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Alaska Subsistence and Personal Use Salmon Fisheries 2010 Annual Report

by

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

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

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

Each year thousands of Alaskans participate in subsistence activities including the harvest of wild resources from Alaska's fisheries. Subsistence fishing is an important element of Alaska's social and cultural heritage, as well as a crucial component of the subsistence sector of the state's economy. In addition, personal use fisheries provide opportunities for Alaska residents to harvest salmon for home use using efficient methods in areas closed to subsistence fishing. This report summarizes Alaska's 2010 subsistence and personal use salmon fisheries based upon subsistence and personal use permit data and harvest assessment surveys from across the state. New information is compared to findings from previous years and the results are discussed. Where available, information about other subsistence finfish fisheries is included. Additional information from federal agencies regulating and administering certain subsistence fisheries, beginning in 1997, is included where available.

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

CHAPTER 1: INTRODUCTION

This is the twelfth report in a series of annual reports on Alaska's subsistence and personal use fisheries. It was prepared by the Alaska Department of Fish and Game (ADF&G) Division of Subsistence.

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

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

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

The Joint Board of Fisheries and Game (Joint Board) is required to identify "nonsubsistence areas," where "dependence upon subsistence is not a principal characteristic of the economy, culture, and way of life of the area or community" (AS 16.05.258 (c)). The Joint Board has identified 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 and for those personal use fisheries that the Division of Commercial Fisheries administers. Detailed annual reports about subsistence fisheries harvest assessment programs are prepared in the Northwest Alaska, Yukon River, and Kuskokwim River areas. Additionally, the Division

of Sport Fish prepares summaries for the personal use salmon fisheries it administers in the Cook Inlet and Prince William Sound (Upper Copper River) areas. However, until the Division of Subsistence annual subsistence fisheries report series began in 1999, there was no single source that compiled subsistence and personal use fisheries harvest data from all management areas. That is the purpose of this 2010 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 and personal use fisheries. These limitations include:

- Annual harvest assessment programs do not take place for all subsistence fisheries. Programs are in place for most salmon fisheries, but few other finfish fisheries or shellfish fisheries have annual harvest monitoring programs.
- Annual harvest data summarized in this report are limited to fisheries classified as subsistence or personal use by regulation, which, especially for salmon, generally means fish taken with gillnets, beach seines, dip nets, or fish wheels. In some parts of Alaska, substantial numbers of fish for home uses are taken with rod and reel (considered sport gear by most state area regulations) or are retained from commercial harvests. With noted exceptions, these harvests are not included in the analysis of subsistence harvest data in this report because they are not collected by annual subsistence fisheries harvest programs. Therefore, the harvest data in this report are a conservative estimate of the number of salmon being taken for subsistence uses in Alaska. Underestimations of subsistence salmon harvests are a particular issue in the Southeast region.
- Between management areas, and sometimes between districts within management areas, there is inconsistency in how subsistence and personal use harvest data are collected, analyzed, and reported.
- In some areas there are no routine mechanisms for evaluating the quality of subsistence harvest data. For example, in some areas it is not known if all subsistence fishers are obtaining permits and providing accurate harvest reports. This can result in a significant underestimation of harvests.
- There are also few programs for contextualizing annual subsistence harvest data so as to interpret changes in harvests. In some cases, however, FMRs do contain discussions of data limitations and harvest trends.

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

most of these fisheries have relatively short histories. However, beginning in this report for 2010, we have added harvest data from the Cook Inlet personal use salmon fisheries so as to provide a complete statewide summary for all subsistence and personal use salmon harvests.

The quality and quantity of subsistence harvest data for finfish other than salmon and for shellfish are very uneven. For other finfish, if annual subsistence harvest information is collected, it is 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 2013, 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 (for a description of data analysis methods for subsistence salmon fisheries see Appendix A).

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

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/.

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 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 (2010). Both date and numeric ranges are inclusive. The following list illustrates named-ranges used in this report and their meanings.

- 5-year average: 2005–2009
- 10-year average: 2000–2009
- 15-year average: 1995–2009
- Historical average: yyyy–2009, beginning of range varies depending on available data

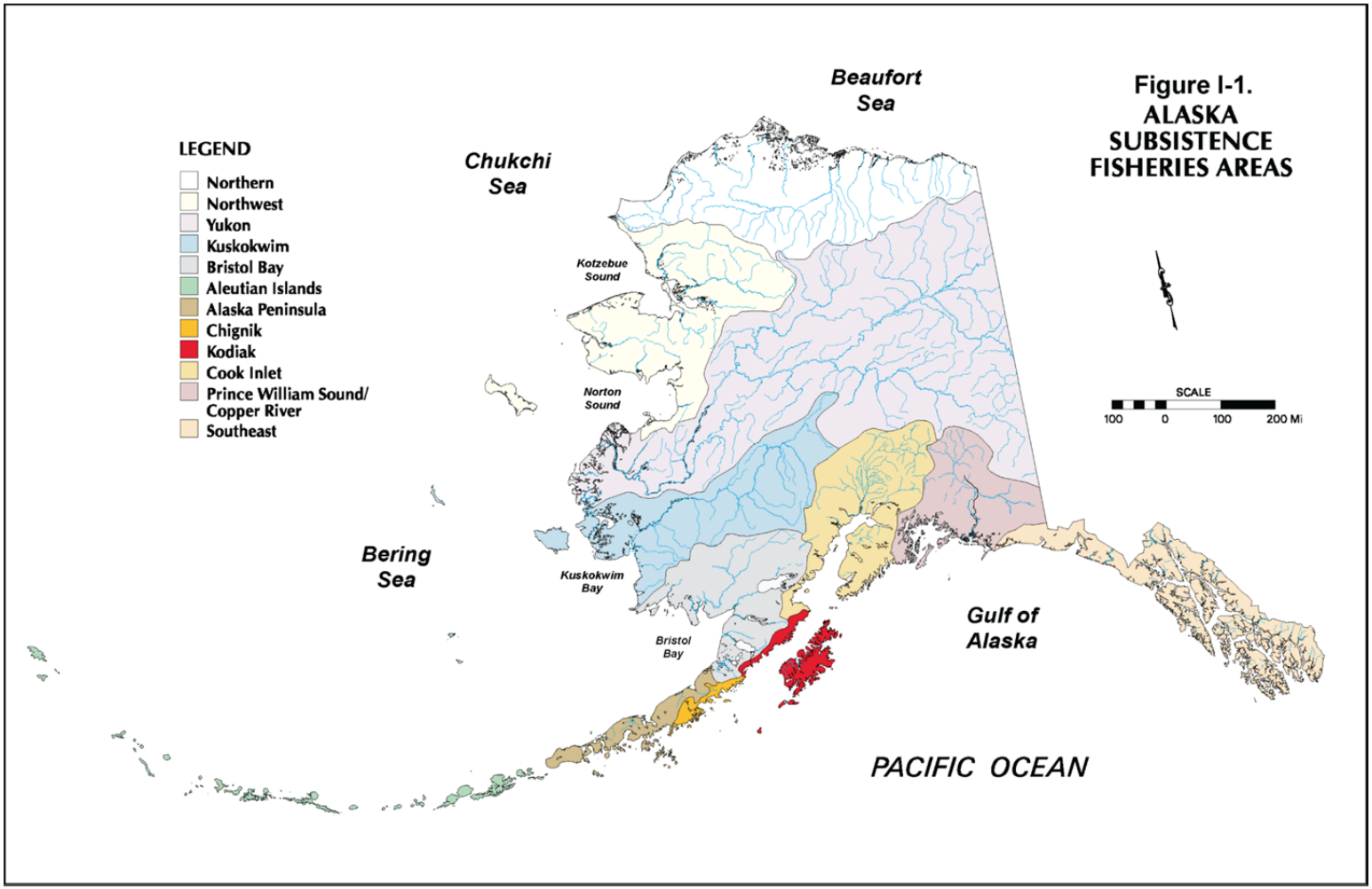

Figure 1-1.–Alaska subsistence fisheries areas.

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 2010[3]

The estimated total subsistence harvest of salmon in Alaska in 2010, based on annual harvest assessment programs, was 834,627 fish (Table 2-1). The estimated statewide harvest by species was as follows: 326,363 sockeye salmon *O. nerka* (39%), 235,763 chum salmon *O. keta* (28%), 133,252 Chinook salmon *O. tshawytscha* (16%), 80,217 coho salmon *O. kisutch* (10%), and 59,031 pink salmon *O. gorbuscha* (7%) (Figure 2-2).

In 2010, fisheries in 7 management areas accounted for 94% of the total estimated statewide subsistence salmon harvest (Table 2-1; Figure 2-3). These were the Yukon Management Area (223,573 salmon; 27% of the statewide total); the Kuskokwim Management Area (193,089 salmon; 23%); the Bristol Bay Management Area (113,238 salmon; 14%); the Glennallen Subdistrict of the Prince William Sound Management Area (95,706 salmon; 11%); Northwest Alaska[4] (79,060 salmon; 9%); Southeast Region[5] (55,104 salmon; 7%); and the Kodiak Management Area (28,067 salmon; 3%).

The largest estimated subsistence harvests of Chinook salmon in 2010 occurred in the Kuskokwim Management Area (69,242 salmon; 52%), followed by the Yukon Management Area (44,721 salmon; 33%), Bristol Bay Management Area (10,852 salmon; 8%), the Glennallen Subdistrict (2,653 salmon; 2%); and Northwest Alaska (2,131 salmon; 2%) (Figure 2-4). For sockeye salmon, the largest estimated subsistence harvests in 2010 were in the Glennallen Subdistrict (92,632 salmon; 28%), followed by the Bristol Bay Management Area (90,444 salmon; 28%), the Southeast Region (45,905 salmon; 14%), the Kuskokwim Management Area (41,042 salmon; 13%), and the Kodiak Management Area (22,170 salmon; 7%) (Figure 2-5).

In 2010, as in past recent years, 3 areas dominated the subsistence chum salmon estimated harvest: the Yukon Management Area (160,546 salmon; 68% of the statewide harvest), Kuskokwim Management Area (47,885 salmon; 20%), and Northwest Alaska (19,527 salmon; 8%) (Figure 2-6). Of the statewide estimated subsistence harvest of coho salmon in 2010, the greatest share was taken in the Kuskokwim

3. Previous annual reports included personal use salmon harvests from Southeast Alaska and the Chitina Subdistrict of the Upper Copper River in the discussion of subsistence harvests. In this report, personal use salmon fisheries are discussed separately. One exception is the small personal use harvest that occurs in those portions of the Yukon Management Area that are within the Fairbanks Nonsubsistence Area. Also, as noted in Chapter 1, Cook Inlet Area personal use salmon harvest data have been added to the annual report.

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 2010. 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.

Management Area (34,169 salmon; 43%), followed by the Yukon Management Area (14,107 salmon; 17%), Northwest Alaska (12,113 salmon; 15%), Bristol Bay Management Area (4,623 salmon; 6%), the Kodiak Management Area (4,200 salmon; 5%), the Southeast Region (3,583 salmon; 4%), and the Alaska Peninsula Management Area (2,898 salmon; 4%) (Figure 2-7). Finally, the largest portion by far of the statewide estimated pink salmon subsistence harvest in 2010 occurred in Northwest Alaska (43,912 salmon; 74%), followed by the Yukon Management Area (4,199 salmon; 7%), and the Southeast Region (3,061 salmon; 5%) (Figure 2-8).

Table 2-2 reports historical estimated subsistence salmon harvests for 1994 through 2010 based on annual harvest assessment programs. While earlier estimates for many of the fisheries are available, 1994 marks the first year that data from all of the included fisheries were available and collected with methods comparable to those currently in use.

The 17-year period reflected in Table 2-2 shows a general downward trend. Estimates from 2000 through 2008 suggested this trend might have been stabilizing. However, the 2010 estimate of 834,627 salmon was the second-lowest within the 17-year period, with the 775,642 salmon harvested in 2009 being the lowest estimate since 1994. The 2010 estimate was lower than the recent 5-year average (883,129 salmon), the recent 10-year average (881,326 salmon), and the historical average since 1994 (955,946 salmon).

PERSONAL USE SALMON HARVESTS IN 2010

In 2010, personal use fisheries produced an estimated harvest of 682,797 salmon (Table 2-1). The Kenai River dip net fishery accounted for 58% of the statewide personal use salmon harvest (397,450 fish), followed by the Chitina Subdistrict dip net fishery (21%; 142,680 salmon), the Kasilof River dip net fishery (11%; 73,826 salmon), the Fish Creek (Knik Arm) dip net fishery (4%; 29,304 salmon), and the Kasilof River set net fishery (3%; 22,107 salmon). Sockeye salmon composed 97% of the Alaska personal use salmon harvest in 2010 (Figure 2-9).

The personal use harvest of 682,797 salmon in 2010 was the largest total since comprehensive records became available in 1994 (Table 2-3). The average annual personal use harvest since 1994 of 404,398 salmon is 59% of the 2010 total. Increased harvests in the Upper Cook Inlet personal use dip net fisheries accounts for most of the growth of personal use harvests since 1994 (see Chapter 11).

STATEWIDE SUBSISTENCE AND PERSONAL USE SALMON HARVESTS, 1994–2010

Table 2-4 reports historical estimated subsistence and personal use salmon harvests for 1994 through 2010 based on annual harvest assessment programs. As noted above, 1994 marks the first year that comparable data from all of the included fisheries are available.

The 17-year period reflected in Table 2-4 shows generally stable statewide harvest totals: the recent (2005–2009) 5-year average harvest was 1,368,677 salmon compared to a 17-year annual average of 1,330,877 salmon. The total harvest estimate for 2010 of 1,517,424 salmon is the highest within the 17-year period. As noted above, however, harvests in subsistence fisheries have generally declined since 1994 while personal use harvests have increased. In 2010, sockeye salmon made up 65% of the combined subsistence and personal use salmon harvests, followed by chum (16%), Chinook (9%), coho (6%), and pink salmon (4%) (Figure 2-10).

Table 2-5 reports subsistence and personal use harvests in 2010 by species and participants' place of residence, with harvests from all subsistence and personal use fisheries combined.

Table 2-1.–Alaska subsistence and personal use salmon harvests, 2010.

Fishery	Households or permits		Estimated salmon harvest					
	Total[a]	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Subsistence								
Adak District	2	1	0	25	0	0	0	25
Alaska Peninsula Management Area	183	138	338	9,464	2,898	1,274	985	14,959
Batzulnetas Fishery	3	3	0	106	0	0	0	106
Bristol Bay Management Area	1,082	979	10,852	90,444	4,623	4,692	2,627	113,238
Chignik Management Area	124	90	188	8,148	1,820	222	656	11,034
Chitina Subdistrict: federal	92	38	36	5,352	88	0	0	5,476
Copper River Flats	326	320	281	2,034	27	22	0	2,365
Glennallen Subdistrict	1,587	1,331	2,653	92,632	422	0	0	95,706
Kenai and Kasilof rivers: federal	169	151	0	943	0	0	0	943
Kodiak Management Area[a]	1,890	1,890	158	22,170	4,200	273	1,266	28,067
Kuskokwim Management Area	4,215	2,243	69,242	41,042	34,169	47,885	751	193,089
Northwest Alaska[b]	1,106	1,032	2,131	1,378	12,113	19,527	43,912	79,060
Port Graham and Koyuktolik subdistricts[a]	35	35	30	1,630	1,448	308	1,054	4,470
Prince William Sound (general)	2	2	0	0	0	0	0	0
PWS Eastern District (Tatitlek)	8	5	0	165	142	10	50	367
PWS Southwestern District (Chenega Bay)	9	5	0	55	0	87	6	148
Seldovia Fishery	16	12	3	133	41	47	88	312
Southeast Region	1,752	1,364	1,775	45,905	3,583	779	3,061	55,104
Tyonek Fishery	105	77	843	212	167	2	2	1,226
Unalaska District	216	170	1	3,883	319	71	336	4,611
Upper Yentna Fishery	32	32	0	642	50	18	38	748
Yukon Management Area[c]	3,066	1,463	44,721	0	14,107	160,546	4,199	223,573
Subtotal, subsistence	***16,020***	***11,381***	***133,252***	***326,363***	***80,217***	***235,763***	***59,031***	***834,627***
Personal use								
Chitina Subdistrict: state[d]	9,308	7,757	700	140,089	1,892	0	0	142,680
Kachemak Bay setnet[e]	128	122	14	149	875	17	251	1,306
Kasilof River setnet[e]	NA	NA	136	21,924	23	1	23	22,107
Kasilof River dip net[e]	NA	NA	31	70,774	1,768	279	974	73,826
Kenai River dip net[e]	NA	NA	865	389,552	2,870	508	3,655	397,450
Fish Creek dip net[e]	NA	NA	12	23,705	3,576	290	1,721	29,304
Unknown Upper Cook Inlet[e]	NA	NA	15	8,300	168	12	109	8,604
Beluga River dip net	14	14	0	47	1	5	0	53
Southeast Region	465	465	53	6,353	302	99	660	7,467
Subtotal, personal use[e]	***41,505***	***33,580***	***1,826***	***660,893***	***11,475***	***1,211***	***7,393***	***682,797***
Total	**57,525**	**44,961**	**135,078**	**987,256**	**91,692**	**236,974**	**66,424**	**1,517,424**

-continued-

Table 2-1.–Page 2 of 2.

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

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

b. Does not include the Kotzebue Area.

c. Includes a small personal use harvest that occurs within the Fairbanks Nonsubsistence Area.

d. Reclassified as a personal use fishery in 2003.

e. A single permit is issued for the Kasilof set net, Kasilof dip net, Kenai dip net, and Fish Creek dip net fisheries. In some cases, returned permits did not indicate the area fished.

NA = Data not available.

Table 2-2.–Historical Alaska subsistence salmon harvests, 1994–2010.

	Households or permits		Estimated salmon harvest					
Year	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	15,493	10,553	183,936	338,946	135,896	417,199	94,469	1,170,446
1995	15,596	10,328	180,805	291,539	120,048	499,992	54,908	1,147,292
1996	16,512	11,789	158,369	320,821	121,381	498,525	80,928	1,180,026
1997	17,668	12,863	176,703	376,397	98,883	347,808	41,543	1,041,335
1998	17,772	12,513	170,271	328,857	93,055	302,037	74,216	968,436
1999	17,290	12,763	155,088	358,866	89,627	338,351	32,402	974,334
2000	16,678	12,765	130,822	296,875	99,338	247,337	51,714	826,087
2001	18,693	13,061	161,632	340,411	98,517	240,581	42,435	883,576
2002	17,266	13,026	142,459	299,182	92,192	229,179	85,431	848,443
2003	18,131	13,211	164,555	324,539	106,488	238,582	66,794	900,958
2004	18,374	13,549	173,746	332,543	100,860	239,811	91,597	938,557
2005	16,256	11,013	153,431	323,218	97,993	257,200	76,071	907,912
2006	16,988	11,400	139,815	314,435	93,478	291,510	73,234	912,473
2007	17,068	10,374	154,974	319,885	78,704	273,802	33,513	860,877
2008	17,226	11,248	174,115	315,040	113,242	270,502	85,842	958,741
2009	16,989	11,607	141,302	296,104	86,363	213,835	38,038	775,642
2010	16,020	11,381	133,252	326,363	80,217	235,763	59,031	834,627
5-year average (2005–2009)	16,905	11,128	152,727	313,736	93,956	261,370	61,339	883,129
10-year average (2000–2009)	17,367	12,125	153,685	316,223	96,718	250,234	64,467	881,326
Historical average (1994–2009)	17,125	12,004	160,126	323,604	101,629	306,641	63,946	955,946

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2013).

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

Table 2-3.–Historical Alaska personal use salmon harvests, 1994–2010.

Year	Households or permits		Estimated salmon harvest					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	7,346	6,223	5,524	142,944	15,810	1,619	2,831	168,729
1995	6,997	5,674	7,029	139,861	18,455	1,672	1,579	168,596
1996	22,071	20,707	4,360	241,293	11,562	374	3,995	261,585
1997	24,281	22,939	6,318	298,151	2,753	100	1,101	308,424
1998	25,764	23,155	7,430	314,131	6,302	225	2,100	330,187
1999	27,907	24,587	7,630	360,885	5,485	1,062	3,097	378,159
2000	25,007	22,006	4,653	274,422	9,576	1,555	3,782	293,988
2001	27,017	23,392	4,631	365,875	6,990	1,746	4,037	383,279
2002	24,921	20,560	3,449	358,608	6,965	1,512	10,044	380,578
2003	26,101	21,707	3,766	394,928	6,004	1,446	3,387	409,532
2004	30,673	25,205	3,775	470,804	8,220	1,729	3,571	488,100
2005	30,817	26,677	3,367	508,419	6,350	1,218	3,776	523,130
2006	27,545	23,772	4,263	354,130	7,600	1,212	13,741	380,946
2007	31,855	27,922	4,773	496,317	6,139	797	4,267	512,294
2008	32,582	27,935	3,646	410,298	7,991	927	13,051	435,913
2009	38,443	32,800	1,654	558,352	6,872	873	7,705	575,456
2010	41,505	33,580	1,826	660,892	11,475	1,212	7,393	682,797
5-year average (2005–2009)	32,248	27,821	3,541	465,503	6,990	1,005	8,508	485,548
10-year average (2000–2009)	29,496	25,198	3,798	419,215	7,271	1,301	6,736	438,322
Historical average (1996–2009)	28,213	24,526	4,551	386,187	7,058	1,055	5,547	404,398

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2013).

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

Table 2-4.–Historical Alaska subsistence and personal use salmon harvests, 1994–2010.

Year	Households or permits		Estimated salmon harvest					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1994	22,839	16,776	189,460	481,890	151,707	418,818	97,300	1,339,175
1995	22,593	16,002	187,834	431,401	138,503	501,664	56,487	1,315,888
1996	38,583	32,496	162,730	562,114	132,944	498,900	84,923	1,441,611
1997	41,949	35,802	183,022	674,548	101,637	347,909	42,644	1,349,759
1998	43,536	35,668	177,701	642,987	99,357	302,262	76,316	1,298,623
1999	45,197	37,350	162,717	719,752	95,112	339,413	35,499	1,352,493
2000	41,685	34,771	135,476	571,297	108,914	248,892	55,496	1,120,074
2001	45,710	36,453	166,263	706,285	105,507	242,327	46,472	1,266,854
2002	42,187	33,586	145,908	657,790	99,157	230,691	95,475	1,229,021
2003	44,232	34,918	168,321	719,467	112,493	240,028	70,181	1,310,489
2004	49,047	38,754	177,521	803,348	109,080	241,540	95,168	1,426,657
2005	47,073	37,690	156,798	831,637	104,343	258,418	79,847	1,431,042
2006	44,533	35,172	144,078	668,565	101,078	292,722	86,975	1,293,419
2007	48,923	38,296	159,747	816,202	84,843	274,599	37,780	1,373,171
2008	49,808	39,183	177,761	725,338	121,233	271,429	98,893	1,394,654
2009	55,432	44,407	142,956	854,456	93,235	214,708	45,743	1,351,098
2010	57,525	44,961	135,078	987,255	91,692	236,975	66,424	1,517,424
5-year average (2005–2009)	49,154	38,950	156,268	779,240	100,946	262,375	69,848	1,368,677
10-year average (2000–2009)	46,863	37,323	157,483	735,438	103,988	251,535	71,203	1,319,648
Historical average (1994–2009)	42,708	34,208	164,893	679,192	109,946	307,770	69,075	1,330,877

Source ADF&G Division of Subsistence, ASFDB 2010 (ADF&G 2013).

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

Table 2-5.–Alaska subsistence salmon harvests by species and place of residence, 2010.

Community	Households or permits		Estimated salmon harvest					
	Total	Included[a]	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak	2	1	0	25	0	0	0	25
Akhiok	4	4	0	148	0	0	0	148
Akiachak	158	82	4,470	2,459	1,182	2,856	57	11,024
Akiak	87	40	3,625	1,161	475	1,163	62	6,486
Alakanuk	139	39	944	0	449	8,582	151	10,126
Alatna	8	5	0	0	0	23	0	23
Aleknagik	23	23	136	1,358	31	44	2	1,570
Allakaket	58	17	63	0	88	3,385	0	3,536
Anaktuvuk	1	1	0	13	0	0	0	13
Anaktuvuk Pass	1	0	0	13	0	0	0	13
Anchor Point	272	230	10	4,700	16	1	21	4,749
Anchorage	17,060	13,585	1,344	271,819	3,992	649	3,424	281,228
Anderson	7	5	0	105	0	0	0	105
Angoon	52	46	0	1,429	176	33	127	1,765
Aniak	192	169	2,212	1,090	2,472	2,538	16	8,328
Anvik	28	22	1,069	0	28	620	0	1,717
Atka	1	1	0	5	0	0	0	5
Atmautluak	61	35	1,091	735	36	1,406	3	3,271
Atqasuk	2	2	0	16	0	0	0	16
Auke Bay	22	21	0	167	7	15	11	200
Barrow	68	38	59	1,800	30	1	11	1,901
Beaver	29	24	198	0	1	59	0	258
Beluga	2	2	3	0	0	0	0	3
Bethel	2,048	1,000	24,974	10,754	19,000	10,986	243	65,957
Bettles	29	17	0	0	0	0	0	0
Big Lake	240	186	24	3,546	236	23	60	3,890
Birch Creek	16	7	73	0	0	0	0	73
Brevig Mission	46	46	36	328	352	2,880	2,587	6,183
Buckland	1	1	0	30	0	0	0	30
Cantwell	15	13	1	295	4	0	7	308
Central	18	17	90	143	0	0	0	233
Chalkyitsik	21	17	0	0	267	133	0	400
Chenega Bay	3	3	0	49	0	45	4	98
Chevak	3	3	0	46	0	0	0	46
Chickaloon	28	23	2	376	24	0	0	402
Chignik Bay	18	8	32	1,239	263	2	11	1,548
Chignik Lagoon	23	17	78	2,011	86	0	31	2,206
Chignik Lake	24	14	34	2,521	53	4	25	2,636
Chiniak	24	24	1	233	81	2	8	325
Chistochina	3	2	6	279	0	0	0	285
Chitina	38	28	55	3,008	29	0	0	3,091
Chuathbaluk	37	28	551	403	76	535	0	1,565
Chugiak	837	708	62	14,732	195	9	98	15,096
Circle	33	30	324	0	164	964	0	1,452
Clam Gulch	56	44	5	826	3	0	8	843

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Table 2-5.–Page 2 of 6.

Community	Households or permits		Estimated salmon harvest					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Clarks Point	12	12	131	334	332	88	270	1,155
Clear	11	9	1	208	1	0	4	214
Coffman Cove	10	3	0	43	0	0	0	43
Cold Bay	26	19	1	855	0	8	0	865
Cooper Landing	96	90	2	1,026	1	0	2	1,031
Copper Center	177	121	340	13,894	113	0	0	14,347
Copperville	5	5	4	497	0	0	0	501
Cordova	282	278	273	2,106	28	17	0	2,424
Craig	175	102	584	4,156	564	19	474	5,796
Crooked Creek	41	28	240	302	87	539	0	1,168
Deering	1	1	0	54	0	0	0	54
Delta Junction	494	435	123	10,191	51	8	12	10,385
Denali National Park	33	31	5	555	12	0	1	573
Dillingham	321	298	4,878	12,357	1,979	1,467	1,129	21,809
Dot Lake	4	2	0	41	0	0	0	41
Douglas	41	37	11	489	61	3	74	638
Dutch Harbor	126	99	0	1,852	128	0	68	2,048
Eagle	36	36	867	65	1	15,033	0	15,966
Eagle River	2,241	1,944	299	38,877	527	63	383	40,148
Edna Bay	1	1	9	0	0	0	0	9
Eek	81	36	1,761	1,241	315	721	47	4,085
Egegik	11	10	21	364	273	42	8	707
Eielson AFB	74	64	1	1,204	0	0	1	1,206
Eklutna	1	1	0	65	0	0	0	65
Ekwok	20	18	668	414	94	198	6	1,380
Elim	66	65	97	20	1,679	3,925	7,830	13,551
Elmendorf AFB	20	16	1	147	0	0	0	148
Emmonak	169	72	2,194	0	362	12,636	206	15,398
Ester	85	77	14	1,636	16	1	0	1,667
Fairbanks	4,136	3,447	2,400	72,000	1,934	5,694	114	82,142
False Pass	3	3	6	137	45	30	50	268
Fort Greely	42	34	4	637	0	0	0	641
Fort Richardson	11	7	3	107	0	0	0	110
Fort Wainwright	102	79	7	1,547	22	0	3	1,579
Fort Yukon	197	59	1,683	0	244	6,728	0	8,655
Fox	1	1	0	0	0	0	0	0
Fritz Creek	56	44	0	743	4	1	10	759
Gakona	37	32	83	3,636	0	0	0	3,720
Galena	162	43	1,357	50	549	3,670	0	5,626
Gambell	2	1	0	13	0	0	0	13
Girdwood	294	236	6	4,263	124	12	37	4,442
Glacier View	1	1	4	43	0	0	0	47
Glennallen	131	96	160	6,690	84	0	1	6,936
Golovin	31	31	43	15	366	672	3,858	4,954
Goodnews Bay	70	42	480	1,093	319	324	32	2,248
Grayling	45	13	2,122	0	132	1,814	0	4,068
Gulkana	6	4	17	908	0	0	0	924

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Table 2-5.–Page 3 of 6.

Community	Households or permits		Estimated salmon harvest					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Gustavus	18	18	2	268	4	2	6	282
Haines	328	316	110	7,959	334	291	1,295	9,990
Healy	84	77	6	1,405	1,207	1,099	12	3,729
Holy Cross	61	29	3,098	0	0	484	0	3,582
Homer	843	728	60	13,528	87	50	129	13,854
Hoonah	54	29	2	1,380	157	6	139	1,684
Hooper Bay	214	72	584	13	45	17,136	219	17,997
Hope	41	34	5	424	1	0	4	435
Houston	42	31	0	613	3	3	3	622
Hughes	30	18	63	0	0	878	0	941
Huslia	74	23	65	0	289	1,752	0	2,106
Hydaburg	44	24	0	2,200	0	0	0	2,200
Igiugig	11	8	4	2,901	0	11	1	2,918
Iliamna	27	26	3	6,047	0	0	0	6,050
Indian	4	3	0	20	0	0	0	20
Ivanof Bay	2	2	1	70	182	27	32	312
Joint Base Elmendorf-Richardson	334	252	5	4,638	121	6	66	4,836
Juneau	462	415	35	6,471	347	26	300	7,178
Kake	72	57	17	2,030	27	57	133	2,266
Kaktovik	1	1	1	18	0	0	0	19
Kaltag	63	20	3,191	0	0	760	0	3,951
Karluk	2	2	0	20	10	0	5	35
Kasaan	4	3	3	53	0	0	0	56
Kasigluk	100	45	3,020	1,448	1,078	2,403	12	7,961
Kasilof	464	380	41	7,612	50	4	63	7,771
Kenai	1,764	1,446	121	28,095	230	48	234	28,728
Kennicott	1	1	0	4	0	0	0	4
Kenny Lake	61	45	61	3,924	4	0	0	3,989
Ketchikan	175	124	41	2,934	111	96	352	3,533
King Cove	52	49	0	2,444	1,686	388	126	4,645
King Salmon	80	70	96	6,285	159	35	212	6,788
Kipnuk	1	1	4	20	0	0	0	24
Klawock	123	72	179	4,929	106	5	10	5,229
Klukwan	2	2	0	63	10	14	22	109
Knik	2	2	2	65	0	0	0	67
Kodiak (city)	1,450	1,441	153	17,944	2,315	110	616	21,138
Kokhanok	27	23	5	14,229	12	0	473	14,718
Koliganek	14	13	783	732	219	620	52	2,406
Kongiganak	97	44	1,470	1,842	390	2,513	0	6,215
Kotlik	105	37	2,314	0	238	4,746	124	7,422
Kotzebue	14	13	1	415	24	0	84	524
Koyuk	87	74	340	32	461	3,180	3,115	7,128
Koyukuk	41	13	867	0	254	1,144	0	2,265
Kwethluk	164	90	4,445	2,571	1,527	3,082	50	11,675
Lake Louise	1	1	0	66	0	0	0	66
Lake Minchumina	1	0	0	13	0	0	0	13

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Table 2-5.–Page 4 of 6.

Community	Households or permits		Estimated salmon harvest					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Larsen Bay	18	18	1	320	55	10	10	396
Levelock	7	7	5	940	1	1	1	948
Lime Village[b]	15	0	81	796	171	277	0	1,325
Lower Kalskag	68	30	1,030	507	96	691	0	2,324
Lower Tonsina	1	1	0	34	0	0	0	34
Manley	18	18	337	0	1,832	2,798	0	4,967
Manley Hot Springs	1	0	0	0	0	0	0	0
Manokotak	23	21	147	2,437	28	34	19	2,665
Marshall	74	29	2,110	15	33	2,451	21	4,630
McCarthy	21	9	17	192	2	0	0	211
McGrath	132	76	257	657	1,053	482	20	2,469
Meadow Lakes	2	2	1	103	0	0	0	104
Mendeltna	1	1	10	92	0	0	0	102
Mentasta	2	1	0	104	0	0	0	104
Metlakatla	10	5	0	318	0	0	0	318
Minto	50	41	43	0	0	78	0	121
Moose Pass	25	23	2	512	15	0	5	534
Mountain Village	163	60	1,601	26	128	7,204	217	9,176
Nabesna	4	4	0	243	0	0	0	243
Naknek	101	83	226	11,133	330	133	78	11,900
Nanwalek	22	22	0	1,514	1,324	271	1,030	4,139
Napakiak	98	54	1,640	1,187	884	1,766	15	5,492
Napaskiak	92	46	4,313	1,979	1,015	3,110	14	10,431
Nelchina	5	5	17	447	6	0	0	470
Nelson Lagoon	3	3	0	190	125	1	0	316
Nenana	99	81	667	1,177	2,329	6,887	1	11,062
New Stuyahok	40	36	2,090	2,020	251	1,081	166	5,608
Newhalen	10	9	0	3,228	0	0	0	3,228
Nikiski	247	202	8	3,599	38	4	32	3,683
Nikolaevsk	19	16	1	328	1	0	1	332
Nikolai	33	32	402	65	135	440	3	1,045
Ninilchik	286	242	10	3,219	10	3	20	3,262
Nome	494	491	34	692	3,061	3,680	8,174	15,641
Nondalton	14	14	0	3,185	0	0	0	3,185
North Pole	1,125	920	203	22,354	157	3	35	22,751
Northway	5	4	2	400	0	0	0	402
Nuiqsut	2	2	0	30	0	0	0	30
Nulato	79	23	2,989	0	242	1,465	0	4,696
Nunam Iqua (Sheldon Point)	37	28	404	0	73	2,410	306	3,193
Nunapitchuk	118	74	2,548	1,902	195	3,223	0	7,868
Old Harbor	25	25	0	595	483	93	285	1,456
Oscarville	16	14	618	250	12	352	1	1,233
Ouzinkie	30	30	2	1,077	609	44	168	1,900
Palmer	2,170	1,802	236	41,319	841	69	366	42,832
Paxson	1	1	0	7	0	0	0	7
Pedro Bay	20	18	0	5,609	0	0	0	5,609
Pelican	2	2	4	50	0	0	0	54

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Table 2-5.–Page 5 of 6.

Community	Households or permits		Estimated salmon harvest					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Perryville	33	30	23	1,019	1,100	185	554	2,881
Peters Creek	3	3	10	42	0	0	0	52
Petersburg	110	95	5	907	820	101	119	1,951
Pilot Point	6	6	1	238	45	0	0	284
Pilot Station	111	57	1,585	0	189	7,029	22	8,825
Pitka's Point	27	21	580	0	116	643	143	1,482
Platinum	18	15	14	175	197	37	3	426
Point Baker	2	2	0	29	3	14	46	92
Point Hope	4	1	0	54	1	0	0	56
Port Alexander	2	2	0	135	0	0	0	135
Port Alsworth	43	43	0	3,250	0	0	0	3,250
Port Graham	15	15	30	116	124	37	24	331
Port Heiden	28	13	142	1,704	222	75	34	2,178
Port Lions	40	40	0	1,404	493	0	108	2,005
Port Moller	1	1	0	250	0	0	0	250
Portage Creek	1	1	51	3	0	7	0	61
Prudhoe Bay	1	1	0	53	34	0	0	87
Quinhagak	155	90	2,692	1,671	1,547	1,376	165	7,451
Rampart	6	5	262	0	24	896	0	1,182
Red Devil	13	11	33	475	88	122	0	718
Ruby	58	15	1,102	0	148	2,997	0	4,247
Russian Mission	65	21	924	0	300	632	2	1,858
Saint George Island	1	0	0	13	0	0	0	13
Saint Marys	121	47	2,800	13	92	7,830	543	11,278
Salcha	88	74	39	2,093	0	2	0	2,134
Sand Point	43	35	176	2,570	794	763	772	5,074
Scammon Bay	90	30	716	0	79	5,475	2,245	8,515
Selawik	2	1	0	49	0	0	0	49
Seldovia	33	24	5	455	42	47	88	637
Seward	234	197	22	3,296	25	2	18	3,363
Shageluk	27	20	277	0	53	1,550	0	1,880
Shaktoolik	64	57	327	115	1,940	1,680	3,705	7,767
Sheep Mountain	1	1	4	17	0	0	0	21
Shishmaref	3	2	0	14	1	0	0	15
Silver Springs	3	2	5	138	0	0	0	143
Sitka	356	325	23	10,968	256	47	252	11,546
Skagway	4	4	0	18	0	5	12	35
Skwentna	11	11	0	227	15	6	22	270
Slana	22	19	29	1,758	0	0	0	1,787
Sleetmute	40	31	272	1,024	458	524	8	2,286
Soldotna	2,153	1,812	113	35,015	238	33	211	35,611
Sourdough	2	2	4	55	0	0	0	59
South Naknek	21	17	54	781	143	9	61	1,048
Sterling	519	433	22	8,303	43	22	93	8,482
Stevens Village	25	17	469	0	428	2,734	0	3,631
Stony River	21	16	189	372	201	338	0	1,100
Sutton	121	104	4	1,981	101	0	59	2,146

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Table 2-5.–Page 6 of 6.

Community	Households or permits		Estimated salmon harvest					
	Total	Included	Chinook	Sockeye	Coho	Chum	Pink	Total
Takotna[a]	25	0	0	4	33	0	0	37
Talkeetna	126	112	9	2,246	45	4	26	2,331
Tanacross	3	2	0	108	12	0	0	120
Tanana	99	37	3,215	0	2,314	16,840	0	22,369
Tatitlek	4	4	0	97	50	8	0	155
Tazlina	30	27	78	2,911	22	0	0	3,011
Telida[c]	2	0	–	–	–	–	–	–
Teller	49	48	17	174	140	1,868	1,822	4,021
Tenakee Springs	1	0	0	0	0	0	0	0
Thorne Bay	29	23	175	100	26	0	1	302
Togiak	60	51	1,075	3,176	489	663	83	5,485
Tok	88	55	41	2,805	1	0	3	2,850
Tolsona	2	1	0	156	0	0	0	156
Tonsina	4	2	8	72	0	0	0	80
Trapper Creek	27	23	0	466	10	1	2	480
Tuluksak	88	41	2,110	2,534	337	3,249	0	8,230
Tuntutuliak	88	49	3,205	2,068	698	2,439	0	8,410
Tununak	1	1	0	0	0	0	0	0
Twin Hills	2	2	87	80	25	72	30	294
Two Rivers	42	39	8	577	100	0	1	686
Tyonek	67	51	725	185	148	2	2	1,062
Uganik Bay	1	1	0	9	0	0	0	9
Ugashik	6	6	3	330	90	3	0	426
Unalakleet	223	171	1,217	293	3,434	1,192	8,140	14,276
Unalaska	88	69	1	2,097	194	71	268	2,631
Upper Kalskag	67	32	1,500	465	93	393	0	2,451
Valdez	302	249	128	7,205	17	10	1	7,361
Venetie	81	15	767	0	159	2,989	0	3,915
Wales	1	1	2	20	70	30	70	192
Ward Cove	16	11	1	211	0	5	20	239
Wasilla	4,697	3,764	505	88,087	2,698	299	1,037	92,626
White Mountain	43	43	16	55	577	333	4,416	5,397
Whittier	4	4	1	69	0	0	0	70
Willow	203	180	31	3,609	148	7	51	3,846
Wiseman	2	2	0	30	0	0	0	30
Wrangell	70	66	42	1,122	30	69	62	1,326
Yakutat	98	70	550	4,752	851	70	261	6,484
Other USA	26	24	0	274	2	0	0	276
Unknown community	719	406	826	6,754	1,031	428	352	9,391
Total	**57,525**	**44,961**	**135,078**	**987,256**	**91,692**	**236,974**	**66,424**	**1,517,424**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

a. "Included" is the sample size or the number of permits returned.

b. These communities were not contacted during the 2010 study period, therefore the total harvest was estimated using the Bayesian multiple imputation method.

c. These communities were not contacted during the 2010 study period. Not enough data were available to estimate harvest.

– Data not available.

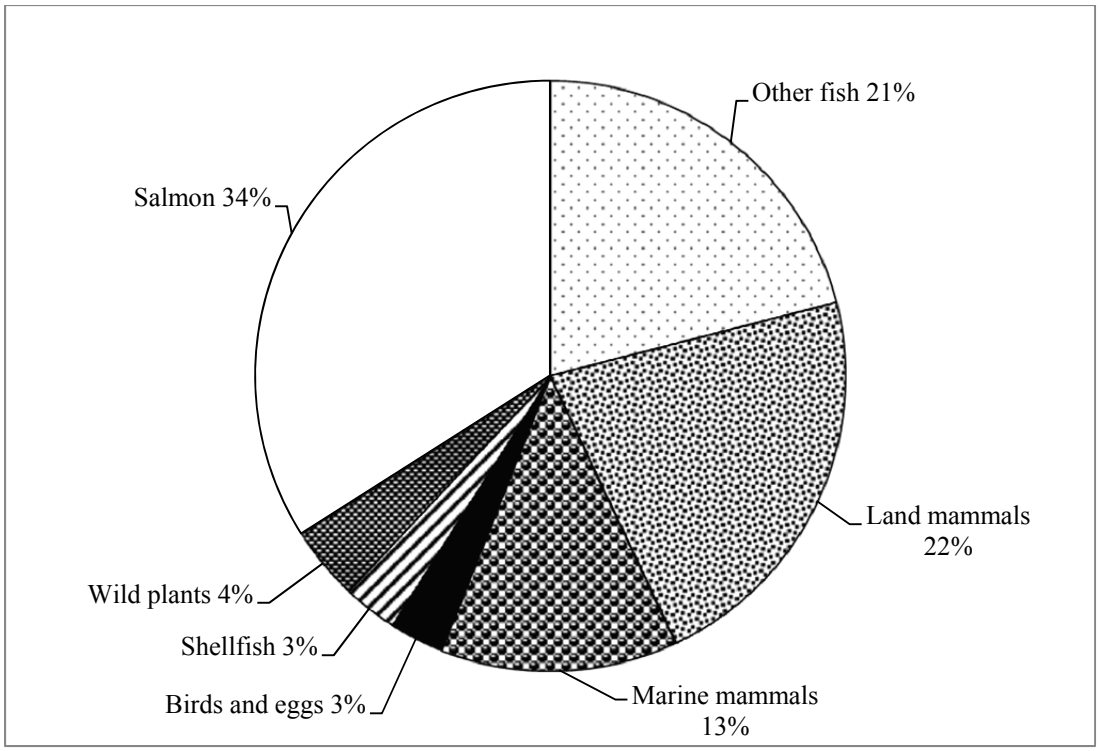


Figure 2-1.–Composition of subsistence harvest by rural Alaska residents, 2010.

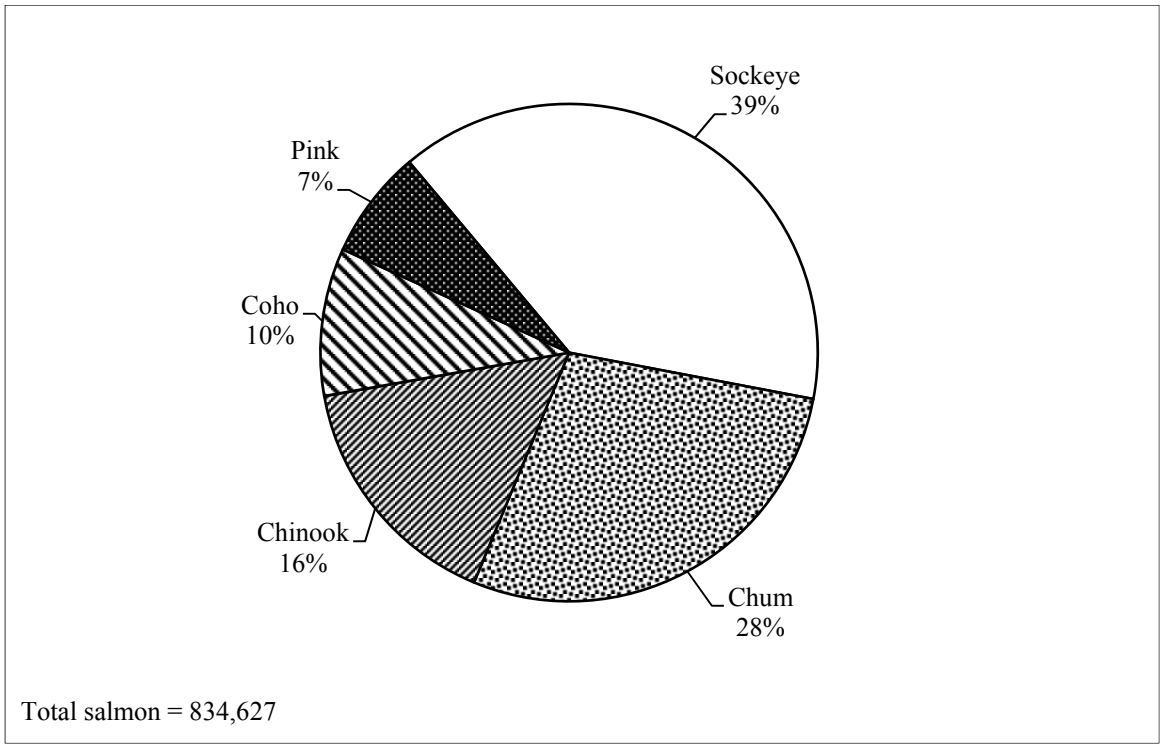


Figure 2-2.–Alaska subsistence salmon harvest by species, 2010.

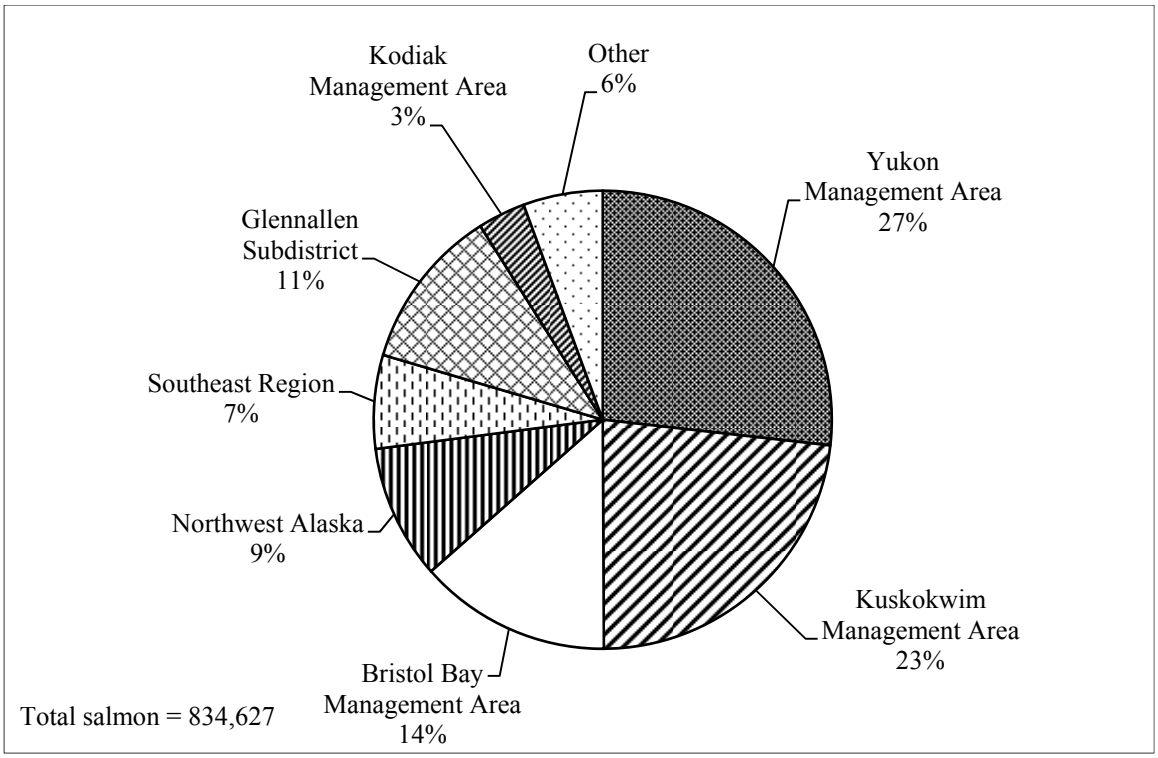


Figure 2-3.–Alaska subsistence salmon harvest by area, 2010.

