

Technical Paper No. 300

Alaska Subsistence Fisheries 1999 Annual Report

by

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Alaska Department of Fish and Game

Division of Subsistence



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative		fork length	FL
deciliter	dL	Code	AAC	mid-eye-to-fork	MEF
gram	g	all commonly accepted		mid-eye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.	Mathematics, statistics	
meter	m			<i>all standard mathematical</i>	
milliliter	mL	at	@	<i>signs, symbols and</i>	
millimeter	mm	compass directions:		<i>abbreviations</i>	
		east	E	alternate hypothesis	H _A
		north	N	base of natural logarithm	<i>e</i>
		south	S	catch per unit effort	CPUE
		west	W	coefficient of variation	CV
		copyright	©	common test statistics	(F, t, χ^2 , etc.)
		corporate suffixes:		confidence interval	CI
		Company	Co.	correlation coefficient	
		Corporation	Corp.	(multiple)	R
		Incorporated	Inc.	correlation coefficient	
		Limited	Ltd.	(simple)	r
		District of Columbia	D.C.	covariance	cov
		et alii (and others)	et al.	degree (angular)	°
		et cetera (and so forth)	etc.	degrees of freedom	df
		exempli gratia		expected value	<i>E</i>
		(for example)	e.g.	greater than	>
		Federal Information		greater than or equal to	≥
		Code	FIC	harvest per unit effort	HPUE
		id est (that is)	i.e.	less than	<
		latitude or longitude	lat. or long.	less than or equal to	≤
		monetary symbols		logarithm (natural)	ln
		(U.S.)	\$, ¢	logarithm (base 10)	log
		months (tables and		logarithm (specify base)	log ₂ , etc.
		figures): first three		minute (angular)	'
		letters	Jan,...,Dec	not significant	NS
		registered trademark	®	null hypothesis	H ₀
		trademark	™	percent	%
		United States		probability	P
		(adjective)	U.S.	probability of a type I error	
		United States of		(rejection of the null	
		America (noun)	USA	hypothesis when true)	α
		U.S.C.	United States	probability of a type II error	
			Code	(acceptance of the null	
		U.S. state	use two-letter	hypothesis when false)	β
			abbreviations	second (angular)	"
			(e.g., AK, WA)	standard deviation	SD
				standard error	SE
				variance	
				population	Var
				sample	var
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	pH				
(negative log of)					
parts per million	ppm				
parts per thousand	ppt,				
	‰				
volts	V				
watts	W				

TECHNICAL PAPER NO. 300

ALASKA SUBSISTENCE FISHERIES 1999 ANNUAL REPORT

by

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The Division of Subsistence Technical Paper Series was established in 1979 and represents the most complete collection of information about customary and traditional uses of fish and wildlife resources in Alaska. The papers cover all regions of the state. Some papers were written in response to specific fish and game management issues. Others provide detailed, basic information on the subsistence uses of particular communities which pertain to a large number of scientific and policy questions. Technical Paper Series reports are available through the Alaska State Library and on the Internet: <http://www.subsistence.adfg.state.ak.us/>

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Every year, thousands of Alaska residents who participate in subsistence fisheries take the time to provide harvest information to the Alaska Department of Fish and Game. We gratefully acknowledge their support, because without it, a report like this would be impossible to produce.

We also thank the many Department of Fish and Game staff in the divisions of Commercial Fisheries, Sport Fish, and Subsistence who annually conduct the programs that collect, analyze, and report subsistence fisheries harvest data. They, too, made this report possible.

Many department personnel made the time to be interviewed by Division of Subsistence staff about harvest assessment programs and subsistence harvest databases. They provided many insights about these programs that we have relied upon in developing the Alaska Subsistence Fisheries Database and evaluating the data that appear in this report. We very much appreciate their help.

We also thank the Subsistence Fisheries Harvest Assessment Working Group, composed of federal, tribal, and state representatives, for providing guidance in the preparation of this report, including important commentary on existing harvest assessment programs.

Finally, we thank the Office of Subsistence Management of the US Fish and Wildlife Service for helping to fund the preparation of this report and the supporting database.

As we note in the report itself, this is the first attempt at a statewide summary of subsistence fisheries harvest data. While we have received a lot of help in compiling the report, we take full responsibility for any errors or shortcomings it may contain. We encourage the users of the report to share with us their ideas on how we can improve upon this effort in the future.

I. INTRODUCTION

This is the first in a planned series of annual reports on Alaska's subsistence fisheries. It was prepared by the Division of Subsistence of the Alaska Department of Fish and Game (ADF&G). Funding was provided through a cooperative agreement with the US Fish and Wildlife Service, Office of Subsistence Management (Project No. FIS 00-017; USFWS Agreement No. 701810J257; ADF&G COOP-00-094). "Subsistence fishing" is defined in state law as taking of fish, shellfish, or other fisheries resources by Alaska residents for subsistence uses (AS 16.05.940[30]). "Subsistence uses" of wild resources are defined as "noncommercial, customary and traditional uses" for a variety of purposes, including:

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[32]).

In addition to subsistence, Alaska law recognizes three other categories of fishing: commercial, sport, and personal use. Under Alaska's subsistence statute, the Alaska Board of Fisheries must identify fish stocks that support subsistence fisheries and, if there is a harvestable surplus of these stocks, provide reasonable opportunities for these subsistence uses to take place. Whenever it is necessary to restrict harvests, subsistence fisheries have a preference over other uses of the stock (AS 16.05.258).

Every year, ADF&G's Division of Commercial Fisheries prepares "annual management reports" (AMRs) for most fishery management areas in the state. Figure I-1 shows the location of these management areas. Although the AMRs focus primarily on commercial fisheries, they routinely summarize basic data for programs that collect harvest information for subsistence fisheries. In a few areas, more detailed annual reports about subsistence fisheries harvest assessment programs are prepared. These include Northwest Alaska, the Yukon River, and the Kuskokwim River. However, there has been no single source that compiles subsistence fisheries harvest data from all management areas. That is the purpose of this report.

At the outset, it is important to acknowledge the limitations that are faced when trying to present a comprehensive annual report on Alaska's subsistence fisheries. These limitations include the following points.

- 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 are mostly, but not entirely, limited to fisheries classified as subsistence by regulation, which for salmon generally means fish taken with nets, seines, or fish wheels. In some parts of the state, substantial numbers of fish for home use are taken with rod and reel (in most areas considered sport gear by regulation) or retained from commercial harvests. With the exceptions noted in the individual sections on each area, these harvests are not included in the subsistence harvest estimates in this report

because they are not covered in annual harvest assessments. Therefore, the harvest data in this report are a conservative estimate of the number of salmon being taken for subsistence use in Alaska. Underestimates of subsistence salmon harvests are particularly an issue in the Southeast Region (see Section XIII on the Southeast Region).

- Between management areas, and sometimes between districts within management areas, there is inconsistency in how subsistence harvest data are collected, analyzed, and reported.
- In some areas, there are no routine mechanisms for evaluating the quality of the subsistence harvest data. For example, in some areas it is not known if all subsistence fishers are obtaining permits and providing harvest reports. This can result in a large underestimate of harvests.
- There are also few programs for contextualizing subsistence harvest data each year to provide information to interpret changes in harvests. In some cases, however, AMRs do contain discussions of data limitations and harvest trends.

Despite these limitations, it is possible to present a reasonable, conservative statewide overview of subsistence harvests of salmon. All areas of the state where salmon occur are covered in this report. The coverage for other finfish and for shellfish is very uneven. For other finfish, if annual subsistence harvest data are collected, they are reported here if the summary data were available to the Division of Subsistence. In other areas, we have usually noted which are the major species used for subsistence, generally relying on baseline studies conducted by the Division. In a few cases, we have drawn from reports prepared for the Alaska Board of Fisheries.

We have not attempted to provide a comprehensive overview of subsistence shellfish harvests in this report. This is largely because the statewide database development (see immediately below) has not yet located, reviewed, and summarized existing data. Future annual reports will provide historical data for subsistence shellfish as well as overviews of the study year.

In 1988, the Division of Subsistence, ADF&G, prepared the first version of the “Historic Subsistence Salmon Harvest Database” (HSSHDB). As part of the same cooperative agreement that supported the preparation of this report, this database was updated, upgraded, and renamed the “Alaska Subsistence Fisheries Database.” The database is written for Microsoft Access 97 software. It is organized by 22 subsistence fisheries, mostly reflecting unique harvest assessment programs and regulatory structures. It contains harvest data by species, year, community of residence of permit holder, and gear type. The number of permits issued and returned each year is reported as well. In developing the database, the most complete data have been sought, which in many cases are more up to date than that reported in AMRs. In most fisheries, reported harvests have been expanded to account for unreturned permits. In a few cases, this results in a larger estimate than in those AMRs that routinely only summarize data from returned permits. Also, the database calculates harvest estimates first for all permit holders living in particular communities represented in the fishery, and then adds these community estimates for a fishery total. This contrasts with the conventional expansion method for a few fisheries (for example, the Glennallen Subdistrict of the Prince William Sound Area) which only considers the total number of issued and returned permits in expansion, and results in a slightly different estimate of the total harvest for those fisheries as reported in AMRs. The goal of this annual report on

Alaska's subsistence fisheries is to treat each fishery in a consistent, systematic manner, rather than to reiterate previously published data.

Due to the large size of the database, it is not available for downloading from the Internet. The database is presently distributed upon request to the Division of Subsistence on compact disks (CDs) along with the Community Profile Database (CPDB) (Scott et al. 2000), which includes the results of systematic household surveys, and is the primary source for subsistence harvest data for finfish other than salmon and for shellfish.

The next chapter of the report is a statewide perspective on subsistence salmon harvests in Alaska in 1999. This is followed by chapters on 11 management areas or, in the case of Southeast Alaska, a region. In a few cases (Northwest, Aleutians, Cook Inlet, and Prince William Sound) harvest assessment programs within areas with different regulations or histories are discussed separately.

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

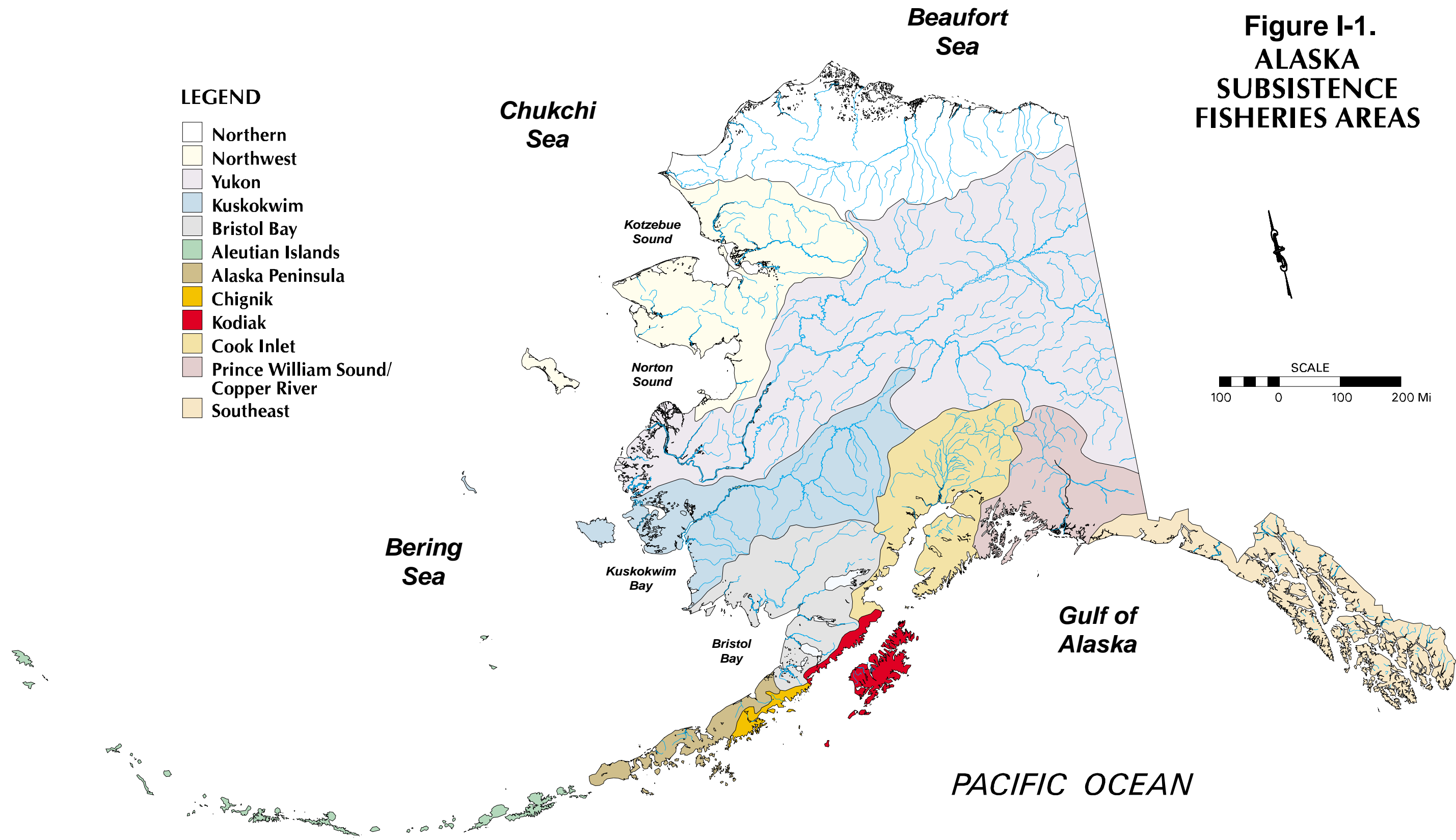
This annual report is the result of the work of a number of Division of Subsistence staff. James Fall and Dave Caylor were the primary compilers of the information. Charles Utermohle and Gretchen Jennings assisted with developing the harvest database. Several other staff prepared preliminary drafts of sections of the report, including Susan Georgette (Northwest), Mike Coffing (Kuskokwim), Polly Wheeler (Yukon), and Brian Davis (Southeast).

Because this is the first effort at an annual report on Alaska's subsistence fisheries, there are likely errors both of omission and commission. We welcome corrections, comments, and recommendations on how to improve future annual reports.

**Figure I-1.
ALASKA
SUBSISTENCE
FISHERIES AREAS**

LEGEND

- Northern
- Northwest
- Yukon
- Kuskokwim
- Bristol Bay
- Aleutian Islands
- Alaska Peninsula
- Chignik
- Kodiak
- Cook Inlet
- Prince William Sound/
Copper River
- Southeast



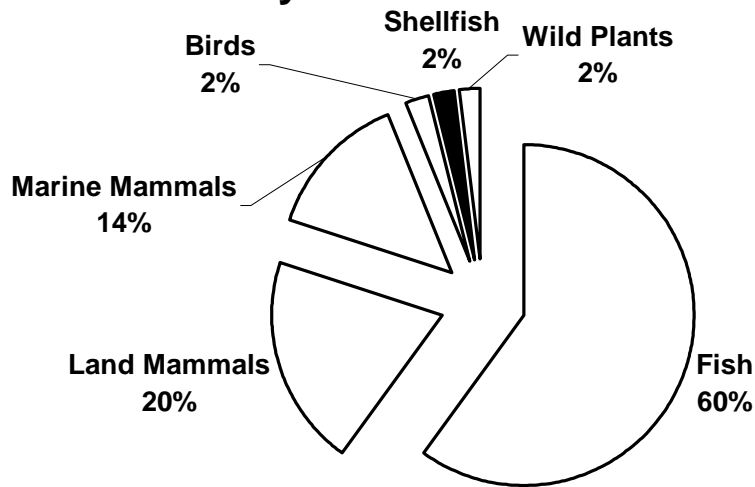
Source: Alaska Department of Fish and Game, Division of Subsistence.

II. OVERVIEW: SUBSISTENCE FISHERIES IN ALASKA

SUBSISTENCE HARVESTS IN RURAL ALASKA

Of the estimated 43.7 million pounds of wild foods produced in rural Alaska communities annually, subsistence fisheries contribute about 62 percent – 60 percent from finfish and 2 percent from shellfish (Fig. II-1). On average, this subsistence fisheries harvest provides about 230 pounds of food per person per year in rural Alaska (Wolfe 2000:2). Although producing a major portion of the food supply, subsistence harvests represent just a small part of the annual harvest of wild resources in Alaska, about 2 percent. Commercial fisheries take 97 percent of the wild resource harvest and sport fisheries and hunts take about 1 percent.

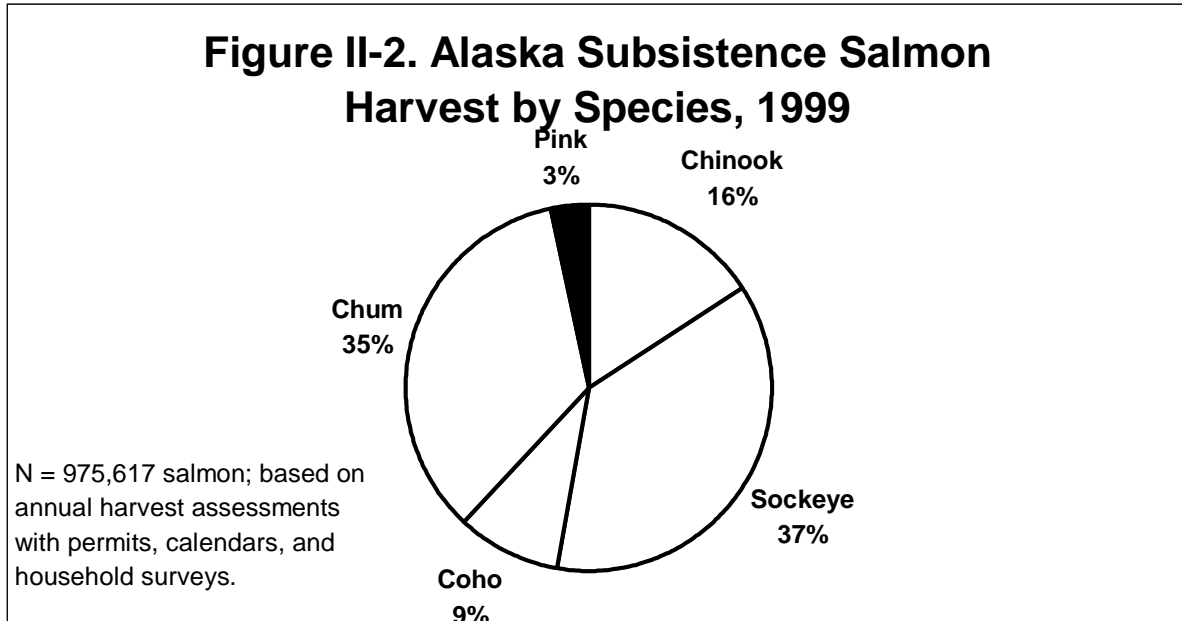
Figure II-1. Composition of Subsistence Harvest by Rural Alaska Residents



N = 44 million usable pounds; Source: Wolfe 2000, based on data in the Community Profile Database (Scott et al. 2000)

SUBSISTENCE SALMON HARVESTS IN 1999

The estimated total subsistence harvest of salmon in Alaska in 1999 based on annual harvest assessment programs was 975,617 fish (Table II-1, Fig. 11-2). The statewide harvest by species was as follows: sockeye, 360,242 (37%); chum, 337,846 (35%); chinook, 155,285 (16%); coho, 89,506 (9%); and pink, 32,737 (3%). Table II-2 reports subsistence harvests in 1999 by species by place of resident of participants, with harvests from all subsistence fisheries combined.



In 1999, fisheries in four management areas accounted for 77% of the total statewide subsistence salmon harvest (Table II-2; Fig. II-3). These were Yukon (232,070 salmon; 25% of the statewide total); Kuskokwim (202,413 salmon; 21%); Northwest Alaska (154,294 salmon; 16%); and Bristol Bay (143,756 salmon; 15%).

The largest subsistence harvests of chinook salmon in 1999 occurred in the Kuskokwim Area (77,660 salmon; 50%), followed by Yukon (50,515 salmon; 33%), Bristol Bay (13,009 salmon; 8%); and Northwest (6,242 salmon; 4%) (Fig. II-4). For sockeye salmon, the largest subsistence harvests in 1999 were in Bristol Bay (122,281 salmon; 35% of the statewide total), followed by the Glennallen Subdistrict of the Prince William Sound Area (76,456 salmon; 21%), Kuskokwim (49,388 salmon; 14%), Southeast (48,559 salmon; 13%), and Kodiak Island (26,497 salmon; 7%) (Fig. II-5). Three areas dominated the subsistence chum salmon harvest in 1999: Yukon (162,670 salmon; 48% of the statewide harvest), Northwest (115,676 salmon; 34%), and Kuskokwim (47,612 salmon; 14%) (Fig. II-6). Of the statewide subsistence harvest of coho salmon in 1999, the most were taken in the Kuskokwim drainage (27,753; 30%), followed by Yukon (19,984 salmon; 22%), Northwest (16,706 salmon; 19%), Bristol Bay (6,143 salmon; 7%), Alaska Peninsula (4,961 salmon; 6%), and Kodiak Island (4,932 salmon; 6%) (Fig. II-7).

Finally, by far the largest portion of the statewide pink salmon subsistence harvest occurred in Northwest Alaska (21,644 salmon; 66%), followed by Southeast (2,769 salmon; 8%), Alaska Peninsula (2,136 salmon; 7%), Port Graham Subdistrict (2,023 salmon; 6%), Kodiak Island (1,266 salmon; 4%), Chignik (1,191 salmon; 4%), and Unalaska (1,066 salmon; 3%) (Fig. II-8).

STATEWIDE SUBSISTENCE SALMON HARVESTS, 1994 - 1999

Table II-3 reports estimated statewide subsistence salmon harvests for 1994 through 1999 based on annual harvest assessment programs. Statewide estimates for years prior to 1994 are not available based on annual harvest assessment programs because data for key fisheries, such as most of the Northwest Alaska fisheries, were not regularly collected. There appears to be a slight downward trend in the statewide total over the six-year period reported in Table II-3. The estimate for 1999 of 975,617 salmon was below the previous five-year average of 1,093,301 salmon. Accounting for much of this decline is a drop in subsistence harvests in the Yukon Area (from 344,049 salmon in 1994 to 233,169 salmon in 1999; see Section IV) and the Kuskokwim Area (from 251,112 salmon in 1994 to 202,413 salmon in 1999; see Section V).

Table II-1. Alaska Subsistence Salmon Harvest by Fishery and Species, 1999

Fishery	Total House- holds/Permits ¹	Expanded? ²	ESTIMATED SALMON HARVEST					
			Chinook	Sockeye	Coho	Chum	Pink	Total
Adak District	5	Yes	0	164	4	0	0	168
Alaska Peninsula	185	Yes	391	15,119	4,961	2,235	2,136	24,843
Batzulnetas	1	Yes	0	55	0	0	0	55
Bristol Bay	1,219	Yes	13,009	122,281	6,143	3,653	420	145,506
Chignik	106	Yes	243	9,040	1,679	136	1,191	12,290
Copper River District (Copper R. Flats)	294	Yes	377	1,422	729	0	0	2,528
Glennallen Subdistrict, U. Copper River	1,102	Yes	3,234	76,456	1,145	0	0	80,835
Kodiak Island	1,438	No	397	26,497	4,932	388	1,266	33,480
Kuskokwim	4,180	Yes	77,660	49,388	27,753	47,612	0	202,413
Northwest Alaska	2,351	Yes	6,242	4,047	16,706	115,676	21,644	164,315
Port Graham/Koyuktoilik Subdistricts	74	No	485	3,157	1,747	1,104	2,023	8,516
Prince William Sound (PWS) (General)	3	Yes	0	0	0	0	0	0
PWS Eastern District (Tatitlek)	17	No	0	344	541	31	31	947
PWS Southwestern District (Chenega)	14	No	57	499	62	101	168	887
Seldovia	16	Yes	136	130	0	38	0	304
Southeast/Yakutat Region	2,318	No	1,308	48,559	1,748	4,164	2,769	58,548
Tyonek Subdistrict	77	No	1,230	144	94	11	32	1,511
Unalaska District	208	Yes	0	2,485	1,234	16	1,044	4,779
Upper Yentna	17	Yes	0	455	43	11	13	522
Yukon	2,888	Yes	50,515	0	19,984	162,670	a	233,169
Totals	16,513		155,285	360,242	89,506	337,846	32,737	975,617

¹ Depending upon the fishery, this is the number of permits issued or the estimated number of households in the area upon which the estimate is based. Number of permits does not necessarily equal number of households. In some fisheries, households obtain two or more permits. In some cases, households share permits and record their harvests on a single record.

² "Yes" means reported harvests from returned records are expanded to the estimated total participants. "No" means harvests are as reported only.

^a 631 pink salmon reported harvested. Data only available for 1999. Not included in fishery total.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.00, 1/24/2001.

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Adak Station	1	1	0	25	0	0	0	25
Akhiok	5	5	0	224	24	20	32	300
Akiachak	119	93	5,373	3,130	663	2,741	0	11,907
Akiak	58	39	2,356	1,145	254	1,202	0	4,957
Alakanuk	128	43	1,236	0	108	4,366	0	5,710
Alatna	12	9	10	0	0	99	0	109
Aleknagik	22	22	235	1,229	55	13	0	1,532
Allakaket	54	20	108	0	0	2,265	0	2,373
Ambler	72	22	0	50	100	591	0	741
Anchor Point	3	3	4	168	0	0	0	172
Anchorage	396	359	892	21,572	334	118	28	22,943
Angoon	54	54	0	1,620	291	3	32	1,946
Aniak	163	147	2,596	1,310	1,418	1,764	0	7,089
Anvik	40	35	776	0	282	974	0	2,032
Atka	1	1	0	0	0	0	0	0
Atmautluak	53	45	1,469	1,874	205	1,667	0	5,216
Auke Bay	11	11	0	134	1	0	3	138
Barrow	6	6	11	311	0	0	0	322
Bear Lake	1	1	0	151	0	0	0	151
Beaver	32	27	473	0	0	107	0	580
Beluga	2	1	5	0	41	0	0	46
Bethel	1,508	1,082	24,996	13,145	12,414	11,163	0	61,719
Bettles	20	18	1	0	0	100	0	101
Big Lake	4	4	2	149	4	1	0	156
Birch Creek	14	14	24	0	0	0	0	24
Brevig Mission	70	63	38	919	774	748	666	3,144
Cantwell	8	8	58	241	0	0	0	299
Central	12	12	91	0	0	0	0	91
Chalkyitsik	35	34	35	0	0	442	0	477
Cheforak	94	0						
Chevak	1	1	0	23	0	0	0	23
Chickaloon	3	3	15	712	0	0	0	727
Chignik Bay	11	11	129	825	10	10	23	997
Chignik Lagoon	32	30	28	3,295	86	3	0	3,411
Chignik Lake	11	9	51	1,924	112	0	73	2,161
Chiniak	22	22	20	219	170	21	28	458
Chistochina	2	2	0	25	0	0	0	25
Chitina	24	21	104	1,922	87	0	0	2,113
Chuathbaluk	28	25	1,110	460	137	729	0	2,436
Chugiak	25	24	50	1,131	4	0	0	1,185
Circle	21	19	524	0	0	2,782	0	3,306
Clarks Point	15	15	207	502	402	84	23	1,218
Coffman Cove	31	31	0	354	0	0	0	354
Cold Bay	14	12	0	109	1	13	0	123
Cooper Landing	2	1	9	128	0	0	0	137

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Copper Center	148	138	573	12,378	82	0	0	13,032
Copperville	1	1	8	330	0	0	0	338
Cordova	1	1	0	10	0	0	0	10
Craig	132	132	4	2,958	20	17	389	3,388
Crooked Creek	30	26	681	690	515	806	0	2,692
Delta Junction	19	19	27	1,383	30	0	0	1,440
Dillingham	343	339	4,332	17,129	2,633	1,338	43	25,474
Dot Lake	2	1	0	100	0	0	0	100
Douglas	46	46	12	426	8	2	18	466
Dutch Harbor	101	72	0	1,223	521	0	144	1,888
Eagle	65	64	2,558	0	0	11,563	0	14,121
Eagle River	71	65	245	5,528	0	2	0	5,774
Edna Bay	2	2	0	8	0	0	0	8
Eek	67	62	1,816	625	258	508	0	3,207
Egegik	24	22	135	1,600	859	44	2	2,640
Eielson AFB	3	3	4	75	0	0	0	79
Ekwok	12	12	446	1,094	93	218	19	1,870
Elim	78	72	424	13	975	744	1,564	3,720
Elmendorf AFB	2	2	37	49	0	0	0	86
Emmonak	157	69	2,172	0	387	8,480	0	11,039
Ester	2	2	17	70	0	0	0	87
Fairbanks	180	173	1,223	4,215	868	2,976	0	9,282
False Pass	8	7	30	530	1,031	169	93	1,853
Fort Wainwright	4	4	10	84	0	0	0	94
Fort Yukon	174	38	2,539	0	124	9,702	0	12,365
Fox	1	1	0	156	0	0	0	156
Gakona	55	49	332	5,308	539	0	0	6,179
Galena	183	40	2,539	0	123	3,620	0	6,282
Girdwood	7	7	15	248	10	0	0	273
Glennallen	153	147	433	11,922	45	0	0	12,400
Golovin	45	37	56	48	784	1,692	172	2,751
Goodnews Bay	53	47	805	770	439	250	0	2,264
Grayling	51	27	2,476	0	201	5,496	0	8,173
Gulkana	1	1	0	8	0	0	0	8
Gustavus	6	6	0	48	0	7	16	71
Haines	221	221	50	5,002	117	854	630	6,653
Healy	11	11	1	186	1,259	2,267	0	3,713
Hollis	1	1	0	24	0	0	0	24
Holy Cross	66	32	4,581	0	62	503	0	5,146
Homer	27	23	35	2,282	32	88	197	2,634
Hoonah	50	50	0	691	32	1,768	149	2,640
Hooper Bay	194	56	173	0	68	10,146	0	10,387
Houston	1	1	0	0	0	0	0	0
Hughes	24	19	105	0	10	661	0	776
Huslia	84	17	90	0	15	1,281	0	1,386

