
Chitina	25	17	141	2,337	18	0	0	2,496
Copper Center	81	67	320	6,039	27	0	0	6,386
Copperville	6	6	25	990	0	0	0	1,015
Gakona	34	22	45	3,351	5	0	0	3,400
Glennallen	55	50	140	3,024	12	0	0	3,176
Gulkana	4	1	44	1,500	0	0	0	1,544
Kenny Lake	45	32	160	2,648	1	0	0	2,810
Lake Louise	1	1	0	92	0	0	0	92
Lower Tonsina	2	1	0	2	38	0	0	40
McCarthy	23	4	17	897	0	0	0	914
Mendeltna	2	2	0	20	0	0	0	20
Nelchina	2	2	4	46	0	0	0	50
Paxson	2	2	2	97	0	0	0	99
Silver Springs	3	3	6	166	0	0	0	172
Slana	20	17	7	1,756	0	0	0	1,764
Sourdough	3	3	0	133	0	0	0	133
Tazlina	33	29	248	2,890	16	0	0	3,154
Tolsona	3	3	5	172	0	0	0	177
Subtotal, Copper Basin	**350**	**267**	**1,182**	**26,768**	**116**	**0**	**0**	**28,066**
Anchor Point	1	1	4	101	0	0	0	105
Anchorage	292	236	475	10,073	37	0	0	10,585
Anderson	1	1	0	0	0	0	0	0
Barrow	2	2	2	87	0	0	0	89
Big Lake	4	4	6	144	0	0	0	150
Cantwell	1	1	0	0	0	0	0	0
Chickaloon	1	0	0	0	0	0	0	0
Chugiak	14	13	14	241	0	0	0	255
Cooper Landing	2	2	13	84	0	0	0	97
Delta Junction	26	24	53	746	0	0	0	800
Denali Park	1	1	0	36	0	0	0	36
Dot Lake	1	0	0	0	0	0	0	0
Eagle River	51	49	151	2,038	0	0	0	2,189
Eielson AFB	1	1	0	0	0	0	0	0
Elmendorf AFB	1	1	7	155	0	0	0	162
Ester	6	6	20	233	0	0	0	253
Fairbanks	150	139	337	4,690	8	0	0	5,034
Fort Greely	1	1	0	0	0	0	0	0
Ft Wainwright	2	2	1	3	0	0	0	4
Girdwood	4	4	0	0	0	0	0	0
Glacier View	1	1	0	11	0	0	0	11
Healy	1	0	0	0	0	0	0	0
Homer	4	4	4	72	0	0	0	76
Houston	2	2	6	35	0	0	0	41
Indian	1	0	0	0	0	0	0	0

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Table 12-3.–Page 2 of 2.

Community	Permits		Estimated salmon harvests[a]					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Knik	2	2	0	0	0	0	0	0
Meadow Lakes	1	1	1	5	0	0	0	6
Meiers Lake	1	1	0	191	0	0	0	191
Mentasta Lake	5	4	70	271	0	0	0	341
Moose Creek	1	1	0	0	0	0	0	0
Nabesna	2	2	0	41	0	0	0	41
Nenana	2	2	11	78	0	0	0	89
Ninilchik	1	1	0	38	0	0	0	38
North Pole	55	46	92	1,374	11	0	0	1,477
Northway	8	4	20	584	0	0	0	604
Palmer	83	72	280	4,940	89	0	0	5,309
Salcha	4	4	7	101	0	0	0	108
Seward	1	1	1	33	0	0	0	34
Soldotna	5	5	38	450	0	0	0	488
Sterling	1	1	0	0	0	0	0	0
Sutton	2	2	0	12	0	0	0	12
Talkeetna	2	2	0	46	0	0	0	46
Tanacross	2	1	0	80	0	0	0	80
Tok	62	40	28	2,722	0	0	0	2,750
Tok Cutoff	1	1	0	51	0	0	0	51
Tonsina	4	3	4	41	3	0	0	48
Two Rivers	2	2	4	25	0	0	0	29
Unknown community	1	1	0	70	0	0	0	70
Valdez	55	48	120	3,284	17	0	0	3,421
Wasilla	139	128	390	7,922	7	0	0	8,318
Willow	1	1	0	11	0	0	0	11
Subtotal, other communities	**1,014**	**871**	**2,159**	**41,119**	**171**	**0**	**0**	**43,449**
Total	**1,364**	**1,138**	**3,341**	**67,887**	**287**	**0**	**0**	**71,515**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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, 1989–2009.

	Permits		Estimated salmon harvests					
Year	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
5-year average (2004–2008)	8,260	6,887	2,410	116,720	2,295	0	0	121,424
10-year average (1999–2008)	8,209	7,125	2,846	114,814	2,473	0	0	120,133
Historical average (1989–2008)	7,650	6,911	3,466	105,455	2,358	0	0	111,279

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chitina	3	1	0	90	0	0	0	90
Copper Center	12	11	0	68	1	0	0	69
Glennallen	10	9	0	133	0	0	0	133
Subtotal, Copper Basin	**25**	**21**	**0**	**291**	**1**	**0**	**0**	**292**
Anchorage	1,874	1,587	51	16,492	298	0	0	16,840
Anderson	5	3	0	87	2	0	0	88
Auke Bay	1	1	0	5	0	0	0	5
Barrow	11	9	0	241	0	0	0	241
Big Lake	35	33	1	326	3	0	0	330
Cantwell	4	2	0	44	0	0	0	44
Central	1	1	0	1	0	0	0	1
Chickaloon	13	12	1	196	2	0	0	199
Chugiak	120	108	2	1,212	21	0	0	1,236
Clear	7	7	0	59	0	0	0	59
Cordova	1	0	0	0	0	0	0	0
Craig	1	1	0	5	0	0	0	5
Delta Junction	392	346	23	5,394	110	0	0	5,527
Denali National Park	20	19	0	342	5	0	0	347
Dillingham	1	0	0	0	0	0	0	0
Dot Lake	1	1	0	30	0	0	0	30
Eagle River	255	231	9	2,648	32	0	0	2,689
Eielson AFB	42	37	0	597	0	0	0	597
Elmendorf AFB	19	18	0	208	0	0	0	208
Ester	61	53	0	1,133	52	0	0	1,184
Fairbanks	2,461	2,136	61	34,463	596	0	0	35,120
Fort Greely	25	22	1	370	3	0	0	375
Fort Richardson	9	6	0	176	0	0	0	176
Fort Wainwright	34	32	0	343	16	0	0	359
Fritz Creek	1	1	0	0	0	0	0	0
Gakona	2	2	0	0	0	0	0	0
Galena	1	1	0	11	0	0	0	11
Girdwood	27	26	1	180	0	0	0	181
Haines	1	1	0	16	1	0	0	17
Healy	42	40	0	437	11	0	0	447
Holy Cross	1	0	0	0	0	0	0	0
Homer	5	3	0	100	0	0	0	100
Houston	8	8	0	74	0	0	0	74
Indian	6	6	0	68	0	0	0	68
Juneau	12	10	0	234	0	0	0	234
Kake	1	1	0	15	0	0	0	15
Kaktovik	6	5	0	143	0	0	0	143
Kenai	3	2	0	59	0	0	0	59
Ketchikan	2	1	0	24	0	0	0	24
Knik	1	1	0	0	0	0	0	0

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Table 12-5.–Page 2 of 2.

Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Kodiak	2	1	0	0	0	0	0	0
Kotzebue	3	1	0	0	0	0	0	0
Lake Minchumina	2	2	0	45	0	0	0	45
Marshall	1	1	0	30	0	0	0	30
McCarthy	1	1	0	25	0	0	0	25
Moose Pass	1	1	0	2	0	0	0	2
Nenana	21	20	0	263	6	0	0	269
Nikolaevsk	2	2	0	1	0	0	0	1
Ninilchik	2	2	0	0	0	0	0	0
Nome	1	1	0	0	0	0	0	0
North Pole	660	556	25	8,739	139	0	0	8,903
Palmer	443	393	8	4,604	113	0	0	4,724
Petersburg	1	1	0	30	0	0	0	30
Point Hope	2	2	0	0	0	0	0	0
Point Lay	1	1	0	0	0	0	0	0
Saint Paul Island	1	0	0	0	0	0	0	0
Salcha	40	35	2	471	11	0	0	485
Seward	3	3	0	12	0	0	0	12
Shishmaref	1	0	0	0	0	0	0	0
Skagway	1	1	0	0	0	0	0	0
Slana	1	1	0	0	0	0	0	0
Soldotna	3	2	0	26	0	0	0	26
Sterling	1	0	0	0	0	0	0	0
Sutton	61	56	0	635	38	0	0	673
Talkeetna	12	10	1	103	0	0	0	104
Tenakee Springs	1	1	0	0	0	0	0	0
Tok	16	14	0	121	0	0	0	121
Trapper Creek	8	7	0	90	0	0	0	90
Two Rivers	13	12	0	217	4	0	0	221
Valdez	226	195	13	2,892	2	0	0	2,907
Wasilla	787	698	27	8,313	196	0	0	8,536
Willow	50	44	3	576	1	0	0	581
Wiseman	1	0	0	0	0	0	0	0
Other USA	14	12	0	93	0	0	0	93
Unknown community	38	38	0	457	3	0	0	460
Subtotal, other communities	**7,933**	**6,887**	**229**	**93,475**	**1,666**	**0**	**0**	**95,370**
Total	**7,958**	**6,908**	**229**	**93,766**	**1,667**	**0**	**0**	**95,662**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 12-6.–Historical subsistence salmon harvests, federal Chitina Subdistrict permits, 2003–2009.

	Permits		Estimated salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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
Historical average (2004–2008)	88	72	21	1,369	38	0	0	1,429

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 12-7.–Subsistence salmon harvests by community, federal Chitina Subdistrict permits, 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chitina	9	5	0	198	0	0	0	198
Copper Center	20	11	7	496	0	0	0	504
Gakona	1	0	0	0	0	0	0	0
Glennallen	20	10	4	244	0	0	0	248
Kenny Lake	4	3	0	268	0	0	0	268
McCarthy	8	4	4	128	22	0	0	154
Northway	2	0	0	0	0	0	0	0
Tok	4	1	0	188	0	0	0	188
Total	**68**	**34**	**15**	**1,522**	**22**	**0**	**0**	**1,560**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 12-8.–Historical subsistence salmon harvests, Batzulnetas fishery, 1987–2009.

Year	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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
5-year average (2004–2008)	0	0	0	36	0	0	0	36
10-year average (1999–2008)	1	1	0	73	0	0	0	73
Historical average (1987–2008)	1	1	0	105	0	0	0	105

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 12-9.–Historical subsistence salmon harvests, Copper River District (Copper River Flats), 1965–2009.

	Permits		Estimated salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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

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Table 12-9.–Page 2 of 2.

Year	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2008	506	482	495	4,161	55	0	21	4,732
2009	323	293	232	1,916	23	1	0	2,173
5-year average (2004–2008)	429	407	782	3,543	27	1	6	4,359
10-year average (1999–2008)	406	385	720	3,189	105	3	5	4,022
Historical average (1965–2008)	157	144	236	1,025	124	1	1	1,386

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

Table 12-10.–Subsistence salmon harvests by community, Copper River District (Copper River Flats), 2009.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchor Point	1	1	0	0	0	0	0	0
Anchorage	19	14	8	16	0	0	0	24
Chugiak	3	3	0	1	0	0	0	1
Cordova	266	244	218	1,791	11	1	0	2,021
Eagle River	1	1	0	26	0	0	0	26
Fairbanks	2	2	0	0	0	0	0	0
Glennallen	1	1	4	3	0	0	0	7
Homer	8	8	0	0	12	0	0	12
Kasilof	1	1	0	0	0	0	0	0
Kenai	1	1	0	0	0	0	0	0
Kodiak	1	1	0	0	0	0	0	0
Palmer	3	3	1	6	0	0	0	7
Seward	1	1	0	0	0	0	0	0
Soldotna	2	2	0	50	0	0	0	50
Tatitlek	5	4	0	0	0	0	0	0
Valdez	4	4	1	20	0	0	0	21
Wasilla	2	0	NA	NA	NA	NA	NA	NA
Whittier	2	2	0	3	0	0	0	3
Total	**323**	**293**	**232**	**1,916**	**23**	**1**	**0**	**2,173**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

NA = Data not available.

Table 12-11.–Historical subsistence salmon harvests, Prince William Sound, Eastern District, 1988–2009.

	Permits		Reported salmon harvests					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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	NA	NA	NA	NA	NA	NA
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	NA	NA	NA	NA	NA	NA
2008	1	1	0	60	0	0	0	60
2009	12	4	0	170	131	0	0	301
5-year average (2004–2008)	12	3	1	130	202	17	85	435
10-year average (1999–2008)	14	5	1	182	279	26	62	550
Historical average (1988–2008)	14	5	1	167	295	46	68	577

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).
NA = Data not available.

Table 12-12.–Estimated harvests of salmon for home use, Tatitlek, 2003.