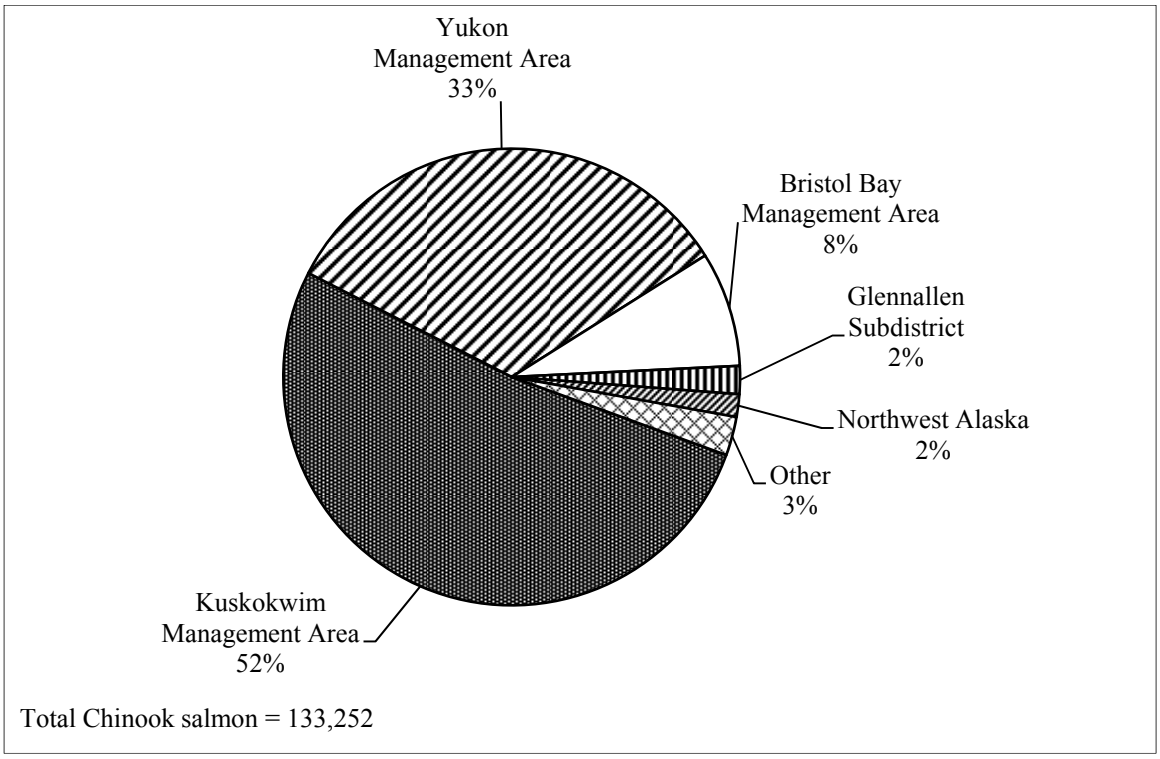


Figure 2-4.–Subsistence Chinook salmon harvest by area, 2010.

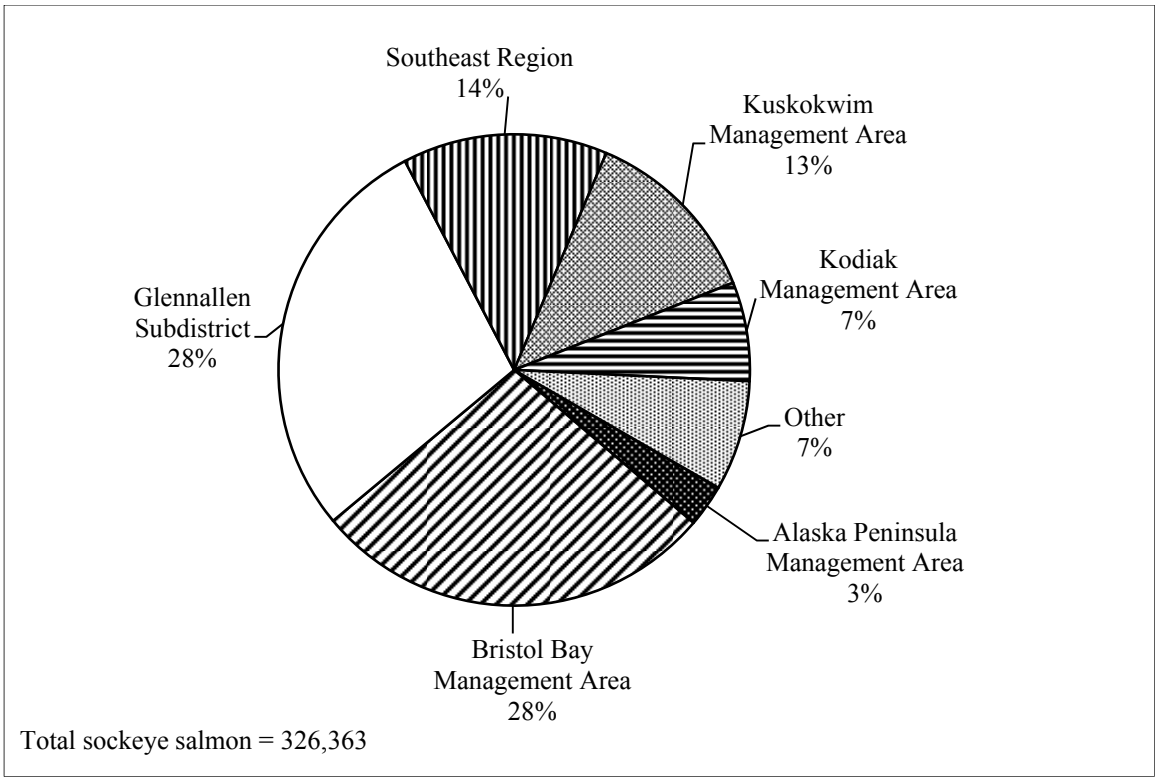


Figure 2-5.–Subsistence sockeye salmon harvest by area, 2010.

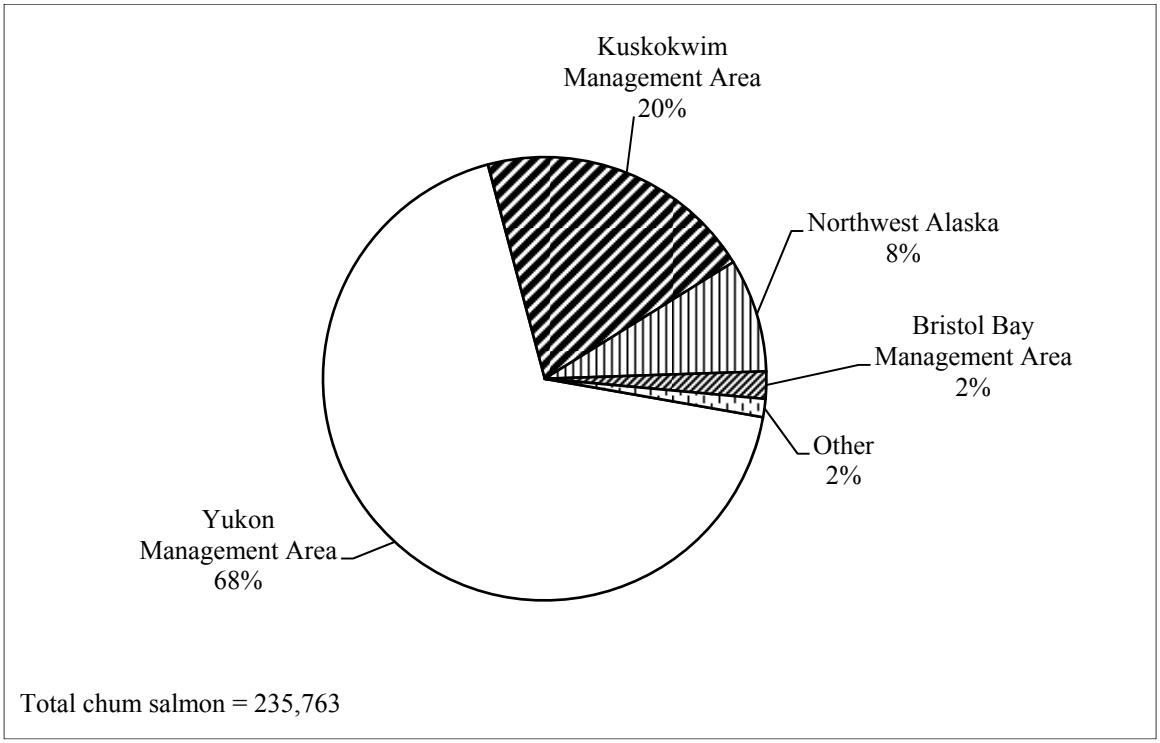


Figure 2-6.–Subsistence chum salmon harvest by area, 2010.

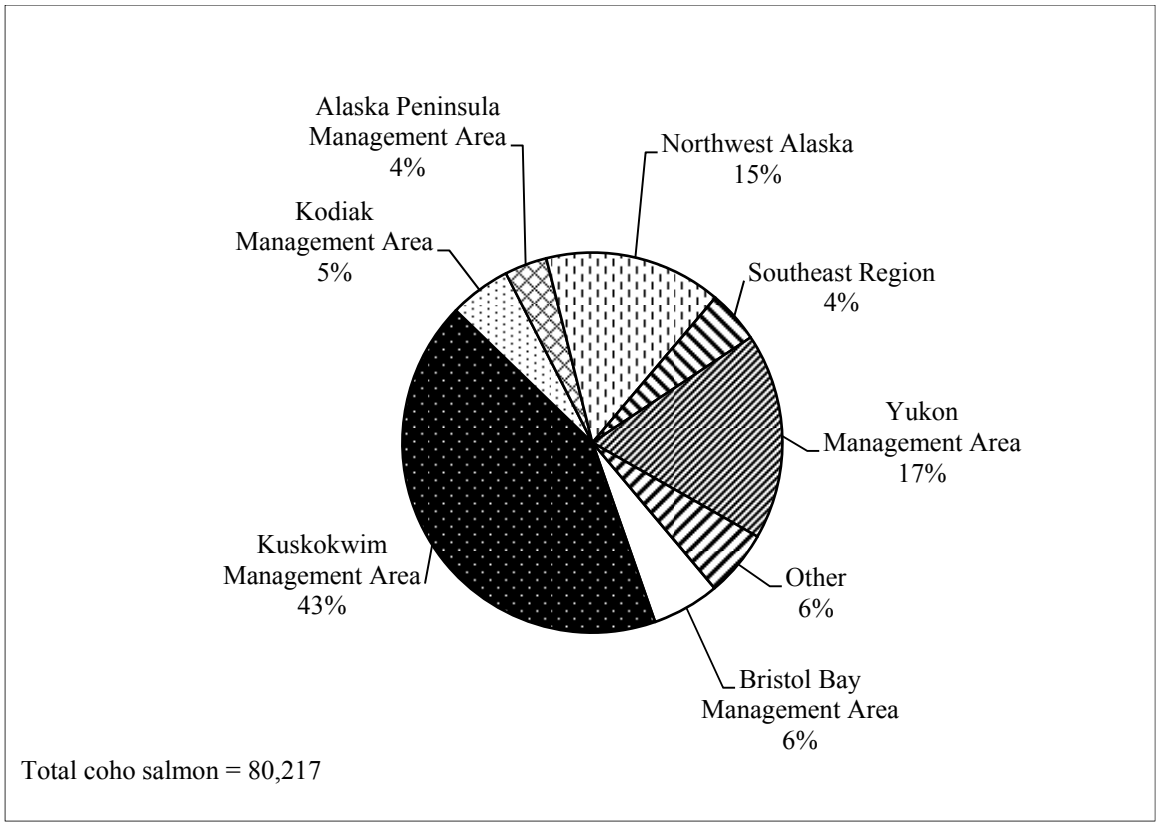


Figure 2-7.–Subsistence coho salmon harvest by area, 2010.

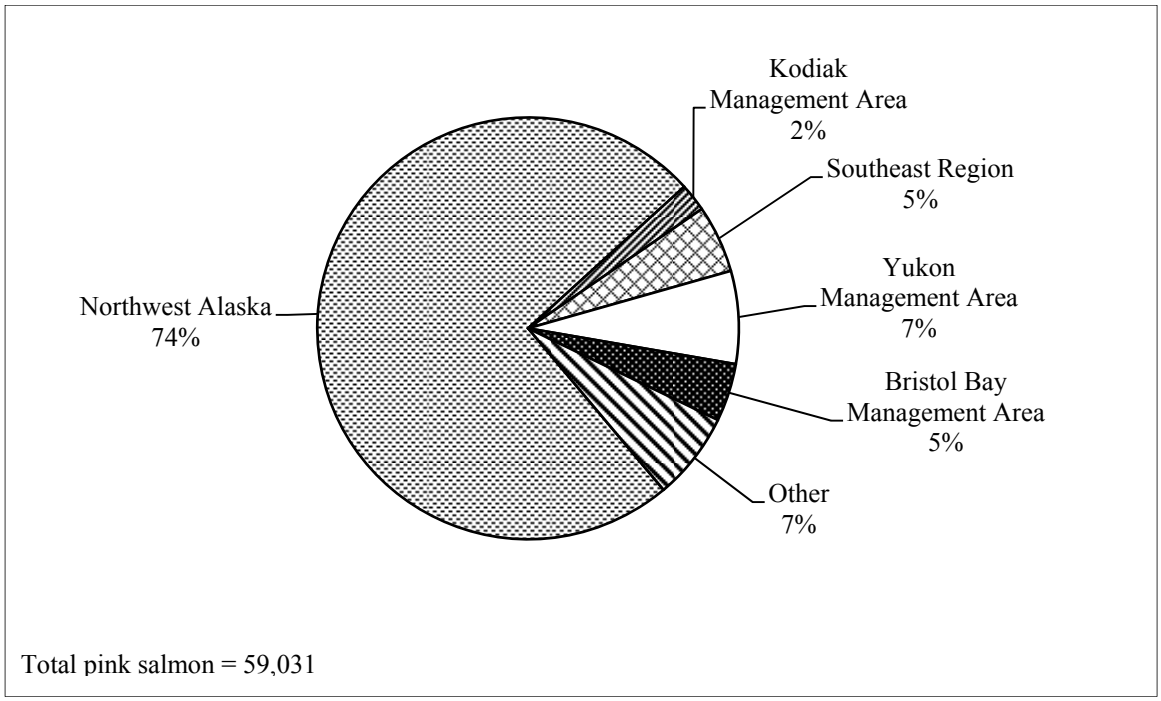
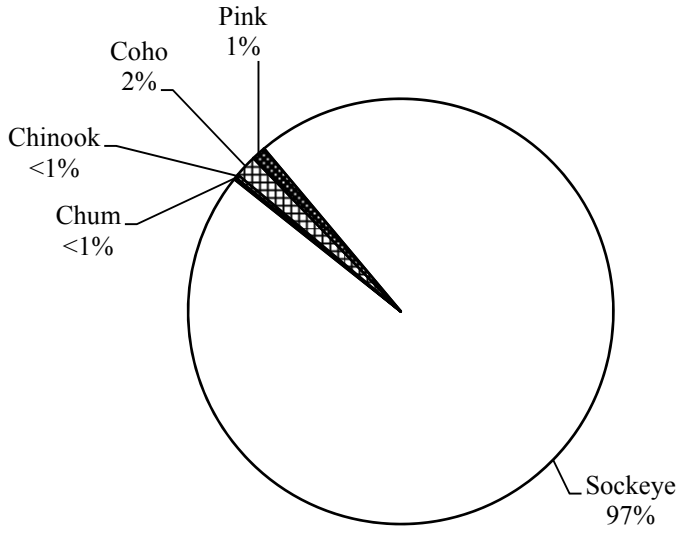
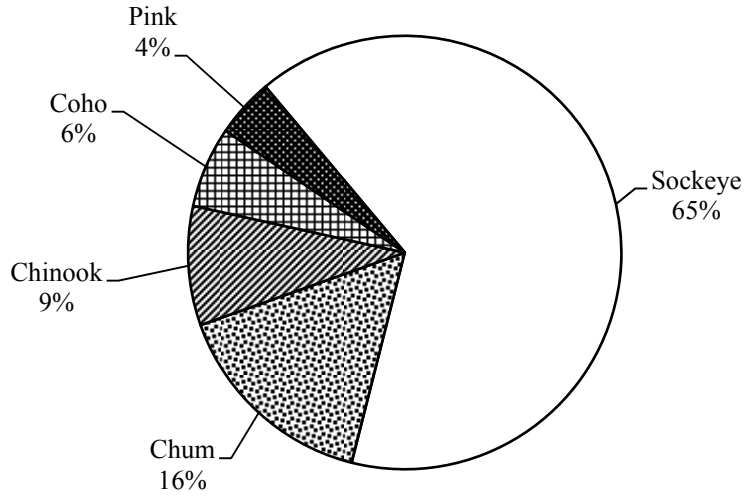


Figure 2-8.–Subsistence pink salmon harvest by area, 2010.



Total salmon = 682,797

Figure 2-9.–Alaska personal use salmon harvest by species, 2010,



Total salmon = 1,517,424

Figure 2-10.–Alaska subsistence and personal use salmon harvest by species, 2010.

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 2010 population of 3,598, and 13 smaller communities ranging in size from 115 (Little Diomede) to 688 (Unalakleet) (ADLWD 2011). Overall, 76% of the residents of the Nome Census Area are Alaska Native, with an additional 6% reporting 2 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 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 and 2010 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/Elim, 4) Norton Bay, 5) Shaktoolik, and 6) Unalakleet. In subdistricts 1 and 6, restrictions exist on gear, fishing periods, and areas open to fishing. In 2001, a regulatory change by the BOF made rod and reel a legal subsistence fishing gear type in the area from Cape Espenberg on northern Seward Peninsula to Bald Head, which is between Elim and Koyuk. This area includes subsistence fishing areas used by the residents of Nome, White Mountain, Golovin, Elim, Koyuk, Shaktoolik, and Unalakleet. Sport fishing bag and possession limits still apply, except when a subsistence salmon permit is required or fishing through the ice. In the former case, the harvest limits (if any exist) specified on the permit for each river apply. When fishers 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 was managed primarily by emergency order and was frequently closed to subsistence fishing for chum salmon each year on June 15 until ADF&G judged escapement goals were likely to be met. These closures, even when they were 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.[6] 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 2010, and generally to observe the fishing schedule provided for by regulation.[7] 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 experienced sharp declines starting in 1990 (Menard and Bergstrom 2006:2); however, the runs have been rebounding in recent years in the Norton Sound District (Menard et al. 2012). In Subdistrict 2 (communities of Golovin and White Mountain), 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 stocks of "yield concern" since 2000, but chum salmon runs greatly improved in the late 2000s (Menard et al. 2012:8).

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 directed fishery has occurred since 2001. Restrictions were placed upon the subsistence and sport fisheries in 2003, 2004, and 2006–2010 (Menard 2010; Menard et al. 2011; Menard et al. 2012). 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 stocks, as well as subdistricts 5 and 6 Chinook salmon stocks, 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).

6. 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.
7. In a "Tier I" subsistence fishery, all interested Alaska residents may participate. Other fishers (commercial, sport, and personal use) are prohibited or restricted.

Subsistence Salmon Harvest Collection Methods

Two methods were used to assess subsistence salmon harvests in the Norton Sound and Port Clarence districts in 2010: 1) fishing permits in Subdistrict 1 (Nome), the Cape Woolley Area, Subdistrict 2 (Golovin), Subdistrict 3 (Moses Point/Elim), and the Port Clarence District (Brevig Mission and Teller); and 2) postseason household surveys in 3communities: Koyuk (Subdistrict 4), Shaktoolik (Subdistrict 5) and Unalakleet (Subdistrict 6).

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 2010, because of an average forecasted run of chum salmon, Tier II was not in effect (Menard et al. 2012). The Nome ADF&G office issued a record 494 subsistence (Tier I) salmon permits (Menard et al. 2012); 492 permits were returned (Table 3-1). A total of 372 households fished their permits, with the largest number of permits fished on the Nome River (190) and Snake River (60) (harvests largely came from those rivers, the Eldorado River, and marine waters) (Menard et al. 2012). Prior to 2010, the largest number of permits issued was in 2004 (491), followed closely by 461 in 2008, and 426 in 2009 (Fall et al. 2012:23).

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 more than 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 2010, 15 permits were issued for the Cape Woolley Area; all were returned to ADF&G (Table 3-1). Only 4 households fished their permits (Menard et al. 2012).

Subsistence permits have been required for salmon fishing in Subdistrict 2 (Golovin) and Subdistrict 3 (Moses Point/Elim) since 2004. In 2010, 159 permits were issued for Subdistrict 2; fewer than in 2005 (174) and 2004 (199) (Menard et al. 2012: Fall et al. 2012:23). All 159 permits were returned (Table 3-1); 112 households reported fishing (Menard et al. 2012). The number of Subdistrict 2 permits issued to Nome residents has dropped since 2004, and fishery managers have attributed the decline to the easing of fishing restrictions in the Nome Subdistrict and rising fuel costs. The number of permits issued to residents of White Mountain and Golovin has held steady. In 2010, ADF&G issued 64 permits for Subdistrict 3, slightly less than the record 73 permits issued in 2009. All permits were returned; 54 households reported fishing (Table 3-1; Menard et al. 2012).

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 2010, 295 Port Clarence and Pilgrim River permits were issued, compared to 328 in 2009, 399 in 2008, and 362 in 2007 (tables 3-3 and 3-4). Of the permits issued in 2010, 146 were to fish the Pilgrim River only; no permits were issued for Salmon Lake because

it was closed; and 144 were issued for other waters in the district (Menard et al. 2012).[8] 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, and continuing poor runs in 2010. Although sockeye salmon escapements increased slightly in 2010, they still tied for the third lowest counts since 2000 (Menard et al. 2012). All Pilgrim River permits were returned, as well as all the permits issued for 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 2010 due to the crash of the sockeye salmon run in 2009 and poor runs in 2010.

Household Surveys

In 2010, ADF&G conducted household surveys in Koyuk, Shaktoolik, and Unalakleet. Researchers attempted to contact all of the households in each of the surveyed communities. Actual sample rates varied: 171 of 223 Unalakleet[9] households (77%) were contacted, as were 57 of 63 Shaktoolik households (90%), and 73 of 86 Koyuk households (85%). The salmon survey data were expanded by community to account for the households not contacted (Table 3-2).

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.

2010 Subsistence Salmon Harvests

Norton Sound District Subsistence Salmon Harvest

The estimated 2010 subsistence harvest of salmon by communities in the Norton Sound District was 67,149 fish (tables 3-1, 3-3, and 3-4). This was the lowest total harvest for the district for an even-numbered year on record since 1994, and 13% lower than the second lowest harvest in an even-numbered year (which occurred in 2004) (Table 3-3). 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 district wide harvests usually reflecting this difference. Between 1994 and 2010, even-year harvests of all salmon have ranged from a low of 67,149 in 2010, to a high of 134,050 in 1996, with an average of 95,328 salmon. Odd-year harvests have ranged from the low in 2009 of 58,080 to a high of 113,612 in 1995, with an average of 76,426 salmon. Chum escapements were well above average to record-setting across Norton Sound and the Port Clarence area in 2010; chum harvests across the Norton Sound area were the highest they had been in years. However, the Chinook salmon run in 2010 was the poorest on record, and conservation measures to protect this species lowered chum harvests in subdistricts 5 and 6. Furthermore, the Norton Sound pink salmon run was below average for an even-numbered year, although escapement goals were easily met. Pink salmon harvests were the second lowest in an even-numbered year for the district since 1994; pink salmon harvests in 2000 were just slightly less

8. The report by Menard et al. (2012) cites a slightly different figure for the number of permits issued in 2010 (290), which is why the total for Pilgrim River and other Port Clarence waters permits does not add to 295, which is the number of total permits issued that the Division of Subsistence calculated and provided in tables 3-3 and 3-4. The slight discrepancy relates to different approaches to permit analysis between the divisions of subsistence and commercial fisheries.

9. The discrepancy between surveyed households in Unalakleet between tables 3-1 (170) and 3-2 (171) can be accounted for by the fact that the 2 tables are presenting slightly different information. Table 3-1 shows harvest by location fished, and 1 household fished outside of the community in 2010. In contrast, Table 3-2 shows reported harvest of a fisher's community of harvest regardless of where he or she fished.

at 38,308 pink salmon. Coho salmon runs were average to above average for most of the Norton Sound subdistricts, although runs were lower than original forecasts for subdistricts 5 and 6. Sockeye escapement levels increased slightly in 2010 following the crash of 2009, but the run was poor enough to require the early closure of the Pilgrim River subsistence fishery in mid-July (Menard et al. 2012).

Subdistrict 1 Harvest

For the fifth 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 early July, however, ADF&G cumulative chum salmon escapement at the Eldorado River weir was above the historical averages, and area biologists observed large schools of chum salmon in the lower reaches of all Nome subdistrict drainages. On July 6, subsistence fishing time was increased in marine waters from 72 hours to 120 hours per week. By mid-July it was determined that the Nome Subdistrict biological escapement goal would be easily surpassed and pink salmon escapement goals were achieved by July 11. This led to further liberalization of regulations, and on July 12 all limits for chum and pink salmon were waived. Subsistence gillnet fishing time in marine waters was increased to 144 hours per week and beach seining for salmon during marine and freshwater subsistence schedules was permitted until July 26. On July 26, the department switched to coho salmon management and returned marine waters to the subsistence fishing schedule of 5 days per week and freshwater areas to two 48-hour periods per week by regulation. Beginning on August 15, subsistence fishing was allowed 7 days a week by regulation in marine waters. By August 20, aerial surveys showed several hundred coho salmon in the lower reaches of Nome Subdistrict drainages, and escapement needs were expected to be met. On September 1, subsistence fishing time was extended to 7 days a week in freshwater subsistence areas and catch limits for coho salmon were waived (Menard et al. 2012). The reported 2010 subsistence salmon harvest in the Nome Subdistrict was 33 Chinook, 3,123 chum salmon, 6,281 pink, 1,983 coho, and 83 sockeye salmon (Table 3-1).

Subdistrict 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 the salmon harvest, followed by chum, Chinook, and a few sockeye salmon. In 2010, a total of 12,864 salmon were harvested in Subdistrict 2 (Golovin) (Table 3-1), the sixth highest harvest in the last 10 years (Menard et al. 2012). Pink salmon composed 75% of the number of salmon harvested, with 9% chum, 16% coho, less than 1% Chinook, and less than 1% sockeye salmon making up the rest of the harvest. Preseason forecasts by ADF&G predicted average to above average returns of pink and coho salmon to the subdistrict, 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 4,954 salmon in 2010, of which more than half, 3,858, were pink salmon (Table 3-2). Coho salmon (366) made up 7% of the total harvest, with chum (672) composing 14%, Chinook (43) less than 1%, and sockeye (15) less than 1%. White Mountain residents harvested an estimated 5,347 salmon, 4,416 (83%) of which were pink salmon. The remainder of the harvest was chum (333) at 6%, coho (577) at 11%, Chinook (16) at less than 1%, and sockeye salmon (5) at less than 1% of the annual total.

In Subdistrict 3 (Moses Point/Elim), record chum salmon returns and a strong coho salmon run on the Kwiniuk River led to the highest number of harvested salmon since 1996. Subsistence fishers harvested an estimated 13,538 salmon, 58% of which were pink salmon. The remainder were 29% chum, 12% coho, less than 1% Chinook, and less than 1% sockeye salmon (Table 3-1).

Subdistrict 4 Harvest

In 2010, the third consecutive annual subsistence salmon surveys were conducted in Koyuk. Households caught an estimated 7,117 salmon, the fewest since 1994, with most of the harvest being made up of pink and chum salmon (44% and 45%, respectively). Of the remainder, 6% were coho, 5% were Chinook, and less than 1% were sockeye salmon (Table 3-2). By comparison, in 2009, the community harvested an estimated 7,556 salmon, 37% of which were pink salmon (2,765) and 46% chum (3,509). Coho salmon made up 13% of that year's subsistence salmon harvest, another 4% came from Chinook salmon, and less than 1% of the harvest was sockeye salmon (Fall et al. 2012).

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 July 5, ADF&G enacted mesh size restrictions of 6 in or less for subsistence gillnets on the river. Local fishers indicated that they had only harvested 20% of their Chinook subsistence needs by the end of June, in contrast to 2009, when local fishers reported that they had quit fishing for Chinook salmon early because their needs had been met (Menard et al. 2011; Menard et al. 2012). Due to low escapement observed at the North River counting tower and Unalakleet River weir, ADF&G restricted the marine subsistence Chinook salmon fishery to gillnets with a mesh size of 6 in or less and closed sport fishing in subdistricts 5 and 6. Beginning July 9, beach seining opened 7 days a week to allow fishers to fish for chum and pink salmon, with all Chinook salmon to be released. At the conclusion of the season, the Chinook salmon return to the Unalakleet River ended up being the poorest on record.

Shaktoolik households caught an estimated 7,767 salmon in 2010, the bulk of which (3,705 or 48%) were pink salmon. Coho salmon (1,940) composed 25% of the total harvest; chum salmon (1,680) and Chinook (327) each were 22% and 4% of the total. Approximately 1% of the harvest was made up of sockeye salmon (tables 3-1 and 3-2). The 2010 harvest total compared favorably to the 2007 harvest, when the community harvested 5,159 fish in total.

In Unalakleet, subsistence fishers caught an estimated 14,276 salmon, more than half of which (57%) were pink salmon. Coho salmon (3,434) made up 24% of the annual harvest, followed by Chinook salmon (1,217 or 9%), and chum salmon (1,192 or 8%). Two percent of the total harvest was sockeye salmon (tables 3-1 and 3-2).

Norton Sound Harvest Overall

Of the total 2010 subsistence salmon harvest in Norton Sound, 1% were sockeye salmon, 3% were Chinook salmon, 21% were chum salmon, 17% were coho salmon, and 58% were pink salmon (Figure 3-1).

Combined harvest estimates for the Norton Sound District, Port Clarence District, and Kotzebue Area for 1975–2010 are presented in Table 3-5. 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 (Moses Point/Elim). The combined total for Northwest Alaska in Table 3-5 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 2010 subsistence salmon harvest was taken by residents from outside the district (Table 3-2). Eighteen subsistence permits were issued to residents of Anchorage, Fairbanks, Wasilla, and Homer; their combined total salmon harvest was 215 salmon.

Port Clarence District Subsistence Salmon Harvest

The estimated 2010 subsistence harvest of salmon in the Port Clarence District was 11,911 fish (tables 3-3 and 3-4). This harvest was significantly higher than the harvest in 2009 (7,429 fish), and is closer to the 10-year average (2000–2009) of 13,595 fish. Of the total salmon harvest, less than 1% were Chinook salmon, 5% were coho salmon, 44% were chum salmon, 44% were pink salmon, and 7% 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, composing 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. 2007:23–38). 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 2010.[10] The average yearly subsistence harvest between 1994 and 2004 was 59,650 salmon, the majority of which were chum salmon (Table 3-3). 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, WHITEFISHES, 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

10. 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.

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. 2007:28). 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. 2007:33). Kotzebue Area's total harvest of those species is probably higher, but subsistence fish surveys are not usually conducted in other villages.

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," composed 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 whitefishes (14,234 lb) (Magdanz et al. 2010:48).

In October 2011, the Division of Subsistence collected fish harvest data in Selawik for the preceding 12 months as part of a comprehensive subsistence harvest survey. Selawik harvested an estimated 316,653 lb of fish in the study period, the overwhelming majority of which (79%) came from various whitefish species. The greater part of the whitefishes harvest was broad whitefish (47,394 fish, 151,722 edible pounds), followed by sheefish (6,190 fish, 68,958 edible pounds), and humpback whitefish (12,647 fish, 23,705 edible pounds). Salmon are present in only low abundance in the vicinity of Selawik; the only species harvested in any quantity was chum salmon (879 fish, 5,273 edible pounds). Selawik fishers took 15,956 northern pike, totaling 52,653 pounds, the greatest amount for any species other than whitefishes. Lesser harvests of smelt, burbot, and Arctic grayling were also documented (Braem et al. in prep).

Table 3-1.–Subsistence salmon harvests by Norton Sound subdistricts, Northwest Alaska, 2010.

Subdistrict	Households surveyed or permits returned	Estimated salmon harvest[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Cape Woolley	15	0	3	0	62	20	85
Moses Point/Elim	64	97	7	1,679	3,925	7,830	13,538
Golovin	159	59	32	2,020	1,133	9,620	12,864
Nome	492	33	83	1,983	3,123	6,281	11,503
Norton Bay	73	340	21	461	3,180	3,115	7,117
Shaktoolik	57	327	115	1,940	1,680	3,705	7,767
Unalakleet	170	1,217	293	3,434	1,192	8,140	14,276
Total	**1,030**	**2,074**	**554**	**11,517**	**14,295**	**38,710**	**67,149**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

Table 3-2.–Subsistence salmon harvests by community, Northwest Alaska, 2010.

Community[b]	Households or permits		Estimated salmon harvests[a]					
	Total	Surveyed or returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	9	9	0	0	9	23	85	117
Brevig Mission	46	46	36	328	352	2,880	2,587	6,183
Chugiak	1	1	0	0	0	0	0	0
Elim	65	65	97	7	1,679	3,925	7,830	13,538
Fairbanks	5	5	0	2	0	23	0	25
Gambell	1	1	0	0	0	0	0	0
Golovin	31	31	43	15	366	672	3,858	4,954
Homer	3	3	2	0	0	40	27	69
Kotzebue	2	2	0	0	24	0	82	106
Koyuk	86	73	340	21	461	3,180	3,115	7,117
Nome	478	476	33	398	3,061	3,680	8,173	15,345
Shaktoolik	63	57	327	115	1,940	1,680	3,705	7,767
Teller	49	48	17	174	140	1,868	1,822	4,021
Unalakleet	223	171	1,217	293	3,434	1,192	8,140	14,276
Wales	1	1	2	20	70	30	70	192
Wasilla	1	1	0	0	0	1	3	4
White Mountain	42	42	16	5	577	333	4,416	5,347
Total	**1,106**	**1,032**	**2,131**	**1,378**	**12,113**	**19,527**	**43,912**	**79,060**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

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

Table 3-3.–Historical subsistence salmon harvests by district, Northwest Alaska, 1994–2010.

	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
2010	1,030	2,074	554	11,517	14,295	38,710	67,149

	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
2010	295	57	824	596	5,232	5,202	11,911

-continued-

Table 3-3.–Page 2 of 2.

	Kotzebue Area[b]						
Year	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
2010[h]	ND	ND	ND	ND	ND	ND	ND

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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 2005–2010. The average yearly subsistence harvest of salmon in the Kotzebue Area between 1994 and 2004 was 59,650 fish. ND = no data.

Table 3-4.–Subsistence salmon harvests by district, Northwest Alaska, 2010.

District	Households surveyed or permits returned	Estimated salmon harvests[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Norton Sound District[b]	1,030	2,074	544	11,517	14,295	38,710	67,149
Port Clarence District[c]	295	57	824	596	5,232	5,202	11,911
Kotzebue Area[d]	ND	ND	ND	ND	ND	ND	ND
Total[e]	**1,032**	**2,131**	**1,378**	**12,113**	**19,527**	**43,912**	**79,060**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

b. Household surveys conducted in Unalakleet, Koyuk, and Shaktoolik. Permits issued for Cape Woolley, Subdistrict 1 (Nome) (Tier I), Subdistrict 2 (Golovin), and Subdistrict 3 (Moses Point/Elim).

c. Permits issued for Port Clarence District, 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 2010. 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 3-5.–Historical subsistence salmon harvests, Northwest Alaska, 1975–2010.

	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
2010[h]	1,106	1,032	2,131	1,378	12,113	19,527	43,912	79,060
5-year average (2005–2009)	1,179	1,131	3,976	7,610	17,105	15,809	45,684	90,185
10-year average (2000–2009)	1,525	1,276	4,462	6,509	16,880	33,870	49,336	111,057
Historical average (1975–2009)	924	698	2,713	2,688	9,322	30,869	26,578	72,170

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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Table 3-5.–Page 2 of 2.

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.

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.

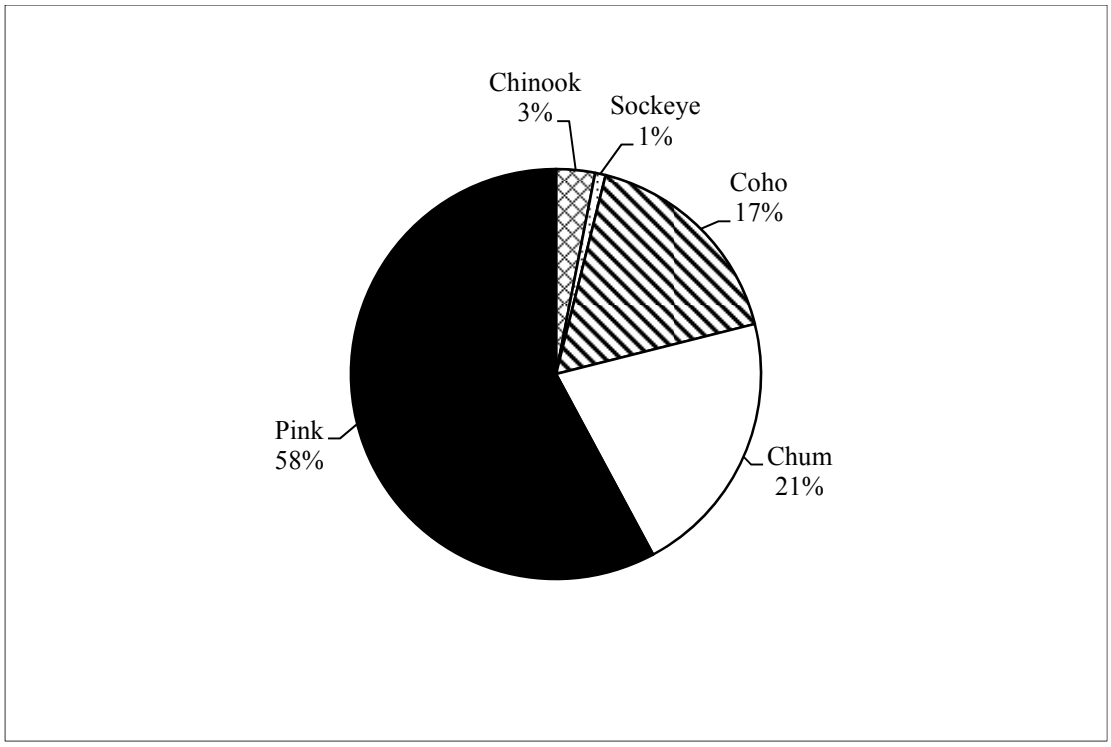

Figure 3-1.–Species composition of estimated subsistence salmon harvests, Norton Sound District, 2010.

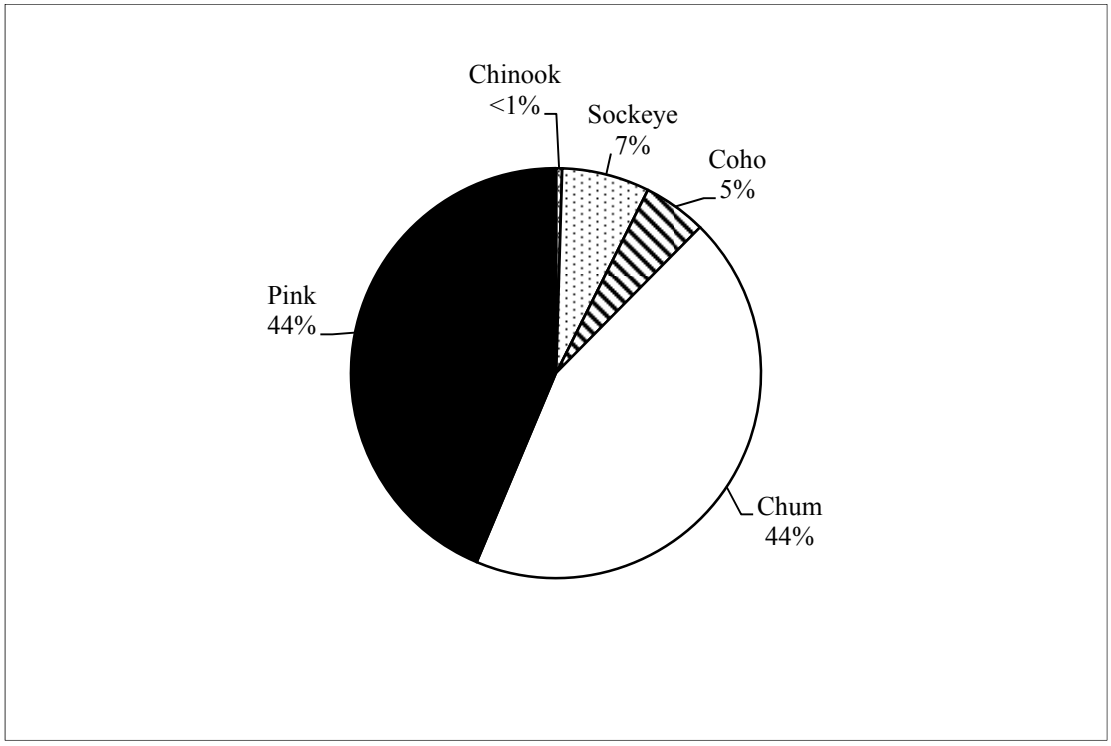

Figure 3-2.–Species composition of estimated subsistence salmon harvests, Port Clarence District, 2010.

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 are an important component of the overall fish harvest (Andersen et al. 2004; Brown et al. 2005), large numbers of Chinook salmon, summer and fall chum salmon, and coho salmon comprise the majority of all subsistence harvests of fish in the Yukon River drainage. Unlike many marine and coastal fisheries in which there are significant commercial harvests, subsistence salmon harvests within the Yukon drainage often exceed commercial, sport, and personal use harvests combined.

Yukon area fishers use drift gillnets, set gillnets, and fish wheels to harvest the majority of salmon. Set gillnets are used 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 downriver of 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 on the middle and upper Yukon and Tanana rivers.

Depending on the area of the Yukon River drainage and each salmon species' run timing, subsistence fishing for salmon occurs from late May through early October. Subsistence harvesters usually base their fishing activities either from fish camps or from their home communities. Extended family groups, typically representing several households, often participate in 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, viscera, backbones, and other scraps 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 abnormality are often fed to dogs. Small male Chinook salmon ("jacks") or spawned-out salmon may also be fed to dogs. In addition, while fishers harvest chum and coho salmon primarily for human consumption, dog mushers harvest and process relatively large numbers of these species as food for 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, during which time some dog mushers "crib" salmon for use as dog food. This method involves storing whole salmon outdoors in large wooden boxes or log cribs in late fall, and allowing them to freeze (Andersen 1992). 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 2010 the BOF removed closures around commercial fishing in Subdistrict 4A. Instead, the subsistence fishing schedule changed to two 48-hour periods per week regardless of commercial fishing openings (Schmidt and Newland 2012). Also beginning in 2010, in the upper portion of District 4 (subdistricts 4B and 4C), when commercial fishing closures lasted longer than 5 days, subsistence periods opened from 6:00 PM Sunday until 6:00 PM Friday (Schmidt and Newland 2012). 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.[11] In the Upper Tanana River drainage upstream of the Volkmar (north bank) and Johnson (south bank)[12] 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 FSB 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.

Over the last 15 years since 1996, Yukon River salmon stocks have fluctuated in terms of abundance. For the first time in regulatory history, in 2000, restrictions were imposed on the summer subsistence salmon fisheries to protect Chinook salmon and summer chum salmon populations. After a modest increase in Chinook salmon abundance from 2004 to 2007, restrictions were imposed on the summer season to protect declining Chinook salmon runs in 2008 and 2009. Restrictions have been implemented with both

11. In the Lower Tanana River drainage, the fishery to harvest salmon for home uses 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 River to 3 miles upstream of Totchaket Slough (the Old Minto area), subsistence fishing is allowed 5 days per week.

12. 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.

period closures and limited gear use in some districts. Because of the inability to maintain expected yields and harvestable surpluses above escapement goals for several years, the BOF classified the Yukon River Chinook salmon stock as a stock of yield concern at its September 2000 work session (Lingnau and Salomone 2003). During its January 2010 meeting in Fairbanks, the BOF continued the stock of yield concern designation for Yukon River Chinook salmon (Estensen et al. 2012:5).

Fall chum salmon returns have also been variable over time. There was a complete closure of the fall season in 2000 severely affecting the subsistence harvest of fall chum and coho salmon. Additional restrictions on subsistence fisheries occurred during the fall season in 1993, 1998, 2001, 2002, and 2009. In 2001 the BOF declared Yukon fall chum salmon a stock of concern. In 2007, after the returns of fall chum rebounded, the BOF lifted the stock of concern designation.

In 2001, as a result of the disastrous runs the year before, the BOF instituted a new subsistence schedule on the Yukon River, commonly referred to as the "windows" schedule. 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 time 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.

Before the 2010 salmon fishing season, YRDFA facilitated a series of regional teleconferences and meeting for managers, fishers, and other stakeholders to discuss options and develop a preseason plan. The 2010 subsistence fishing schedule is presented in Table 4-1. The 2010 season marked the tenth annual implementation of the windows schedule. Preseason outlooks for 2010 projected an average to below average Chinook salmon run, especially for Canadian-origin fish. Run strength was predicted to be considerably better than the 2009 run and outlooks anticipated enough Chinook salmon to meet the escapement obligations specified by the U.S.–Canada Pacific Salmon Treaty. Summer chum, fall chum, and coho salmon runs were projected to be of average strength. Historically, the windows schedule began around May 28 in District 1, but in 2010 the reduced schedule implementation was delayed until June 7. Poor weather, including persistent rain and cool temperatures resulting in poor processing conditions, led many fishers to reduce their harvests on the first pulse of Chinook salmon (Hayes and Buckelew 2010:4).

Since 2009, YRDFA has facilitated an annual planning meeting to bring together managers and stakeholders to discuss the upcoming fishing season. In addition, since 1994, weekly teleconferences during the fishing season facilitate communication among managers and subsistence and commercial fishermen along the river. A directed commercial Chinook salmon 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. Ultimately, given the need for subsistence restrictions indicated by the preseason outlook and early inseason indicators, ADF&G did not authorize any commercial fishing periods targeting Chinook salmon on the mainstem Yukon River; however, according to Division of Commercial Fisheries' data, during the directed commercial summer chum opening 9,897 Chinook salmon were incidentally harvested and commercially sold in Districts 1 and 2 (Hayes and Buckelew 2010).

Beginning June 7, 2010, 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. Following the pulse closures, each fishing district was returned to the windows schedule. As the Chinook salmon migration progressed upriver, managers were increasingly concerned they would be unable to

meet escapement goals and considered further closures; however, poor fishing conditions, including the heavy drifting of debris such as logs, high water, and persistent rain, limited fishers in their opportunities to harvest Chinook salmon. Therefore, managers did not feel it was necessary to place additional regulatory restrictions on Chinook salmon harvests. Managers encouraged fishers to reduce their harvests voluntarily and adjust their subsistence activities to conserve Chinook salmon and to "work around their own unique fishing conditions to effectively conserve Chinook salmon where they could" (Hayes and Buckelew 2010:35). Suggestions included fishing less, reducing extended sharing networks, keeping harvested fish in the village and spreading harvest throughout the course of the whole run (Hayes and Buckelew 2010:35).

Preseason projections expected the 2010 coho salmon run to be average. Similarly, the preseason outlook for fall chum salmon estimated a return of 600,000 fish, enough to meet the escapement goal and provide for subsistence harvests (Estensen and Borba 2010:3). In 2010, fall chum salmon returned in numbers great enough to satisfy escapement and subsistence needs and provide an opportunity for commercial fishing. A directed commercial fall chum fishery resulted in a harvest of 2,550 fish. Additionally, a limited coho salmon commercial fishery opened in districts 1 and 2 and later in District 6.

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 2010, 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. A total of 1,527 calendars were sent to Yukon River households. Fifteen percent of contacted households (229) returned harvest calendars 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 inseason management purposes. To maximize the return of permits, ADF&G staff also sent reminder letters to these households. A total of 538 salmon fishing permits were issued to households in the Yukon Area in 2010, including 463 subsistence and 75 personal use permits (Table 4-2). Of these permits, 433 (94%) subsistence permits and 73 (97%) personal use permits were returned to ADF&G (Table 4-2). Unreturned permits were 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.

Department staff surveyed 859 households in the Yukon Area concerning their subsistence salmon harvests (Jallen et al. 2012:12). Additional information for 67 households was collected by telephone, and 33 households mailed in their harvest numbers on a survey or a calendar (Jallen et al. 2012:14). Based on these various methods of collecting harvest data, it was estimated that 1,277 Yukon Area households (out of approximately 2,528 households that do not require a subsistence and personal use permit) participated in subsistence and personal use fishing in 2010 (Table 4-3).

SUBSISTENCE SALMON HARVESTS IN 2010

In 2010, 1,659 surveyed households (54% of the 3,066 total estimated households in districts 1–6 who were either surveyed or permitted) and 506 permit holders that returned permits, provided harvest data for the Yukon Area subsistence–personal use salmon fishery (Table 4-2; Table 4-4). The estimated subsistence–personal use salmon harvest for the entire Yukon Area included 44,721 Chinook salmon (20% of the estimated total salmon harvest), 88,692 summer chum salmon (40%), 71,854 fall chum salmon (32%), 14,107coho salmon (6%), and 4,199 pink salmon (2%), for a total of 223,573 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 subsistence, and fish distributed from ADF&G test fisheries.

Since the disastrous harvest levels in 2000 (152,300 total salmon), subsistence salmon harvests have fluctuated by species. Chinook salmon harvest levels have remained relatively stable except in years when conservative management actions were taken. As shown in Table 4-5, the 2010 Chinook salmon and summer chum salmon harvest estimates were below the most recent Yukon Area 5-year averages (2005–2009), reflecting the restrictions put in place to protect Chinook salmon. The estimated subsistence and personal use harvest of 44,721 Chinook salmon in 2010 was 6% below the most recent 5-year average of 47,353 fish, and 9% below the most recent 10-year average of 48,852 fish.

From 1990 to 1997, when the salmon roe market declined, subsistence harvests of summer chum salmon were regularly estimated between 115,000 and 142,000 fish. Fishers harvested summer chum salmon for roe and kept most of the carcasses primarily for dog food; these fish were counted in the subsistence harvest. Since then, summer chum harvests have been relatively stable. The estimated 2010 subsistence harvest of 88,692 summer chum salmon was 6% below the 5-year average of 93,868 fish and 2% above

the 10-year average of 87,036 fish. Summer chum salmon may play a larger role in subsistence salmon harvests if Chinook salmon harvests continue to decline as subsistence users attempt to adapt to changes in Chinook salmon availability.

Fall chum salmon harvests have shown similar declines, though they are not as linked to the commercial market (Figure 4-3). Fall chum salmon are used as both human food and dog food, depending on quality and timing of harvests within the run. Harvest of fall chum salmon has fallen below the lower end of the amounts necessary for subsistence (ANS) in 8 out of the past 10 years (Table 5-6); declines in the maintenance of dog teams along the river likely account for this change in harvest levels. Historically, due to run timing, the management of coho salmon has been tied to the management of fall chum salmon. As such, it is difficult to assess actual trends in the harvest of coho salmon and reasons for these trends.

Pink salmon harvest information has been collected in several communities in the Yukon Area since 2000. Although pink salmon can be abundant in lower Yukon River and coastal Yukon River delta communities, fishers do not typically harvest large numbers of this species.