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Hydaburg	28	28	0	1,314	0	40	0	1,354
Hyder	1	1	0	0	1	23	0	24
Igiugig	5	5	386	1,608	35	0	0	2,029
Iliamna	34	33	109	8,658	0	1	0	8,768
Ivanof Bay	2	2	2	105	215	40	60	422
Juneau	353	353	70	3,641	43	135	206	4,095
Kake	134	134	1	2,318	2	200	93	2,614
Kalskag (Upper)	53	49	1,688	614	153	665	0	3,120
Kaltag	57	23	2,050	0	263	906	0	3,219
Karluk	1	1	7	50	10	0	10	77
Kasaan	2	2	0	50	3	0	8	61
Kasigluk	136	7	480	183	92	350	0	1,105
Kasilof	4	3	1	128	1	0	1	132
Kenai	5	4	1	101	0	5	0	107
Kenny Lake	1	0						
Ketchikan	297	297	249	6,762	24	616	543	8,194
Kiana	91	67	5	0	33	3,788	7	3,832
King Cove	52	44	59	5,432	3,371	746	285	9,892
King Salmon	103	91	203	6,972	379	174	35	7,763
Kipnuk	177	9	29	84	75	31	0	219
Klawock	84	84	1	2,256	38	155	185	2,635
Kobuk	23	13	0	0	0	1,869	0	1,869
Kodiak (city)	1,138	1,138	349	20,385	3,227	201	794	24,956
Kodiak USCG Base	43	43	5	806	57	1	17	886
Kokhanok	20	18	0	11,917	0	0	0	11,917
Koliganek	18	18	1,065	1,164	131	411	1	2,772
Kongiganak	71	54	1,320	991	222	1,152	0	3,685
Kotlik	90	31	929	0	535	5,589	0	7,053
Kotzebue	833	163	0	488	1,202	64,768	817	67,274
Koyuk	72	67	327	0	167	4,153	1,943	6,590
Koyukuk	38	34	506	0	295	1,741	0	2,542
Kwethluk	142	109	6,081	3,112	2,993	3,449	0	15,635
Kwigillingok	95	0						
Larsen Bay	10	10	5	521	17	4	9	556
Levelock	5	4	18	1,526	75	48	19	1,685
Lime Village	17	12	155	2,550	600	1,012	0	4,317
Lower Kalskag	63	54	1,787	605	302	759	0	3,452
Manley Hot Springs	17	17	136	0	3,244	5,444	0	8,824
Manokotak	18	18	700	2,643	34	23	13	3,413
Marshall	68	29	2,007	0	1,041	1,727	0	4,775
McCarthy	6	6	1	153	14	0	0	168
McGrath	100	75	1,295	74	553	260	0	2,182
Mekoryuk	92	18	15	2	64	1,583	0	1,664
Mentasta	2	2	0	55	0	0	0	55
Metlakatla	3	3	0	18	0	5	6	29

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Meyers Chuck	1	1	0	35	0	0	0	35
Minto	65	58	317	0	0	954	0	1,271
Mountain Village	151	49	2,161	0	663	11,019	0	13,843
Naknek	111	96	220	13,045	360	160	45	13,829
Nanwalek	44	44	102	2,775	1,320	890	1,873	6,960
Napakiak	73	62	2,380	2,115	487	1,573	0	6,554
Napaskiak	74	62	3,827	2,058	355	2,687	0	8,928
Nelson Lagoon	11	8	10	397	45	0	1	454
Nenana	36	35	975	32	4,023	7,513	0	12,543
New Stuyahok	47	45	3,021	1,640	117	345	51	5,173
Newhalen	15	15	102	7,716	0	0	0	7,818
Newtok	80	0						
Nightmute	67	1	6	5	0	10	0	21
Nikiski	1	1	1	40	17	6	2	66
Nikolai	29	27	288	0	117	89	0	494
Ninilchik	3	3	0	0	0	0	0	0
Noatak	91	14	0	0	0	1,616	10	1,626
Nome	151	118	39	265	266	698	85	1,353
Nondalton	27	27	0	18,064	0	0	0	18,064
Noorvik	118	48	4	0	0	17,843	8	17,855
North Pole	24	22	57	673	0	0	0	731
Northway	9	9	6	772	0	0	0	778
Nulato	100	30	1,799	0	170	4,283	0	6,252
Nunam Iqua (Sheldon's Point)	35	31	855	0	51	1,458	0	2,364
Nunapitchuk	100	87	4,521	3,493	391	4,742	0	13,147
Old Harbor	18	18	0	323	562	47	187	1,119
Oscarville	15	10	2,289	2,165	970	1,906	0	7,330
Ouzinkie	32	32	4	1,483	564	93	131	2,275
Palmer	46	43	173	2,629	90	12	0	2,904
Paxson	2	2	4	12	0	0	0	16
Pedro Bay	17	15	0	5,005	0	0	0	5,005
Pelican	13	13	0	267	0	0	0	267
Perryville	43	30	24	2,309	1,254	53	1,031	4,671
Petersburg	77	76	10	614	178	29	10	841
Pilot Point	13	12	46	1,048	141	28	0	1,262
Pilot Station	95	40	2,356	0	69	3,816	0	6,241
Pitka's Point	26	25	632	0	302	902	0	1,836
Platinum	19	17	66	102	143	31	0	342
Point Baker	4	4	1	30	19	28	80	158
Port Alsworth	46	45	0	4,395	0	0	0	4,395
Port Graham	30	30	383	382	427	214	150	1,556
Port Heiden	3	3	25	245	60	0	0	330
Port Lions	46	46	24	1,739	265	1	41	2,070
Portage Creek	2	2	55	1	0	3	0	59
Quinhagak	133	102	3,167	1,639	2,021	1,810	0	8,637

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Rampart	29	25	2,018	0	126	4,384	0	6,528
Red Devil	18	16	161	568	455	193	0	1,377
Ruby	73	19	777	0	620	2,604	0	4,001
Russian Mission	57	16	2,722	0	542	716	0	3,980
Saint Mary's	118	37	2,150	0	536	7,474	0	10,160
Saint Michael	101	83	1,053	111	798	3,036	365	5,363
Salcha	5	4	8	289	0	0	0	296
Sand Point	54	41	263	4,969	419	1,052	856	7,560
Scammon Bay	76	20	938	0	0	3,519	0	4,457
Seldovia	15	15	136	137	0	38	0	311
Seward	5	5	11	451	0	175	700	1,337
Shageluk	32	29	412	0	6	4,944	0	5,362
Shaktoolik	57	55	818	183	1,556	467	5,092	8,116
Shungnak	51	28	0	0	0	3,868	0	3,868
Sitka	530	529	6	13,977	17	51	96	14,147
Skagway	5	5	0	0	1	60	8	69
Skwentna	13	13	0	328	35	11	13	387
Slana	9	9	85	967	0	0	0	1,052
Sleetmute	35	30	447	946	226	367	0	1,985
Soldotna	8	7	9	602	0	0	0	611
South Naknek	44	42	120	2,422	322	172	85	3,121
Stebbins	132	111	760	200	1,312	3,312	459	6,043
Sterling	2	2	5	0	0	0	0	5
Stevens Village	31	21	1,214	0	0	46	0	1,260
Stony River	16	12	55	1,230	511	358	0	2,154
Sutton	3	3	2	308	0	0	0	310
Takotna	14	14	0	0	0	0	0	0
Talkeetna	1	1	1	3	55	4	0	63
Tanacross	1	1	0	6	0	0	0	6
Tanana	122	49	3,388	0	3,989	23,519	0	30,896
Telida	2	0						
Teller	72	70	24	1,293	236	1,097	120	2,770
Tenakee Springs	1	1	0	0	0	0	0	0
Thorne Bay	49	49	0	725	7	2	29	763
Togiak	73	70	1,163	3,664	217	460	84	5,588
Tok	52	50	76	3,737	3	0	0	3,817
Toksook Bay	133	15	407	193	83	326	0	1,009
Trapper Creek	1	1	0	36	0	0	0	36
Tuluksak	73	61	2,348	1,496	307	1,566	0	5,717
Tuntutuliak	74	55	3,645	2,048	331	1,862	0	7,886
Tununak	109	1	0	0	0	0	0	0
Twin Hills	1	1	72	26	0	11	0	109
Tyonek	51	42	1,119	56	19	3	10	1,207
Unalakleet	228	209	2,691	537	8,140	3,692	10,067	25,127
Unalaska	105	80	0	1,322	713	16	900	2,951

Table II- 2. Alaska Subsistence Salmon Harvests by Species and Place of Residence of Fisher, 1999

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST					TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SOCKEYE	COHO	CHUM	PINK	
Valdez	41	41	70	2,155	0	0	0	2,225
Venetie	54	15	127	0	0	2,177	0	2,304
Ward Cove	32	32	11	889	2	81	90	1,073
Wasilla	70	68	141	4,670	167	3	0	4,981
Whale Pass	1	1	0	0	3	0	5	8
White Mountain	67	62	4	0	365	1,694	271	2,334
Willow	5	4	0	661	3	0	4	668
Wrangell	66	66	34	862	1	74	61	1,032
Yakutat	77	76	858	3,444	939	0	107	5,348
Unspecified Communities	526	475	925	3,697	1,372	251	216	6,461
Totals	16,513	11,988	155,285	360,242	89,507	337,846	32,737	975,616

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table I I-3. Historic Alaska Subsistence Salmon Harvests, 1994 - 1999¹

YEAR	Households/ Permits		Estimated Salmon Harvest					
	Total	Included	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	15,340	10,617	158,278	306,478	120,767	497,093	80,145	1,162,761
1997	16,322	11,520	176,662	366,291	98,477	346,904	40,821	1,029,155
1998	16,518	11,262	170,240	319,613	92,679	300,651	73,670	956,854
1999	16,513	11,988	155,285	360,242	89,506	337,846	32,737	975,617
1995-1999								
Average	16,058	11,143	168,254	328,833	104,295	396,497	56,456	1,054,336
1994-1998								
Average	15,854	10,856	173,984	324,573	113,573	412,368	68,803	1,093,301

¹ Includes personal use fishery harvest data for the Yukon Area and Southeast Region for all years; includes data for the Adak District fishery and the Upper Yentna fishery when they were previously classified as personal use.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Figure II-3. Alaska Subsistence Salmon Harvest by Area, 1999

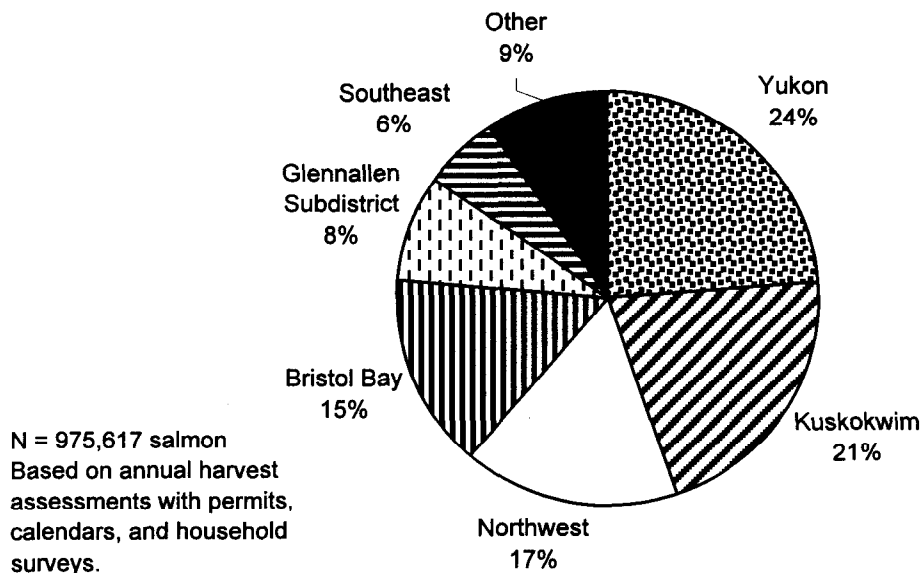


Figure II-4. Alaska Subsistence Chinook Salmon Harvest by Area, 1999

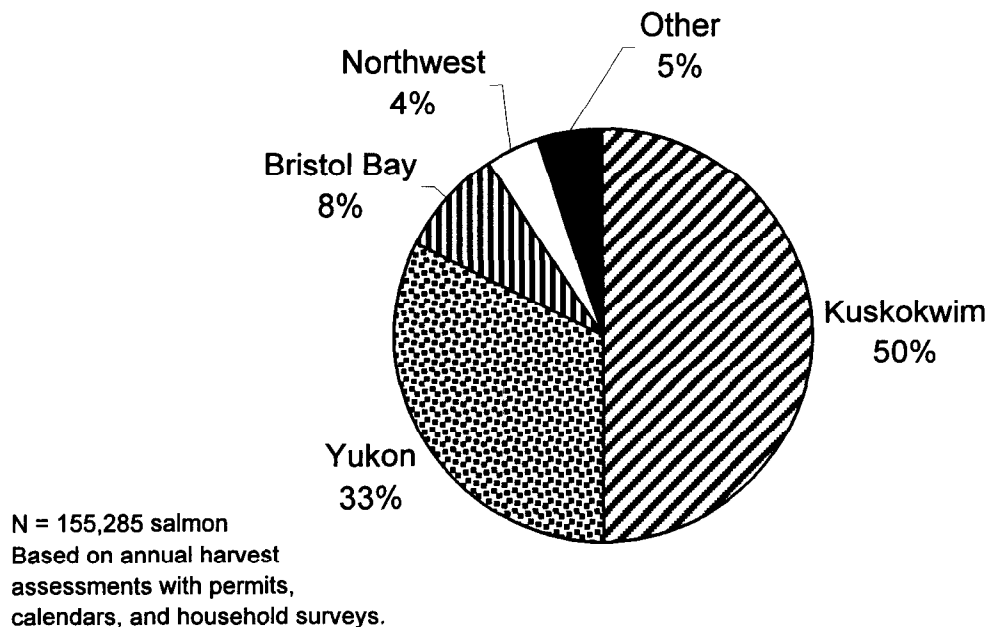


Figure II-5. Alaska Subsistence Sockeye Salmon Harvest by Area, 1999

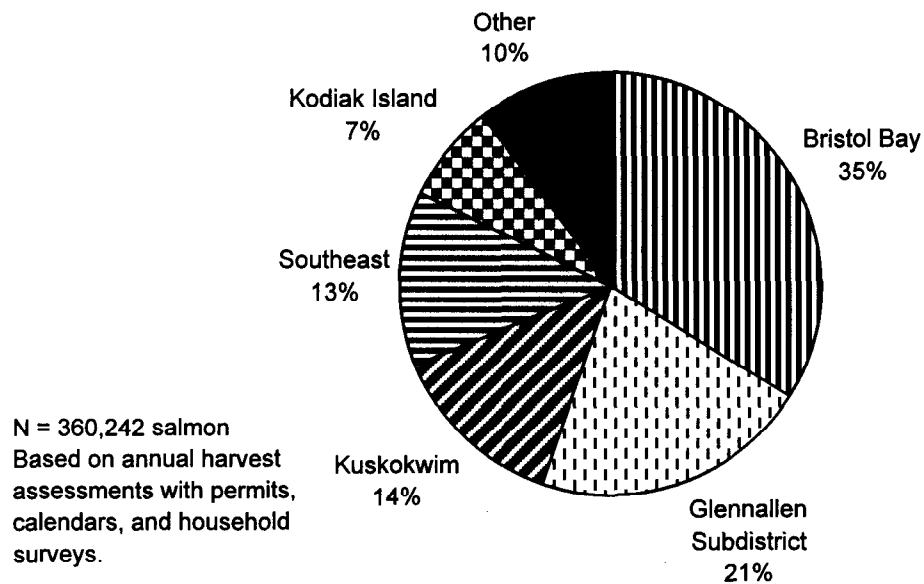


Figure II-6. Alaska Subsistence Chum Salmon Harvest by Area, 1999

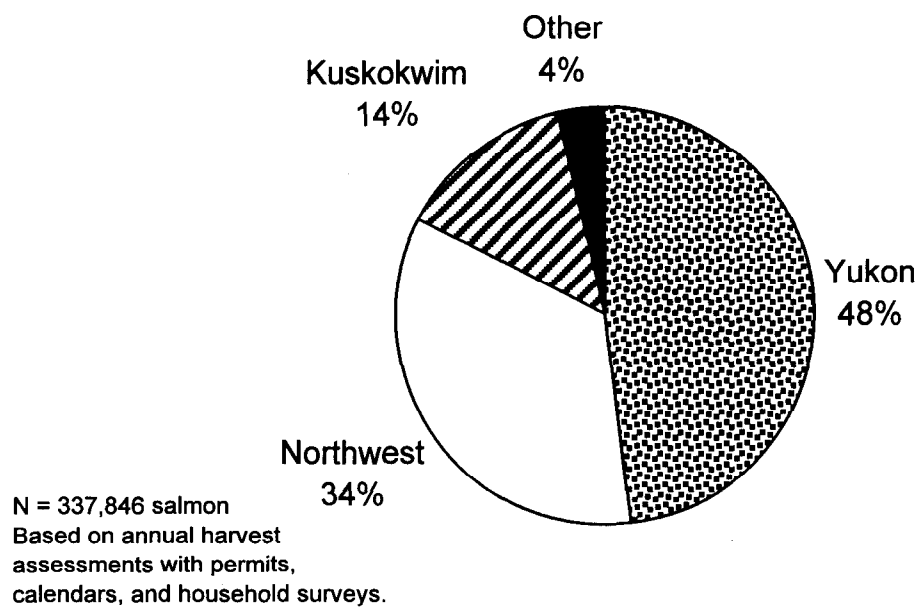


Figure II-7. Alaska Subsistence Coho Salmon Harvest by Area, 1999

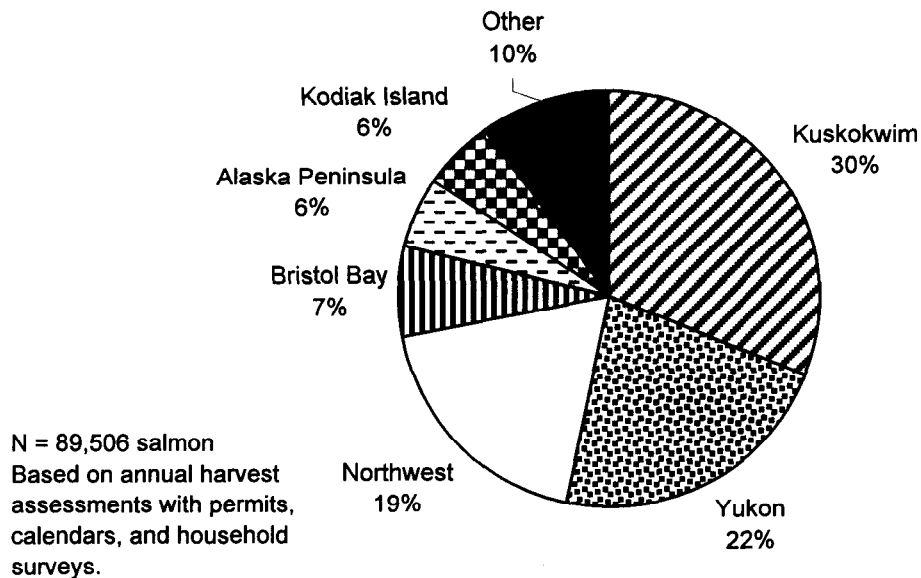
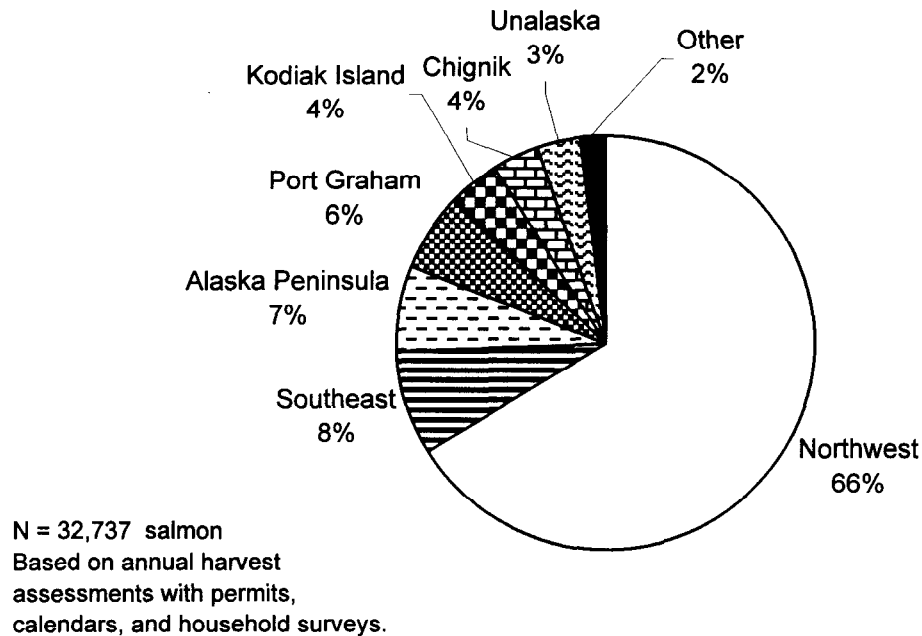


Figure II-8. Alaska Subsistence Pink Salmon Harvest by Area, 1999



III. NORTHWEST ALASKA

NORTON SOUND AND PORT CLARENCE AREA SALMON

Background

Subsistence salmon fishing has been a major feature of life in northwest Alaska for centuries. In the late 1990s, most local residents in the region continue to participate in a mixed subsistence-cash economy, depending on local wild foods for cultural and nutritional sustenance. In summer subsistence fishers harvest salmon with gillnets or seines in the main Seward Peninsula rivers and in the coastal marine waters. Beach seines are used near the spawning grounds to catch schooling or spawning salmon and other species of fish. The major portion of fish taken during the summer months is air dried or smoked for later consumption by local residents. Chum, pink, and coho salmon are found throughout the Norton Sound and Port Clarence districts, with chinook salmon more common in eastern and southern Norton Sound and sockeye salmon more common in Port Clarence drainages.

Regulations

In most of the Port Clarence District, subsistence salmon fishing has few restrictions other than the general statewide provisions. Salmon may be taken in most areas at any time with no harvest limits and no required permits. The exception to this is the Pilgrim River drainage including Salmon Lake where permits are required, harvests are limited, and specified areas are closed to subsistence salmon fishing.

The Norton Sound District has considerably more complex regulations, particularly in Subdistricts 1 (Nome) and 6 (Unalakleet), where restrictions exist on gear, fishing periods, and areas opened to fishing. In Subdistrict 1, chum salmon runs have been depressed for approximately 20 years. Upstream portions of several rivers are closed to protect spawning salmon, and harvests are limited in all subdistrict rivers. In regulation, fishing is open during two 48-hour periods each week, but during the last 10 years subsistence fishing has been regulated primarily by emergency order, and openings have been much less frequent than in regulation. Beginning in 1999, chum salmon fishing in Subdistrict 1 was closed to all but 20 households who qualified for Tier II subsistence fishing permits. In Subdistrict 6, subsistence fishing is closed one day a week through July 15 to ensure adequate chinook salmon escapement. In Subdistricts 2-5, salmon may be taken at any time with no harvest limits. However, restrictions exist on commercial fishermen's participation in subsistence salmon fishing.

In-Season Management in 1999

In Subdistrict 1 (Nome), subsistence salmon fishing was closed at the beginning of the season to all households except those with Tier II permits. Tier II fishing was allowed only in marine waters east of Cape Nome. On July 20 the subdistrict was closed to all subsistence fishing. On August 3 it reopened to all fishermen to target coho salmon. A poor coho salmon return resulted

in the department again closing the subdistrict to all subsistence fishing from August 16 to September 7. Fishing reopened after this to allow harvest opportunity for species such as Dolly Varden and whitefish.

In Subdistrict 2 (Golovnin Bay), subsistence fishing was closed August 27 through September 7 to protect a weak coho return. This was the second time on record that the subdistrict had been closed to subsistence fishing.

In Subdistricts 3-6 subsistence fishing continued as normal throughout the season.

Subsistence Salmon Harvest Collection Methods

Two methods were used to assess subsistence salmon harvests in the Norton Sound and Port Clarence districts in 1999: 1) fishing permits in the Nome Subdistrict and in the Salmon Lake-Pilgrim River drainage, and 2) post-season household surveys in 10 communities.

Norton Sound Subdistrict 1 Fishing Permits

Permits have been required for subsistence salmon fishing in Norton Sound Subdistrict 1 (Nome) since 1974. In 1999 for the first time, 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 users if only a small number of chum salmon were available for harvest. Tier I fishing permits were available to all other households when run strength was determined to be adequate. In 1999, 109 permits (89 Tier I and 20 Tier II permits) were issued for Subdistrict 1, 90 (83%) of which were returned to the department.

In 1998 and 1999, the permit data were not expanded to account for households whose permits were not returned. This contrasted with earlier years when permit data were expanded by drainage with expansion factors based upon the fraction of unreturned permits for that drainage. Department 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.

Salmon Lake and Pilgrim River Fishing Permits

Permits were required for subsistence salmon fishing in Salmon Lake and the Pilgrim River drainage in the Port Clarence District. In 1999, 35 households requested permits for this area, 22 (63%) of which were returned to the department.

Household Surveys

In the Norton Sound and Port Clarence districts, household surveys were conducted in Brevig Mission, Teller, Golovin, White Mountain, Elim, Koyuk, Shaktoolik, Unalakleet, St. Michael, and Stebbins. Surveys were not conducted in Gambell or Savoonga. Researchers attempted to contact 100% of the households in each of the surveyed communities. Actual sample rates ranged from 82% of households in Golovin to 98% of households in Shaktoolik. Overall, 90%

of the households in the surveyed communities were interviewed. The salmon survey data were expanded by community to account for the households not contacted.

The goals of the post-season household survey were to:

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

1999 Subsistence Salmon Harvests

Norton Sound District Subsistence Salmon Harvest

The estimated 1999 subsistence harvest of salmon by the surveyed communities in the Norton Sound District was 61,078 fish (Table III-1, Table III-2). This was the lowest subsistence salmon harvest documented in the six years of this survey project in this area (Table III-3). Weak coho and chum salmon returns and an off-year for pink salmon abundance contributed to the low harvest in 1999. (Pink salmon abundance fluctuates in an even-year/odd-year cycle, with even-numbered years having the greatest abundance.) Of the total salmon harvest, 10% were chinook, 32% were chum, 33% were pink, 2% were sockeye, and 23% were coho (Fig. III-1).

The estimated mean harvest was about 68 salmon per household in the Norton Sound District; the estimated breakdown of this harvest was 7 chinook, 22 chum, 22 pink, 1 sockeye, and 16 coho. Mean household harvests in the subdistricts ranged from 11 salmon per permit in Subdistrict 1 (including Pilgrim River and Niukluk River permits) to 142 salmon per household in Subdistrict 5 (Shaktoolik).

Port Clarence District Subsistence Salmon Harvest

The estimated 1999 subsistence harvest of salmon by the two communities in the Port Clarence District was 6,233 fish (Table III-1, Table III-2). This was the lowest harvest documented in the six years of this survey project in this district. Of the total harvest, 1% were chinook, 31% were chum salmon, 13% were pink, 38% were sockeye, and 17% were coho (Fig. III-1). The estimated mean harvest in the Port Clarence District was about 35 salmon per household; the estimated breakdown of this harvest was 0.5 chinook, 11 chum, 4 pink, 14 sockeye, and 6 coho.

Participation in Subsistence Fishing

In the Norton Sound District (excluding Nome), about 55% of households subsistence fished for salmon and an additional 9% assisted other households in processing subsistence-caught salmon. Participation in subsistence salmon fishing in the district ranged from 38% of households in Stebbins and St. Michael to 75% in Golovin.

In the Port Clarence District, 42% of households subsistence fished for salmon in 1999. About 12% helped other households process subsistence-caught fish.

Participation in Commercial Fishing

In the Norton Sound District (excluding Nome), about 14% of households participated in commercial salmon fishing, but only 1% of all households reported removing salmon from their commercial catches for subsistence use. In the Port Clarence District no households participated in commercial salmon fishing. In 1999, as in other recent years, commercial salmon fishing in the region suffered from poor market conditions and from poor salmon returns in some areas. An estimated total of 369 salmon were retained from commercial catches for subsistence use in the Norton Sound District, comprising about 0.6% of the district's estimated subsistence harvest.

Gear Type

In the Norton Sound District (excluding Nome), rod and reel was used by about 70% of households to harvest salmon, followed by set gillnets (43% of households), seines (13% of households), and driftnets (less than 1% of households). Although rod and reel was the most widely used gear type, it accounted for only 11% of the total salmon harvest in the surveyed communities in the Norton Sound District. Coho salmon was the primary target of rod and reel fishing.

In the Port Clarence District, set gillnet was the most common gear for harvesting salmon, used by about 94% of the households that subsistence fished for salmon. Seines were the second most widely used gear. Less than 1% of the salmon harvest by district residents was caught with rod and reel.

Salmon for Dog Food

In 1999 an estimated 2,066 salmon were harvested specifically for dog food in the surveyed communities (excluding Nome) in the two districts. The 1999 harvest for dog food was about 3% of the total subsistence salmon catch. The mean number of salmon fed per dog was about 12 fish per year. Overall, about 3.5% of all the surveyed households in the two districts (excluding Nome) caught salmon for dog food.