	Estimated salmon harvest			
Species	Subsistence methods	Rod and reel	Removed from commercial harvests	All methods
Chinook	27	0	0	27
Sockeye	306	0	0	306
Coho	651	0	0	651
Chum	13	0	0	13
Pink	77	0	0	77
All salmon	**1,075**	**0**	**0**	**1,075**
Estimated number of households harvesting[a]	13 households	0 households	0 households	13 households (any method)

Source Fall 2006b.
a. Number of households in the community = 27; 25 (93%) were interviewed.

Table 12-13.–Historical subsistence salmon harvests, Prince William Sound, Southwestern District, 1988–2009.

	Permits		Reported salmon harvests					
Year	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
5-year average (2004–2008)	9	5	4	320	46	91	56	517
10-year average (1999–2008)	11	6	12	262	89	105	99	567
Historical average (1988–2008)	11	6	9	261	58	116	157	602

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).
NA = Data not available.

Table 12-14.–Estimated harvests of salmon for home use, Chenega Bay, 2003.

	Estimated salmon harvests			
Species	Subsistence methods	Rod and reel	Removed from commercial harvests	All methods
Chinook	79	36	19	134
Sockeye	829	100	0	929
Coho	331	263	0	594
Pink	201	131	0	333
Chum	250	81	0	331
Other/Unknown	0	56	0	56
All salmon	**1,690**	**668**	**19**	**2,376**
Estimated number of households harvesting[a]	8 households	10 households	1 household	14 households (any method)

Source Fall 2006b.
a. Number of households in the community = 20; 16 (80%) were interviewed.

Table 12-15.–Historical subsistence salmon harvests, Prince William Sound general, 1960–2009.

Year	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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	NA	NA	NA	NA	NA	NA
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

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Table 12-15.–Page 2 of 2.

Year	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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
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
5-year average (2004–2008)	9	8	0	20	6	1	0	27
10-year average (1999–2008)	8	7	0	18	3	2	1	24
Historical average (1960–2008)	10	7	0	14	27	10	60	112

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).
NA = Data not available.

Table 12-16.–Subsistence salmon harvests by community, Prince William Sound general, 2009.

Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Whittier	1	1	0	0	0	0	0	0
Total	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

CHAPTER 13: THE SOUTHEAST REGION

INTRODUCTION

The Southeast region is composed of 2 areas: the Southeastern Alaska Area, which includes all waters between a line projecting southwest from the westernmost tip of Cape Fairweather and Dixon Entrance, and the Yakutat Area, which includes all waters of Alaska between the longitude of Cape Suckling and the longitude of Cape Fairweather. The Joint Board identified 2 nonsubsistence areas in the Southeast region: the Ketchikan Nonsubsistence Area and the Juneau Nonsubsistence Area (5 AAC 99.015). No subsistence fisheries may be authorized in nonsubsistence areas. Southeast region subsistence and personal use fisheries have annual harvest assessment programs based on a permit reporting program. All of the areas within the Southeast Region, except the Yakutat Management Area, have identified specific waters with a positive C&T use finding, with daily and annual limits, seasons, and allowable gear types as part of discretionary permit conditions. State regulations do not recognize rod and reel as subsistence gear in Southeast Alaska, except in the Redoubt Bay sockeye salmon fishery. Since 1990, any Alaska resident may harvest under the terms of a subsistence permit. There are 6 management areas with annual harvest assessment programs in the Southeast region:

1. Yakutat Management Area
2. Haines Management Area
3. Juneau Management Area
4. Sitka Management Area
5. Petersburg Management Area
6. Ketchikan Management Area

HARVEST ASSESSMENT PROGRAMS

The Division of Commercial Fisheries is responsible for administering the subsistence and personal use salmon permit programs in the Southeast region. Area management biologists issue permits that specify open fishing locations, species, daily (and, in some cases, annual) possession limits, seasons, and gear. Area management biologists may change permit conditions at their discretion, including issuing emergency closures. Area management offices require that harvest calendars on the permit be returned by mail or telephone at the end of each season. The information on the calendars is entered into Alexander: the Integrated Fisheries Database for Southeast Alaska and Yakutat. The database includes the names and addresses of all who held subsistence or personal use permits, along with their harvest record. Regulations specify that a permit will not be issued to anyone who has failed to return a permit issued for the previous year. Generally, however, area management offices will accept a harvest record for the previous year at the time a person applies for a current year's permit.

SUBSISTENCE SALMON HARVESTS IN 2009

In 2009, the total estimated subsistence and personal use salmon harvest for the Southeast region, based on returned permits, was 59,627 fish (Table 13-1). This was above the total estimated harvest for 2008 (49,472 salmon) and the recent 5-year average (56,810) but below the 10-year average (62,956) (Table 13-2). By species, sockeye salmon comprised the greatest share of the harvest at 49,507 fish (83%), followed by 3,616 coho salmon (6%), 3,290 pink salmon (6%), 2,006 chum salmon (3%), and 1,208 Chinook salmon (2%) (Table 13-3, Figure 13-1). The estimated salmon harvests by management area were as follows: Ketchikan 15,436 (26%), Sitka 12,768 (21%), Haines 10,249 (17%), Juneau 9,632 (16%), Yakutat 7,585 (13%), and Petersburg 3,958 (7%) (Table 13-3, Figure 13-2). Compared to 2008,

harvests in the Juneau and Haines management areas decreased, harvests in the Ketchikan and Yakutat management areas increased, while those in Sitka and Petersburg management areas did not change significantly.

Since 2004, the number of salmon permits issued for the Southeast region has averaged 3,344 per year (Table 13-2). In 2009, 3,421 permits were issued and 3,097 were returned, a regionwide response rate of 91%. 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.

YAKUTAT MANAGEMENT AREA

Yakutat Area Subsistence Fisheries

Background and History

The Yakutat Management Area stretches from Cape Fairweather to Cape Suckling. Fishing areas used by Yakutat residents are under the management responsibility of the Division of Commercial Fisheries' Yakutat Area offices. C&T findings by the BOF for salmon identify the fresh waters upstream from the terminus of streams and rivers from the Doame River in the south to the Tsiu River, the waters of Yakutat Bay and Russell Fjord, and the waters of Icy Bay (5 AAC 01.666 (a)(3)). 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.

Regulations

The 2009 permit specified that during the commercial salmon net season, the weekly subsistence fishing period was from 6:00 AM Friday to 6:00 PM Saturday. This applied to each river or by fishery individually. On the Situk River, subsistence fishers were required to attend their nets when they were being used to harvest salmon. Other standard permit conditions included removal of dorsal fins; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert or other artificial obstruction; and completion of the harvest calendar for each day fished, specifying location, species, and gear. Sport-taken and subsistence-taken salmon could not be possessed on the same day. Because rod and reel was not a recognized subsistence gear type, any salmon or rainbow/steelhead trout taken with rod and reel gear could not be possessed with fish taken with nets. The permit, however, did not specify allowable subsistence gear. Permits could be used for any location in the area.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1989. The estimated total subsistence salmon harvest for the Yakutat Management Area in 2009 was 7,585 salmon, including 4,983 sockeye salmon (66%), 1,500 coho salmon (20%), 1,027 Chinook salmon (14%), 69 pink salmon (<1%), and 5 chum salmon (<1%) (Table 13-3). An estimated 361 permits were fished in the Yakutat Area (Table 13-3). This reflects an overall increase in permits and salmon harvested over 2008 levels.

Residents of Yakutat were issued 116 subsistence permits, with 86 returned (Table 13-4). The estimated total subsistence salmon harvest for the community of Yakutat in 2009 was 6,729 fish, including 4,266 sockeye salmon (63%), 1,439 coho salmon (21%), 950 Chinook salmon (14%), 69 pink salmon (<1%), and 5 chum salmon (<1%) (Table 13-4).

HAINES MANAGEMENT AREA

Haines Area Subsistence Fisheries

Background and History

The Haines Management Area 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 by the BOF 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)(2)).

There are several communities in the Haines Management Area: the city of Haines and surrounding borough, 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 2009, the combined population of these communities was 3,223 (ADLWD 2010). The populations of Haines and Skagway are predominantly non-Native, while Klukwan continues to have a predominantly Alaska Native population.

Regulations

In 2009, the subsistence permit for the Haines Management Area provided for an open season of June 1–September 30 for sockeye, coho, pink, and chum salmon in the Chilkat River, Chilkat Inlet, and Lutak Inlet. Inseason, the season was extended until October 11 to allow additional harvest opportunity on late-run sockeye salmon. Limits for sockeye salmon were 25 in possession and 50 annually; for coho salmon, 20 in possession and 40 annually; and for pink and chum salmon, 75 in possession and 100 annually. Chinook salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could be retained only if taken incidentally by gear operated under the terms of the permit.

Sport-taken and subsistence-taken salmon could not be possessed on the same day. In the salt waters of Lynn Canal (District 15), including Chilkat, Chilkoot, and Lutak inlets, subsistence salmon could not be taken during closed periods of the commercial salmon net fishery, except salmon could be taken in the salt waters of Chilkoot Inlet north of the latitude of Battery Point and in Chilkat Inlet north of Glacier Point on the Saturday before any open period of the Section 15A commercial salmon net fishery.

Allowable gear types in the Haines Management Area subsistence fishery are set and drift gillnets. Set and drift gillnets 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 1 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. In the Chilkat River, the permit holder was required to be physically present at the net while it was in use. Subsistence salmon could not be harvested by the use of a line attached to a pole or rod. Other standard permit conditions included removal of dorsal fins; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert or other artificial obstruction; and completion of the harvest calendar for each day fished, specifying location, species, and gear.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The estimated subsistence salmon harvest in the Haines Management Area in 2009 was 10,249 salmon, including 7,647 sockeye salmon (75%), 1,581 pink salmon (15%), 470 coho salmon (5%), 458 chum salmon (5%), and 93 Chinook salmon (1%) (Table 13-3). This represents a slight increase over total harvests in 2008, mostly seen in the number of pink salmon harvested, which increased from 689 in 2008 to 1,581 in 2009.

For the purposes of this report, Haines and Klukwan permits and harvests are combined. In 2009, 414 permits were issued, and 408 were returned (99%). The estimated total number of salmon harvested by Haines and Klukwan residents (9,835 salmon) included 7,322 sockeye salmon (75%), 1,505 pink salmon (15%), 463 coho salmon (5%), 454 chum salmon (5%), and 91 Chinook salmon (1%) (Table 13-4).

JUNEAU MANAGEMENT AREA

Angoon Subsistence Area

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 south of a line from Fishery Point to South Passage Point and north of the latitude of Point Caution, and in waters of Section 13C east of the longitude of Point Elizabeth (5 AAC 01.716 (a)(6)).

The residents of Angoon are the principal subsistence fishers in this area. In 2009, Angoon had a population of 442 (ADLWD 2010). 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. Over the years, 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 have provided the people of Angoon with salmon and other marine resources.

Regulations

In 2009, a subsistence salmon permit for the Angoon Area waters of District 12 provided for an open season for sockeye salmon in Kanalku Bay from June 1–July 31, with a limit of 15 fish in possession and annually; in Basket Bay (Kook Lake outlet) from June 1–July 31, with a possession limit of 15 fish and an annual limit of 30 fish; in Sitkoh Bay from June 1–August 31, with a possession and annual limit of 50 fish; and in Hasselborg River–Salt Lake from July 1–July 31, with a limit of 25 fish in possession and annually. The open period for subsistence coho salmon fishing on Hasselborg River–Salt Lake was from July 1–October 31 with a possession and annual limit of 20 fish. Coho salmon could also be taken in other streams in the Angoon subsistence areas described under specific subsistence permit conditions from June 1–October 31, with limits of 20 in possession and 40 annually from all combined streams. Pink salmon could be harvested in all streams of the area 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. Chinook salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could be retained only if taken incidentally by gear operated under the terms of the permit.

Sport-taken and subsistence-taken salmon could not be possessed on the same day and salmon taken under the subsistence or personal use regulations could not be subsequently used as bait for commercial fishing purposes. Gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets were the allowable subsistence gear types in the Angoon Area. Drift gillnets could not exceed 50 fathoms in length; set gillnets could not be used. Snagging or fishing with a rod or reel was prohibited. Other standard permit conditions included removal of dorsal fins; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert or other artificial obstruction; and completion of the harvest calendar for each day fished, specifying location, species, and gear. Only one permit was allowed per household.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The estimated salmon harvest in the Angoon Area subsistence fisheries in 2009 was 2,051 salmon, including 1,741 sockeye salmon (85%), 216 coho salmon (11%), 71 pink salmon (4%), and 23 chum salmon (1%) (Table 13-3). The 2009 salmon harvest continues a trend of increasing harvests in the Angoon Area since 2007.

The estimated salmon harvest for the community of Angoon, based on 115 permits issued and 96 returned (83%), totaled 1,284 salmon, including 1,128 sockeye salmon (88%), 84 coho salmon (7%), 66 pink salmon (5%), and 6 chum salmon (1%) (Table 13-4). This is a higher harvest than was seen in 2008 (800 salmon), owing mostly to a large increase in the number of sockeye salmon harvested. The 2008

estimated salmon harvest for the community of Angoon was based on 87 permits issued and 84 (97%) returned; an overall lower number of permits, but with a higher return rate than in 2009.