Figure 4-4 shows the number of dogs reported by surveyed households in each fishing district, as well as the percentage of total dogs in the Yukon Area reported in each district. Of the estimated 1,509 households in the Yukon Area that own dogs, about 7% (110 households) fed their dogs salmon in 2010 (Jallen et al. 2012:13). Of the 5,058 dogs owned by fishing households in 2010, upper Yukon households in districts 4, 5, and 6 owned 3,324 dogs (65% of the total number of dogs own in Yukon River districts) (Figure 4-4). In 2010, the Division of Commercial Fisheries collected information on the number of each of the 5 species of salmon that fishers retained for dog food from subsistence harvests in surveyed communities. In permit communities, only the total number of whole salmon, and not the numbers of each species, was documented. In the Coastal District and in districts 1 through 5, an estimated 8,363 summer chum salmon, 23,779 fall chum salmon, and 3,089 coho salmon were retained for dog food from subsistence salmon harvests (Jallen et al. 2012:33). Additionally, permit holders fed 25,718 whole salmon to dogs, including in District 6, which includes Manley, Minto, Fairbanks, Healy and other Upper Tanana villages (Jallen et al. 2012:32).

Primary gear types used by fishing households in surveyed villages in 2010 included set gillnet (48%), drift gillnet (46%), and fish wheel (6%) (Figure 4-8), largely the same as 2008 and 2009.

Since 1992, ADF&G has asked surveyed households whether they were able to meet their subsistence salmon needs for each survey year. The disastrous fishing year in 2000 resulted in restrictions and closures in subsistence salmon fishing schedules and made it extremely difficult for fishing families to meet their needs (64% of surveyed households reported not meeting their needs in 2000) (Borba and Hamner 2001:98). In 2003, ADF&G began asking households to describe whether they met their subsistence needs for each species of salmon, 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 2010 data, more than one-quarter (27%) of all households reported meeting greater than 75% of their needs for Chinook salmon (Jallen et al. 2012:53). This represents a decrease since 2005 in the percentage of households reporting that they met the majority of their needs for Chinook salmon. In 2010, 34% of surveyed households reported meeting greater than 75% of their needs for summer chum salmon; 22% reported meeting greater than 75% of their needs for fall chum salmon; and 22% of surveyed households reported meeting greater than 75% of their needs for coho salmon. Fourteen percent of households reported meeting less than one-half (<50%) of their needs for Chinook salmon; 13%, 12%, and 5% of households reporting meeting less than one-half their needs for summer chum salmon, fall chum salmon, and coho salmon, respectively (Jallen et al. 2012:52–55).

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 (5 AAC 01.236).

Under these 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 40% (Table 4-5). In 2001, the BOF made species-specific ANS determinations for each of the 5 species of salmon harvested in the Yukon Area. The 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. With the exception of summer chum salmon, harvests of all salmon species in 2010 were below the minimum of the ANS ranges (Table 4-6). This was the third consecutive year that Chinook, coho, and fall chum salmon harvests remained below the minimum of their respective ANS ranges (Table 4-6). See Table 4-6 for a comparison of ANS ranges and subsistence salmon harvests from 1998–2010.

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 Area fishers. Salmon are only available seasonally, but most nonsalmon species are available year-round. Nonsalmon fishes not only provide an important source of nutrition for residents of the Yukon Area, they also represent a significant cultural resource for subsistence fishers in the region. In 1987, and again in 1993, the BOF made a positive C&T use determination for freshwater fish species in the Yukon Area, including sheefish, whitefish species, Arctic lamprey, burbot, longnose sucker, Arctic grayling, northern pike, and Arctic char (5 AAC 01.236). Subsistence fishing for nonsalmon species is generally open by regulation 7 days per week, 24 hours per day, year-round. These state regulations also apply to subsistence fisheries in waters adjacent to 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 C&T use determination for nonsalmon fishes, and are 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 a postseason salmon survey; however, collection of nonsalmon harvest data is not the primary purpose of the postseason subsistence salmon harvest survey. Furthermore, the implementation of this survey immediately following the salmon fishing season may not be timed to produce the most accurate results for nonsalmon harvests, nor is the stratified sample of salmon fishing households necessarily the best design for collecting nonsalmon harvest information. While other single-year harvest data collection efforts suggest that the postseason survey may significantly underestimate harvests (Andersen et al. 2004; Brown et al. 2005), these data remain the only annual estimate of nonsalmon fish harvests in the Yukon Area (Table 4-7).

Table 4-7 estimates nonsalmon harvest by community. The “large whitefish” category includes broad and humpback whitefishes while the “small whitefish” category includes least and Bering cisco species. Fishers in District 1 harvested the most number of whitefishes (13,630), followed by District 4 (10,127). On a drainagewide level, small whitefish species are harvested in greater numbers than any other nonsalmon fish; however, because of their small size, they may not provide more edible pounds than other nonsalmon fish species. Approximately, 26,882 small whitefishes were harvested by Yukon River fishers; fishers in District 1 harvested the most number of small whitefishes (11,885), followed by District 5 (4,634). Of the remaining nonsalmon fish species, northern pike and sheefish contributed 14,071 and 9,231 fish respectively. District 2 households harvested the most pike (3,344), followed by District 4 (2,386). District 4 households harvested more sheefish than in any other district (2,253).

Table 4-1.–Subsistence fishing schedule by district, 2010.

	District 1	District 2	District 3	Subdistrict 4-A	Subdistricts 4-B/4-C	Subdistricts 5-A, B, C[b]	Tanana District 6[a]
6/7[b]	Open 8 PM	Open	Open	Open	Open	Open	Open 6 PM
6/8	36-hr period	Open	Open	Open	Open	Open	42-hr period
6/9	Close 8 AM	Open 8 PM	Open	Open	Open	Open	Close 12 PM
6/10	Open 8 PM	36-hr period	Open	Open	Open	Open	Closed
6/11	36-hr period	Close 8 AM	Open	Open	Open	Open	Open 6 PM
6/12	Close 8 AM	Closed	Open	Open	Open	Open	42-hr period
6/13	Closed	Open 8 PM	Open 8 PM	Open	Open	Open	Close 12 PM
6/14	Open 8 PM	36-hr period	36-hr period	Open	Open	Open	Open 6 PM
6/15	36-hr period	Close 8 AM	Close 8 AM	Open	Open	Open	42-hr period
6/16	Close 8 AM	Open 8 PM	Open 8 PM	Open 6 PM	Open	Open	Close 12 PM
6/17	Open 8 PM	36-hr period	36-hr period	48-hr period	Open	Open	Closed
6/18	36-hr period	Close 8 AM	Close 8 AM	Close 6 PM	Open	Open	Open 6 PM
6/19	Close 8 AM	Closed	Closed	Closed	Open	Open	42-hr period
6/20	Closed	Open 8 PM	Open 8 PM	Open 6 PM	Open	Open	Close 12 PM
6/21	Open 8 PM	36-hr period	36-hr period	48-hr period	Open	Open	Open 6 PM
6/22	36-hr period	Close 8 AM	Close 8 AM	Close 6 PM	Open	Open	42-hr period
6/23	Close 8 AM	Open 8 AM	Open 8 AM	Open 6 PM	Open 6 PM	Open	Close 12 PM
6/24	Open 8 PM	36-hr period	36-hr period	48-hr period	48-hr period	Open	Closed
6/25	Close 12 AM	Close 8 AM	Close 8 AM	Close 6 PM	Close 6 PM	Open	Open 6 PM
6/26	Closed	Closed	Closed	Closed	Closed	Open	42-hr period
6/27	Closed	Open 8 PM	Open 8 PM	Open 6 PM	Open 6 PM	Open	Close 12 PM
6/28	Closed	36-hr period	36-hr period	48-hr period	48-hr period	Open	Open 6 PM
6/29	Open 12 PM	Close 8 AM	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	42-hr period
6/30	38-hr period	Closed	Open 8 AM	Open 6 PM	Open 6 PM	48-hr period	Close 12 PM
7/1	Close 2 AM	Open 8 PM	36-hr period	48-hr period	48-hr period	Close 6 PM	Closed
7/2	Closed	46-hr period	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	Open 6 PM
7/3	Closed	Close 6 PM	Closed	Closed	Closed	48-hr period	42-hr period
7/4	Open 12 PM	Closed	Open 8 PM	Open 6 PM	Open 6 PM	Close 6 PM	Close 12 PM
7/5	Close 6 PM	Open 6 AM	36-hr period	48-hr period	48-hr period	Closed	Open 6 PM
7/6	Closed	Close 6 PM	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	42-hr period
7/7	Open 6 AM	Closed	Open 8 PM	Open 6 PM	Open 6 PM	48-hr period	Close 12 PM
7/8	Closed 12 AM	Open 6 AM	36-hr period	48-hr period	48-hr period	Close 6 PM	Closed
7/9	Open 3 PM	Close 12 AM	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	Open 6 PM
7/10	Close 12 AM	Closed	Closed	Closed	Closed	48-hr period	42-hr period
7/11	Closed	Open	Open 8 PM	Open 6 PM	Open 6 PM	Close 6 PM	Close 12 PM
7/12	Open 9 AM –9 PM	Closed 12 AM	36-hr period	48-hr period	48-hr period	Closed	Open 6 PM
7/13	Closed	Open 12 PM	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	42-hr period
7/14	Open 12 PM –9 PM	Closed	Open 8 PM	Open 6 PM	Open 6 PM	48-hr period	Close 12 PM
7/15	Closed	Open 12 PM	36-hr period	48-hr period	48-hr period	Close 6 PM	Closed
7/16	Open 12 PM	Closed 12 AM	Close 8 AM	Close 6 PM	Close 6 PM	Open 6 PM	Open 6 PM
7/17	Open	Open 3 PM	Closed	Closed	Closed	48-hr period	42-hr period
7/18	Open	Open	Open 8 PM	Open 6 PM	Open 6 PM	Close 6 PM	Close 12 PM
7/19	Open	Open	Open	48-hr period	48-hr period	Closed	Open 6 PM
7/20	Open	Open	Open	Close 6 PM	Close 6 PM	Open 6 PM	42-hr period
7/21	Open	Open	Open	Open 6 PM	Open 6 PM	48-hr period	Close 12 PM

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	District 1	District 2	District 3	Subdistrict 4-A	Subdistricts 4-B/4-C	Subdistricts 5-A, B, C[b]	Tanana District 6[a]
7/22	Open	Open	Open	48-hr period	48-hr period	Close 6 PM	Closed
7/23	Open	Open	Open	Close 6 PM	Close 6 PM	Open 6 PM	Open 6 PM
7/24	Open	Open	Open	Closed	Closed	48-hr period	42-hr period
7/25	Open	Open	Open	Open 6 PM	Open	Close 6 PM	Close 12 PM
7/26	Open	Open	Open	Open 5 days	Open 5 days	Closed	Open 6 PM
7/27[c]	Open	Open	Open	per week	per week	Open 6 PM	42-hr period

	District 1	District 2	District 3	District 4	Subdistricts 5-A, B, C	Subdistrict 5-D	Tanana 6-A, B, C
8/15[c]	Open	Open	Open	Open	Open	Open	Close 12 PM
8/16	7 days/week	7 days/week	7 days/week	7 days/week	7 days/week	7 days/week	Open 6 PM
8/17	Open	Open	Open	Open	Open	Open	42-hr Period
8/18	Close 8 AM	Open	Open	Open	Open	Open	Close 12 PM
8/19	Open 8 PM	Open	Open	Open	Open	Open	Closed
8/20	36-hr Period	Close 8 AM	Close 8 AM	Close 8 AM	Open	Open	Open 6 PM
8/21	Close 8 AM	Closed	Closed	Closed	Open	Open	42-hr Period
8/22	Closed	Open 10 PM	Open 10 PM	Open 6 PM	Close 6 PM	Open	Close 12 PM
8/23	Closed	36-hr Period	36-hr Period	48-hr Period	Closed	Open	Open 6 PM
8/24	Closed	Close 8 AM	Close 8 AM	Close 6 PM	Open 6 PM	Open	42-hr Period
8/25	Closed	Closed	Closed	Open 6 PM	48-hr Period	Open	Close 12 PM
8/26	Open 8 PM	Closed	Closed	48-hr Period	Close 6 PM	Open	Closed
8/27	36-hr Period	Closed	Closed	Close 6 PM	Open 6 PM	Open	Open 6 PM
8/28	Close 8 AM	Closed	Closed	Closed	48-hr Period	Open	42-hr Period
8/29	Closed	Open 8 PM	Open 8 PM	Closed	Close 6 PM	Open	Close 12 PM
8/30	Open 8 PM	36-hr Period	36-hr Period	Closed	Closed	Open	Open 6 PM
8/31	36-hr Period	Close 8 AM	Close 8 AM	Closed	Open 6 PM	Open	42-hr Period
9/1	Close 8 AM	Open 10 PM	Open 10 PM	Open 6 PM	48-hr Period	Open	Close 12 PM
9/2	Open 8 PM	36-hr Period	36-hr Period	48-hr Period	Close 6 PM	Open	Closed
9/3	36-hr Period	Close 8 AM	Close 8 AM	Close 6 PM	Closed	Open	Open 6 PM
9/4	Close 8 AM	Closed	Closed	Closed	Closed	Open	42-hr Period
9/5	Closed	Open 8 PM	Open 8 PM	Open 6 PM	Closed	Open	Close 12 PM
9/6	Open 8 PM	Open	Open	Open	Closed	Open	Open 6 PM
9/7	Close 10 PM	Open	7 days/week	7 days/week	Open 6 PM	Open	42-hr Period
9/8	Closed	Open	Open	Open	48-hr Period	Open	Close 12 PM
9/9	Open 7 AM–10 PM	Close 10 PM	Open	Open	Close 6 PM	Open	Closed
9/10	Closed	Closed	Open	Open	Open 6 PM	Open	Open 6 PM
9/11	Open 7 AM	Open 7 AM	Open	Open	48-hr Period	Open	42-hr Period
9/12	Open	Open	Open	Open	Close 6 PM	Open	Close 12 PM
9/13	7 days/week	7 days/week	Open	Open	Closed	Open	Open 6 PM
9/14	Open	Open	Open	Open	Open 6 PM	Open	42-hr Period
9/15	Open	Open	Open	Open	48-hr Period	Open	Close 12 PM
9/16	Open	Open	Open	Open	Close 6 PM	Open	Closed
9/17	Open	Open	Open	Open	Open 6 PM	Open	Open 6 PM
9/18	Open	Open	Open	Open	48-hr Period	Open	42-hr Period
9/19	Open	Open	Open	Open	Close 6 PM	Open	Close 12 PM
9/20	Open	Open	Open	Open	Closed	Open	Open 6 PM
9/21	Open	Open	Open	Open	Open 6 PM	Open	42-hr Period

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Table 4-1.–Page 3 of 3.

	District 1	District 2	District 3	District 4	Subdistricts 5-A, B, C	Subdistrict 5-D	Tanana 6-A, B, C
9/22	Open	Open	Open	Open	120-hr Period	Open	Close 12 PM
9/23	Open	Open	Open	Open	Open	Open	Closed
9/24	Open	Open	Open	Open	Open	Open	Open 6 PM
9/25	Open	Open	Open	Open	Open	Open	42-hr Period
9/26	Open	Open	Open	Open	Close 6 PM	Open	Close 12 PM
9/27	Open	Open	Open	Open	Closed	Open	Open 6 PM
9/28	Open	Open	Open	Open	Open 6 PM	Open	42-hr Period
9/29	Open	Open	Open	Open	120-hr Period	Open	Close 12 PM
9/30	Open	Open	Open	Open	Open	Open	Closed

Note Shaded areas indicate fishery closures and gear restrictions implemented inseason beyond regulatory windows. Unshaded fishing period closures follow regulations by district, including those closures relating to commercial fisheries openings. The Coastal District, Innoko River, Koyukuk River, and Subdistrict 5-D remained open 7 days per week. No mesh size restrictions were enacted in 2010.

a. The Old Minto Area of Subdistrict 6-B remained open 5 days per week.

b. From June 1 to June 7 all districts and subdistricts were open.

c. From July 27 to August 3 all subdistricts were on regulatory schedules as follows: districts 1, 2, and 3were open 24 hours per day, 7 days a week. District 4 was open 5 days per week. Subdistricts 5-A, 5-B, and 5-C were open for two 48-hour periods per week; Subdistrict 5-D remained open 24 hours per day, 7 days per week. From August 4 to August 15, all districts and subdistricts were open 24 hours a day, 7 days per week.

Table 4-2.–Household subsistence and personal use permits, listed by fishery and community of residence, Yukon Area, 2010.

Community	Permits Issued	Permits Returned	Percent of permits returned	Number of permits returned that fished
Subsistence permits				
Central	7	7	100%	5
Circle	33	30	91%	16
Eagle	34	34	100%	27
Rampart	6	5	83%	4
Fairbanks (FNSB)[a]	187	181	97%	100
Healy	6	6	100%	4
Manley	18	18	100%	10
Minto	48	41	85%	12
Nenana	52	48	92%	18
Stevens Village	5	4	80%	1
Upper Tanana Villages[b]	52	45	87%	23
Other subsistence[c]	15	14	93%	9
Subsistence permit subtotal	**463**	**433**	**94%**	**229**
Personal use permits				
Fairbanks (FNSB)[a]	73	71	97%	39
Other personal use[d]	2	2	100%	2
Personal use permit subtotal	**75**	**73**	**97%**	**41**
Total	**538**	**506**	**94%**	**270**

Source Jallen et al. (2012).

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

b. Upper Tanana River (UTV) residents are 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, 2010.

Community	Households Total	Households Surveyed	Estimated number of fishing households
Hooper Bay	212	83	120
Scammon Bay	90	32	53
Coastal District subtotal	**302**	**115**	**173**
Alakanuk	139	53	86
Emmonak	169	91	91
Kotlik	105	41	48
Nunam Iqua	37	29	22
District 1 subtotal	**450**	**214**	**247**
Marshall	73	35	59
Mountain Village	161	65	101
Pilot Station	111	62	50
Pitkas Point	27	26	15
Saint Mary's	120	52	88
District 2 subtotal	**492**	**240**	**313**
Holy Cross	60	36	34
Russian Mission	65	22	38
Shageluk	27	22	11
District 3 subtotal	**152**	**80**	**83**
Alatna	8	7	1
Allakaket	58	19	22
Anvik	28	27	17
Bettles	28	19	0
Galena	159	48	60
Grayling	45	16	39
Hughes	30	20	5
Huslia	73	27	16
Kaltag	63	26	54
Koyukuk	41	20	21
Nulato	79	26	57
Ruby	58	20	27
District 4 subtotal	**670**	**275**	**319**
Beaver	29	26	14
Birch Creek	16	16	6
Chalkyitsik	21	20	1
Fort Yukon	197	70	61
Stevens Village	20	19	11
Tanana	98	57	32
Venetie	81	21	17
District 5 subtotal	**462**	**229**	**142**
Total	**2,528**	**1,153**	**1,277**

Source Jallen et al. (2012).

Table 4-4.–Estimated subsistence salmon harvests by community, Yukon Area, 2010.

	Households or permits		Estimated salmon harvest[a]					
Community	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	Total
Hooper Bay	212	83	584	45	17,020	116	219	17,984
Scammon Bay	90	32	716	79	5,405	70	2,245	8,515
Coastal District	**302**	**115**	**1,300**	**124**	**22,425**	**186**	**2,464**	**26,499**
Alakanuk	139	53	944	449	7,722	860	151	10,126
Emmonak	169	91	2,194	362	10,918	1,718	206	15,398
Kotlik	105	41	2,314	238	4,265	481	124	7,422
Nunam Iqua (Sheldon Point)	37	29	404	73	2,267	143	306	3,193
District 1	**450**	**214**	**5,856**	**1,122**	**25,172**	**3,202**	**787**	**36,139**
Marshall	73	35	2,110	33	2,395	56	21	4,615
Mountain Village	161	65	1,601	127	7,071	133	217	9,149
Pilot Station	111	62	1,585	189	6,196	833	22	8,825
Pitka's Point	27	26	580	116	633	10	143	1,482
Saint Mary’s	120	52	2,800	92	7,443	387	543	11,265
District 2	**492**	**240**	**8,676**	**557**	**23,738**	**1,419**	**946**	**35,336**
Holy Cross	60	36	3,098	0	463	21	0	3,582
Russian Mission	65	22	924	300	528	104	2	1,858
Shageluk	27	22	277	53	350	1,200	0	1,880
District 3	**152**	**80**	**4,299**	**353**	**1,341**	**1,325**	**2**	**7,320**
Alatna	8	7	0	0	23	0	0	23
Allakaket	58	19	63	88	2,864	521	0	3,536
Anvik	28	27	1,069	28	451	169	0	1,717
Bettles	28	19	0	0	0	0	0	0
Galena	159	48	1,357	549	1,702	1,968	0	5,576
Grayling	45	16	2,122	132	1,612	202	0	4,068
Hughes	30	20	63	0	878	0	0	941
Huslia	73	27	65	289	1,349	403	0	2,106
Kaltag	63	26	3,191	0	102	658	0	3,951
Koyukuk	41	20	867	254	352	792	0	2,265
Nulato	79	26	2,989	242	416	1,049	0	4,696
Ruby	58	20	1,102	148	1,971	1,026	0	4,247
District 4	**670**	**275**	**12,888**	**1,730**	**11,720**	**6,788**	**0**	**33,126**
Beaver	29	26	198	1	22	37	0	258
Birch Creek	16	16	73	0	0	0	0	73
Central	7	7	90	0	0	0	0	90
Chalkyitsik	21	20	0	267	133	0	0	400
Circle	33	30	324	164	37	927	0	1,452
Eagle	34	34	867	1	25	15,008	0	15,901
Fairbanks	260	252	1,915	1,276	927	4,709	0	8,827
Fort Yukon	197	70	1,683	244	722	6,006	0	8,655
Rampart	6	5	262	24	161	735	0	1,182
Stevens Village	25	23	469	428	28	2,706	0	3,631
Tanana	98	57	3,215	2,314	1,856	14,984	0	22,369
Venetie	81	21	767	159	0	2,989	0	3,915
District 5	**807**	**561**	**9,863**	**4,878**	**3,911**	**48,101**	**0**	**66,753**
Healy	6	6	2	1,198	30	1,068	0	2,298

-continued-

Table 4-4.–Page 2 of 2.

Community	Households or permits		Estimated salmon harvest[a]					
	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	Total
Manley	18	18	337	1,832	102	2,696	0	4,967
Minto	48	41	43	0	8	70	0	121
Nenana	52	48	666	2,313	85	6,802	0	9,866
District 6	**154**	**151**	**894**	**6,474**	**884**	**12,619**	**0**	**20,871**
Other communities	69	61	791	0	160	197	0	1,148
Total	**3,066**	**1,659**	**44,721**	**14,107**	**88,692**	**71,854**	**4,199**	**223,573**

Source Jallen et al. (2012)

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, 1976–2010.

Year	Households or permits[a]		Estimated salmon harvest[a]					
	Total	Surveyed or returned	Chinook	Coho	Summer chum	Fall chum	Pink	Total
1976			17,530	12,737		1,375		31,642
1977			16,007	16,333		4,099		36,439
1978			30,785	7,965	213,953	95,532		348,235
1979			31,005	9,794	202,772	233,347		476,918
1980			42,724	20,158	274,883	172,657		510,422
1981			29,690	21,228	210,785	188,525		450,228
1982			28,158	35,894	260,969	132,897		457,918
1983			49,478	23,905	240,386	192,928		506,697
1984			42,428	49,020	230,747	174,823		497,018
1985			39,771	32,264	264,828	206,472		543,335
1986			45,238	34,468	290,825	164,043		534,574
1987			55,039	46,213	300,042	226,990		628,284
1988	2,700	1,865	45,495	69,679	229,838	157,075		502,087
1989	2,211	983	48,462	40,924	169,496	211,303		470,185
1990	2,666	1,121	48,587	43,460	115,609	167,900		375,556
1991	2,521	1,261	46,773	37,388	118,540	145,524		348,225
1992	2,751	1,281	47,077	51,980	142,192	107,808		349,057
1993	3,028	1,397	63,915	15,812	125,574	76,882		282,183
1994	2,922	1,386	53,902	41,775	124,807	123,565		344,049
1995	2,832	1,391	50,620	28,377	136,083	130,860		345,940
1996	2,869	1,293	45,671	30,404	124,738	129,258		330,071
1997	2,825	1,309	57,117	23,945	112,820	95,141		289,023
1998	2,986	1,337	54,124	18,121	87,366	62,901		222,512
1999	2,888	1,377	50,515	19,984	79,250	83,420		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
2010	3,066	1,659	44,721	14,107	88,692	71,854	4,199	223,573
5-year average (2005–2009)	2,839	1,509	47,353	20,467	93,868	86,168	4,387	252,243
10-year average (2000–2009)	2,882	1,410	48,852	20,893	87,036	62,914	4,422	224,116
Historical average (1976–2009)	2,819	1,368	44,960	27,669	153,964	115,131	4,422	333,968

Source Jallen et al. (2012)

a. Estimates prior to 1988 are based on fish camp surveys and sampling information is unavailable. Cells that do not contain data have no data available.

Table 4-6.–Comparison of amounts necessary for subsistence (ANS) and estimated subsistence salmon harvests, Yukon Area, 1998–2010.

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**
2010	**44,559**	**13,045**	88,373	**68,645**

Source Jallen et al. (2012)

a. Estimates for 1998–2004 do not include personal use harvests, ADF&G test fishery distributions, or salmon removed from commercial harvests. Estimates for 2005–2010 include test fishery distributions because the amounts necessary for subsistence (ANS) are based on harvests from 1990–1999 and included test fishery distributions. **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, 2010.

	Households		Estimated nonsalmon harvest				
Community	Total	Surveyed[a]	Large whitefish[b]	Small whitefish	Northern pike	Sheefish	Total
Hooper Bay	212	72	805	2,437	371	48	3,661
Scammon Bay	90	30	667	2,590	1,334	334	4,925
Coastal District	**302**	**102**	**1,472**	**5,027**	**1,705**	**382**	**8,586**
Alakanuk	139	39	224	4,975	1,096	340	6,635
Emmonak	169	72	1,043	3,494	1,591	1,055	7,183
Kotlik	105	37	345	2,199	622	912	4,078
Nunam Iqua (Sheldon Point)	37	28	133	1,217	105	621	2,076
District 1	**450**	**176**	**1,745**	**11,885**	**3,414**	**2,928**	**19,972**
Marshall	73	29	1,176	224	1,721	499	3,620
Mountain Village	161	60	566	1,571	1,623	493	4,253
Pilot Station	111	57	1,145	205	454	487	2,291
Pitka's Point	27	21	339	141	98	133	711
Saint Mary’s	120	47	2,026	217	673	349	3,265
District 2	**492**	**214**	**5,252**	**2,358**	**4,569**	**1,961**	**14,140**
Holy Cross	60	28	516	0	81	59	656
Russian Mission	65	21	1,090	0	723	316	2,129
Shageluk	27	20	687	0	129	50	866
District 3	**152**	**69**	**2,293**	**0**	**933**	**425**	**3,651**
Alatna	8	5	40	51	21	12	124
Allakaket	58	15	1,094	1,076	437	660	3,267
Anvik	28	22	129	24	49	109	311
Bettles	28	16	0	0	4	4	8
Galena	159	40	2,446	424	238	238	3,346
Grayling	45	13	366	9	196	266	837
Hughes	30	18	914	1,145	139	290	2,488
Huslia	73	23	834	138	894	171	2,037
Kaltag	63	20	168	0	95	115	378
Koyukuk	41	13	737	0	131	13	881
Nulato	79	23	261	37	88	308	694
Ruby	58	17	160	74	94	67	395
District 4	**670**	**225**	**7,149**	**2,978**	**2,386**	**2,253**	**14,766**
Beaver	29	24	19	17	122	17	175
Birch Creek	16	8	115	30	90	9	244
Chalkyitsik	21	17	9	13	27	3	52
Fort Yukon	197	58	749	969	334	301	2,353
Stevens Village	20	13	171	300	30	74	575
Tanana	98	37	4,351	3,305	436	871	8,963
Venetie	81	15	15	0	25	7	47
District 5	**462**	**172**	**5,429**	**4,634**	**1,064**	**1,282**	**12,409**
Total	**2,528**	**958**	**23,340**	**26,882**	**14,071**	**9,231**	**73,524**

-continued-

Table 4-7.–Page 2 of 2.

Source Jallen et al. (2012)

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

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

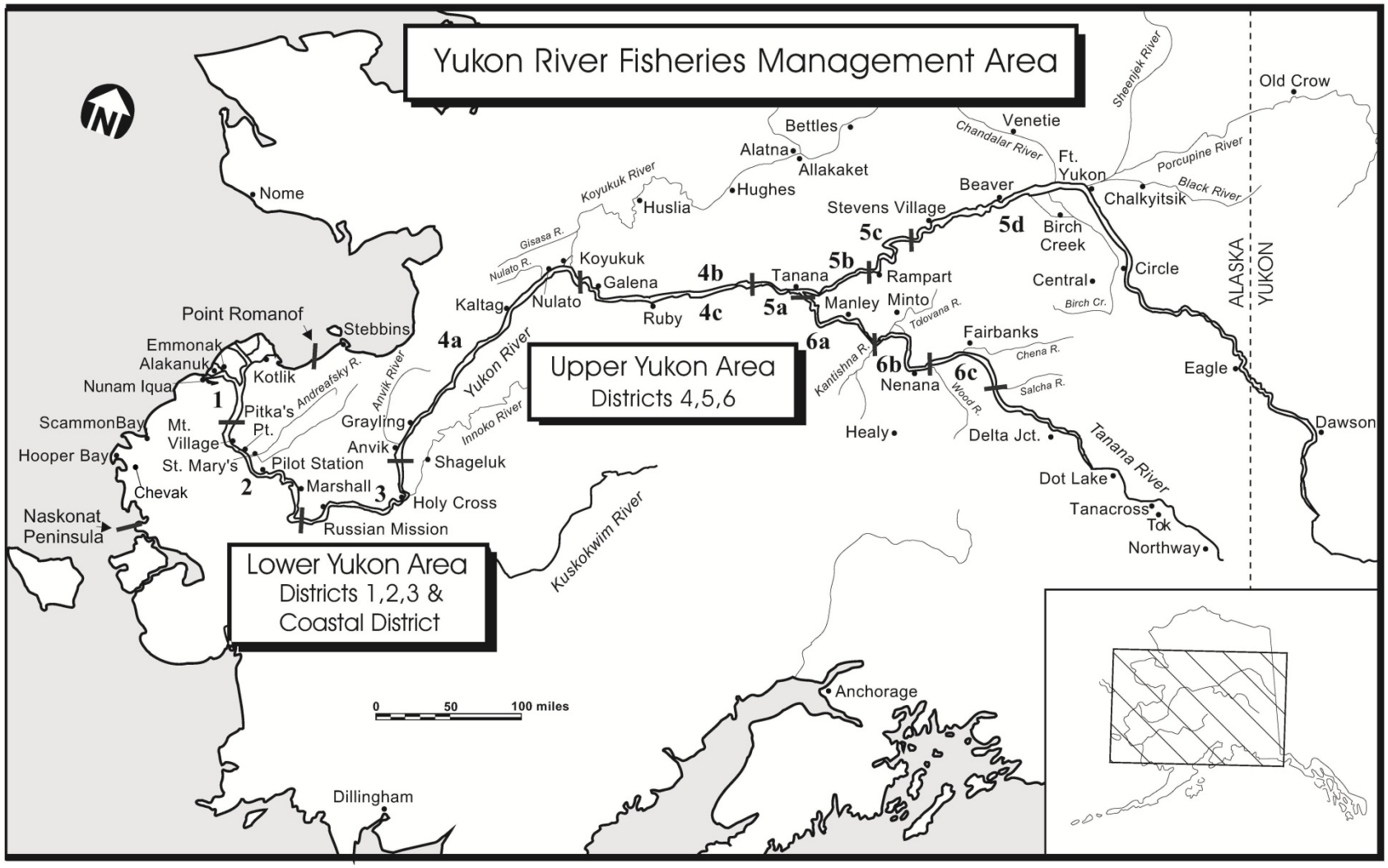

Figure 4-1.–Map of the Alaska portion of the Yukon River drainage, showing communities and districts.

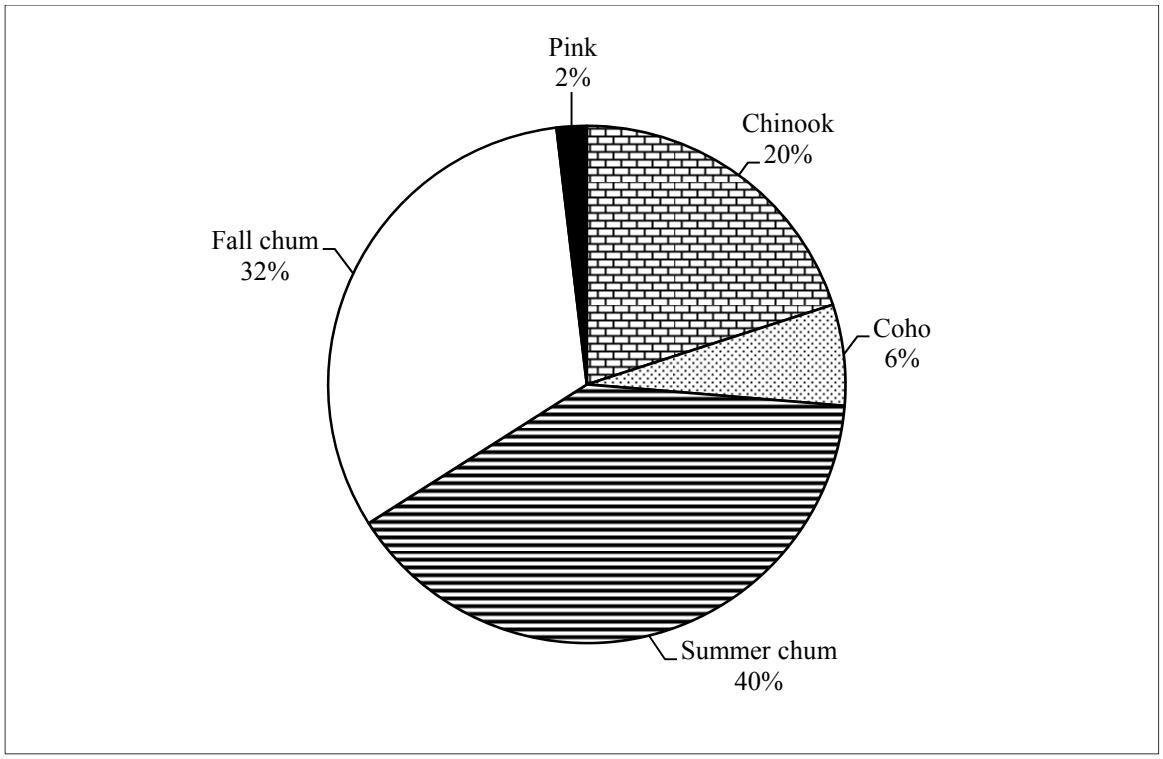

Figure 4-2.–Yukon Area estimated subsistence salmon harvests, 2010.

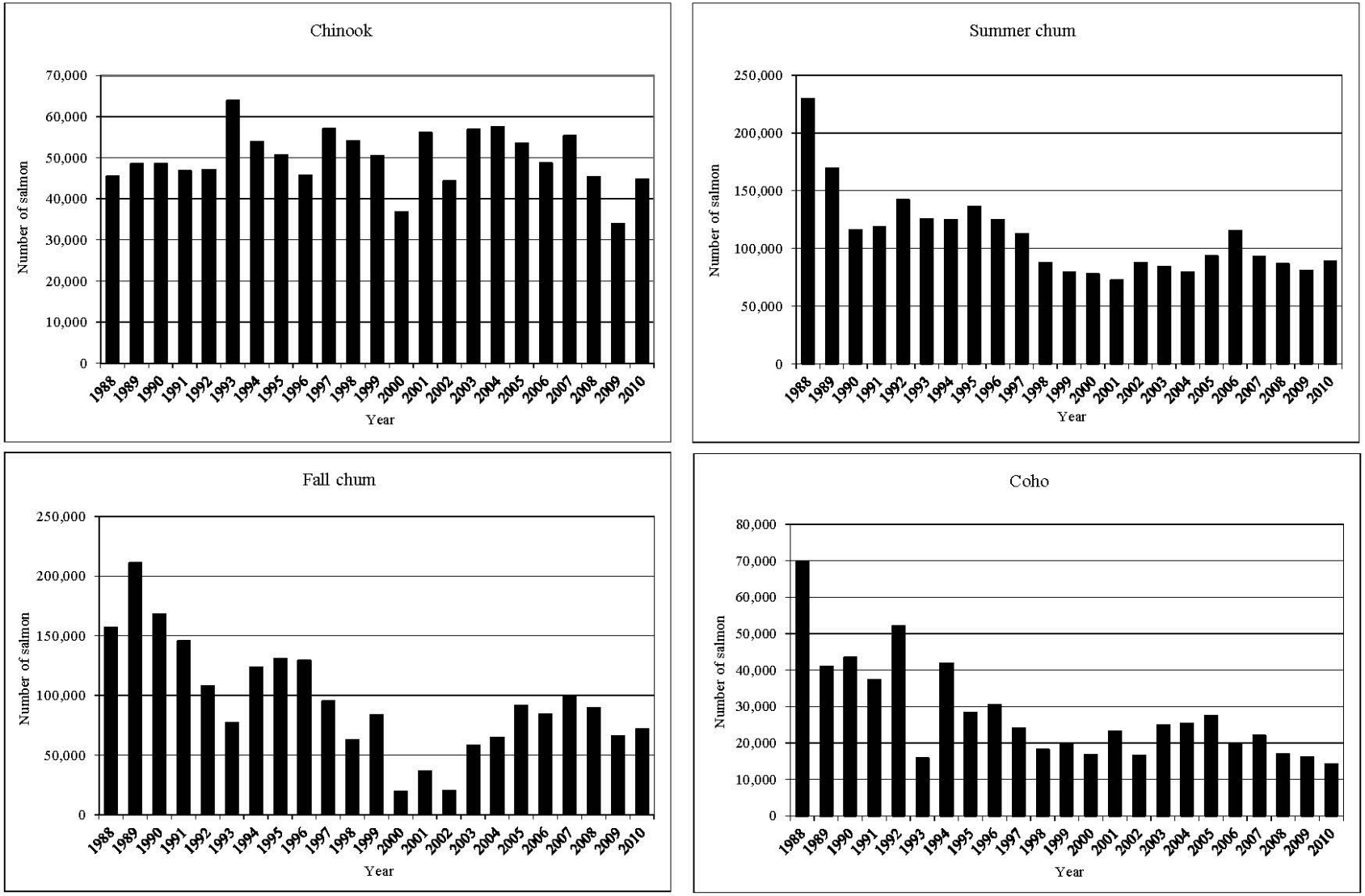

Figure 4-3.–Estimated subsistence salmon harvests by species, Yukon Area, 1988–2010.

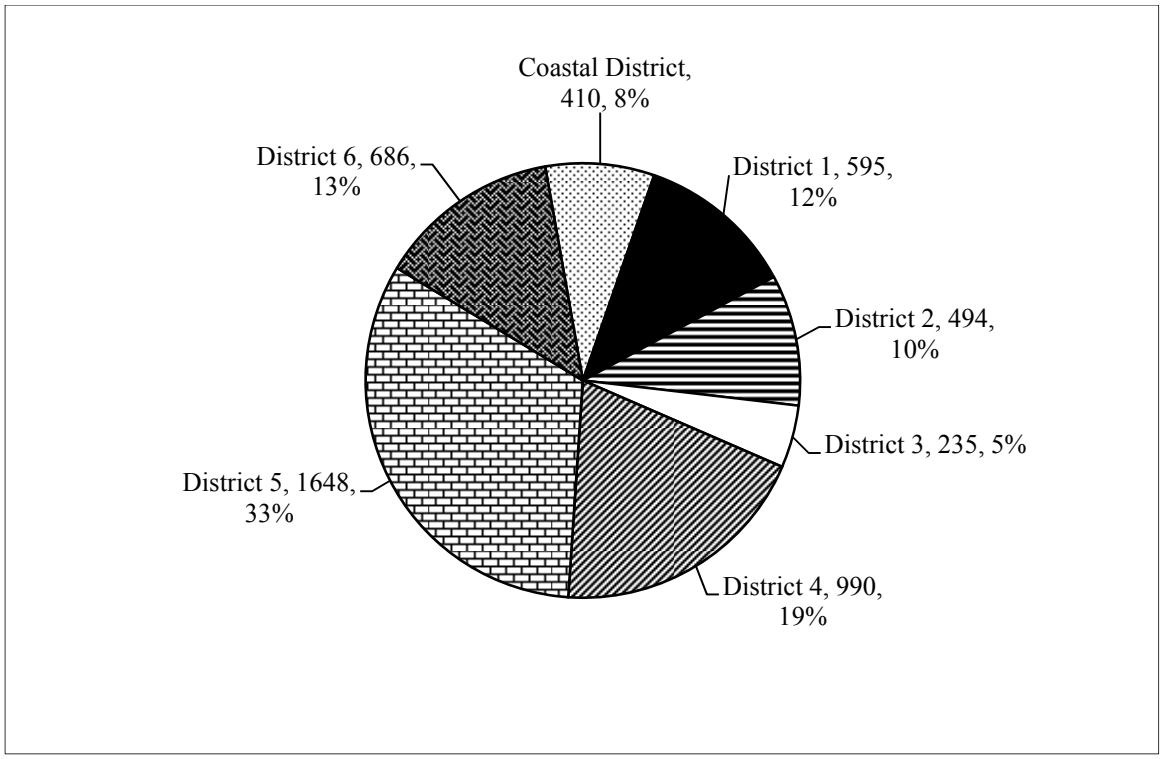

Figure 4-4.–Estimated number of dogs by district, Yukon Area, 2010.

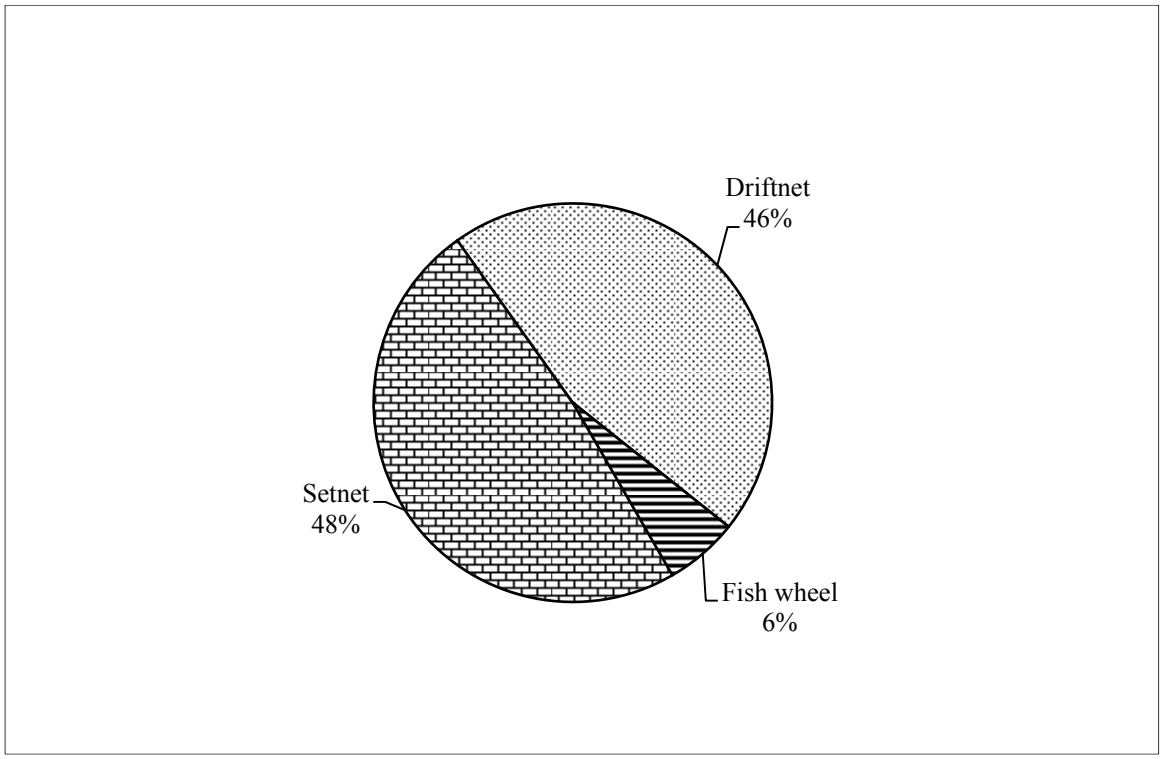

Figure 4-5.–Primary gear type utilized for subsistence salmon fishing, Yukon Area, 2010.

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 2010, the postseason subsistence salmon harvest monitoring program was administered by the ADF&G Division of Commercial Fisheries, which assumed the program in 2008. There are more than 38 communities within the Kuskokwim Area; these consist of approximately 4,215 households in 2010, with the majority (85%) located or fishing in the Kuskokwim River drainage. Bethel is the largest community in the region, consisting of approximately 2,043 households in 2010. The north Kuskokwim Bay communities of Kwigillingok, Kongiganak, and Kipnuk were composed of about 311 households in 2009[13], 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 243 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 were composed of approximately 453 households as of 2009; updated 2010 household number estimates are not available since none of these communities was surveyed in 2010. 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 coastal communities because the communities are not included in either the Kuskokwim or the Yukon postseason subsistence salmon harvest monitoring programs.

13. Of these communities, survey data were only collected for Kongiganak. Updated 2010 household estimates are not available for Kipnuk and Kwigillingok.

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 a 1989 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 2010 (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 mm 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. Each fisher is required to attach his/her name and address 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 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 2010, 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 2010 between June 25 and August 12. There were 2 local buyers available to purchase harvested fish, and processing capacity was adequate to purchase harvested fish.

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). These closures were reduced to 8 hours before, during, and 6 hours after commercial fishing periods beginning July 13. The District 4 commercial salmon fishing season opened June 15, and District 5 opened on June 28. Both districts opened with management directed toward the harvest of Chinook salmon, with 1 to 2 commercial periods per week. By July 5, management was directed toward the sockeye salmon harvest, and a schedule of three 12-hour commercial periods per week was initiated. At the end of July, both districts shifted to coho salmon management, and the commercial fishing schedule of three 12-hour periods per week was continued in both districts.

Many of the fishers who participate in the Kuskokwim commercial fisheries are area residents who also subsistence fish. A total of 523,870 salmon were commercially harvested from the Kuskokwim Area in 2010. A total of 530 permit holders participated in the area commercial fisheries with an estimated exvessel value of $2,894,590.[14]

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; Hamazaki 2011). 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 2010, under a cooperative program between ADF&G and the U.S. Fish and Wildlife Service Office of Subsistence Management, 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 under a similar agreement 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 2010 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 2010, two methods were used to gather subsistence salmon harvest data in the Kuskokwim Area: subsistence salmon harvest calendars and postseason household harvest surveys.

14. 2010 Kuskokwim Area Salmon Fishery Summary, ADF&G Division of Commercial Fisheries, 2010 Kuskokwim Area Salmon Fishery News Release, October 7, 2010. http://www.adfg.alaska.gov/static/fishing/PDFs/commercial/2010_kuskokwim_post_summary.pdf.

Estimating Bethel Salmon Harvests

The 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 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.

The Division of 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 Division of Commercial Fisheries staff to generate subsistence salmon harvest estimates by species.

Estimating Aniak Salmon Harvests

Compared to Bethel, Aniak is a small community and there is less change among households. This makes it possible to maintain more accurate household lists from year to year. 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. 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 Division of 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 (attempt was made to survey 100% of households) or stratified random sample, depending on community size. Surveyors attempted a census 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 Division of 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

Division of 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 = usually fish, usually do not fish, unknown) use group of the kth community;

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

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

Mean response of the jth use 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 harvest 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

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

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

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

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

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

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 Wishart prior distribution.

Estimates were made for log-transformed mean harvest per household for each species and community for all available years from 1990 to 2010. 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 2010, 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 2010, so there are insufficient data for the Bayesian imputation method.

2010 SAMPLING SUMMARY

From an estimated total of 4,215 households located in the Kuskokwim Area, contact was made with 2,243 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.

For lower Kuskokwim River and north Kuskokwim Bay communities, 1,646 (50%) of the 3,289 households were contacted. Based upon 2010 data, these regions represent 78% of the estimated total number of households in the Kuskokwim Area.

In the south Kuskokwim Bay region (Quinhagak, Goodnews Bay, and Platinum), 147 (60%) of the 243 households were contacted. The Bering Sea coastal communities of Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, and Chefornak had an estimated 453 total households as of 2009, but none were surveyed in 2010 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.

The 13 communities of the middle and upper Kuskokwim River regions are generally smaller than lower river communities, and together compose 16% of total households in the Kuskokwim area. In the middle Kuskokwim River region, defined here as communities located on the Kuskokwim River from Lower Kalskag upriver to Chuathbaluk, 257 (71%) of 362 households were contacted in 2010. For upper Kuskokwim communities, defined here as communities located on the Kuskokwim River from Crooked Creek upriver to Telida (in addition to Lime Village located on the Stony River and Takotna located on the Takotna River), 193 (60%) of 321 households were contacted. Takotna and Lime Village were not contacted during the 2010 study period, but community harvest was estimated for Lime Village using Bayesian multiple imputation method. The communities of Georgetown and Napaimute are not currently included in the community sampling list due to limited permanent populations and primarily seasonal use patterns for these 2 communities; the large majority of Georgetown and Napaimute community members are surveyed during their residence in other Kuskokwim River communities.

2010 SUBSISTENCE SALMON HARVEST SUMMARY

A summary of the subsistence salmon harvest estimates by community and fishing area is presented in Table 5-1. In 2010, subsistence salmon harvest estimates for communities contacted in the Kuskokwim Area totaled 69,242 Chinook salmon (36%), 47,885 chum salmon (25%), 41,042 sockeye salmon (21%), 34,169 coho salmon (18%), and 751 pink salmon (<1%), for a total estimate of 193,089 salmon (Figure 5-1). 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. Low numbers of returning salmon likely accounted for the low harvests; in 2010 the Kuskokwim drainage experienced the lowest estimated total run and spawning escapement on record for Chinook salmon (Travis Elison, Acting Area Management Biologist, ADF&G, personal communication, October 12, 2011).[15] Lower Kuskokwim River Area communities accounted for 79% of the 2010 estimated subsistence salmon harvests in the Kuskokwim Area and 84% of the entire estimated Chinook salmon subsistence harvest. Residents of Bethel accounted for 34% of the Kuskokwim Area subsistence salmon harvests and 36% of subsistence-caught Chinook salmon and 56% 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 2010, preliminary data show a reported harvest of 6,480 salmon for use as dog food (Table 5-3). The majority of the salmon harvested for dog food were chum salmon, at 3,817 fish, while coho salmon accounted for 2,331 fish. Sockeye salmon contributed 215 fish and pink salmon 46 fish to the harvest for dog food. Households do not target Chinook salmon for dog food; however, 71 Chinook salmon considered, likely unfit for human consumption, were reported to have been fed to dogs in an effort to

15. "2011 Preliminary Kuskokwim Area Salmon Season Summary," ADF&G Division of Commercial Fisheries, News Release, October 12, 2011. http://www.adfg.alaska.gov/static/home/news/pdfs/newsreleases/cf/93505531.pdf.