Assessment of Fishing Season

When asked whether subsistence chum salmon fishing was very good, average, or poor in 1999, 49% of the fishing households in the Norton Sound District (excluding Nome) responded "poor," 39% responded "average," and 12% responded "very good." Responses by community varied widely. The percentage of households assessing the 1999 chum salmon fishing season as "poor" ranged from 28% of households in Koyuk to 86% in Golovin.

In the Port Clarence District, about 57% of the fishing households responded that the chum fishing season was "poor" in 1999 and 36% said it was "average." About 7% said the chum

fishing season was “very good.” A larger percentage of households responded “poor” in 1999 than in the previous three years.

KOTZEBUE AREA SALMON

Background

Kotzebue Sound residents have relied on fish for cultural and nutritional sustenance for thousands of years. In the late 1990s, most local residents in the region continue to participate in a mixed subsistence-cash economy, harvesting a wide variety of wild foods. In the Kotzebue Area, salmon’s role in the wild food diet varies from community to community, affected primarily by salmon abundance. Along the Noatak and Kobuk rivers, where runs of chum salmon are strong, many households’ activities in middle and late summer revolve around the catching, drying, and storing of salmon for use during the winter. Chum salmon predominate in the district, with small numbers of other salmon species present.

Regulations

In the Kotzebue Area, subsistence salmon fishing has few restrictions other than the general statewide provisions. Salmon may be taken in the district at any time with no harvest limits and no required permits. Commercial fishermen, however, are not allowed to subsistence fish for salmon during the commercial season.

In-Season Management

Subsistence salmon fishing in the Kotzebue Area proceeded as normal in 1999. No emergency orders were issued affecting this fishery.

Subsistence Salmon Harvest Collection Methods

Two methods were used to assess subsistence salmon harvests in the Kotzebue Area in 1999: 1) post-season household surveys in 6 communities, and 2) a postcard survey in Kotzebue.

Household Surveys

In the Kotzebue Area, household surveys were conducted in the Noatak and Kobuk river villages of Noatak, Noorvik, Kiana, Ambler, Shungnak, and Kobuk. The communities of Wales, Diomede, Shishmaref, Deering, Buckland, Selawik, Kivalina, and Point Hope were not surveyed due to little availability of salmon, the lack of competing commercial salmon uses, or limited staff time and funding. Researchers attempted to contact 100% of the households in each of the surveyed communities. Overall, about 43% of the households in the surveyed communities were interviewed. The salmon survey data were expanded by community to account for the households not contacted.

The goals of the post-season household survey were to:

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

Kotzebue Postcard Survey

With a population of about 3,000 people, Kotzebue was too large to survey house-to-house in an effective and timely way. Instead the department assessed subsistence salmon harvests through a mail-out postcard survey, essentially an abbreviated version of the household survey instrument. A total of 614 postcards were mailed to Kotzebue households; 162 (26%) responded. The Kotzebue postcard data were analyzed as a random sample and expanded with a single expansion factor based on the sampling rate of the entire community. Using a recent list of Permanent Fund Dividend applicants, an additional 218 households were added to the Kotzebue household list after the postcard mailing took place. The expanded estimate of Kotzebue's subsistence salmon harvest was based on this total of 832 households.

1999 Subsistence Salmon Harvests

Kotzebue Area Subsistence Salmon Harvest

The 1999 subsistence salmon harvest in the Kotzebue Area was 97,004 fish, 97% of which were chum salmon (Table III-1, Fig. III-1). The remaining portion was a mix of other salmon species, present in only small numbers in the district. The estimated mean salmon harvest was about 76 salmon per household, which included 74 chum salmon, 1 pink, and 1 coho. Mean harvests ranged from 33 salmon per household in Ambler to 151 salmon per household in Noorvik.

Participation in Subsistence Fishing

In the Kotzebue Area, 58% of households subsistence fished for salmon in 1999 and about 2% assisted other households in processing subsistence-caught salmon. Participation in subsistence salmon fishing ranged from 33% of households in Ambler to 74% in Noatak.

Participation in Commercial Fishing

In the Kotzebue Area (excluding Kotzebue) about 1.4% of households in the surveyed communities participated in commercial salmon fishing, and most of these removed salmon from their commercial catches for subsistence use. An estimated total of 82 salmon were retained from commercial catches for subsistence use in the Kotzebue Area, comprising less than 0.1% of the district's estimated subsistence harvest. In 1999 as in other recent years, commercial salmon fishing in the region suffered from poor market conditions.

Gear Type

In the Kotzebue Area, set gillnet was the most common gear for harvesting salmon, used by about 69% of the households that subsistence fished for salmon. Rod and reel was the next most widely used gear, although it accounted for less than 2% of the salmon harvest in the surveyed communities (excluding Kotzebue). Overall, seines were used by 7% of fishing households. In the upper Kobuk River villages, however, seines were used by 25-36% of fishing households.

Salmon for Dog Food

In the Kotzebue Area, an estimated 4,224 salmon were harvested specifically for dog food in the surveyed communities (excluding Kotzebue) in 1999. This harvest for dog food was about 14% of the total subsistence salmon catch in these communities. The mean number of salmon fed per dog was about 18 fish per year. Overall, about 8% of the surveyed households in the district (excluding Kotzebue) caught salmon specifically for dog food.

Assessment of Fishing Season

In the Kotzebue Area, 11% of fishing households responded that their chum fishing season was “poor” in 1999, 48% said “average,” and 41% said “very good.” This was a considerable improvement from 1998 when 48% of households assessed the chum fishing season as “poor.” In general, satisfaction with subsistence chum salmon fishing in the Kotzebue Area is determined largely by weather and water conditions. Salmon stocks continue to be fairly stable and abundant in this district, particularly compared to the Norton Sound area.

KOTZEBUE AREA SHEEFISH, WHITEFISH, AND CHAR

Background

In addition to salmon, major subsistence fisheries take place in northwest Alaska for sheefish, whitefish, and char. In the Kotzebue Area, subsistence fishing for these species has few restrictions other than the general statewide provisions. Fish may be taken at any time with no harvest limits and no required permits. Gillnets used to take sheefish have length, depth, and mesh size restrictions.

Harvest Collection Methods

Household surveys were conducted in October and November in the Noatak and Kobuk river villages of Noatak, Noorvik, Kiana, Ambler, Shungnak, and Kobuk. These household surveys primarily collected subsistence salmon harvest information, but also asked about harvests of sheefish and whitefish. Information on char harvests was not collected in 1999, but had been collected in Noatak in the previous four years. Researchers attempted to contact 100% of the households in each of the surveyed communities. Overall, about 43% of the households in the surveyed communities were interviewed. The survey data were expanded by community to account for the households not contacted.

1999 Sheefish and Whitefish Harvests

In 1999 an estimated 8,256 sheefish were harvested by the six surveyed communities in the Kotzebue Area (Table III-4). This was slightly higher than the average harvest of the previous four years (Table III-5). Household harvests ranged from 7.2 sheefish in Kiana to 45.0 sheefish in Shungnak.

In 1999 an estimated 56,326 whitefish were harvested for subsistence by the six surveyed communities in the Kotzebue Area (Table III-4). This was somewhat lower than the average harvest of the previous two years (Table III-5). Mean household harvests ranged from about 15 whitefish in Noatak to 261 in Noorvik.

Table III-1. 1999 Northwest Alaska Subsistence Salmon Harvests by District and Species

	Total	Harvests in Numbers of Fish					Total
	Households	Chinook	Chum	Pink	Sockeye	Coho	
Norton Sound District	898	6,144	19,398	20,017	1,177	14,342	61,078
Port Clarence District	177	89	1,936	786	2,392	1,030	6,233
Kotzebue Area	1,277	9	94,342	841	478	1,334	97,004
Total Northwest Alaska	2,352	6,242	115,676	21,644	4,047	16,706	164,315

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1999.

Table III-2. 1999 Northwest Alaska Subsistence Salmon Harvests by Community

	Total	HH's	Harvests in Numbers of Fish*					Total
	HH's	Contacted	Chinook	Chum	Pink	Sockeye	Coho	
Nome Permits ¹	109	90	11	337	58	85	161	652
Subdistrict 1	109	90	11	337	58	85	161	652
Golovin	45	37	56	1,692	172	48	784	2,751
Niukluk R. Permits ¹	9	6	0	270	27	0	85	382
White Mountain	67	62	4	1,694	271	0	365	2,334
Subdistrict 2	121	105	60	3,656	469	48	1,234	5,467
Elim	78	72	424	744	1,564	13	975	3,720
Subdistrict 3	78	72	424	744	1,564	13	975	3,720
Koyuk	72	67	327	4,153	1,943	0	167	6,590
Subdistrict 4	72	67	327	4,153	1,943	0	167	6,590
Shaktoolik	57	55	818	467	5,092	183	1,556	8,116
Subdistrict 5	57	55	818	467	5,092	183	1,556	8,116
Unalakleet ²	228	209	2,691	3,692	10,067	537	8,140	25,127
Subdistrict 6	228	209	2,691	3,692	10,067	537	8,140	25,127
Stebbins	132	111	760	3,312	459	200	1,312	6,043
St. Michael	101	83	1,053	3,036	365	111	798	5,363
South Norton Sound	233	194	1,813	6,348	824	311	2,110	11,406
NORTON SOUND	898	792	6,144	19,398	20,017	1,177	14,342	61,078
Brevig Mission	70	63	38	748	666	919	774	3,144
Pilgrim R. Permits ¹	35	22	28	91	0	180	20	319
Teller	72	70	24	1,097	120	1,293	236	2,770
PORT CLARENCE	177	155	89	1,936	786	2,392	1,030	6,233
Ambler	71	21	0	590	0	0	100	690
Kiana ³	91	67	5	3,788	7	0	33	3,832
Kobuk	23	13	0	1,869	0	0	0	1,869
Kotzebue ⁴	832	162	0	64,768	817	478	1,202	67,264
Noatak	91	14	0	1,616	10	0	0	1,626
Noorvik	118	48	4	17,843	8	0	0	17,855
Shungnak	51	28	0	3,868	0	0	0	3,868
KOTZEBUE SOUND	1,277	353	9	94,342	841	478	1,334	97,004
TOTALS	2,352	1,300	6,242	115,676	21,644	4,046	16,706	164,315

* Data from contacted households were expanded to households not contacted. If less than 30 and less than 50% of households in a community were contacted, then reported harvest is used for estimated harvest.

¹ Alaska Department of Fish and Game, Division of Commercial Fisheries, permit returns, 1999. Data not expanded.

² Estimated salmon harvest in Unalakleet includes 61 chinook, 955 chum, 359 pink, and 187 coho from the ADF&G test net fishery in addition to the survey results.

³ Estimated chum salmon harvest in Kiana includes 1,373 chum from the ADF&G test net fishery in addition to the survey results.

⁴ Alaska Department of Fish and Game, Division of Subsistence, postcard survey, 1999.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, household surveys, 1999.

Table III-3. Northwest Alaska Subsistence Salmon Harvests by Area, 1994- 1999

Norton Sound-Port Clarence Area							
	Number of Households	Chinook	Chum	Pink	Sockeye	Coho	Total
1994	990	7,415	27,070	75,130	3,381	24,000	136,995
1995	1,002	7,842	49,025	41,887	5,703	24,754	129,212
1996	990	7,449	39,292	66,960	3,816	27,562	145,079
1997 ¹	1,276	9,157	28,903	27,955	5,070	17,305	88,389
1998 ¹	1,341	8,584	22,653	59,748	2,910	20,766	114,659
1999	1,075	6,233	21,334	20,803	3,569	15,372	67,311

Kotzebue Area							
	Number of Households	Chinook	Chum	Pink	Sockeye	Coho	Total
1994 ²	557	135	48,175	3,579	33	478	52,400
1995 ³	1,327	228	102,880	2,059	935	2,560	108,662
1996	1,187	550	99,740	951	471	317	102,029
1997	1,122	464	57,906	1,181	528	848	60,925
1998	1,279	383	48,979	2,116	392	461	52,330
1999	1,277	9	94,342	841	478	1,334	97,004

¹ Includes Gambell and Savoonga.

² Includes Deering and Wales; does not include Kotzebue.

³ Includes Shishmaref.

Table III-4. Sheefish and Whitefish Harvests by
Community in the Kotzebue District, 1999

	Total Households	Number of Fish Harvested	
		Sheefish	Whitefish
Ambler	71	559	8,170
Kiana	91	657	5,464
Kobuk	23	614	871
Noatak	91	100	1,375
Noorvik	118	4,034	30,809
Shungnak	51	2,293	9,637
Total	445	8,256	56,326

Table III-5. Sheefish, Whitefish, and Char Harvests in Kotzebue District, 1995-1999

	Sheefish ¹		Whitefish ²		Char ³	
	Total Households	Number of Fish	Total Households	Number of Fish	Total Households	Number of Fish
1995	385	9,465	*	*	92	5,762
1996	389	6,953	*	*	88	5,692
1997	398	9,805	482	84,851	84	4,763
1998	392	5,350	489	39,754	97	3,872
1999	445	8,256	445	56,326	*	*

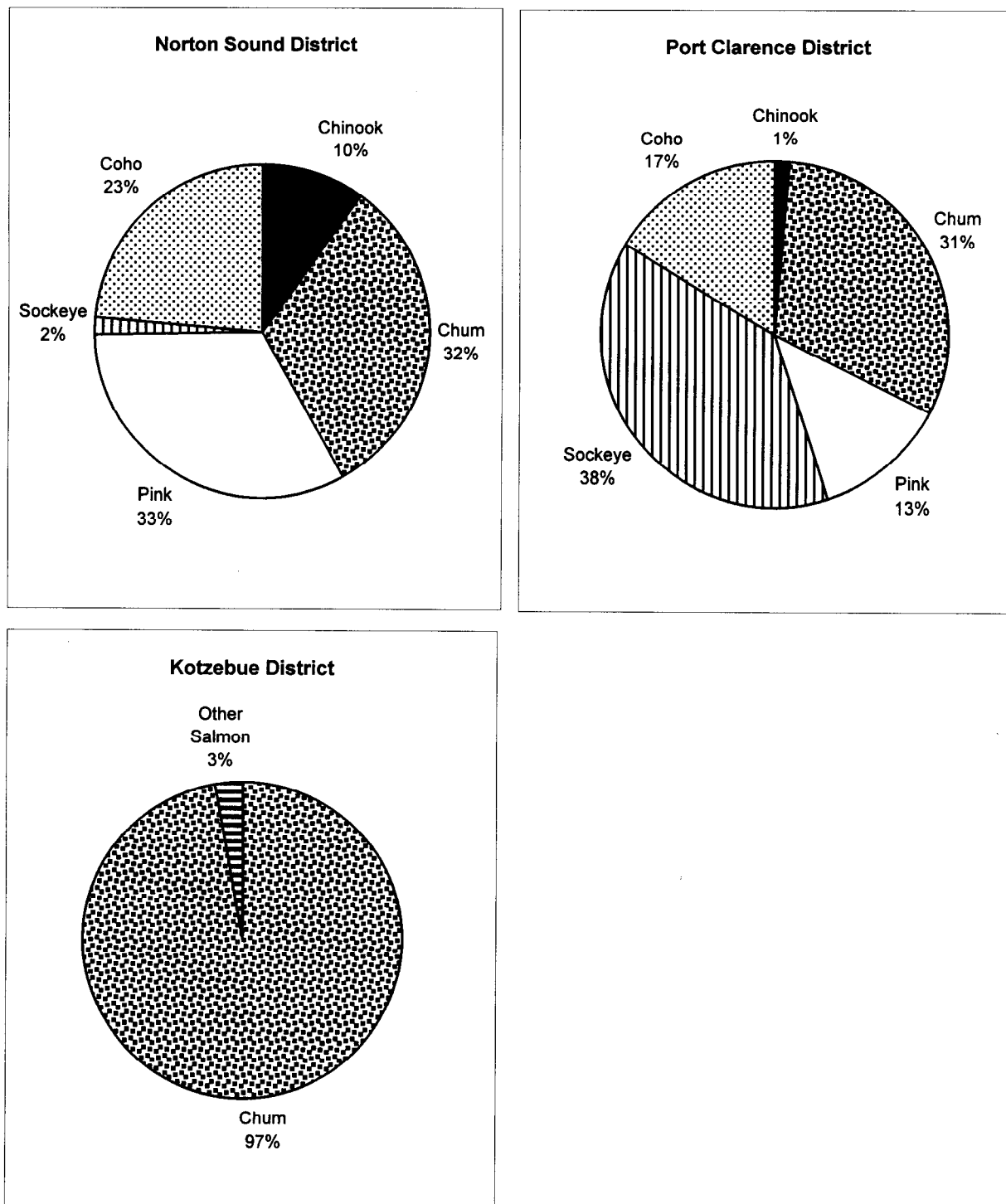
* Data not collected.

¹ Includes Noorvik, Kiana, Ambler, Shungnak, and Kobuk.

² Includes Noorvik, Kiana, Ambler, Shungnak, Kobuk, and Noatak.

³ Includes Noatak.

Figure III-1. Species Composition of Subsistence Salmon Harvests, 1999, Norton Sound, Port Clarence, and Kotzebue Districts



IV: YUKON AREA

BACKGROUND

In historic times as well as today, residents of the Yukon River area rely heavily upon fish for human food. While non-salmon species provide an important component of the overall fish harvest, salmon comprises the bulk of the total subsistence fish harvested. Although four salmon species are harvested in the Yukon drainage subsistence fishery, chinook, chum and coho salmon comprise the majority of the subsistence harvests. In portions of the drainage, subsistence harvests of some species, especially chum and chinook salmon, are substantial. Often subsistence harvests far exceed commercial harvests.

Drift gillnets, set gillnets, and fish wheels are used by Yukon Area fishermen to harvest the majority of salmon. Set gillnets are utilized throughout the Yukon area, in the main rivers and coastal marine waters, while drift gillnets are used extensively in some parts of the river (i.e., that portion of the Yukon drainage 18 miles below Galena). Fish wheels are a legal gear type throughout the Yukon drainage, although due to river conditions and the availability of wood, they are only used on the Upper Yukon and Tanana Rivers.

Depending on the area of the drainage, subsistence fishing occurs from late May through early October. Fishing activities are either based from a fish camp or from the home village: fishing patterns and preferred sites vary from community to community. Extended family groups, typically representing several households, often undertake subsistence salmon fishing. Households and related individuals typically cooperate to harvest, process, preserve, and store salmon for subsistence use. (For more detail on subsistence uses of Yukon River salmon, see the three articles on this topic in the Division of Subsistence "Wildlife Use Notebook Series" [ADF&G n.d.a, n.d.b, n.d.c]).

The majority of the subsistence salmon harvest is frozen, dried or smoked for later use, while the head, cutting scraps and viscera are often fed to dogs. Chinook salmon are harvested and processed primarily for human consumption, although small kings and those fish deemed not suitable for human consumption (due to presence of the fungus, *Ichthyophonus hoferi* or some other disease) are often fed to dogs. In addition, while chum and coho salmon are primarily taken for human consumption, relatively large numbers are harvested and processed to feed sled dogs. The practice of keeping sled dogs is much more common in communities along the Upper Yukon River.

REGULATIONS

The Alaska Joint Board of Fisheries and Game has defined a portion of the Yukon River drainage as the Fairbanks Nonsubsistence Area (5 AAC 99.015). Subsistence fisheries may not be authorized within nonsubsistence areas. Fish harvests for home use occur under personal use and sport regulations.

In 1993 the Alaska Board of Fisheries 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 4-A) (Fig. IV-1). In these districts, subsistence salmon fishing is allowed seven days per week, but may not occur 24 hours prior to and immediately following the commercial salmon fishing season. By regulation, once the commercial season is open, subsistence salmon fishing may not occur 18 hours immediately before, during, and 12 hours after each District 1, 2, or 3 summer season commercial fishing period. During the fall season, in Districts 1, 2, and 3, subsistence fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial fishing period. In Subdistrict 4A, subsistence salmon fishing may not occur 12 hours immediately before, during, and 12 hours after each commercial salmon fishing period throughout the season.

In the Upper portion of District 4 (4-B and 4-C) and in Subdistricts 5-B 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 are also allowed during the commercial salmon fishing season. In Subdistrict 5-D, subsistence salmon fishing is allowed 7 days per week.

In Subdistrict 5-A, subsistence fishing is allowed seven days per week until 24 hours prior to the commercial fishing season. Since 1994, with the exception of 1998¹, the subsistence salmon fishing schedule in 5-D allows subsistence salmon fishing five days per week following the closure of the commercial salmon fishing season.

Since 1988, subsistence fishing in the lower Tanana River drainage in Subdistricts 6-A and 6-B is allowed for two 42-hour periods per week unless altered by emergency order.² In the Upper Tanana River drainage, subsistence fishing is allowed seven days per week.

In 1999, there were no subsistence salmon closures in the Yukon area, nor were there any emergency orders affecting subsistence salmon fishing.

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 out prior to fishing activities, post-season household interviews, postseason household telephone interviews, and postcards. In road-accessible portions of the Yukon Area, including the majority of the Tanana River drainage (Subdistricts 6-A, 6-B and the Upper Tanana River drainage), the Yukon River drainage between Hess Creek and the Dall River (known as the Yukon River bridge area), and the upper portion of Subdistrict 5-D between the upstream mouth of Twenty-two Mile Slough and the U.S. Canada

¹ In 1998, the Alaska Board of Fisheries relaxed restrictive elements of the Toklat River Fall Chum Salmon Rebuilding Management Plan and allowed Subdistrict 5-A to subsistence salmon fish seven days per week. When the escapement objectives were not subsequently met, the restrictive elements of the salmon rebuilding plan were reinstated and subsistence fishing in Subdistrict 5-A was reduced during the 1999 season.

² In the lower Tanana River drainage, Sub-district 6-C is a personal use salmon fishery. Its regulations match those of the 6-A and 6-B subsistence salmon fishery; namely, that personal use fishing is allowed for two 42-hour periods per week unless altered by emergency order.

border, subsistence fishermen are required to obtain an annual household permit prior to fishing. In these areas, fishermen are required to document their subsistence salmon harvest 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 out 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 contain the months of June through October. Additional calendars are made available to households upon request from ADF&G offices in Emmonak and Fairbanks. The calendars provide space for fishermen to record their daily subsistence catch of salmon. Surveyors who travel through villages following the completion of salmon fishing activities pick up calendars. Posters are sent to village post offices and announcements on local radio stations remind fishermen to have their calendars available for pick up by surveyors. In 1999, an estimated 2,268 calendars were distributed. About 10 percent of these (227) were either returned to the department by mail, or picked up by surveyors during their fall surveys. Calendars provide important run timing information that is not obtained by any other data collection method.

In addition to the catch calendars, the Division of Commercial Fisheries conducts post-season personal interviews with a stratified random sample of all fishing households within the Yukon River drainage. Survey questions focus on chinook, summer chum, fall chum and coho salmon, but households are also asked about the number of pink salmon [DATA?] as well as the annual harvest of other miscellaneous non-salmon species such as pike, whitefish, and sheefish. Some households that are not personally contacted by the surveyors are contacted by telephone. Those households not contacted by telephone are mailed a survey questionnaire including a postage paid return envelope. In 1999, 1,024 households were interviewed about their subsistence salmon fishing harvests.

In road-accessible portions of the Yukon River drainage (see area description above), a subsistence permit is required. Subsistence fishermen record their salmon catches on household permit and return the permit at the end of the season. Subsistence permit applications are mailed to all permittees who return the prior year's permit. Subsistence permit applications are mailed to rural communities along with a letter explaining 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 person or by mail throughout the season from numerous ADF&G offices. Permit holders are required to keep a record of their daily fish harvest on their permit and return it to the department within ten days of the expiration date on the permit. Permit holders that do not send in their permits within ten days are sent up to two reminder letters. Telephone contacts with households that do not respond to the reminder letters are attempted as a final measure.

Subsistence salmon permits in a portion of Subdistrict 6-B (the Tanana River drainage above a point three miles upstream of Tolchaket slough to the boundary with 6-C) are required to report their harvests weekly for in-season management purposes. To maximize the return of permits, ADF&G staff sends reminder letters. The annual return rate for permits is typically over 80 percent. A total of 375 subsistence permits were issued in 1999, and 362 (97%) were returned.

SUBSISTENCE SALMON HARVESTS IN 1999

In 1999, 1,377 households provided harvest data for the Yukon Area subsistence salmon fishery. It is estimated that 2,888 households participated in the fishery. The estimated 1999 total subsistence salmon harvest for the Yukon area broken down by species included chinook 50,515 chinook (22%), 79,250 summer chum (34%), 83,420 fall chum (35%), 19,984 coho (9%), and 681 pink salmon (0.3%) (harvests of which are not included in the table or figure) (Table IV-1; Figure IV-1).

As shown in Table IV-2, the estimated 50,515 chinook salmon were harvested for subsistence in the Yukon Area in 1999 was near the recent five-year average of 51,609. However, the estimated 1999 summer chum subsistence harvest of 79,250 was about 27 percent below the recent five-year average of 108,05. The 1999 estimated subsistence harvest of fall chum of 83,420 was about 17 percent below the recent five-year average. However, the five-year average includes harvests from 1995 to 1998, when regulatory restrictions were imposed to reduce fishing opportunity for fall chum subsistence. (A similar restriction was in place in 1994.) A comparison with years in which restrictions were not imposed suggests that the 1999 fall chum harvest is approximately 41 percent below the 1989 to 1993 five-year average (a period with more typical harvests).

As illustrated in Table IV-2, the estimated 1999 subsistence coho salmon harvest was 19,984, 17 percent below the recent five year average.

Finally, pink salmon harvest information is collected in several communities in the Yukon Area since 1993. Although pink salmon are only abundant in the lower Yukon area, they are not typically sought after and their harvest remains low. Pink salmon exhibit a low and high abundance cycle, and 1999 was a low year. The estimated 1999 subsistence pink salmon harvest was 681 fish. These fish were harvested exclusively by communities in the coastal district.

An estimated 63 percent of the total households who participated in the subsistence fishery owned dogs. Households in the Upper Yukon own 70% of the dogs. Figure IV-3 provides a breakdown of number of dogs by fishing district. About 13 percent of the households owning dogs (216 households) are estimated to have fed their dogs whole salmon in 1999. An estimated 22,302 summer chum salmon, 39,527 fall chum salmon and 6,899 coho salmon were retained for dog food from both subsistence and commercial-related salmon harvests.

Primary gear types used by households in surveyed villages reporting fishing included set gillnet (35%), drift net (58%) and fish wheel (7%). Figure IV-4 provides a breakdown of the subsistence salmon harvest gear types.

A total of 385 households reported that they did not meet their subsistence salmon needs in 1999. About 18 percent of those reporting that they did not meet their needs attributed the problem to poor salmon returns.