Hoonah Subsistence Area

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 the salmon in those waters of District 12 that were in Basket Bay inside a line from lat 57º30.83′ N, long 134º53.20′ W, to lat 57º39.28′ N, long 134º53.88′ W; in those waters of District 13 that were along the western shore of Yakobi Island east of a line from Cape Spencer light to Surge Bay light; and in the waters of sections 14B and 14C (5 AAC 01.716 (a)(4)).

The residents of Hoonah are the principal users of waters in the Hoonah Subsistence Area. In 2009, Hoonah had a population of 764 (ADLWD 2010).

Regulations

The 2009 subsistence salmon permit for Hoonah Area waters provided open seasons and limits for sockeye salmon at the following locations: Surge Bay from June 1–August 15, with a limit of 50 fish annually and in possession; Hoktaheen Cove from June 1–July 20, with a possession and annual limit of 50 fish; Hanus Bay (Lake Eva) from June 1–August 15, with a possession and annual limit of 50 fish; Berg Bay from June 1–July 31, with a limit of 25 fish annually and in possession; and Neva Creek from June 1–August 15, with a limit of 40 fish annually and in possession. Pink salmon could be harvested under a subsistence permit in all streams in the Hoonah Subsistence Area from June 1–September 30, with a possession and annual limit of 150 fish. Chum salmon could be harvested under a subsistence permit in the same waters from June 1–October 31, with a possession and annual limit of 50 fish. Coho salmon could be taken in streams described under specific subsistence permit conditions from June 1–October 31, with limits of 20 in possession and 40 annually. Chinook salmon, rainbow/steelhead trout and Arctic char/Dolly Varden could be retained only if taken incidentally by gear operated under the terms of the permit.

Sport-taken and subsistence-taken salmon could not be possessed on the same day, and salmon taken under subsistence regulations could not be subsequently used as bait for commercial fishing purposes. Gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets were the types of subsistence gear allowed in the Hoonah Area. Drift gillnets could not exceed 50 fathoms in length; set gillnets could not be used. Snagging or fishing with a rod or reel was prohibited. Other standard permit conditions included removal of dorsal fins; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert or other artificial obstruction; and completion of the harvest calendar for each day fished, specifying location, species, and gear. Only 1 permit was issued per household.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The estimated salmon harvest in the Hoonah Subsistence Area in 2009 was 3,053 salmon, including 2,203 sockeye salmon (72%), 760 chum salmon (25%), 44 pink salmon (1%), and 42 coho salmon (1%) (Table 13-3). The 2009 harvest was considerably higher than the 2008 harvest. The estimated total subsistence salmon harvest in 2008 was 1,162 salmon, 1,891 fewer fish than in 2009. The 2008 harvest included 974 sockeye salmon, 143 coho salmon, and 37 chum salmon.

In 2009, 114 permits were issued in the community of Hoonah, 84 were returned (74%) with a total estimated harvest of 2,543 fish including 1,613 sockeye salmon (63%), 753 chum salmon (30%), 143 coho salmon (6%), 30 pink salmon (1%) and 4 Chinook salmon (<1%) (Table 13-4). In 2008, 69 permits were issued in the community and 57 (83%) were returned, for a total estimated harvest of 599 salmon.

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. Fishers from these communities fish in districts 11, 12, 13, and 14. Elfin Cove fishers harvest salmon from Hoktaheen Cove 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 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, and Takanis Bay and Hoktaheen Cove in District 13. Most of these areas have positive C&T findings as described in other sections of this report.

In 2009, Elfin Cove had a population of 25, Gustavus had a population of 451, Pelican had a population of 122, and Tenakee Springs had a population of 104 (ADLWD 2010).

Regulations

Permit regulations applying to fishers in this area can be found under the Hoonah, Angoon, Haines, and Juneau subsections.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. In 2009, the number of salmon reported on permits from Elfin Cove, Gustavus, Pelican, and Tenakee Springs was modest. One permit was issued and returned in Elfin Cove with no harvests reported. In Gustavus, 28 permits were issued and 27 returned (96%). The estimated harvest for Gustavus was 371 total salmon, consisting of 329 sockeye salmon (89%), 27 Chinook salmon (7%), 8 pink salmon (2%), and 7 chum salmon (2%). Five permits were issued to Pelican residents and all were returned. Pelican had a total harvest of 29 salmon, consisting of 26 sockeye salmon (90%) and 3 chum salmon (10%). One permit was issued and returned by Tenakee Springs residents, but no harvest was reported (Table 13-4).

Juneau Personal Use Area

Juneau fishers primarily harvest sockeye salmon from the Taku River and Sweetheart Creek, which lie within District 11. These waters are under the management responsibility of the Division of Commercial Fisheries' Juneau Area Office. Waters of District 11 lie within the Juneau Nonsubsistence Area (Figure 13-3). Personal use regulations apply to salmon fishing with nets and spears for home uses in this area. Juneau area residents were the principal participants in the designated personal use fisheries in District 11. In 2009, the city and borough of Juneau, excluding Douglas, had a population of 25,771. The community of Douglas had a population of 4,890 (ADLWD 2010).

Regulations

The 2009 personal use permit for the Juneau Management Area waters provided open seasons and limits for sockeye salmon at the following locations: in the Taku River drainage from July 1–July 31, with a possession and annual limit of 5 sockeye salmon for a household of 1 person and 10 sockeye salmon for a household of 2 or more people; and in Sweetheart Creek from June 1–October 31, with a possession limit of 25 sockeye salmon and no annual limit. In all streams in the Juneau Management Area, except along the Juneau road system, the open season and limit 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.

Salmon could be taken under a personal use fishing permit by holders of a valid Alaska resident sport fishing license, by Alaska residents under the age of 16, or by Alaska residents with a permanent

identification card (seniors and disabled veterans). Both lobes (tips) of the caudal fin (tail) of personal-use salmon had to be removed immediately after harvest. Other standard permit conditions included a prohibition on possession of sport-taken and personal use-taken salmon on the same day; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert or other artificial obstruction; and completion of the harvest calendar for each day fished, specifying location, species, and gear. Fishing with a rod or reel was prohibited. Beach seines, cast nets, dip nets, gaffs, and spears were the gear allowed in the Juneau Management Area. Set gillnets could not be used except in the Taku River. Set gillnets could not exceed 15 fathoms in length, had to be set from the Taku River Lodge upstream to the U.S.–Canada border, and could not be fished within 100 yd of the ADF&G fish wheels. Additionally, the permit holder had to be present at the net while it was in use. Snagging was prohibited in the personal use fisheries. Statewide regulations said that it is unlawful to buy, sell, trade, or barter fish or their parts taken under personal use regulations. Chinook and coho salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could be retained only if taken incidentally under a personal use permit. Salmon possession limits were 2 Chinook and 6 coho salmon.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The total estimated salmon harvest for the Juneau Area personal use fisheries in 2009 was 4,527 salmon, consisting of 3,925 sockeye salmon (87%), 311 pink salmon (7%), 258 coho salmon (6%), 29 Chinook salmon (<1%), and 4 chum salmon (<1%) (Table 13-3). This was a significantly lower harvest then 2008, which totaled 8,554 salmon, while the number of permits fished decreased only slightly.

The estimated salmon harvest for the community of Juneau, based on 705 permits issued and 658 returned (93%), totaled 5,961 salmon, including 5,409 sockeye salmon (91%), 294 coho salmon (5%), 167 pink salmon (3%), 62 Chinook salmon (1%) , and 30 chum salmon (<1%) (Table 13-4). The estimated salmon harvest for the community of Douglas, based on 49 permits issued and 46 returned (94%), totaled 471 salmon, including 274 sockeye salmon (58%), 154 pink salmon (33%), 42 coho salmon (9%), and 1 chum salmon (<1%) (Table 13-4).

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 the waters of Section 13A south of the latitude of Cape Edward, in waters of Section 13B north of the latitude of Redfish Cape, and in waters of Section 13C (5 AAC 01.716 (a)(8)). At the March 1997 BOF meeting in Sitka, this finding was extended to include all other salmon species (5 AAC 01.716 (a)(21)). 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.

The residents of Sitka are the principal subsistence users of the salmon stocks in the area. In 2009, Sitka had a population of 8,627 (ADLWD 2010). 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

The 2009 subsistence–personal use salmon permit for the Sitka Management Area stipulated that sport-taken and subsistence–personal use taken salmon may not be possessed on the same day; fish taken under the permit could not be bought or sold, or used for commercial bait; and the harvest report must be completed daily. Chinook salmon, rainbow/steelhead trout and Arctic char/Dolly Varden could only be taken incidentally by gear operated under the subsistence–personal use fishing guidelines of the permit prior to August 16. Other standard permit conditions include issuance of one permit per household; removal of dorsal fins of subsistence caught salmon, and for personal use salmon, removal of both tips of the caudal fin (tail), and; prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Allowed subsistence gear included hand purse seines, beach seines, drift gillnets, cast nets, dip nets, gaffs, and spears. Drift gillnets could not exceed 50 fathoms. In Redoubt Bay only, the use of rod and reel gear was allowed as subsistence gear and sport regulations applied to this gear.

The 2009 subsistence–personal use permit applied to the marine waters and anadromous lakes and streams within the Sitka Management Area. The season for sockeye salmon for all Sitka locations opened June 1 and closed on a variety of dates depending on location. July 20 was the closing date for Gut Bay, Hoktaheen Cove, and Takanis Bay. July 25 was the sockeye salmon closing date for Leo's Anchorage and July 31 for Silver Bay (Salmon Lake) and Politofski Lake. Hanus Bay (Lake Eva), Lake Anna, Ford Arm, Klag Bay, and Surge Bay closed on August 15. Inseason, sockeye salmon subsistence fisheries in Klag Bay, Lake Anna and Ford Arm and all associated freshwater drainages were closed on July 25 due to low water conditions, high subsistence harvest and low escapements. August 31 was the closing date for Necker Bay, Redfish Bay, and Sitkoh Bay. Falls lake and bay were open from June 1–July 13 and again from July 23–August 15.

Possession and annual limits for sockeye salmon varied from 10 fish in possession and annually at Leo's Anchorage and Silver Bay to 100 fish in possession and annually at Necker Bay. Sitkoh, Takanis, Surge, Klag, and Hanus bays, Hoktaheen Cove, and Politofski Lake had possession and annual limits of 50 sockeye salmon. Lake Anna, Ford Arm, Falls Lake, and Falls Bay had possession and annual limits of 25 fish. Redfish Bay had limits of 50 in possession and 100 fish annually. Gut Bay limits were 10 fish in possession and 20 fish annually.

Fishing for Chinook salmon in Takanis Bay or in parts of Sitka Sound was managed under personal use regulations with a possession limit of 20 fish, no annual limit, and an open season from July 1–August 31. Salmon streams flowing across or adjacent to the Sitka road system were closed to subsistence–personal use fishing for coho and chum salmon. The open season for pink salmon in these streams was from July 15–August 31. Only dip nets, gaffs, spears and cast nets were allowed. Portions of Falls Lake, Gut Bay, and Indian River had closed areas specified on the permit.

The 2009 permit provided an open season for pink salmon in all C&T areas within the Sitka Management Area, except in listed sockeye salmon streams, from July 15–September 30, with a possession limit of 50 fish and an annual limit of 150 fish. For chum salmon in the same waters, the open season was July 15–October 31. The possession and annual limits for chum salmon were 50 fish. The directed coho salmon fishing season in C&T use areas, as identified on the permit, was from August 16–October 31, except at Redoubt, Necker, Redfish, and Sitkoh bays, where it was from September 1–October 31. The possession limit was 2 fish and the annual limit was 40 fish.

In January 2003, the BOF adopted the Redoubt Bay and Lake Sockeye Salmon Management Plan (5 AAC 01.760). The plan provides a management approach for subsistence, sport, and commercial fisheries that target Redoubt Lake sockeye salmon based on an optimal escapement goal (OEG) of 7,000–25,000 fish. As specified on the permit, by default the fishery is open from June 1–August 31 with a possession limit of 10 fish and an annual limit of 50 fish. If the projected run falls below 10,000 fish or above 20,000 fish, the season or limits will change inseason. The 2009 escapement was 13,000 fish, so no changes were made to the season or limits specified on the permit.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. As reported in Table 13-3, the estimated salmon harvest in the Sitka Management Area subsistence and personal use fisheries in 2009 was 12,768 salmon, including 12,421 sockeye salmon (97%), 203 pink salmon (2%), 94 coho salmon (1%), 49 chum salmon (<1%), and 2 Chinook salmon (<1%). This was an increase over 2008 harvest levels of 10,471 fish, mostly attributable to an increase in sockeye salmon harvests, from 9,640 fish in 2008.

As reported in Table 13-4, the estimated salmon harvest for the community of Sitka in 2009, based on 631 permits issued and 609 returned (97%), was 12,403 salmon, including 12,108 sockeye salmon (98%), 196 pink salmon (2%), 53 coho salmon (<1%), 35 chum salmon (<1%), and 11 Chinook salmon (<1%).