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 2010, out of 1,407 contacted fishing households, 1,208 (86%) reported using drift gillnets for subsistence salmon harvests, 104 (7%) reported using set gillnets, and 92 (7%) reported using subsistence rod and reel gear.

The most common gear type used in the Kuskokwim Area is the drift gillnet, 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 2010, few households reported retaining commercially-caught salmon for subsistence uses. Data show a reported total of 1,628 salmon were retained from commercial catches, including 257 Chinook, 708 chum, 359 sockeye, 268 coho, and 36 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). In 2009, the Division of Subsistence also conducted a study that included comprehensive subsistence harvest surveys and key respondent interviews in the central Kuskokwim River communities of Aniak, Chuathbaluk, Crooked Creek, Lower Kalskag, Red Devil, Sleetmute, Stony River, and Upper Kalskag (Brown et al. 2012). Brown et al. (2012) presented harvest data for all subsistence resources, including nonsalmon fishes, which are used by residents of these central Kuskokwim River communities. Subsistence surveys regarding Pacific herring *Clupea pallasi* were conducted in the mid-1980s through the early 1990s in the Nelson Island region. Data from all of these studies can be found in the CSIS.

Table 5-1.–Subsistence salmon harvests by community, Kuskokwim Area, 2010.

Community	Households		Estimated salmon harvests					
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[b]	–	–	–	–	–	–	–	–
Kwigillingok[b]	–	–	–	–	–	–	–	–
Kongiganak	97	44	1,470	1,842	390	2,513	0	6,215
North Kuskokwim Bay	**97**	**44**	**1,470**	**1,842**	**390**	**2,513**	**0**	**6,215**
Tuntutuliak	88	49	3,205	2,068	698	2,439	0	8,410
Eek	81	36	1,761	1,241	315	721	47	4,085
Kasigluk	100	45	3,020	1,448	1,078	2,403	12	7,961
Nunapitchuk	118	74	2,548	1,902	195	3,223	0	7,868
Atmautluak	61	35	1,091	735	36	1,406	3	3,271
Napakiak	98	54	1,640	1,187	884	1,766	15	5,492
Napaskiak	92	46	4,313	1,979	1,015	3,110	14	10,431
Oscarville	16	14	618	250	12	352	1	1,233
Bethel	2,043	996	24,973	10,662	19,000	10,986	243	65,864
Kwethluk	164	90	4,445	2,571	1,527	3,082	50	11,675
Akiachak	156	82	4,470	2,433	1,181	2,856	57	10,997
Akiak	87	40	3,625	1,161	475	1,163	62	6,486
Tuluksak	88	41	2,110	2,534	337	3,249	0	8,230
Lower Kuskokwim	**3,192**	**1,602**	**57,819**	**30,171**	**26,753**	**36,756**	**504**	**152,003**
Lower Kalskag	68	30	1,030	507	96	691	0	2,324
Kalskag (Upper)	67	32	1,500	465	93	393	0	2,451
Aniak	190	167	2,212	1,055	2,472	2,538	16	8,293
Chuathbaluk	37	28	551	403	76	535	0	1,565
Middle Kuskokwim	**362**	**257**	**5,293**	**2,430**	**2,737**	**4,157**	**16**	**14,633**
Crooked Creek	41	28	240	302	87	539	0	1,168
Red Devil	13	11	33	475	88	122	0	718
Sleetmute	40	31	272	1,024	458	524	8	2,286
Stony River	21	16	189	372	201	338	0	1,100
Lime Village[a]	15	0	81	796	171	277	–	1,325
McGrath	131	75	257	622	1,053	482	20	2,434
Takotna[a]	25	0	0	4	33	0	–	0
Nikolai	33	32	402	65	135	440	3	1,045
Telida[b]	2	0	–	–	–	–	–	–
Upper Kuskokwim	**321**	**193**	**1,474**	**3,660**	**2,226**	**2,722**	**31**	**10,076**
Kuskokwim River	**3,972**	**2,096**	**66,056**	**38,103**	**32,106**	**46,148**	**551**	**182,964**
Quinhagak	155	90	2,692	1,671	1,547	1,376	165	7,451
Goodnews Bay	70	42	480	1,093	319	324	32	2,248
Platinum	18	15	14	175	197	37	3	426
South Kuskokwim Bay	**243**	**147**	**3,186**	**2,939**	**2,063**	**1,737**	**200**	**10,125**
Mekoryuk[b]	–	–	–	–	–	–	–	–
Newtok[b]	–	–	–	–	–	–	–	–

-continued-

Table 5-1.–Page 2 of 2.

Community	Households		Estimated salmon harvests					
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Nightmute[b]	–	–	–	–	–	–	–	–
Toksook Bay[b]	–	–	–	–	–	–	–	–
Tununak[b]	–	–	–	–	–	–	–	–
Chefornak[b]	–	–	–	–	–	–	–	–
Bering Sea Coast	–	–	–	–	–	–	–	–
Total	**4,215**	**2,243**	**69,242**	**41,042**	**34,169**	**47,885**	**751**	**193,089**

Source Carroll and Hamazaki (2012)

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 2010 study period; therefore, the total harvest was estimated using Bayesian multiple imputation method.

b. These communities were not contacted during the 2010 study period. Not enough data were available to estimate harvest.

– Data not available.

Table 5-2.–Historical subsistence salmon harvests, Kuskokwim Area, 1990–2010.

	Households		Estimated salmon harvest				
Year	Total	Surveyed	Chinook	Sockeye	Coho	Chum	Total
1990	3,317	1,448	114,219	48,752	63,084	157,335	314,513
1991	3,340	2,033	79,445	50,383	44,222	89,008	298,561
1992	3,308	1,308	87,663	46,493	57,551	120,126	246,914
1993	3,269	1,786	91,973	53,625	31,659	61,027	240,103
1994	3,169	1,801	108,066	44,060	39,668	78,795	251,111
1995	3,638	1,907	105,787	31,736	39,582	71,789	236,885
1996	3,630	1,524	100,352	41,532	45,279	102,079	241,572
1997	3,501	1,919	83,022	39,827	31,324	38,073	198,466
1998	3,497	1,940	85,779	38,049	26,594	63,413	218,595
1999	4,165	2,512	76,418	49,614	29,758	46,094	202,413
2000	3,317	1,448	71,336	48,449	43,863	57,727	204,714
2001	4,469	2,215	82,106	55,290	33,474	57,060	212,338
2002	4,804	2,687	84,508	34,317	44,029	88,836	205,599
2003	4,513	2,292	70,549	33,815	36,499	41,945	194,474
2004	4,638	2,398	102,336	41,558	48,693	65,805	214,959
2005	4,603	1,593	89,538	44,637	35,793	59,220	186,762
2006	4,671	1,439	96,006	47,501	43,444	93,037	279,988
2007	4,620	1,279	101,554	50,092	37,481	76,187	265,314
2008	4,734	992	103,713	64,183	52,742	71,649	292,287
2009	4,810	1,699	82,100	37,971	32,090	45,199	197,360
2010	4,215	2,243	69,242	41,042	34,169	47,885	192,338
5-year average (2005–2009)	4,688	1,400	94,582	48,877	40,310	69,058	244,342
10-year average (2000–2009)	4,518	1,804	88,375	45,781	40,811	65,667	225,379
15-year average (1995–2009)	4,241	1,856	89,007	43,905	38,710	65,208	223,448
Historical average (1990–2009)	4,001	1,811	90,824	45,094	40,841	74,220	235,146

Source Hamazaki (2011).

Table 5-3.–Number of households that own dogs, fed salmon to dogs, and total number of salmon fed to dogs, Kuskokwim Area, 2010.

	Households		Households		Total number of dogs	Reported salmon fed to dogs					
	Total	Contacted	Own dogs	Fed salmon		Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[a]	–	–	–	–	–	–	–	–	–	–	–
Kwigillingok[a]	–	–	–	–	–	–	–	–	–	–	–
Kongiganak	97	35	13	0	19	0	0	0	0	0	0
North Kuskokwim Bay	**97**	**35**	**13**	**0**	**19**	**0**	**0**	**0**	**0**	**0**	**0**
Tuntutuliak	88	43	29	0	90	0	0	0	0	0	0
Eek	81	32	20	2	41	0	0	0	0	0	0
Kasigluk	100	37	25	3	119	17	7	332	7	0	363
Nunapitchuk	118	59	46	3	91	0	0	0	59	0	59
Atmautluak	61	27	20	0	68	0	0	0	0	0	0
Napakiak	98	42	32	1	67	0	0	0	10	0	10
Napaskiak	92	40	20	1	96	0	0	0	0	0	0
Oscarville	16	11	7	2	19	0	0	0	60	0	60
Bethel	2,043	994	597	12	952	0	0	3	667	4	674
Kwethluk	164	81	60	5	204	0	0	500	60	0	560
Akiachak	156	62	33	3	132	50	65	125	70	0	310
Akiak	87	31	18	2	105	0	0	0	38	12	50
Tuluksak	88	28	21	3	61	3	61	4	182	0	250
Lower Kuskokwim	**3,192**	**1,487**	**928**	**37**	**2,045**	**70**	**133**	**964**	**1,153**	**16**	**2,336**
Lower Kalskag	68	23	15	1	40	0	0	0	50	0	50
Kalskag (Upper)	67	25	19	0	35	0	0	0	0	0	0
Aniak	190	164	92	16	280	0	2	1,005	1,691	0	2,698
Chuathbaluk	37	19	14	0	25	0	0	0	0	0	0
Middle Kuskokwim	**362**	**231**	**140**	**17**	**380**	**0**	**2**	**1,005**	**1,741**	**0**	**2,748**
Crooked Creek	41	16	13	3	46	0	0	0	155	0	155
Red Devil	13	8	5	4	13	1	5	8	50	0	64
Sleetmute	40	20	14	2	27	0	0	0	73	0	73
Stony River	21	15	10	1	22	0	0	0	0	0	0
Lime Village[a]	15	0	–	–	–	–	–	–	–	–	–
McGrath	131	72	33	3	93	0	75	338	230	5	648
Takotna[a]	25	0	–	–	–	–	–	–	–	–	–
Nikolai	33	27	15	2	31	0	0	6	370	0	376
Telida[a]	2	0	–	–	–	–	–	–	–	–	–
Upper Kuskokwim	**321**	**158**	**90**	**15**	**232**	**1**	**80**	**352**	**878**	**5**	**1,316**
Kuskokwim River	**3,972**	**1,911**	**1,171**	**69**	**2,676**	**71**	**215**	**2,321**	**3,772**	**21**	**6,400**
Quinhagak	155	86	45	2	74	0	0	10	45	25	80
Goodnews Bay	70	40	23	0	39	0	0	0	0	0	0
South Kuskokwim Bay	**243**	**138**	**75**	**2**	**126**	**0**	**0**	**10**	**45**	**25**	**80**
Mekoryuk[a]	–	–	–	–	–	–	–	–	–	–	–
Newtok[a]	–	–	–	–	–	–	–	–	–	–	–

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Table 5-3.–Page 2 of 2.

	Households		Households		Total number of dogs	Reported salmon fed to dogs					
	Total	Contacted	Own dogs	Fed salmon		Chinook	Sockeye	Coho	Chum	Pink	Total
Platinum	18	12	7	0	13	0	0	0	0	0	0
Nightmute[a]	–	–	–	–	–	–	–	–	–	–	–
Toksook Bay[a]	–	–	–	–	–	–	–	–	–	–	–
Tununak[a]	–	–	–	–	–	–	–	–	–	–	–
Chefornak[a]	–	–	–	–	–	–	–	–	–	–	–
Bering Sea Coast	–	–	–	–	–	–	–	–	–	–	–
Total	**4,215**	**2,049**	**1,246**	**71**	**2,802**	**71**	**215**	**2,331**	**3,817**	**46**	**6,480**

Source Carrol and Hamazaki (2012).

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 2010 study period.

– Data not available.

Table 5-4.–Gear types used for subsistence fishing, Kuskokwim Area, 2010.

Community	Total households[c]	Gear types[a] Setnet	Drift net	Rod and reel	Fish wheel
Kipnuk[b]	–	–	–	–	–
Kwigillingok[b]	–	–	–	–	–
Kongiganak	26	0	26	0	0
North Kuskokwim Bay	**26**	**0**	**26**	**0**	**0**
Tuntutuliak	34	0	34	0	0
Eek	29	5	24	0	0
Kasigluk	34	0	34	0	0
Nunapitchuk	48	0	48	0	0
Atmautluak	26	0	26	0	0
Napakiak	30	2	28	0	0
Napaskiak	41	5	36	0	0
Oscarville	9	1	7	1	0
Bethel	655	27	590	38	0
Kwethluk	58	11	46	0	1
Akiachak	59	4	55	0	0
Akiak	29	2	27	0	0
Tuluksak	29	1	28	0	0
Lower Kuskokwim	**1,081**	**58**	**983**	**39**	**1**
Lower Kalskag	15	1	13	1	0
Kalskag (Upper)	21	1	20	0	0
Aniak	86	6	61	19	0
Chuathbaluk	14	1	12	1	0
Middle Kuskokwim	**136**	**9**	**106**	**21**	**0**
Crooked Creek	11	0	10	1	0
Red Devil	7	5	2	0	0
Sleetmute	16	5	9	2	0
Stony River	9	0	4	4	1
Lime Village[b]	–	–	–	–	–
McGrath	12	4	3	4	1
Takotna[b]	–	–	–	–	–
Nikolai	18	11	1	6	0
Telida[b]	–	–	–	–	–
Upper Kuskokwim	**73**	**25**	**29**	**17**	**2**
Kuskokwim River	**1,316**	**92**	**1,144**	**77**	**3**
Quinhagak	57	3	45	9	0
Goodnews Bay	24	7	16	1	0
Platinum	10	2	3	5	0
South Kuskokwim Bay	**91**	**12**	**64**	**15**	**0**
Mekoryuk[b]	–	–	–	–	–

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Table 5-4.–Page 2 of 2.

Community	Total households[c]	Gear types[a]			
		Setnet	Drift net	Rod and reel	Fish wheel
Newtok[b]	–	–	–	–	–
Nightmute[b]	–	–	–	–	–
Toksook Bay[b]	–	–	–	–	–
Tununak[b]	–	–	–	–	–
Chefornak[b]	–	–	–	–	–
Bering Sea Coast	**–**	**–**	**–**	**–**	**–**
Total	**1,407**	**104**	**1,208**	**92**	**3**

Source Carroll and Hamazaki (2012).

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

b. Community was not contacted during the 2010 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 uses, Kuskokwim Area, 2010.

	Households		Reported salmon					
Community	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Kipnuk[a]	–	0	–	–	–	–	–	–
Kwigillingok[a]	–	0	–	–	–	–	–	–
Kongiganak	97	10	57	189	15	65	0	326
North Kuskokwim Bay	**97**	**10**	**57**	**189**	**15**	**65**	**0**	**326**
Tuntutuliak	88	26	2	5	6	0	2	15
Eek	81	12	10	15	40	0	0	65
Kasigluk	100	8	0	0	13	1	0	14
Nunapitchuk	118	19	0	1	1	0	0	2
Atmautluak	61	8	0	1	0	0	0	1
Napakiak	98	3	7	5	10	0	0	22
Napaskiak	92	13	0	0	0	0	0	0
Oscarville	16	2	0	0	0	0	0	0
Bethel	2043	30	31	8	65	510	0	614
Kwethluk	164	11	0	0	0	7	0	7
Akiachak	156	21	0	0	2	4	0	6
Akiak	87	2	0	0	0	0	0	0
Tuluksak	88	6	0	0	0	0	0	0
Lower Kuskokwim	**3,192**	**161**	**50**	**35**	**137**	**522**	**2**	**746**
Lower Kalskag	68	0	0	0	0	0	0	0
Kalskag (Upper)	67	0	0	0	0	0	0	0
Aniak	190	1	0	0	0	0	0	0
Chuathbaluk	37	0	0	0	0	0	0	0
Middle Kuskokwim	**362**	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Crooked Creek	41	0	0	0	0	0	0	0
Red Devil	13	0	0	0	0	0	0	0
Sleetmute	40	0	0	0	0	0	0	0
Stony River	21	0	0	0	0	0	0	0
Lime Village[a]	15	0	–	–	–	–	–	–
McGrath	131	0	0	0	0	0	0	0
Takotna[a]	25	0	–	–	–	–	–	–
Nikolai	33	0	0	0	0	0	0	0
Telida[a]	2	0	–	–	–	–	–	–
Upper Kuskokwim	**321**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Kuskokwim River	**3,972**	**172**	**107**	**224**	**152**	**587**	**2**	**1,072**
Quinhagak	155	34	146	129	114	120	30	539
Goodnews Bay	70	9	1	5	1	0	3	10
Platinum	18	4	3	1	1	1	1	7
South Kuskokwim Bay	**243**	**47**	**150**	**135**	**116**	**121**	**34**	**556**

-continued-

Table 5-5.–Page 2 of 2.

Community	Households		Reported salmon					
	Total	Contacted	Chinook	Sockeye	Coho	Chum	Pink	Total
Mekoryuk[a]	–	0	–	–	–	–	–	–
Newtok[a]	–	0	–	–	–	–	–	–
Nightmute[a]	–	0	–	–	–	–	–	–
Toksook Bay[a]	–	0	–	–	–	–	–	–
Tununak[a]	–	0	–	–	–	–	–	–
Chefornak[a]	–	0	–	–	–	–	–	–
Bering Sea Coast	**–**	**0**	**–**	**–**	**–**	**–**	**–**	**–**
Total	**4,215**	**219**	**257**	**359**	**268**	**708**	**36**	**1,628**

Source Carroll and Hamazaki (2012).

a. These communities were not contacted during the 2010 study period.

– Data not available.

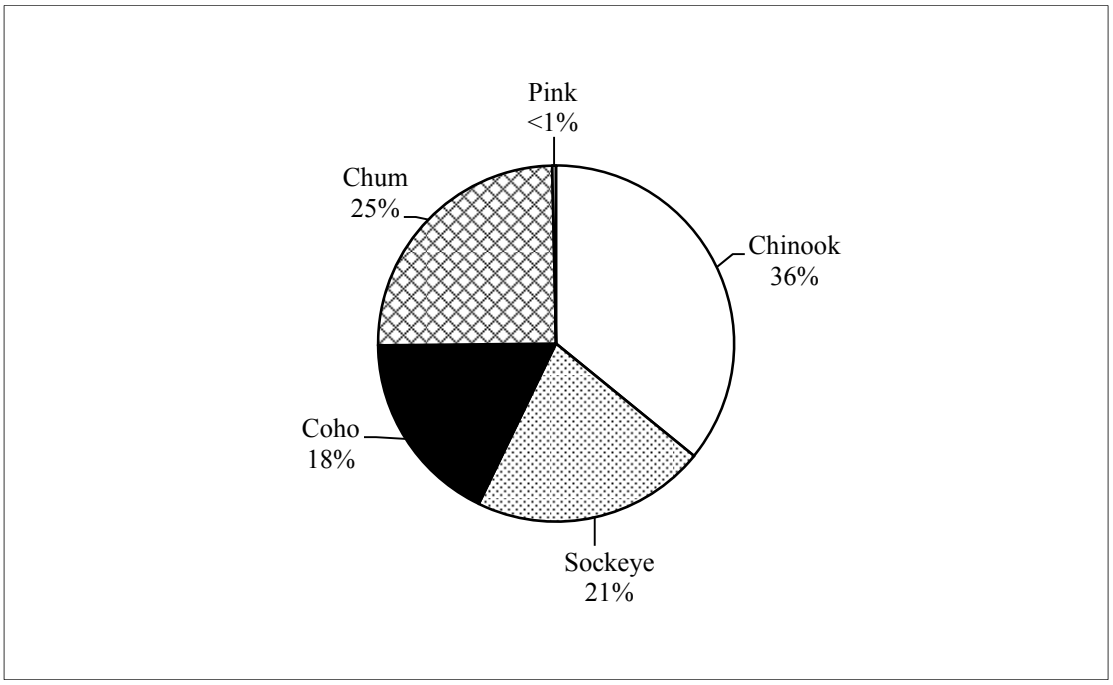

Figure 5-1.–Kuskokwim subsistence salmon harvest composition, 2010.

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 2010, 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.[16] 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,

16. Besides the Togiak River as described above 5 AAC 01.320 allows for the harvest of salmon by drift and set gillnet within commercial fishing districts.

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 2010

From June 1 through September 30 in all waters of a commercial salmon district within the Bristol Bay region, subsistence salmon could be taken only during commercial fishing periods. For a list of 2010 commercial fishing emergency orders for Bristol Bay when subsistence salmon were allowed to be taken in commercial districts, see Table 7 in Salomone et al. (2011:35). In the Nushagak District, subsistence salmon fishing was provided for by emergency order during periods of extended commercial fishing closures.

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 2010, a total of 1,082 permits were issued for the Bristol Bay Management Area, of those 979, or 90%, were returned (Table 6-1). The largest number of permits were issued for the Nushagak (528 permits) and Naknek–Kvichak (437 permits) districts (Table 6-1). The number of permits issued in 2010 was below the 5-year (1,086), 10-year (1,125), and historical (1,092) averages (Table 6-2).

SUBSISTENCE SALMON HARVESTS IN 2010

Estimated total Bristol Bay subsistence salmon harvests in 2010 were 113,238 fish (Table 6-1). The 2010 salmon harvest was below the 5-year (127,285 fish), 10-year (124,332 fish), and historical (1983–2009 of 148,945 salmon) averages (Table 6-2).

Chinook salmon harvests were estimated at 10,852 in 2010, a decrease from the previous year's harvest of 14,020, and lower than the 2003 record harvest of 21,231 fish. Estimated sockeye salmon harvests for 2010 were 90,444, which fall below the recent 5-year average of 99,159 fish, the 10-year average of 95,048 fish, and the historical average (1983–2009) of 116,505 fish. Because the return of pink salmon to Bristol Bay are higher in even-numbered years than odd-numbered years, the number of pink salmon reported harvested was significantly larger in 2010 (2,627 fish) than in 2009 (442 fish). The estimated harvest of chum salmon in 2010 (4,692 fish) was lower than both the recent 5-year (5,235 fish) and 10-year averages (5,264 fish) and below the historical average (1983–2009) of 6,643 fish. The coho harvest in 2010 was lowest estimated harvest of coho salmon (4,623 fish) recorded, with the 5-year average at 6,815 fish and 10-year average at (7,152) (Table 6-2).

In 2010, the Bristol Bay subsistence salmon harvest was composed of 80% sockeye salmon, 10% Chinook salmon, 4% coho salmon, 4% chum salmon, and 2% pink salmon (Figure 6-1). Of the entire Bristol Bay Area subsistence salmon harvest in 2010, residents of Bristol Bay communities harvested 103,331 salmon (91%), and other Alaska residents harvested 9,907 salmon (9%) (Table 6-3).

In 2010, as over the last several decades, most of the Bristol Bay Area subsistence harvest was taken in the Naknek–Kvichak (57%) and the Nushagak (35%) districts (Figure 6-2). The Naknek–Kvichak total harvest of 64,445 salmon in 2010 (Table 6-1) was lower than in 2009 (69,235), 2008 (73,184 salmon) and 2007 (72,280 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 16 Chinook salmon, and 40,688 sockeye salmon, while those fishing in the Naknek River Subdistrict harvested 407 Chinook salmon, and 21,621 sockeye salmon (Table 6-1). The 2010 subsistence harvest of 40,688 sockeye salmon in the Kvichak drainage (Table 6-1) was lower than the 2009 harvest of 46,772 sockeye and the 2008 harvest of 49,563 sockeye (Fall et al. 2009b:69) and below historical levels (the most recent 10-year average harvest from 2001 through 2010 was 45,148 sockeye salmon) (Jones et al. 2012:100).[17]

Subsistence sockeye salmon harvests in the Kvichak District have declined since the early 1990s (Salomone et al. 2011:113). From 1998 to 2010, estimated harvests were below the range of 55,000 to 65,000 sockeye salmon established by the BOF as the amount reasonably 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. 2003; Stickman et al. 2003; Fall et al. 2006; Fall et al. 2009b).

In the Nushagak District, the total estimated subsistence harvest in 2010 of 39,791 salmon (Table 6-1) was the lowest recorded for the 20-year period from 1991 to 2010. The next lowest estimated harvests were 40,373 in 2006 and 43,154 in 2004 (Jones et al. 2012:97). The estimated harvest in 2008 of 51,395 was the highest since 55,076 in 2003 (Jones et al. 2012:97). The 2008 estimated harvest more accurately recorded harvest numbers for the season due to the administration of comprehensive baseline household subsistence harvest surveys by the Division of Subsistence in Aleknagik and Manokotak. For a more detailed description of these data see Fall et al. (2012:75). The Nushagak District Chinook salmon harvest in 2010 was 9,150 (Table 6-1), also the lowest recorded for the 20-year period from 1991 to 2010. The next lowest estimated harvests were 9,470 in 2000 and 9,971 in 2006 (Jones et al. 2012:97). The harvests in 2009 and 2008 (12,737 and 12,960 fish, respectively) were down from the 2003 estimate of 18,686 fish (the highest estimate on record), and below the 10-year (1991–2000) average of 13,716 fish and the more recent 10-year average (2001–2010) of 12,801 (Jones et al. 2012:97). The 2010 Nushagak District sockeye salmon harvest of 22,326 (Table 6-1) was lower than the 2009 harvest of 26,922 fish, the 2008 estimate of 26,828, and also the previous 10-year average (2001–2010) of 23,859 fish (Jones et al. 2012:97). For the 20-year period from 1991 to 2010 the estimated 2010 harvest was the second lowest with only the 2006 harvest of 20,773 being lower (Jones et al. 2012:97).

The estimated total subsistence salmon harvest for the Togiak District in 2010, 5,779 fish (Table 6-1), was considerably higher than the previous year's estimate of 3,689 fish and higher 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

17. Note that the Kvichak River drainage sockeye salmon harvest total for 2007 listed in the 2008 Bristol Bay Area Annual Management Report (Jones et al. 2009:106) was adjusted down to the total of 47,473 by the Division of Subsistence. The updated data were included in the 2011 Annual Management Report (Jones et al. 2012:100). Additional harvest reports collected through subsistence salmon household harvest surveys in 4 Kvichak drainage communities increased the accuracy of the reported harvests and reduced the expansion factor for the estimated subsistence salmon harvest in the Kvichak drainage in 2007.

2003. Postseason household surveys included more harvesters in the estimate because fishers who did not turn in their harvest permits were contacted. Comprehensive baseline household subsistence harvest surveys conducted in Togiak for the 2008 calendar year also showed an increase in the participation in the 2008 harvest assessment program. The estimated subsistence salmon harvest in the Ugashik District in 2010 was 1,056 fish (Table 6-1), slightly lower than the 2009 estimate of 1,270 fish, and also lower 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 2,091 fish (Table 6-1) was substantially higher than the 2009 estimate of 953 fish; however, the 2010 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). Harvests in 2010 and 2008 (1,928 fish) were exceptions to the downward trend in harvest numbers since 2004 (Salomone et al. 2011:109).

OTHER SUBSISTENCE FISHERIES

In May 2003, new federal regulations authorizing subsistence fishing for Pacific halibut came into effect. A harvest assessment program for the subsistence halibut fishery was implemented in 2004 (Fall et al. 2007; Fall et al. 2005; Fall et al. 2006; 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. (2009c).

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. 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:[18]

- 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) and Holen and Lemons (2012). Holen et al. (2012a) and Wright and Chythlook (1985) describe the uses of herring spawn on kelp in the Togiak District. Harvests of fishes other than salmon contribute

18. 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.

about 10% of the annual subsistence harvests of wild foods in the Bristol Bay region, about 41 lb per person (Fall et al. 2009c; Holen and Lemons 2012).

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. 2006; Krieg et al. 2005; Krieg et al. 2009; Holen et al. 2011; Holen et al. 2012b; Evans et al. 2013). 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 (fyke nets): 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: Pacific 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* mixed with dry fish is also consumed. Rainbow trout smelt are fried, boiled, dried, or eaten frozen with seal oil (Fall et al. 1986:100; Fall et al. 2009c). 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; Fall et al. 2009c).

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; Fall et al. 2009c).

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, 2010.

Area and river system	Number of permits issued[a]	Estimated salmon harvest					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek–Kvichak District	437	422	62,309	645	233	835	64,445
Naknek River Subdistrict	261	407	21,621	642	220	360	23,250
Kvichak River–Iliamna Lake Subdistrict:	180	16	40,688	3	13	475	41,195
Igiugig	14	4	3,042	0	11	1	3,059
Iliamna Community	1	1	235	0	0	0	236
Iliamna Lake–General	29	0	5,729	0	0	0	5,729
Kijik	1	0	100	0	0	0	100
Kokhanok	29	5	13,429	2	0	473	13,908
Kvichak River	5	0	761	0	0	0	761
Lake Clark	53	0	3,457	0	0	0	3,457
Levelock	9	6	1,233	1	2	1	1,243
Newhalen River	25	0	6,471	0	0	0	6,471
Pedro Bay	20	0	5,240	0	0	0	5,240
Six Mile Lake	6	0	991	0	0	0	991
Egegik District	37	93	1,657	275	59	8	2,091
Ugashik District	18	21	896	135	4	0	1,056
Nushagak District	528	9,150	22,326	2,983	3,660	1,672	39,791
Igushik–Snake River	26	135	2,673	29	35	19	2,890
Nushagak Bay (commercial)	37	382	1,497	430	140	270	2,720
Nushagak Bay (noncommercial)	217	2,906	7,622	1,281	1,081	865	13,756
Nushagak River	130	4,301	4,233	820	1,991	371	11,716
Site unknown	7	83	131	6	39	4	263
Wood River	1,341	418	375	142	8,447	0	0
Togiak District	64	1,162	3,256	514	735	113	5,779
Total	**1,082**	**10,852**	**90,444**	**4,623**	**4,692**	**2,627**	**113,238**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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 1,082 permits issued for the management area, 979 were returned (91%).

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, 1983–2010.

	Permits		Estimated salmon harvest					
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
2010	1,082	979	10,852	90,444	4,623	4,692	2,627	113,238
5-year average (2005–2009)	1,086	967	14,489	99,159	6,815	5,235	1,586	127,285
10-year average (2000–2009)	1,125	1,007	15,058	95,048	7,152	5,264	1,800	124,322
Historical average (1983–2009)	1,092	954	14,896	116,505	8,487	6,643	2,413	148,945

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 6-3.–Estimated subsistence salmon harvests by community, Bristol Bay Area, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Aleknagik	23	23	136	1,358	31	44	2	1,570
Clark's Point	12	12	131	334	332	88	270	1,155
Dillingham	319	296	4,878	12,284	1,979	1,467	1,125	21,732
Egegik	11	10	21	364	273	42	8	707
Ekwok	20	18	668	414	94	198	6	1,380
Igiugig	11	8	4	2,901	0	11	1	2,918
Iliamna	27	26	3	6,047	0	0	0	6,050
King Salmon	79	69	96	6,235	159	35	212	6,738
Kokhanok	26	22	5	14,196	12	0	473	14,685
Koliganek	14	13	783	732	219	620	52	2,406
Levelock	7	7	5	940	1	1	1	948
Manokotak	23	21	147	2,437	28	34	19	2,665
Naknek	100	82	226	11,133	330	133	78	11,900
New Stuyahok	40	36	2,090	2,020	251	1,081	166	5,608
Newhalen	10	9	0	3,228	0	0	0	3,228
Nondalton	13	13	0	3,185	0	0	0	3,185
Pedro Bay	20	18	0	5,609	0	0	0	5,609
Pilot Point	6	6	1	238	45	0	0	284
Port Alsworth	43	43	0	3,250	0	0	0	3,250
Portage Creek	1	1	51	3	0	7	0	61
South Naknek	21	17	54	781	143	9	61	1,048
Togiak	60	51	1,075	3,176	489	663	83	5,485
Twin Hills	2	2	87	80	25	72	30	294
Ugashik	6	6	3	330	90	3	0	426
Subtotal, Bristol Bay	**894**	**809**	**10,463**	**81,275**	**4,502**	**4,507**	**2,584**	**103,331**
Anchorage	77	68	112	3,544	2	83	0	3,741
Anderson	1	0	0	0	0	0	0	0
Barrow	2	2	49	200	22	0	0	271
Big Lake	1	1	1	92	0	0	0	93
Chugiak	3	3	0	123	0	0	0	123
Copper Center	1	1	0	0	0	0	0	0
Cordova	1	1	3	124	0	0	0	127
Delta Junction	3	2	6	120	0	8	0	134
Eagle River	8	7	22	842	21	20	1	906
Ester	1	1	1	28	0	0	0	29
Fairbanks	10	9	23	423	0	27	0	473
Girdwood	1	1	0	0	0	0	0	0
Homer	18	17	23	728	0	1	1	754
Juneau	1	1	0	7	0	0	0	7
Kasilof	1	1	16	76	0	1	0	93
Kenai	4	3	21	444	29	9	0	504
Kipnuk	1	1	4	20	0	0	0	24
Kodiak City	10	9	3	307	4	7	8	329
McCarthy	1	1	0	0	0	0	0	0
Nikiski	2	2	2	52	13	3	0	70
Palmer	10	9	4	749	1	0	0	754
Salcha	1	1	5	12	0	2	0	19
Seward	1	1	0	31	0	0	0	31

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Table 6-3.–Page 2 of 2.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Shaktoolik	1	0	0	0	0	0	0	0
Sitka	1	1	0	54	0	0	0	54
Soldotna	3	3	0	52	0	0	0	52
Sterling	1	1	5	39	5	18	33	100
Talkeetna	2	2	6	26	0	0	0	32
Wasilla	18	18	56	983	22	7	0	1,068
Willow	3	3	25	93	0	0	0	118
Subtotal, other Alaska	**188**	**170**	**389**	**9,170**	**120**	**185**	**43**	**9,907**
Total	**1,082**	**979**	**10,852**	**90,444**	**4,623**	**4,692**	**2,627**	**113,238**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

		Percentage of households[a]					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	1	100	100	0	40	72	36

Sources CSIS; BBNA and ADF&G 1996; Coiley-Kenner 2003; Krieg et al. 2005; Fall et al. 2006; Krieg et al. 2009; Holen et al. 2011; Holen et al. 2012b; 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*	*Ch'dat'an*
		Culugpauk	
Alaska blackfish	*Dallia pectoralis*	*Can'giiq*	*Huzhegh*
Burbot	*Lota lota*	*Manignaq*[a]	*Ch'unya*
		Atgiaq[b]	
Dolly Varden[c]	*Salvelinus malma*	*Yugyaq*[d]	*Qak'elay*
		Anerrluaq	
		Anyuk	
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 harengus 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*	

-continued-

Table 6-5.–Page 2 of 2.

Source Fall et al. (1996).

a. Nushagak River villages.

b. Manokotak, Aleknagik, Twin Hills, Togiak.

c. Also includes the closely related Arctic char.

d. At Togiak, Manokotak, and Aleknagik, and perhaps elsewhere, there are three Yup'ik names for Arctic char/Dolly Varden. *Yugyak* probably refers to resident char/Dolly Varden. *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.

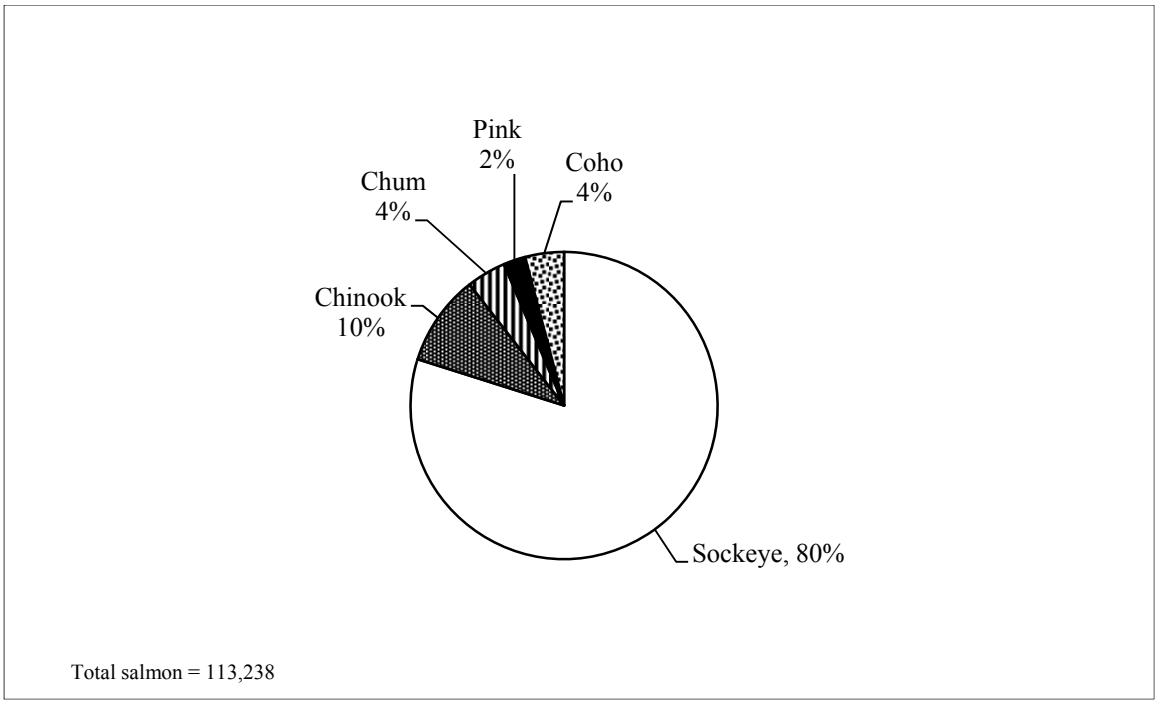

Figure 6-1.–Bristol Bay area subsistence salmon harvest composition, 2010.

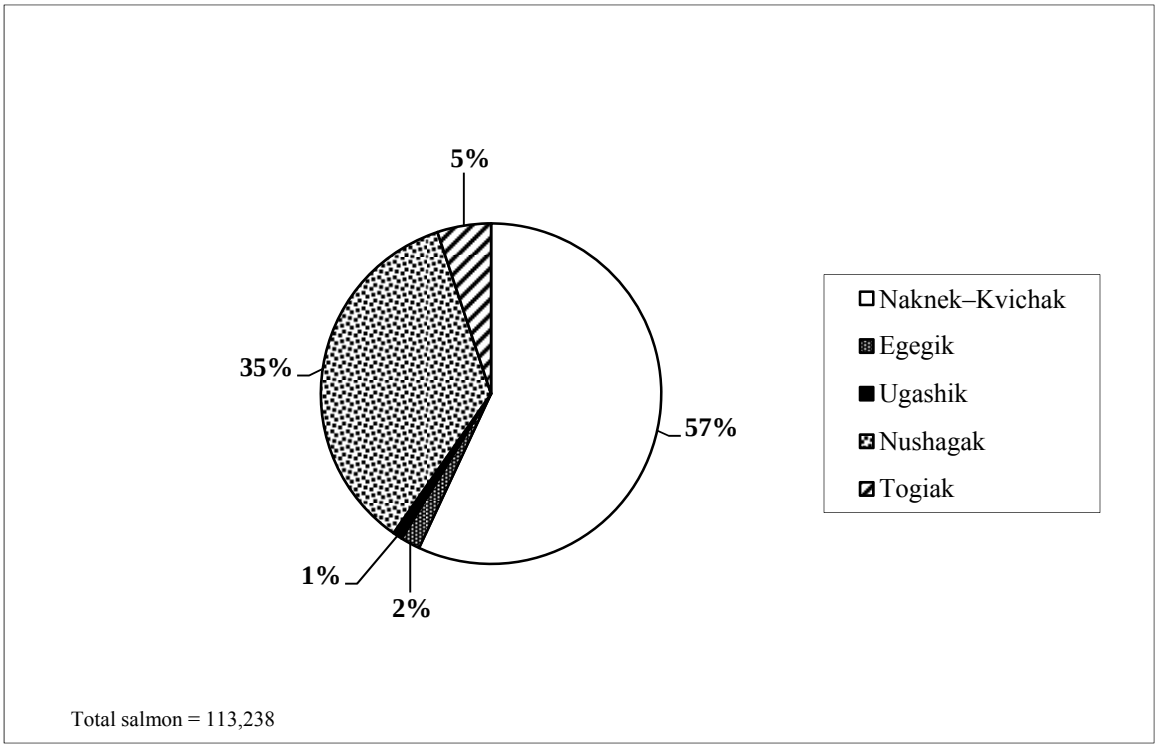

Figure 6-2.–Bristol Bay area subsistence salmon harvests by district, 2010.

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 2010 population of 91, Chignik Lagoon (population 78), Chignik Lake (population 73), Perryville (population 113), and Ivanof Bay (7) (ADLWD 2011). 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. 2006).

REGULATIONS

In 1993 the BOF 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; the permit 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 1 mile upstream.[19] 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 under federal subsistence regulations (Hutchinson-Scarborough and Fall 1996; Hutchinson-Scarbrough et al. 2010).

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

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

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.[20] 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 BOF 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 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

20. 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.

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 2010

Since 1977, the number of subsistence salmon permits issued for the Chignik Area has averaged 103 per year, with 70 permits (68%) returned (Table 7-1). Over the last 10 years (1999–2009), the average has been 118 permits issued and 92 permits (78%) returned. The recent 5-year average (2005–2009) is 109 permits issued and 83 (76%) returned. In 2009, 95 permits were issued, and 82 were returned (86%). 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 2010, 124 permits were issued, which was higher than 5-year (109), 10-year (118), and historical averages (103), and 90 (73%) were returned. Of all permits issued for 2010, 100 (81%) were issued to residents of Chignik Area communities, and 24 (19%) were issued to residents of other Alaska communities (Table 7-2).

In 2010, the estimated subsistence salmon harvest for the Chignik Area was 11,034 fish. This was just below the historical average (1977–2009; 11,277 salmon) as well as below the recent 10-year average (11,845 salmon), but slightly higher than the 5-year average (10,768 salmon) (Table 7-1).

The 2010 estimated subsistence harvest in the CMA was made up of 74% (8,148) sockeye salmon, 16% (1,820) coho salmon, 6% (656) pink salmon, 2% (222) chum salmon, and 2% (188) Chinook salmon (Table 7-2; Figure 7-1). The combined salmon harvest by residents of the 5 communities located within the CMA (Chignik Bay, Chignik Lake, Chignik Lagoon, Perryville, and Ivanof Bay) totaled 9,583 salmon (87% of the CMA total salmon harvest) while other Alaska residents harvested 1,451 salmon (13%) (Table 7-2).

In 2010, the communities of Chignik Lagoon, Chignik Lake, and Perryville each harvested similar total quantities of salmon; Perryville harvested the most at 2,881 salmon (26% of total area harvest), followed by Chignik Lake with 2,636 (24%); and Chignik Lagoon, 2,206 (20%). Additionally, Chignik Bay harvested 1,548 salmon (14%) and Ivanof Bay, 312 (3%) (Figure 7-2).

The community of Chignik Lake harvested the majority of sockeye salmon for all communities with 2,521 (31%) harvested, followed by Chignik Lagoon, 2,011 (25%) and Chignik Bay, 1,239 (15%) (Table 7-2; Figure 7-3). Perryville harvested the most coho salmon, totaling 1,100 (60% of the total CMA coho salmon harvest), and nearly the same number of sockeye salmon at 1,019 (13% of total CMA sockeye salmon harvest). Perryville also harvested the majority of chum (185; 83%) and pink (554; 84%) salmon. All other Alaska residents harvested a total of 1,288 (16%) sockeye and 136 (7%) coho salmon. Chinook salmon harvested for the entire region totaled 188 (2% of total salmon harvested), with the most having been harvested by Chignik Lagoon residents (78; 41%), followed by Chignik Lake, 34 (18%); Chignik Bay, 32 (17%); Perryville 23 (12%); all other Alaska residents (20; 11%); and Ivanof Bay, 1 (<1%).

The reported subsistence salmon harvests by general location are shown in Table 7-3.[21] Harvests from the Perryville subarea (Perryville and Western commercial fisheries districts) totaled 1,132 salmon (18% of reported harvests by location), of which 656 were coho salmon (64% of total reported coho salmon harvests by location), 271 were sockeye salmon (6% of reported sockeye salmon harvests by location), 116 were chum (77% of reported chum salmon harvests by location), 76 were pink (45% of reported pink salmon harvests by location), and 13 were Chinook salmon (12% of reported Chinook salmon harvests by location).

Reported harvests in the subarea of Chignik Bay and Chignik Lagoon (Central, Eastern, and Chignik Bay commercial management districts [CMD], excluding areas above ADF&G weir) totaled 3,677 salmon (58% of reported harvests by location). Sockeye salmon represented the largest portion of all reported salmon harvested in this subarea (3,192 or 87%) as well as the reported sockeye salmon harvests by location (65%). Other salmon harvested in this subarea totaled: 69 Chinook (64% of reported Chinook salmon harvests by location), 297 coho (29% of reported coho salmon harvests by location), 85 pink (50% of reported pink salmon harvests by location), and 34 chum (23% of reported chum salmon harvests by location).

The Chignik Lake subarea includes all waters of the Chignik Bay CMD above the ADF&G Chignik River weir. Reported subsistence harvests for this subarea totaled 1,544 salmon (24% of reported harvests by location) Most of the salmon harvested in this subarea were sockeye salmon (1,447; 29% of reported sockeye salmon harvests by location). The remaining composition of the Chignik Lake subarea harvest included 64 coho, 24 Chinook and 9 pink, and no chum salmon (Table 7-3).

Subsistence harvest patterns in the CMA 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

21. Data in Table 7-3 are based on extrapolating harvests recorded on returned permits. Not all permits recorded location of harvest; therefore these data are not expanded and differ from the estimated salmon harvest totals in tables 7-1 and 7-2. Reported harvests in this table are from 2010 permit returns only.

(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 was enacted in 2005. In 2006, the Chignik commercial fishery was managed solely under the Chignik Area 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 2010, 66 CFEC boats fished and made deliveries (Anderson and Nichols 2010).

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 seine. 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 fishing 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 fewer fish passing in the lagoon, but at a more steady rate rather than experiencing 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 fishery with 89 permits issued; 39 fewer permits issued than in 2007, and 32 fewer than the previous 10-year (1997–2007) average of 121. In 2010, however, there was an increase in permits with 124 issued, which was an increase from 2009 (95).

Numerous fish or summer camps located on the north side of Chignik Lagoon were abundantly utilized in the 1990s but were mostly abandoned by 2006. However, in 2007 through 2010, a few families that reside in Chignik Lake and Perryville continued to stay at their camp during the commercial fishing season. A Perryville family member who has maintained and continues to utilize one of these multi-generational camps indicated that these camps are summer homes that provide housing for the families when commercial fishing; however, subsistence salmon are also harvested and processed while occupying the camps (Alvin Shangin, Chignik subsistence and commercial fisherman, Perryville, personal communication, 2011).

In 2010, beach seines, setnets, and purse seines were used to catch subsistence salmon in the lagoon as well as at the mouth of Chignik River and in Chignik Lake. Late-run sockeye salmon were also utilized and harvested in Chignik Lagoon, as well as in Chignik Lake and the Clark River. Beach seines or handlines were used to harvest these late-run or spawning fish, which are typically dried since residents report they have less fat than early-run sockeye salmon. Chinook salmon were caught in Chignik River and often canned or smoked, or were removed from commercial harvests for home use (home pack) (Hutchinson-Scarbrough and Marchioni *In prep*).

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 back to the village by commercial fishing families. Area streams and beaches are used extensively for the harvest of the local 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 and bays as far east of the village as Mitrofania Bay and as far west as Ivanof Bay to harvest their fish. Fish are smoked, dried, canned, salted, and frozen by Perryville residents. Some Perryville families have relatives in Chignik Lake and travel to Chignik Lake in the fall to harvest late-run sockeye salmon for drying (Hutchinson-Scarbrough and Marchioni *In prep*).

From 2006–2009, the village of Ivanof Bay did not have a reported year-round population; however, former residents occupied the village seasonally (ADLWD 2012). Starting in 2010, the U.S. Census reported a year-round population of 7 (ADLWD 2011). Some former families from Ivanof Bay now reside in Perryville or Chignik Bay, but return to Ivanof Bay annually to harvest primarily coho, pink, and chum salmon (Hutchinson-Scarbrough and Marchioni *In prep*). 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 2010, Chignik commercial fishing boats reported removing 973 sockeye, 118 Chinook, and 7 pink salmon from their commercial harvest for home pack (Anderson and Nichols 2010).

OTHER CHIGNIK AREA SUBSISTENCE FISHERIES

Estimates of subsistence halibut harvests for eligible communities and tribes, including those of the CMA, are available for 2010 (Fall and Koster 2012).

Although state regulations require a subsistence permit for the harvest of rainbow/steelhead trout and Arctic char/Dolly Varden, there are no annual harvest assessment programs for the other subsistence

fisheries of the Chignik Area. The BOF, in an update of its C&T finding in January 2002, identified positive subsistence uses of all finfishes in the Chignik Area. Table 7-4 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 positive 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, 1977–2010.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1977	NA	NA	50	9,700	2,400	600	1,800	14,550
1978	NA	NA	50	6,000	500	600	2,100	9,250
1979	NA	NA	14	7,750	34	0	262	8,060
1980	82	37	6	12,475	32	169	478	13,160
1981	29	7	0	2,049	0	0	0	2,049
1982	59	15	3	8,532	12	0	2	8,548
1983	32	21	0	3,078	1,319	850	1,250	6,497
1984	77	64	23	8,747	464	204	330	9,768
1985	59	48	1	7,177	50	25	26	7,279
1986	74	38	4	10,347	205	77	98	10,730
1987	NA	NA	10	7,021	278	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
2010[a]	124	90	188	8,148	1,820	222	656	11,034
5-year average (2005–2009)	109	83	142	8,083	1,528	197	817	10,768
10-year average (1999–2009)	118	92	147	8,672	1,694	223	1,109	11,845
Historical average (1977–2009)	103	70	81	8,797	1,269	251	880	11,277

Sources ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013); Quimby and Owen 1994 for 1976–1979 and 1987.