Table IV.1. 1999 Subsistence Salmon Harvests by Community: Yukon Management Area

COMMUNITY	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST				TOTAL SALMON
	TOTAL	INCLUDED	CHINOOK	SUMMER CHUM	FALL CHUM	COHO	
Alakanuk	128	43	1,236	3,808	558	108	5,710
Alatna	12	9	10	99	0	0	109
Allakaket	54	20	108	2,245	20	0	2,373
Anvik	40	35	776	848	126	282	2,032
Beaver	32	27	473	91	16	0	580
Bettles	20	18	1	100	0	0	101
Birch Creek	14	14	24	0	0	0	24
Central	12	12	91	0	0	0	91
Chalkyitsik	35	34	35	0	442	0	477
Circle	21	19	524	60	2,722	0	3,306
Eagle	65	64	2,558	271	11,292	0	14,121
Emmonak	157	69	2,172	8,194	286	387	11,039
Fairbanks	95	93	1,046	661	2,311	868	4,886
Fort Yukon	173	38	2,539	0	9,702	124	12,365
Galena	183	40	2,539	1,688	1,932	123	6,282
Grayling	51	27	2,476	4,126	1,370	201	8,173
Healy	8	8	1	0	2,267	1,259	3,527
Holy Cross	66	32	4,581	264	239	62	5,146
Hooper Bay	194	56	173	10,146	0	68	10,387
Hughes	24	19	105	577	84	10	776
Huslia	84	17	90	1,192	89	15	1,386
Kaltag	57	23	2,050	625	281	263	3,219
Kotlik	90	31	929	4,107	1,482	535	7,053
Koyukuk	38	34	506	197	1,544	295	2,542
Manley Hot Springs	16	16	136	272	5,172	3,244	8,824
Marshall	68	29	2,007	1,031	696	1,041	4,775
Minto	65	58	317	173	781	0	1,271
Mountain Village	151	49	2,161	10,059	960	663	13,843
Nenana	33	32	975	1,894	5,619	4,023	12,511
Nulato	100	30	1,799	1,945	2,338	170	6,252
Nunam Iqua (Sheldon's Point)	35	31	855	1,343	115	51	2,364
Pilot Station	95	40	2,356	3,629	187	69	6,241
Pitka's Point	26	25	632	849	53	302	1,836
Rampart	29	25	2,018	60	4,324	126	6,528
Ruby	73	19	777	1,697	907	620	4,001
Russian Mission	57	16	2,722	616	100	542	3,980
Saint Mary's	118	37	2,150	6,752	722	536	10,160
Scammon Bay	76	20	938	3,315	204	0	4,457
Shageluk	32	29	412	4,868	76	6	5,362
Stevens Village	31	21	1,214	26	20	0	1,260
Tanana	122	49	3,388	1,214	22,305	3,989	30,896
Venetie	54	15	127	166	2,011	0	2,304
Other Alaska Communities	54	54	488	42	67	2	599
Totals	2,888	1,377	50,515	79,250	83,420	19,984	233,169

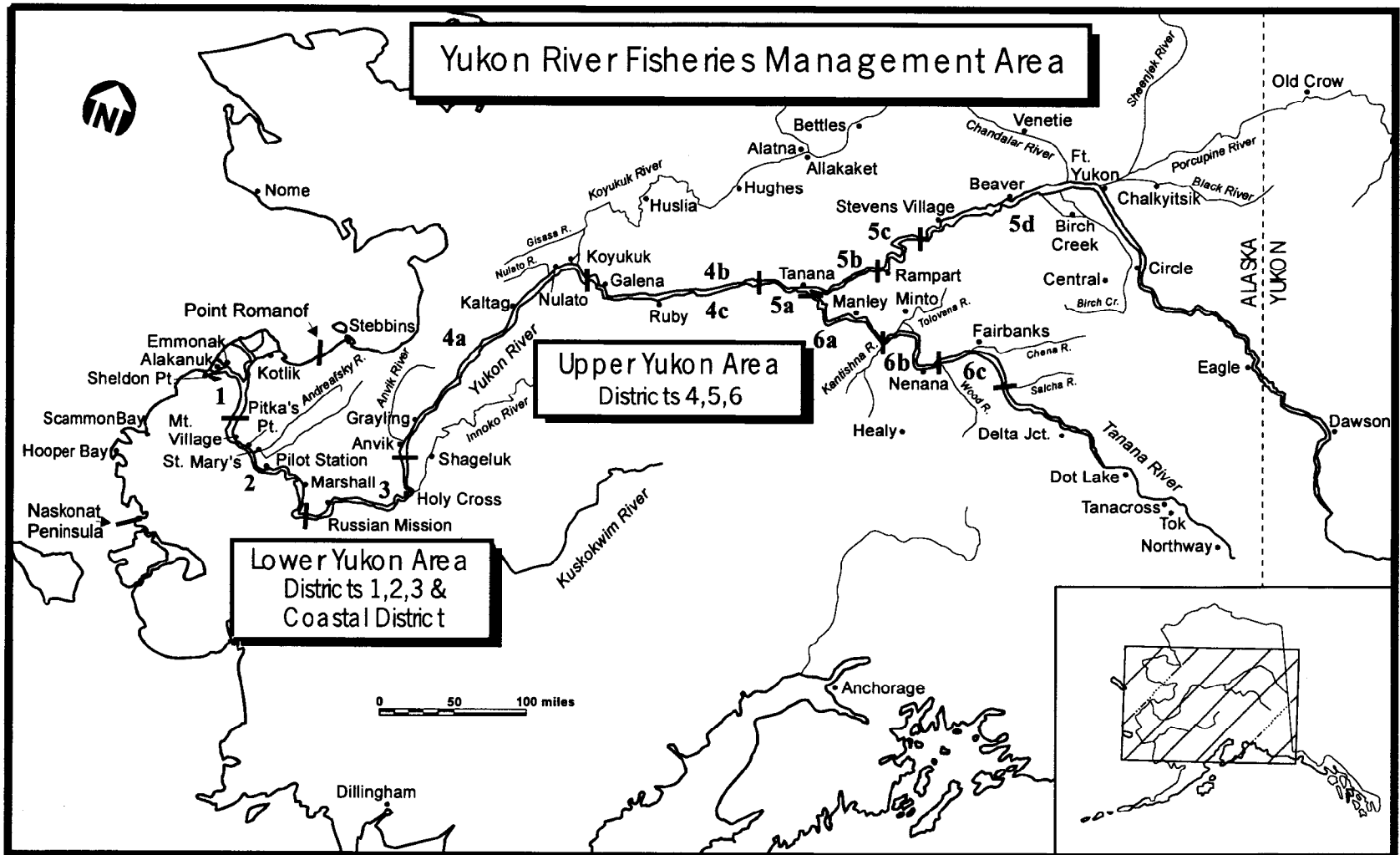
SOURCE: Alaska Department of Fish and Game, Division of Commercial Fisheries, Annual Management Reports and Regional Information Repo

Table IV-2. Historic Subsistence Salmon Harvests: Yukon Management Area

YEAR	HOUSEHOLDS / PERMITS		ESTIMATED SALMON HARVEST				TOTAL
	ISSUED	RETURNED	CHINOOK	SUMMER CHUM	FALL CHUM	COHO	
1975			12,724			10,992	23,716
1976			17,530		1,375	12,737	31,642
1977			16,007		4,099	16,333	36,439
1978			30,785	213,953	95,532	7,965	348,235
1979			31,005	202,772	233,347	9,794	476,918
1980			42,724	274,883	172,657	20,158	510,422
1981			29,690	210,785	188,525	21,228	450,228
1982			28,158	260,969	132,897	35,894	457,918
1983			49,478	240,386	192,928	23,905	506,697
1984			42,428	230,747	174,823	49,020	497,018
1985			39,771	264,828	206,472	32,264	543,335
1986			45,238	290,825	164,043	34,468	534,574
1987			55,039	300,042	226,990	46,213	628,284
1988	2,700	1,865	45,495	229,838	157,075	69,679	502,087
1989	2,211	983	48,462	169,496	211,303	40,924	470,185
1990	2,666	1,121	48,587	115,609	167,900	43,460	375,556
1991	2,521	1,261	46,773	118,540	145,524	37,388	348,225
1992	2,751	1,281	47,077	142,192	107,808	51,980	349,057
1993	3,028	1,397	63,915	125,574	76,882	15,812	282,183
1994	2,922	1,386	53,902	124,807	123,565	41,775	344,049
1995	2,832	1,391	50,620	136,083	130,860	28,377	345,940
1996	2,869	1,293	45,671	124,738	129,258	30,404	330,071
1997	2,825	1,309	57,117	112,820	95,141	23,945	289,023
1998	2,986	1,337	54,124	87,366	62,901	18,121	222,512
1999	2,888	1,377	50,515	79,250	83,420	19,984	233,169
1995-1999							
Average	2,880	1,341	51,609	108,051	100,316	24,166	284,143
1990-1999							
Average	2,829	1,315	51,830	116,698	112,326	31,125	311,978
All Years							
Average	2,767	1,333	42,113	184,387	136,889	29,713	365,499

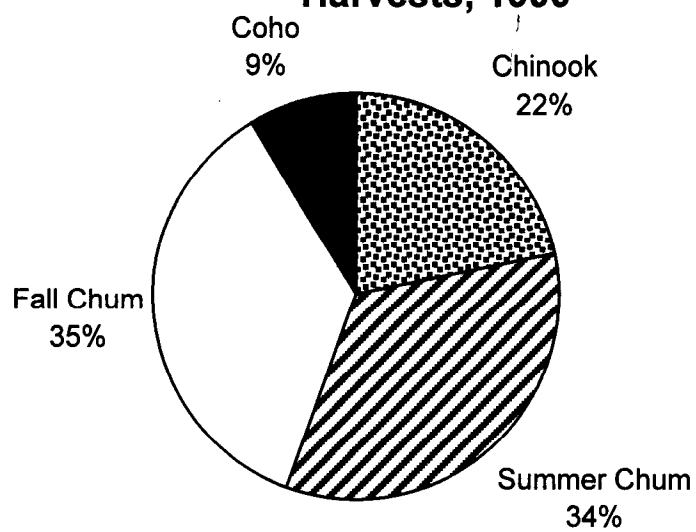
SOURCE: Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Reports and Annual Management Reports.

Figure IV-1.



Map of the Alaskan portion of the Yukon River drainage showing communities and fishing districts.

Figure IV-2. Yukon Area Subsistence Salmon Harvests, 1999



N = 233,169 salmon; based on annual harvest assessment program using permits, calendars, and household surveys.

**Figure IV-3. Estimated Number of Dogs by Fishing District,
Yukon Area, 1999**

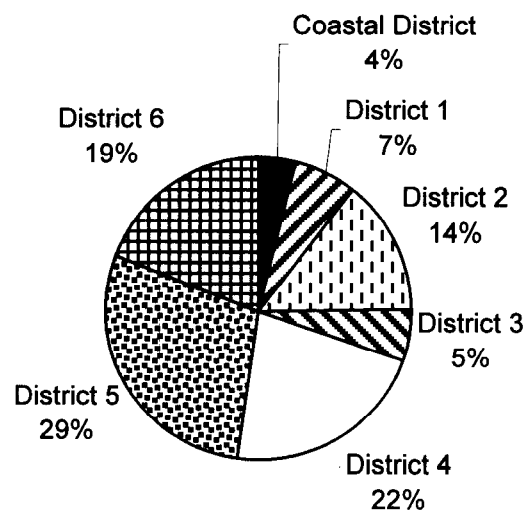
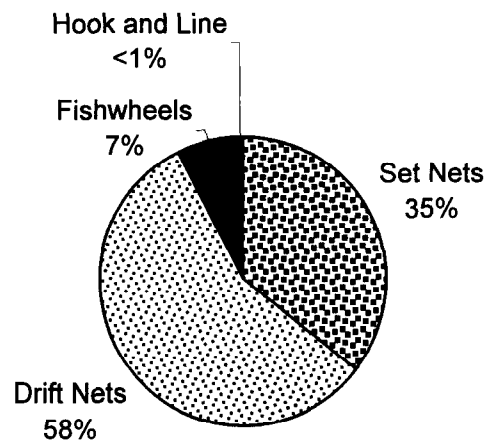


Figure IV-4. Primary Gear Type Utilized for Subsistence Salmon Fishing, Yukon Area, 1999



V: KUSKOKWIM AREA

BACKGROUND

The harvest of fish and wildlife for subsistence use is an important component of the mixed subsistence-cash economy throughout the Kuskokwim Area. The subsistence salmon fishery in the region is one of the largest and most important in the state. During summer, early June through August, the day-to-day activities of many Kuskokwim Area households revolve around the harvesting, processing, and preserving of salmon for subsistence use. The seasonal movement of families from permanent winter communities to summer fish camps situated along rivers and sloughs, continues to be a significant element of the annual subsistence harvest effort. Division of Subsistence studies in the region indicate that fish contribute as much as 85 percent of the total pounds of fish and wildlife harvested in a community annually, and salmon as much as 53 percent of the total annual harvest (Coffing 1991).

Approximately 1,700 households in the region annually harvest salmon for subsistence use. Many other households, which are not directly involved in catching salmon, participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning and freezing). Annual subsistence harvest surveys have been aimed at gathering data on Chinook, chum, sockeye, and coho salmon. Subsistence catches of Chinook salmon in the Kuskokwim Area exceed the commercial catch of this species.

There are 37 communities consisting of approximately 4,200 households within the Kuskokwim Area (Table V-1). The majority of the area households (3,059) are situated within the drainage of the Kuskokwim River. Bethel is the largest community in the region, containing approximately 1,508 households. Approximately 342 households are located in the northern Kuskokwim Bay communities of Kwigillingok, Kongiganak and Kipnuk. Residents of these three communities harvest subsistence salmon from the Kuskokwim River as well as from areas closer to the communities. Residents of Quinhagak, Goodnews Bay, and Platinum, located along the south shore of Kuskokwim bay, harvest salmon stocks primarily from the Kanektok, Arolik, and Goodnews River systems. Residents of Mekoryuk, Toksook Bay, Nightmute, Tununak, Newtok, and Chefornak, situated near the Bering Sea Coast, also harvest salmon from coastal waters as well as local tributaries.

REGULATIONS

Eligibility criteria require individuals be Alaskan residents for the proceeding 12 consecutive months before harvesting salmon for subsistence use. The majority of individuals who subsistence fish for salmon in the Kuskokwim Area are residents of the area. People living in other parts of the state who have family or friends in the region sometimes return to the Kuskokwim area to harvest or help process salmon.

Licenses and permits have never been required for subsistence salmon fishing in the Kuskokwim Area, nor were any required during 1999. There were also no restrictions on the number of salmon that could be harvested by individual fishers or households. Salmon harvested for subsistence use could be caught using set and drift gill nets, beach seines, and fish wheels. In the Holitna, Kanektok, Arolik, and Goodnews river drainages only, spears could also be used. The total length of set or drift gill nets in use by an individual fisher could not exceed 50 fathoms. Unless changed by emergency order, gill nets used for harvesting salmon in the Kuskokwim Area could be of any size mesh. Gill nets with six-inch or smaller mesh could not be more than 45 meshes in depth and nets with greater than six-inch mesh could not be more than 35 meshes in depth. Fishers were required to have their name and address attached to their gill nets and fish wheels.

IN-SEASON SUBSISTENCE CLOSURES IN 1999

Areas within the commercial salmon fishing districts were periodically closed to subsistence salmon fishing 16 hours before, during, and 6 hours after commercial salmon fishing periods. The purpose of these closures was to discourage illegal commercial fishing and to help discourage the sale of subsistence caught salmon in the commercial fishery. Many of the commercial fishers are local residents who also participate in the subsistence fishery. The specific area closed to subsistence fishing varied from one district to the next. During 1999, there were no additional subsistence salmon fishing restrictions.

In District 1, the waters of the Kuskokwim River were closed to subsistence salmon fishing around commercial salmon fishing periods. Tributaries flowing into the Kuskokwim River within the District did not close. That portion of the Kuskokwim River between Districts 1 and 2 was closed to subsistence fishing at the same time subsistence closures occurred in District 1. Kuskokuak Slough, located in District 1, did not close to subsistence fishing after July 31.

In District 2, waters of the Kuskokwim River and all tributaries flowing into the Kuskokwim River within District 2 were closed to subsistence salmon fishing around commercial salmon fishing periods in District 2. In addition to subsistence closures in District 4 waters, the entire Kanektok and Arolik Rivers near District 4 were closed to all subsistence fishing with nets around the commercial salmon fishing periods in that District. Likewise, the waters of District 5 were also restricted. The Goodnews River was also closed to all subsistence fishing by nets around the commercial periods in District 5.

SUBSISTENCE SALMON HARVEST ASSESSMENT METHODS

Data on the subsistence harvest of salmon are collected annually. Commercial Fisheries Division began conducting subsistence salmon harvest surveys along the Kuskokwim River in 1960. Surveys were initiated in Quinhagak (1967) and Goodnews Bay and Platinum (1979). The Division of Subsistence took over the annual subsistence salmon harvest surveys in 1988 under a reimbursable service agreement and have been responsible for collecting and analyzing the data since then. During the early survey years, prior to 1985 subsistence salmon catch data was lumped into two primary categories, “king salmon” and “small salmon.” Not until 1985 were survey methods revised to better identify the number of chum, sockeye and coho salmon caught for subsistence use.

Three methods are used to gather subsistence salmon harvest data in the Kuskokwim Area. These methods include subsistence salmon catch calendars, post-season community household surveys, and postcard surveys.

Catch Calendars

In May 1999 subsistence salmon catch calendars were mailed to all Kuskokwim Area households that had been identified as “usually fish.” Three similar, but unique, catch calendars were designed for recording the daily catch of each salmon species harvested for subsistence use. One style of calendar was sent to households in communities along the Lower and Middle regions of the Kuskokwim River, to communities along the Bering Sea coast and along North Kuskokwim Bay, and to those communities in the Upper Kuskokwim River region upstream as far as the community of Stony River. A second style of calendar was sent to the remaining households in the Upper Kuskokwim River region and a third style was sent to households in Quinhagak, Goodnews Bay, and Platinum. Differences in the style of calendar sent to households take into account the species available, salmon run-timing, and timing of subsistence fishing activities. Where mailing addresses were available, the calendars were mailed to post office boxes; otherwise calendars were sent general delivery for the post office clerk to distribute. Each calendar was postage paid and addressed for return to the Division of Subsistence office in Bethel. Subsistence salmon catch calendars were distributed to 1,528 households.

Household Surveys

The second method of collecting subsistence salmon harvest information was the post-season household surveys. With this method, staff traveled to communities in the Kuskokwim Area and went house-to-house interviewing residents about their 1999 salmon fishing efforts. Similar to the approach used in developing the catch calendars, three color-coded survey instruments were used to survey the majority of the communities. Except for local terms used for the salmon species, the survey questions asked in each region were identical. The survey form used when interviewing Bethel households also included a space for recording the households resident address and asked reasons why the household harvested salmon for subsistence using hook and line gear.

During 1999, the Division of Subsistence staff conducted house-to-house surveys in 28 communities. Budget constraints have precluded attempts to conduct house-to-house surveys in Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, Chefnak, and Telida. House to house surveys were also not done in the communities of Kwigillingok, Kipnuk, and Kasigluk, since the communities asked us to stop doing surveys there several years ago.

Survey efforts in these communities occurred over a two-month period, beginning in early October, after most residents had completed salmon fishing for the season and after most hunters had returned home from fall moose and caribou hunting. Communities in which residents usually harvest salmon through October were surveyed in November. Time spent in any one community ranged from one-half to two days depending on the size of the community. Surveys in Bethel were conducted over a 6 week period.

Survey work was conducted systematically. Prior to beginning the community surveys, efforts were made to inform and prepare residents for the arrival of staff doing the surveys. This was done weeks or days in advance of their arrival through letters to City, Tribal, or Traditional Council offices in each community, radio announcements, posters in public buildings and phone calls to community officials. Prior to traveling to each community, staff identified households that had already mailed in or returned their salmon harvest calendars.

In Bethel, survey staff used a map of the community developed by the Bethel Fire Department. This map identified the street addresses of much of the community and was used to divide the community into areas that could be assigned to each of the two survey staff. Each survey staff working in Bethel also had access to a list of all Bethel households identified through previous surveys and a list of households which had been sent and returned their salmon fishing calendar.

Upon arrival in a community, staff checked in with the City or Council office to introduce themselves and outline their task. Staff used community household checklists, prepared in advance, to help them identify households they needed to contact while conducting household surveys. Knowledgeable individuals in each community helped staff update the community household list. Attempts were made to contact all households that were identified as fishing households, or whose fishing status was unknown. Structured interviews were conducted with these households through the use of the survey instrument. Subsistence salmon catch calendars that had not been mailed back to the department were also collected. If time permitted, other households on the community list were contacted about their salmon fishing activities. In 1999, 2,124 households were surveyed using this method.

Postcard Surveys

The third method of collecting information on subsistence harvest of salmon was through the use of postcard surveys. The postcard survey simply asked if the household harvested salmon from the Kuskokwim Area for subsistence use, the species and quantities harvested, the type of fishing gear used, and how fishing was for each of the four salmon species usually harvested. The postcard could be separated in half and returned postage paid to the department. This type of survey was the primary method of obtaining harvest data from households in Kipnuk, Kwigillingok, Kasigluk, Mekoryuk, Newtok, Nightmute, Toksook Bay, and Tununak. Households in surveyed communities which were not at home at the time staff visited their community were also mailed a postcard survey. Overall, approximately 1,200 households were mailed postcard surveys.

SAMPLING SUMMARY FOR 1999

Of the estimated 4,180 households located in the Kuskokwim Area, 2,523 households were contacted. Fishing activity information was obtained for 2,571 households within the Kuskokwim River drainage, including the North Kuskokwim Bay communities. A total of 2,322 of these households were successfully contacted either through a household interview, a returned harvest calendar or returned postcard. 1,512 of these households harvested salmon for subsistence use during 1999.

In the South Kuskokwim Bay region, containing the communities of Quinhagak, Goodnews Bay, and Platinum, 166 (81%) of the 204 households living in the region were contacted. Of these contacted households, 136 (82%) harvested salmon in 1999 for subsistence use.

In total, 575 households have been estimated in the Bering Sea coast communities of Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak and Chefnak. A complete list of households was not available for these communities. Because house-to-house surveys were not conducted in these communities, data were obtained only by postcard surveys and calendar returns. Thirty-five households in this region provided information and twenty-nine reported harvesting salmon. Based on data gathered in other years, actual participation in salmon harvesting activities by households in this region is thought to be much greater than that reported by catch calendars or postcard surveys. For most communities, house-to-house surveys continue to be the primary vehicle for gathering data on harvest and use of subsistence salmon. During the 1999 survey efforts, house to house surveys accounted for 84 percent of all households contacted.

In total, 16% (252) of the 1,528 subsistence salmon calendars which were mailed pre-season were used and returned or picked up during the household surveys. There were 217 responses to the 1,254 postcard surveys that were mailed to Kuskokwim Area households who had not returned harvest calendars and were not interviewed by staff.

SUBSISTENCE SALMON HARVEST SUMMARY FOR 1999

A summary of the subsistence salmon harvest estimates by community is presented in Table V-1. The 1999 total subsistence salmon harvest estimates for the Kuskokwim Area was 77,660 Chinook, 47,612 chum, 49,388 sockeye, and 27,753 coho salmon. Seventy-six percent of the overall subsistence salmon harvests in the Kuskokwim Area were taken by residents of communities located from Tuluksak downstream to Eek.

Chinook salmon are particularly sought after for subsistence use in the Kuskokwim Area and account for a large percentage (38 percent) of the total subsistence salmon catch (Figure V-1). The 1999 subsistence Chinook harvest was about 3 percent below the 1985 – 1999 average of 80,328 fish (Table V-2)

The estimated sockeye harvest during 1999 (49,388 fish) was the highest it has been since 1993 (Table V-2). The 1999 harvest was also 32 percent greater than the 1985 through 1999 harvest average of 37,467. Subsistence harvests of both coho and chum salmon have both experienced a general decline since 1989 (Table V-1). The estimated harvest of 27,753 coho salmon in 1999 is 25 percent below the average harvest of 37,081 fish from 1985 through 1999. The harvest of 47,612 chum salmon during 1999 was the second lowest catch since 1985. The average harvest of chum salmon from 1985 through 1999 is 92,679 fish. Only in 1997 was the chum harvest lower (Table V-2).

Several hundred households provided information on the types of gear that they used for harvesting subsistence salmon. Households often used multiple types of gear: set gill nets, drift gill nets, large mesh gear and small mesh gear. Drift gill nets were the gear type most commonly reported, particularly in the lower and middle Kuskokwim River areas. Set gill nets were used throughout the region. Fishers in the Kuskokwim River drainage from Stony River upstream to Nikolai and communities in the Bering Coast area depended largely on set gill nets for harvesting subsistence salmon. No fish wheels were reported during the 1999 surveys. Fish wheels are sometimes used by residents in Aniak and Stony River as well as in other middle and upper Kuskokwim River communities. One household in Mekoryuk reported using a seine to harvest salmon. Several households (175) in 21 communities throughout the region reported using rod and reel gear for harvest salmon for subsistence use.

On occasion, commercial fishers sometimes keep salmon caught during a commercial fishing period and take them home for subsistence use. During 1999, approximately 11 percent of the households which reported commercial fishing also reported that they kept salmon from their commercial catch for subsistence use. A total of 105 Chinook salmon, 37 chum, 106 sockeye, and 140 coho salmon were reportedly retained from the commercial catch for subsistence use. The number of salmon retained from commercial fishing activities for subsistence use is usually relatively low. The lack of commercial fishing opportunities in 1999 is partly responsible for the low numbers retained.

More than 1,000 households responded to a question about the quality of subsistence salmon fishing during 1999. The purpose of this question was to learn how households viewed their 1999 subsistence fishing success. Households were asked to rate their subsistence fishing success for each of the four species surveyed (Chinook, sockeye, chum, coho) as “Very Good,” “Average,” or “Poor.” Subsistence fishers from communities located within the Lower Kuskokwim River area, Tuntutuliak to Tuluksak, generally reported the quality of their subsistence fishing results higher than fishers in the middle and upper Kuskokwim region and South Kuskokwim Bay.

The majority (72 percent) of subsistence fishers responding felt that the quality of their subsistence Chinook fishing was very good or average. Fishers commented that the 1999 chinook run was slow, weak, and later than usual. Fishers also said that the Chinook salmon were smaller than usual and that high water made fishing difficult.

Although the chum salmon harvest was relatively low during 1999, nearly two-thirds of Kuskokwim fishers felt that their chum salmon harvests were average or better. Fishers reporting poor chum harvest success indicated that the run was weak and that there were fewer fish than usual.

Overall satisfaction in subsistence fishing for sockeye salmon was higher than Chinook, at 73 percent of households reporting it as very good or above average. Fishers reporting sockeye fishing as poor often weren’t sure why it was poor for them, although some mentioned high water and weak runs as the reason. Satisfaction in fishing for coho salmon was the lowest of all. Almost half (43 percent) reported that subsistence fishing for coho was poor. Reasons given for poor coho fishing included a weak run, small than usual fish and high water. Several fishers mentioned having to make more drifts than usual to harvest the few coho they caught.

OTHER FISH

Presently, there are no annual harvest assessment programs for subsistence harvests of other fish in the Kuskokwim Management Area. Harvest estimates based on household surveys in several communities are available in the Community Profile Database (Scott et al. 2000). Table V-3 reports a sample of data for two area communities, Kwethluk and Nunapitchuk. The species used and relative harvest quantities may differ substantially between villages and from year to year.

Table V-1. 1999 Subsistence Salmon Harvests by Community: Kuskokwim Management Area

Community	Households		Estimated Salmon Harvest				Total Salmon
	Total	Included	Chinook	Sockeye	Coho	Chum	
Akiachak	119	93	5,373	3,130	663	2,741	11,907
Akiak	58	39	2,356	1,145	254	1,202	4,957
Aniak	163	147	2,596	1,310	1,418	1,764	7,089
Atmautluak	53	45	1,469	1,874	205	1,667	5,216
Bethel	1,508	1,082	24,996	13,145	12,414	11,163	61,719
Cheforak	94	0					
Chuathbaluk	28	25	1,110	460	137	729	2,436
Crooked Creek	30	26	681	690	515	806	2,692
Eek	67	62	1,816	625	258	508	3,207
Goodnews Bay	53	47	805	770	439	250	2,264
Kalskag (Upper)	53	49	1,688	614	153	665	3,120
Kasigluk	136	7	480	183	92	350	1,105
Kipnuk	176	8	29	54	75	31	189
Kongiganak	71	54	1,320	991	222	1,152	3,685
Kwethluk	142	109	6,081	3,112	2,993	3,449	15,635
Kwigillingok	95	0					
Lime Village	17	12	155	2,550	600	1,012	4,317
Lower Kalskag	63	54	1,787	605	302	759	3,452
McGrath	100	75	1,295	74	553	260	2,182
Mekoryuk	92	18	15	2	64	1,583	1,664
Napakiak	73	62	2,380	2,115	487	1,573	6,554
Napaskiak	74	62	3,827	2,058	355	2,687	8,928
Newtok	80	0					
Nightmute	67	1	6	5	0	10	21
Nikolai	29	27	288	0	117	89	494
Nunapitchuk	100	87	4,521	3,493	391	4,742	13,147
Oscarville	15	10	2,289	2,165	970	1,906	7,330
Platinum	19	17	66	102	143	31	342
Quinhagak	132	102	3,167	1,639	2,021	1,810	8,637
Red Devil	18	16	161	568	455	193	1,377
Sleetmute	35	30	447	946	226	367	1,985
Stony River	16	12	55	1,230	511	358	2,154
Takotna	14	14	0	0	0	0	0
Telida	2	0					
Toksook Bay	133	15	407	193	83	326	1,009
Tuluksak	72	60	2,348	1,490	307	1,566	5,711
Tuntutuliak	74	55	3,645	2,048	331	1,862	7,886
Tununak	109	1	0	0	0	0	0
Totals	4,180	2,523	77,660	49,388	27,753	47,612	202,413

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database.

Table V-2. Historic Subsistence Salmon Harvest Kuskokwim Area, 1960 - 1999.

Year	Households		Estimated Salmon Harvest					Total Salmon
	Total	Surveyed	Chinook	Sockeye	Chum	Coho	"Small Salmon"	
1960			18,887				303,153	322,040
1961			28,934				183,186	212,120
1962			13,582				163,554	177,136
1963			34,482				138,669	173,151
1964			29,017				190,191	219,208
1965			24,697				250,878	275,575
1966			49,325				180,054	229,379
1967			61,262				221,419	282,681
1968			35,698				278,008	313,706
1969			40,617				238,798	279,415
1970			69,612				258,678	328,290
1971			43,013				123,290	166,303
1972			38,176				121,641	159,817
1973			38,451				203,005	241,456
1974			26,665				309,950	336,615
1975			47,569				176,389	223,958
1976			58,055				228,104	286,159
1977			58,158				215,590	273,748
1978			38,145				137,489	175,634
1979			57,053				190,567	247,620
1980			62,047				216,322	278,369
1981			64,274				191,855	256,129
1982			61,141				240,872	302,013
1983			51,020				76,059	127,079
1984			60,668				103,144	163,812
1985			45,720	33,632	95,999	24,524	154,155	199,875
1986			54,256	20,239	142,930	29,742	192,911	247,167
1987			71,804	25,180	70,709	18,085	113,974	185,778
1988			75,107	33,102	153,980	43,866	230,948	306,055
1989	3,422	2,135	85,322	37,088	145,106	57,847	240,041	325,363
1990	3,317	1,830	92,678	39,662	131,469	50,713	221,844	314,522
1991	3,347	2,024	90,224	56,404	96,308	55,581	208,293	298,517
1992	3,314	1,724	68,665	34,159	99,576	44,496	178,231	246,896
1993	3,274	1,816	91,721	51,363	61,726	35,295	148,384	240,105
1994	3,179	1,821	98,378	39,279	76,951	36,504	152,734	251,112
1995	3,652	1,894	100,159	28,622	68,942	39,165	136,729	236,888
1996	3,643	1,837	81,598	35,036	90,238	34,698	159,972	241,570
1997	3,510	1,831	85,506	41,270	40,976	30,714	112,960	198,466
1998	3,495	1,849	86,115	37,578	67,665	27,239	132,482	218,597
1999	4,180	2,523	77,660	49,388	47,612	27,753	124,753	202,413
40 Year Average			57,887				186,232	244,118
1960 - 1979 Average			40,570				205,631	246,201
1980 - 1999 Average			75,203				166,833	242,036
1985 - 1999 Average			80,328	37,467	92,679	37,081	167,227	247,555
1990 - 1999 Average	3,491	1,915	87,270	41,276	78,146	38,216	157,638	244,909

Note: Prior to 1985, subsistence salmon harvest information was collected using two basic categories, King salmon and small salmon. Small salmon were comprised of primarily chum and sockeye salmon with some coho salmon and very few pink salmon. In 1985 survey methods were modified to identify chum, sockeye and coho salmon harvests in the subsistence catch. Pink salmon are harvested primarily on even number years and have not been included in the subsistence surveys. Data for 1983, 1984, 1986 and 1987 are estimates based on surveys in a sample of communities. Survey methods were revised beginning in 1988.