PETERSBURG MANAGEMENT AREA

Kake Subsistence Area

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 sections 9A and 9B north of the latitude of Swain Point; in the waters of District 10 west of a line from Pinta Point to False Point Pybus; and in the waters of District 5 north of a line from Point Barrie to Boulder Point (5 AAC 01.716 (a)(10)). 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 2009, Kake had a population of 497 (ADLWD 2010). 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.

Regulations

The 2009 subsistence salmon permit for the Kake Area waters of District 9 provided for an open season for sockeye salmon in Alecks Creek and Shipley Bay of June 1–July 31. In the former stream, harvest limits were set at 50 salmon in possession and annually. In the latter area, the possession limit was 25 fish and the annual limit was 50 fish. In Bay of Pillars, the open season was from June 1–August 15 with annual and possession limits of 50 fish. For Falls Lake, the open seasons were June 1–July 13 and July 23–August 15 with possession and annual limits of 25 fish. The season for sockeye salmon in Gut Bay was June 1–July 20 with a limit 10 fish in possession and 20 fish annually. Pink salmon could be harvested in all streams in the Kake subsistence area, except for the sockeye salmon streams identified on the permits, between July 15–September 15. The possession limit was 100 pink salmon, with no annual limit. Chum salmon harvest was allowed in the same areas from July 1–October 31 with a possession limit of 50 fish and no annual limit. For coho salmon, fishing was allowed August 16–October 31 with a limit of 20 fish in possession and 40 fish annually. Coho salmon harvest was allowed in the same areas as pink and chum salmon fishing.

Permitted subsistence gear included gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets. Set gillnets could only be used 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. Drift and set gillnets could not exceed 50 fathoms. Other standard permit conditions included prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction; completion of harvest reports daily prior to leaving the fishing area, and removal of the dorsal fin. Only one permit was issued per household.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. As reported in Table 13-3, the estimated salmon harvest in the Kake Subsistence Area in 2009 was 1,863 salmon, including 1,549 sockeye salmon (83%), 167 pink salmon (9%), 100 chum salmon (5%), 33 coho salmon (2%), and 14 Chinook salmon (1%).

The estimated subsistence salmon harvest for the community of Kake in 2009, based on 123 permits issued and 117 returned (95%), was 1,532 salmon, including 1,253 sockeye salmon (82%), 113 chum salmon (7%), 104 pink salmon (7%), 50 coho salmon (3%), and 13 Chinook salmon (1%) (Table 13-4).

Petersburg–Wrangell Subsistence–Personal Use Area

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 1989, the BOF adopted a positive C&T finding for salmon in the waters of Southeast Alaska. At that time, the BOF did not act on proposals requesting a positive C&T finding for salmon in the waters of districts 7 and 8, the principal waters used by Petersburg and Wrangell residents. In 2002, however, the BOF made a positive C&T finding for these districts (5 AAC 01.716 (a)(23)). These waters include Thoms Place, Harding River, Mill Creek, and the Stikine River.

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 2009, the population of Petersburg was 2,973 and that of Wrangell was 1,892 (ADLWD 2010).

Regulations

The 2009 subsistence–personal use salmon permit for the Petersburg Management Area provided a June 1–July 31 open season for subsistence sockeye salmon in Shipley, Salmon, and Red bays, along with Thoms Place and Mill Creek. 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. 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 subsistence areas, except the sockeye salmon locations listed on the permit, 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. For the same areas, 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 open season for all the streams in the Wrangell and Petersburg subsistence areas was August 16–October 31, with a limit of 20 fish in possession and 40 annually.

General permit conditions for 2009 specified that only one permit would be issued per household. Sport fish and subsistence/personal use salmon could not be possessed on the same day. Subsistence or personal use salmon could not be sold or bought nor used for commercial bait. Other standard permit conditions included prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction and fishing with a line attached to a rod or pole. Dorsal fins were to be removed.

The subsistence permit for the Petersburg Management Area was valid in the waters of districts 7 and 8. Allowed subsistence gear included gaffs, spears, beach seines, dip nets, drift gillnets, and cast nets. Drift and set gillnets could not exceed 50 fathoms. Set gillnets could only be used 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.

Personal use permit conditions applied in the absence of customary and traditional findings. Streams that crossed or were adjacent to the Petersburg or Wrangell road system were closed to personal use fishing.

Fish could be taken under a personal use permit only by holders of a valid Alaska resident sport fishing license, or by Alaska residents under the age of 16, or by Alaska residents who had been issued an ADF&G permanent identification card. Both tips of the caudal fin (tail) had to be removed. Allowed personal use gear included beach seines, drift gillnets, cast nets, dip nets, spears, and gaffs. Gillnets could not exceed 50 fathoms in length.

Personal use regulations established a weekly sockeye salmon season at Hatchery Creek, which drains into Sweetwater Lake. Because of increasing fishing pressure and concerns for the viability of the stock, the fishery was closed Mondays, Tuesdays, and Wednesdays from June 4–June 28. In 2009, harvest limits were restricted to 3 fish daily and 9 annually. Personal use coho salmon fishing was open in Blind Slough and North Wrangell Narrows with possession and annual limits of 25 fish combined. The Anita Bay personal use permit allowed the harvest of Chinook, chum, and coho salmon May 1–October 31 with both possession and annual limits of 25 fish in any combination. Outside of this area, the possession limit was 2 Chinook salmon and 6 coho salmon.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The estimated salmon harvest in the Petersburg Subsistence–Personal Use Area in 2009 was 1,181 salmon, including 532 sockeye salmon (45%), 478 coho salmon (41%), 84 chum salmon (7%), 76 pink salmon (6%), and 11 Chinook salmon (1%) (Table 13-3).

As reported in Table 13-4, the estimated subsistence salmon harvest for the community of Petersburg in 2009, based on 86 permits issued and 79 returned (92%), was 1,041 salmon, including 550 sockeye salmon (53%), 393 coho salmon (38%), 54 pink salmon (5%), 40 chum salmon (4%), and 3 Chinook salmon (<1%).

As shown in Table 13-3, the estimated salmon harvest in the Wrangell Subsistence–Personal Use Area in 2009 was 914 salmon, which included 730 sockeye salmon (80%), 122 chum salmon (13%), 44 pink salmon (5%), 18 Chinook salmon (2%), and 1 coho salmon (<1%).

The estimated subsistence salmon harvest for the community of Wrangell in 2009, based on 85 permits issued and 68 returned (80%), was 1,066 salmon, including 827 sockeye salmon (78%), 135 chum salmon (13%), 53 pink salmon (5%), 26 Chinook salmon (2%) and 24 coho salmon (2%) (Table 13-4). Harvests amounts of all species of salmon increased in 2009 over 2008 harvests in the Petersburg and Wrangell Subsistence–Personal Use Areas.

2009 Federal Stikine River Subsistence Salmon Fishery: Regulations

In January 2004, the U.S. and Canada negotiated a modified Pacific Salmon Treaty that allowed a U.S. subsistence fishery for salmon 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, 2 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 the season. There were no changes in subsistence fishing regulations or permit conditions for the 2009 fishing season and no inseason actions.

Current Federal Regulations

The Federal subsistence fisheries regulatory year begins April 1. Regulations are detailed in Subpart C of 36 CFR part 242. The sections relevant to the Stikine River are as follows:

§___.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:

> *District 8 and waters draining into that District: Salmon, Dolly Varden, trout, smelt, and eulachon. Residents of drainages flowing into Districts 7 & 8, residents of drainages flowing into District 6 north of the latitude of Point Alexander (Mitkof Island), and residents of Meyers Chuck.*

§___.27 Subsistence taking of fish.

(i) Fishery management area restrictions.

(13) Southeastern Alaska Area.

> *(xv) 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 mesh size is 5l/2 inches, except during the Chinook season when the maximum gillnet mesh size is 8 inches.*
>
> *(A) You may take Chinook salmon from May 15 through June 20. The annual limit is 5 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) The total annual guideline harvest level for the Stikine River fishery is 125 Chinook, 600 sockeye, and 400 coho salmon. All salmon harvested, including incidentally taken salmon, will count against the guideline for that species.*

The following conditions were included on the Stikine River subsistence fishing permit:

1) Permit was valid for subsistence salmon fishing in the mainstem of the Stikine River. Clearwater tributaries were closed. Fishing gear could not interfere with the U.S.–Canada test fishing program;
2) Only residents of Meyers Chuck, Wrangell and Petersburg (including all residents of District 6 living north of Point Alexander) could participate in the Stikine River subsistence fishery;
3) Permit had to be in possession while fishing. A daily harvest entry was to be completed prior to leaving the fishing site;
4) Only one permit issued to a household;
5) Incidental harvest of Chinook, sockeye, or coho salmon had to be reported on the daily harvest log, and;
6) Completed permits had to be returned by October 15, 2009.

Harvest Assessment Program

An inseason monitoring program of the Chinook, coho, and sockeye salmon fisheries exists on the Stikine River, as well as permits and harvest reporting. In 2009, 80 fishing permits were issued, with the majority going to Wrangell households. Of this total, 34 households reported successfully harvesting fish. The

Stikine River subsistence harvest totaled 31 Chinook salmon greater than 28 inches, 19 Chinook salmon less than 28 inches, and 723 sockeye, 21 coho, 66 pink, and 46 chum salmon. There were also 2 steelhead, 1 cutthroat trout and 20 Dolly Varden harvested. Fishing patterns were similar to previous years in that most of the fishing effort and harvest occurred in the lower and middle portions of the river. Approximately 90% of the Chinook salmon were harvested by July 15 and 90% of the sockeye salmon were taken by July 16 (Larson 2009).

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, especially the Salmon Bay and Red Bay sockeye salmon stocks at the northern end of Prince of Wales Island. In 1989, when the BOF adopted a positive C&T finding for salmon in some waters of Southeast Alaska, it did not act on proposals to make a similar finding for the principal waters used by Point Baker and Port Protection residents. In 1997, however, the BOF did adopt 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, in the waters of Section 6A 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)(20)).

In 2009, Point Baker had a population of 11 and Port Protection had a population of 72 (ADLWD 2010).

Regulations

The Point Baker drift gillnet subsistence sockeye salmon fishery occurs in the waters of Sumner Strait within 3 miles of the Prince of Wales Island shoreline north of Hole-in-the-Wall and west of the western side of Buster Bay. The fishery was open from Wednesday 12:00 PM to Sunday 12:00 PM, from June 10–July 31. Only drift gillnet gear was allowed, and gillnets could not exceed 50 fathoms in length. Harvest was limited to a maximum of 25 sockeye salmon per household annually. Fishers could retain other species incidentally harvested during this fishery. Pink and chum salmon harvests were allowed in all streams within the Point Baker–Port Protection subsistence area, except for 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 in all streams in the Point Baker–Port Protection subsistence area with a possession limit of 20 fish and annual limit of 40.

Sport fish and subsistence–personal use salmon could not be possessed on the same day. Subsistence or personal use salmon could not be sold or bought nor used for commercial bait. Other standard permit conditions included prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction and fishing with a line attached to a rod or pole. Dorsal fins were to be removed.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. Port Protection households maintain either a Ketchikan or Point Baker post office address and receive mail via a private carrier from Ketchikan. Port Protection harvests can be included in either the Point Baker or Ketchikan harvest estimates. In 2009, no salmon permits were issued to Port Protection residents. For Point Baker in 2009, 1 permit was issued and returned, with 48 salmon harvested, including 23 sockeye salmon, 11 pink salmon, 8 chum salmon, and 6 coho salmon (Table 13-4).

KETCHIKAN MANAGEMENT AREA

Craig, Klawock and Hydaburg Subsistence Fisheries

Background and History

The Ketchikan Management Area includes 3 subsistence areas where the BOF made positive C&T findings in 1989. Two of these areas are on the west coast of Prince of Wales Island: Hydaburg area waters and Craig–Klawock area waters. The third area is on the east coast of Prince of Wales Island and will be addressed in a subsequent section. These areas are under the management responsibilities of the Division of Commercial Fisheries' Ketchikan Area Office. Hydaburg area waters include Section 3A and the waters of District 2 in Nichols Bay north of lat 54º42.12′ N (5 AAC 01.716 (a)(18)). Craig–Klawock area waters include Section 3B east of a line from Point Ildefonso to Tranquil Point; Warm Chuck Inlet north of a line from a point on Heceta Island at lat 55º44′ N, long 133º25′ W to Bay Point; Section 3C in Karheen Passage north of lat 55º48′ N and east of long 133º20′ W; and Sarkar Cove and the Sarkar lakes (5 AAC 01.716 (a)(15)).

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–Sukkwan Strait (Eek Creek), Big Salt–Trocadero Bay (Klawock River), and Sea Otter Sound (Sarkar River).

In 2009, Craig had a population of 1,101, Klawock had a population of 782, and Hydaburg had a population of 340 (ADLWD 2010).