-continued-

Table 7-1.–Page 2 of 2.

a. From 1993 through 2008, post-season household surveys were conducted to supplement harvest data collected through returned permits. Limited budgets prevented administering the surveys for 2009 and 2010, 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 post-season surveys was added to harvests from returned permits to estimate the total subsistence harvest for 2009 and 2010.

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.

Table 7-2.–Estimated subsistence salmon harvests by community, Chignik Area, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay	18	8	32	1,239	263	2	11	1,548
Chignik Lagoon	23	17	78	2,011	86	0	31	2,206
Chignik Lake	24	14	34	2,521	53	4	25	2,636
Perryville	33	30	23	1,019	1,100	185	554	2,881
Ivanof Bay	2	2	1	70	182	27	32	312
Subtotal, Chignik Area residents	**100**	**71**	**168**	**6,860**	**1,684**	**218**	**653**	**9,583**
Anchorage	10	7	3	739	136	4	3	884
Douglas	1	1	0	25	0	0	0	25
Fairbanks	1	1	0	65	0	0	0	65
Girdwood	1	1	1	17	0	0	0	18
Juneau	1	1	0	5	0	0	0	5
Kenai	1	1	0	7	0	0	0	7
Kodiak	6	5	0	152	0	0	0	152
Seldovia	1	1	2	128	0	0	0	130
Seward	1	1	14	150	0	0	0	164
Wasilla	1	0	0	0	0	0	0	0
Subtotal, other Alaska residents	**24**	**19**	**20**	**1,288**	**136**	**4**	**3**	**1,451**
Total	**124**	**90**	**188**	**8,148**	**1,820**	**222**	**656**	**11,034**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 7-3.–Subsistence salmon harvests by species and subarea of harvest, Chignik Area, 2010.

Subarea of harvest[b]	Estimated salmon harvest[a, c]					
	Chinook	Sockeye	Coho	Chum	Pink	Total
Chignik Bay and Lagoon	69	3,192	297	34	85	3,677
Chignik Lake	24	1,447	64	0	9	1,544
Perryville	13	271	656	116	76	1,132
Total	**107**	**4,909**	**1,018**	**150**	**169**	**6,353**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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 2010 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* spp	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

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

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

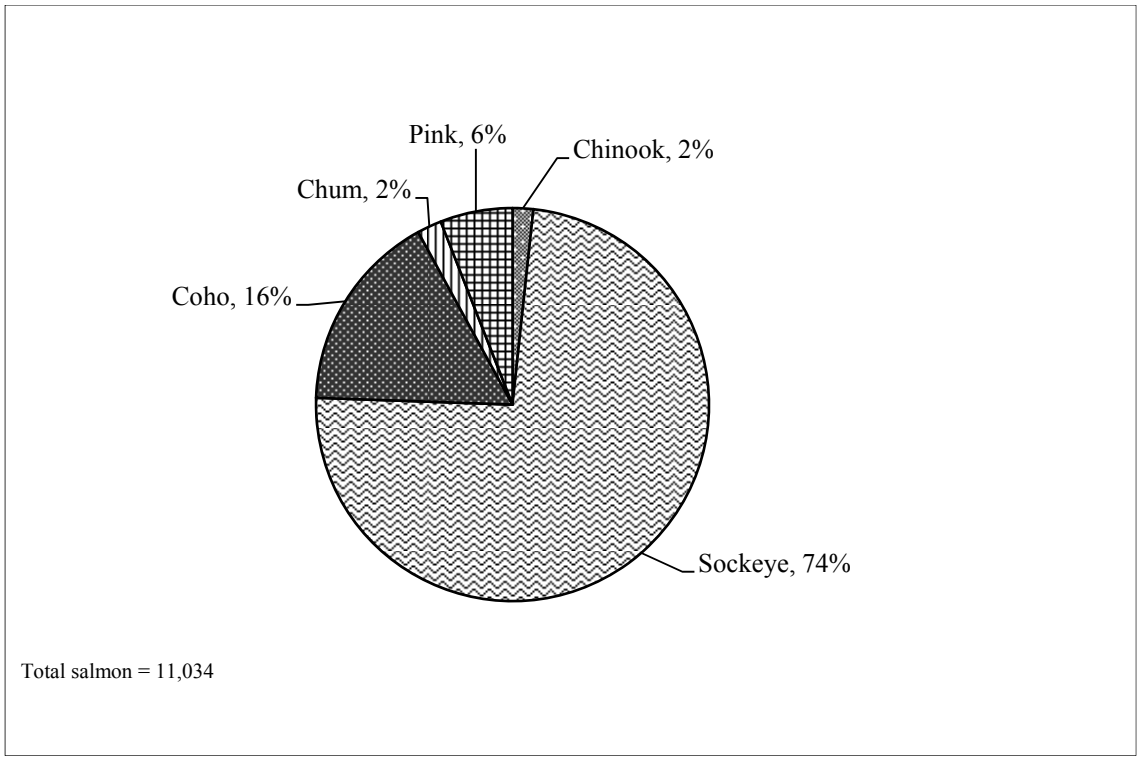

Figure 7-1.–Composition of Chignik Area subsistence salmon harvest by species, 2010.

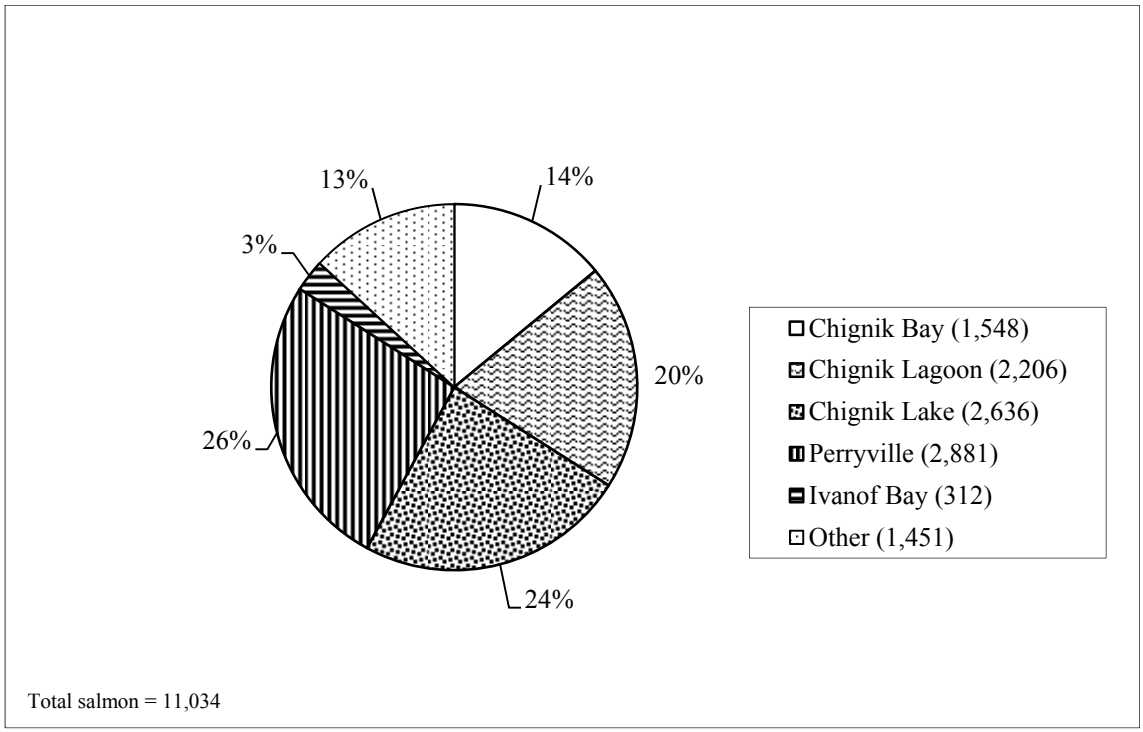

Figure 7-2.–Subsistence salmon harvests by community, Chignik Area, 2010.

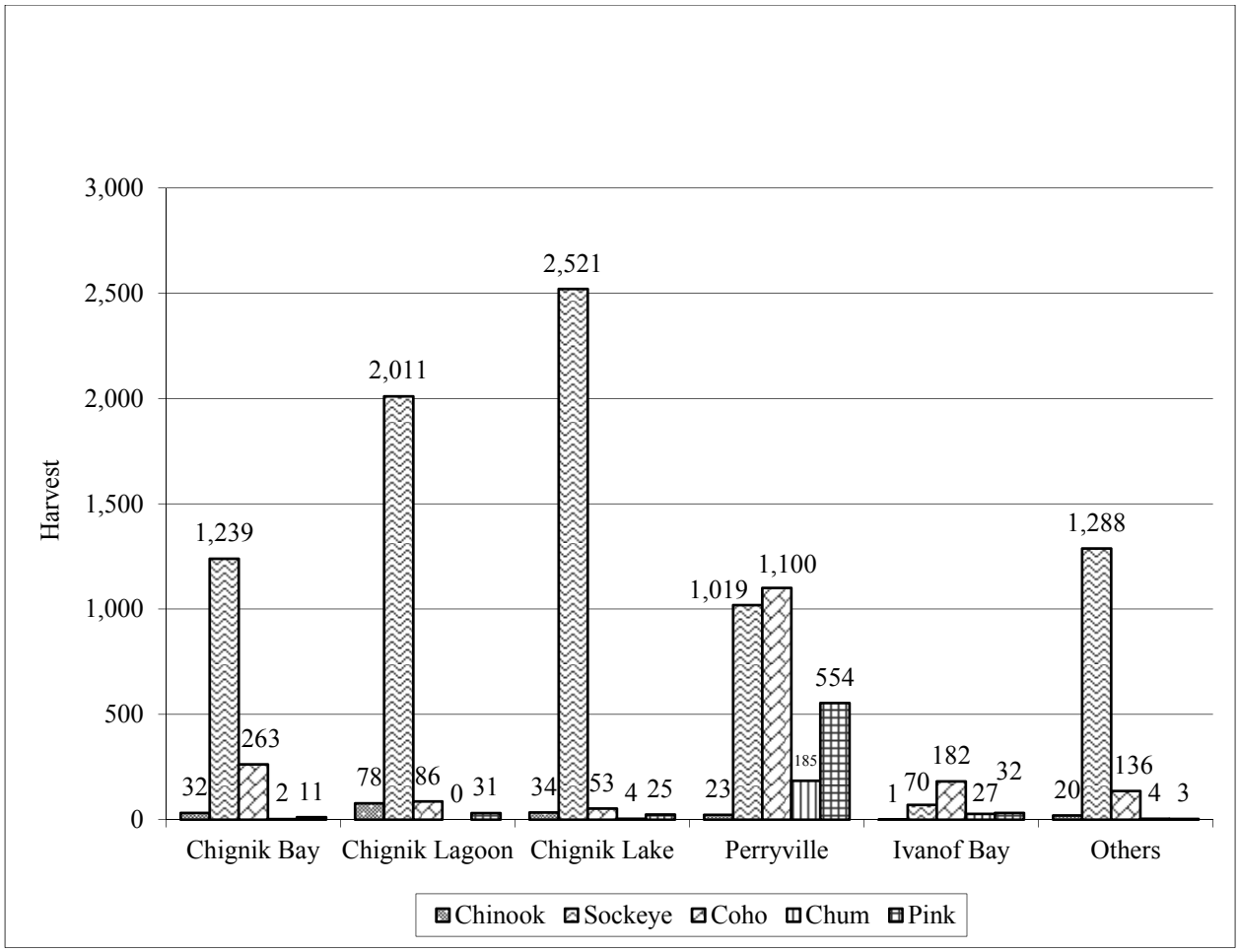

Figure 7-3.–Subsistence salmon harvests by community, Chignik Area, 2010.

CHAPTER 8: ALASKA PENINSULA AREA

BACKGROUND

The Alaska Peninsula Area includes all Pacific Ocean waters of Alaska on the north side of the Alaska Peninsula southwest of a line from Cape Menshikof to Cape Newenham and east of the longitude of Cape Sarichef Light and on the south side of the Alaska Peninsula from a line extending from Scotch Cap through the easternmost tip of Ugamak Island to a line extending 135 degrees southeast from Kupreanof Point. The communities of the Alaska Peninsula Area are Port Heiden (estimated population 102 in 2010), Nelson Lagoon (population 52), False Pass (population 35), Cold Bay (population 108), King Cove (population 938), and Sand Point (population 976) (ADLWD 2011). 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. The Alaska Administrative Code (5 AAC 01.423) includes special provisions regarding subsistence gear for other areas, including Mortensens Lagoon, the False Pass vicinity, and Bear and Sandy rivers. Salmon may be taken at any time, except in those districts and sections that are open to commercial salmon fishing, salmon may not be taken during the 24 hours before and 12 hours following a commercial salmon fishing period. A few small areas closed to subsistence salmon fishing are listed in 5 AAC 01.425.

Federal regulations governing subsistence salmon fishing in waters under the jurisdiction of the 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 2010

From 1985 through 2009, the number of subsistence salmon permits issued for the Alaska Peninsula Area has averaged 193 per year (Table 8-1). The recent 5-year average (2005–2009) was 159 permits. In 2010, 183 subsistence salmon fishing permits were issued for the Alaska Peninsula Area, up from 134 issued in 2009. The response rate was 75% in 2010 (138 of 183 permits were returned). Of all permits issued, 154

(84%) were issued to residents of Alaska Peninsula Area communities, and 29 (16%) 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 2010 was 14,959 fish. This is an increase from the year before (9,707 salmon) and is more than the recent 5-year average (13,026), and less than the 10-year average (15,156) (Table 8-1). The 2010 subsistence harvest was made up of 63% sockeye salmon, 19% coho salmon, 7% pink salmon, 9% chum salmon, and 2% Chinook salmon (Figure 8-1). Of the total harvest, the residents of Cold Bay took 6%, False Pass residents 2%, Sand Point residents 34%, Port Heiden residents 14%, Port Moller residents 2%, Nelson Lagoon residents 2%, and King Cove residents 31%. Other Alaska residents harvested 9% (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 2010 were higher than the previous year but still significantly lower than harvest levels in the nineties (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 Pacific halibut fishing harvest estimates for communities and tribes in the Alaska Peninsula Area are available for 2010 (Fall and Koster 2012).

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, 1985–2010.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	161	95	74	4,037	7,504	1,566	574	13,755
1986	147	84	101	5,396	2,996	1,455	1,779	11,727
1987	191	144	193	5,777	4,259	1,943	1,547	13,719
1988	183	114	257	5,501	5,646	1,692	1,666	14,762
1989	188	139	88	10,404	3,505	2,104	1,213	17,314
1990	201	157	246	8,588	4,029	1,589	736	15,188
1991	249	185	458	11,345	5,551	3,551	1,878	22,783
1992	229	177	385	10,739	4,267	2,574	1,840	19,805
1993	262	215	615	12,478	5,753	1,997	1,189	22,032
1994	256	213	674	11,884	6,086	4,406	2,206	25,256
1995	260	198	492	12,716	5,021	3,369	2,653	24,251
1996	234	178	362	12,176	7,743	2,728	2,569	25,578
1997	217	172	420	15,224	4,612	2,885	2,955	26,096
1998	233	153	407	12,920	5,820	1,326	2,286	22,759
1999	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
2010	183	138	338	9,464	2,898	1,274	985	14,959
5-year average (2005–2009)	159	135	206	7,846	3,218	727	1,029	13,026
10-year average (2000–2009)	163	138	282	9,042	3,651	1,221	961	15,156
Historical average (1985–2009)	193	150	319	9,789	4,570	1,905	1,473	18,057

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 8-2.–Subsistence salmon harvest estimates by community, Alaska Peninsula Area, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Cold Bay	25	18	0	847	0	8	0	856
False Pass	3	3	6	137	45	30	50	268
King Cove	51	49	0	2,431	1,686	388	126	4,632
Nelson Lagoon	3	3	0	190	125	1	0	316
Port Heiden	28	13	142	1,704	222	75	34	2,178
Port Moller	1	1	0	250	0	0	0	250
Sand Point	43	35	176	2,570	794	763	772	5,074
Subtotal, area residents	**154**	**122**	**324**	**8,129**	**2,872**	**1,266**	**982**	**13,573**
Anchorage	14	5	0	454	17	3	0	473
Eagle River	1	1	0	50	0	0	0	50
Fairbanks	1	0	0	0	0	0	0	0
Juneau	1	0	0	0	0	0	0	0
King Salmon	1	1	0	50	0	0	0	50
Kodiak City	1	1	13	7	0	0	0	20
Kotzebue	1	1	0	209	0	0	2	211
Palmer	1	1	0	48	0	1	1	50
Petersburg	2	0	0	0	0	0	0	0
Talkeetna	4	4	0	197	0	2	0	199
Wasilla	1	1	0	250	0	0	0	250
Willow	1	1	1	70	10	2	0	83
Subtotal, other Alaska residents	**29**	**16**	**14**	**1,335**	**27**	**8**	**3**	**1,386**
Total	**183**	**138**	**338**	**9,464**	**2,898**	**1,274**	**985**	**14,959**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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
Pacific 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 CSIS.

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.

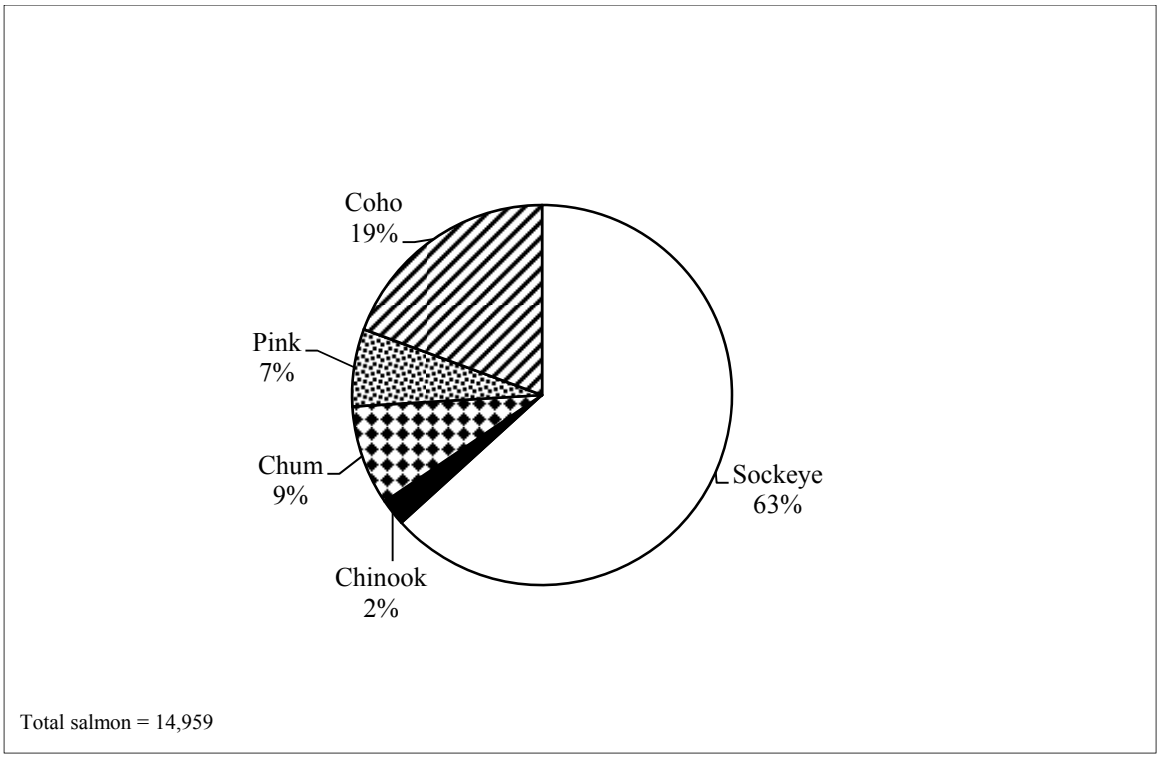

Figure 8-1.–Composition of Alaska Peninsula Area subsistence salmon harvest by species, 2010.

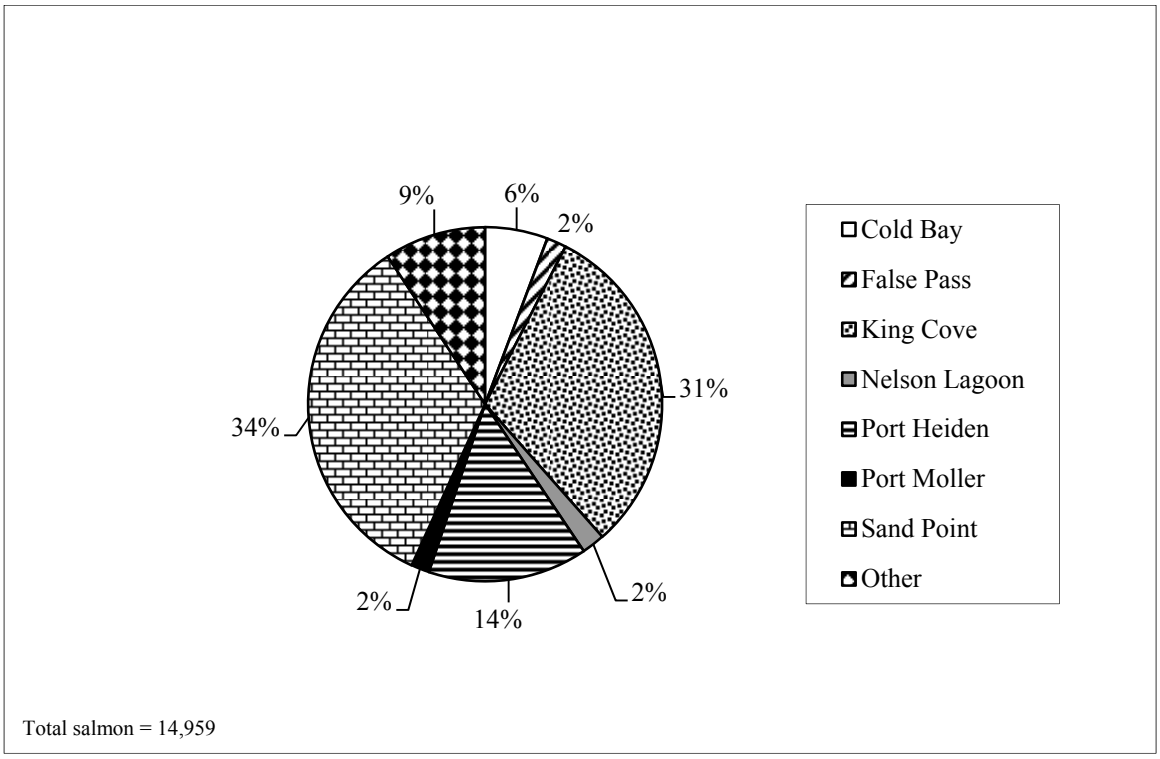

Figure 8-2.–Subsistence salmon harvests by community, Alaska Peninsula Area, 2010.

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. The population of area communities, with the exception of Unalaska–Dutch Harbor, has declined in recent years. 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 2010, the total Akutan population was estimated at 1,027; however, most of the people were living in group housing and household surveys conducted for 2009 estimated the local village population of Akutan at 90.[22] In 2000, the population of Unalaska–Dutch Harbor was 4,283 with 2,091 residents living in households and the remainder in group quarters; in 2010 the population was 4,376. In Nikolski, the population was 33 in 2000 and 18 in 2010; in Atka the population was 92 in 2000 and 61 in 2010; and in Adak the population was 326 in 2010. The population of St. Paul in 2000 was estimated at 532, and the 2010 population at 479. In 2000, St. George had an estimated population of 152, and 102 in 2010 (ADLWD 2010; ADLWD 2009; U.S. Census Bureau 2001; U.S. Census Bureau 2011). 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 local 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

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

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 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 2010

In 2010, 216 subsistence salmon permits were issued for the Unalaska District. This number is higher than the previous year, 2009, when 210 were issued, and also higher than the recent 5-year (202 permits issued) and 10-year (209 permits) averages (Table 9-1). This number was also higher than the historical average (1985–2009) of 164 permits issued yearly since 1985. Harvest numbers are recorded on the permit and returned at the end of the harvest season to ADF&G. In 2010, the return rate for the Unalaska District was 79%, with 170 permits returned out of 216 permits issued. Dutch Harbor and Unalaska residents accounted for 210, or 97%, of all permits issued in the Unalaska District, and returned 164 permits out of 170 permits (96%) (Hartill and Keyse 2010) (Table 9-2).

The estimated subsistence harvest of salmon in the Unalaska District in 2010 was 4,611 fish, which was higher than the recent 5-year average (3,895 fish) but lower than the 10-year average (4,953 fish) for the district (Table 9-1). The composition of the 2010 subsistence salmon harvest was sockeye (84%, up from 72% in 2009), pink (7%, down from 10% in 2009), coho (7%, down from 14% in 2009), chum (2%), 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 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 326 in 2010 (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 2010

Two subsistence salmon permits were issued for the Adak District in 2010. This was less than the 5-year (5) and 10-year (7) averages, and also lower than the historical 1988–2009 average (19) (Table 9-3). In 2010, both permits were issued to residents of Adak (Table 9-4). The total harvest in 2010 was 25 salmon (Table 9-3). This was the same as in 2009 (25), but considerably less than the recent 5-year (217) and 10-year (280) averages, and the historical average (1988–2009) of 342 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 8 personal use–subsistence permits have been issued and the average annual harvest has been 260 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 2010 (Fall and Koster 2012).

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, 1985–2010.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985	65	22	0	897	208	20	1,293	2,418
1986	121	28	0	3,449	847	375	2,468	7,139
1987	81	49	0	1,097	378	151	1,780	3,406
1991	77	45	3	966	390	83	2,627	4,069
1989	74	42	2	1,112	470	36	1,292	2,912
1990	94	37	4	2,357	681	100	1,428	4,570
1991	89	48	0	1,294	666	45	1,075	3,080
1992	144	102	7	2,739	587	11	1,723	5,067
1993	139	102	17	2,831	697	136	587	4,268
1994	150	120	1	2,759	774	48	1,053	4,635
1995	160	129	23	4,484	484	23	791	5,805
1996	189	123	5	1,107	1,033	49	492	2,686
1997	221	163	8	4,192	864	110	554	5,728
1998	206	161	4	3,317	731	26	729	4,807
1999	208	154	0	2,485	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
2010	216	170	1	3,883	319	71	336	4,611
5-year average (2005–2009)	202	146	9	2,699	509	80	598	3,895
10-year average (2000–2009)	209	159	9	3,715	610	64	555	4,953
Historical average (1985–2009)	164	117	7	2,889	646	75	980	4,596

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 9-2.–Estimated subsistence salmon harvests by community, Unalaska District, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	1	1	0	24	0	0	1	25
Dutch Harbor	125	98	0	1,852	125	0	68	2,045
Eagle River	1	1	0	0	0	0	0	0
Palmer	1	1	0	0	0	0	0	0
Pelican	1	1	0	0	0	0	0	0
Unalaska	85	66	1	2,007	194	71	268	2,541
Wasilla	2	2	0	0	0	0	0	0
Total	**216**	**170**	**1**	**3,883**	**319**	**71**	**336**	**4,611**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 9-3.–Historical subsistence and personal use salmon harvests, Adak District, 1988–2010.

	Permits		Estimated salmon harvest					
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
2010	2	1	0	25	0	0	0	25
5-year average (2005–2009)	5	4	0	208	0	0	9	217
10-year average (2000–2009)	7	6	1	262	2	0	13	280
Historical average (1988–2009)	19	14	1	311	7	0	24	342

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

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

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

Table 9-4.–Estimated subsistence salmon harvests by community, Adak District, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Adak	1	1	0	25	0	0	0	25
Adak Station	1	0	0	0	0	0	0	0
Total	**2**	**1**	**0**	**25**	**0**	**0**	**0**	**25**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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

Community	Year	Estimated number of harvesting households	Estimated salmon harvest[a]						
			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, 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.

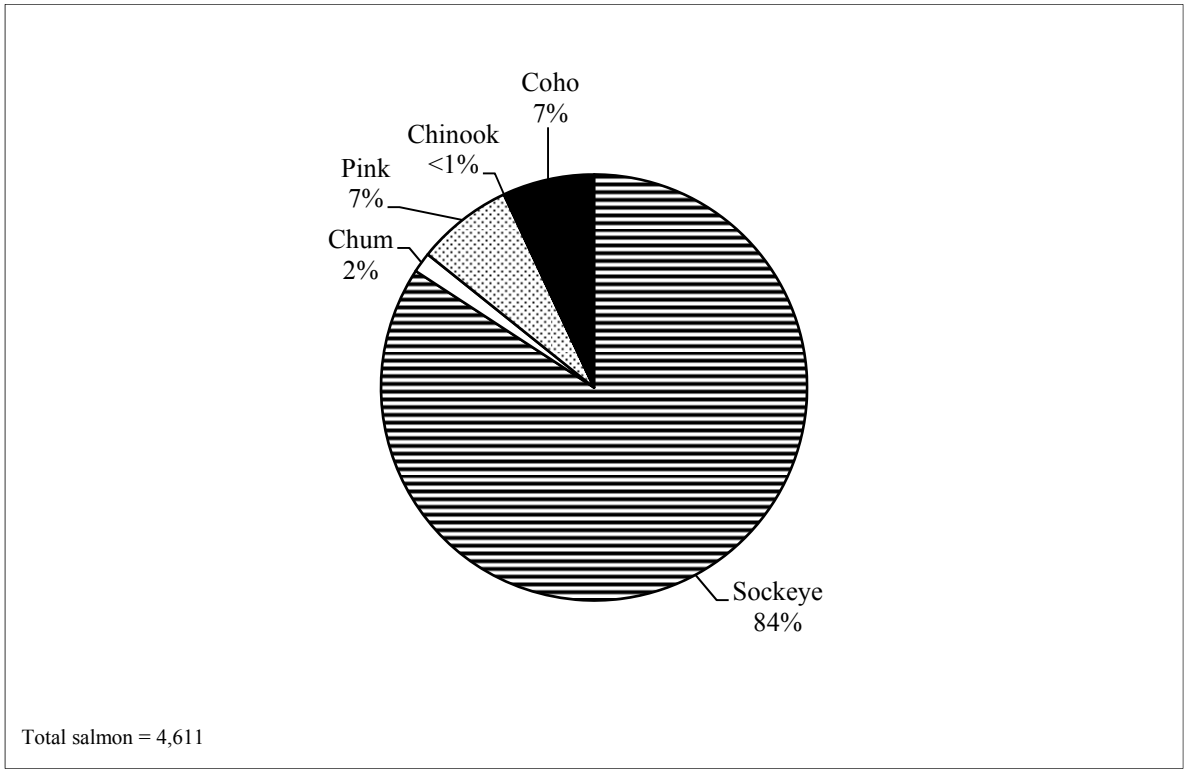

Figure 9-1.–Composition of Unalaska District estimated subsistence salmon harvest by species, 2010.

CHAPTER 10: KODIAK AREA

INTRODUCTION

The Kodiak Area encompasses the waters of the Gulf of Alaska surrounding the Kodiak Archipelago and those waters along that portion of the Alaska Peninsula that drains into Shelikof Strait (Figure 10-1). The portion of the Kodiak Island Borough's population living along the island's road system is the largest rural community in Alaska (as defined by the Federal Subsistence Board [FSB]) and the largest community outside the nonsubsistence areas defined by the Joint Board (Figure 10-1). The population of the Kodiak Island Borough (13,592 in 2010) comprises all individuals residing on Kodiak Island; however this population is often distinguished by which communities have access to the road system. Communities along the Kodiak Island road system include Kodiak City (6,130), the U.S. Coast Guard Base (1,301), Womens Bay (719), Chiniak (47), and the remainder of the road-accessible Kodiak Island Borough (this includes all residents of Kodiak Island who are on the road system but are not identified within the population of a census designated place [CDP] or city) (4,315). Communities on Kodiak Island that are located outside the range of the road system include Akiak (346), Aleneva CDP (37), Karluk (37), Larsen Bay (87), Old Harbor (218), Ouzinkie (161), and Port Lions (194) (U.S. Census Bureau 2011).

SALMON HARVEST IN THE KODIAK AREA

Salmon Harvest Regulations

Permits have been required to harvest salmon for subsistence purposes in the Kodiak Area since 1962. Since 1990, all Alaska state residents have been eligible to participate in subsistence salmon fishing in the Kodiak Area. In 2010, 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. Only gillnets could be operated for subsistence purposes from purse seine vessels. Permits allowed individual fishers to harvest 25 salmon for their own use 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 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.

In 2010, 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 2010 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 2010

In the Kodiak 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 2010, 1,890 subsistence permits with harvest information were returned to ADF&G (tables 10-1 and 10-2). Of these, 1,550 (82%) had been issued to residents of Kodiak Island Borough, 327 (17%) had been issued to residents of other Alaska communities, and 13 (<1%) had been issued to Alaska residents who were serving in the military outside of the state. Following a well-established trend, permit holders with addresses in Kodiak Island Borough accounted for the majority (82%) of all permits returned for 2010 (Table 10-2).

The total reported subsistence salmon harvest for the Kodiak Area in 2010 was 28,067 fish, which is lower than the recent 5-year (2005–2009) average of 31,122 salmon, and the 10-year (2000–2009) average of 34,913 salmon (Table 10-1). Of the total harvest, 26,516 salmon (94%) were harvested by residents of Kodiak Island Borough communities and 1,439 salmon (5%) were harvested by permit holders in other Alaska communities (Table 10-2). Of the 26,516 salmon harvested by Kodiak Island Borough residents, 20,611 fish (78%) were taken by residents living along the Kodiak Island road system (figures 10-1 and 10-2). The Kodiak Island road system includes Kodiak City, the U.S. Coast Guard Base, Womens Bay, Chiniak, and the remaining residents who live along the Kodiak Island road system but who are not identified within the population of a CDP or city. This is consistent with the pattern between 2000 and 2009 when 72% to 83% of all salmon harvested by Kodiak Island Borough residents for subsistence purposes was taken by residents of Kodiak City and areas along the road system. Comparatively, the 6 villages and other populated remote locations that do not have access to the road system surrounding Kodiak City harvested 5,905 salmon in 2010 (Table 10-2).

In 2010, the Kodiak Area subsistence salmon harvest was composed of 79% sockeye salmon, 15% coho salmon, 4% pink salmon, 1% chum salmon, and 1% Chinook salmon (Figure 10-3). The commercial harvest retained for home use was different in 2010 in terms of the composition of the harvest. As shown in Figure 10-4, in 2010, 11,748 salmon, including 2,976 coho (25%), 6,267 pink (53%), 2,330 sockeye (20%), 160 Chinook (2%), and 15 chum salmon (<1%), were retained from commercial harvests for home use (Jackson et al. 2012:38). The total number of salmon retained from commercial harvests for personal use in 2010 was almost 3 times as large as it was in 2009. The greatest increase overall was for the harvests of pink and sockeye salmon retained from commercial boats. With the exception of coho, the harvest quantity of all other species at least doubled from 2009 to 2010 (Jackson et al. 2012:38).

In 2001, interviews were conducted with Division of Subsistence staff and fishery managers within the Division of Commercial Fisheries. During interviews, fishery managers expressed uncertainty regarding the accuracy of subsistence salmon harvest data collected through the Kodiak Area permit program. ADF&G staff suspected that a substantial amount of subsistence harvests occurred without permits, especially in areas off the Kodiak Island road system. Subsistence salmon harvest estimates for the Kodiak 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 communities outside of the road system, including Akhiok, Karluk, Larsen Bay, Old Harbor, Ouzinkie, and Port Lions, has proven 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 result in increased participation in the permit program in these 6 communities. A total of 100 permits were returned in 2000; from 2001 through 2006 between 189 and 143 permits were returned (Table 10-3). Accordingly, the yearly reported subsistence salmon harvest also fluctuated between 2000 and 2006 with the lowest number harvested being 6,299 fish in 2000 and the highest number being 10,172 fish in 2005. The most recent years of 2007–2010 have marked the lowest reported salmon harvests, the lowest being 5,138 in 2007 and the highest being 5,896 in 2010. In 2010, both the number of permits returned by the 6 villages (118 permits) and the number of harvested salmon reported (5,896 fish) were comparable to data for 2000, which was 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. In 2013, the Division of Subsistence will begin conducting subsistence salmon harvest surveys with residents of Larsen Bay, Old Harbor, and Kodiak City and communities along surrounding road system to address this need for current data and community outreach.

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 document the number 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. This need will also be addressed by Division of Subsistence researchers while administering 2013 subsistence salmon harvest surveys .

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 Area. For the findings for 2010, see Fall and Koster (2012).

There are no annual harvest assessment programs for other subsistence finfish fisheries in the Kodiak Area. Harvest estimates based on comprehensive household surveys conducted by the Division of Subsistence are available in the CSIS for freshwater and marine species spanning multiple years for each Kodiak Island Borough community. Fish harvested in the largest quantities and used by the majority of households include Pacific cod, lingcod *Ophiodon elongatus*, various species of flounders, Pacific 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, 1986–2010.

Year	Permits		Reported salmon harvest[a]					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1986	1,244	1,002	90	14,391	6,998	605	2,371	24,455
1987	1,124	880	101	13,198	6,463	1,299	2,421	23,482
1988	1,098	699	108	10,081	4,291	377	1,320	16,177
1989	2,800	717	43	12,638	4,123	419	1,553	18,776
1990	2,900	1,167	131	17,959	8,627	655	1,605	28,977
1991	1,406	1,225	177	21,835	8,208	714	1,743	32,677
1992	1,561	1,195	318	20,684	8,643	643	1,646	31,934
1993	1,496	959	243	19,471	7,176	838	2,696	30,424
1994	2,550	1,464	205	17,962	7,491	440	1,758	27,856
1995	1,950	1,194	175	19,416	5,603	293	1,548	27,035
1996	1,567	1,390	253	28,287	5,117	381	1,125	35,163
1997	2,098	1,638	383	33,293	6,369	234	1,458	41,737
1998	1,841	1,126	350	20,459	5,348	214	1,412	27,783
1999	ND	1,438	397	26,497	4,932	388	1,266	33,480
2000	ND	1,376	273	24,873	5,399	341	742	31,628
2001	ND	2,153	273	33,833	5,920	427	1,158	41,611
2002	ND	2,271	593	32,977	6,057	350	1,665	41,642
2003	ND	2,275	500	32,104	6,096	384	1,484	40,568
2004	ND	2,240	379	30,217	5,819	261	1,395	38,071
2005	ND	1,900	431	27,002	7,447	592	2,343	37,815
2006	ND	1,906	280	22,905	6,640	441	1,827	32,093
2007	ND	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
2010	ND	1,890	158	22,170	4,200	273	1,266	28,067
5-year average (2005–2009)	ND	1,860	246	23,425	5,525	325	1,602	31,122
10-year average (2000–2009)	ND	1,961	325	27,113	5,691	339	1,445	34,913
Historical average (1986–2009)	ND	1,488	259	22,804	6,096	454	1,599	31,212

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 2010.

Community	Permits returned	Reported Salmon Harvest[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Kodiak Island Borough							
Akhiok	4	0	148	0	0	0	148
Chiniak	24	1	233	81	2	8	325
Karluk	2	0	20	10	0	5	35
Kodiak (city)	1,407	137	17,139	2,308	103	599	20,286
Larsen Bay	18	1	320	55	10	10	396
Old Harbor	25	0	595	483	93	285	1,456
Ouzinkie	30	2	1,077	609	44	168	1,900
Port Lions	39	0	1,360	493	0	108	1,961
Uganik Bay	1	0	9	0	0	0	9
Subtotal, Kodiak Island Borough	**1,550**	**141**	**20,901**	**4,039**	**252**	**1,183**	**26,516**
Other Alaska							
Anchor Point	4	0	0	0	0	0	0
Anchorage	137	15	573	77	5	18	688
Bethel	1	0	14	0	0	0	14
Bettles	1	0	0	0	0	0	0
Big Lake	1	0	0	0	0	0	0
Central	1	0	0	0	0	0	0
Chickaloon	2	0	0	0	0	0	0
Chugiak	7	0	0	0	0	0	0
Cold Bay	1	1	8	0	0	0	9
Cordova	3	0	0	0	0	0	0
Craig	1	0	15	0	0	0	15
Delta Junction	1	0	0	0	0	0	0
Douglas	1	0	25	0	0	0	25
Dutch Harbor	1	0	0	3	0	0	3
Eagle River	22	0	46	36	2	5	89
Elmendorf AFB	1	0	0	0	0	0	0
Fairbanks	23	0	145	0	4	12	161
Girdwood	3	0	4	0	5	1	10
Gustavus	1	0	0	0	0	0	0
Homer	19	0	112	15	1	35	163
Hope	1	0	0	0	0	0	0
Juneau	1	0	75	0	0	0	75
Kasilof	4	0	0	0	0	0	0
Kenai	10	1	14	22	1	2	40
Ketchikan	1	0	0	0	0	0	0
Nikiski	3	0	0	0	0	0	0
Ninilchik	1	0	0	0	0	0	0
North Pole	1	0	0	0	0	0	0
Palmer	20	0	3	6	3	10	22
Petersburg	1	0	0	0	0	0	0
Seldovia	2	0	0	0	0	0	0
Seward	9	0	0	0	0	0	0

-continued-

Table 10-2.–Page 2 of 2.

Community	Permits returned	Reported Salmon Harvest[a]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Sitka	1	0	0	0	0	0	0
Soldotna	14	0	0	0	0	0	0
Sterling	2	0	0	0	0	0	0
Unknown community	1	0	125	0	0	0	125
Wasilla	23	0	0	0	0	0	0
Willow	1	0	0	0	0	0	0
Subtotal, other Alaska	**327**	**17**	**1,159**	**159**	**21**	**83**	**1,439**
Other USA[b]	13	0	110	2	0	0	112
Total	**1,890**	**158**	**22,170**	**4,200**	**273**	**1,266**	**28,067**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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. 2009b:105
2008	117	5,850	Fall et al. 2011:111
2009	118	5,824	Fall et al. 2012:119
2010	118	5,896	Table 10-2

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

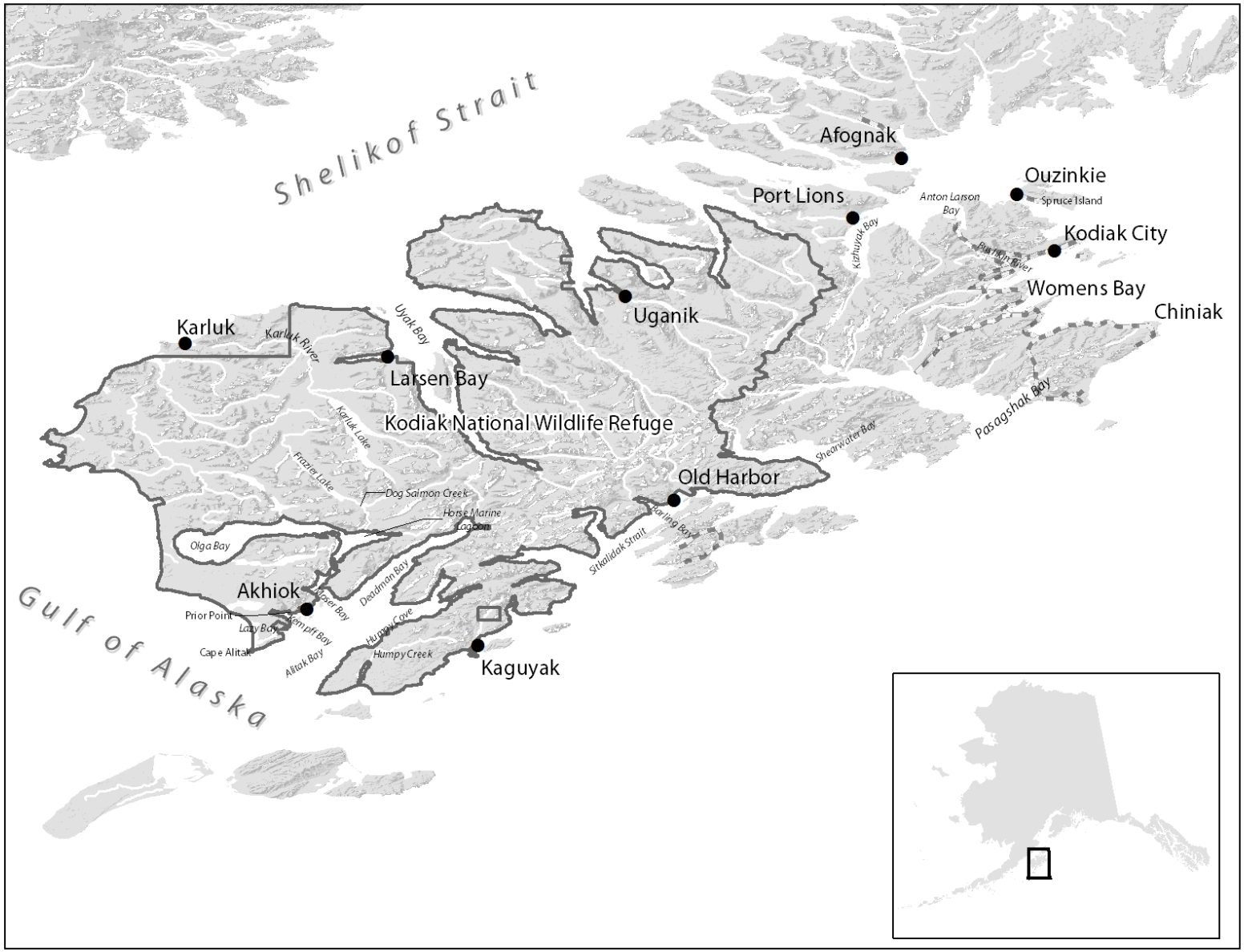

Figure 10-1.–Kodiak Area map, 2010.

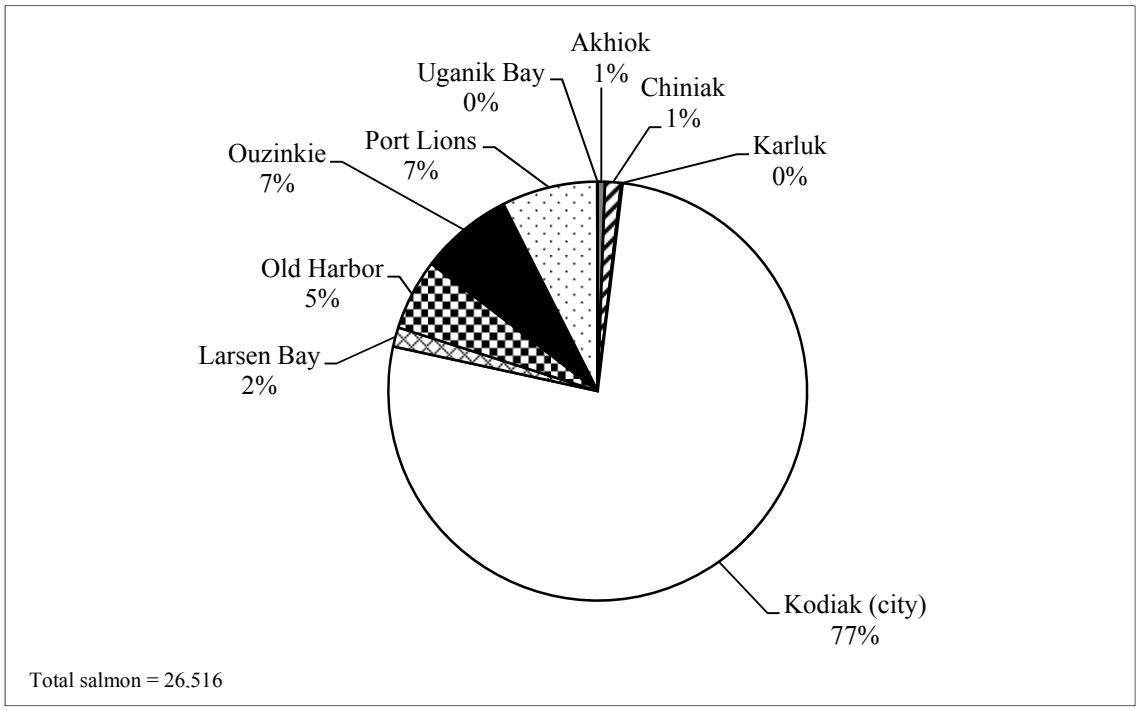

Figure 10-2.–Subsistence salmon harvests by community, Kodiak Area, 2010.

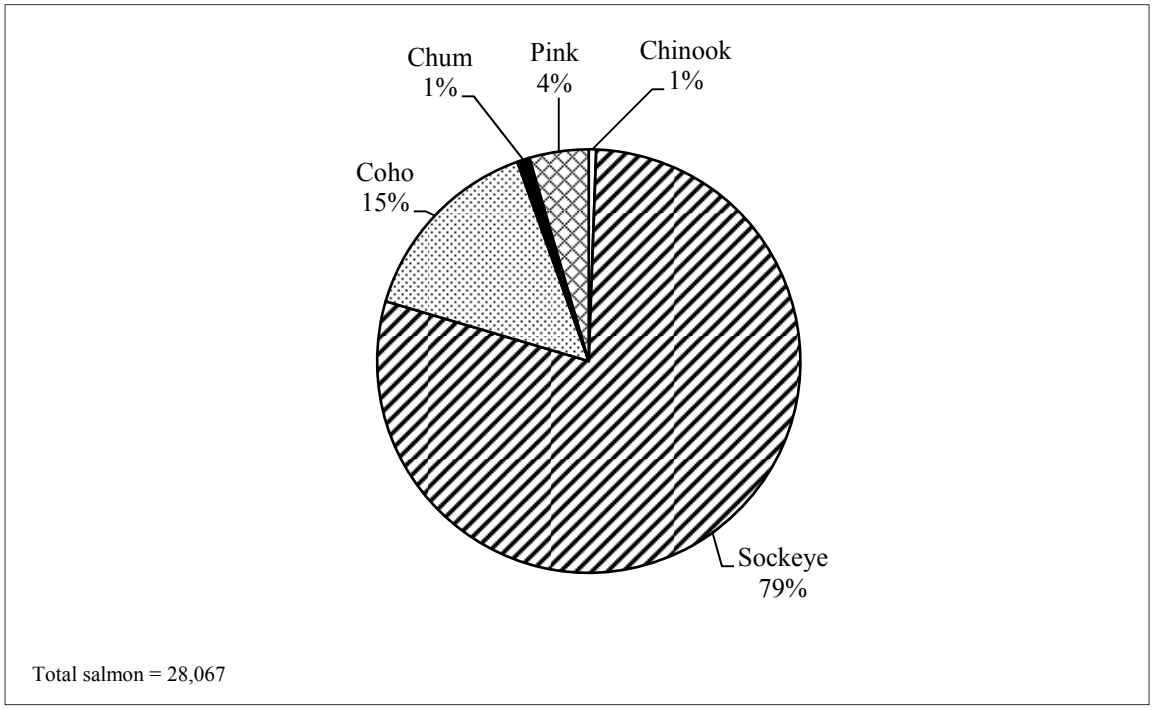

Figure 10-3.–Composition of Kodiak Area subsistence salmon harvest by species, 2010.