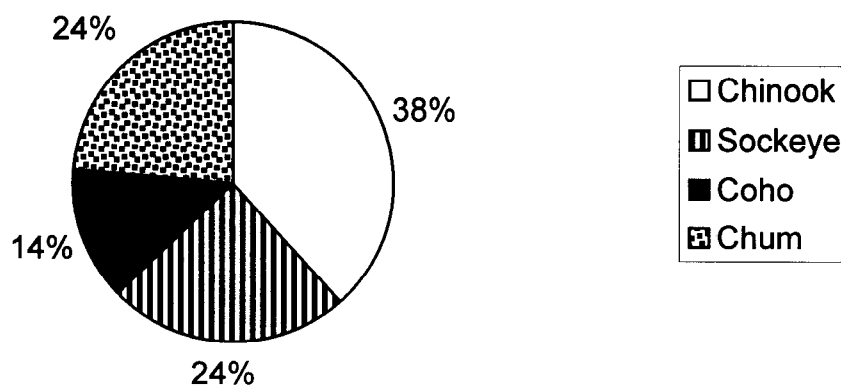
Table V-3. Subsistence Harvests of Nonsalmon Fish, Kwethluk and Nunapitchuk

Resource	Kwethluk (1986)		Nunapitchuk (1983)	
	% of Households Harvesting	Estimated Harvest	% of Households Harvesting	Estimated Harvest
Smelt	32.1%	24,900 fish		
Blackfish	18.0%	14,184 lbs	52.9%	4,719 gal
Burbot	79.2%	7,497 fish	76.5%	1,342 fish
Dolly Varden	29.1%	608 fish		
Lake Trout	5.3%	249 fish		
Grayling	42.2%	1,043 fish		
Pike	75.8%	9,043 fish	100.0%	26,925 fish
Sheefish	37.4%	2,119 fish	11.8%	12 fish
Rainbow Trout	28.6%	545 fish		
Whitefish	45.7%	9,946 fish	94.1%	12,052 fish

Blank cells = no data available

Source: Scott et al. 2000

Figure V-1. Composition of Subsistence Harvest by Species, Kuskokwim Area, 1999



N = 202,413 salmon; based on annual harvest assessment program using calendars and household surveys.

VI. BRISTOL BAY AREA

BACKGROUND

In spite of numerous social, economic, and technological changes, Bristol Bay residents continue to depend on salmon and other fish species as an important source of food. Bristol Bay communities have relied on fish to provide nourishment and sustenance for thousands of years. Subsistence harvests provide important nutritional, economic, social, and cultural benefits to most Bristol Bay families. All five species of salmon are utilized for subsistence purposes in Bristol Bay, but the most popular are sockeye, chinook, and coho. 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. Since 1990, all Alaska state residents have been eligible to participate in subsistence salmon fishing in all Bristol Bay drainages. In 1999, with two exceptions, only gillnets were recognized as legal subsistence gear. In the Togiak District, spear fishing was also allowed. In 1998, the Board of Fisheries adopted new regulations for the taking of “redfish” (spawned sockeye salmon) in portions of the Naknek District. Gillnets, spears, and dipnets may be used along a 100 yard 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 1999, 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.

In Dillingham and the Naknek, Egegik, and Ugashik rivers, subsistence fishing was limited to several fishing periods per week during the peak of the sockeye 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 September, from Monday to Friday. In recent years, declining chinook and coho stocks resulted in longer commercial closures and some residents had an increasingly difficult time obtaining fish for home use. The Nushagak commercial district, starting in 1988, has been opened for subsistence fishing by emergency order during extended commercial closures.

SALMON HARVEST ASSESSMENT PROGRAM

A permit system was gradually introduced throughout the region in the late 1960s to document the harvest of salmon for subsistence. Much of the increase in the number of permits issued during the 1960s and 1970s reflects: 1) a greater compliance with the permitting and reporting requirements, 2) an increased level of effort expended by the department in making permits available (including a local system of vendors), contacting individuals, and reminding them to

return the harvest forms, and 3) a growing regional population. Today, most subsistence fishermen are obtaining permits and reporting their catches, and overall permit returns have averaged between 85% and 90%. However, fish removed for home use from commercial catches are not included in most reported subsistence harvest totals. Also, fish caught later in the season, such as coho and spawning sockeye salmon are probably not documented as consistently as Chinook, sockeye, chum, and pink.

Bristol Bay subsistence permits include a harvest report on the reverse side that asks for dates fished, location fished, and quantities of each species harvested. In 1999, subsistence fishers could obtain permits at ADF&G offices in Dillingham or King Salmon. Permits were also available through vendors in most of the smaller communities of the area. Division of Subsistence staff send two rounds of reminder letters to permit holders at the end of the season to encourage return of harvest data.

In 1999, 1,219 subsistence permits were issued for the Bristol Bay Management Area, and of these, 1,157 (94.9 percent) were returned to the Department with harvest data. The largest number of permits were issued for fishing in the Nushagak (548 permits) and Naknek/Kvichak (528 permits) districts (Table VI-1). For the Nushagak and Naknek/Kvichak districts, more permits were issued in 1999 than the long-term 20-year average, due in part to permits being available to all state residents since 1990. Fewer permits were issued for the Egegik and Ugashik districts in 1999 than the average for the past 10 years. The number of permits issued for the Togiak District (76) was the highest on record, reflecting a more complete involvement by local subsistence fishers in the harvest reporting program for that district than has been the case in the past. Of all permits, 1,013 (83.1 percent) were issued to residents of Bristol Bay communities, and 206 (16.9 percent) were issued to other Alaska residents.

SUBSISTENCE SALMON HARVESTS IN 1999

The estimated total Bristol Bay subsistence salmon harvest in 1999 was 145,506 fish (Table VI-1). This number is below both the long-term average (since 1979) of 164,861 salmon and recent 10-year average of 155,762 salmon (Table VI-2). The area-wide chinook harvest was the lowest since 1989, while the area-wide harvest of sockeyes was the highest since 1993. Of the entire Area harvest, 135,422 salmon (93.1%) were harvested by residents of Bristol Bay communities, and 10,084 salmon (6.9%) were harvested by other Alaska residents (Table VI-3).

In 1999 as over the last several decades, most of the Bristol Bay subsistence harvest was taken in the Naknek/Kvichak (61%) and the Nushagak (32%) districts (Fig. VI-1). The Naknek/Kvichak total harvest of 88,674 fish was below the recent 10-year average of 93,561. In 1999, Kvichak drainage residents, and other permit holders fishing in the Kvichak drainage, harvested an estimated 57,723 sockeye salmon, compared to a recent 10-year average of 64,812 and a 20-year average of 70,781 sockeye salmon. However, the 1999 sockeye salmon harvest in the Kvichak system was the second highest over the last five years. Of Kvichak drainage communities, estimated sockeye harvests were up at Nondalton, Port Alsworth, and Igiugig compared to 10-year averages, but were lower than 10-year averages in Levelock, Pedro Bay, Kokhanok, and

Iliamna/Newhalen. (See the annual management reports for Bristol Bay for historic data at the district level.)

In the Nushagak District, the total estimated subsistence harvest in 1999 was 45,969 salmon. The recent 10-year average is 53,823. All species except sockeyes were harvested in the Nushagak District at levels below their recent 10-year averages. The sockeye harvest of 29,387 was slightly above the 10-year average and the highest estimate since 1992. The Nushagak chinook harvest in 1999 of 10,057 was the lowest since 1989, and was down notably from the 15,318 chinook estimated for 1997 and the 12,258 harvested in 1998.

Estimated harvests of all species except cohos in the Togiak District in 1999 were up from the year before, due in large part to the notable increase in the number of permits obtained and returned by Togiak residents. The estimated total subsistence salmon harvest for the Togiak District in 1999 of 5,804 exceeds both the recent 10-year and 20-year averages and is the highest estimate since 1992. The estimated subsistence harvest in the Ugashik District in 1997 was 1,675, below the 10-year average of 2,268. In the Egegik District the estimated subsistence salmon harvest of 3,384 was slightly below the recent 10-year average. However, the number of permits issued for this district has dropped notably since peaking at 80 in 1992; 42 permits were issued for 1998.

In 1999, the Bristol Bay subsistence salmon harvest was composed of 84.0% sockeye, 8.9% chinook, 2.5% chum, 0.3% pink, and 4.2% coho salmon (Fig. VI-2).

OTHER SUBSISTENCE FISHERIES

There are no annual harvest assessment programs in the Bristol Bay Area for non-salmon subsistence fisheries. The following overview derives primarily from a report that the Division of Subsistence, ADF&G, prepared for the Alaska Board of Fisheries in November 1997 (Fall and Chythlook 1997).

Subsistence Regulations

The Alaska Board of Fisheries has determined that all finfish of the Bristol Bay Management Area support customary and traditional uses (5 AAC 01.336). The Board determined that approximately 250,000 pounds (usable weight; about 41 pounds per person) is the amount 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 (Scott et al. 1996). Amounts for specific species or more specific stocks were not established.

For the most part, subsistence fishing for fish other than salmon and rainbow 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 fish other than salmon in the area.

- A permit is required for harvesting trout and char (5 AAC 01.330). However, the department has no program for issuing such permits, and virtually all subsistence fishing for these resources takes place without permits.
- Rainbow trout taken incidentally in other subsistence net fisheries or 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-fourth 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 fish in the Bristol Bay Area appears in Fall et al. (1996). Wright and Chythlook (1985) describe uses of herring spawn on kelp in the Togiak District. Harvests of fish other than salmon contribute about 10 percent of the annual subsistence harvests of wild foods in the Bristol Bay region, about 42.5 pounds per person. In the villages, the per capita harvest is 72.6 pounds per person (Fall and Chythlook 1997).

Subsistence harvests of fish other than salmon are not annually monitored by the Department of Fish and Game. Harvest and use data are available for most communities (except Twin Hills) through Division of Subsistence household harvest surveys (Scott et al. 2000; BBNA and ADF&G 1996). Some of the findings of this research regarding non-salmon fish are summarized in Table VI-4. The vast majority of households in the Bristol Bay area use fish other than salmon for subsistence purposes. Most households also participate in the harvest of these fish. Harvests as measured in pounds useable weight per person for available study years vary from community to community, but are generally substantial. Harvests range from a low of 12 pounds per person (Port Alsworth in 1983) to 175 pounds per person (Nondalton in 1983). Harvests in ten communities exceeded 50 pounds per person per year; these harvests exceeded 20 pounds per person per year in an additional five communities. Fish other than salmon generally rank third behind salmon and land mammals in their contribution to the total subsistence harvests in Bristol Bay communities.

Harvests and uses of the non-salmon fish listed in Table VI-5 have been documented in Bristol Bay communities through Division of Subsistence research. Uses of other species may occur.

Harvest quantities of particular species vary between communities, subregions, and from year to year. Generally, fish taken in the largest quantities in the area as a whole include smelt, whitefish, Dolly Varden, grayling, and pike (see Fall et al. 1996 for a summary of harvest data).

In the Bristol Bay Area, harvests of non-salmon finfish 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 smelt. Substantial harvests of non-salmon fish occur through the ice in winter. Smelting is a popular

activity in October and in late winter when they 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 non-salmon fish for home use in the Bristol Bay Area. Rod and reel is used for most fish and some, such as Dolly Varden/Arctic char, herring, and other marine fish are removed from commercial catches. Various other methods are used, including (but not necessarily limited to) the following:

- Traps: blackfish, burbot
- Set hooks: burbot
- Handline jigging through the ice: grayling, Dolly Varden/Arctic char, lake trout, smelt, rainbow trout, whitefish, pike
- Set gill nets: grayling, Dolly Varden/Arctic char, lake trout, suckers, rainbow trout, herring, pike, burbot
- Beach seining: Dolly Varden/Arctic char, lake trout, smelt, herring
- Hand line in open water: halibut
- Dipnets: smelt, herring

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

Maps of areas used by Bristol Bay communities to harvest non-salmon fish appear in the Alaska Habitat Management Guide Reference Atlas Series (ADF&G 1985) and in Wright et al. (1985). Harvest activities occur throughout in region in most rivers, lakes, and along shorelines. It is likely that most effort occurs near each community and near seasonal camps at such locations as Kulukak. (See Wright and Chythlook (1985) and Schichnes and Chythlook (1988) for maps of herring camps at Kulukak Bay.) For frequency of use 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 fish 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:

- Grayling: dried, frozen
- Dolly Varden: dried, smoked, half dried (*egamaarrluk*)
- Pike: dried, half-dried
- Rainbow trout: dried
- Whitefish: dried, frozen with seal oil, fermented and frozen

Much dry fish is eaten with seal oil. Some use of brown bear fat with dry fish also occurs. Smelt are fried, boiled, dried, or eaten frozen with seal oil (Fall et al. 1986:100). Herring are salted, or split, dried, and smoked (Schichnes and Chythlook 1988:126). Pike heads and stomachs are boiled and eaten (Schichnes and Chythlook 1991:139). Freshwater fish that are usually eaten

frozen with seal oil also form a category called *qumlanaq*. This includes grayling, whitefish, and pike (Fall et al. 1986:102).

Much traditional knowledge is associated with subsistence uses of nonsalmon fish in the Bristol Bay area. For example, a Yup'ik classification system for some types of freshwater fish exists that is different from that developed by Western science. Three kinds of fish separately named in Central Yup'ik all are classed by biologists as "Dolly Varden." Distinctions are made in Yup'ik depending upon the condition of the flesh for drying, harvest locations, and harvest methods (Fall et al. 1996).

Table VI-1. Subsistence Salmon Harvest by Species, by District and Location Fished, Bristol Bay, 1999*

Area and River System	Permits Issued	Estimated Number of Salmon Harvested					
		Sockeye	Chinook	Chum	Pink	Coho	Total
NAKNEK-KVICHAK DISTRICT	528	85,315	1,567	725	210	856	88,674
Naknek River ¹	312	27,592	568	528	159	701	29,549
Kvichak River/Iliamna Lake:	216	57,723	999	197	51	155	59,125
Alagnak River	1	65	0	0	0	0	65
Chekok	1	250	0	0	0	0	250
Igiugig	2	110	0	10	0	0	120
Iliamna Lake	23	3,528	108	1	0	30	3,667
Kokhanok	22	12,324	55	4	0	0	12,383
Kvichak River	21	3,328	403	23	15	65	3,835
Lake Clark	69	11,287	0	0	0	0	11,287
Levelock	3	527	8	40	4	55	633
Newhalen River	43	10,933	425	118	32	5	11,513
Nondalton Village	2	580	0	0	0	0	580
Pedro Bay	16	5,692	0	1	0	0	5,693
Six Mile Lake	13	9,099	0	0	0	0	9,099
EGEGIK DISTRICT ²	42	2,434	106	35	2	806	3,384
UGASHIK DISTRICT ³	25	1,365	35	5	0	271	1,675
NUSHAGAK DISTRICT	548	29,387	10,056	2,408	123	3,992	45,969
Wood River ⁴	115	4,820	1,768	269	7	660	7,524
Lower Nushagak River ⁵	33	1,381	1,747	160	4	55	3,348
Upper Nushagak River ⁶	44	2,556	2,477	665	22	244	5,964
Dillingham Beaches ⁷	258	14,031	2,416	1,038	36	2,062	19,584
Nushagak Bay Commercial ⁸	75	3,579	927	253	41	937	5,738
Igushik/Snake River	22	3,020	721	23	13	34	3,811
Nushagak, Site Unspecified	1	0	0	0	0	0	0
TOGIAC DISTRICT ⁹	76	3,780	1,244	479	84	217	5,804
TOTAL BRISTOL BAY	1,219	122,281	13,009	3,653	420	6,143	145,506

* Harvests are extrapolated for all permits issued, based on those returned and on the area fished as first recorded on the permit. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,219 permits issued for the management area, 1,157 were returned (94.9%).

¹ Includes Mile 5 North, Naknek River General, Powerline-North, North and South Savonoski, South Naknek Beach, and Telephone Point-North.

² Includes Egegik river and beach

³ Includes Point Point and Ugashik

⁴ Includes Dragnet, Aleknagik area, Muklung River, Red Bluff, and Upper and Lower Wood River General

⁵ Includes Black Point, Grassy Island, and Lewis Point

⁶ Includes Ekwook Area, Kokwok River, New Stuyahok Area, Koliganek Area, Mulchatna River, and Portage Creek

⁷ Includes Bradford Point, City Dock, Kanakanak, Scandinavia, Skinner, Snag Point, and Squaw Creek

⁸ Includes Clark's Point, Ekuk, Etolin Point, Nushagak Point, Protection Point, and Queen's Slough.

⁹ Includes Togiak village and Togiak River

Source: Bristol Bay Subsistence Permit Data Base, ADF&G

Table VI-2. Historic Subsistence Salmon Harvests: Bristol Bay Management Area, 1979 - 1999¹

YEAR	Permits		Estimated Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1979	829		10,300	116,500	7,300	7,700	500	142,300
1980	1,243		14,100	168,600	7,300	13,100	10,000	213,100
1981	1,121		13,000	132,100	12,200	11,500	2,600	171,400
1982	806		13,700	110,800	11,500	12,400	8,600	157,000
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

1995-1999								
Average	1,170	1,056	16,339	113,855	7,082	4,172	1,328	142,777

1990-1999								
Average	1,169	1,025	16,623	122,389	8,674	6,000	2,075	155,762

All Years								
Average	1,059	923	14,415	129,674	9,330	8,163	3,279	164,861

¹ Data for 1983 through 1998 may differ from data previously reported in annual management reports. The number of permits issued and returned has been updated. Also, data have been expanded to reflect community of residence of permit holders.

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table VI-3. Bristol Bay Subsistence Salmon Harvest by Species and Community of Residence, 1999.

Community of Residence	Permits		Estimated Number of Salmon Harvested					Total
	Issued	Returned	Sockeye	Chinook	Chum	Pink	Coho	
Aleknagik	22	22	1,229	235	13	0	55	1,532
Clarks Point	15	15	502	207	84	23	402	1,218
Dillingham	342	338	17,129	4,332	1,338	42	2,633	25,474
Egegik	24	22	1,600	135	44	2	859	2,640
Ekwok	12	12	1,094	446	218	19	93	1,870
Igiugig	5	5	1,608	386	0	0	35	2,029
Iliamna	34	33	8,658	109	1	0	0	8,768
King Salmon	103	91	6,972	203	174	35	379	7,763
Kokhanok	20	18	11,917	0	0	0	0	11,917
Koliganek	18	18	1,164	1,065	411	1	131	2,772
Levelock	5	4	1,526	18	48	19	75	1,685
Manokotak	18	18	2,643	700	23	13	34	3,413
Naknek	110	95	12,970	218	160	41	360	13,748
New Stuyahok	47	45	1,640	3,021	345	51	117	5,173
Newhalen	15	15	7,716	102	0	0	0	7,818
Nondalton	27	27	18,064	0	0	0	0	18,064
Pedro Bay	17	15	5,005	0	0	0	0	5,005
Pilot Point	13	12	1,048	46	28	0	141	1,262
Port Alsworth	46	45	4,395	0	0	0	0	4,395
Portage Creek	2	2	1	55	3	0	0	59
South Naknek	44	42	2,422	120	172	85	322	3,121
Togiak	73	70	3,664	1,163	460	84	217	5,588
Twin Hills	1	1	26	72	11	0	0	109
<hr/>								
Subtotal, Bristol Bay Communities	1,013	965	112,991	12,631	3,531	416	5,852	135,422
<hr/>								
Subtotal, Other Alaska Communities	206	192	9,289	378	122	4	291	10,084
<hr/>								
Grand Total	1,219	1,157	122,281	13,009	3,653	420	6,143	145,506

Table VI-4. Uses and Harvests of Fish Other Than Salmon, Bristol Bay Communities¹

Community and Year	Percentage of Households					Average Pounds Harvested	
	Use	Fish for	Harvest	Receive	Give	Per Household	Per Person
Aleknagik 89	94.7	89.5	89.5	73.7	71.1	208.3	61.4
Clark's Point 89	94.1	82.4	82.4	82.4	70.6	113.4	34.4
Dillingham 84	75.0	56.2	54.9	39.9	19.6	51.6	17.5
Egegik 84	64.0	60.0	60.0	24.0	40.0	36.5	15.7
Ekwok 87	75.9	72.4	62.1	62.1	37.9	229.4	68.6
Igiugig 92	100.0	100.0	100.0	80.0	80.0	392.0	100.5
Iliamna 91	87.0	73.9	73.9	65.2	43.5	249.7	76.6
King Salmon 83			76.7			48.1	15.9
Kokhanok 92	91.7	86.1	86.1	72.2	61.1	469.9	105.7
Koliganek 87	92.9	81.0	81.0	69.0	57.1	369.7	95.3
Levelock 92	90.0	76.7	73.3	76.7	63.3	186.6	65.9
Manokotak 94	100.0	96.0	96.0	98.0	87.0	327.2	65.9
Naknek 83			75.0			58.0	18.6
New Stuyahok 87	100.0	85.0	82.5	82.5	62.5	171.9	36.0
Newhalen 91	100.0	96.2	92.3	73.1	46.2	185.1	37.6
Nondalton 83		90.5	90.5	23.8		906.4	174.6
Pedro Bay 96	76.9	53.8	53.8	53.8	30.8	85.6	25.9
Pilot Point 87	94.1	94.1	94.1	35.3	58.8	55.8	15.5
Port Alsworth 83		61.5	61.5	7.7		42.0	11.6
Port Heiden 87	91.9	62.2	62.2	70.3	45.9	32.6	11.7
South Naknek 92	85.7	77.1	74.3	68.6	48.6	64.4	20.1
Togiak 94	98.0	96.0	96.0	86.0	72.0	245.4	53.1
Ugashik 87	100.0	100.0	100.0	0.0	40.0	72.2	36.1

¹ Information for the most recent year for which data are available. Data not available for Twin Hills.

Source: Scott et al. 2000; BBNA and ADF&G 1996

Table VI-5. Nonsalmon Finfish Known to be Used for Subsistence Purposes in the Bristol Bay Area

<u>Common English Name</u>	<u>Scientific Name</u>	<u>Yup'ik Name</u>	<u>Dena'ina Name</u>
Arctic Grayling	<i>Thymallus arcticus</i>	<i>Nakrullugpak</i>	<i>Ch'dat'an</i>
Blackfish	<i>Dallia pectoralis</i>	<i>Can'giiq</i>	<i>Huzhegh</i>
Burbot	<i>Lota lota</i>	<i>Manignaq^a</i> <i>Atgiaq^b</i>	<i>Ch'unya</i>
Dolly Varden ^c	<i>Salvelinus malma</i>	<i>Yugyaq^d</i> <i>Anerrluaq</i> <i>Anyuk</i>	<i>Qak'elay</i>
Lake Trout	<i>Salvelinus namaycush</i>	<i>Cikignaq</i>	<i>Zhuk'udghuzha</i>
Longnose Sucker	<i>Catostomus catostomus</i>	<i>Cungartak</i>	<i>Duch'ehdi</i>
Northern Pike	<i>Esox lucius</i>	<i>Cuukvak</i>	<i>Ghelguts'i</i>
Rainbow Smelt	<i>Osmerus mordax</i>	<i>Iqalluaq</i>	
Rainbow Trout	<i>Oncorhynchus mykiss</i>	<i>Talaariq</i>	<i>Tuni</i>
Broad Whitefish ^e	<i>Coregonus nasus</i>	<i>Akakiik</i>	<i>Telay</i>
Humpback Whitefish ^e	<i>Coregonus pidschian</i>	<i>Uraruq</i>	<i>Q'untuq'</i>
Round Whitefish ^e	<i>Prosopium cylindraceum</i>	<i>Uraruq</i>	<i>Hesten</i>
Least Cisco	<i>Coregonus sardinella</i>	<i>Cavirrutnaq</i>	<i>Ghelguts'i k'una</i>
Herring, Pacific	<i>Clupea harengus pallasii</i>	<i>Iqalluarpak</i>	
Herring Spawn on Kelp		<i>Melucuaq</i>	
Starry Flounder	<i>Platichthys stellatus</i>	<i>Naterna</i>	
Halibut	<i>Hippoglossus stenolepis</i>	<i>Naternarpak</i>	
Pacific Cod	<i>Cadus macrocephalus</i>	<i>Ceturrnaq</i>	
Sculpin	Unknown	<i>Kayutaq</i>	
Capelin	<i>Mallotus villosus</i>	<i>Cikaaq</i>	
Yellowfin Sole	<i>Limanda aspera</i>	<i>Sagiq</i>	

^a Nushagak River villages.

^b Manokotak, Aleknagik, Twin Hills, Togiak.

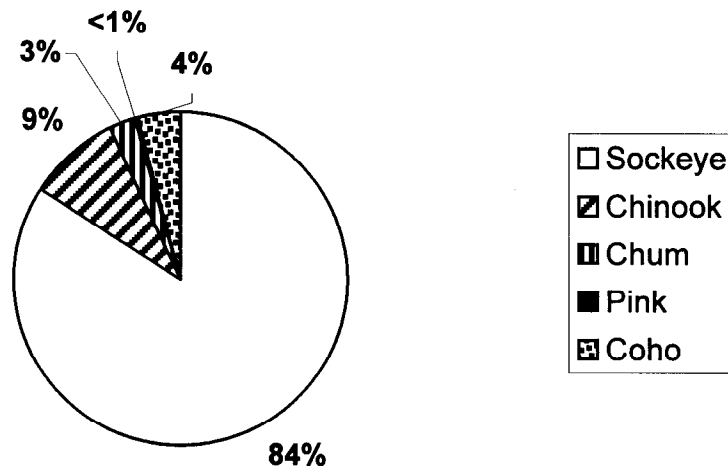
^c Also includes the closely related Arctic char, *Salvelinus alpinus*.

^d At Togiak, Manokotak, and Aleknagik, and perhaps elsewhere, there are three Yup'ik names for Dolly Varden/Arctic char. *Yugyak* probably refers to resident Dolly Varden/char. *Anerrluaq*, called "Togiak trout" in the local English dialect, probably refers to anadromous fish taken in fresh water. Finally, *anyuk* or "sea run dollies" are Dolly Varden or 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 used for round whitefish in the Togiak and Nushagak drainages.

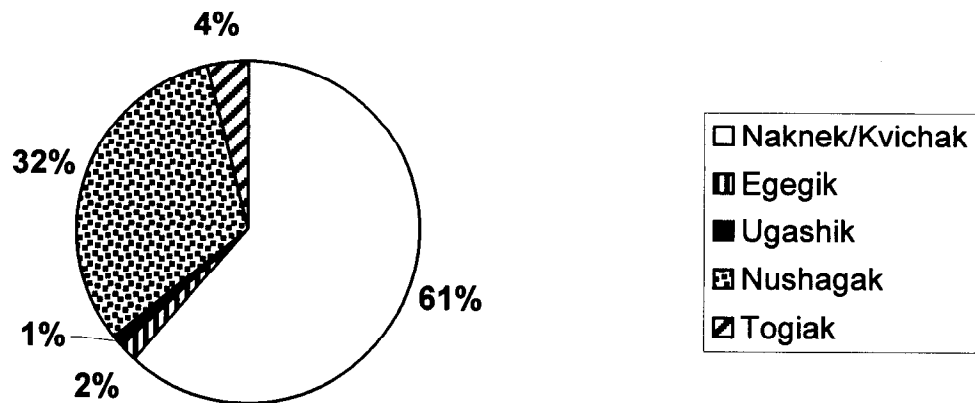
Source: Fall et al. 1996

Figure VI-1. Composition of Bristol Bay Area Subsistence Salmon Harvest by Species, 1999



N = 145,506 salmon, based on annual harvest assesement program with subsistence permits

Figure VI-2. Subsistence Salmon Harvests by District, Bristol Bay Management Area, 1999



N = 145,506 salmon, based on annual harvest assesement program with subsistence permits

VII. CHIGNIK AREA

BACKGROUND

The Chignik Management Area 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) (estimated population 103 in 1999), Chignik Lagoon (population 68), Chignik Bay (population 136), Ivanof Bay (population 29), and Perryville (population 102) (ADLWD 2000). All of these communities are within the Lake and Peninsula Borough.

In the early 1990s, the Division of Subsistence of ADF&G conducted detailed research on patterns of subsistence use of fisheries resources in the Chignik Management Area. The research findings are summarized in Hutchinson-Scarborough and Fall (1996). A more recent update with more detail on subsistence uses of salmon by Perryville residents is also available (Hutchinson-Scarborough and Fall 1999).

REGULATIONS

A subsistence permit is required for fishing within the Chignik Management Area, which must be used to record daily salmon harvests. Permits must be returned to the department by December 31. There is a 250 salmon annual limit. Legal gear includes seine and gillnets. Purse seines may not be used in Chignik Lake. There is no closed season for subsistence salmon fishing. However, commercial fishing license holders may not subsistence fish for salmon from 48 hours before the first commercial salmon fishing opening through September 30. Salmon may not be taken in the Chignik River upstream from the department weir site or counting tower, in Black Lake, or any tributary to Black and Chignik lakes.