Regulations

The 2009 subsistence sockeye salmon openings in Craig–Klawock area waters were Monday 8:00 AM to Friday 5:00 PM from July 7–August 7, with a 20 sockeye salmon possession limit and no annual limit; in Hetta Inlet and Eek Creek, the season was June 1–August 31, with a possession limit of 20 sockeye salmon and no annual limit; and in Hugh Smith Lake fishing was open June 22–July 12 with a 12 sockeye salmon possession limit and no annual limit. All other systems in the Ketchikan Management Area with customary and traditional use areas were open to sockeye salmon fishing June 1–July 31, with a 20 sockeye salmon possession limit and no annual limit. All streams in the Ketchikan Management Area with customary and traditional use areas were open for pink salmon July 1–September 30 with a 150-fish possession limit and no annual limit. Chum salmon fishing was open in the same waters July 1–October 31 with a possession limit of 25 fish and no annual limit, and coho salmon fishing was open July 1–October 31 with limits of 20 fish in possession and 40 annually.

The 2009 subsistence–personal use salmon permit for the Ketchikan Management Area stipulated that hand purse seines, beach seines, spears, gaffs, cast nets, and dip nets were the types of subsistence–personal use gear allowed for general use. Salmon could not be taken with a line attached to a rod or pole. The standard permit conditions prohibiting fishing near dams, fish ladders, weirs, and culverts were also in effect, as well as the prohibition against possessing salmon taken under sport fishing regulations on the same day as subsistence–personal-use-taken salmon and the requirement of immediate removal of the dorsal fin (subsistence caught) or tail fin tips (personal use salmon). In addition, harvest reports were to be completed prior to leaving the fishing area. In the subsistence fisheries, Chinook salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could only be taken incidentally by gear operated under the terms of the permit.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The estimated salmon harvest for the Craig–Klawock–Hydaburg Subsistence Area in 2009 was 10,280 salmon, including 9,891 sockeye salmon (96%), 184 pink salmon (2%), 161 coho salmon (2%), 36 chum salmon (<1%), and 7 Chinook salmon (<1%) (Table 13-3). The 2009 harvest increased from 8,543 fish in 2008, mostly due to an increase in sockeye salmon harvests.

As reported in Table 13-4, 202 permits were issued to residents of Craig, and 170 (84%) were returned. The total estimated salmon harvest was 3,841 salmon, consisting of 3,196 sockeye salmon (83%), 292 coho salmon (8%), 250 pink salmon (7%), 96 chum salmon (3%) and 7 Chinook salmon (<1%). The total estimated salmon harvest for Klawock, based on 168 permits issued and 130 returned (77%), was 4,704 salmon, consisting of 4,554 sockeye salmon (97%), 90 pink salmon (2%), 51 coho salmon (1%), and 9 chum salmon (<1%). The total estimated salmon harvest for Hydaburg, based on 56 permits issued and 33 returned (59%), was 2,299 salmon, of which 2,279 were sockeye salmon (99%) and 20 were pink salmon (1%). All communities, except for Hydaburg, demonstrated an overall increase in permits issued and salmon harvested in 2009 as compared to 2008.

Kasaan Subsistence Area

Background and History

The subsistence area on the east coast of Prince of Wales Island with a positive C&T finding for salmon includes 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)(12)). Salmon fishing in all other marine waters along the east coast of Prince of Wales Island occurs under personal use or sport regulations. Subsistence and personal use fishing is under the management responsibility of the Division of Commercial Fisheries' Ketchikan Area Office. 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 Personal Use Area section.

In 2009, Coffman Cove had a population of 152, Edna Bay's population was 49, Hollis had a population of 193, Kasaan's population was 56, Thorne Bay's population was 424, and the population of Whale Pass was 60 (ADLWD 2010).

Regulations

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 20 fish possession limit and no annual limit. Also in these waters, pink salmon fishing was open 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.

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. Harvest reports needed to be completed prior to leaving the immediate fishing area. Other standard permit conditions included removal of the dorsal fin; prohibition on possessing sport-taken and subsistence use salmon on the same day; prohibition against buying or selling fish taken under subsistence regulations; and prohibition on fishing within 300 feet of a dam, fish ladder, weir or culvert. In addition, Chinook salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could only be taken incidentally by gear operated under the terms of the permit.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. As reported in Table 13-3, the estimated salmon harvest in the Kasaan Subsistence Area in 2009 was 1,801 salmon, including 1,177 sockeye salmon (65%), 343 coho (19%), 222 pink salmon (12%), and 59 chum (3%). Total harvest, as well as harvests of each species, increased significantly over 2008 levels. In 2008, 854 salmon were harvested, including 420 sockeye salmon, 283 coho salmon, 144 pink salmon, and 6 chum salmon.

Based on 12 permits issued to residents of Kasaan and 9 returned (75%) in 2009, 191 sockeye salmon were harvested in Kasaan in 2009, constituting that community's entire salmon harvest. For Coffman

Cove residents, 11 permits were issued and returned, with reported salmon harvests of 68 coho salmon. In Hollis, 2 permits were issued and returned, showing salmon harvests of 80 fish, including 40 sockeye salmon (50%), 20 coho salmon (25%), and 20 pink salmon (25%). Thorne Bay residents were issued 36 permits and returned 35 (97%), resulting in a harvest estimate of 271 salmon, including 114 sockeye salmon (42%), 92 coho salmon (34%), and 66 pink salmon (24%) (Table 13-4).

Ketchikan Personal Use Area

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 Use Area (Figure 13-4). The BOF made a positive C&T finding for salmon stocks in the waters traditionally used by the Tongass Tlingit of Saxman. These waters include the Naha River, Boca de Quadra in the waters of Sockeye Creek and Hugh Smith Lake, as well as the salt waters within 500 yards of the terminus of Sockeye Creek (5 AAC 01.716 (a)(19)).

The communities of Ketchikan and Saxman are the principal users of the fisheries in the Ketchikan area. In 2009, the population of the city and borough of Ketchikan, excluding Saxman, was 12,550. Saxman, located within the Ketchikan Borough, had a population of 434 ().

Regulations

Sockeye salmon fisheries in Helm, McDonald, and Checates lakes, and pink and chum salmon fisheries in all streams in the Ketchikan Management Area, except along the Ketchikan road systems and in subsistence areas described above, are managed under personal use or sport regulations. The 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. All other streams in the Ketchikan Management Area's personal use area, except the Ketchikan road system, were open June 1–July 31 with a limit of 12 sockeye salmon in possession and no annual limit. Hatchery Creek was open June 4–June 28 on Thursdays through Sundays, with a limit of 3 sockeye salmon in possession and 9 annually. This fishery was closed early on June 14 due to low returning numbers of sockeye salmon. Leask Creek was closed for the season. For pink salmon, all streams in the Ketchikan Management Area personal use area, except the Ketchikan road system, were open June 2–September 30 with a limit of 150 fish in possession and no annual limit. The same streams and areas were open for chum salmon June 1–October 31 with a possession limit of 25 and no annual limit. Excluding the Herring Cove and Ketchikan Creek personal use Chinook salmon fishery, coho and Chinook salmon, steelhead, trout, and Arctic char/Dolly Varden could only be taken incidentally by gear operated under personal use fishing guidelines of the permit. The possession limit for Chinook salmon was 2 fish and the possession limit for coho salmon was 6 fish. The Ketchikan Creek Chinook and coho salmon personal use fishery was opened on August 10 and August 17 for three hours each day with a bag limit of 4 Chinook salmon and 6 coho salmon per person. Other standard permit conditions included removal of both tips of the caudal (tail) fin, prohibition on using salmon taken under personal use regulations as bait for commercial fishing purposes, and prohibition of fishing within 300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction.

Harvest Assessment Program

Annual subsistence salmon harvest assessments have been in place since 1985. The total estimated salmon harvest in the Ketchikan Personal Use Area in 2009 was 3,355, including 2,709 sockeye salmon (81%), 317 pink salmon (9%), 306 chum salmon (9%), 19 coho salmon (<1%), and 3 Chinook (<1%) (Table 13-3). This represents a significant increase in harvest over 2008 levels, when 915 salmon were harvested total, including 440 sockeye salmon, 278 pink salmon, 177 chum salmon, and 16 coho salmon.

As reported in Table 13-4, the total estimated salmon harvest for the community of Ketchikan, based on 313 permits issued and 291 returned (93%), was 3,486, including 2,927 sockeye salmon (84%), 265 pink salmon (8%), 221 chum salmon (6%), 69 coho salmon (2%), and 3 Chinook salmon (<1%). Two permits were issued to residents of Saxman in 2009 and one was returned, reporting 60 sockeye salmon harvested. Based on 8 permits and 7 returned, in 2009 residents of Metlakatla harvested 109 salmon, including 99 sockeye salmon and 10 coho salmon. In 2009, the number of permits issued and the amount of salmon harvested increased in each of these 3 communities from 2008.

Table 13-1.–Subsistence and personal use salmon harvests by district, Southeast region, 2009.

		Permits fished		Estimated salmon harvests					
Fishing location	Name	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total
District 1	Ketchikan–Behm Canal	231	253	3	2,709	19	306	317	3,355
District 2	Clarence Strait–East Prince of Wales Island	95	112	0	1,162	191	54	222	1,630
District 3	Inside Waters–West Prince of Wales Island	475	623	7	9,891	161	36	184	10,280
District 5	Sumner Strait	0	0	0	0	0	0	0	0
District 6	East Sumner Strait–North Frederick Sound	93	101	2	476	607	76	68	1,229
District 7	East Etolin Island Wrangell Island–Ernest Sound	85	107	18	730	1	122	44	914
District 8	Stikine River	13	16	9	93	23	13	9	145
District 9	South Chatham Strait–West Frederick Sound	97	103	14	1,496	33	100	167	1,810
District 10	East Frederick Sound	3	3	0	53	0	0	0	53
District 11	Juneau–Taku Inlet–Stephens Passage	479	514	29	3,925	258	4	311	4,527
District 12	Angoon-North Chatham Strait-East Chichagof	63	75	0	966	216	17	11	1,211
District 13	Sitka–Outer Baranof and Chichagof–Peril Strait	543	570	6	14,387	94	55	264	14,805
District 14	Icy Strait–Glacier Bay	62	74	0	989	42	760	43	1,835
District 15	Lynn Canal–Chilkat Inlet	1,099	1,115	93	7,647	470	458	1,581	10,249
Yakutat Forelands	Yakutat Forelands	173	219	521	4,525	1,404	5	69	6,525
Yakutat Bay–Troll	Yakutat Bay–Troll	104	140	506	459	69	0	0	1,033
Yakataga	Yakataga	1	1	0	0	27	0	0	27
Total		**–**	**–**	**1,208**	**49,507**	**3,616**	**2,006**	**3,290**	**59,627**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

– 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 13-2.–Historical subsistence and personal use salmon harvests, Southeast region, 1985–2009.

Year[a]	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	ND	1,271	19	20,006	360	2,951	2,136	25,472
1986	ND	1,354	29	21,974	277	2,840	971	26,091
1987	ND	1,322	34	25,405	117	3,878	1,474	30,908
1988	ND	1,013	94	19,898	97	3,013	1,145	24,247
1989	ND	1,479	580	32,860	1,381	3,113	3,664	41,598
1990	ND	1,543	524	36,376	1,615	3,433	3,529	45,477
1991	ND	1,554	262	37,765	766	3,271	1,741	43,805
1992	ND	1,860	614	53,131	4,939	3,201	2,942	64,827
1993	ND	2,121	537	56,249	3,515	2,583	2,143	65,027
1994	ND	2,239	800	57,097	3,607	4,211	3,639	69,354
1995	ND	2,005	1,203	45,087	3,702	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	3,405	2,809	1,356	54,862	1,873	1,731	3,603	63,425
2007	3,156	1,622	1,199	43,100	1,444	721	3,273	49,737
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
5-year average (2004–2008)	3,344	2,652	1,215	48,125	2,320	1,771	3,379	56,810
10-year average (1999–2008)	3,533	2,892	1,369	52,632	2,518	3,025	3,413	62,956
Historical average (1985–2008)	3,691	2,382	892	46,780	2,275	3,443	2,997	56,387

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

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.

ND = No data.

Table 13-3.–Estimated subsistence and personal use salmon harvests by management- and use-areas, Southeast region, 2009.

Area	Permits fished		Estimated salmon harvests					
	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total
Yakutat Management Area	278	361	1,027	4,983	1,500	5	69	7,585
Haines Management Area	1,099	1,115	93	7,647	470	458	1,581	10,249
Juneau Management Area	649	717	33	7,868	516	787	427	9,632
Juneau Personal Use Area	479	514	29	3,925	258	4	311	4,527
Angoon Subsistence Area	81	95	0	1,741	216	23	71	2,051
Hoonah Subsistence Area	89	108	4	2,203	42	760	44	3,053
Sitka Management Area	500	518	2	12,421	94	49	203	12,768
Petersburg Management Area	271	308	42	2,810	513	305	288	3,958
Petersburg Subsistence–Personal Use Area	86	95	11	532	478	84	76	1,181
Wrangell Subsistence–Personal Use Area	85	107	18	730	1	122	44	914
Kake Subsistence Area	100	106	14	1,549	33	100	167	1,863
Ketchikan Management Area	819	1,008	10	13,778	523	402	723	15,436
Ketchikan Personal Use Area	231	253	3	2,709	19	306	317	3,355
Kasaan Subsistence Area	113	132	0	1,177	343	59	222	1,801
Craig–Klawock–Hydaburg Subsistence Area	475	623	7	9,891	161	36	184	10,280
Total	–	–	**1,208**	**49,507**	**3,616**	**2,006**	**3,290**	**59,627**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

– 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, 2009.

Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchor Point	1	1	0	0	0	0	0	0
Anchorage	23	20	11	102	14	1	2	131
Angoon	115	96	0	1,128	84	6	66	1,284
Auke Bay	27	24	0	174	8	0	0	182
Barrow	1	0	0	0	0	0	0	0
Cantwell	1	1	0	19	0	0	0	19
Coffman Cove	11	11	0	0	68	0	0	68
Craig	202	170	7	3,196	292	96	250	3,841
Douglas	49	46	0	274	42	1	154	471
Eagle River	1	1	0	0	0	0	0	0
Elfin Cove	1	1	0	0	0	0	0	0
Fairbanks	7	6	0	165	0	0	8	173
Gustavus	28	27	27	329	0	7	8	371
Haines	411	405	91	7,244	462	454	1,498	9,749
Hollis	2	2	0	40	20	0	20	80
Homer	4	2	0	0	0	0	0	0
Hoonah	114	84	4	1,613	143	753	30	2,543
Hydaburg	56	33	0	2,279	0	0	20	2,299
Juneau	705	658	62	5,409	294	30	167	5,961
Kake	123	117	13	1,253	50	113	104	1,532
Kasaan	12	9	0	191	0	0	0	191
Kenai	2	2	0	50	0	0	0	50
Ketchikan	313	291	3	2,927	69	221	265	3,486
King Salmon	1	1	0	0	0	0	0	0
Klawock	168	130	0	4,554	51	9	90	4,704
Klukwan	3	3	0	78	1	0	7	86
Kodiak City	1	1	0	0	0	0	0	0
Kotzebue	1	1	0	10	0	0	0	10
Metlakatla	8	7	0	99	10	0	0	109
Naukati Bay	4	3	0	83	0	0	0	83
Palmer	2	2	0	12	0	0	4	16
Pelican	5	5	0	26	0	3	0	29
Petersburg	86	79	3	550	393	40	54	1,041
Point Baker	1	1	0	23	6	8	11	48
Port Alexander	4	4	0	50	0	0	0	50
Saxman	2	1	0	60	0	0	0	60
Sitka	631	609	11	12,108	53	35	196	12,403
Skagway	8	8	0	31	0	1	22	54
Soldotna	1	1	0	0	0	0	0	0
Sterling	1	1	0	0	0	0	0	0
Talkeetna	1	1	0	0	0	0	0	0
Tenakee Springs	1	1	0	0	0	0	0	0
Thorne Bay	36	35	0	114	92	0	66	271
Togiak	1	1	0	0	0	0	0	0
Tok	1	0	0	0	0	0	0	0
Ward Cove	35	32	0	205	2	87	97	391
Wasilla	5	5	0	18	0	0	29	47
Whale Pass	4	4	0	0	0	0	0	0
Wrangell	85	68	26	827	24	135	53	1,066
Yakutat	116	86	950	4,266	1,439	5	69	6,729
Total	**3,421**	**3,097**	**1,208**	**49,507**	**3,616**	**2,006**	**3,290**	**59,627**

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2010).

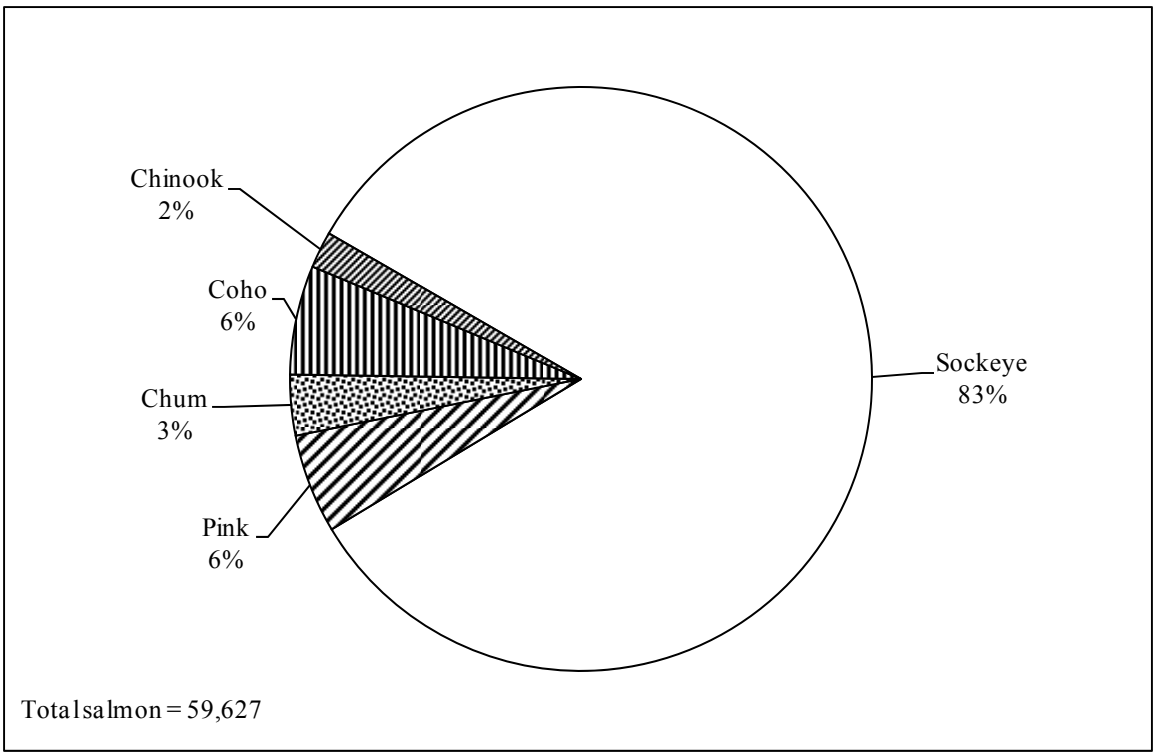

Figure 13-1.–Southeast region subsistence and personal use harvests by species, 2009.

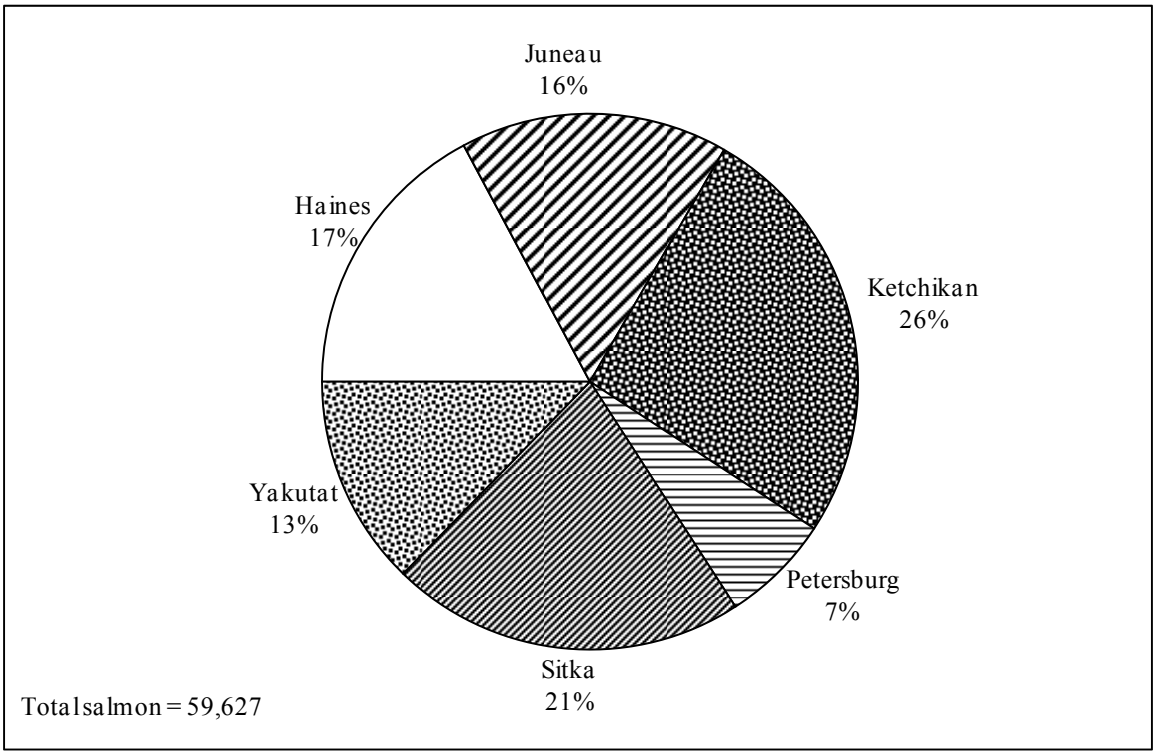

Figure 13-2.–Total salmon harvested by management area, Southeast region, 2009.

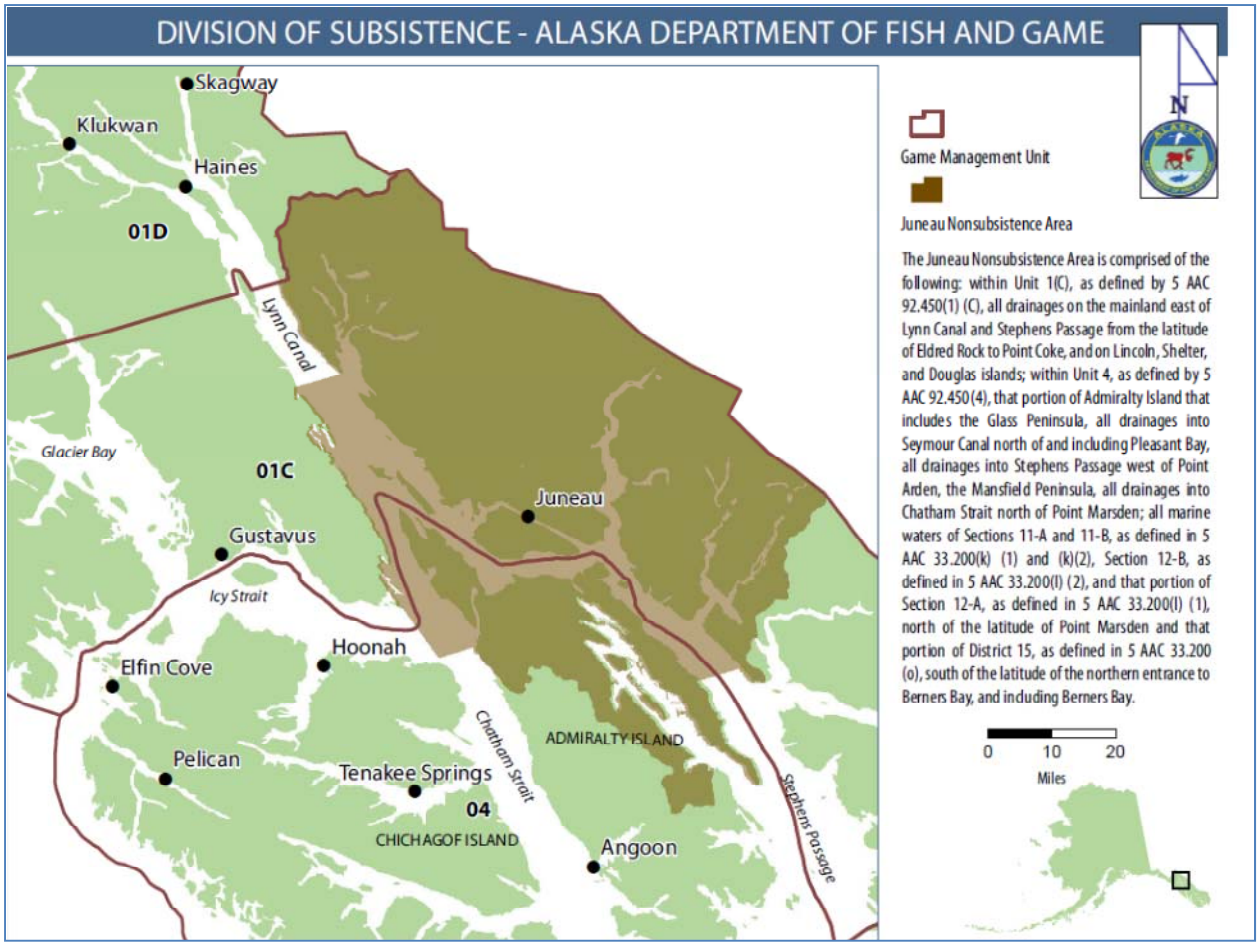

Figure 13-3.–Juneau Nonsubsistence Area map, 2009.