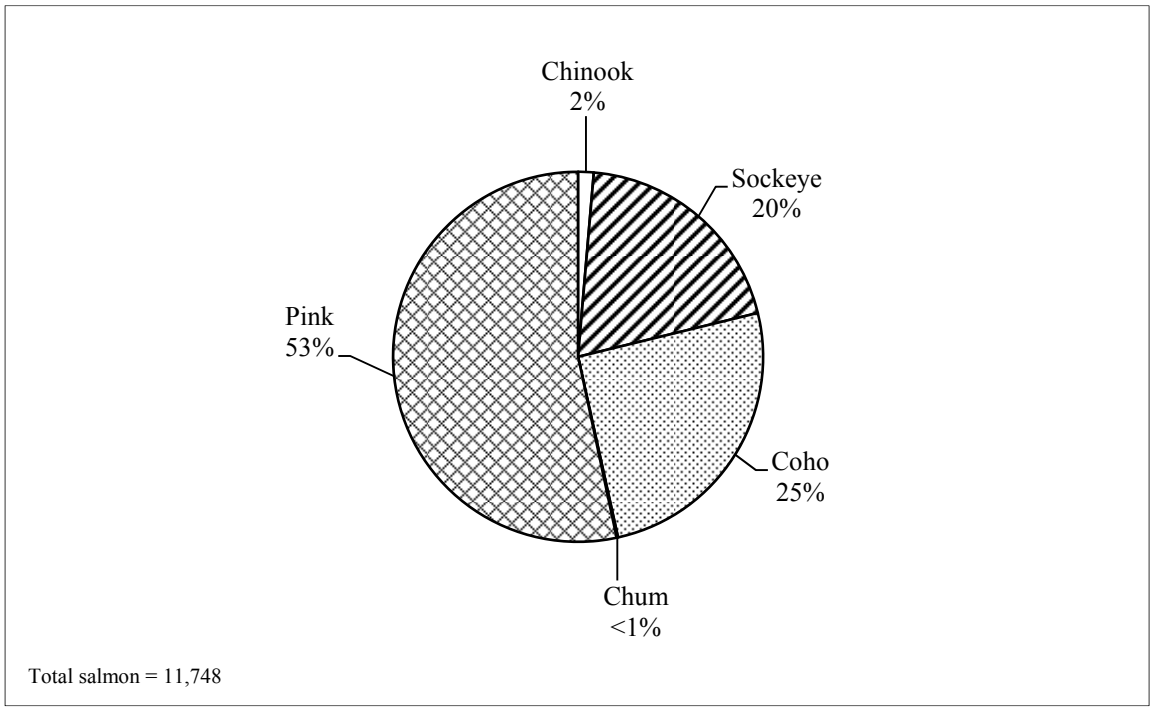

Figure 10-4.–Salmon retained from commercial harvests for home use, Kodiak Area, 2010.

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. 2009a), which, in this area, 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. A summary of the personal use salmon fisheries of the Cook Inlet Area follows the discussion of Cook Inlet subsistence 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 37 in 2010), Tyonek (population 171), Beluga (population 20), Seldovia (population 420 in the city and village CDP), Port Graham (population 177), and Nanwalek (formerly called English Bay, population 254). The population of the entire Cook Inlet area in 2010 was 436,221, including the Municipality of Anchorage (population 291,826), the Kenai Peninsula Borough (55,400), and the Matanuska-Susitna Borough (88,995). This represented 61% of the state's total population in 2010 (ADLWD 2011).

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 2010, returns of natural runs of pink salmon, usually the dominant species in Lower Cook Inlet, were fair to poor, demonstrating an overall reduction of abundance (Hammarstrom and Ford 2011:2). Key runs of enhanced sockeye salmon were poor and the commercial fishery had the lowest harvest of sockeye salmon since 1980 (Hammarstrom and Ford 2011:5). However,

runs into the English Bay lakes, which are important for the Nanwalek and Port Graham fisheries, were reasonably good. However, due to the overall concern for sockeye salmon stocks in Lower Cook Inlet, the subsistence fishery was restricted to a single 48-hour period per week starting June 1 in 2010 (Hammarstrom and Ford 2011:6).

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.

Sockeye salmon returns to the English Bay lakes were 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) and in 2010 released more than 200,000 sockeye salmon fry into the English Bay Lakes lakes system (Hammarstrom and Ford 2011:6).

Harvest Estimates for 2010

In 2010, estimated salmon harvests for home uses in the Port Graham and Koyuktolik subdistricts totaled 4,470 salmon, including both subsistence setnet and reported rod and reel harvests (Table 11-1). The 2010 harvest was slightly lower than the historical average of 5,226 salmon.

In 2010, residents of Port Graham returned 15 permits and harvested 331 salmon (Table 11-2), a major decrease in harvest from the 2009 harvest of 2,265 salmon (Fall et al. 2012). Nanwalek residents returned 20 permits and harvested a total of 4,139 salmon, a major increase from the 2009 harvest of 2,858 salmon. As shown in Table 11-2 and Figure 11-2, the combined harvest of the 2 communities of Nanwalek and Port Graham included 1,630 sockeye salmon, the species with the highest harvest (36% of the overall harvest), followed by coho salmon (1,448; 32%), pink salmon (1,054; 24%), chum salmon (308; 7%), and Chinook salmon (30; 1%). The harvest was relatively evenly distributed among the species, compared to the 2009 harvest where sockeye salmon made up 68% of the harvest (Fall et al. 2012). The setnet fishery in Port Graham was restricted to a single 48-hour period from June 1 to July 2 (Hammarstrom and Ford 2011:6). Residents of Port Graham reported to Division of Subsistence research staff that this led to a reduction in their sockeye harvest in 2010 since they were not able to set their nets for the normal 132-hour weekly fishing period.

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. 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 2010 Season

There were 16 permits issued for the Seldovia subsistence fishery in 2010; 12 were returned (Table 11-3). The estimated harvest was 133 sockeye salmon (43%), 88 pink salmon (28%), 47 chum salmon (15%), 41 coho salmon (13%), and 3 Chinook salmon (1%), for a total of 312 salmon (Table 11-3 and Figure 11-3). All 16 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, 15 harvested in 2009, and 3 harvested in 2010. 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 (2005–2009) average for the fishery is 195 salmon (Table 11-4), with the 2010 harvest above the 5-year, 10-year (2000–2009), and historical averages.

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) and Holen and Fall (2011).

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 2010 Season

In 2010, 105 permits were issued for the Tyonek Subdistrict subsistence salmon fishery, including 67 permits issued to Tyonek residents (64%) and 38 permits issued to other Alaska residents, including 27 to residents of Anchorage (26%; Table 11-5). Residents of Tyonek accounted for 87% of the reported harvest total (1,062 salmon), including 86% of the reported Chinook salmon harvest (725 Chinook salmon).

The 2010 reported harvest of 1,226 salmon was consistent with the 5-year average of 1,273; however, this was lower than the 10-year average of 1,323 salmon and the historical average of 1,547 salmon (Table 11-6). Of the total reported subsistence salmon harvest in 2010, 843 were Chinook salmon (69%), 212 were sockeye salmon (17%), 167 were coho salmon (14%), 2 were chum salmon (<1%) , and 2 were 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. For a more detailed discussion of this fishery see Holen and Fall (2011).

Legal gear includes a fish wheel equipped with a live box. Permit holders must be present at the fish wheel while the wheel is fishing. A season limit of 2,500 salmon was established for the fishery. Chinook salmon and rainbow/steelhead trout must be returned alive to the water. Seasonal limits for households are 25 salmon for a household of 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 2010

A record 32 subsistence permits were issued for the Yentna River subsistence fish wheel fishery in 2010 and all were returned (tables 11-7 and 11-8). In 2010, 11 of the 32 permit holders resided in the Skwentna area (34%), with the remaining 21 permits held by residents of other Cook Inlet area communities, particularly residents of nearby Willow who held 7 permits (22%) (Figure 11-5). Permit holders living in the community of Skwentna in 2010 harvested 270 of the reported 748 salmon, or 36% of the harvest (Table 11-7).

The total harvest as reported on permit returns in 2010 was 748 salmon, including 642 sockeye salmon (86%), 50 coho salmon (7%), 38 pink salmon (5%), and 18 chum salmon (2%) (Figure 11-6). There were no reported harvests of Chinook salmon nor is it legal to retain the harvest. The 2010 harvest of 748 salmon was almost double the 5-year average of 398 salmon, and above the 10-year average of 497 salmon, and the historical average of 524 salmon (Table 11-8).

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 2010, the total harvest in the federal fishery on the Kenai and Kasilof rivers was 943 salmon, all of which were sockeye salmon (Table 11-9). There were a total of 169 permits issued to residents of these 3 communities, with 65 permits issued to residents of Cooper Landing, 22 to residents of Hope, and 82 to residents of Ninilchik (Table 11-9).

Table 11-10 shows the harvest over time, but only includes the years 2007–2010 because this is a new fishery. In all 4 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.

COOK INLET PERSONAL USE SALMON FISHERIES

Background

The BOF first established personal use salmon fisheries in the Cook Inlet Area in 1981 (Nelson et al. 1999:146). Since Alaska statehood in 1959, opportunities had been provided to harvest salmon for home uses with noncommercial set gillnets along various Cook Inlet beaches under subsistence regulations (Braund 1982). In 1978, the new Alaska subsistence statute defined, for the first time, subsistence fishing as fishing for “customary and traditional” uses (AS 16.05.940(31, 33)). In 1980, the BOF determined that only the noncommercial net fisheries in the Tyonek and Port Graham subdistricts met the criteria to qualify as customary and traditional subsistence fisheries. Therefore, the BOF created the “personal use” category of fishing regulations to continue providing opportunities for Alaskans to harvest salmon for home use with nets in areas of Cook Inlet that are generally accessible along the road system. In 1992, the Joint Board classified most of the Cook Inlet Area as a “nonsubsistence area,” where subsistence fishing may not be permitted. Thus, in these areas, personal use fisheries are the primary means by which Alaska residents may obtain salmon for home uses using setnets or dip nets.

Due primarily to court decisions and legislation, personal use fishing regulations for Cook Inlet changed frequently in the 1980s and early 1990s. In 1981, the BOF created personal use dip net fisheries targeting

sockeye salmon in the Kasilof and Kenai rivers. Until 1996, these fisheries opened only after achievement of escapement goals was projected. Since then, they have taken place within a fixed season. In 1986, the BOF created a personal use dip net fishery at the mouth of Fish Creek (Knik Arm) focusing on sockeye salmon. A fourth Upper Cook Inlet dip net fishery began in 2008 in the lower portion of the Beluga River on the western shore of Cook Inlet; this fishery is open only to Alaska residents 60 years of age or older. In most years since 1981, personal use set gillnet fisheries in the Cook Inlet Area have been limited to Kachemak Bay and an area at the mouth of the Kasilof River. For more detail on the history of subsistence and personal use salmon fisheries in the Cook Inlet Area, see Braund (1982), Fall and Stanek (1990), Brannian and Fox (1996), Nelson (1994), Nelson (1995), Nelson et al. (1999), and Dunker (2010). Table 11-11 summarizes harvest data for Cook Inlet personal use and subsistence fisheries (the latter of which are no longer authorized by state regulations).

Upper Cook Inlet Personal Use Salmon Fisheries

Presently, personal use salmon fisheries in the Upper Cook Inlet Area are governed by the provisions of the Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.540). Participants must possess an Alaska resident sport fishing license and obtain an Upper Cook Inlet Personal Use Fishing Permit for their household. Permit holders and household members may participate in any of the upper inlet personal use salmon fisheries (except, as noted, the Beluga River fishery is only open to Alaska residents 60 years of age or older). For all the fisheries combined, the annual limit is 25 salmon for the permit holder and 10 salmon for each additional household member. Permits must be returned to ADF&G at the end of the season with a record of the harvest.

In 2010, 31,590 permits were issued for Upper Cook Inlet personal use fisheries, excluding the Beluga River dip net fishery. For the 4 fisheries combined (including unknown fishing locations), the estimated harvest was 531,291 salmon, including 514,255 sockeye (97%), and there were lesser totals for the other 4 species (Table 11-12). The estimated harvest in 2010 was the highest in the history of these fisheries. For 1996 through 2009, the average annual harvest was 271,514 salmon, although participation and harvest have grown steadily (Table 11-13).

Table 11-14 reports the number of permits issued for these 4 Upper Cook Inlet personal use fisheries and the estimated harvest by place of residence of the permit holder. Residents of the Municipality of Anchorage (including Anchorage, Chugiak, Eagle River, JBER [Joint Base Elmendorf/Richardson], and Girdwood) held the most permits (55%) and accounted for 55% of the harvest, followed by Kenai Peninsula Borough residents (21% of permits; 20% of harvests), Matanuska–Susitna Borough residents (19% of permits; 20% of harvest), residents of other Alaska communities (3% of permits; 4% of harvest), and permit holders for whom a community of residence could not be established (1% of permits; 1% of harvests).

Kasilof River Personal Use Setnet Fishery

This fishery takes place at the mouth of the Kasilof River between regulatory markers approximately 1 mile on either side of the river. Legal gear is a set gillnet no more than 10 fathoms in length, 6 inches in mesh size, and 45 meshes in depth. The fishery is open daily from 6:00 AM to 11:00 PM from June 15 through June 24. In 2010, the total estimated harvest in the fishery was 22,107 salmon, of which 21,924 (99%) were sockeye salmon. The average annual harvest from 1996 through 2009 was 19,475 salmon (Table 11-15).

Kasilof River Dip Net Fishery

This dip net fishery takes place in the lower mile of the Kasilof River 24 hours per day from June 25 through August 7. Retention of Chinook salmon in this fishery is prohibited. The estimated harvest in 2010 was 73,826 salmon, of which 96% was sockeye salmon. From 1996 through 2009, the average annual harvest in this fishery was 42,430 salmon (Table 11-16).

Kenai River Dip Net Fishery

This dip net fishery takes place in the lower Kenai River downriver of the Warren Ames Bridge. Fishing is open from July 10 through July 31, 7 days per week from 6:00 AM to 11:00 PM; when the abundance of sockeye salmon is greater than 2 million fish, the fishery may be open by emergency order 24 hours a day. No more than 1 Chinook salmon per permit may be retained in this fishery. Estimated harvests totaled 397,450 salmon in 2010, including 389,552 sockeye salmon (98%). The average annual harvest from 1996 through 2009 was 197,414 salmon, with harvest—along with participation—rising markedly over that period (Table 11-17).

Fish Creek Dip Net Fishery

This dip net fishery opens by emergency order if the department projects an escapement into Fish Creek (Knik Arm) of more than 50,000 sockeye salmon. The season is July 10 through July 31. Open waters extend from the terminus of Fish Creek upstream to one-quarter of a mile above the Knik–Goose Bay Road. No Chinook salmon may be retained in this fishery. Estimated harvests totaled 29,304 salmon in 2010, 81% of which was sockeye salmon. This was the highest harvest recorded for the fishery since 1993. The fishery did not open from 2002 through 2008. The average annual harvest for those years with an open fishery from 1996 through 2009 was 6,859 salmon (Table 11-18).

Unknown Upper Cook Inlet Personal Use Dip Net Fishery

Because not all participants in the Upper Cook Inlet personal use dip net fisheries indicate the location of their fishing activities when they return their permits, an estimate of harvests in an "unknown" Upper Cook Inlet dip net fishery is produced annually. Harvests that could not be attributed to one of the 4 Upper Cook Inlet dip net fisheries (excluding the Beluga River fishery, which is discussed below) were estimated at 8,604 salmon in 2010, 96% of which was sockeye salmon (Table 11-19).

Beluga River Personal Use Salmon Fishery

Participation in this dip net fishery, which first took place in 2008, is limited to Alaska residents 60 years of age or older. The fishery is open 24 hours per day from July 10 to August 31 within the Beluga River, western Cook Inlet, from about one-quarter mile upstream of the Beluga River bridge to about 1 mile below the bridge. The fishery operates under the single seasonal limit for Cook Inlet Area personal use salmon fisheries (25 salmon for the permit holder and 10 additional salmon for each dependent), except only 1 Chinook salmon may be retained. Participants must report their harvest weekly to ADF&G, and the fishery closes when 500 salmon have been harvested (5 AAC 77.540(g)). Harvests totaled 53 salmon in 2010, compared to 225 salmon in 2009 and 66 salmon in 2008 (Table 11-20). Harvest data by place of residence are presently not available for this fishery, and totals for this fishery are not included with other Upper Cook Inlet personal use fisheries summarized in Table 11-14.

Lower Cook Inlet Personal Use Salmon Fisheries

Kachemak Bay Setnet Fishery

This setnet fishery along Kachemak Bay in the Lower Cook Inlet Management Area was a subsistence fishery before being reclassified as a personal use fishery in the early 1980s. By regulation, the fishery is open from August 16 through September 15, from 6:00 AM Monday until 6:00 AM Wednesday and from 6:00 AM Thursday until 6:00 AM Saturday. The fishery closes when a guideline harvest range of 1,000–2,000 coho salmon has been achieved. Participants must obtain a permit from the Homer ADF&G office—this is separate from the permit program for the Upper Cook Inlet personal use fisheries. Seasonal limits are 25 salmon for the permit holder and 10 salmon for each additional household member (5 AAC 77.549). Fishers must phone the Homer ADF&G office to report their daily harvests.

In 2010, the reported harvest, based on 122 returned permits (95% of the 128 permits issued), was 1,306 salmon, of which 875 (67%) were coho. The recent 10-year average harvest for this fishery (2000–2009)

was 1,805 salmon (Table 11-21). In 2010, 103 of 128 permits (80%) were issued to residents of Homer. Since 1990, about 78% of permit holders for this fishery have been from Homer (Hollowell et al. 2012:114). Harvest data by place of residence are presently not available for this fishery. Table 11-21 also provides historical harvests for this fishery for 1969 through 2010.

China Poot Dip Net Fishery

This personal use dip net fishery first opened in 1980. It takes place in China Poot Bay, approximately 4 miles southeast of the Homer Spit, on the south side of Kachemak Bay. This area is not accessible by road. The fishery targets enhanced sockeye salmon (stocked by the Cook Inlet Aquaculture Association) that have escaped the commercial fishery. Personal use fishers must have a valid Alaska resident sport fishing license but a permit is not required. The season is July 1 through August 7. Only sockeye salmon may be retained in this fishery, with a bag and possession limit of 6 fish (5 AAC 77.545). Since 1996, ADF&G has not estimated harvests in this fishery. Table 11-22 summarizes historical harvest data for this fishery for 1980–1995. During those years, sockeye salmon harvests ranged between 794 (in 1985) and 8,605 (in 1995) and averaged 3,373 sockeye salmon. The annual average participation in this fishery was 1,215 fishers.

OTHER SUBSISTENCE FISHERIES IN COOK INLET

Federal halibut subsistence harvest data are currently available for communities and tribes in the Cook Inlet area. Residents of Port Graham, Nanwalek, and Seldovia participate in this program. For the findings for 2010, see Fall and Koster (2012).

There are no annual harvest assessment programs for other subsistence finfish fisheries in Cook Inlet. Harvest estimates based on comprehensive household surveys conducted by the Division of Subsistence are available in the CSIS for freshwater and marine species spanning multiple years for selected Cook Inlet communities. Of note in Lower Cook Inlet is rockfish (Sebastes) documented in Turek et al. (2009). Information on other fish species used in Upper Cook Inlet by Tyonek and Beluga residents can be found in Stanek et al. (2007).

Table 11-1.–Historical subsistence salmon harvests, Port Graham and Koyuktolik subdistricts, 1981–2010.

	Permits		Reported salmon harvest					
Year	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	ND	57	138	2,670	825	177	874	4,684
1982	ND	61	124	2,354	1,493	220	2,932	7,123
1983	ND	46	67	2,480	471	95	187	3,300
1984	ND	24	45	3,262	510	6	673	4,496
1985	ND	24	146	1,177	621	26	345	2,315
1986	ND	44	125	647	481	14	1,062	2,329
1987	ND	55	21	901	914	114	714	2,664
1988	ND	48	104	1,021	844	110	1,756	3,835
1989	ND	44	51	157	1,155	74	1,495	2,932
1990	ND	60	265	1,162	1,417	151	2,960	5,955
1991	ND	63	163	688	2,053	221	4,587	7,712
1992	ND	71	200	535	1,150	236	1,421	3,542
1993	ND	56	277	1,148	913	257	2,663	5,258
1994	ND	70	300	830	1,370	504	1,979	4,983
1995	ND	87	585	1,795	538	376	1,273	4,567
1996	ND	75	310	1,744	939	276	749	4,018
1997	ND	26	202	325	203	153	511	1,394
1998	ND	19	169	289	243	240	459	1,400
1999	ND	74	485	3,157	1,747	1,104	2,023	8,516
2000	ND	67	259	4,664	1,831	953	1,606	9,313
2001	ND	49	133	1,085	1,295	228	1,454	4,195
2002	ND	79	346	10,620	1,057	488	1,831	14,342
2003	ND	52	465	5,534	1,006	532	1,572	9,109
2004	ND	80	312	3,525	1,303	213	1,600	6,953
2005	ND	68	292	2,126	1,193	180	1,608	5,399
2006	ND	53	275	2,559	1,200	296	2,131	6,461
2007[a]	ND	24	92	532	0	63	74	761
2008	ND	48	124	4,352	1,448	269	2,682	8,875
2009	ND	44	44	3,497	528	140	914	5,123
2010[a]	ND	35	30	1,630	1,448	308	1,054	4,470
5-year average (2005–2009)	–	47	165	2,613	874	190	1,482	5,324
10-year average (2000–2009)	–	56	234	3,849	1,086	336	1,547	7,053
Historical average (1981–2009)	–	54	211	2,236	991	266	1,522	5,226

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Note There are no records indicating the numbers of permits issued for any year (ND). 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, 2010.

	Permits		Reported salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Nanwalek	ND	20	0	1,514	1,324	271	1,030	4,139
Port Graham	ND	15	30	116	124	37	24	331
Total	**–**	**35**	**30**	**1,630**	**1,448**	**308**	**1,054**	**4,470**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Note There are no records indicating the numbers of permits issued for any year (ND). 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, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Seldovia	16	12	3	133	41	47	88	312
Total	**16**	**12**	**3**	**133**	**41**	**47**	**88**	**312**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 11-4.–Historical subsistence salmon harvests, Seldovia, 1996–2010.

	Permits		Estimated salmon harvest					
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
2010	16	12	3	133	41	47	88	312

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Table 11-4.–Page 2 of 2.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
5-year average (2005–2009)	17	14	24	61	20	13	78	195
10-year average (2000–2009)	18	15	79	129	12	17	51	288
Historical average (1997–2009)	20	18	84	108	8	16	36	252

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 11-5.–Subsistence salmon harvests by community, Tyonek Subdistrict, 2010.

Community	Permits		Reported salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	27	17	70	18	16	0	0	104
Beluga	2	2	3	0	0	0	0	3
Big Lake	1	1	7	4	0	0	0	11
Chugiak	2	1	5	0	0	0	0	5
Eagle River	4	4	9	1	0	0	0	10
Kenai	1	1	24	4	3	0	0	31
Tyonek	67	51	725	185	148	2	2	1,062
Wasilla	1	0	0	0	0	0	0	0
Total	**105**	**77**	**843**	**212**	**167**	**2**	**2**	**1,226**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 11-6.–Historical subsistence salmon harvests, Tyonek Subdistrict, 1981–2010.

Year	Permits		Reported salmon harvests					
	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

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Table 11-6.–Page 2 of 2.

Year	Permits		Reported salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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
2010	105	77	843	212	167	2	2	1,226
5-year average (2005–2009)	85	67	1,004	117	146	3	3	1,273
10-year average (2000–2009)	86	67	1,076	123	115	4	4	1,323
Historical average (1981–2009)	72	57	1,269	131	128	11	8	1,547

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Note 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.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook[a]	Sockeye	Coho	Chum	Pink	Total
Anchorage	2	2	0	32	4	0	0	36
Big Lake	1	1	0	25	6	0	4	35
Chugiak	5	5	0	75	10	4	0	89
Eagle River	1	1	0	13	0	3	11	27
Skwentna	11	11	0	227	15	6	22	270
Wasilla	5	5	0	137	10	1	1	149
Willow	7	7	0	133	5	4	0	142
Total	**32**	**32**	**0**	**642**	**50**	**18**	**38**	**748**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 1996–2010.

	Permits		Estimated salmon harvest					
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
2010	32	32	0	642	50	18	38	748
5-year average (2005–2009)	19	19	0	295	71	16	16	398
10-year average (2000–2009)	20	18	0	385	84	13	14	497
Historical average (1996–2009)	20	18	0	404	81	16	24	524

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 2010.

	Permits		Reported salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Cooper Landing	65	62	0	679	0	0	0	679
Hope	22	18	0	172	0	0	0	172
Ninilchik	82	71	0	92	0	0	0	92
Total	**169**	**151**	**0**	**943**	**0**	**0**	**0**	**943**

Source Douglas Palmer, USFWS, Kenai Fish & Wildlife Field Office, personal communication.

Table 11-10.–Historical federal subsistence salmon harvests, Kenai and Kasilof rivers, 2007–2010.

	Permits		Reported salmon harvest					
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
2010	169	151	0	943	0	0	0	943

Source Douglas Palmer, USFWS, Kenai Fish & Wildlife Field Office, personal communication.

Table 11-11.–Miscellaneous Upper Cook Inlet personal use and subsistence salmon harvests, 1981–1995.

	Permits		Reported salmon harvests					
Year[a]	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Noncommercial gillnet fishery								
1981	1,108	NA	68	466	12,713	305	149	13,701
Fall coho personal use/subsistence								
1983	295	NA	0	0	712	0	0	712
1984	309	NA	1	2	2,261	7	10	2,281
1985	998	NA	50	805	11,265	53	108	12,281
1986	892	NA	0	0	2,422	0	0	2,422
1987	486	NA	8	9	2,213	37	2	2,269
1988	449	NA	2	19	2,662	10	38	2,731
1989	365	NA	0	0	2,376	0	0	2,376
1990	420	NA	0	0	2,290	0	0	2,290
1991[b]	360	NA	0	0	2,703	8	0	2,711
1993	535	NA	0	0	1,168	0	23	1,191
Northern/Central districts subsistence/personal use setnets[c]								
1985[d]	638	NA	117	2,218	1,427	121	90	3,973
1991	7,065[e]	NA	496	20,855	3,372	1,596	517	26,836
1992	9,200[e]	NA	957	28,949	8,821	1,753	1,217	41,697
1994	10,127[e]	NA	1,260	36,701	9,509	1,601	1,653	50,724
1995	9,300[e]	NA	1,294	45,259	9,678	1,665	1,236	59,132
Knik Arm subsistence								
1985	405	NA	4	1,649	2,055	212	48	3,968

Source Ruesch and Fox (1996); Brannian and Fox (1996).

a. Years listed are only the years in which the fishery was open.

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b. Summary data reported in Ruesch and Fox (1996) and in Brannian and Fox (1996) include dip net and setnet harvests. Here, only setnet harvests are included. See separate tables for the Kasilof River dip net fishery and the Kenai River dip net fishery for harvest data for those fisheries.

c. In 1991, the fall coho fishery operated as a personal use fishery separate from subsistence setnet fisheries (Ruesch and Fox 1992).

d. In 1985, this subsistence fishery was open in areas generally open to commercial fishing, except for the Upper Subdistrict, which had a separate season and permit (called the "fall coho fishery" in this table). The Knik Arm subsistence gillnet fishery was also administered separately in 1985 (Ruesch 1987).

e. For 1991, 1992, 1994, and 1995, the number of permits issued includes all Upper Cook Inlet dip net and setnet fisheries except the Tyonek Subdistrict.

NA = Data not available.

Table 11-12.–Cook Inlet personal use salmon fisheries, 2010.

	Permits		Estimated salmon harvests[b]					
Year[a]	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Lower Cook Inlet								
Kachemak Bay setnet	128	122	14	149	875	17	251	1,306
China Poot Bay dip net[a]								
Subtotal, Lower Cook Inlet	128	122	14	149	875	17	251	1,306
Upper Cook Inlet								
Kasilof River setnet[c]			136	21,924	23	1	23	22,107
Kasilof River dip net[c]			31	70,774	1,768	279	974	73,826
Kenai River dip net[c]			865	389,552	2,870	508	3,655	397,450
Fish Creek dip net[c]			12	23,705	3,576	290	1,721	29,304
Unknown Upper Cook Inlet[c]			15	8,300	168	12	109	8,604
Subtotal, common permit fisheries[c]	31,590	25,222	1,059	514,255	8,405	1,090	6,482	531,291
Beluga River dip net	14	14	0	47	1	5	0	53
Subtotal, Upper Cook Inlet	31,604	25,236	1,059	514,302	8,406	1,095	6,482	531,344
Cook Inlet Total	**31,732**	**25,358**	**1,073**	**514,451**	**9,281**	**1,112**	**6,733**	**532,650**

Source ADF&G Division of Sport Fish

a. Permits are not issued for this fishery and harvest estimates are not produced.

b. Estimated harvests for all fisheries except Kachemak Bay setnet. Only reported harvests are available.

c. A single permit is issued for the Kasilof setnet, Kasilof dip net, Kenai dip net, and Fish Creek dip net fisheries. In some cases, returned permits did not indicate the area fished.

Table 11-13.–Estimated personal use salmon harvests, Upper Cook Inlet personal use fishery total, 1996–2010.

	Permits		Estimated salmon harvests					
Year	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1996	14,576	13,452	452	145,545	4,811	350	2,973	154,131
1997	14,919	13,756	464	148,940	777	88	844	151,113
1998	15,535	13,190	549	176,581	2,685	220	1,933	181,968
1999	17,197	14,216	1,108	208,589	1,413	168	2,078	213,356
2000	16,107	13,582	1,102	149,267	3,638	290	2,482	156,779
2001	16,915	14,398	1,138	218,688	2,637	276	1,821	224,560
2002	17,568	14,284	1,070	259,623	3,271	757	8,470	273,191
2003	19,110	15,726	1,711	298,831	2,250	371	2,082	305,245
2004	21,910	17,748	1,098	350,091	3,754	502	2,715	358,160
2005	21,905	19,081	1,132	369,776	3,415	428	2,520	377,271
2006	18,563	16,532	1,405	216,047	3,759	746	12,434	234,391
2007	23,046	20,312	1,924	356,717	2,727	614	2,352	364,334
2008	23,722	20,259	1,601	318,594	3,249	727	11,869	336,040
2009	29,619	25,029	1,384	457,539	4,204	559	6,969	470,655
2010	31,590	25,222	1,059	514,255	8,405	1,090	6,482	531,291
5-year average (2005–2009)	23,371	20,243	1,489	343,735	3,471	615	7,229	356,538
10-year average (2000–2009)	20,847	17,695	1,357	299,517	3,290	527	5,371	310,063
Historical average (1996–2009)	19,335	16,540	1,153	262,488	3,042	435	4,396	271,514

Source ADF&G Division of Sport Fish.

Note Does not include the Beluga River dip net fishery.

Table 11-14.–Personal use salmon harvest estimates by community, Upper Cook Inlet, 2010.

Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchor Point	263	222	7	4,526	16	1	21	4,572
Clam Gulch	56	44	5	826	3	0	8	843
Cooper Landing	28	26	2	235	1	0	2	240
Fritz Creek	56	44	0	743	4	1	10	759
Homer	789	676	21	12,302	71	7	66	12,468
Hope	17	14	0	245	1	0	4	251
Kasilof	458	374	25	7,517	50	3	63	7,659
Kenai	1,746	1,430	75	27,584	176	38	232	28,104
Moose Pass	24	22	2	394	15	0	5	416
Nanwalek	1	1	0	0	0	0	0	0
Nikiski	242	197	6	3,547	25	1	32	3,613
Nikolaevsk	17	14	1	283	1	0	1	287
Ninilchik	201	168	10	3,000	10	3	20	3,043
Seldovia	12	9	0	193	1	0	0	195
Seward	211	176	8	2,957	25	2	18	3,009
Soldotna	2,129	1,789	106	34,393	238	33	211	34,982
Sterling	510	424	17	8,224	38	4	60	8,342
Kenai Peninsula Borough subtotal	*6,760*	*5,630*	*288*	*106,971*	*675*	*94*	*755*	*108,782*
Anchorage	14,375	11,361	456	228,960	3,127	526	3,316	236,385
Chugiak	669	562	23	12,108	185	5	98	12,419
Eagle River	1,830	1,581	60	31,519	410	38	366	32,392
Girdwood	245	192	3	3,785	124	7	36	3,955
Joint Base Elmendorf-Richardson	328	249	5	4,638	121	6	66	4,836
Anchorage Municipality subtotal	*17,447*	*13,945*	*548*	*281,010*	*3,966*	*582*	*3,882*	*289,988*
Big Lake	198	150	3	2,945	218	23	56	3,246
Chickaloon	13	10	1	214	24	0	0	240
Houston	35	24	0	542	3	3	3	551
Palmer	1,616	1,313	56	27,925	691	63	353	29,089
Sutton	69	55	1	1,145	82	0	59	1,288
Talkeetna	100	88	3	1,671	45	2	26	1,748
Trapper Creek	20	17	0	328	10	1	2	342
Wasilla	3,732	2,911	103	64,787	2,289	290	1,032	68,502
Willow	151	133	2	2,872	110	1	51	3,035
Matanuska-Susitna Borough subtotal	*5,934*	*4,701*	*170*	*102,430*	*3,472*	*385*	*1,583*	*108,041*
Akiachak	2	0	0	26	1	0	0	27
Anaktuvuk Pass	1	0	0	13	0	0	0	13
Anderson	5	4	0	95	0	0	0	95
Aniak	2	2	0	35	0	0	0	35
Atka	1	1	0	5	0	0	0	5

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Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Atqasuk	2	2	0	16	0	0	0	16
Barrow	55	26	2	1,118	8	1	11	1,139
Bethel	3	2	1	78	0	0	0	79
Cantwell	7	7	0	198	4	0	7	209
Central	5	5	0	63	0	0	0	63
Chenega Bay	1	1	0	10	0	0	0	10
Chevak	3	3	0	46	0	0	0	46
Clear	5	5	1	100	1	0	4	106
Coffman Cove	2	1	0	13	0	0	0	13
Copper Center	4	4	1	34	0	0	0	35
Cordova	1	0	0	13	0	0	0	13
Deering	1	1	0	54	0	0	0	54
Delta Junction	49	42	0	1,192	10	0	12	1,214
Denali Park	18	16	0	332	9	0	1	342
Dillingham	2	2	0	73	0	0	4	77
Eielson AFB	10	10	0	167	0	0	1	168
Elim	1	0	0	13	0	0	0	13
Ester	3	3	0	55	0	1	0	56
Fairbanks	473	393	23	8,260	59	4	97	8,444
Fort Greely	3	2	0	59	0	0	0	59
Fort Wainwright	13	10	0	117	3	0	3	124
Gakona	3	2	0	77	0	0	0	77
Galena	2	2	0	25	0	0	0	25
Gambell	1	0	0	13	0	0	0	13
Glennallen	15	10	0	287	2	0	1	290
Healy	39	35	3	678	8	1	12	702
Holy Cross	1	1	0	0	0	0	0	0
Hooper Bay	1	0	0	13	0	0	0	13
Juneau	38	26	0	665	5	1	3	675
Ketchikan	5	3	0	94	1	0	0	95
King Cove	1	0	0	13	0	0	0	13
Kodiak City	20	15	0	339	2	0	9	350
Kokhanok	1	1	0	33	0	0	0	33
Kotzebue	10	9	0	206	0	0	0	206
Lake Minchumina	1	0	0	13	0	0	0	13
McGrath	1	1	0	35	0	0	0	35
Metlakatla	1	1	0	0	0	0	0	0
Mountain Village	2	0	0	26	1	0	0	27
Naknek	1	1	0	0	0	0	0	0
Nenana	12	7	0	167	1	0	1	169
Nome	13	13	0	270	0	0	1	271
Nondalton	1	1	0	0	0	0	0	0
North Pole	138	113	6	2,483	11	3	35	2,537
Nuiqsut	2	2	0	30	0	0	0	30
Petersburg	2	2	0	20	5	0	0	25
Point Hope	4	1	0	54	1	0	0	56
Prudhoe Bay	1	1	0	53	34	0	0	87
Saint George Island	1	0	0	13	0	0	0	13

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Table 11-14.–Page 3 of 3.

Community	Permits		Estimated salmon harvests					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Saint Mary's	1	0	0	13	0	0	0	13
Salcha	7	6	1	210	0	0	0	211
Selawik	2	1	0	49	0	0	0	49
Shishmaref	2	2	0	14	1	0	0	15
Sitka	5	3	0	92	1	0	0	93
Tanacross	1	1	0	0	12	0	0	12
Tatitlek	1	1	0	2	0	8	0	10
Tok	13	10	0	187	1	0	2	191
Two Rivers	5	5	0	37	0	0	1	38
Unalaska	3	3	0	90	0	0	0	90
Valdez	28	21	1	396	3	0	1	401
White Mountain	1	1	0	50	0	0	0	50
Whittier	4	4	1	69	0	0	0	70
Wiseman	1	1	0	0	0	0	0	0
Wrangell	4	4	0	98	0	0	0	98
Yakutat	1	1	0	16	0	0	0	16
Other Alaska subtotal	*1,068*	*853*	*42*	*19,110*	*187*	*21*	*210*	*19,570*
Unknown residence	381	93	11	4,733	105	9	51	4,909
Total	**31,590**	**25,222**	**1,059**	**514,255**	**8,405**	**1,090**	**6,482**	**531,291**

Source ADF&G Division of Sport Fish.

Note Includes Kasilof River setnet fishery, Kasilof River dip net fishery, Kenai River dip net fishery, Fish Creek (Knik Arm) dip net fishery, and unknown fishery.

Table 11-15.–Estimated personal use salmon harvests, Kasilof River setnet fishery, 1982–2010.

	Permits		Estimated salmon harvests					
Year[a]	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1982	649	NA	372	7,543	24	NA	17	7,956
1983	684	NA	307	8,846	NA	NA	NA	9,153
1984	698	NA	165	12,926	NA	NA	NA	13,091
1985	692	NA	203	10,746	NA	NA	NA	10,949
1986	NA	NA	168	9,609	NA	NA	NA	9,777
1987	NA	NA	184	9,375	NA	NA	NA	9,559
1988	NA	NA	118	9,803	NA	NA	NA	9,921
1989	NA	NA	186	9,928	NA	NA	NA	10,114
1990	NA	NA	133	7,123	NA	NA	NA	7,256
1991[b]	NA	NA	34	8,380	NA	NA	NA	8,414
1992	--	--	--	--	--	--	--	--
1993	NA	NA	47	7,942	NA	NA	NA	7,989
1994	--	--	--	--	--	--	--	--
1995	--	--	--	--	--	--	--	--
1996[c]	NA	NA	46	9,506	0	1	8	9,561
1997	NA	NA	65	17,997	1	3	102	18,168
1998	NA	NA	126	15,975	0	12	15	16,128
1999	NA	NA	442	12,832	25	10	10	13,319
2000	NA	NA	514	14,774	9	10	17	15,324
2001	NA	NA	174	17,201	6	7	11	17,399
2002	NA	NA	192	17,980	12	13	30	18,227
2003	NA	NA	400	15,706	107	4	9	16,226
2004	NA	NA	163	25,417	58	0	6	25,644
2005	NA	NA	87	26,609	326	1	16	27,039
2006	NA	NA	287	28,867	420	6	11	29,591
2007	NA	NA	343	14,943	68	0	2	15,356
2008	NA	NA	151	23,432	65	23	35	23,706
2009	NA	NA	127	26,646	165	11	14	26,963
2010	NA	NA	136	21,924	23	1	23	22,107
5-year average (2005–2009)	NA	NA	199	24,099	209	8	16	24,531
10-year average (2000–2009)	NA	NA	244	21,158	124	8	15	21,548
Historical average (1996–2009)[d]	NA	NA	223	19,135	90	7	20	19,475

Source Ruesch and Fox (1996) for 1982–1995; Division of Sport Fish for 1996–2010.

a. The fishery was closed 1992, 1994, and 1995.

b. This fishery was administered separately from the subsistence setnet fisheries that operated in 1991 (Ruesch and Fox 1992).

c. Current regulations in place since 1996. Permits since 1996 issued for 4 Upper Cook Inlet personal use salmon fisheries.

d. Historical average based on years since 1996 when current regulations were adopted.

Table 11-16.–Estimated personal use salmon harvests, Kasilof River dip net fishery, 1981–2010.

Year[b]	Permits		Estimated salmon harvests[a]					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	NA	NA	NA	10,300	NA	NA	NA	10,300
1982	NA	NA	NA	1,800	NA	NA	NA	1,800
1983	NA	NA	NA	11,124	NA	NA	NA	11,124
1984	NA	NA	NA	12,771	NA	NA	NA	12,771
1985	NA	NA	NA	16,284	NA	NA	NA	16,284
1986	NA	NA	NA	38,674	NA	NA	NA	38,674
1987	NA	NA	NA	18,454	NA	NA	NA	18,454
1988	NA	NA	NA	3,547	NA	NA	NA	3,547
1989	–	–	–	–	–	–	–	–
1990	–	–	–	–	–	–	–	–
1991[cd]	7,065	5,480	10	907	2	0	3	922
1992	9,500	4,104	24	1,230	24	0	3	1,281
1993	–	–	–	–	–	–	–	–
1994[e]	10,127	4,823	54	6,414	137	14	59	6,678
1995	NA	NA	NA	4,160	NA	NA	NA	4,160
1996[f]	NA	NA	50	11,197	334	17	103	11,701
1997	NA	NA	35	9,737	90	19	19	9,900
1998	NA	NA	134	45,161	731	74	610	46,710
1999	NA	NA	127	37,176	286	52	264	37,905
2000	NA	NA	134	23,877	1,004	34	841	25,890
2001	NA	NA	138	37,612	766	23	307	38,846
2002	NA	NA	106	46,769	1197	139	1862	50,073
2003	NA	NA	57	43,870	592	30	286	44,835
2004	NA	NA	44	48,315	668	90	396	49,513
2005	NA	NA	16	43,151	538	102	658	44,465
2006	NA	NA	55	56,144	1,057	105	992	58,353
2007	NA	NA	35	43,293	487	136	383	44,334
2008	NA	NA	46	54,051	509	143	787	55,536
2009	NA	NA	34	73,035	1,441	173	1,274	75,957
2010	NA	NA	31	70,774	1,768	279	974	73,826
5-year average (2005–2009)	NA	NA	37	53,935	806	132	819	55,729
10-year average (2000–2009)	NA	NA	67	47,012	826	98	779	48,780
Historical average (1996–2009)[g]	NA	NA	72	40,956	693	81	627	42,430

Source Nelson et al. (1999) for 1981–1990 and 1993–1995; Brannian and Fox (1996) for 1991, 1992, and 1994; Division of Sport Fish for 1996–2010.

a. Personal use harvests are estimated based on the annual sport harvest survey conducted by the Division of Sport Fish prior to 1996, and are estimated based on permit returns since 1996. Only sockeye salmon harvests reported, 1981–1990.

b. Fishery closed 1989–1990, and 1993. Classified as a subsistence fishery in 1991 and 1992.

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c. In 1991, 1992, and 1994, a single permit was issued for all Upper Cook Inlet subsistence fisheries except Tyonek (Central District dip net, Central District setnet, Northern District set net) (Brannian and Fox 1996). Permit return rate for 1992 was approximately 43.2% (Ruesch and Fox 1993).

d. Harvests for 1991 and 1992, and subsistence harvests for 1994, are reported, not estimated.

e. In 1994, both a subsistence and a personal use dip net fishery took place in the Kasilof River (Nelson et al. 1999). Sockeye harvests included 3,679 salmon in the personal use fishery and 2,735 salmon in the subsistence fishery. Harvest data for other species in the personal use fishery are not available.

f. Current regulations have been in place since 1996. Permits have been required since 1996 and are issued for 4 Upper Cook Inlet personal use fisheries.

g. Historical average based on years since 1996 when current regulations were adopted.

NA = Data not available.

Table 11-17.–Estimated personal use salmon harvests, Kenai River dip net fishery, 1981–2010.

	Permits		Estimated salmon harvests[a]					
Year[b]	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1981	–	–	–	–	–	–	–	–
1982[c]	NA	NA	NA	NA	NA	NA	NA	0
1983	NA	NA	NA	7,562	NA	NA	NA	7,562
1984	–	–	–	–	–	–	–	–
1985	–	–	–	–	–	–	–	–
1986	–	–	–	–	–	–	–	–
1987	NA	NA	NA	24,086	NA	NA	NA	24,086
1988	NA	NA	NA	16,880	NA	NA	NA	16,880
1989	NA	NA	NA	48,976	NA	NA	NA	48,976
1990	–	–	–	–	–	–	–	–
1991[de]	7,065	5,480	44	10,468	146	2	17	10,677
1992[f]	9,500	4,104	158	28,429	1,475	74	598	30,734
1993	NA	NA	NA	33,467	NA	NA	NA	33,467
1994	10,127	4,823	187	13,897	2,535	114	1,263	17,996
1995	NA	NA	NA	14,352	NA	NA	NA	14,352
1996[g]	NA	NA	295	102,821	1,932	175	2,404	107,627
1997	NA	NA	364	114,619	559	58	619	116,219
1998	NA	NA	254	103,847	1,011	85	1,032	106,229
1999	NA	NA	488	149,504	1,009	102	1,666	152,769
2000	NA	NA	410	98,262	1,449	193	1,457	101,771
2001	NA	NA	638	150,766	1,555	155	1,326	154,440
2002	NA	NA	606	180,028	1,721	551	5,662	188,568
2003	NA	NA	1,016	223,580	1,332	249	1,647	227,824
2004	NA	NA	792	262,831	2,661	387	2,103	268,774
2005	NA	NA	997	295,496	2,512	321	1,806	301,132
2006	NA	NA	1,034	127,630	2,235	551	11,127	142,577

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Table 11-17.–Page 2 of 2.

Year[b]	Permits		Estimated salmon harvests[a]					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2007	NA	NA	1,509	291,270	2,111	472	1,939	297,301
2008	NA	NA	1,362	234,109	2,609	504	10,631	249,215
2009	NA	NA	1,189	339,993	2,401	285	5,482	349,350
2010	NA	NA	865	389,552	2,870	508	3,655	397,450
5-year average (2005–2009)	NA	NA	1,218	257,700	2,374	427	6,197	267,915
10-year average (2000–2009)	NA	NA	955	220,397	2,059	367	4,318	228,095
Historical average (1996–2009)[h]	NA	NA	782	191,054	1,793	292	3,493	197,414

Source Nelson et al. (1999) for 1981–1990 and 1993–1995; Brannian and Fox (1996) for 1991, 1992, and 1994; Division of Sport Fish for 1996–2010.

a. Personal use harvests are estimated based on the annual sport harvest survey conducted by the Division of Sport Fish prior to 1996, and are estimated based on permit returns since 1996. Only sockeye salmon harvests reported, 1981–1990.

b. Fishery closed 1981, 1984–1986, and 1990. Classified as a subsistence fishery in 1991, a portion of 1992 and 1994.

c. The 1982 harvest is reported as "unknown" but "insignificant" (Nelson et al. 1999; Brannian and Fox 1996).

d. Subsistence harvests for 1991, 1992, and 1994 are reported, not estimated.

e. 1991, 1992, and 1994 permits: single permit issued for all Upper Cook Inlet subsistence fisheries except Tyonek.

f. Harvests for 1992 include 16,240 sockeye salmon in the subsistence fishery and 12,189 sockeye in the personal use fishery. Harvests for other species are for the subsistence fishery only. Personal use harvests are not available for the other species.

g. Current regulations have been in place since 1996. Permits have been required since 1996 and are issued for 4 Upper Cook Inlet personal use fisheries.

h. Historical average based on years since 1996 when current regulations were adopted.

NA = Data not available.

Table 11-18.–Estimated personal use salmon harvests, Fish Creek dip net fishery, 1987–2010.

	Permits		Estimated salmon harvests[a]					
Year[b]	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1987	NA	NA	0	2,200	0	0	2,200	4,400
1988	NA	NA	0	3,000	0	0	3,000	6,000
1989	NA	NA	0	5,000	0	0	5,000	10,000
1990	NA	NA	0	6,500	0	0	6,500	13,000
1991	NA	NA	0	14,369	0	549	567	15,485
1992	NA	NA	0	19,002	0	607	678	20,287
1993	NA	NA	0	37,224	973	503	2,068	40,768
1994	NA	NA	0	16,012	1,336	248	632	18,228
1995	NA	NA	0	9,102	2,640	99	290	12,131
1996	NA	NA	37	17,260	2,414	153	331	20,195
1997	NA	NA	0	3,277	63	4	53	3,397
1998	NA	NA	1	4,036	649	29	80	4,795
1999	NA	NA	0	1,083	17	0	12	1,112
2000	NA	NA	0	6,925	958	29	83	7,995
2001	NA	NA	0	436	18	1	2	457
2002	–	–	–	–	–	–	–	–
2003	–	–	–	–	–	–	–	–
2004	–	–	–	–	–	–	–	–
2005	–	–	–	–	–	–	–	–
2006	–	–	–	–	–	–	–	–
2007	–	–	–	–	–	–	–	–
2008	–	–	–	–	–	–	–	–
2009	NA	NA	10	9,898	53	33	66	10,060
2010	NA	NA	12	23,705	3,576	290	1,721	29,304
Historical average (1996–2009)	NA	NA	7	6,131	596	36	90	6,859

Source Brannian and Fox (1996) for 1987–1994; Howe et al. (1996) for 1995; Division of Sport Fish for 1996–2010.

a. Estimates derived from statewide sport harvest survey prior to 1996. Permits required since 1996.

b. Fishery closed 2002 through 2008.

Table 11-19.–Estimated personal use salmon harvests, unknown fishery, 1996–2010.