HARVEST ASSESSMENT PROGRAM

The Division of Commercial Fisheries conducted the first subsistence salmon fisheries harvest assessment in the Chignik Area in 1976. Subsistence harvest assessments for salmon have been conducted annually since then. The Division of Subsistence took over responsibility for running the harvest assessment program in 1993. Permits are issued on 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 local organizations. Permits are also issued on 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. Non-responses are followed up with reminder letters, and phone calls are made where phone numbers are known if further follow-up is required. Also, face-to-face household interviews have been conducted since 1997 to collect

harvest information from households that do not obtain permits and to add late season harvest information not recorded on permits. Local survey technicians attempt to contact all households in the Chignik area. The surveys are generally conducted during January, February, and March. Respondents are asked questions similar to those on the permit, but additional questions regarding late season harvests and whether or not their subsistence needs were met are also asked.

In 1993, the Division of Subsistence, ADF&G, obtained copies of all available subsistence permits for the Chignik Management Area 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 AMRs differ slightly from that reported in earlier AMRs for several reasons. There are small discrepancies in some years for the number of permits issued or returned. Estimated harvests in earlier AMRs 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 local vendors to issue permits and post-season surveys by department staff and local 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 local permit vendors, research assistants, and local 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 1999

Since 1980, the number of subsistence salmon permits issued for the Chignik Area has averaged 95 per year, with 61 percent returned. Since 1993, the average has been 141 permits issued and 74 percent returned. The recent 5-year average (1995 through 1999) is 113 permits issued, and 82 percent returned. In 1999, 106 permits were issued and 88 were returned (83 percent) (Table VII-1). Of all permits issued, 98 (92.5 percent) were issued to residents of Chignik Area communities, and 8 (7.5 percent) were issued to residents of other Alaska communities (Table VII-2).

In 1999, the estimated subsistence salmon harvest for the Chignik Area was 12,290 fish (Table VII-1). This was above the long-term average (10,914 salmon) but slightly lower than the average since 1993 (15,194 salmon). The 1999 subsistence harvest was made up of 74 percent sockeye, 14 percent coho, 10 percent pink, 2 percent chinook, and 1 percent chum salmon (Fig. VII-1). Of the total harvest, local residents took 11,662 salmon (94.9 percent) and other Alaska residents harvested 628 salmon (5.1 percent) (Table VII-2; Fig. VII-2).

In 1999, the largest number of salmon (7,364; 59.9 percent) was harvested in Chignik Bay and Chignik Lagoon (Table VII-3). Most of this harvest was sockeyes (92.7 percent). Subsistence

harvests in the Perryville and Western districts numbered 2,843 salmon (23.1 percent), with most of this coho and pink, accounting for most of the Area's subsistence harvest of these species. Estimated subsistence harvests in Chignik Lake totaled 2,082 salmon (16.9 percent), mostly sockeye salmon. This total includes spawning sockeye salmon, locally called "redfish," which are harvested in the fall and early winter. This estimate is very likely too low, because only 11 Chignik Lake village households provided subsistence harvest data for 1999.

OTHER CHIGNIK AREA SUBSISTENCE FISHERIES

Although state regulations require a subsistence permit for harvesting trout and char, there are no annual harvest assessment programs for the other subsistence fisheries of the Chignik Area. The Alaska Board of Fisheries has identified subsistence uses of all finfish in the Chignik Area, except rainbow trout and steelhead for which no finding has been made. Table VII-4 lists the finfish other than salmon for which subsistence uses have been documented through systematic household interviews.

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

The reader should consult Morris 1987, Fall et al. 1995, and Hutchinson-Scarborough and Fall 1996 for more background on these subsistence fisheries for nonsalmon finfish and for shellfish. For harvest estimates based on systematic household interviews, see the Division of Subsistence Community Profile Database (Scott et al. 2000).

Table VII-1. Historic Subsistence Harvests of Salmon, Chignik Management Area, 1976 - 1999¹

Year	Number of Permits		Percentage Returned	Estimated Number Fished		Estimated Harvests					
	Issued	Returned				Chinook	Sockeye	Coho	Pink	Chum	Total
1976						100	6,000	1,500	500	150	8,250
1977						50	9,700	2,400	1,800	600	14,550
1978						50	6,000	500	2,100	600	9,250
1979						14	7,750	34	262	0	8,060
1980	82	37	45.1%	70.0	85.4%	6	12,475	32	478	169	13,160
1981	29	7	24.1%	18.0	62.1%	0	2,049	0	0	0	2,049
1982	59	15	25.4%	56.0	94.9%	3	8,532	12	2	0	8,548
1983	32	21	65.6%	26.5	82.8%	0	3,078	1,319	1,250	850	6,497
1984	77	64	83.1%	57.7	74.9%	23	8,747	464	330	204	9,768
1985	59	48	81.4%	49.0	83.1%	1	7,177	50	26	25	7,279
1986	74	38	51.4%	70.0	94.6%	4	10,347	205	98	77	10,730
1987	NA	NA	NA	NA	NA	10	7,021	278	204	261	7,774
1988	80	34	42.5%	77.0	96.3%	9	9,073	1,455	54	142	10,733
1989	68	23	33.8%	46.8	68.8%	24	7,552	384	81	147	8,187
1990	72	23	31.9%	62.0	86.1%	103	8,099	210	470	115	8,996
1991	95	58	61.1%	83.0	87.4%	42	11,483	13	275	81	11,893
1992	98	19	19.4%	85.8	87.5%	55	8,648	709	305	145	9,862
1993	202	141	69.8%	163.6	81.0%	122	14,710	3,765	1,265	642	20,503
1994	219	122	55.7%	159.9	73.0%	165	13,978	4,055	1,720	382	20,300
1995	111	95	85.6%	95.2	85.8%	98	9,563	1,191	723	150	11,725
1996	119	104	87.4%	104.1	87.5%	48	7,357	2,126	2,204	355	12,090
1997	126	103	81.7%	118.7	94.2%	28	13,442	2,678	2,035	840	19,023
1998	104	72	69.2%	89.6	86.2%	91	7,750	1,390	1,007	186	10,424
1999	106	88	83.0%	99.1	93.5%	243	9,040	1,679	1,191	136	12,290
Average	95.4	58.5	61.4%	80.6	84.5%	54	8,732	1,102	766	261	10,914
Average											
1993-99	141.0	103.6	73.5%	114.5	81.2%	114	10,834	2,412	1,449	385	15,194
Average											
1995-99	113.2	92.4	81.6%	101.3	89.5%	102	9,430	1,813	1,432	333	13,110

Sources: Quimby and Owen 1994:90, for 1976 - 1979 and 1987; Division of Subsistence, ADF&G, Alaska Subsistence Fisheries Database, for the remaining years.

Table VII-2. Chignik Area Subsistence Salmon Harvests by Species and Community of Residence, 1999.

Community of Residence	Permits		Estimated Number of Salmon Harvested					Total
	Issued	Returned	Chinook	Sockeye	Coho	Pink	Chum	
Chignik	11	11	129	825	10	23	10	997
Chignik Lagoon	31	29	28	3,295	86	0	3	3,411
Chignik Lake	11	9	51	1,924	112	73	0	2,161
Ivanof Bay	2	2	2	105	215	60	40	422
Perryville	43	30	24	2,309	1,254	1,031	53	4,671
Subtotal, Chignik Area Communities	98	81	234	8,457	1,677	1,187	106	11,662
Subtotal, Other Alaska Communities	8	7	9	583	2	4	30	628
Grand Total	106	88	243	9,040	1,679	1,191	136	12,290

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database

Table VII-3. Chignik Area Subsistence Salmon Harvests by Species and Subarea of Harvest, 1999.

Subarea of Harvest ¹	<u>Estimated Number of Salmon Harvested²</u>					
	Chinook	Sockeye	Coho	Pink	Chum	All Salmon
Chignik Bay and Lagoon	88	6,830	270	113	63	7,364
Chignik Lake	131	1,882	69	0	0	2,082
Perryville	24	328	1,340	1,078	73	2,843
Grand Total	243	9,040	1,679	1,191	136	12,289

¹ 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 Ivan Bay, Mitrofan Bay, the Kametolook River and other streams near Perryville, and Ivanof Bay. In recent years there have been no subsistence harvests reported for the Eastern District.

² Estimated based on extrapolating harvests recorded on returned permits. In 1999, 106 permits were issued and 88 were returned (83.0 percent).

Table VII-4. Finfish Other Than Salmon Used for Subsistence Purposes in Communities of the Chignik Management Area, 1989

Common English Name	Scientific Name	Percentage of Households Using in:				
		Chignik Bay	Chignik Lagoon	Chignik Lake	Ivanof Bay	Perryville
Herring	<i>Clupea harengus pallasii</i>	22.9	46.7	28.6	28.6	14.8
Herring Spawn on Kelp	---	14.3	0.0	4.8	0.0	3.7
Pollock	<i>Theragra chalcogramma</i>	2.9	0.0	0.0	0.0	0.0
* Rainbow Smelt	<i>Osmerus mordax</i>	11.4	0.0	47.6	0.0	0.0
Halibut	<i>Hippoglossus stenolepis</i>	88.6	100.0	66.7	100.0	96.3
Rainbow Trout	<i>Salmo gairdneri</i>	2.9	0.0	23.8	57.1	7.4
Dolly Varden	<i>Salvelinus malma</i>	22.9	6.7	38.1	85.7	55.6
Eulachon (Candlefish)	<i>Thaleichthys pacificus</i>	22.9	40.0	33.3	100.0	77.8
Pacific Cod (Gray)	<i>Gadus macrocephalus</i>	28.6	60.0	47.6	85.7	63.0
Sculpin	<i>Hemilepidotus sp.</i>	11.4	0.0	4.8	0.0	29.6
Starry Flounder	<i>Platichthys stellatus</i>	5.7	0.0	19.0	14.3	0.0
Greenling	<i>Hexagrammos decagrammus</i>	11.4	0.0	9.5	0.0	29.6
Grayling	<i>Thymallus arcticus</i>	0.0	0.0	0.0	14.3	0.0
Black Cod	<i>Anoplopoma fimbria</i>	0.0	6.7	4.8	0.0	0.0
Steelhead	<i>Salmo gairdneri</i>	0.0	13.3	4.8	0.0	0.0
Black Rockfish	<i>Sebastes melanops</i>	0.0	6.7	0.0	0.0	22.2
Red Rockfish	<i>Sebastes ruberrimus</i>	2.9	0.0	0.0	0.0	3.7
Any Fish Other Than Salmon		89.0	100.0	86.0	100.0	96.0

* 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 Nanek, among other communities.

Source: Scott et al. 2000; Hutchinson-Scarborough and Fall 1996

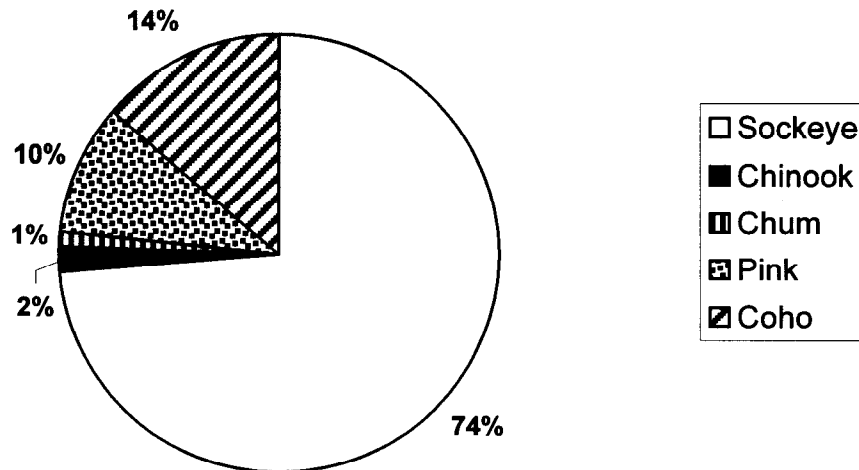
Table VII-5. Marine Invertebrates Used for Subsistence Purposes in Communities of the Chignik Area, 1989

Common English Name	Scientific Name	Percentage of Households Using in:				
		Chignik Bay	Chignik Lagoon	Chignik Lake	Ivanof Bay	Perryville
Razor Clams	<i>Siliqua patula</i>	14.3	33.3	23.8	42.9	37.0
Butter Clams	<i>Saxidomus giganteus</i>	71.4	66.7	52.4	71.4	40.7
Horse Clams	<i>Tresus capax</i>	11.4	0.0	0.0	0.0	3.7
Cockles	<i>Clinocardium sp.</i>	37.1	6.7	47.6	100.0	70.4
Pinkneck Clams (redneck)	<i>Spicula polynuma</i>	0.0	0.0	0.0	71.4	3.7
Littleneck (Steamer) Clams	<i>Protothaca staminea</i> *	11.4	0.0	0.0	28.6	11.1
Chitons, Black	<i>Katharina tunicata</i>	48.6	26.7	57.1	100.0	92.6
Chitons, Red	<i>Cryptochiton stelleri</i>	0.0	0.0	0.0	85.7	11.1
Mussels (blue)	<i>Mytilus edulis</i>	8.6	6.7	0.0	14.3	14.8
Octopus	<i>Octopus dofleini</i>	42.9	20.0	47.6	71.4	51.9
Sea Urchins	<i>Strongylocentrotus sp.</i>	28.6	0.0	47.6	100.0	88.9
Sea Cucumber	Unidentified	0.0	0.0	0.0	0.0	3.7
Shrimp	<i>Pandalus sp.</i>	8.6	0.0	4.8	0.0	0.0
Scallops	<i>Pecten caurinus</i>	2.9	0.0	0.0	0.0	0.0
King Crab	<i>Paralithodes camtschatica</i>	40.0	20.0	33.3	42.9	0.0
Dungeness Crab	<i>Cancer magister</i>	37.1	40.0	47.6	100.0	51.9
Tanner Crab	<i>Chionoecetes bairdi</i>	62.9	66.7	14.3	0.0	3.7
Snails	<i>Neptunea sp.</i>	2.9	0.0	0.0	0.0	3.7
Limpets	<i>Acmaeidae sp.</i>	2.9	0.0	0.0	0.0	3.7
Any Marine Invertebrate		89.0	87.0	81.0	100.0	96.0

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

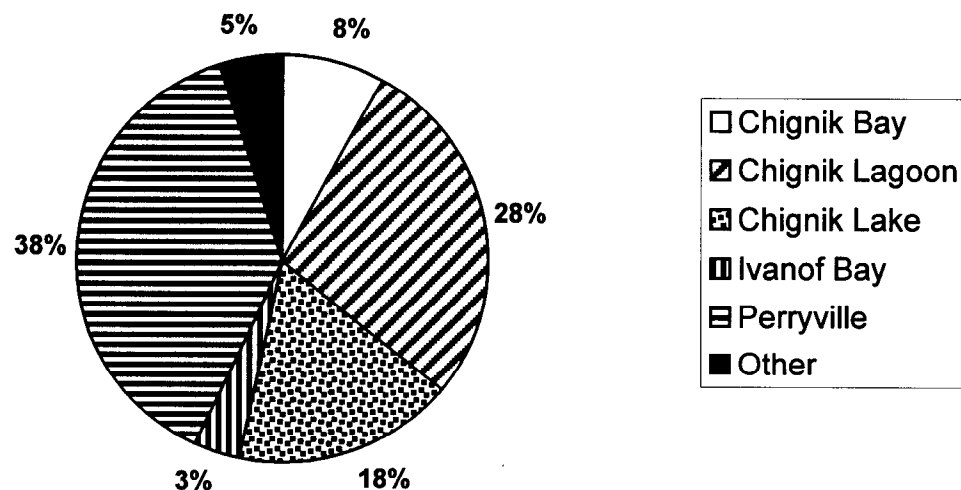
Source: Scott et al. 2000; Hutchinson-Scarborough and Fall 1996

Figure VII-1. Composition of Chignik Area Subsistence Salmon Harvest by Species, 1999



N = 12,290 salmon, based on annual harvest assessment program with permits and household surveys.

Figure VII-2. Subsistence Salmon Harvests by Community, Chignik Management Area, 1999



N = 12,290 salmon, based on annual harvest assessment program with permits and household surveys.

VIII: ALASKA PENINSULA AREA

BACKGROUND

The Alaska Peninsula Area includes all Pacific Ocean waters of Alaska between a line extending southeast from the tip of Kupreanof Point and the longitude of the tip of Cape Sarichef, and all Bering Sea waters of Alaska east of the longitude of the tip of Cape Sarichef and south of the latitude of the tip of Cape Menshikof. The communities of the Alaska Peninsula Area are Port Heiden (estimated population 125 in 1999), Nelson Lagoon (population 87), False Pass (population 48), Cold Bay (population 71), King Cove (population 691), and Sand Point (population 842) (ADLWD 2000). 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 is required for fishing in the Alaska Peninsula Area, which must be used to record daily harvests. There is a 250 salmon annual limit. Legal gear includes seine and gillnets. Set gillnets may not exceed 100 fathoms in length. Salmon may be taken at any time except within 24 hours before and within 12 hours following each open weekly commercial salmon fishing period within a 50-mile radius of the area open to commercial salmon fishing. A few small areas closed to subsistence salmon fishing are listed in 5 AAC 01.425.

HARVEST ASSESSMENT PROGRAM

The Division of Commercial Fisheries of ADF&G 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 turned in their permits at the end of the previous fishing season. Sand Point and Cold Bay residents are issued permits on request at the Sand Point and Cold Bay ADF&G offices. Permits are also issued on request at other ADF&G offices and by mail to people who call in and request them. Regulations require that permits be turned in 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, their name is dropped from the mailing list for the next year. 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 1999

Since 1985, the number of subsistence salmon permits issued for the Alaska Peninsula Area has averaged 213 per year (Table VIII-1). The recent five-year average (1995 through 1999) was 226 permits. However, only 185 subsistence salmon fishing permits were issued for the Alaska Peninsula Area in 1999, the lowest number since 1988 and a sharp decrease from 233 permits issued in 1998. The response rate was 80 percent in 1999 (148 of 185 permits were returned). Of all permits issued, 142 (76.8 percent) were issued to residents of Area communities, and 43 (23.2

percent) were issued to other Alaska communities (Table VIII-2). Most non-local residents fish at Mortensen's Lagoon on the Cold Bay road system.

In 1999, the estimated subsistence salmon harvest for the Alaska Peninsula Area was 24,843 fish. This was above the long-term average (19,991 salmon) but almost identical with the recent five-year average (24,705 salmon) (Table VIII-2). The 1999 subsistence harvest was made up of 61% sockeye, 20% coho, 9% chum, 9% pink, and 2% chinook salmon (Fig. VIII-1). Of the total harvest, local residents took 20,256 salmon (82%) and other Alaska residents harvested 4,587 salmon (18%) (Table VIII-2; Fig. VIII-2).

In interviews with Division of Subsistence staff, fisheries managers stated that in their view, the subsistence permit system does completely document all subsistence salmon harvesting activities because some fishers fail to 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. 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. 1993a:58-62). At Sand Point in the same year, 41% of interviewed households who reported that they harvested salmon with subsistence methods did not have permits. The estimated total subsistence salmon harvest for Sand Point based on the interviews was 11,338 (+/-2,551), compared to 7,833 based on permit returns (Fall et al. 1993b:61).

Another limitation is that the subsistence permit system for the Alaska Peninsula Area does not account for salmon withheld from commercial catches for home use. Fisheries 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 use at King Cove and 39% at Sand Point were removed from commercial harvests (Fall et al. 1993a:56, Fall et al. 1993b:58).

OTHER SUBSISTENCE FISHERIES

There are no annual harvest assessment programs for the other finfish and shellfish subsistence fisheries of the Alaska Peninsula Area. The Division of Subsistence has conducted one round of systematic household harvest surveys in each of the Area's communities except 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 Community Profile Database (Scott et al. 2000). Table VIII-3 reports the percentage of households in the surveyed communities that used selected non-salmon finfish species in the study year. Generally, Pacific cod, halibut, and Dolly Varden/char were used by the most households. Survey data for marine invertebrates will be reported in future annual reports.

Table VIII-1. Historic Subsistence Salmon Harvests, Alaska Peninsula Area, 1985 - 1999

Year	Permits		Estimated Harvests in Number of Salmon					Total
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	
1985	161	95	4,037	74	7,504	574	1,566	13,755
1986	147	84	5,396	101	2,996	1,779	1,455	11,727
1987	191	144	5,777	193	4,259	1,547	1,943	13,719
1988	183	114	5,501	257	5,646	1,666	1,692	14,762
1989	188	139	10,404	88	3,505	1,213	2,104	17,314
1990	201	157	8,588	246	4,029	736	1,589	15,188
1991	249	185	11,345	458	5,551	1,878	3,551	22,783
1992	229	177	10,739	385	4,267	1,840	2,574	19,805
1993	262	215	12,478	615	5,753	1,189	1,997	22,032
1994	256	213	11,884	674	6,086	2,206	4,406	25,256
1995	260	198	12,716	492	5,021	2,653	3,369	24,251
1996	234	178	12,176	362	7,743	2,569	2,728	25,578
1997	217	172	15,224	420	4,612	2,955	2,885	26,096
1998	233	153	12,920	407	5,820	2,286	1,326	22,759
1999	185	148	15,119	391	4,961	2,136	2,235	24,843
Average Recent 5-Year	213	158	10,287	344	5,184	1,815	2,361	19,991
Average Recent 10-Year	226	170	13,631	414	5,631	2,520	2,509	24,705
Average	233	180	12,319	445	5,384	2,045	2,666	22,859

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database

Table VIII-2. Estimated Subsistence Salmon Harvests, Alaska Peninsula Area,
by Community and Species, 1999

Community	Permits		Estimated Harvests in Number of Salmon					Total
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	
Bear Lake	1	1	151	0	0	0	0	151
Cold Bay	14	12	109	0	1	0	13	123
False Pass	8	7	530	30	1,031	93	169	1,853
King Cove	51	43	5,346	39	3,371	285	746	9,786
Nelson Lagoon	11	8	397	10	45	1	0	454
Port Heiden	3	3	245	25	60	0	0	330
Sand Point	54	41	4,969	263	419	856	1,052	7,560
Subtotal, Area Residents	142	115	11,747	367	4,927	1,235	1,980	20,256
Other Alaska Residents	43	33	3,372	24	34	901	255	4,587
Grand Total	185	148	15,119	391	4,961	2,136	2,235	24,843

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database

Table VIII-3. Percentage of Households Using Selected Non-Salmon Finfish,
Alaska Peninsula Area Communities

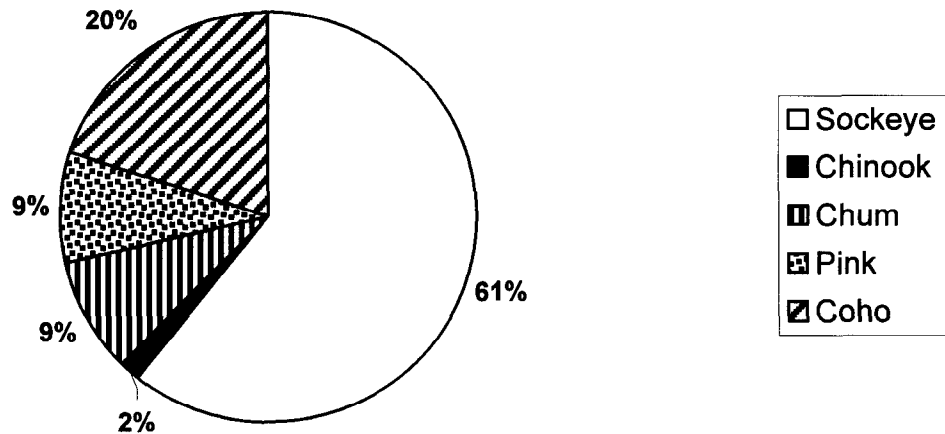
Resource ¹	<u>Percentage of Households Using in Study Year²</u>				
	False Pass	King Cove	Nelson Lagoon	Port Heiden	Sand Point
Pacific Cod	65.0%	44.0%	0.0%	2.7%	60.6%
Sablefish	15.0%	8.0%			12.5%
Greenling	10.0%	5.3%			6.7%
Flounder	20.0%	4.0%	7.7%	10.8%	3.8%
Halibut	95.0%	73.3%	0.0%	21.6%	89.4%
Herring	30.0%	22.7%		2.7%	13.5%
Herring Spawn on Kelp	0.0%	2.7%		2.7%	1.0%
Smelt	0.0%	1.3%		48.6%	4.8%
Rockfish	5.0%	36.0%			60.6%
Sculpin	35.0%	6.7%			3.8%
Pollock		2.7%			1.9%
Lake Trout				10.8%	
Dolly Varden/Char	75.0%	66.7%	53.8%	75.7%	51.0%
Rainbow Trout/Steelhead	5.0%	4.0%		2.7%	30.8%

¹ Most commonly used types in the study year; uses of other species occurred, or may occur in other years. Blank cells indicate no data for that resource.

² Study year = 1987/88 for False Pass; 1986/87 for Nelson Lagoon and Port Heiden; 1992 for King Cove and Sand Point.

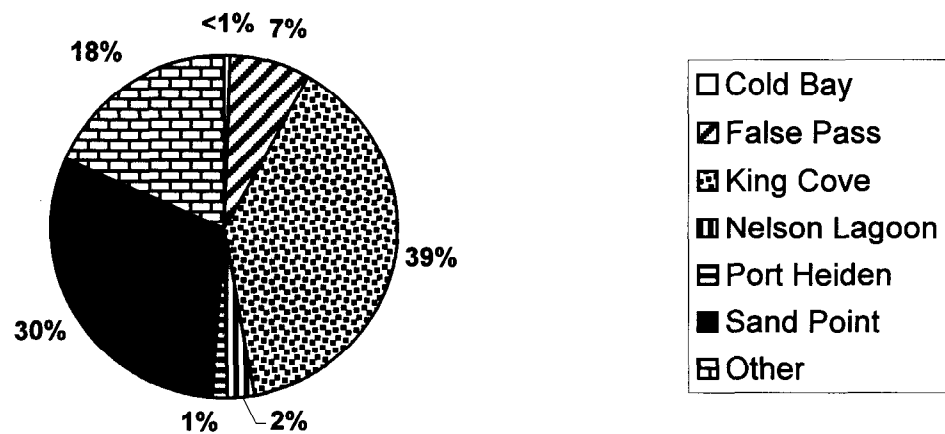
Source: Scott et al. 2000

Figure VIII-1. Composition of Alaska Peninsula Area Subsistence Salmon Harvest by Species, 1999



N = 24,843 salmon; based on annual harvest assessment program with permits.

Figure VIII-2. Subsistence Salmon Harvests by Community, Alaska Peninsula Management Area, 1999



N = 24,843 salmon; Nelson Lagoon includes Bear Lake; based on annual harvest assessment program with permits.

IX. ALEUTIAN ISLANDS AREA

UNALASKA DISTRICT: SUBSISTENCE SALMON FISHERY

Background

The Aleutian Islands Area includes all waters of Alaska west of the longitude of the tip of Cape Sarichef, east of 172° east longitude, and south of 54° 36' north latitude (5 AAC 01.350). For subsistence purposes, the Aleutian Islands Area is divided into five management districts. From east to west, they are the Akutan District, Unalaska District, Umnak District, Atka-Amlia Islands District, and the Adak District. The major communities of the Aleutian Islands Area are Akutan (estimated population 408 in 1999), Unalaska/Dutch Harbor (population 4,178), Nikolski (population 39), Atka (population 105), and Adak (population 106) (ADLWD 2000). Akutan is part of the Aleutians East Borough; the other communities are not part of any organized borough.

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

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 no more than 25 salmon, plus an additional 25 salmon for each member of the same household who are listed on the permit. 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 from 6 a.m. until 9 p.m. from January 1 through December 31, except from June 1 through September 15, a salmon seine vessel may not be used to take salmon for subsistence purposes 24 hours before, during, or 24 hours after an open commercial fishing period within a 50-mile 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. Subsistence gillnets must be attended at all times while fishing. Waters within the Unalaska District that are closed to subsistence fishing for salmon are defined in 5 AAC 01.375.

Harvest Assessment Program

The Division of Commercial Fisheries of ADF&G has issued subsistence salmon harvest permits for the Unalaska District since 1979. Permits are issued only in person at the ADF&G office in Dutch Harbor. Unalaska District permits may be dropped off or mailed back to the ADF&G office in Dutch Harbor at the end of the fishing season. They are required by regulation to be returned by October 31. Reminder letters are sent around the first of November to all permit holders who have not turned in their permits by that time. Data from returned permits are tabulated by species and fishing area. Data from successfully fished permits are then expanded to represent fish taken by all permit holders, including those who did not return permits.

Subsistence Salmon Harvests in 1999

In 1999, 208 subsistence salmon permits were issued for the Unalaska District, the second highest on record and notably above the long-term average of 135 permits and the recent five – year average of 197 permits. The return rate in 1999 was 74.0 percent (154 of 208 permits) (Table IX-1). Individuals with Unalaska/Dutch Harbor addresses obtained 204 permits (98.1 percent) and other Alaska residents obtained the balance, 4 permits (1.9 percent).

The estimated subsistence harvest of salmon in the Unalaska District in 1999 was 4,779 fish. This is above the long-term average of 4,358 salmon and about the same as the recent five-year average of 4,761 salmon. The 1999 subsistence harvest was composed of 52.0% sockeye, 25.8% coho, 21.8% pink, and 0.3% chum (Fig. IX-1). There was no reported harvest of chinook. Permit holders with Unalaska/Dutch harbor addresses harvested all of the subsistence catch in 1999.