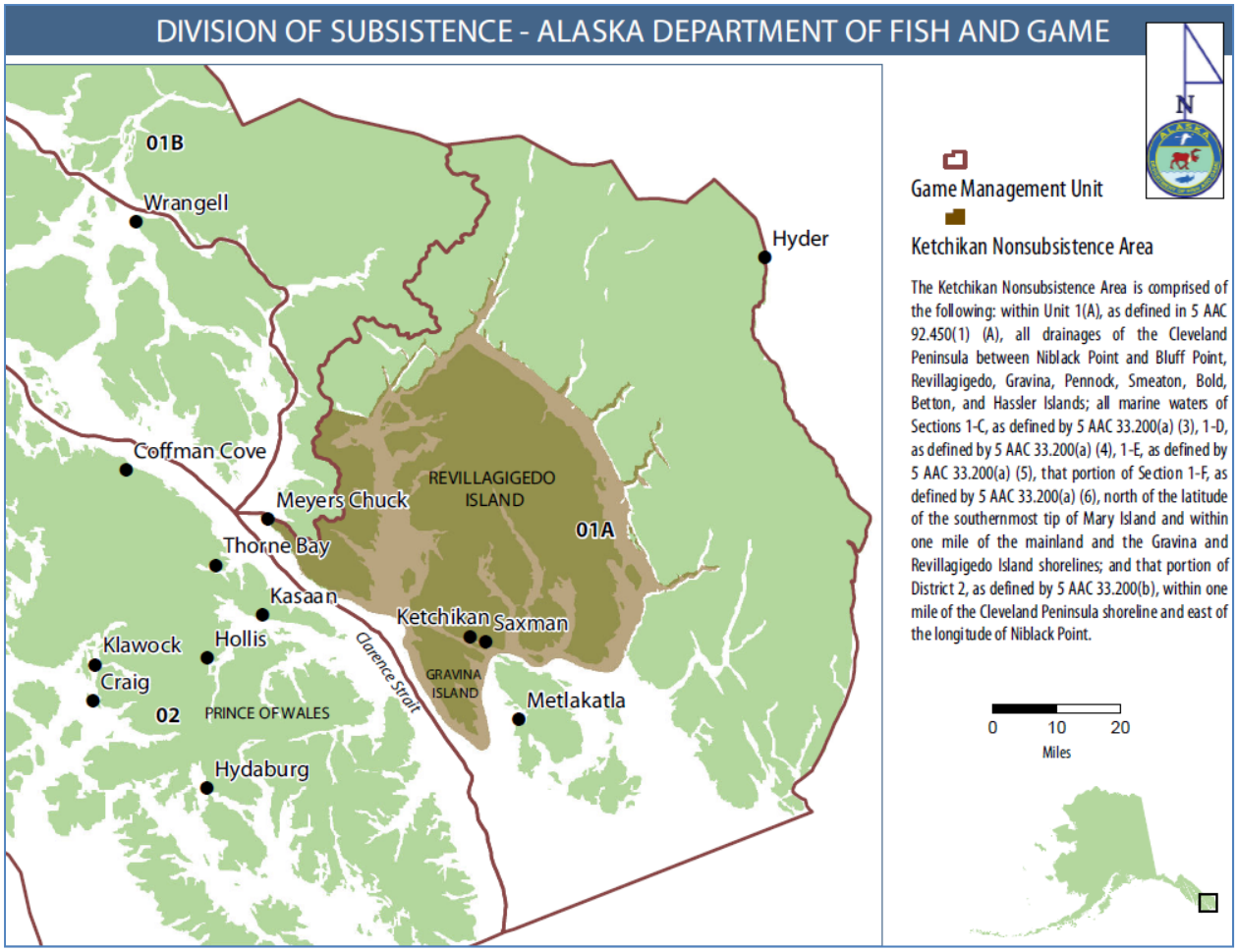

Figure 13-4.–Ketchikan Nonsubsistence Area map, 2009.

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Each year, thousands of Alaska residents who participate in subsistence fisheries take the time to provide harvest information to ADF&G. We acknowledge their support with profound gratitude, for without it, a report like this would be impossible to produce.

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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 2009 is the result of the work of a number of Division of Subsistence staff. Former division employees Dave Caylor, Jeannie Heltzel, and Brian Davis helped design and update the Alaska Subsistence Fisheries Database. Data for 2009 were compiled by Terri Lemons. Division personnel who authored report chapters were James A. Fall, Nicole Braem, Caroline Brown, Sarah Evans, Davin Holen, Theodore Krieg, Robbin La Vine, Meredith Marchioni, David Runfola, Lisa Hutchinson-Scarbrough, Lauren Sill, and James Van Lanen. We also acknowledge the contributions of Eunice Dyasuk, who administers the division's subsistence salmon permit program for Bristol Bay in Dillingham, as well as Lisa Olson, Garrett Zimpelmam, and Lisa Ka'aihue, who reviewed and edited the report.

As noted in the report itself, this is the eleventh in a series of statewide summaries of subsistence 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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APPENDIX A. DATA ANALYSIS METHODS

Northwest Alaska: Norton Sound–Port Clarence Area

Data Sources

- Household surveys
- Subsistence fishing permits
- ADF&G test fishery records

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence fishing permits, required in some fishing areas
  - Conducted household surveys in Unalakleet and Shaktoolik
  - Compiled reported harvest data from returned permits and household surveys into MS Excel spreadsheets
  - Distributed salmon harvested by ADF&G test fisheries to area communities and kept records of how many were distributed to each village by species
  - Provided fishing permit and test fishery data to Division of Subsistence

Annual Harvest Assessment Project – Analysis

- Household surveys
  - Reported harvests were analyzed separately by type.
    - Subsistence harvests (harvested under subsistence regulations)
    - Commercial harvests retained for home uses
    - Rod and reel harvests (by regulation, these are sport fishing harvests in most areas, but subsistence harvests in others—accurate separation not possible)
  - Reported harvests expanded to community harvest estimates within each of two harvest strata
    - Usually fish
    - Do not usually fish
  - Harvest estimates
    - For community i, species j: $E_{i,j} = \sum_{k=1}^{2} \left(\left(N_{i,k} / n_{i,k} \right) \times R_{i,j,k} \right)$, where… (1)
      - E = estimated harvest,
      - R = reported harvest,
      - N = total number of households,
      - n = number of households sampled, and
      - k = harvest stratum.
    - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where… (2)
      - E = estimated harvest and
      - i = community
- Subsistence fishing permits
  - Reported harvests by permit area as compiled by Division of Commercial Fisheries are included in project tables.
  - Reported harvests are not expanded into community estimates.

- ADF&G test fishery records
    - Salmon harvested by ADF&G test fisheries and distributed to communities are included in results tables

Statewide Compilation – Included Data and Special Measures

- Results of 5 types are included in the report tables
    - Subsistence harvests from household surveys
    - Subsistence permit harvests
    - Commercial harvests retained for home uses
    - Rod and reel harvests
    - ADF&G test fishery harvests distributed to communities
- No special measures were necessary to include project results in this statewide report.

Northwest Alaska: Kotzebue Area

Note The information below describes how data have been collected and analyzed for the Kotzebue area in the past. These data appear in the Alaska Subsistence Fisheries Database and in historical tables in this annual report. However, no subsistence fisheries data collection program occurred in the Kotzebue area in 2009 due to lack of funding.

Data Sources

- Household surveys
- ADF&G test fishery records

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
    - Coordinated postseason household survey process, conducted surveys
    - Conducted analysis of data from all sources
    - Provided results to Division of Commercial Fisheries for inclusion in annual management report
    - Included more detailed results in Division of Subsistence annual Northwest Alaska subsistence salmon report
- Division of Commercial Fisheries
    - Distributed salmon harvested by ADF&G test fisheries to area communities and kept records of how many were distributed to each village by species
    - Provided test fishery data to Division of Subsistence

Annual Harvest Assessment Project – Analysis

- None, due to no data collection in 2009.

Statewide Compilation – Included Data and Special Measures

None, due to no data collection in 2009.

Yukon Area

Data Sources

- Household surveys
- Harvest calendars
- Subsistence fishing permits
- Personal use fishing permits
- ADF&G test fishery records

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
    - Distributed preseason subsistence harvest calendars to selected households
    - Coordinated postseason household survey process, conducted surveys
    - Distributed salmon harvested by ADF&G test fisheries to area communities and kept records of how many were distributed to each village by species
    - Conducted detailed analysis of data from all sources
    - Included detailed results in annual Yukon River drainage subsistence salmon report
    - Provided selected raw data to Division of Division of Subsistence
    - Provided analysis results to Division of Division of Subsistence

Annual Harvest Assessment Project – Analysis

- Household surveys
    - Reported harvests expanded to community harvest estimates within each of 5 harvest strata
        - Unknown
        - Do not fish
        - Light harvester
        - Medium harvester
        - Heavy harvester
    - Harvest estimates
        - For community i, species j: $E_{i,j} = \sum_{k=1}^{5} \left(\left(N_{i,k} / n_{i,k} \right) \times R_{i,j,k} \right)$, where…
            - E = estimated harvest,
            - R = reported harvest,
            - N = total number of households,
            - n = number of households sampled, and
            - k = harvest stratum.
        - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
            - E = estimated harvest and
            - i = community
- Harvest calendars
    - Not normally calculated into harvest estimates
    - Data may substitute for survey if household not contacted

    - Special treatment of some cases; e.g., may include calendar in survey estimates if calendar harvest is especially high
- Subsistence fishing permits
    - Reported harvests not expanded into community estimates—only reported harvests included in project results
    - Assumption is unreturned permits were not fished
- Personal use fishing permits
    - Reported harvests not expanded into community estimates—only reported harvests included in project results
    - Assumption is unreturned permits were not fished
- Test fishery records
    - Salmon harvested by ADF&G test fisheries and distributed to communities reported at the community level.
    - Test fishery harvests sometimes included in community survey estimates

Statewide Compilation – Included Data and Special Measures

- Results of 5 types are included in the report tables.
    - Subsistence harvests from household surveys
    - Subsistence harvests from permits
    - Personal use harvests from permits
    - Commercial harvests retained for home uses
    - Test fishery harvests distributed to communities
- Special measures necessary to include project results in this statewide report.
    - Subsistence harvests from household surveys
        - Division of Commercial Fisheries' harvest estimates were adjusted to remove nonsurvey amounts (e.g. test fishery harvests) and to accommodate several Division of Commercial Fisheries' special case adjustments.
    - Subsistence harvests from permits
        - Permit data analyzed to separate harvests by community
        - Permit-survey overlap removed; i.e., permit data from residents of surveyed communities not included.
        - Reported harvests were expanded into community estimates for nonresponse.
        - Harvest estimates
            - For community i, species j: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
                - E = estimated harvest,
                - R = reported harvest,
                - N = number of permits issued, and
                - n = number of permits returned.
            - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
                - E = estimated harvest and
                - i = community
    - Personal use harvests from permits
        - Permit data analyzed to separate harvests by community

        - Expansion for nonresponse unnecessary due to 100% response rate.
    - Commercial harvests retained for home uses
        - Information not available in Division of Commercial Fisheries project results
        - Household survey data analyzed according to established Division of Commercial Fisheries methods; i.e., reported harvests were expanded into community estimates using 5 harvest strata.
        - Harvest estimates
            - For community i, species j: $E_{i,j} = \sum_{k=1}^{5} \left(\left(N_{i,k} / n_{i,k} \right) \times R_{i,j,k} \right)$, where…
                - E = estimated harvest,
                - R = reported harvest,
                - N = total number of households,
                - n = number of households sampled, and
                - k = harvest stratum.
            - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
                - E = estimated harvest and
                - i = community
    - Test fishery harvests distributed to communities
        - Distributions reported by community
        - No special measures necessary

Kuskokwim Area

Data Sources

- Household surveys
- Harvest calendars

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
    - Coordinated postseason household survey process
    - Conducted postseason household surveys in all surveyed communities except Bethel and Aniak
    - Conducted analysis of data from all sources
    - Provided results to Division of Commercial Fisheries for inclusion in annual management report
- Orutsararmiut Native Council (ONC)
    - Conducted postseason household surveys in Bethel
- Kuskokwim Native Association
    - Conducted postseason household surveys in Aniak

Annual Harvest Assessment Project – Analysis

- Household surveys
    - Three types of harvests were analyzed and reported together.
        - Subsistence harvests

        - Commercial harvests retained for home uses
        - Rod and reel harvests
    - Reported harvests expanded to community harvest estimates using 2 harvest strata
        - Usually fish
        - Do not usually fish
    - Harvest estimates
        - For community i, species j: $E_{i,j} = \sum_{k=1}^{2} \left(\left(N_{i,k} / n_{i,k} \right) \times R_{i,j,k} \right)$, where…
            - E = estimated harvest,
            - R = reported harvest,
            - N = total number of households,
            - n = number of households sampled, and
            - k = harvest stratum.
        - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
            - E = estimated harvest and
            - i = community
- Harvest calendars
    - For surveyed households, harvests reported on calendars used in place of postseason survey reports; analyzed with survey data.
    - For households not surveyed, harvests reported on calendars used instead of household survey; analyzed with survey data.

Statewide Compilation – Included Data and Special Measures

- Results of 3 types are included in the report tables.
    - Subsistence harvests from household surveys
    - Commercial harvests retained for home uses
    - Rod and reel harvests
- No special measures were necessary to include project results in this statewide report.