Year	Permits		Estimated salmon harvests					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1996	NA	NA	24	4,761	131	4	127	5,047
1997	NA	NA	0	3,310	64	4	51	3,429
1998	NA	NA	34	7,562	294	20	196	8,106
1999	NA	NA	51	7,994	76	4	126	8,251
2000	NA	NA	44	5,429	218	24	84	5,799
2001	NA	NA	188	12,673	292	90	175	13,418
2002	NA	NA	166	14,846	341	54	916	16,323
2003	NA	NA	238	15,675	219	88	140	16,360
2004	NA	NA	99	13,527	366	25	210	14,227
2005	NA	NA	32	4,520	39	4	40	4,635
2006	NA	NA	29	3,406	47	84	304	3,870
2007	NA	NA	37	6,729	61	6	28	6,861
2008	NA	NA	41	6,890	66	58	412	7,467
2009	NA	NA	25	7,968	144	57	133	8,327
2010	NA	NA	15	8,300	168	12	109	8,604
5-year average (2005–2009)	NA	NA	33	5,903	71	42	183	6,232
10-year average (2000–2009)	NA	NA	90	9,166	179	49	244	9,729
Historical average (1996–2009)	NA	NA	72	8,235	168	37	210	8,723

Source ADF&G Division of Sport Fish.

Table 11-20.–Beluga River senior personal use dip net fishery summary, 2008–2010.

Year	Permits		Reported salmon harvests					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2008	20	20	0	31	35	0	0	66
2009	11	11	0	140	78	0	7	225
2010	14	14	0	47	1	5	0	53
Historical average (2008–2009)	16	16	0	86	57	0	4	146

Source ADF&G Division of Sport Fish.

Table 11-21.–Personal use/subsistence salmon harvests, Kachemak Bay setnet fishery (excluding the Port Graham/Nanwalek subsistence fishery and the Seldovia subsistence fishery), Lower Cook Inlet, 1969–2010.

	Households or permits		Reported salmon harvests					
Year	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1969	47	44	0	9	752	0	38	799
1970	78	73	0	12	1,179	13	143	1,347
1971	112	95	2	16	1,549	7	44	1,618
1972	135	105	1	11	975	69	48	1,104
1973	143	128	0	18	1,304	40	84	1,446
1974	148	118	0	16	376	77	43	512
1975	292	276	4	47	1,960	61	632	2,704
1976	242	221	16	46	1,962	56	1,513	3,593
1977	197	179	12	46	2,216	119	639	3,032
1978	311	264	4	35	2,482	34	595	3,150
1979	437	401	6	37	2,118	41	2,251	4,453
1980	533	494	43	32	3,491	25	1,021	4,612
1981	403	383	15	73	4,370	68	718	5,244
1982	395	372	41	49	7,398	154	956	8,598
1983	344	328	5	17	2,701	44	305	3,072
1984	368	346	3	25	3,639	105	804	4,576
1985	328	302	5	49	3,317	34	138	3,543
1986	349	310	7	68	3,831	56	3,132	7,094
1987	363	339	5	50	3,979	61	279	4,374
1988	439	417	14	73	5,007	75	1,445	6,614
1989	477	453	41	156	7,219	53	883	8,352
1990	578	543	12	200	8,323	69	1,846	10,450
1991	472	459	8	47	4,931	23	366	5,375
1992	365	350	5	63	2,277	21	643	3,009
1993	326	317	6	44	1,992	18	463	2,523
1994	286	284	66	80	4,097	18	1,178	5,439
1995	235	232	118	108	2,916	7	343	3,492
1996	299	293	302	102	3,347	24	1,022	4,797
1997	276	264	384	191	1,817	12	257	2,661
1998	227	214	135	20	1,461	5	167	1,788
1999	146	141	276	119	1,803	3	168	2,369
2000	213	206	104	28	2,064	4	304	2,504
2001	154	148	86	27	1,579	16	150	1,858
2002	122	113	61	33	1,521	12	251	1,878
2003	104	96	17	57	1,071	9	170	1,324
2004	91	83	7	56	1,554	16	172	1,805
2005	108	96	8	57	833	13	296	1,207
2006	89	82	15	41	1,295	5	221	1,577
2007	141	133	10	113	1,431	34	641	2,229
2008	146	142	2	92	1,844	14	687	2,639
2009	145	142	9	273	646	4	101	1,033
2010	128	122	14	149	875	17	251	1,306

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Year	Households or permits		Reported salmon harvests					
	Total	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
5-year average (2005–2009)	126	119	9	115	1,210	14	389	1,737
10-year average (2000–2009)	131	124	32	78	1,384	13	299	1,805
Historical average (1969–2009)	260	244	45	64	2,649	37	614	3,410

Source Hallowell et al. (2012).

Table 11-22.–Estimated personal use salmon harvests, China Poot dip net fishery, 1980–1995[a].

Year	Fishers	Estimated salmon harvests					
		Chinook	Sockeye	Coho	Chum	Pink	Total
1980	NA	0	1,000	0	0	0	1,000
1981[b]	--	--	--	--	--	--	--
1982	NA	0	1,320	0	0	0	1,320
1983	1,956	0	5,910	0	0	0	5,910
1984	1,237	0	1,794	0	0	0	1,794
1985	398	0	794	0	0	12	806
1986	993	0	1,815	0	0	673	2,488
1987	1,016	0	1,231	0	0	0	1,231
1988	1,361	0	1,910	0	127	36	2,073
1989	1,428	0	5,416	0	0	239	5,655
1990	1,537	0	5,835	0	178	68	6,081
1991	395	0	1,528	0	0	33	1,561
1992	810	0	3,468	0	76	183	3,727
1993	1,036	0	4,260	0	0	45	4,305
1994	1,372	0	5,715	0	0	34	5,749
1995	2,261	0	8,605	0	0	77	8,682
Historical average (1980–1995)	1,215	0	3,373	0	25	93	3,492

Source Fall and Stanek (1990), for 1980–1989, based on annual reports of the sport fish harvest survey. Annual sport fish angler survey report for 1990–1995. Harvest data as reported in annual sport fish angler survey reports differ from data reported in Nelson (1995:222), which reports "sport and personal use harvests combined."

a. Harvest data not collected after 1995.

b. Fishery was closed in 1981.

NA = Data not available.

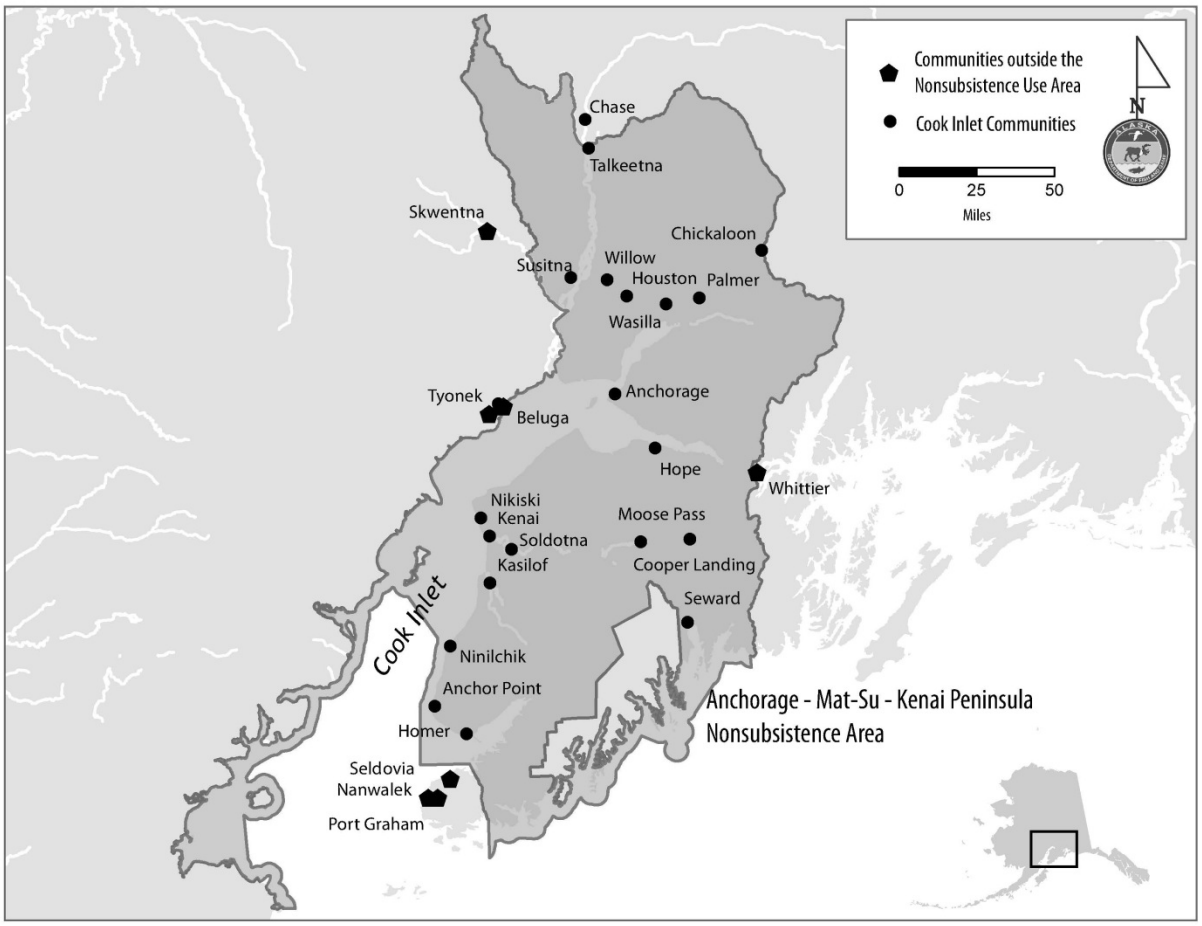

Figure 11-1.–Anchorage Nonsubsistence Area map.

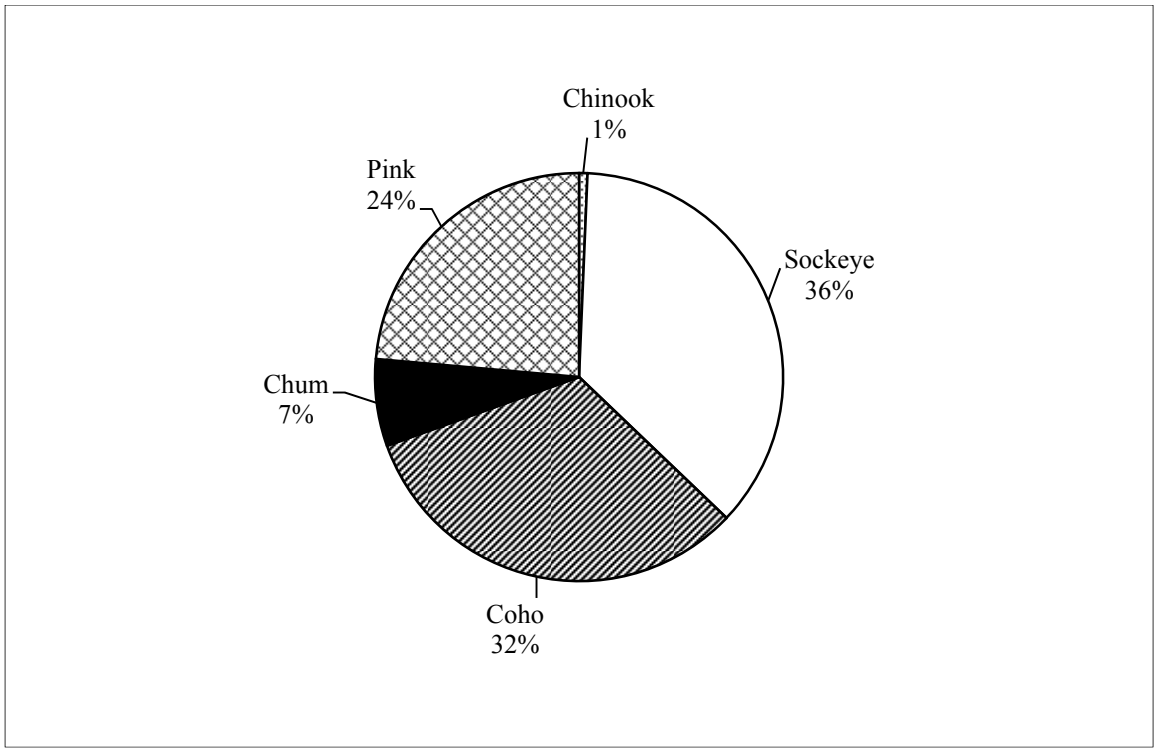

Figure 11-2.–Subsistence salmon harvests in the Port Graham and Koyuktolik subdistricts, 2010.

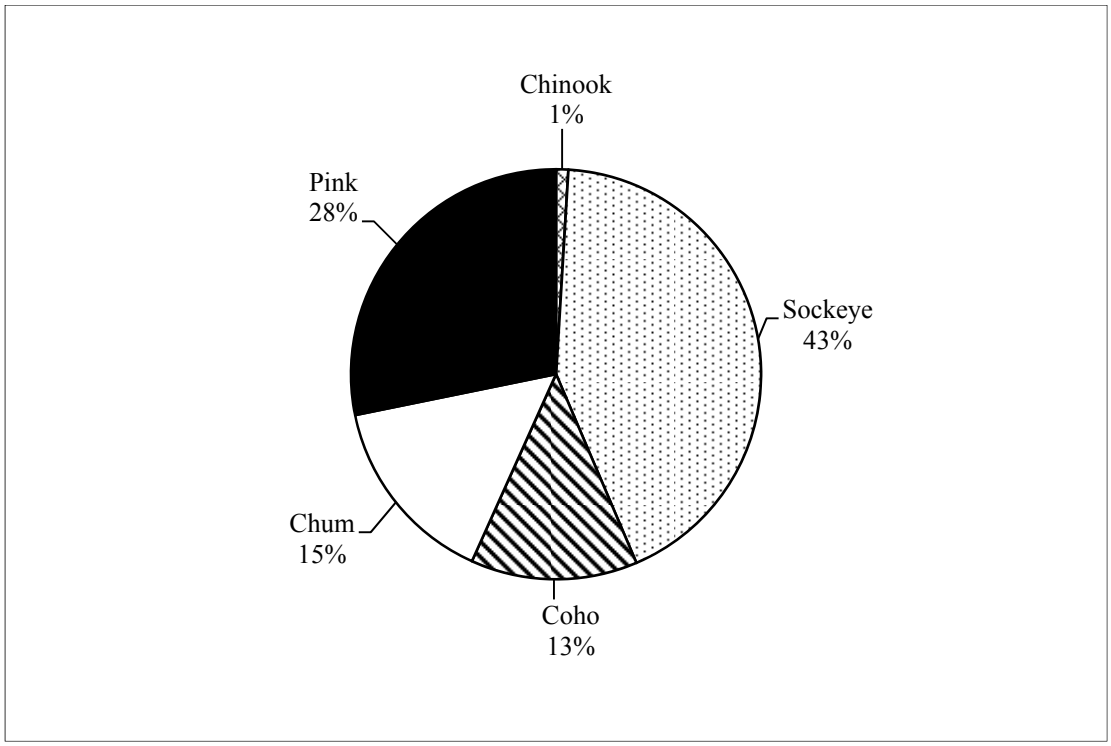

Figure 11-3.–Subsistence salmon harvests in Seldovia, 2010.

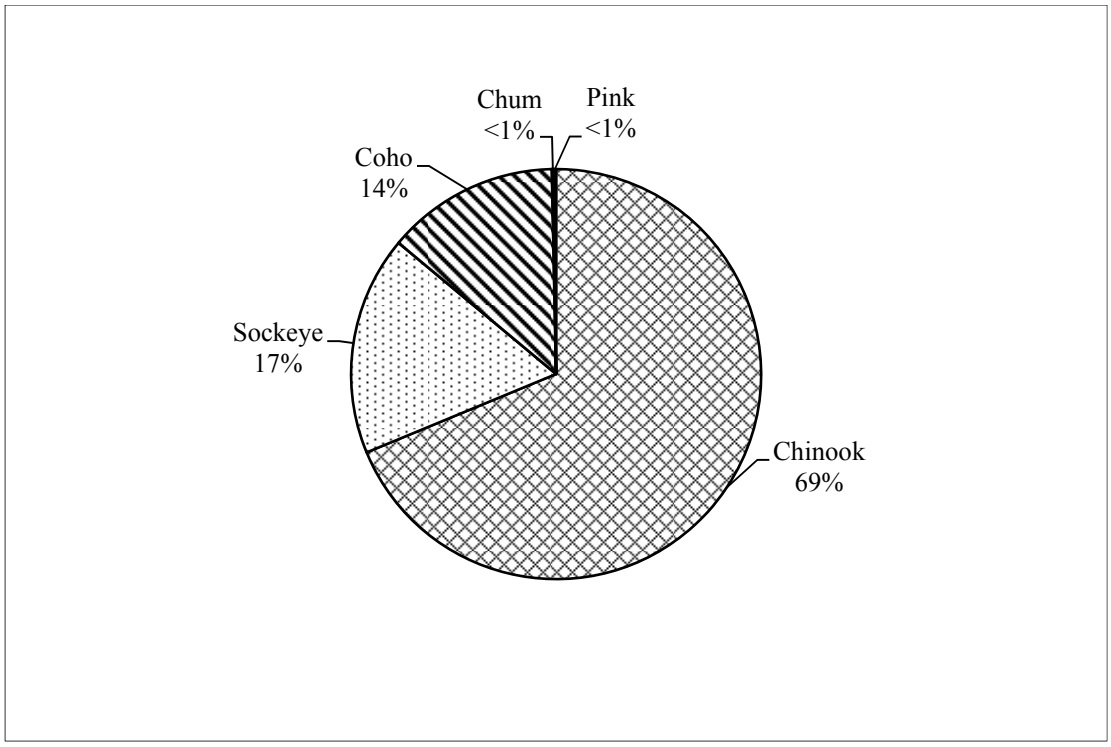

Figure 11-4.–Subsistence salmon harvests in the Tyonek Subdistrict, 2010.

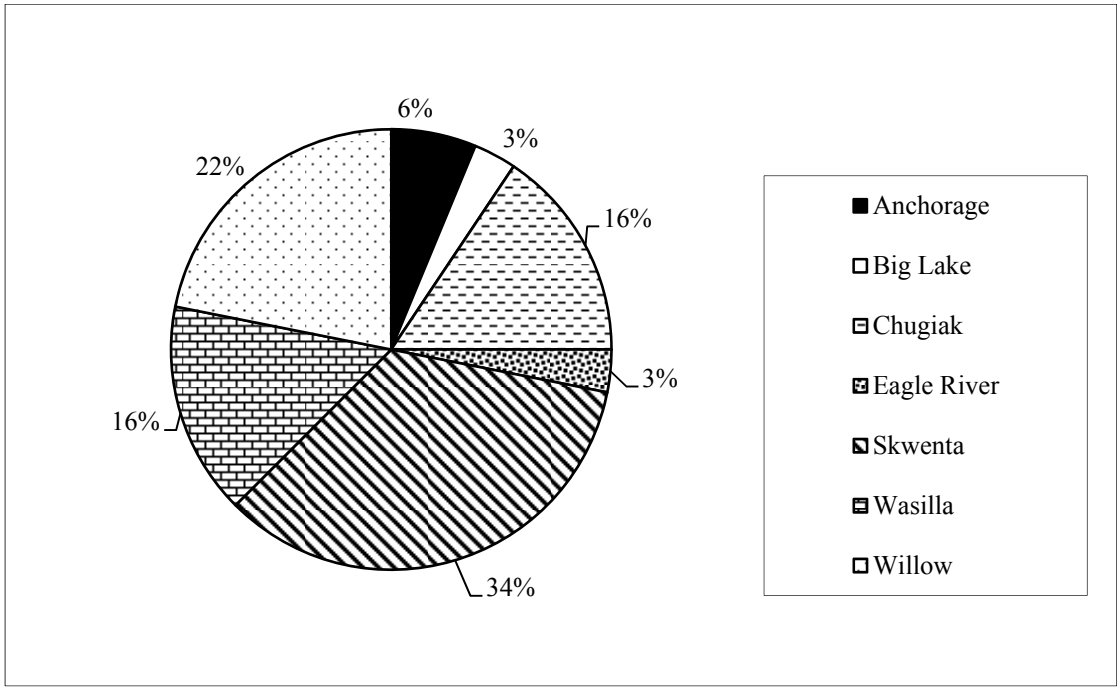

Figure 11-5.–Permits issued, by place of residence, for the Upper Yentna River fishery, 2010.

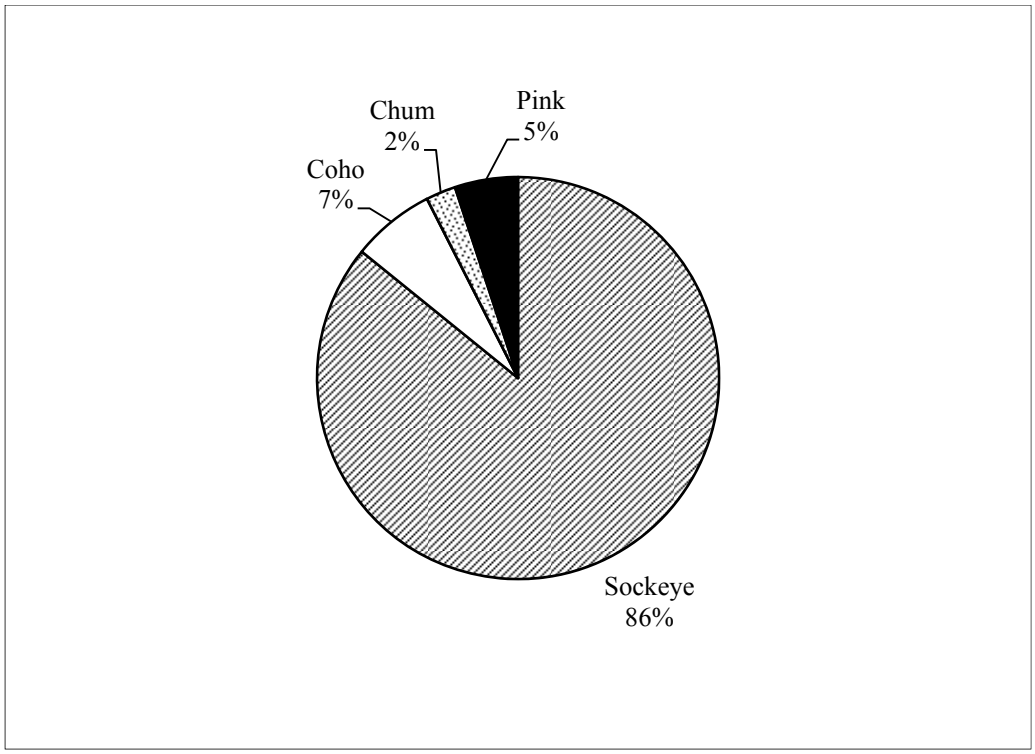

Figure 11-6.–Subsistence salmon harvests in the Upper Yentna River, 2010.

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 2010, 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, and
9. Prince William Sound, general area: state subsistence permit program.

The year 2010 was the ninth 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 yd upstream of Haley Creek as designated by ADF&G regulatory markers. There are 2 subdistricts: 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; 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 2010. 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 NPS. 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 2, 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 NPS, 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 NPS. 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 2010

As shown in Table 12-2, ADF&G and NPS issued a total of 1,587 subsistence salmon permits for the Glennallen Subdistrict for 2010. This total is higher than both the recent 5-year average (1,306 permits) and 10-year average (1,277 permits). Of all Glennallen Subdistrict permits issued, both federal and state, residents of Copper Basin communities held 383 permits (24%) and other Alaska residents held 1,204 permits (76%) (Table 12-3).

As reported in Table 12-2, the estimated total subsistence salmon harvest in the Glennallen Subdistrict in 2010 was 95,706 salmon, including 92,632 sockeye salmon (97%), 2,653 Chinook salmon (3%), and 422 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 2010 harvest was higher than the recent 5-year average (80,115 salmon), 10-year average (77,754 salmon), and the historical average (1989–2009; 66,704 salmon). Table 12-3 reports subsistence salmon harvests in the Glennallen Subdistrict by place of residence of permit holders in 2010. Copper Basin residents caught 35% of the harvest (33,972 salmon) and other Alaska residents harvested 65% (61,734 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 C&T 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 2010

As reported in Table 12-4, the estimated total salmon harvest in the state-administered Chitina Subdistrict personal use fishery in 2010 was 142,680 fish, including 140,089 sockeye salmon (98%), 700 Chinook salmon (<1%), and 1,892 coho salmon (1%), by 9,308 permit holders. The 2010 total estimated harvest for the Chitina Subdistrict was well above the recent 5-year (117,261 salmon) and 10-year (114,615 salmon) averages, as well as the historical average (1989–2009; 110,536 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 2010; most participants (74%) in this fishery lived in Fairbanks, Anchorage, or the Matanuska–Susitna Borough. Only 55 Copper Basin residents (<1%) obtained state personal use salmon permits for the Chitina Subdistrict in 2010. Non-area residents harvested all but 481 of the salmon harvested in this fishery in 2010 (>99%).

UPPER COPPER RIVER FEDERAL SUBSISTENCE FISHERY: CHITINA SUBDISTRICT

Regulations

In 2010, qualified Alaska rural residents could obtain federal subsistence permits for the Chitina Subdistrict from the NPS. 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 2010

As reported in Table 12-6, an estimated 5,476 salmon were harvested in the federal Chitina Subdistrict subsistence fishery in 2010, well above the 2009 harvest of 1,560 salmon and the recent 5-year (1,407 salmon) as well as the historical (1989–2009; 1,458 salmon) averages.

The total harvest included 5,352 sockeye salmon (98%), 88 coho salmon (2%), and 36 Chinook salmon (<1%). A total of 92 permits were issued, which is fewer than the 68 issued in 2009. Table 12-7 reports harvest and permit numbers according to each permittee's community of residence in 2010 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 12 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. Three permits were issued and returned in 2010. The total 2010 harvest included 106 sockeye salmon. The historical average (1987–2009) harvest for this fishery is 101 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 2010

As reported in Table 12-9, 326 permits were issued for this fishery in 2010, and 320 (98%) were returned, which was a little more than the 323 permits issued for this fishery in 2009, and 293 (91%) were returned. Permits issued in 2010 represent a decline from the number of permits issued in 2004 (511 permits) and 2008 (506 permits); however, it represents an increase from the number of permits issued in 2005 (237 permits). The number of permits issued in 2010 was lower than the recent 5-year (391 permits) or 10-year

(409 permits) averages. The estimated harvest in 2010 of 2,365 salmon was a slight increase from the previous year. The 2010 harvest was composed mainly of 2,034 sockeye salmon (86%), 281 Chinook salmon (12%), 27 coho salmon (1%), and 22 chum salmon (1%). Most permit holders lived in Cordova (276; 85%) (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 2010, there were 8 permits issued for this fishery (Table 12-11). The permittees reported a harvest of 165 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 (Table 12-11) 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 2006b).

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 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 2010, 9 permits were issued for this fishery and 5 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 2010 was 148 salmon, consisting of 55 sockeye salmon, 87 chum salmon, and 6 pink salmon. The 2010 harvest was well below the recent 5-year average (430 salmon) and 10-year average (507 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 2010, 2 permits were issued, and 2 were returned. Neither permit holder harvested any salmon (tables 12-15 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 2010 (Fall and Koster 2012).

In 2010, 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 landlocked freshwater lakes, which 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, the 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 (April 15) 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 (April 15–September 15). Detailed summaries of harvest estimates and data from returned permits appear in Hochhalter and Hansen (2011). Subsistence fishing for Dungeness, Tanner, and king crabs 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, 1997–2010.

		Reported subsistence harvest					
Year	Village	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-Kaah	12	61	0	0	0	73
1999	Chickaloon	1	5	0	0	0	6
1999	Gakona[a]	0	0	0	0	0	0
1999	Kluti-Kaah	46	85	0	0	0	131
2000	Chickaloon	73	200	0	0	0	273
2000	Chistochina	1	880	0	0	0	881
2000	Kluti-Kaah	20	110	0	0	0	130
2001	Chickaloon	20	120	0	0	0	140
2001	Chistochina	4	1,203	0	0	0	1,207
2001	Kluti-Kaah	3	259	114	0	0	376
2002	Chickaloon	0	91	0	0	0	91
2002	Chitina[b]	0	0	0	0	0	0
2003	Chickaloon	8	105	0	0	0	113
2004	Chickaloon	5	178	0	0	0	183
2004	Chistochina	17	1,563	0	0	0	1,580
2005	Chistochina	4	545	0	0	0	549
2005	Chickaloon	20	533	0	0	1	554
2005	Gakona	9	442	0	0	0	451
2006	Chistochina	8	559	0	0	0	567
2006	Chickaloon[b]	0	0	0	0	0	0
2006	Chitina	0	497	0	0	0	497
2007	Chitina[b]	0	0	0	0	0	0
2008	Chickaloon[b]	0	0	0	0	0	0
2008	Gakona	1	241	15	0	0	257
2009	Chickaloon[b]	0	0	0	0	0	0
2009	Kluti-Kaah	0	30	0	0	0	30
2010	Chickaloon	2	237	0	0	0	239
2010	Gakona[a]	0	0	0	0	0	0
2010	Kluti-Kaah[b]	0	0	0	0	0	0

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, 1989–2010.

	Permits		Estimated salmon harvest[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
2010	1,587	1,331	2,653	92,632	422	0	0	95,706
5-year average (2005–2009)	1,306	1,129	3,364	76,352	360	0	0	80,115
10-year average (2000–2009)	1,277	1,131	3,753	73,409	570	3	0	77,754
Historical average (1989–2009)	1,030	922	2,680	63,538	476	1	0	66,704

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 2010.

	Permits		Estimated salmon harvest[a]					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chistochina	3	2	6	279	0	0	0	285
Chitina	24	20	41	2,342	29	0	0	2,412
Copper Center	103	80	325	9,955	18	0	0	10,298
Copperville	5	5	4	497	0	0	0	501
Gakona	31	29	83	3,560	0	0	0	3,643
Glennallen	66	57	156	5,589	51	0	0	5,796
Gulkana	6	4	17	908	0	0	0	924
Kenny Lake	61	45	61	3,924	4	0	0	3,989
Lake Louise	1	1	0	66	0	0	0	66
Lower Tonsina	1	1	0	34	0	0	0	34
McCarthy	17	6	16	168	0	0	0	184
Mendeltna	1	1	10	92	0	0	0	102
Mentasta	2	1	0	104	0	0	0	104
Nabesna	4	4	0	243	0	0	0	243
Nelchina	5	5	17	447	6	0	0	470
Paxson	1	1	0	7	0	0	0	7
Silver Springs	3	2	5	138	0	0	0	143
Slana	21	19	29	1,758	0	0	0	1,787
Sourdough	2	2	4	55	0	0	0	59
Tazlina	30	27	78	2,911	22	0	0	3,011
Tolsona	2	1	0	156	0	0	0	156
Subtotal, Copper Basin	**389**	**313**	**851**	**33,234**	**130**	**0**	**0**	**34,215**
Anchor Point	2	2	3	174	0	0	0	177
Anchorage	323	264	477	13,237	177	0	0	13,891
Barrow	4	4	7	117	0	0	0	124
Big Lake	5	5	3	49	0	0	0	52
Chickaloon	1	0	0	0	0	0	0	0
Chugiak	17	17	20	955	0	0	0	975
Clear	1	1	0	0	0	0	0	0
Cooper Landing	1	1	0	70	0	0	0	70
Delta Junction	44	38	69	2,312	0	0	0	2,382
Denali Park	2	2	4	18	0	0	0	22
Dot Lake	1	0	0	0	0	0	0	0
Eagle River	64	58	171	2,601	0	0	0	2,772
Eklutna	1	1	0	65	0	0	0	65
Ester	4	4	12	169	0	0	0	181
Fairbanks	189	169	257	7,507	1	0	0	7,766
Fort Greely	1	1	0	1	0	0	0	1
Fox	1	1	0	0	0	0	0	0
Ft Richardson	1	0	0	0	0	0	0	0
Girdwood	3	3	0	28	0	0	0	28
Glacier View	1	1	4	43	0	0	0	47
Healy	4	2	0	270	0	0	0	270
Homer	4	4	12	310	0	0	0	322

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Table 12-3.–Page 2 of 2.

Community	Permits		Estimated salmon harvest[a]					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Houston	2	2	0	0	0	0	0	0
Huslia	1	0	0	0	0	0	0	0
Kennicott	1	1	0	4	0	0	0	4
Knik	2	2	2	65	0	0	0	67
Meadow Lakes	2	2	1	103	0	0	0	104
Moose Pass	1	1	0	118	0	0	0	118
Nanwalek	1	1	0	0	0	0	0	0
Nenana	1	1	0	348	0	0	0	348
Ninilchik	1	1	0	97	0	0	0	97
North Pole	79	66	139	4,446	19	0	0	4,604
Northway	3	2	2	390	0	0	0	392
Palmer	102	88	137	6,468	28	0	0	6,632
Peters Creek	3	3	10	42	0	0	0	52
Port Lions	1	1	0	44	0	0	0	44
Salcha	8	8	27	492	0	0	0	519
Sheep Mountain	1	1	4	17	0	0	0	21
Soldotna	4	4	7	570	0	0	0	577
Sterling	1	1	0	0	0	0	0	0
Sutton	4	4	2	90	0	0	0	92
Talkeetna	3	2	0	5	0	0	0	5
Tanacross	2	1	0	108	0	0	0	108
Tok	49	25	35	1,950	0	0	0	1,985
Tonsina	4	2	8	72	0	0	0	80
Trapper Creek	1	1	0	0	0	0	0	0
Two Rivers	3	2	8	93	0	0	0	101
Unknown community	9	6	3	191	0	0	0	194
Valdez	61	53	120	3,686	9	0	0	3,815
Wasilla	168	153	258	11,936	57	0	0	12,251
Willow	6	6	0	138	0	0	0	138
Subtotal, other communities	**1,198**	**1,018**	**1,802**	**59,398**	**292**	**0**	**0**	**61,491**
Total	**1,587**	**1,331**	**2,653**	**92,632**	**422**	**0**	**0**	**95,706**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 1989–2010.

	Permits		Estimated salmon harvest					
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
2010	9,308	7,757	700	140,089	1,892	0	0	142,680
5-year average (2005–2009)	8,221	6,897	1,951	113,232	2,078	0	0	117,261
10-year average (2000–2009)	8,011	6,855	2,272	109,923	2,420	0	0	114,615
Historical average (1989–2009)	7,664	6,911	3,312	104,899	2,325	0	0	110,536

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chitina	2	1	0	0	0	0	0	0
Copper Center	32	25	0	289	38	0	0	328
Gakona	1	1	0	0	0	0	0	0
Glennallen	21	14	0	153	0	0	0	153
McCarthy	2	2	1	24	2	0	0	27
Subtotal, Copper Basin	**58**	**43**	**1**	**466**	**40**	**0**	**0**	**508**
Anaktuvuk	1	1	0	13	0	0	0	13
Anchor Point	2	1	0	0	0	0	0	0
Anchorage	2,048	1,679	171	23,971	418	0	0	24,560
Anderson	1	1	0	10	0	0	0	10
Auke Bay	2	2	0	6	0	0	0	6
Barrow	6	5	1	115	0	0	0	116
Bethel	1	1	0	0	0	0	0	0
Big Lake	33	27	10	431	12	0	0	453
Buckland	1	1	0	30	0	0	0	30
Cantwell	8	6	1	97	0	0	0	99
Central	5	4	0	80	0	0	0	80
Chenega Bay	1	1	0	2	0	0	0	2
Chickaloon	12	11	1	161	0	0	0	163
Chugiak	131	110	14	1,471	0	0	0	1,485
Clear	5	3	0	108	0	0	0	108
Cooper Landing	2	1	0	42	0	0	0	42
Delta Junction	396	351	47	6,567	41	0	0	6,655
Denali National Park	13	13	1	205	3	0	0	209
Dot Lake	2	2	0	41	0	0	0	41
Douglas	1	0	0	0	0	0	0	0
Eagle	2	2	0	65	0	0	0	65
Eagle River	307	266	35	3,787	60	0	0	3,881
Eielson AFB	64	54	1	1,037	0	0	0	1,038
Elmendorf AFB	19	15	1	147	0	0	0	148
Ester	77	69	1	1,384	16	0	0	1,401
Fairbanks	3,169	2,590	181	55,553	598	0	0	56,332
Fort Greely	38	31	4	577	0	0	0	581
Fort Richardson	10	7	3	107	0	0	0	110
Fort Wainwright	89	69	6	1,429	19	0	0	1,455
Galena	1	1	0	25	0	0	0	25
Girdwood	38	33	1	430	0	0	0	431
Haines	2	2	0	50	0	0	0	50
Healy	35	34	1	457	1	0	0	459
Homer	8	7	1	75	1	0	0	78
Hooper Bay	1	0	0	0	0	0	0	0
Houston	5	5	0	71	0	0	0	71
Indian	4	3	0	20	0	0	0	20
Joint Base Elmendorf-Richardson	6	3	0	0	0	0	0	0

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Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Juneau	9	8	0	221	0	0	0	221
Kaktovik	1	1	1	18	0	0	0	19
Kasilof	1	1	0	19	0	0	0	19
Kenai	2	1	0	42	0	0	0	42
Ketchikan	2	2	0	30	0	0	0	30
Kodiak	3	2	0	0	0	0	0	0
Kotzebue	1	1	1	0	0	0	0	1
Koyuk	1	1	0	11	0	0	0	11
Manley Hot Springs	1	0	0	0	0	0	0	0
Marshall	1	1	0	15	0	0	0	15
Minto	2	0	0	0	0	0	0	0
Nenana	34	25	1	662	15	0	0	679
Nikolaevsk	2	2	0	45	0	0	0	45
Ninilchik	1	1	0	30	0	0	0	30
Nome	2	2	1	24	0	0	0	25
North Pole	906	739	59	15,425	85	0	0	15,569
Northway	2	2	0	10	0	0	0	10
Palmer	416	367	39	6,114	116	0	0	6,268
Salcha	72	59	6	1,379	0	0	0	1,385
Seldovia	2	0	0	0	0	0	0	0
Seward	11	9	0	159	0	0	0	159
Shishmaref	1	0	0	0	0	0	0	0
Sitka	3	3	0	57	0	0	0	57
Soldotna	3	2	0	0	0	0	0	0
Sterling	4	4	0	40	0	0	0	40
Sutton	47	44	1	732	19	0	0	752
Talkeetna	17	16	0	347	0	0	0	347
Tanana	1	0	0	0	0	0	0	0
Tok	17	14	1	217	0	0	0	219
Trapper Creek	6	5	0	138	0	0	0	138
Tununak	1	1	0	0	0	0	0	0
Two Rivers	34	32	0	447	100	0	0	547
Valdez	207	170	7	3,093	5	0	0	3,105
Wasilla	738	643	88	9,935	319	0	0	10,342
Willow	34	29	4	302	23	0	0	329
Wiseman	1	1	0	30	0	0	0	30
Wrangell	1	1	0	0	0	0	0	0
Other USA	13	11	0	164	0	0	0	164
Unknown community	104	103	7	1,349	0	0	0	1,356
Subtotal, other communities	**9,250**	**7,714**	**699**	**139,622**	**1,851**	**0**	**0**	**142,172**
Total	**9,308**	**7,757**	**700**	**140,089**	**1,892**	**0**	**0**	**142,680**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-6.–Historical subsistence salmon harvests, federal Chitina Subdistrict permits, 2003–2010.

	Permits		Estimated salmon harvest					
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
2010	92	38	36	5,352	88	0	0	5,476
5-year average (2005–2009)	80	62	23	1,347	37	0	0	1,407
Historical average (1989–2009)	87	66	22	1,383	52	0	0	1,458

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-7.–Subsistence salmon harvests by community, federal Chitina Subdistrict permits, 2010.

	Permits		Estimated salmon harvest					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Chitina	12	7	14	665	0	0	0	679
Copper Center	37	11	13	3,616	57	0	0	3,687
Dot Lake	1	0	0	0	0	0	0	0
Gakona	2	0	0	0	0	0	0	0
Glennallen	29	15	4	661	31	0	0	696
McCarthy	1	0	0	0	0	0	0	0
Slana	1	0	0	0	0	0	0	0
Tok	8	5	5	410	0	0	0	414
Total	**91**	**38**	**36**	**5,352**	**88**	**0**	**0**	**5,476**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-8.–Historical subsistence salmon harvests, Batzulnetas fishery, 1987–2010.

	Permits		Estimated salmon harvest					
Year	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
2010	3	3	0	106	0	0	0	106
5-year average (2005–2009)	0	0	0	0	0	0	0	0
10-year average (2000–2009)	1	1	0	67	0	0	0	67
Historical average (1987–2009)	1	1	0	101	0	0	0	101

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-9.–Historical subsistence salmon harvests, Copper River District (Copper River Flats), 1965–2010.

	Permits		Estimated salmon harvest					
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
2008	506	482	495	4,161	55	0	21	4,732
2009	323	293	232	1,916	23	1	0	2,173
2010	326	320	281	2,034	27	22	0	2,365

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Table 12-9.–Page 2 of 2.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
5-year average (2005–2009)	391	369	595	3,544	22	1	6	4,168
10-year average (2000–2009)	409	387	706	3,238	35	3	5	3,987
Historical average (1965–2009)	161	148	236	1,044	122	1	1	1,404

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-10.–Subsistence salmon harvests by community, Copper River District (Copper River Flats), 2010.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchor Point	1	1	0	0	0	0	0	0
Anchorage	18	17	4	39	0	5	0	49
Chugiak	2	2	0	0	0	0	0	0
Coffman Cove	1	1	0	0	0	0	0	0
Cordova	276	273	270	1,969	27	17	0	2,284
Delta Junction	1	1	0	0	0	0	0	0
Eagle River	3	3	2	18	0	0	0	20
Fairbanks	1	1	0	0	0	0	0	0
Girdwood	3	3	0	0	0	0	0	0
Homer	2	2	0	0	0	0	0	0
Hoonah	1	1	0	0	0	0	0	0
Hope	1	1	5	7	0	0	0	12
Nome	1	0	0	0	0	0	0	0
Palmer	2	1	0	0	0	0	0	0
Seward	1	1	0	0	0	0	0	0
Sitka	1	1	0	0	0	0	0	0
Sterling	1	1	0	0	0	0	0	0
Tatitlek	1	1	0	0	0	0	0	0
Valdez	4	4	0	0	0	0	0	0
Wasilla	5	5	0	0	0	0	0	0
Total	**326**	**320**	**281**	**2,034**	**27**	**22**	**0**	**2,365**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Table 12-11.–Historical subsistence salmon harvests, Prince William Sound, Eastern District, 1988–2010.

	Permits		Reported salmon harvest					
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						
1996	6	NA	0	0	38	0	0	38
1997	6	NA	0	107	45	54	0	206
1998	11	NA	0	2	71	28	4	105
1999	17	NA	0	344	541	31	31	947
2000	12	3	0	140	468	40	40	688
2001	14	9	0	114	230	12	60	416
2002	19	8	6	437	278	66	71	858
2003	15	8	0	81	185	12	20	298
2004	18	12	2	358	505	28	105	998
2005	16	3	0	98	286	16	200	600
2006	11	1	0	3	18	25	35	81
2007	14	0						
2008	1	1	0	60	0	0	0	60
2009	12	4	0	170	131	0	0	301
2010	8	5	0	165	142	10	50	367
5-year average (2005–2009)	11	2	0	83	109	10	59	261
10-year average (2000–2009)	13	5	1	162	233	22	59	478
Historical average (1988–2009)	14	4	1	167	287	44	65	563

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Note Blank cells indicate that no permits were returned so no information about harvests is available.

NA Data not available.

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

Species	Estimated salmon harvest			
	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 (2006).

a. Number of households in the community = 27; 15 (93%) were interviewed.

Table 12-13.–Historical subsistence salmon harvests, Prince William Sound, Southwestern District, 1988–2010.

Year	Permits		Reported salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1988	10	NA	1	50	8	294	251	604
1989	8	NA	0	322	0	180	554	1,056
1990	7	NA	1	36	5	2	20	64
1991	12	NA	3	345	42	53	195	638
1992	14	NA	1	526	23	99	313	962
1993	22	NA	2	835	50	124	232	1,243
1994	16	NA	5	192	77	161	402	837
1995	10	NA	2	152	67	41	67	329
1996	7	NA	0	107	7	46	105	265
1997	5	NA	44	193	30	272	110	649
1998	4	NA	13	114	20	119	65	331
1999	14	NA	57	499	62	101	168	887
2000	12	8	24	39	229	143	211	646
2001	16	9	2	119	92	146	95	454
2002	10	5	10	142	123	60	83	418
2003	13	7	6	219	156	147	149	677
2004	8	5	3	535	44	84	56	722
2005	13	8	10	515	84	174	124	907
2006	7	6	0	159	1	111	28	299
2007	4	3	2	293	27	55	4	381
2008	15	3	4	97	75	30	70	276
2009	5	4	2	168	26	84	5	285

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Table 12-13.–Page 2 of 2.

Year	Permits		Reported salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
2010	9	5	0	55	0	87	6	148
5-year average (2005–2009)	9	5	4	246	43	91	46	430
10-year average (2000–2009)	10	6	6	229	86	103	83	507
Historical average (1988–2009)	11	6	9	257	57	115	150	588

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

NA Data not available.

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

Species	Estimated salmon harvest			
	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 (2006).

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

Table 12-15.–Historical subsistence salmon harvests, Prince William Sound general, 1960–2010.

	Permits		Estimated salmon harvest					
Year	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						
1976	0	0	0	0	0	0	0	0
1977	4	4	0	0	0	0	0	0
1978	3	2	0	0	0	0	0	0
1979	15	2	0	0	0	0	0	0
1980	26	15	0	12	10	0	0	23
1981	12	8	0	5	44	3	0	51
1982	35	27	0	109	5	31	40	185
1983	26	21	0	27	45	98	11	181
1984	8	8	0	10	0	2	11	23
1985	22	16	1	37	22	36	19	116
1986	25	14	0	9	27	0	0	36
1987	18	17	5	33	6	17	0	61
1988	7	7	2	51	7	9	10	79
1989	11	7	0	0	0	5	0	5
1990	8	8	0	0	7	0	4	11
1991	9	5	0	4	0	0	0	4
1992	10	6	0	33	0	0	0	33
1993	6	6	1	104	10	0	0	115
1994	5	4	0	0	0	0	0	0
1995	4	2	0	0	0	0	0	0
1996	10	7	0	0	0	0	0	0
1997	4	3	0	4	0	0	0	4
1998	4	3	0	0	0	0	0	0
1999	3	3	0	0	0	0	0	0
2000	3	3	0	0	0	0	0	0
2001	5	5	0	0	0	0	0	0
2002	11	9	0	38	0	9	11	57
2003	11	11	0	48	0	3	0	51

-continued-

Table 12-15.–Page 2 of 2.

Year	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
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
2010	2	2	0	0	0	0	0	0
5-year average (2005–2009)	8	7	0	17	6	0	0	24
10-year average (2000–2009)	8	7	0	18	3	2	1	24
Historical average (1960–2009)	10	7	0	14	27	10	58	109

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

Note Blank cells indicate that no permits were returned so no information about harvests is available.

NA Data not available.

Table 12-16.–Subsistence salmon harvests by community, Prince William Sound general, 2010.

Community	Permits		Estimated salmon harvest					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	1	1	0	0	0	0	0	0
Cordova	1	1	0	0	0	0	0	0
Total	**2**	**2**	**0**	**0**	**0**	**0**	**0**	**0**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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 Juneau Nonsubsistence Area and the Ketchikan Nonsubsistence Area (figures 13-1 and 13-2) (5 AAC 99.015). No subsistence fisheries may be authorized in nonsubsistence areas.

Since 1990, any Alaska resident may harvest under the terms of a subsistence permit. Southeast region subsistence and personal use salmon fisheries have annual harvest assessment programs based on a permit reporting program. All of the management areas within the Southeast region contain specific waters with various positive C&T use findings, and all areas, except the Yakutat Management Area, have daily and annual limits, seasons, and allowable gear types set as part of the 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. 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, and
6. Ketchikan Management Area.

HARVEST ASSESSMENT PROGRAMS

Annual subsistence harvest assessments have been in place in Southeast Alaska since 1985 and in Yakutat since 1989. The Division of Commercial Fisheries is responsible for administering the subsistence and personal use salmon permit programs in the Southeast region. Permits are available at area offices. Department personnel or authorized designees also issue permits in Angoon, Hoonah, and Kake. Permits specify by location allowable gear types, possession limits, annual limits, seasons, area restrictions, and other conditions. Subsistence and personal use fishermen must record their harvests on a daily basis prior to leaving the fishing location and permits must be returned to ADF&G.

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.

Permit conditions that are listed on all permits issued in the Southeast region include: to be issued a permit a person must be an Alaska resident, only 1 permit per household will be issued, and the permit must be with the permittee, other authorized members of the household, or authorized proxy while taking or transporting subsistence salmon. Other standard permit conditions include removal of dorsal fins of subsistence salmon and both tips of the tail fin of personal use salmon, and a prohibition on fishing within

300 ft of a dam, fish ladder, weir, culvert, or other artificial obstruction. Sport-taken and subsistence-taken salmon cannot be possessed on the same day.

SUBSISTENCE SALMON HARVESTS IN 2010

In 2010, the total estimated subsistence and personal use salmon harvest for the Southeast region, based on returned permits, was 62,571 fish (Table 13-1). This was above the total estimated harvest for 2009 (59,627 salmon) as well as the recent 5- and 10-year averages (54,383 and 62,041 salmon, respectively) (Table 13-2). Sockeye salmon usually make up the largest proportion of subsistence salmon catches in Southeast Alaska, in contrast to the commercial fishery which has been dominated by pink salmon harvests since the early 1900s (Tingley and Davidson 2011). As expected, in 2010, sockeye salmon contributed the greatest amount to the overall harvest at 52,258 fish (84%), followed by 3,885 coho salmon (6%), 3,721 pink salmon (6%), 1,828 Chinook salmon (3%), and 878 chum salmon (1%) (Table 13-1; Figure 13-3). While the numbers of each species of salmon harvested differed from the 2009 harvest, the overall contribution of each species to the total harvest did not change significantly. The estimated salmon harvests by management area were as follows: Ketchikan 17,777 (28%), Sitka 12,268 (20%), Haines 10,705 (17%), Juneau 8,648 (14%), Yakutat 7,642 (12%), and Petersburg 5,531 (9%) (Table 13-3, Figure 13-4). Compared to 2009, harvests in the Juneau and Sitka management areas decreased slightly, while harvests in the Ketchikan, Haines, Yakutat, and Petersburg management areas increased. The largest change was seen in the Ketchikan area, where the harvest increased by more than 2,000 salmon.