In interviews with Division of Subsistence personnel, ADF&G fisheries managers expressed the view that the permit system covers most subsistence salmon fishing occurring in the Unalaska District. In their view, most subsistence fishers obtain permits. They cite the local presence of Fish and Wildlife Protection officers and a population that is self-enforcing (likely to report violators) as reasons for this belief. Unlike other in other areas, fisheries managers in the Unalaska District feel that commercially caught salmon withheld for subsistence purposes is not a major factor in the Aleutian Islands Area. This is because most commercial fishing occurring in the area is for shellfish and ground fish, not for salmon. Results of a survey of randomly-selected Unalaska households conducted by the Division of Subsistence, found that about 4% of all salmon harvested for home use were removed from commercial catches, 62% were harvested with noncommercial nets, and 34% were taken with rod and reel (Scott et al. 2000).

ADAK DISTRICT

Background

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.

Until phased out from 1993 to 1996, Adak was the site of a navy base and military community, with a population of 4,633 in 1990. With the base closure complete, the population was estimated at 0 in 1997. Since then, a new civilian community has been established. In 2000, the Alaska Boundary Commission approved Adak's application to become a second class city. The estimated population in 1999 was 106 (ADLWD 2000).

Regulations

Prior to 1988, the non-commercial salmon net fishery at Adak was classified as a subsistence fishery. Beginning in 1988, this fishery operated as a personal use fishery. The Board of Fisheries reclassified it again as a subsistence fishery beginning in 1998.

Subsistence regulations in place in 1999 required 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 no more than 25 salmon, plus an additional 25 salmon for each member of the same household who are listed on the permit. 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. The following waters of and around Adak Island and Kagalaska Island were closed to subsistence fishing for salmon (5 AAC 01.375(6)):

- A. all freshwater
- B. all salt waters within 100 yards of a stream terminus.

Harvest Assessment Program

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

Subsistence Salmon Harvests in 1999

Five subsistence salmon permits were issued for the Adak District in 1999. All were returned. The harvest was 164 sockeye salmon and 4 coho salmon (Table IX-2). The coho salmon and all but 10 of the sockeye salmon were harvested along Kagalaska Island with the balance coming from Hidden Bay on Adak Island (Shaul and Dinnocenzo 2000: 4).

For the period 1988 through 1993 during which the navy base operated at Adak, an average of about 49 personal use periods were issued annually. The average annual harvest during that period was 611 salmon (Table IX-2).

OTHER SUBSISTENCE SALMON FISHERIES IN THE ALEUTIAN ISLANDS

Permits are not required for subsistence salmon fishing in the waters fished by the communities of Atka, Akutan, and Nikolski, and there are no annual harvest assessment programs in place. The Division of Subsistence of ADF&G conducted post-season household interviews in Akutan and Nikolski pertaining to 1991 subsistence harvests (all resources), and in Atka pertaining to harvests in 1992 (salmon only) and 1994 (all resources). The results of these interviews for salmon are reported in Table IX-3. Subsistence salmon harvests in Akutan in 1991 totaled 3,268 fish. This harvest consisted primarily of sockeye (1,872 fish), pink (915 fish), and coho (429). At Nikolski in 1991, subsistence salmon harvests totaled 1,902 fish, with sockeye (957 fish), coho (547 fish), and pink (327 fish) making up most of the total. At Atka in 1992, the subsistence salmon harvest totaled 1,454 fish, composed of about equal numbers of sockeye (502 fish), coho (465 fish), and pink salmon (459). Subsistence salmon harvests at Atka were higher in 1994, with a total of 2,387 fish. A substantially larger harvest of pink salmon in 1994 (1,267) accounted for most of the difference from the 1992 estimates.

OTHER SUBSISTENCE FISHERIES IN THE ALEUTIAN ISLANDS AREA

Finfish

There are no annual harvest assessment programs for the other subsistence finfish fisheries of the Aleutian Islands Area. Permits are required for the taking of trout and char, but no permit system is in place. Fish other than salmon may be taken by gear specified in 5 AAC 01.010(a), except that halibut may be taken only a single handheld line with no more than two hooks attached. The Division of Subsistence has conducted systematic household surveys pertaining to a single year's harvests in Akutan (pertaining to 1991), Atka (1994), Nikolski (1991), Saint George (1994), Saint Paul (1994), and Unalaska/Dutch Harbor (1994). Results, including harvest estimates for finfish and shellfish, can be found in the Community Profile Database (Scott et al. 2000).

Shellfish

Permits for the taking of shellfish for subsistence purposes are only required for king and Tanner crab in the portion of the Alaska Peninsula-Aleutian Islands area west of Scotch Cap Light and east of 168° west longitude. Future annual reports will summarize subsistence harvest data from this permit program. As noted above, estimates of subsistence harvests of all marine invertebrates for single study years based on systematic household surveys are available in the Community Profile Database (Scott et al. 2000).

Table IX-1. Historic Subsistence Salmon Harvests, Unalaska District, 1985 - 1999

Year	Permits		Estimated Harvests in Numbers of Salmon					
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	Total
1985	65	22	897	0	208	1,293	20	2,418
1986	121	28	3,449	0	847	2,468	375	7,139
1987	81	49	1,097	0	378	1,780	151	3,406
1988	77	45	966	3	390	2,627	83	4,069
1989	74	42	1,112	2	470	1,292	36	2,912
1990	94	37	2,357	4	681	1,428	100	4,570
1991	89	48	1,294	0	666	1,075	45	3,080
1992	144	102	2,739	7	587	1,723	11	5,067
1993	139	102	2,831	17	697	587	136	4,268
1994	150	120	2,759	1	774	1,053	48	4,635
1995	160	129	4,484	23	484	791	23	5,805
1996	189	123	1,107	5	1,033	492	49	2,686
1997	221	163	4,192	8	864	554	110	5,728
1998	206	161	3,317	4	731	729	26	4,807
1999	208	154	2,485	0	1,234	1,044	16	4,779
Average Recent 5-Year	135	88	2,339	5	670	1,262	82	4,358
Average Recent 10-Year	197	146	3,117	8	869	722	45	4,761
Average	160	114	2,757	7	775	948	56	4,543

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database

Table IX-2. Estimated Personal Use and Subsistence Harvests of Salmon, Adak District, 1988 - 1999

Year	Permits ¹		Estimated Harvest in Number of Salmon					Total
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	
1988	43	29	503	0	23	150	0	676
1989	64	47	382	0	0	117	0	499
1990	61	29	800	0	47	41	0	888
1991	37	31	281	0	6	34	0	321
1992	52	41	572	0	30	4	0	606
1993	36	26	638	0	12	26	0	676
1994 ²	0	0	0	0	0	0	0	0
1995	4	3	156	0	0	0	0	156
1996	6	6	91	0	0	0	0	91
1997 ³	18	12	229	0	0	0	4	233
1998	13	10	399	0	0	25	0	424
1999	5	5	164	0	4	0	0	168
<hr/>								
Average, 1988 - 1993	49	34	529	0	20	62	0	611

¹ Personal use fishery, 1988 to 1997; subsistence fishery, 1998 to present

² US Navy presence at Adak was reduced beginning in 1994; no requests for personal use permits in 1994

³ In 1997, a substantial number of civilians were hired by the Navy to work on a clean-up effort at Adak

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database

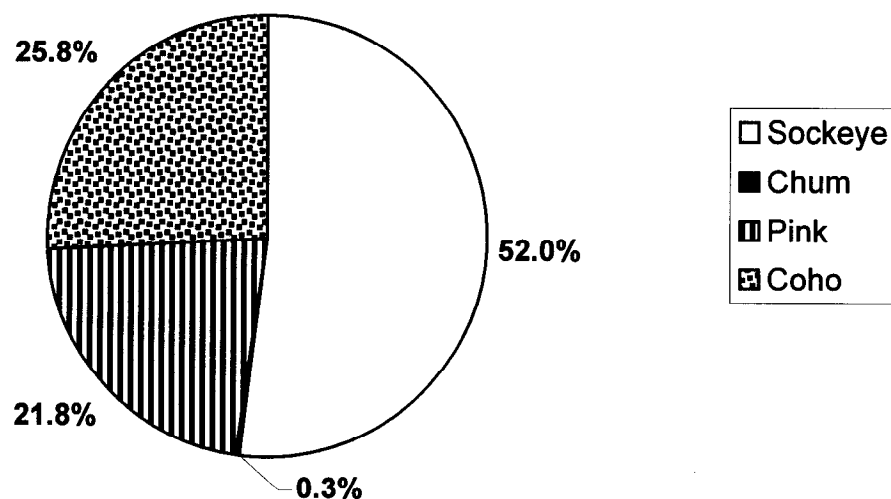
Table IX-3. Estimated Subsistence Harvests of Salmon, Akutan, Atka, and Nikolski

Community	Year	Estimated Number of Households Harvesting	Estimated Harvests in Number of Salmon ¹						
			Chum	Coho	Chinook	Pink	Sockeye	Other/ Unknown	All Salmon
Akutan	1991	24	36	429	10	915	1,872	6	3,268
Atka	1992	18	24	465	4	459	502	0	1,454
Atka	1994	23	133	583	10	1,267	394	0	2,387
Nikolski	1991	12	54	547	0	327	957	17	1,902

¹ Includes harvests for home use by all methods, including subsistence nets, rod & reel, and removal from commercial harvests.

Source: ADF&G, Division of Subsistence Household Surveys; Scott et al. 2000

Figure IX-1. Composition of Unalaska District Subsistence Salmon Harvest by Species, 1999



N = 4,779 salmon; based on annual harvest assessment program with permits.

X: KODIAK AREA

INTRODUCTION

The Kodiak Management Area encompasses the waters of the western Gulf of Alaska surrounding the Kodiak Archipelago and along that portion of the Alaska Peninsula that drains into Shelikof Strait between Cape Douglas and Kilokak Rocks. It also includes Chirikof Island. The major communities within the Area include Akhiok, Chiniak, the Coast Guard Base, Karluk, and Kodiak City. Larsen Bay, Old Harbor, Ouzinkie, and Port Lions. All are within the Kodiak Island Borough, which had a estimated population in 1999 of 13,989 (ADLWD 2000).

REGULATIONS

Permits have been required to harvest salmon for subsistence purposes in the Kodiak Management Area since 1962. Since 1990, all Alaska state residents have been eligible to participate in subsistence salmon fishing in the Kodiak Management Area. In 1999, legal gear for subsistence salmon fishing under state regulations included gillnets and seines, and fishers were required to be physically present while the net was being fished. Generally, fishing was open year-round from 6:00 a.m. to 9:00 p.m. 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 open commercial salmon fishing period. During the same time span, only gillnets could be operated for subsistence purposes from purse seine vessels. Permits allowed fishers to harvest 25 salmon plus 25 additional salmon for each member of the permit holder's household. An additional permit could be obtained if the fisher could demonstrate a need for more fish. Permit holders are required to keep a record of their harvest on the permit. A list of waters closed to subsistence fishing within the Kodiak Management Area appears in 5 AAC 01.525.

HARVEST ASSESSMENT PROGRAM

ADF&G's Division of Commercial Fisheries runs the subsistence salmon harvest assessment program for this management area out of the Kodiak regional office. Permits are mailed each year to people who turned in their permits at the end of the previous fishing season. Subsistence permits are also issued on request at ADF&G offices and by mail to people who call in and request one. In addition, field camp staff at Karluk and Olga Bay issue permits on request. Subsistence fishers mail permits with a harvest record to ADF&G at the end of the season or drop the permits off at the Kodiak office. ADF&G sends reminder letters in February to those permit holders who have not returned their permits by then.

SUBSISTENCE SALMON HARVESTS IN 1999

In 1999, subsistence fishers returned 1,438 subsistence permits to the Department (Table X-1). (Information on the number of permits issued was not available when this report was prepared.) Of all returned permits, 1,308 (91.0 percent) were held by residents of Kodiak Island Borough communities, and 130 (9.0 percent) were issued to other Alaska residents (Table X-2).

Individuals and families with Kodiak city addresses accounted for a very large number of the total permits in 1999 (1,120; 77.9 percent of all permits returned).

In the Kodiak Area, tabulated subsistence harvest data are not expanded. Results of the assessment program reflect only the reported harvests of subsistence fishers who obtained and returned permits. The estimated total Kodiak Area subsistence salmon harvest in 1999 was 33,480 fish (Table X-1). This number is very similar to both the recent 5-year average of 33,040 salmon and recent 10-year average of 31,707 salmon. Of the entire management area harvest, 32,400 salmon (96.8%) were harvested by residents of Kodiak Island Borough communities, and 1,080 salmon (3.2%) were harvested by other Alaska residents (Table X-2).

In 1999, the Kodiak Area subsistence salmon harvest was composed of 79.1% sockeye, 14.7% coho, 3.8% pink, 1.2% chinook, and 1.2% chum salmon (Fig. X-1).

In interviews with Division of Subsistence staff, fisheries managers within Division of Commercial Fisheries expressed uncertainty about the extent to which subsistence salmon harvests in the Kodiak Management Area are documented by the permit system. They suspect that a substantial amount of subsistence harvesting occurs without permits, especially in areas off of the road system. Delivery of permits to subsistence fishers living in the six communities off the island road system has been problematic in the past. Comparisons of subsistence harvests based on returned permits with those from household harvest surveys (as reported in the Community Profile Database; Scott et al. 2000) suggest that subsistence salmon harvests are substantially higher than permit return indicate.

The permit system in this management area might also be improved by adding documentation of rod and reel fishing as subsistence take method. This gear type is allowed for subsistence salmon fishing under federal subsistence rules.

OTHER SUBSISTENCE FISHERIES

There are no annual harvest assessment programs for the other subsistence finfish fisheries of the Kodiak Management Area. Harvest estimates based on systematic household surveys conducted by the Division of Subsistence are available for resident and marine species for multiple years for each Kodiak Island Borough community. These estimates can be found in the Community Profile Database (Scott et al. 2000). Fish harvested in the largest quantities and used by the most households include Pacific cod, lingcod, flounder, halibut, rockfish, and Dolly Varden.

Subsistence permits are required for the harvest of king, Tanner, and Dungeness crab in the Kodiak Area (5 AAC 02.410). Regulations also establish size, bag and possession limits for each type of crab. Only male crab may be taken. In addition to crab, other marine invertebrates used for subsistence purposes in the Kodiak Area include, but are limited to, clams, cockles, mussels, chitons, octopus, and sea urchins. Future annual reports will summarize the subsistence harvest data for marine invertebrates based on permit programs and household surveys.

Table X-1. Reported Subsistence Salmon Harvests, Kodiak Area, 1981 - 1999

Year	Permits		Sockeye	Reported Harvest in Number of Salmon ¹				Total
	Issued	Returned		Chinook	Coho	Pink	Chum	
1981		658	12,924	49	4,029	2,458	484	19,944
1986	1,244	1,002	14,391	90	6,998	2,371	605	24,455
1987	1,124	880	13,198	101	6,463	2,421	1,299	23,482
1988	1,098	699	10,081	108	4,291	1,320	377	16,177
1989	2,800	717	12,638	43	4,123	1,553	419	18,776
1990	2,900	1,167	17,959	131	8,627	1,605	655	28,977
1991	1,406	1,225	21,835	177	8,208	1,743	714	32,677
1992	1,561	1,195	20,684	318	8,643	1,646	643	31,934
1993	1,496	959	19,471	243	7,176	2,696	838	30,424
1994	2,550	1,464	17,962	205	7,491	1,758	440	27,856
1995	1,950	1,194	19,416	175	5,603	1,548	293	27,035
1996	1,567	1,390	28,287	253	5,117	1,125	381	35,163
1997	2,098	1,638	33,293	383	6,369	1,458	234	41,737
1998	1,841	1,126	20,459	350	5,348	1,412	214	27,783
1999		1,438	26,497	397	4,932	1,266	388	33,480
Average	1,818	1,117	19,273	202	6,228	1,759	532	27,993
Recent 5-Year Average	1,864	1,357	25,590	312	5,474	1,362	302	33,040
Recent 10- Year Average	1,930	1,280	22,586	263	6,751	1,626	480	31,707

¹ In the Kodiak Management Area, reported harvest data are not expanded.

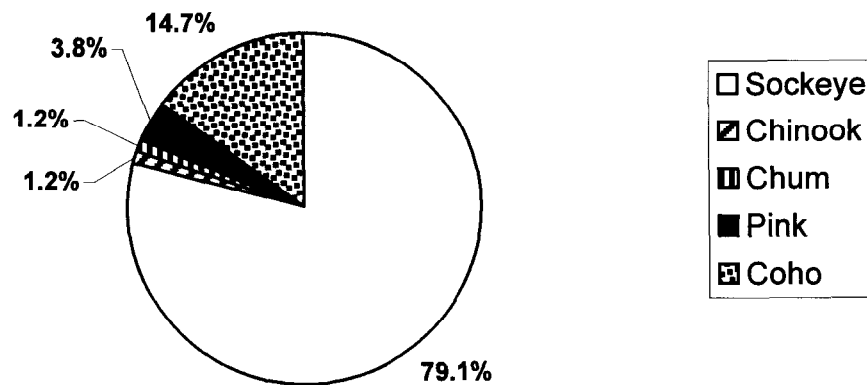
Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.00

Table X-2 . Reported Subsistence Salmon Harvests, Kodiak Area, by Community and Species, 1999

Community	Permits Returned	Reported Harvests in Number of Salmon					Total
		Sockeye	Chinook	Coho	Pink	Chum	
Akhiok	5	224	0	24	32	20	300
Chiniak/Pasagshak	21	189	20	170	28	21	428
Karluk	1	50	7	10	10	0	77
Kodiak City	1,120	19,785	329	3,225	794	191	24,324
Larsen Bay	10	521	5	17	9	4	556
Military Housing	43	806	5	57	17	1	886
Old Harbor	18	323	0	562	187	47	1,119
Ouzinkie	32	1,483	4	564	131	93	2,275
Port Lions	46	1,739	24	265	41	1	2,070
Other Kodiak Island	12	358	0	0	0	7	365
Subtotal, Kodiak Island	1,308	25,478	394	4,894	1,249	385	32,400
Other Alaska	130	1,019	3	38	17	3	1,080
Grand Total	1,438	26,497	397	4,932	1,266	388	33,480

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.00

**Figure X-1. Composition of Kodiak Area
Subsistence Salmon Harvest by Species, 1999**



N = 33,480 salmon; based on annual harvest
assessment program with permits.

XI. COOK INLET AREA

INTRODUCTION

Most of the waters of the Cook Inlet Management Area are within the Anchorage-MatSu-Kenai Nonsubsistence Area as established by the Joint Boards of Fisheries and Game (5 AAC 99.015(3)). Subsistence fisheries are not authorized within these nonsubsistence areas. Non-commercial harvesting opportunities are provided under sport and personal use fishing regulations. Harvest summaries for the personal use dip net and set net fisheries of the Kenai Peninsula can be found in annual management reports prepared by the ADF&G divisions of Sport Fish and Commercial Fisheries.

Waters outside the nonsubsistence area include the Tyonek Subdistrict and the western portion of the Susitna River drainage in Upper Cook Inlet, plus those waters north of Point Bede which are west of a line from the eastern most point of Jakolof Bay north of the westernmost point of Hesketh Island including Jakolof Bay and south of a line west of Hesketh Island and the waters south of Point Bede which are west of the easternmost point of Rocky Bay, which are in Lower Cook Inlet.

Communities within the areas outside the nonsubsistence zone include Skwentna (estimated population 72 in 1999), Alexander (population 39), Tyonek (population 160), Seldovia (population 413), Port Graham (population 178) and Nanwalek (English Bay) (population 170). The population of the entire Cook Inlet Area in 1999 was 364,037, including the Anchorage Municipality (population 259,391), the Kenai Peninsula Borough (48,952), and the Matanuska-Susitna Borough (55,694). This represents 58.5 percent of the state's total population in 1999 (ADLWD 2000).

PORT GRAHAM AND KOYUKTOLIK SUBDISTRICTS

History and Regulations

A separate set of subsistence regulations for this subsistence setnet fishery was first established by the Alaska Board of Fisheries 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. Two 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 opens April 1st and closes September 30th. There are frequent emergency closures and openings during July when escapements of sockeye salmon into the English Bay River are being closely monitored to achieve minimum escapement goals. Throughout the season two 48-hour openings occur each week. The area open to subsistence set netting includes the entire shoreline of the subdistrict to a regulatory marker near the head of Port Graham Bay. There are no season or household bag or possession limits. The three 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 six-inch stretched mesh. A lead may be used on the shoreward end of the net.

Harvest Assessment Methods

Household permits are issued by the Department of Fish and Game, Division of Subsistence through cooperative agreements with the Port Graham and Nanwalek village councils prior to fishing. When permits are issued, a separate monthly catch calendar is also issued for recording daily household harvests. Home use salmon harvests by the two communities occur with the use of setnet 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, fishermen are asked to voluntarily record their rod and reel harvests. In order to accommodate the recording of harvests in both fisheries, the recording device has two pages, one for each gear type, and is issued separately from the permit. Local assistants hired by each village council collect the calendars periodically throughout the season. Dolly Varden harvests are also recorded on the calendars. (Future annual reports will summarize the Dolly Varden data.)

The sockeye salmon run to the English Bay Lakes was severely depressed for much of the late 1980s and early 1990s, with returns failing to achieve the minimum escapement goal for nine consecutive years between 1985 and 1993. Recent returns have been bolstered as a result of a rehabilitation/enhancement project initiated by ADF&G and subsequently run by the Chugach Regional Resources Commission (CRRC) and the village of Nanwalek. In-season escapement monitoring has taken place since 1994, and openings and closures in the subsistence and commercial fisheries controlled by emergency order.

Harvest Estimates

In 1999, subsistence salmon harvests in the Port Graham and Koyuktoalik subdistricts totaled 8,516 salmon, including both set net and rod and reel harvests. Residents of Nanwalek, with 44 permits, harvested 6,960 salmon and residents of Port Graham, with 30 permits, took the balance of 1,556 salmon (Table XI-1). Of the total harvest, sockeye were the most numerous species (3,157 salmon; 36%), followed by pink (2,023 salmon; 24%), coho (1,747 salmon; 31%), chum (1,104 salmon; 13%), and chinook (485 salmon; 6%) (Fig. XI-1). The total subsistence harvest in 1999 was the largest since the monitoring program for this fishery began in 1981. This was due in part to a strong return of sockeye salmon to the English Bay River and a record subsistence harvest of chum salmon. Another factor was likely the very thorough documentation of the 1999 harvest, with most subsistence fishers providing data. This is in contrast to the previous two years, when subsistence harvests were likely underreported due to incomplete coverage of all fishing households.

SELDOVIA SUBSISTENCE FISHERY

History and Regulations

This is a subsistence set gillnet fishery that was established in the fall of 1995 by the Alaska Board of Fisheries. The fishery is located on the south side of Kachemak Bay in the vicinity of

the community of Seldovia in the Southern District of the Lower Cook Inlet Area. The fishery targets king salmon runs passing through lower Cook Inlet and a separate enhanced chinook run returning to Seldovia Bay. Coho salmon are targeted in a fall fishery.

The fishery operates in a split season with two parts, the first occurring from April 1 through May 30 and the second occurring during the first two weekends in August. In the early season fishing is allowed during two 48-hour periods each week, while in the late season fishing is continuous during the two-day weekends. There is a guideline harvest limit of 200 chinook salmon set for the early season and an annual possession limit of 20 chinook per household. There are no seasonal limits for the other 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 proper to the west of Point Naskowhak. The gear allowed includes set gillnets no longer than 35 fathoms, no deeper than 45 meshes, and no larger than a six inch stretched mesh.

Harvest Assessment Methods

A household permit is issued by the Department of Fish and Game prior to fishing, and catches are recorded on the permit. Permits are also available from the harbormaster in Seldovia. Fishermen are required to call in daily to report their catch to ADF&G and return their permit after each of the two segments of the season. ADF&G sends reminder letters to permit holders if harvest records have not been returned in a timely manner, and phone calls are also made to enhance permit returns. ADF&G considers the harvest data for this fishery to be very reliable.

The 1999 Season

There were 16 permits issued in the 1999 early season, and no permits issued in the late season. Although permit holders were required to call in their catch in-season, only a few did. All permits were returned to the Department as required by regulation, and the total harvest was determined from these returns. For the early season, 12 of 16 permit holders (75%) fished, and four (25%) did not fish. The total reported harvest was 136 chinook salmon, 130 sockeyes, and 38 chums (Table XI-3). Fourteen permits were issued to residents of Seldovia and two to Anchorage residents. All of the harvest was taken by Seldovia permit holders.

The 1998 and 1999 early season harvests increased from the first two years of the fishery, and this increase can be attributed to the longer season for the second straight year. Beginning with the 1998 season, the Board of Fisheries lengthened the season by 10 days in May. The additional fishing time resulted in increased harvests of both chinook and sockeye salmon (Table XI-3).

TYONEK SUBDISTRICT

History and Regulations

A separate set of subsistence salmon fishing regulations was first established for the Tyonek Subdistrict by court order in 1980, and subsequently established permanently by the Alaska Board of Fisheries. This setnet fishery is located in the Tyonek Subdistrict of the Northern District of upper Cook Inlet. The subdistrict includes the area from one mile south of the mouth of the Chuitna River south to the eastern-most part of Granite Point and from the mean high tide to the mean 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 permission to land their boats or set their nets on the privately owned land. For a detailed discussion of this fishery and other subsistence uses at Tyonek, see Fall et al. (1984).

The season in this subsistence fishery operates in two parts. The first part, which focuses on chinook salmon, opens May 15th and runs through June 15th with daily openings on Tuesdays, Thursdays, and Fridays. The second part opens on Saturdays from June 16th through October 15th. A 4,200 chinook salmon limit is set for the early season. If this limit is reached, the second season does not open until July 1st. In 20 years of operation of this fishery, the chinook salmon limit 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 inches. When fishing, permit holders are required to be present at the net site.

Harvest Assessment Methods

A household permit is issued by the Department of Fish and Game prior to fishing, and catches are recorded on the permit. Two separate permits are required, one for the early season and one for the late season. Permits are 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 assistance from the Tyonek village government, ADF&G views the harvest estimates for this fishery as very reliable.

The 1999 Season

In 1999, 77 subsistence permits were issued for the Tyonek District, including 51 permits issued to Tyonek residents (66.2%) and 26 permits issued to other Alaska residents (33.8%), mostly residents of Anchorage (Table XI-4). The total reported subsistence salmon harvest was 1,511 fish, with 1,230 chinook, 144 sockeye, 94 coho, 32 pink, and 11 chum. Residents of Tyonek accounted for 79.9% of the harvest total (1,207 salmon), including 91.0% of the chinook harvest (1,119 salmon). The total 1999 harvest was slightly lower than the long-term average for this fishery of 1,681 salmon, but was the highest total since 1995 (Table XI-5)

UPPER YENTNA RIVER FISH WHEEL FISHERY

History and Regulations

This is a subsistence fish wheel fishery that began in 1996 as a personal use fishery and was reclassified as a subsistence fishery by the Board of Fisheries beginning in 1998. It is located in the main stem 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 a.m. to 8 p.m. Monday, Wednesday, and Friday.

Legal gear includes a fish wheel with a live box. Permit holders must be present at the fish wheel while fishing. A season limit of 2,800 salmon is established for the fishery. Chinook salmon and rainbow trout must be returned alive to the water. Seasonal limits for households are 25 salmon for a head of household and 10 salmon for each dependent.

Harvest Assessment Methods

A permit issued by the ADF&G is required prior to fishing. Permits are available through the Division of Sport Fish office in Palmer. Permit holders must record their harvests on the permit and return it to the department. In the view of ADF&G, compliance with the permit requirement is high and harvest estimates for this fishery are very reliable.

Harvests in 1999

Seventeen subsistence permits were issued for the Yentna River subsistence fish wheel fishery in 1999. All were returned to ADF&G. In 1999, 13 of the 17 permit holders resided in the Skwentna area, with the remaining four permits held by residents of Anchorage (one permit), Big Lake (one), and Chugiak (two) (Table XI-6). The total harvest in 1999 was 522 salmon, including 455 sockeye (87%), 43 coho (8%), 13 pink (3%), and 11 chum (2%). (Chinook salmon may not be retained in this fishery.) The 1999 harvest was about the same as the four-year average, but down slightly from the harvest in 1998 of 721 salmon (Table XI-7).

Table XI-1. 1999 Subsistence Salmon Harvests by Community, Port Graham/Koyuktolik Subdistricts

Community	Permits		Reported Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Nanwalek		44	102	2,775	1,320	890	1,873	6,960
Port Graham		30	383	382	427	214	150	1,556
Totals		74	485	3,157	1,747	1,104	2,023	8,516

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XI-2. Historic Subsistence Salmon Harvests: Port Graham/Koyuktolik Subdistricts,
1981 - 1999

Year	Permits		Reported Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1981		57	138	2,670	825	177	874	4,684
1982		61	124	2,354	1,493	220	2,932	7,123
1983		46	67	2,480	471	95	187	3,300
1984		24	45	3,262	510	6	673	4,496
1985		24	146	1,177	621	26	345	2,315
1986		44	125	647	481	14	1,062	2,329
1987		55	21	901	914	114	714	2,664
1988		48	104	1,021	844	110	1,756	3,835
1989		44	51	157	1,155	74	1,495	2,932
1990		60	265	1,162	1,417	151	2,960	5,955
1991		63	163	688	2,053	221	4,587	7,712
1992		71	200	535	1,150	236	1,421	3,542
1993		56	277	1,148	913	257	2,663	5,258
1994		70	300	830	1,370	504	1,979	4,983
1995		87	585	1,795	538	376	1,273	4,567
1996		75	310	1,744	939	276	749	4,018
1997		26	202	325	203	153	511	1,394
1998		19	169	289	243	240	459	1,400
1999		74	485	3,157	1,747	1,104	2,023	8,516
1995-1999								
Average		56	350	1,462	734	430	1,003	3,979
1990-1999								
Average		60	296	1,167	1,057	352	1,863	4,735
All Years								
Average		53	199	1,386	941	229	1,509	4,264

SOURCE: Alaska Department of Fish and Game, Division of Subsistence,
Alaska Subsistence Fisheries Database, Version 3.0.