Bristol Bay Area

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
    - Issued subsistence salmon fishing permits
    - Conducted all data analysis
    - Provided results to Division of Commercial Fisheries for inclusion in annual management report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests expanded to community harvest estimates using a single harvest stratum.
  - Harvest estimates
    - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
      - E = estimated harvest,
      - R = reported harvest,
      - N = number of permits issued, and
      - n = number of permits returned.
    - For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
      - E = estimated harvest and
      - i = community

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests from subsistence fishing permits included in report tables.
- No special measures were necessary to include project results in this statewide report.

Chignik Area

Data Sources

- Subsistence fishing permits
- Follow-up household surveys

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
  - Coordinated issuing of subsistence salmon permits through area vendors, businesses, and public offices
  - Conducted follow-up household surveys
  - Conducted all data analysis
  - Provided results to Division of Commercial Fisheries for inclusion in annual management report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests expanded to community harvest estimates using a single harvest stratum.
- Follow-up household surveys
  - Used to supplement permit data for households not obtaining permits
  - Analyzed with permit data
  - Harvest estimates

- For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
  - E = estimated harvest,
  - R = reported harvest,
  - N = number of permits issued[19], and
  - n = number of permits returned.[1]
- For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
  - E = estimated harvest and
  - i = community

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- No special measures were necessary to include project results in this statewide report.

Alaska Peninsula Area

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence salmon permits
  - Conducted all data analysis
  - Published results in Division of Commercial Fisheries annual management report
  - Provided data to Division of Subsistence for further analysis and inclusion in statewide database and annual report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests from area communities expanded to community harvest estimates.
  - Non-area communities grouped into categories, then harvests expanded together to non-area estimate

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests from permits included in report tables.
- Data reanalyzed to generate community harvest estimates without grouping non-area communities.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,

19. Includes number of households surveyed postseason, whether or not permits were issued.

        - N = number of permits issued, and
        - n = number of permits returned.
    - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
        - E = estimated harvest and
        - i = community

Aleutian Islands Area: Unalaska District

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
    - Issued subsistence salmon permits
    - Conducted all data analysis
    - Published results in Division of Commercial Fisheries annual management report
    - Provided data to Division of Subsistence for further analysis and inclusion in statewide database and annual report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Reported harvests from area communities expanded to community harvest estimates.
    - Non-area communities grouped into categories, then harvests expanded together to non-area estimate

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests from permits included in report tables.
- Data reanalyzed to generate community harvest estimates without grouping non-area communities.
- Harvest estimates
    - For community i, species j: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.
    - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
        - E = estimated harvest and
        - i = community

Aleutian Islands Area: Adak District

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence salmon permits
  - Conducted all data analysis
  - Published results in Division of Commercial Fisheries annual management report
  - Provided data to Division of Subsistence for further analysis and inclusion in statewide database and annual report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests from area communities expanded to community harvest estimates.
  - Non-area communities grouped into categories, then harvests expanded together to non-area estimate

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests from permits included in report tables.
- Data reanalyzed to generate community harvest estimates without grouping non-area communities.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and
    - n = number of permits returned.
  - For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
    - E = estimated harvest and
    - i = community

Kodiak Area

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence salmon permits
  - Conducted all data analysis

    - Published results in Division of Commercial Fisheries annual management report
    - Provided data to Division of Subsistence for further analysis and inclusion in statewide database and annual report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Reported harvests not expanded into estimates.
    - Harvests tabulated and reported only at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests from permits included in report tables.
- Data reanalyzed to generate reported community harvests.

Cook Inlet Area: Port Graham & Koyuktolik Subdistricts

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
    - Issued subsistence fishing permits in Anchorage
    - Conducted all data analysis
    - Provided results to Division of Commercial Fisheries for inclusion in annual management report
- Port Graham Tribal Council
    - Issued subsistence fishing permits in Port Graham
    - Entered data into area database
    - Forwarded data to Division of Subsistence for analysis
- Nanwalek Tribal Council
    - Issued subsistence fishing permits in Nanwalek
    - Entered data into area database
    - Forwarded data to Division of Subsistence for analysis

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Reported harvests were analyzed separately by type.
        - Subsistence harvests
        - Rod and reel harvests
    - Harvests reported at the community level and not expanded into community harvest estimates.

Statewide Compilation – Included Data and Special Measures

- Results of 2 types are included in the report tables.
    - Subsistence harvests
    - Rod and reel harvests

- No special measures were necessary to include project results in this statewide report.

Cook Inlet Area: Seldovia Fishery

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
  - Issued subsistence fishing permits
  - Conducted all data analysis
  - Provided results to Division of Commercial Fisheries for inclusion in annual management report

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests expanded into harvest estimates.
    - Single stratum expansion at the community level.
  - Harvest estimates
    - For community i, species j: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
      - E = estimated harvest,
      - R = reported harvest,
      - N = number of permits issued, and
      - n = number of permits returned.
    - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
      - E = estimated harvest and
      - i = community

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- No special measures were necessary to include project results in this statewide report.

Cook Inlet Area: Tyonek Subdistrict

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Subsistence
  - Issued subsistence fishing permits in Anchorage
  - Conducted all data analysis
  - Provided results to Division of Commercial Fisheries for inclusion in annual management report

- Tyonek Tribal Council
    - Issued subsistence fishing permits in Tyonek

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Reported harvests *not* expanded into harvest estimates.
    - Harvests reported at the community level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- No special measures were necessary to include project results in this statewide report.

Cook Inlet Area: Upper Yentna Fishery

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Sport Fish
    - Issued subsistence fishing permits
    - Compiled data from returned permits into Excel spreadsheet
    - Provided data to Division of Subsistence for further analysis
- Division of Subsistence
    - Provided Division of Subsistence analysis results (see "Statewide Compilation" description below) to Division of Commercial Fisheries for inclusion in annual management report.

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Harvests reported at the fishery level and not expanded into estimates.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
    - Single stratum expansion at the community level.
- Harvest estimates
    - For community i, species j: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.

- For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
  - E = estimated harvest and
  - i = community

Prince William Sound Area: Glennallen Subdistrict

Data Sources

- State subsistence fishing permits
- Federal subsistence fishing permits

Annual Harvest Assessment Project(s) – Tasks

- Division of Sport Fish
  - Issued state subsistence fishing permits
  - Conducted all data analysis
  - Provided data to Division of Subsistence for further analysis
- National Park Service
  - Issued federal subsistence fishing permits
  - Compiled data from returned permits into Excel spreadsheet
  - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project(s) – Analysis

- State subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Detailed analysis guided by Division of Sport Fish operational plan
  - Reported harvests expanded into fishery-level estimates.
- Federal subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Data from returned permits compiled into Excel spreadsheet.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Data from the state and federal permit programs combined and controlled for state–federal data overlap.[20]
- Reported harvests expanded into harvest estimates.
  - Single stratum expansion at the community level.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and
    - n = number of permits returned.

20.State–federal data overlap occurs in the Glennallen fishery when a household obtains both state and federal permits and then reports the same harvests on each. When such cases were identified, only one permit's harvests were included in the combined data set.

- For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
  - E = estimated harvest and
  - i = community

Prince William Sound Area: Chitina Subdistrict (State)

Data Source

- State personal use fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Sport Fish
  - Issued state personal use fishing permits. Authorized vendors could also issue permits.
  - Conducted all data analysis
  - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project – Analysis

- State personal use fishing permits
  - Only personal use harvest data analyzed.
  - Detailed analysis guided by Division of Sport Fish operational plan
  - Reported harvests expanded to fishery-level estimates.

Statewide Compilation – Included Data and Special Measures

- Only personal use harvests included in report tables.
- Reported harvests expanded into harvest estimates.
  - Single stratum expansion at the community level.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and
    - n = number of permits returned.
  - For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
    - E = estimated harvest and
    - i = community

Prince William Sound Area: Chitina Subdistrict (Federal)

Data Source

- Federal subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- National Park Service

    - Issued federal subsistence fishing permits
    - Compiled data from returned permits into Excel spreadsheet
    - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project – Analysis

- Federal subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Data from returned permits compiled into Excel spreadsheet.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
    - Single stratum expansion at the community level.
- Harvest estimates
    - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.
    - For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
        - E = estimated harvest and
        - i = community

Prince William Sound Area: Batzulnetas Fishery

Data Sources

- State subsistence fishing permits
- Federal subsistence fishing permits
    - Only 1 permit issued

Annual Harvest Assessment Project – Tasks

- Division of Sport Fish
    - Available to issue permits if requested (none were)
- National Park Service
    - Issued federal subsistence fishing permit (only 1)
    - Provided data to Division of Subsistence

Annual Harvest Assessment Project – Analysis

- State subsistence fishing permits
    - No data = no analysis
    - Similar treatment as other Copper River fisheries, if any permits issued
- Federal subsistence fishing permits
    - Only subsistence harvest data included.
    - One permit = no analysis.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Harvest reported at the community level.

Prince William Sound Area: Copper River District

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
    - Issued subsistence fishing permits
    - Compiled data from returned permits into Excel spreadsheet
    - Published results in Division of Commercial Fisheries annual management report
    - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Reported harvests *not* expanded into harvest estimates.
    - Harvests reported at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
    - Single stratum expansion at the community level.
- Harvest estimates
    - For community i, species j: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.
    - For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
        - E = estimated harvest and
        - i = community

Prince William Sound Area: Eastern District

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
    - Coordinated issuance of permits

    - Issued subsistence fishing permits in Cordova
    - Compiled data from returned permits into Excel spreadsheet
    - Published results in Division of Commercial Fisheries annual management report
    - Provided data to Division of Subsistence for further analysis
- Tatitlek Tribal Council
    - Issued subsistence fishing permits in Tatitlek
    - Provided data from returned permits to Division of Commercial Fisheries

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
    - Only subsistence harvest data analyzed.
    - Reported harvests *not* expanded into harvest estimates.
    - Harvests reported at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
    - Single stratum expansion at the fishery level.
    - Community harvest estimates not possible from available data.
        - Division of Commercial Fisheries did include community of principal residence in compiled data.
- Harvest estimates
    - For fishery total, species *j*: $E_j = \left(\left(N / n \right) \times R_j \right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.

Prince William Sound Area: Southwestern District

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
    - Coordinated issuing of permits
    - Issued subsistence fishing permits in Cordova
    - Compiled data from returned permits into Excel spreadsheet
    - Published results in Division of Commercial Fisheries annual management report
    - Provided data to Division of Subsistence for further analysis
- Chenega Bay Tribal Council
    - Issued subsistence fishing permits in Chenega Bay
    - Provided data from returned permits to Division of Commercial Fisheries

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits

- Only subsistence harvest data analyzed.
- Reported harvests *not* expanded into harvest estimates.
- Harvests reported at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
  - Single stratum expansion at the fishery level.
  - Community harvest estimates not possible from available data.
    - Division of Commercial Fisheries did include community of principal residence in compiled data.
- Harvest estimates
  - For fishery total, species *j*: $E_j = \left((N / n) \times R_j \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and
    - n = number of permits returned.

Prince William Sound Area: General

Data Source

- Subsistence fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence fishing permits
  - Compiled data from returned permits into Excel spreadsheet
  - Published results in Division of Commercial Fisheries annual management report
  - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed.
  - Reported harvests *not* expanded into harvest estimates.
  - Harvests reported at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Only subsistence harvests included in report tables.
- Reported harvests expanded into harvest estimates.
  - Single stratum expansion at the community level.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left((N_i / n_i) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and
    - n = number of permits returned.

- For species *j* fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
  - E = estimated harvest and
  - i = community

Southeast–Yakutat Region

Data Sources

- Yakutat Management Area subsistence fishing permits
- Haines Management Area subsistence fishing permits
- Juneau Management Area subsistence and personal use fishing permits
- Sitka Management Area subsistence and personal use fishing permits
- Petersburg–Wrangell Management Area subsistence and personal use fishing permits
- Ketchikan Management Area subsistence and personal use fishing permits

Annual Harvest Assessment Project – Tasks

- Division of Commercial Fisheries
  - Issued subsistence fishing permits in each management area
  - Entered data from returned permits into Southeast–Yakutat region's Alexander database
  - Published results in Division of Commercial Fisheries regional report to the BOF
  - Provided data to Division of Subsistence for further analysis

Annual Harvest Assessment Project – Analysis

- Subsistence fishing permits
  - Only subsistence harvest data analyzed for Yakutat and Haines management areas
    - Permits in these management areas are for subsistence fishing only.
  - Subsistence and personal use harvest data analyzed for Juneau, Sitka, Petersburg–Wrangell, and Ketchikan management areas
    - Permits in these management areas are dual subsistence *and* personal use permits.
  - Reported harvests *not* expanded into harvest estimates.
  - Harvests reported at the fishery level.

Statewide Compilation – Included Data and Special Measures

- Results of two types are included in the report tables.
  - Subsistence harvests
  - Personal use harvests
- Reported harvests expanded into harvest estimates.
  - Single stratum expansion at the community level.
- Harvest estimates
  - For community *i*, species *j*: $E_{i,j} = \left(\left(N_i / n_i \right) \times R_{i,j} \right)$, where…
    - E = estimated harvest,
    - R = reported harvest,
    - N = number of permits issued, and

- n = number of permits returned.

- For species j fishery total: $E_j = \sum_{i=1}^{n} E_{i,j}$, where…
  - E = estimated harvest and
  - i = community