The number of permits issued per year, on average, for the 10-year time period of 1999–2009, has been 3,444 (Table 13-2). In 2010, significantly fewer permits were issued. A total of 2,217 permits were issued and 1,829 permits were returned. This corresponds to a region-wide response rate of 82%, a lower response rate than was seen in 2009. 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 and encompasses Yakutat Area subsistence fisheries. 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 freshwaters upstream from the terminus of streams and rivers from the Doame River to the Tsiu River, the waters of Yakutat Bay and Russell Fjord, and the waters of Icy Bay (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 2010 permit was valid only in the areas with positive C&T findings. No daily or annual limits or allowable subsistence gear was specified. The weekly subsistence fishing period during the commercial salmon net season was from 6:00 AM Friday to 6:00 PM Saturday. This applied to each river or fishery individually. On the Situk River, subsistence fishers were required to attend their nets when they were being used to harvest salmon. Due to low returns of Chinook salmon to the Situk River, managers disallowed retention of Chinook salmon in the Situk–Ahrnklin Inlet. The permit was valid through December 31.

Harvest Assessment Program

The estimated total subsistence salmon harvest for the Yakutat Management Area in 2010 was 7,642 salmon, including 5,791 sockeye salmon (76%), 933 coho salmon (12%), 585 Chinook salmon (8%), 262

pink salmon (3%), and 70 chum salmon (1%) (Table 13-3). An estimated 117 permits were fished in the Yakutat Area (Table 13-3). This reflects an overall decrease in permits fished compared to 2009, but the amount of salmon harvested did not change significantly.

The community of Yakutat is the only one within the Yakutat Management Area. Residents of Yakutat were issued 97 subsistence permits, with 69 returned (71%) (Table 13-4). The estimated total subsistence salmon harvest for the community of Yakutat in 2010 was 6,468 fish, including 4,736 sockeye salmon (73%), 851 coho salmon (13%), 550 Chinook salmon (9%), 261 pink salmon (4%), and 70 chum salmon (1%) (Table 13-4).

HAINES MANAGEMENT AREA

Haines Area Subsistence Fisheries

Background and History

The Haines Management Area, encompassing the Haines Area subsistence fisheries, 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 2010, the combined population of these communities was 3,396 (ADLWD 2011). The populations of Haines and Skagway are predominantly non-Native, while Klukwan continues to have a predominantly Alaska Native population.

Regulations

In 2010, 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. 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.

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. This gear could be used to take salmon in the mainstem and side channels, but not in the tributaries, of the Chilkat River from Mile 4 of the Haines Highway to 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.

Harvest Assessment Program

The estimated subsistence salmon harvest in the Haines Management Area in 2010 was 10,705 salmon, including 8,522 sockeye salmon (80%), 1,388 pink salmon (13%), 355 coho salmon (3%), 328 chum salmon (3%), and 111 Chinook salmon (1%) (Table 13-3). This represents a slight increase compared to total harvests in 2009, mostly in the number of sockeye salmon harvested, which increased from 7,647 in 2009. An estimated 358 permits were fished in the Haines Management Area in 2010.

In Haines, 326 permits were issued, and 314 were returned (96%). Two Klukwan residents were issued permits and both were returned. The estimated total number of salmon harvested by Haines and Klukwan residents combined (10,049 salmon) included 7,972 sockeye salmon (79%), 1,317 pink salmon (13%), 344 coho salmon (3%), 305 chum salmon (3%), and 110 Chinook salmon (1%) (Table 13-4).

JUNEAU MANAGEMENT AREA

The Juneau Management Area encompasses subsistence fisheries in the Angoon Subsistence Area and the Hoonah Subsistence Area, as well as personal use fisheries in the Juneau area and subsistence and personal use fisheries in the Elfin Cove–Tenakee Springs–Gustavus–Pelican area. Management responsibility for the area rests with both the Juneau and Sitka area offices. Overall, in 2010 there were 482 permits fished in the Juneau Management Area with an estimated harvest of 8,648 (Table 13-3). Sockeye salmon harvests constituted 85% of the total harvest.

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 2010, Angoon had a population of 459 (ADLWD 2011). 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 2010, a subsistence salmon permit for the Angoon Area waters of District 12 provided for an open season for sockeye salmon in Kanalku Bay and Basket Bay (Kook Lake outlet) from June 1–July 31, with a limit of 15 fish in possession and annually at Kanalku Bay and 15 fish in possession with an annual limit of 30 fish in Basket Bay; 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–August 15, 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 in 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.

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. 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.

Harvest Assessment Program

The estimated salmon harvest in the Angoon Area subsistence fisheries in 2010 was 2,118 salmon, including 1,620 sockeye salmon (76%), 276 coho salmon (13%), 177 pink salmon (8%), and 46 chum salmon (2%) (Table 13-3). The 2010 salmon harvest continues a trend of slightly increasing harvests in the Angoon Area since 2007. The majority of the increase in 2010 harvests was the result of increased pink and coho salmon harvests. An estimated 75 permits were fished in the area.

The estimated salmon harvest for the community of Angoon, based on 52 permits issued and 46 returned (88%), totaled 1,765 salmon, including 1,429 sockeye salmon (81%), 176 coho salmon (10%), 127 pink salmon (7%), and 33 chum salmon (2%) (Table 13-4). Approximately 500 more salmon were caught by residents of Angoon in 2010 compared to 2009, however less than half the number of permits were issued in 2010 as in 2009. The increase in overall harvest is reflected in increased harvests of each salmon species.

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 2010, Hoonah had a population of 760 (ADLWD 2011).

Regulations

The 2010 subsistence salmon permit for Hoonah Area waters provided open seasons and limits for sockeye salmon at the following locations: Surge Bay, Hanus Bay (Lake Eva), and Neva Creek from June 1–August 15, Hoktaheen Cove from June 1–July 20, and Berg Bay from June 1–July 31. Limits at these locations varied: 50 sockeye salmon annually and in possession were allowed at Surge and Hanus bays; a limit 40 fish in possession and annually was in effect at Neva Creek; Hoktaheen Cove had a possession and annual limit of 50 fish; and Berg Bay had a limit of 25 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.

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 Subsistence 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.

Harvest Assessment Program

The estimated salmon harvest in the Hoonah Subsistence Area in 2010 was 1,602 salmon, including 1,478 sockeye salmon (92%), 90 coho salmon (6%), 22 pink salmon (1%), 10 chum salmon (1%), and 2 Chinook salmon (<1%) (Table 13-3). The 2010 harvest was less than half the quantity of the 2009 harvest of 3,053 salmon and similar to the 2008 harvest of 1,162 fish. Fewer salmon of all species were harvested in 2010, except for coho salmon, of which there was a slight increase. An estimated 62 permits were fished in the Hoonah Subsistence Area in 2010.

In 2010, 53 permits were issued in the community of Hoonah and 28 were returned (53%) with a total estimated harvest of 1,684 salmon. The harvest consisted of 1,380 sockeye salmon (82%), 157 coho salmon (9%), 139 pink salmon (8%), 6 chum salmon (<1%), and 2 Chinook salmon (<1%) (Table 13-4). In 2009, 114 permits were issued in the community and 84 (74%) were returned, for a total estimated harvest of 2,543 salmon. Chum salmon harvests underwent the most drastic change, declining from 753 fish taken in 2009.

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 2010, Elfin Cove had a population of 20, Gustavus–442 residents; Pelican–88 residents; and Tenakee Springs–131 residents (ADLWD 2011).

Regulations

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

Harvest Assessment Program

In 2010, the number of salmon reported on permits from Elfin Cove, Gustavus, Pelican, and Tenakee Springs was modest. No permits were issued in Elfin Cove. In Gustavus, 17 permits were issued and all were returned. The estimated harvest for Gustavus was 282 total salmon, consisting of 268 sockeye salmon (95%), 6 pink salmon (2%), 4 coho salmon (1%), 2 Chinook salmon (1%), and 2 chum salmon (1%). One permit was issued to Pelican residents and one to Tenakee Springs residents; one was returned from Pelican. Estimated harvests for these 2 communities were 54 salmon. Of that, 50 were sockeye salmon and 4 were Chinook salmon (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, which is in the Juneau Nonsubsistence Area (Figure 13-1). These waters are under the management responsibility of the Division of Commercial Fisheries' Juneau Area office. Personal use regulations apply to salmon fishing for home uses in this area. Juneau area residents were the principal participants in the designated personal use fisheries in District 11. In 2010, the city and borough of Juneau had a population of 31,275 (ADLWD 2011).

Regulations

The 2010 personal use permit for 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 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). 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. 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

The total estimated salmon harvest for the Juneau Personal Use Area fisheries in 2010 was 4,928 salmon, consisting of 4,286 sockeye salmon (87%), 307 pink salmon (6%), 288 coho salmon (6%), 39 Chinook salmon (1%), and 8 chum salmon (<1%) (Table 13-3). This was a slightly higher harvest than 2009, which totaled 4,527 salmon; the composition of the harvest in both years was similar.

The estimated salmon harvest for the community of Juneau, based on 411 permits issued and 378 returned (92%), totaled 6,195 salmon, including 5,498 sockeye salmon (89%), 341 coho salmon (6%), 297 pink salmon (5%), 34 Chinook salmon (<1%) , and 25 chum salmon (<1%) (Table 13-4). The total salmon harvest for Juneau increased slightly compared to the 2009 amount (5,961), but the number of permits issued declined by almost half (705 permits were issued in 2009). The estimated salmon harvest for the community of Douglas, based on 38 permits issued and 35 returned (92%), totaled 588 salmon, including 439 sockeye salmon (75%), 74 pink salmon (13%), 61 coho salmon (10%), 11 Chinook salmon (2%), and 3 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 in all waters of District 13 (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 2010, Sitka had a population of 8,881 (ADLWD 2011). 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 2010 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 between July 13 and August 31, depending on location. As stated on the permit, Falls Lake and Bay closed on July 13, but was open again from July 23 to August 15. On July 20, Hoktaheen Cove, Takanis Bay, and Gut Bay closed to sockeye salmon fishing. Leo's Anchorage closed on July 25. On July 31, Silver Bay, Politofski Lake, and other unlisted C&T areas closed. On August 15, Klag and Surge bays, Lake Anna, Ford Arm, and Hanus Bay (Lake Eva) closed. The last areas closed on August 31, and included Necker, Redfish, and Sitkoh bays. Inseason changes were made to 2 of these systems. Due to low water conditions on West Chichagof Island, a high subsistence harvest, and low escapement in the Klag Bay, Lake Anna, and Ford Arm systems, managers closed these areas and all associated freshwater drainages on July 25. Falls Lake was closed on August 7 to subsistence and sport fishing in an attempt to improve escapement.

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. For subsistence–personal use locations not listed on the permit, the possession limit and annual limit was 10 sockeye salmon with a season of June 1–July 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 season for chum salmon in other C&T waters within the Sitka Management Area, except for the listed sockeye salmon streams, was July 15 to October 31, with a possession and annual limit of 50 fish. Pink salmon could be harvested from C&T areas within the Sitka Management Area, except those sockeye streams listed on the permit, from July 15–September 30, with a possession limit of 50 fish and annual limit of 150. Coho salmon could be taken in C&T areas within the Sitka Management Area from August 16–October 31 and in Redoubt, Necker, Redfish, and Sitkoh bays from September 10–October 31 with a possession limit of 20 fish and an annual limit of 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 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 2010 escapement fell within this range, so no changes were made to the season or limits specified on the permit.

The 2010 subsistence–personal use salmon permit for the Sitka Management Area stipulated that 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. Allowable subsistence gear included hand purse seines, beach seines, drift gillnets, dip nets, gaffs, and spears. Drift gillnets could not exceed 50 fathoms. Cast nets were allowed in all areas except Redoubt Bay. In Redoubt Bay only, the use of rod and reel gear was allowed as subsistence gear and sport regulations applied to this gear. Portions of Falls Lake, Gut Bay, and Indian River had closed areas and restricted gear types specified on the permit.

Harvest Assessment Program

As reported in Table 13-3, the estimated salmon harvest in the Sitka Management Area subsistence and personal use fisheries in 2010 was 12,268 salmon, including 11,613 sockeye salmon (95%), 335 pink salmon (3%), 258 coho salmon (2%), 47 chum salmon (<1%), and 14 Chinook salmon (<1%). This was a decrease from 2009 harvest levels of 12,768 fish; the largest decrease was seen in the sockeye salmon harvest. An estimated 373 permits were fished in the Sitka Management Area in 2010.

As reported in Table 13-4, the estimated salmon harvest for the community of Sitka in 2010, based on 345 permits issued and 316 returned (92%), was 11,343 salmon, including 10,765 sockeye salmon (95%), 256 coho salmon (2%), 252 pink salmon (2%), 47 chum salmon (<1%), and 23 Chinook salmon (<1%). Many fewer permits were issued to Sitka residents in 2010 compared to 2009, when 631 permits were issued. The corresponding 2010 harvest is 1,060 salmon fewer than in 2009, with most of the decrease coming from sockeye salmon harvests. There was a large increase in the amount of coho salmon caught, up from just 53 fish in 2009.

PETERSBURG MANAGEMENT AREA

The Petersburg Management Area includes the Kake Subsistence Area, the Petersburg–Wrangell Personal Use Area, the federal Stikine subsistence fishery, and the Point Baker–Port Protection Subsistence Area. Overall, an estimated 258 permits were fished in the Petersburg Management Area. The total estimated salmon harvest was 5,531fish, with 72% of the harvest coming from sockeye salmon (Table 13-3). For any areas with a positive C&T determination not listed on the permit, the open season was June 1–July 31, with harvest limits for sockeye salmon of 10 in possession and 10 annually.

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 2010, Kake had a population of 557 (ADLWD 2011). 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 2010 subsistence salmon permit for the Kake Area waters with a positive C&T finding 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. Inseason, Falls Lake was closed on August 7 to subsistence and sport fishing in an attempt to improve escapement. The season for sockeye salmon in Gut Bay was June 1–July 20 with a limit of 10 fish in possession and 20 fish annually. Pink, chum, and coho salmon could be harvested in all streams in the Kake Subsistence Area, except for the sockeye salmon streams identified on the permits. The open season for pinks was between July 15–September 15 with a possession limit of 100 pink salmon and no annual limit. Chum salmon could be

harvested from July 1–October 31 with a possession limit of 50 fish and no annual limit. The coho salmon season lasted from August 16–October 31 with a limit of 20 fish in possession and 40 fish annually.

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.

Harvest Assessment Program

As reported in Table 13-3, the estimated salmon harvest in the Kake Subsistence Area in 2010 was 2,547 salmon, including 2,172 sockeye salmon (85%), 160 pink salmon (6%), 128 chum salmon (5%), 70 coho salmon (3%), and 19 Chinook salmon (1%). An estimated 87 permits were fished in the Kake Subsistence Area in 2010.

The estimated subsistence salmon harvest for the community of Kake in 2010, based on 72 permits issued and 57 returned (79%), was 2,266 salmon. The harvest consisted of 2,030 sockeye salmon (90%), 133 pink salmon (6%), 57 chum salmon (3%), 27 coho salmon (1%), and 17 Chinook salmon (<1%) (Table 13-4). Fewer permits were issued in 2010 than 2009 with a lower return rate, but slightly more fish were harvested (1,532 salmon in 2009). Sockeye salmon constituted a greater portion of the overall harvest in 2010 compared to 2009.

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 many of 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 2010, the population of Petersburg was 2,948 and that of Wrangell was 2,369 (ADLWD 2011).

Regulations

The 2010 subsistence–personal use salmon permit for the Petersburg Management Area was valid in the waters of districts 7 and 8. The permit provided an open season (June 1–July 31) 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, fishing for pink and chum salmon was permitted. The open season for subsistence pink salmon fishing was July 15–September 15, with a daily possession limit of 100 pink salmon and no annual limit. The open season for subsistence chum salmon fishing was July 1–October 31, with a daily possession limit of 50 fish and no annual limit. Subsistence coho salmon was permitted in all the streams in the Wrangell and Petersburg subsistence areas from August 16–October 31, with a limit of 20 fish in possession and 40 annually.

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 C&T findings. Streams that crossed or were adjacent to the Petersburg or Wrangell road system were closed to personal use fishing. 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. The fishery was only open Thursdays through Sundays from June 3–June 27. In 2010, harvest limits were restricted to 3 fish daily and 9 annually. Due to low numbers of sockeye returning, the fishery closed for the season on June 16. Personal use coho salmon fishing was open in Blind Slough and North Wrangell Narrows from August 13 to September 3 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 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

The estimated salmon harvest in the Petersburg Subsistence–Personal Use Area in 2010 was 1,834 salmon, including 809 sockeye salmon (44%), 808 coho salmon (44%), 163 pink salmon (9%), 50 chum salmon (3%), and 3 Chinook salmon (<1%) (Table 13-3). Compared to 2009, 2010 saw a higher total harvest, with greater numbers of sockeye, coho, and pink salmon taken than in 2009. An estimated 106 permits were fished in 2010.

As reported in Table 13-4, the estimated subsistence salmon harvest for the community of Petersburg in 2010, based on 105 permits issued and 92 returned (88%), was 1,926 salmon, including 887 sockeye salmon (46%), 815 coho salmon (42%), 119 pink salmon (6%), 101 chum salmon (5%), and 5 Chinook salmon (<1%).

As shown in Table 13-3, the estimated salmon harvest in the Wrangell Subsistence–Personal Use Area in 2010 was 1,150 salmon, which included 992 sockeye salmon (86%), 65 chum salmon (6%), 50 pink salmon (4%), and 42 Chinook salmon (4%). Compared to 2009, sockeye and Chinook salmon constituted a greater percentage of the catch in 2010.

The estimated subsistence salmon harvest for the community of Wrangell in 2010, based on 65 permits issued and 61 returned (94%), was 1,228 salmon, including 1,024 sockeye salmon (83%), 69 chum salmon (6%), 62 pink salmon (5%), 42 Chinook salmon (3%) and 30 coho salmon (3%) (Table 13-4). Harvests of all species of salmon, except chum salmon, increased in 2010 compared to 2009 harvests in the Wrangell Subsistence–Personal Use Areas.

2010 Federal Stikine River Subsistence Salmon Fishery: Regulations

In January 2004, the U.S. and Canada negotiated a modified Pacific Salmon Treaty that allowed for a U.S. subsistence salmon fishery on the Stikine River. The Federal Subsistence Board implemented a Stikine River subsistence sockeye salmon fishery in 2004, followed by directed Chinook and coho salmon subsistence fisheries authorized in 2005. Regulatory changes implemented for the 2006 season included an increase in the mesh size of gillnets during the Chinook salmon fishery and an earlier starting date for the sockeye salmon fishery. In 2008, 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 2010 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 51/2 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. Permits were to be returned by October 15, 2010.

1. This permit is only valid for subsistence salmon fishing in the mainstream of the Stikine River. Clearwater tributaries of the Stikine are closed to subsistence salmon fishing. Fishing gear must be operated in such a way that it does not interfere with the U.S.–Canada test fishing program.
2. Only residents of Meyers Chuck, Wrangell, and Petersburg (including all residents of Fishing District 6 living north of Point Alexander) may participate in the Stikine River subsistence fishery.
3. This permit must be in your possession while fishing. A daily harvest entry must be completed prior to leaving the fishing site, whether a fish is harvested or not.
4. Only one permit will be issued to a household. Any member of the household or other federally qualified person may fish the permit if included as a designated fisherman on this permit as long as the person fishing possesses the permit while fishing.

5. Incidental harvest of Chinook, sockeye or coho outside of the directed fishery seasons and the harvest of any other species of fish is allowed but harvests must be reported on the daily harvest log.
6. Only Chinook greater than 28 inches are included in harvest limits. Indicate the numbers of Chinook taken that are greater than and less than 28 inches separately.

Harvest Assessment Program

For Chinook, coho, and sockeye salmon fisheries harvest assessment, a telephone-based monitoring program is used inseason, with permits and harvest reporting used for overall harvest assessment postseason. In 2010, 107 fishing permits were issued, with the majority going to Wrangell households. Of this total, 70 households, approximately 65% of all permit holders, reported successfully harvesting fish. The Stikine River subsistence harvest totaled 1,964 salmon. The harvest consisted of 61 Chinook salmon greater than 28 inches (3%), 18 Chinook salmon less than 28 inches (1%), 1,653 sockeye salmon (84%), 135 coho salmon (7%), 60 pink salmon (3%), and 37 chum salmon (2%). There were also 7 steelhead and 15 Dolly Varden harvested. Compared to 2009, more permit holders caught more of each salmon species. The proportion of the catch contributed by each species was similar, with sockeye salmon constituting 80% or more of the harvest in both years. 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 and sockeye salmon were harvested by July 17 and 90% of the coho salmon were taken by September 9 (Larson 2010).

Point Baker–Port Protection Subsistence Fisheries

Background and History

The Division of Commercial Fisheries' Petersburg Area office manages subsistence and personal use salmon fisheries in the waters used by fishers from the communities of Point Baker and Port Protection. These fisheries rely especially on 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 2010, Point Baker had a population of 15 and Port Protection had a population of 48 (ADLWD 2011).

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 Wednesdays at 12:00 PM to Sundays at 12:00 PM, from June 16–July 31. Only drift gillnet gear, not to exceed 50 fathoms in length, was allowed. Harvest was limited to 25 sockeye salmon in possession and 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 the sockeye salmon streams identified on the permit. There was a 100-fish possession limit for pink salmon, with no annual limit. For chum salmon, 50 fish were allowed in possession with no annual limit. Coho salmon could be harvested in all streams in the Point Baker–Port Protection subsistence area with a possession limit of 20 fish and annual limit of 40 fish.

Harvest Assessment Program

Port Protection households maintain either a Ketchikan or Point Baker post office address and receive mail via private carrier from Ketchikan. Port Protection harvests can be included in either the Point Baker or Ketchikan harvest estimates. In 2010, no salmon permits were issued to Port Protection residents. For Point Baker in 2010, 2 permits were issued and returned, with 92 salmon harvested, including 29 sockeye salmon, 46 pink salmon, 14 chum salmon, and 3 coho salmon (Table 13-4).

KETCHIKAN MANAGEMENT AREA

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, around the community of Kasaan. In addition, the Ketchikan Management Area includes the personal use fisheries in the Ketchikan area. All of these areas are under the management responsibilities of the Division of Commercial Fisheries' Ketchikan Area office. There were an estimated 580 permits fished in the Ketchikan Management Area in 2010. The total estimated salmon harvest was 17,777 fish (Table 13-3). Sockeye salmon harvests contributed 84% of this harvest, followed by Chinook salmon at 6%.

Craig, Klawock, and Hydaburg Subsistence Fisheries

Background and History

Hydaburg area waters with a positive C&T finding 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 with a positive C&T finding 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 2010, Craig had a population of 1,201, Klawock had a population of 755, and Hydaburg had a population of 376 (ADLWD 2011).

Regulations

The 2010 subsistence sockeye salmon openings in Craig–Klawock area waters were Mondays 8:00 AM to Fridays 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. Other systems in the Ketchikan Management Area with C&T areas were open to sockeye salmon fishing June 1–July 31, with a 10 sockeye salmon possession limit and a 25 sockeye 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 and coho salmon fishing was open in the same waters July 1–October 31 with a possession limit of 25 chum and 20 coho salmon. There was no annual limit for chum salmon, but there was a 40 coho salmon limit annually. Inseason, the Port St. Nichols personal use Chinook salmon fishery opened on June 25 and closed on August 1. Legal gear was limited to beach seines and dip nets. The bag limit was 10 Chinook salmon with no size limits. 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 allowable subsistence–personal use gear allowed for general use. Salmon could not be taken with a line attached to a rod or pole. Chinook salmon,

rainbow/steelhead trout, and Arctic char/Dolly Varden could only be taken incidentally by gear operated under the terms of the permit. Sockeye salmon could not be retained as incidental catch.

Harvest Assessment Program

The estimated salmon harvest for the Craig–Klawock–Hydaburg Subsistence Area in 2010 was 11,987 salmon, including 10,097 sockeye salmon (84%), 999 Chinook salmon (8%), 656 coho salmon (5%), 212 pink salmon (2%), and 22 chum salmon (<1%) (Table 13-3). The 2010 harvest increased from 10,280 fish in 2009. Chinook and coho salmon harvests changed the most drastically between the 2 years, constituting <1% and 2% of the total harvest, respectively, in 2009.

As reported in Table 13-4, 174 permits were issued to residents of Craig and 101 (58%) were returned. The total estimated salmon harvest of Craig residents was 5,781 salmon, consisting of 4,141 sockeye salmon (72%), 584 Chinook salmon (10%), 564 coho salmon (10%), 474 pink salmon (8%), and 19 chum salmon (<1%). The total estimated salmon harvest for Klawock, based on 123 permits issued and 72 returned (59%), was 5,229 salmon, consisting of 4,929 sockeye salmon (94%), 179 Chinook salmon (3%), 106 coho salmon (2%), 10 pink salmon (<1%), and 5 chum salmon (<1%). The total estimated salmon harvest for Hydaburg, based on 44 permits issued and 24 returned (55%), was 2,200 salmon, all of which were sockeye salmon. Fewer permits were issued in each community in 2010 and the response rate of returned permits was lower. All communities, except for Hydaburg, demonstrated an overall increase in salmon harvested in 2010 compared to 2009.

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. 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 2010, Coffman Cove had a population of 176, Edna Bay's population was 42, Hollis had a population of 112, Kasaan's population was 49, Thorne Bay's population was 471, and the population of Whale Pass was 31 (ADLWD 2011).

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 10 fish possession limit and a 25 fish annual limit. All streams with a positive C&T determination were open to pink salmon fishing July 1–September 30, with a limit of 150 fish in possession and no annual limit. Coho and chum salmon fishing was also open in these waters July 1–October 31, with a limit on coho salmon harvests of 20 fish in possession and 40 fish annually. The limit on chum salmon harvests was 25 fish in possession and no annual limit.

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. Chinook salmon, rainbow/steelhead trout, and Arctic char/Dolly Varden could only be taken incidentally by gear operated under the terms of the permit. Sockeye salmon could not be retained as incidental catch.

Harvest Assessment Program

As reported in Table 13-3, in 2010 an estimated 101 permit holders were fishing in the Kasaan Subsistence Areas with an estimated salmon harvest of 3,250 salmon. The harvest included 2,808 sockeye salmon (86%), 291 pink salmon (9%), 138 coho (4%), and 13 chum (<1%). The total harvest increased significantly compared to 2009 levels, with the largest increase seen in sockeye salmon harvests. In 2009, 1,801 salmon were harvested, consisting of 1,177 sockeye salmon, 343 coho salmon, 222 pink salmon, and 59 chum salmon.

Based on 4 permits issued to residents of Kasaan and 3 returned (75%) in 2010, an estimated 56 salmon were harvested, consisting of almost entirely sockeye salmon (53) and 3 Chinook salmon (Table 13-4). For Coffman Cove residents, 7 permits were issued and only 1 was returned (14%), with estimated salmon harvests of 30 sockeye salmon. In Hollis, no permits were issued. Thorne Bay residents were issued 29 permits and returned 23 (79%), resulting in a harvest estimate of 302 salmon, including 175 Chinook salmon (58%), 100 sockeye salmon (33%), 26 coho salmon (9%), and 1 pink salmon (<1%) (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 13-2). 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 2010, the population of the city and borough of Ketchikan, excluding Saxman, was 13,066. Saxman, located within the Ketchikan Gateway Borough, had a population of 411(ADLWD 2011).

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. Kegan Lake and Thorne River were open from June 1–July 31 to sockeye fishing, with a possession limit of 12 sockeye salmon and an annual limit of 50 sockeye salmon. 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 10 sockeye salmon in possession and a 25 fish annual limit. Hatchery Creek was open June 3–June 27, Thursdays through Sundays, with a limit of 3 sockeye salmon in possession and 9 annually. Leask Creek and Mahoney Creek and Lake, and marine waters within 500 yards of the terminus of these streams, were closed for the season. For pink and chum salmon, all streams in the Ketchikan Management Area personal use area, except the Ketchikan road system, were open. The season for pink salmon ran from June 2–September 30 with a limit of 150 fish in possession and no annual limit. For chum salmon, the open season was from June 1–October 31 with a possession limit of 25 and no annual limit. Excluding the Herring Cove and Ketchikan Creek personal use Chinook salmon fishery, coho and Chinook salmon, rainbow/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. Sockeye salmon could not be retained as incidental catch. The Ketchikan Creek personal use salmon fishery was opened on August 23 and August 30 for 3 hours each day. A per person bag limit of 4 Chinook, 4 coho and 6 pink salmon was in effect, with no size limit.

Harvest Assessment Program

The total estimated salmon harvest in the Ketchikan Personal Use Area in 2010 was 2,540, including 2,067 sockeye salmon (81%), 353 pink salmon (14%), 91 chum salmon (4%), 14 coho salmon (<1%), and 14 Chinook (<1%) (Table 13-3). An estimated 128 permits were fished in this area. The 2010 harvest represents a decrease in harvest compared to 2009 levels, when 3,355 salmon were harvested total, including 2,709 sockeye salmon, 317 pink salmon, 306 chum salmon, 3 Chinook salmon, and 19 coho salmon.

As reported in Table 13-4, the total estimated salmon harvest for the community of Ketchikan, based on 167 permits issued and 118 returned (71%), was 3,408, including 2,810 sockeye salmon (83%), 351 pink salmon (10%), 110 coho salmon (3%), 96 chum salmon (3%), and 41 Chinook salmon (1%). No permits were issued to residents of Saxman in 2010. Based on 9 permits issued and 4 returned (44%), in 2010 residents of Metlakatla harvested 318 salmon, all of which were sockeye salmon. In 2010, the number of permits issued and the amount of salmon harvested decreased in Ketchikan and Saxman, but increased in Metlakatla from 2009 levels.

Table 13-1.–Subsistence and personal use salmon harvests by district, Southeast region, 2010.

		Permits fished		Estimated salmon harvests					
Fishing location	Name	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total
District 1	Ketchikan–Behm Canal	91	128	14	2,067	14	91	353	2,540
District 2	Clarence Strait–East Prince of Wales Island	58	91	0	2,778	125	13	291	3,208
District 3	Inside Waters–West Prince of Wales Island	212	352	999	10,097	656	22	212	11,986
District 5	Sumner Strait	0	0	0	0	0	0	0	0
District 6	East Sumner Strait–North Frederick Sound	91	110	3	814	757	40	149	1,764
District 7	East Etolin Island–Wrangell Island–Ernest Sound	60	65	42	992	0	65	50	1,150
District 8	Stikine River	5	5	0	25	64	10	14	113
District 9	South Chatham Strait–West Frederick Sound	69	86	19	2,149	70	128	98	2,463
District 10	East Frederick Sound	2	2	0	22	0	0	62	85
District 11	Juneau–Taku Inlet–Stephens Passage	374	403	39	4,286	288	8	307	4,928
District 12	Angoon–North Chatham Strait–East Chichagof	62	73	0	1,517	276	16	136	1,945
District 13	Sitka–Outer Baranof and Chichagof–Peril Strait	360	404	14	12,730	262	85	392	13,483
District 14	Icy Strait–Glacier Bay	28	37	2	464	86	2	6	559
District 15	Lynn Canal–Chilkat Inlet	349	358	111	8,522	355	328	1,388	10,705
Yakutat Forelands	Yakutat Forelands	69	93	312	5,272	907	70	262	6,825
Yakutat Bay–Troll	Yakutat Bay–Troll	28	39	273	519	25	0	0	817
Total		**–**	**–**	**1,828**	**52,258**	**3,885**	**878**	**3,721**	**62,571**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

– 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, 1985–2010.

	Permits		Estimated salmon harvests					
Year[a]	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
2010	2,217	1,829	1,828	52,258	3,885	878	3,721	62,571
5-year average (2005–2009)	3,288	2,624	1,140	45,742	2,554	1,542	3,404	54,383
10-year average (1999–2009)	3,444	2,830	1,350	51,920	2,686	2,670	3,414	62,041
Historical average (1985–2009)	3,672	2,411	905	46,889	2,329	3,385	3,009	56,516

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

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, 2010.

Area	Permits fished		Estimated salmon harvest					
	Reported	Estimated	Chinook	Sockeye	Coho	Chum	Pink	Total
Yakutat Management Area	86	117	585	5,791	933	70	262	7,642
Haines Management Area	349	358	111	8,522	355	328	1,388	10,705
Juneau Management Area	482	540	41	7,385	654	63	505	8,648
Juneau Personal Use Area	374	403	39	4,286	288	8	307	4,928
Angoon Subsistence Area	63	75	0	1,620	276	46	177	2,118
Hoonah Subsistence Area	45	62	2	1,478	90	10	22	1,602
Sitka Management Area	339	373	14	11,613	258	47	335	12,268
Petersburg Management Area	222	258	64	3,973	878	243	373	5,531
Petersburg Subsistence–Personal Use Area	92	106	3	809	808	50	163	1,834
Wrangell Subsistence–Personal Use Area	60	65	42	992	0	65	50	1,150
Kake Subsistence Area	70	87	19	2,172	70	128	160	2,547
Ketchikan Management Area	365	580	1,013	14,972	808	127	857	17,777
Ketchikan Personal Use Area	91	128	14	2,067	14	91	353	2,540
Kasaan Subsistence Area	62	101	0	2,808	138	13	291	3,250
Craig–Klawock–Hydaburg Subsistence Area	212	352	999	10,097	656	22	212	11,987
Total	**–**	**–**	**1,828**	**52,258**	**3,885**	**878**	**3,721**	**62,571**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

– 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, 2010.

	Permits		Estimated salmon harvests					
Community	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
Anchorage	17	16	36	229	8	0	1	274
Angoon	52	46	0	1,429	176	33	127	1,765
Auke Bay	20	19	0	161	7	15	11	194
Barrow	1	1	0	250	0	0	0	250
Coffman Cove	7	1	0	30	0	0	0	30
Craig	174	101	584	4,141	564	19	474	5,781
Douglas	38	35	11	439	61	3	74	588
Edna Bay	1	1	9	0	0	0	0	9
Fairbanks	4	4	0	44	0	0	5	49
Gustavus	17	17	2	268	4	2	6	282
Haines	326	314	110	7,909	334	291	1,295	9,940
Hoonah	53	28	2	1,380	157	6	139	1,684
Hydaburg	44	24	0	2,200	0	0	0	2,200
Juneau	411	378	34	5,498	341	25	297	6,195
Kake	72	57	17	2,030	27	57	133	2,266
Kasaan	4	3	3	53	0	0	0	56
Ketchikan	167	118	41	2,810	110	96	351	3,408
Klawock	123	72	179	4,929	106	5	10	5,229
Klukwan	2	2	0	63	10	14	22	109
Kodiak City	3	2	0	0	0	0	0	0
Metlakatla	9	4	0	318	0	0	0	318
Palmer	1	1	0	8	0	0	0	8
Pelican	1	1	4	50	0	0	0	54
Petersburg	105	92	5	887	815	101	119	1,926
Point Baker	2	2	0	29	3	14	46	92
Port Alexander	2	2	0	135	0	0	0	135
Sitka	345	316	23	10,765	256	47	252	11,343
Skagway	4	4	0	18	0	5	12	35
Sutton	1	1	0	14	0	0	0	14
Tenakee Springs	1	0	0	0	0	0	0	0
Thorne Bay	29	23	175	100	26	0	1	302
Tok	1	1	0	40	0	0	1	41
Ward Cove	16	11	1	211	0	5	20	239
Wasilla	2	2	0	59	0	0	1	60
Wrangell	65	61	42	1,024	30	69	62	1,228
Yakutat	97	69	550	4,736	851	70	261	6,468
Total	**2,217**	**1,829**	**1,828**	**52,258**	**3,885**	**878**	**3,721**	**62,571**

Source ADF&G Division of Subsistence, ASFDB 2011 (ADF&G 2013).

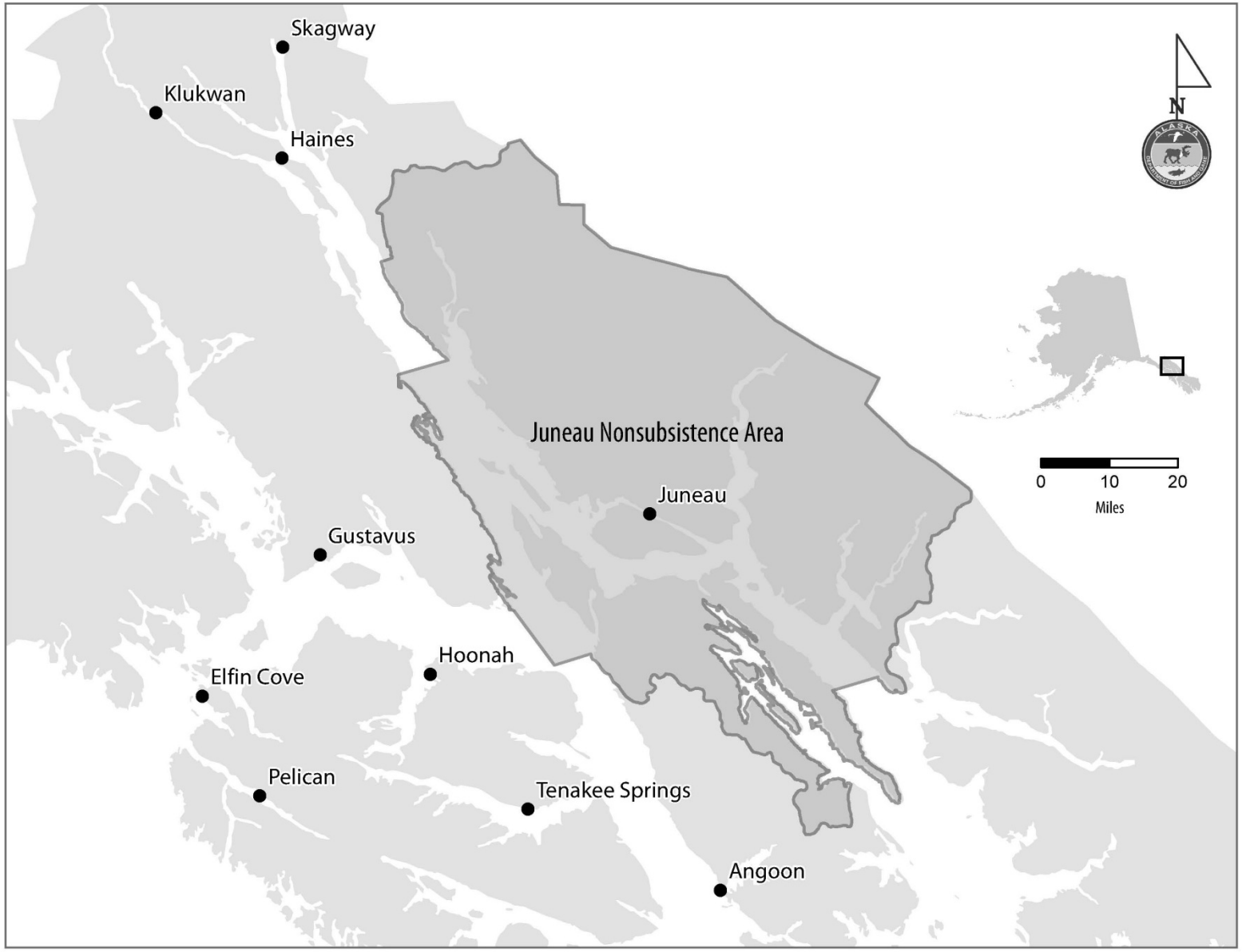

Figure 13-1.–Juneau Nonsubsistence Area map, 2010.

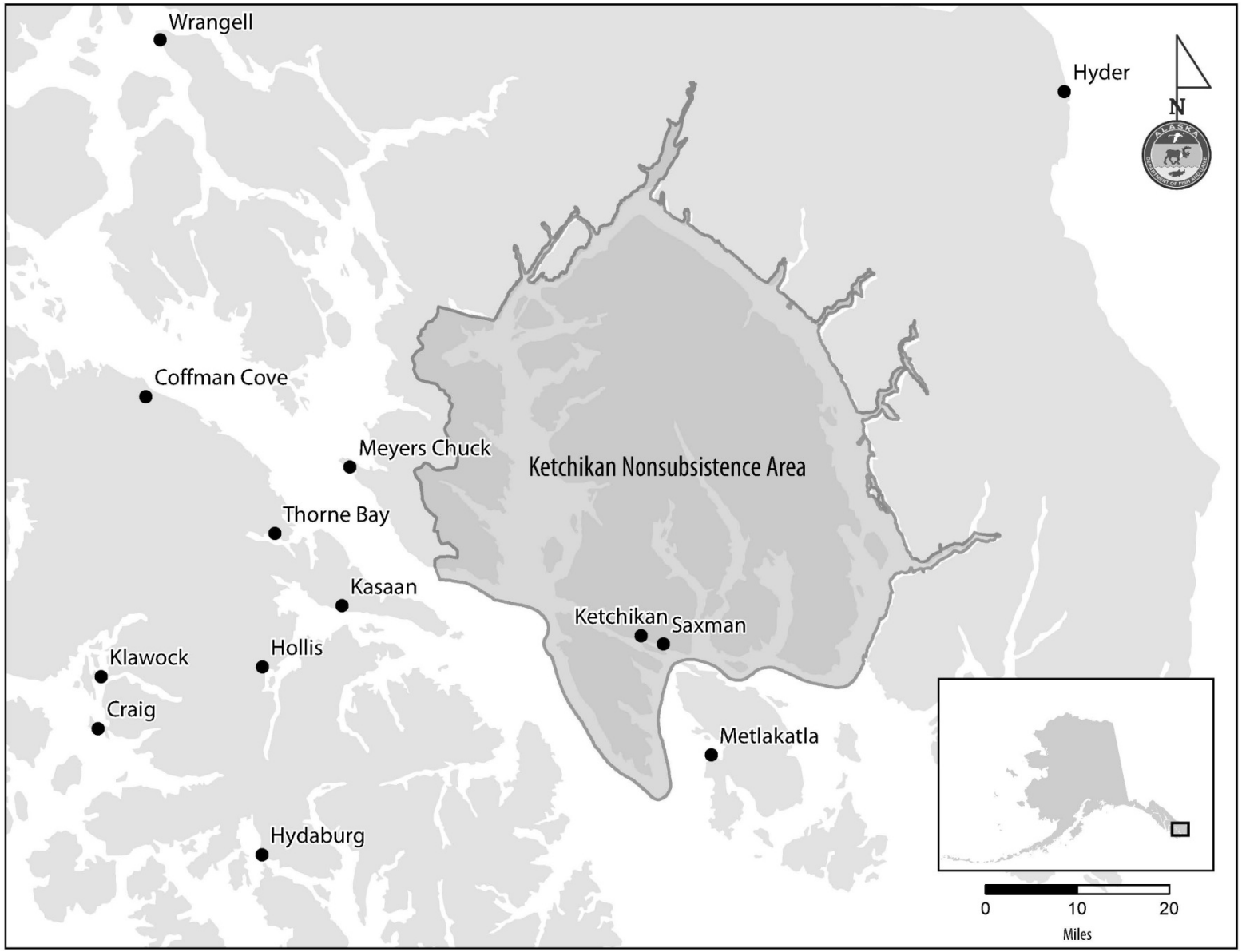

Figure 13-2.–Ketchikan Nonsubsistence Area map, 2010.

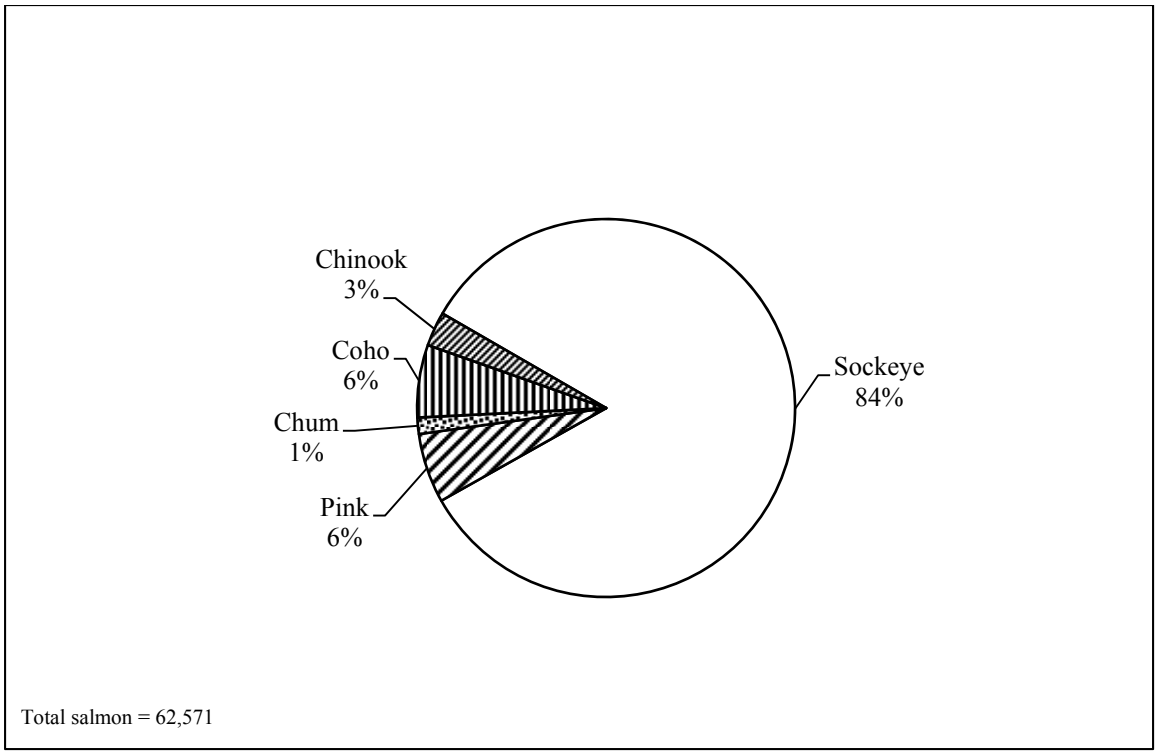

Figure 13-3.–Southeast region subsistence and personal use harvests by species, 2010.

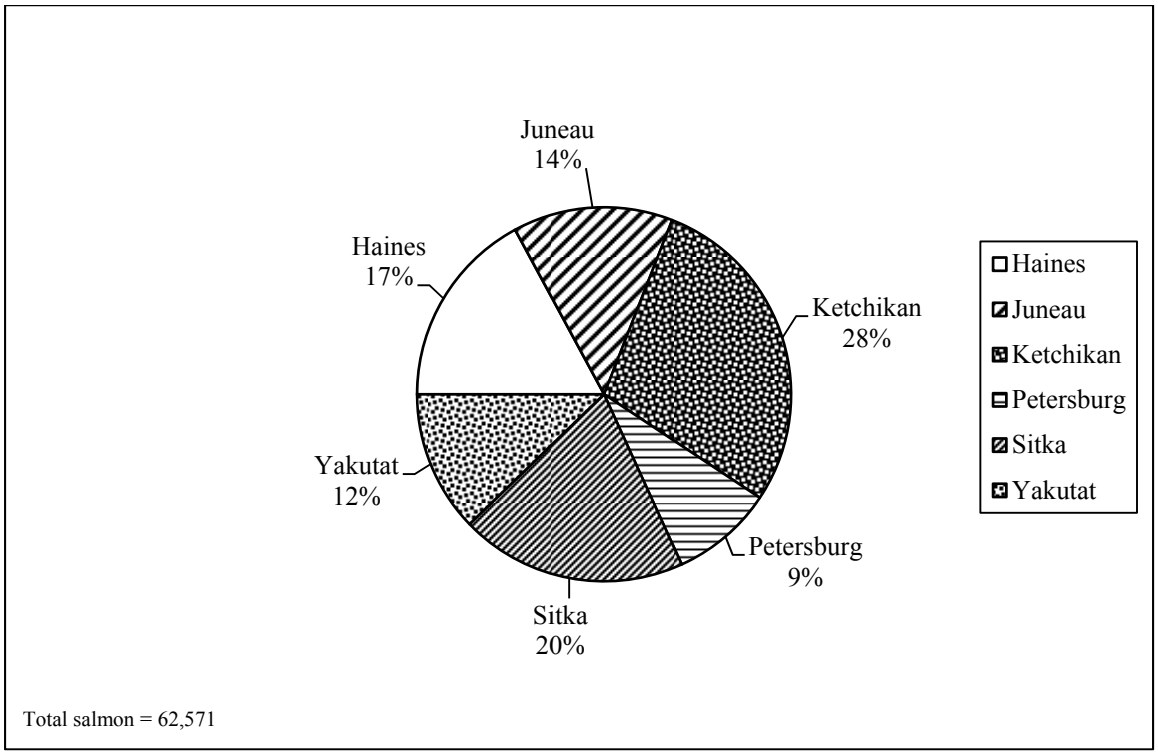

Figure 13-4.–Total salmon harvested by management area, Southeast region, 2010.

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Each year, thousands of Alaska residents who participate in subsistence and personal use 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.

We also offer thanks to the numerous ADF&G staff in the divisions of Commercial Fisheries, Sport Fish, and Subsistence who conduct the programs that collect, analyze, and report the subsistence and personal use fisheries harvest data every year. They, too, made this report possible.

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 2010 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 2010 were compiled by Terri Lemons, with assistance from Dave Koster. Division personnel who authored report chapters were James A. Fall, Benjamin M. Balivet, Andrew R. Brenner, Sarah S. Evans, Davin Holen, Lisa Hutchinson-Scarbrough, Bronwyn Jones, Theodore M. Krieg, Meredith Ann Marchioni, Elizabeth Mikow, Lauren A. Sill, and Alida Trainor. 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 Zimpelman, Mary Lamb, and Lisa Ka'aihue, who reviewed and edited the report.

As noted in the report itself, this is the 12th in a series of statewide summaries of subsistence and personal use fisheries harvest data. We encourage those who use this report to offer ideas and suggestions to improve future volumes in this series.

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APPENDIX A. DATA ANALYSIS METHODS FOR SUBSISTENCE FISHERIES

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 2010 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 2010.

Statewide Compilation – Included Data and Special Measures

None, due to no data collection in 2010.

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

<u>Statewide Compilation – Included Data and Special Measures</u>

- 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

<u>Data Sources</u>

- Household surveys
- Harvest calendars

<u>Annual Harvest Assessment Project – Tasks</u>

- 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

<u>Annual Harvest Assessment Project – Analysis</u>

- 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[1], 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,

1. 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: $E_{i,j} = \left((N_i / n_i) \times R_{i,j}\right)$, 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

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*: $E_{i,j} = \left((N_i / n_i) \times R_{i,j}\right)$, 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

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.[2]
- 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.

2.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*: $E_j = \left((N/n) \times R_j\right)$, where…
        - E = estimated harvest,
        - R = reported harvest,
        - N = number of permits issued, and
        - n = number of permits returned.

Prince William Sound Area: 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