Table XI-3. Historic Subsistence Salmon Harvests: Seldovia Fishery, 1996 - 1999

YEAR	Permits		Estimated Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
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
1996-1999								
Average	25	24	95	57	0	11	0	164

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XI-4. Tyonek Subdistrict Subsistence Salmon Harvests by Community, 1999

Community	Permits		Reported Harvests in Number of Salmon					Total
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	
Anchorage	17	7	63	91	25	22	6	207
Beluga	2	1	0	5	41	0	0	46
Chugiak	2	1	0	3	0	0	0	3
Eagle River	4	2	1	12	0	0	0	13
Tyonek	51	42	56	1,119	19	10	3	1,207
Wasilla	1	1	24	0	9	0	2	35
Total	77	54	144	1,230	94	32	11	1,511

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.00

Table XI-5. Historic Subsistence Salmon Harvests: Tyonek Subdistrict, 1980 - 1999

Year	Permits		Reported Subsistence Harvests					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1980	67		1,757	235	0	0	0	1,992
1981	70		2,002	269	64	32	15	2,382
1982	69		1,590	310	113	4	14	2,031
1983	75		2,665	187	59	6	0	2,917
1984	75		2,200	266	79	23	3	2,571
1985	76		1,472	164	91	10	0	1,737
1986	65		1,676	203	223	46	50	2,198
1987	64	61	1,610	166	149	24	10	1,959
1988	47	42	1,587	91	253	12	8	1,951
1989	49	47	1,250	85	115	1	0	1,451
1990	42	37	781	66	352	12	20	1,231
1991	57	54	902	20	58	0	0	980
1992	57	44	907	75	234	19	7	1,242
1993	62	54	1,370	57	77	17	19	1,540
1994	58	49	770	85	101	22	0	978
1995	70	55	1,317	45	153	15	0	1,530
1996	73	49	1,039	68	137	7	21	1,272
1997	70	42	639	101	137	8	0	885
1998	74	49	1,027	163	64	2	1	1,257
1999	77	54	1,230	144	94	11	32	1,511
1995-1999								
Average	73	50	1,313	130	146	11	14	1,614
1990-1999								
Average	64	49	1,109	92	156	13	11	1,381
All Years								
Average	65	49	1,390	140	128	14	10	1,681

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XI-6. Subsistence Salmon Harvests, Upper Yentna River Fish Wheel Fishery by Community, 1999

Community	Permits		Reported Harvests in Number of Salmon					Total
	Issued	Returned	Chinook ¹	Sockeye	Coho	Pink	Chum	
Anchorage	1	1	0	12	0	0	0	12
Big Lake	1	1	0	19	4	0	0	23
Chugiak	2	2	0	96	4	0	0	100
Skwentna	13	13	0	328	35	13	11	387
Total	17	17	0	455	43	13	11	522

¹ Regulations prohibit the retention of chinook salmon in this fishery (5 AAC 01.593).

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XI-7. Historic Subsistence and Personal Use Salmon Harvests,
Upper Yentna River Fish Wheel Fishery, 1996 - 1999¹

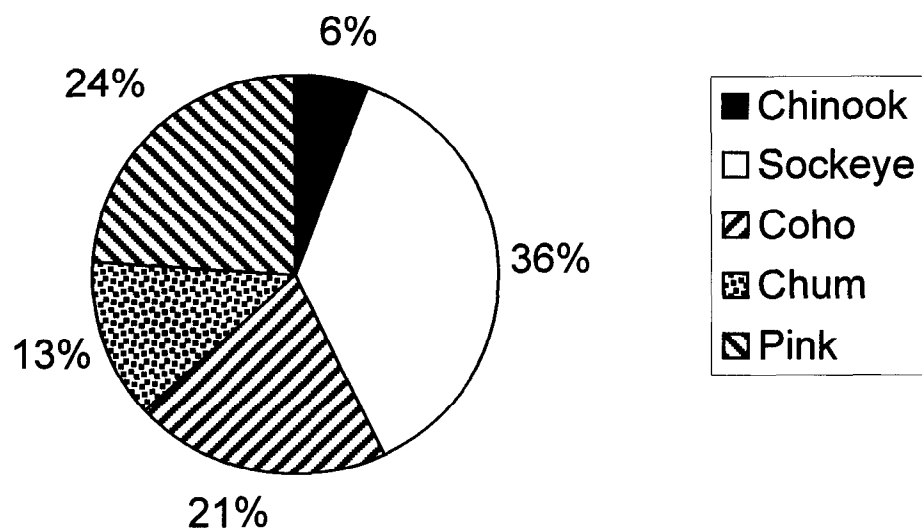
Year	Permits		Estimated Harvests in Number of Salmon					Total
	Issued	Returned	Chinook ²	Sockeye	Coho	Pink	Chum	
1996	15	15	0	152	33	89	37	311
1997	20	20	0	460	63	26	8	557
1998	22	22	0	491	163	38	29	721
1999	17	17	0	455	43	13	11	522
Average	19	19	0	390	76	42	21	528

¹ This fishery was classified as personal use in 1996 and 1997, and as subsistence since 1998.

² Regulations prohibit the retention of chinook salmon in this fishery (5 AAC 01.593).

Source: ADF&G, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Figure XI-1. Composition of Subsistence Salmon Harvest, Port Graham/Koyuktolik Subdistricts, 1999



N = 8,516 salmon, based on annual harvest assessment program with harvest calendars.

XII: 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. In 1999, there were six subsistence fisheries with annual harvest assessment programs in the Prince William Sound Management Area:

1. Upper Copper River: Glennallen Subdistrict
2. Batzulnetas Fishery
3. Copper River Flats / Prince William Sound
4. Prince William Sound: Eastern District / Tatitlek
5. Prince William Sound: Southwestern District / Chenega
6. Prince William Sound: General

Each of these fisheries will be discussed in turn. It should also be noted that the dip net fishery that takes place in the Chitina Subdistrict of the Upper Copper River District was classified as a personal use fishery in 1999 and will not be discussed in this report. The Alaska Board of Fisheries reclassified this fishery as a subsistence fishery beginning in 2000. Future statewide overviews will include data on the Chitina Subdistrict fishery.

UPPER COPPER RIVER SUBSISTENCE FISHERY: GLENNALLEN SUBDISTRICT

Background and History

The Upper Copper River District of the Prince William Sound Management Area consists of all waters of the mainstem Copper River from the mouth of the Slana River downstream to an east-west line crossing the Copper River approximately 200 yards upstream of Haley Creek as designated by ADF&G regulatory markers. There are two subdistricts:

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

The Glennallen and Chitina subdistricts were established 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).

Regulations

In the Glennallen Subdistrict, 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 on request at ADF&G offices in Glennallen and Tok, at the Slana office of the National Park Service, Chistochina Village Council office, and the Copper River Native Association office.

Legal subsistence gear in the Glennallen Subdistrict includes fish wheels and dip nets. The season runs from June 1 through September 30. Annual limits are 30 salmon for a household with one person, of which no more than five may be chinook salmon if taken with a dip net; 60 salmon for a household of two persons, with the same chinook limit for dipnetters; and 10 salmon for each additional person in the household, again with the chinook limit for dipnetters. Upon request, permits will be issued for additional salmon, with limits of 200 salmon for 1 person households and 500 for households of two or more persons. Dipnetters are still limited to 5 chinook per year.

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 fish and the number of each species harvested each day. Reminder letters are mailed to those permittees who do not return permits at the end of the season. Total harvest estimates for the fishery are made based on reported harvests expanded to all permit holders.

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 to ADF&G. These organizations may also issue household permits and register fish wheels. Table XII-1 summarizes data for the three permits issued for village fish wheels in 1997 and 1999.

Subsistence Salmon Harvests in 1999

As reported in Table XII-2, the estimated total subsistence salmon harvest in the Glennallen Subdistrict in 1999 was 80,835 salmon, including 76,456 sockeye (94.6%), 3,234 chinook (4.0%), and 1,145 coho (1.4%). (There are no pink or chum salmon in the upper Copper River.) Of the total harvest in 1999, 70,142 salmon were taken with fish wheels (86.8%) and 10,694 salmon with dip nets (13.2%) (Table XII-3). Table XII-4 reports subsistence salmon harvests by place of residence of permit holders in 1999, while Table XII-5 and Table XII-6 shows harvests by community by gear type, fish wheel or dip net, respectively. Copper Basin Residents harvested 43.8% of the harvest, including 49.0% of the fish wheel harvest but only 9.8% of the dip net harvest (Table XII-3).

BATZULNETAS SUBSISTENCE FISHERY

The Batzulnetas subsistence salmon fishery includes all waters from the regulatory markers near the mouth of Tanada Creek and approximately on-half mile downstream from that mouth, and in Tanada Creek between ADF&G regulatory markers. The fishery may begin after June 1. Fishing periods during the month of June are one 48 hour period per week. Beginning in July fishing periods are 84-hours per week until September 1 when the fishery closes. This fishery was created in 1987 through an emergency regulation to settle the United States District Court case of John vs. Alaska.

Since 1987, subsistence permits have been issued in six years (Table XII-7). In 1999, one permit was issued with a total reported harvest of 55 sockeye salmon. The long-term average harvest for this fishery is 127 sockeye salmon, with the highest harvest occurring in 1994 with a take of 997 sockeyes. Participants in this fishery are largely from the community of Mentasta.

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 on request at the ADF&G office in Cordova or they may be obtained by calling and requesting them by phone. Legal gear is set or drift gillnet. Annual limits are 15 salmon for a one person household; 30 salmon for a two person household; and 10 salmon for each additional person in the household. There is a limit of five king salmon per permit.

Harvest Assessment Program

A permit system with annual subsistence salmon harvest assessments has been in place for Prince William Sound at least since 1960. Permits are either dropped off at the Cordova ADF&G office or mailed in 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 fish harvested caught each day. There is one version of the permit, but fishers need to declare whether they want to fish the Copper River Flats area or in Prince William Sound. An issued permit is only valid for one of these locations. A strong incentive is in place for fishers to record catches and return their permits. If they do not, they do not receive permits the following year, and this restriction is strictly enforced.

Subsistence Salmon Harvests in 1999

As reported in Table XII-8, 294 permits were issued for this fishery in 1999, and 275 (93.5%) were returned. The estimated harvest was 2,528 salmon, including 1,422 sockeye (56.3%), 729 coho (28.8%), and 377 chinook (14.9%). Most permit holders lived in Cordova, although place of residence data are not presently available in the database. The 1999 harvest was the second highest on record, and higher than the recent 5-year average of 2,048 salmon.

EASTERN DISTRICT SUBSISTENCE SALMON FISHERY

The present set of subsistence regulations the Eastern District of Prince William Sound has been in place since 1988. The primary participants in this fishery are residents of Tatitlek. Prior to 1992, permits were only issued in Tatitlek. Since 1992, they have also been issued at the ADF&G office in Cordova. Permits may be dropped off at the Cordova ADF&G office, the Tatitlek Village Council office, or mailed in 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. If fishers do not return their permit, they are not eligible for permits for the following year. This restriction is strictly enforced.

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of four inches, or gillnets up to 150 fathoms in length with a maximum size of six and one-quarter inches. Pink salmon may be taken in fresh water with dip nets. The season is May 15 through October 31, seven days per week before and after the commercial salmon season, and during commercial fishing openings. There are no bag or possession limits for this fishery.

In 1999, 17 permits were issued for this fishery. Eight permits were returned that indicated fishing activity; it is uncertain how many total permits were returned, so data in Table XII-9 are reported harvests only. The reported harvest for 1999 was 947 salmon, mostly coho (541; 57.1%) and sockeye (36.3%). It is likely that the harvest assessment program for this fishery consistently underestimates harvests. As shown in Table XII-10, household surveys in Tatitlek for 1998 provide an estimate of 830 salmon taken with subsistence methods in 1998, compared to just 105 based on returned permits. Rod and reel and removal from commercial harvests also provide salmon for home use in Tatitlek.

SOUTHWESTERN DISTRICT SUBSISTENCE SALMON FISHERY

The present set of subsistence regulations the Southwestern District of Prince William Sound has been in place since 1988. For subsistence fishing purposes, the waters around Green Island are included in this area. The primary participants in this fishery are residents of Chenega Bay. Prior to 1992, permits were only issued in Chenega Bay. Since 1992, they have also been issued at the ADF&G office in Cordova. Permits may be dropped off at the Cordova ADF&G office, the Chenega Village Council office, or mailed in 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. If fishers do not return their permit, they are not eligible for permits for the following year. This restriction is strictly enforced.

Legal gear for this fishery includes seines up to 50 fathoms in length and 100 meshes deep with a maximum mesh size of four inches, or gillnets up to 150 fathoms in length with a maximum size of six and one-quarter inches. Pink salmon may be taken in fresh water with dip nets. The season is May 15 through October 31, seven days per week before and after the commercial salmon season, and during commercial fishing openings. There are no bag or possession limits for this fishery.

In 1999, 14 permits were issued for this fishery. Seven permits were returned that indicated fishing activity; it is uncertain how many total permits were returned, so data in Table XII-11 are reported harvests only. The reported harvest for 1999 was 887 salmon, mostly sockeye (499; 56.3%) and pink (168; 18.9%). It is likely that the harvest assessment program for this fishery consistently underestimates harvests. As shown in Table XII-12, household surveys in Chenega Bay for 1998 provide an estimate of 1,571 salmon taken with subsistence methods in 1998, compared to just 331 based on returned permits. Rod and reel and removal from commercial harvests also provide salmon for home use in Chenega Bay.

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) is open in conformance with commercial fishing regulations regarding gear, open areas, and open periods. Permits are required and may be obtained from the Cordova office of ADF&G. Annual limits are 15 salmon for a one person household; 30 salmon for a two person household; and 10 salmon for each additional person in the household. There is a limit of five king salmon per permit.

Since the creation of separate regulations for the waters fished by Tatitlek and Chenega Bay residents in 1988, there has been very limited participation in this fishery. Since 1994, there has been only one year with any reported harvest. In 1999, 3 permits were issued, but none of these permit holders fished (Table XII-13).

OTHER SUBSISTENCE FISHERIES IN THE PRINCE WILLIAM SOUND AREA

In 1999, there were no harvest assessment programs for other subsistence fisheries in the Prince William Sound Area. In the upper Copper River watershed, resident species such as grayling, burbot, and whitefish, among other species, are harvested for home use. Harvest estimates based on household surveys are available in the Community Profile Database (Scott et al. 2000).

Residents of Cordova, Chenega Bay, Tatitlek, Valdez, and Whittier take a variety of shellfish and marine finfish for subsistence use. Harvest estimates are available in the Community Profile Database (Scott et al 2000) based upon systematic household surveys.

Table XII-1. Subsistence Harvests by Village Fish Wheel Permit Holders, Glennallen Subdistrict

Year	Village	Sockeye	Chinook	Coho	Steelhead	Other	Total	Comments
1999	Gakona						0	did not fish
1999	Chickaloon	5	1				6	
1999	Kluti-Kah	85	46				131	
1997	Kluti-Kah	61	12				73	
1997	Gakona	1,242	8				1,250	
1997	Chistochina	342	105	139	88	1	675	

Source: Tom Taube, ADF&G, Division of Sport Fish, Glennallen

Table XII-2. Historic Subsistence Salmon Harvests: Glennallen Subdistrict, 1988 - 1999

YEAR	Permits		Estimated Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1988	420	264	1,082	33,294	465	0	0	34,841
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
<hr/>								
1995-1999								
Average	991	913	2,228	66,326	682	0	0	69,235
<hr/>								
1990-1999								
Average	847	768	1,795	57,147	423	0	0	59,366
<hr/>								
All Years								
Average	773	692	1,653	52,791	397	0	0	54,841

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XII-3. Subsistence Salmon Harvests, Glennallen Subdistrict, by Area of Residence and Gear Type, 1999

	<u>Dip Nets</u>				<u>Fishwheels</u>				<u>Either Gear</u>			
	Permits	%	Harvest	%	Permits	%	Harvest	%	Permits	%	Harvest	%
Copper Basin	45	13.4%	1,044	9.8%	359	46.9%	34,343	49.0%	404	36.7%	35,387	43.8%
Other Alaska	291	86.6%	9,650	90.2%	407	53.1%	35,799	51.0%	698	63.3%	45,449	56.2%
Total	336	30.5%	10,694	13.2%	766	69.5%	70,142	86.8%	1,102		80,836	

Table XII-4. 1999 Subsistence Salmon Harvests by Community: Glennallen Subdistrict

Community	Permits		Estimated Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Chistochina	2	2	0	25	0	0	0	25
Chitina	24	21	104	1,922	87	0	0	2,113
Copper Center	148	138	573	12,378	82	0	0	13,032
Copporville	1	1	8	330	0	0	0	338
Gakona	55	49	332	5,308	539	0	0	6,179
Glennallen	153	147	433	11,922	45	0	0	12,400
Gulkana	1	1	0	8	0	0	0	8
Kenny Lake	1	0						
McCarthy	6	6	1	153	14	0	0	168
Mentasta	2	2	0	55	0	0	0	55
Paxson	2	2	4	12	0	0	0	16
Slana	9	9	85	967	0	0	0	1,052
Subtotal, Copper Basin	404	378	1,540	33,080	767	0	0	35,387
Anchor Point	1	1	4	14	0	0	0	18
Anchorage	254	235	618	15,863	231	0	0	16,712
Barrow	3	3	1	266	0	0	0	267
Big Lake	2	2	0	0	0	0	0	0
Cantwell	7	7	58	133	0	0	0	191
Chickaloon	3	3	15	712	0	0	0	727
Chugiak	19	19	8	779	0	0	0	787
Cooper Landing	1	1	9	128	0	0	0	137
Delta Junction	19	19	27	1,383	30	0	0	1,440
Dillingham	1	1	0	0	0	0	0	0
Dot Lake	2	1	0	100	0	0	0	100
Eagle River	53	51	228	4,764	0	0	0	4,991
Eielson AFB	3	3	4	75	0	0	0	79
Elmendorf AFB	2	2	37	49	0	0	0	86
Ester	2	2	17	70	0	0	0	87
Fairbanks	74	69	149	3,983	0	0	0	4,132
Fort Wainwright	4	4	10	84	0	0	0	94
Fort Yukon	1	0						
Fox	1	1	0	156	0	0	0	156
Girdwood	5	5	15	213	0	0	0	228

Continued

Table XII-4, continued

Community	Permits		Estimated Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Healy	3	3	0	186	0	0	0	186
Homer	1	1	1	89	0	0	0	90
Houston	1	1	0	0	0	0	0	0
Juneau	2	2	0	59	1	0	0	60
Kenai	1	1	0	54	0	0	0	54
Manley Hot Springs	1	1	0	0	0	0	0	0
Nenana	2	2	0	22	0	0	0	22
Ninilchik	1	1	0	0	0	0	0	0
North Pole	24	22	57	673	0	0	0	731
Northway	9	9	6	772	0	0	0	778
Palmer	38	38	135	2,206	0	0	0	2,341
Salcha	5	4	8	289	0	0	0	296
Seward	1	1	0	0	0	0	0	0
Soldotna	1	1	5	200	0	0	0	205
Sterling	1	1	5	0	0	0	0	5
Sutton	3	3	2	308	0	0	0	310
Tanacross	1	1	0	6	0	0	0	6
Tok	51	49	76	3,737	3	0	0	3,817
Trapper Creek	1	1	0	36	0	0	0	36
Valdez	41	41	70	2,155	0	0	0	2,225
Wasilla	51	49	129	3,621	113	0	0	3,863
Willow	2	1	0	192	0	0	0	192
Subtotal, Other	698	662	1,694	43,377	378	0	0	45,449
Totals	1,102	1,040	3,234	76,456	1,145	0	0	80,835

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database.

Table XII-5. 1999 Subsistence Harvest by Community: Glennallen Subdistrict - Fish Wheels

Community	Permits		Estimated Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Chistochina	2	2	0	25	0	0	0	25
Chitina	20	18	104	1,830	32	0	0	1,967
Copper Center	128	119	541	11,904	82	0	0	12,527
Copporville	1	1	8	330	0	0	0	338
Gakona	52	46	331	5,278	539	0	0	6,148
Glennallen	142	136	422	11,742	43	0	0	12,207
Gulkana	1	1	0	8	0	0	0	8
Mentasta	2	2	0	55	0	0	0	55
Paxson	2	2	4	12	0	0	0	16
Slana	9	9	85	967	0	0	0	1,052
Subtotal, Copper Basin	359	336	1,496	32,151	696	0	0	34,343
Anchor Point	1	1	4	14	0	0	0	18
Anchorage	121	120	493	10,350	174	0	0	11,017
Barrow	2	2	1	266	0	0	0	267
Cantwell	3	3	56	86	0	0	0	142
Chickaloon	3	3	15	712	0	0	0	727
Chugiak	10	10	6	676	0	0	0	682
Cooper Landing	1	1	9	128	0	0	0	137
Delta Junction	8	8	12	1,024	15	0	0	1,051
Dillingham	1	1	0	0	0	0	0	0
Dot Lake	2	1	0	100	0	0	0	100
Eagle River	41	39	216	4,509	0	0	0	4,724
Elmendorf AFB	1	1	37	46	0	0	0	83
Ester	1	1	13	54	0	0	0	67
Fairbanks	40	39	117	3,449	0	0	0	3,566
Fort Yukon	1	0						
Fox	1	1	0	156	0	0	0	156
Healy	3	3	0	186	0	0	0	186
Homer	1	1	1	89	0	0	0	90
Houston	1	1	0	0	0	0	0	0
Juneau	2	2	0	59	1	0	0	60
Kenai	1	1	0	54	0	0	0	54
Manley Hot Springs	1	1	0	0	0	0	0	0

Continued

Table XII-5, continued

Community	Permits		Estimated Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
North Pole	7	7	3	162	0	0	0	165
Northway	8	8	6	772	0	0	0	778
Palmer	27	27	112	1,856	0	0	0	1,968
Seward	1	1	0	0	0	0	0	0
Soldotna	1	1	5	200	0	0	0	205
Sterling	1	1	5	0	0	0	0	5
Sutton	3	3	2	308	0	0	0	310
Tanacross	1	1	0	6	0	0	0	6
Tok	42	42	75	3,497	3	0	0	3,575
Trapper Creek	1	1	0	36	0	0	0	36
Valdez	30	30	66	1,976	0	0	0	2,042
Wasilla	37	35	100	3,176	113	0	0	3,389
Willow	2	1	0	192	0	0	0	192
Subtotal, All	407	398	1,354	34,138	307	0	0	35,799
Totals	766	734	2,849	66,290	1,003	0	0	70,142

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database.

Table XII-6. 1999 Subsistence Harvests by Community: Glennallen Subdistrict - Dip Nets

Community	Permits		Estimated Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Chitina	4	3	0	92	55	0	0	147
Copper Center	20	19	32	474	0	0	0	505
Gakona	3	3	1	30	0	0	0	31
Glennallen	11	11	11	180	2	0	0	193
Kenny Lake	1	0						
McCarthy	6	6	1	153	14	0	0	168
Subtotal, Copper Basin	45	42	45	929	71	0	0	1,044
Anchorage	133	115	125	5,513	57	0	0	5,695
Barrow	1	1	0	0	0	0	0	0
Big Lake	2	2	0	0	0	0	0	0
Cantwell	4	4	2	47	0	0	0	49
Chugiak	9	9	2	103	0	0	0	105
Delta Junction	11	11	15	359	15	0	0	389
Eagle River	12	12	12	255	0	0	0	267
Eielson AFB	3	3	4	75	0	0	0	79
Elmendorf AFB	1	1	0	3	0	0	0	3
Ester	1	1	4	16	0	0	0	20
Fairbanks	34	30	32	534	0	0	0	566
Fort Wainwright	4	4	10	84	0	0	0	94
Girdwood	5	5	15	213	0	0	0	228
Nenana	2	2	0	22	0	0	0	22
Ninilchik	1	1	0	0	0	0	0	0
North Pole	17	15	54	511	0	0	0	566
Northway	1	1	0	0	0	0	0	0
Palmer	11	11	23	350	0	0	0	373
Salcha	5	4	8	289	0	0	0	296
Tok	9	7	1	240	0	0	0	242
Valdez	11	11	4	179	0	0	0	183
Wasilla	14	14	29	445	0	0	0	474
Subtotal, Other Alaska	291	264	340	9,238	72	0	0	9,650
Totals	336	306	384	10,167	142	0	0	10,694

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database.

Table XII-7. Historic Subsistence Salmon Harvests, Batzulnetas Fishery, 1987 - 1999

YEAR	Permits		Estimated Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1987	8	8	0	22	0	0	0	22
1988	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0
1993	1	1	0	160	0	0	0	160
1994	4	4	0	997	0	0	0	997
1995	4	2	0	32	0	0	0	32
1996	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0
1998	1	1	0	382	0	0	0	382
1999	1	1	0	55	0	0	0	55
1995-1999								
Average	1	1	0	94	0	0	0	94
1990-1999								
Average	1	1	0	163	0	0	0	163
All Years								
Average	1	1	0	127	0	0	0	127

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database.

Table XII-8. Historic Subsistence Salmon Harvests: Copper River District (Copper River Flat

YEAR	Permits		Estimated Salmon Harvest					Total
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
1965	31	20	19	711	132	0	0	862
1966	45	31	68	254	0	0	0	322
1967	61	56	90	167	0	0	0	257
1968	17	15	12	41	0	0	0	53
1969	49	33	24	94	126	0	0	244
1970	32	27	78	212	0	0	0	290
1971	29	26	11	36	4	0	0	51
1972	104	79	196	749	70	0	0	1,015
1973	94	89	162	344	190	0	0	696
1974	9	5	9	7	4	0	0	20
1975	2	2	0	5	0	0	0	5
1976	27	14	2	19	0	0	0	21
1977	23	22	10	74	0	0	0	85
1978	34	28	45	22	15	0	0	81
1979	49	41	54	31	20	0	0	105
1980	39	35	21	30	19	0	0	70
1981	72	51	68	205	147	0	0	419
1982	108	90	72	761	127	0	0	960
1983	87	73	94	128	68	0	0	290
1984	118	104	77	368	153	0	0	598
1985	94	94	88	261	83	0	0	432
1986	88	85	89	360	49	0	0	498
1987	95	89	52	383	15	0	0	450
1988	114	97	69	266	49	0	0	384
1989	75	64	66	397	60	0	0	523
1990	88	76	69	543	95	0	0	707
1991	129	115	153	931	43	0	0	1,126
1992	126	113	158	875	47	0	0	1,080
1993	111	93	143	511	35	0	0	689
1994	101	97	171	494	70	0	0	734
1995	126	112	173	779	35	0	0	987
1996	176	157	309	1,086	53	0	0	1,448
1997	269	243	223	1,144	1,967	0	0	3,333
1998	245	230	314	905	724	0	0	1,944
1999	294	275	377	1,422	729	0	0	2,528
<hr/>								
1999 Average	222	203	279	1,067	702	0	0	2,048
<hr/>								
1999 Average	167	151	209	869	380	0	0	1,458
<hr/>								
All Years Average	88	77	99	406	142	0	0	647

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0.

Table XII-9. Historic Subsistence Salmon Harvests, Eastern Prince William Sound, 1988 - 1999¹

Year	Permits		Reported Harvests in Number of Salmon					Total
	Issued	Fished	Sockeye	Chinook	Coho	Pink	Chum	
1988	17	9	210	2	249	143	297	901
1989	14	7	107	1	653	28	43	832
1990	13	8	5	0	241	10	4	260
1991	19	7	107	0	984	320	28	1,439
1992	15	5	441	2	369	30	49	891
1993	18	7	512	2	305	144	74	1,037
1994	14	4	50	0	143	50	70	313
1995	15	*	0	0	0	0	0	0
1996	6	1	0	0	38	0	0	38
1997	6	3	107	0	45	0	54	206
1998	11	2	2	0	71	4	28	105
1999	17	8	344	0	541	31	31	947
Average	14	6	157	1	303	63	57	581
Recent 5-year average	11	4	91	0	139	7	23	259

¹ Defined as "those waters north of a line from Porcupine Point to Granite Point, and south of a line from Point Lowe to Tongue Point" (5 AAC 5 AAC 01.648(b)). Prior to 1988, this area was included in the "general Prince William Sound Area" for purposes of subsistence salmon permits.

* No permits were returned.

Source: ADF&G Division of Subsistence Alaska Subsistence Fisheries Database; Sharp et al. 2000

Table XII-10. Estimated Harvests of Salmon for Home Use, Tatitlek, 1998

	Estimated Number Harvested			
	Subsistence Methods	Rod & Reel	Commercial from Removed	All Methods
Chinook	29	3	8	40
Sockeye	472	46	83	601
Coho	202	322	54	578
Pink	110	25	0	135
Chum	17	3	0	20
All Salmon	830	399	145	1,374
Number of Households Harvesting ¹	8 households	19 households	3 households	19 households (any method)

¹ Number of households in the community = 27; 16 (59.3 percent) were interviewed

Source: Community Profile Database (Scott et al. 2000)

Table XII-11. Reported Subsistence Salmon Harvests, Southwestern Prince William Sound, 1988 - 1999¹

Year	Permits		Reported Harvests in Number of Salmon					Total
	Issued	Fished	Sockeye	Chinook	Coho	Pink	Chum	
1988	10	5	50	1	8	251	294	604
1989	8	7	322	0	0	554	180	1,056
1990	7	2	36	1	5	20	2	64
1991	12	4	345	3	42	195	53	638
1992	14	8	526	1	23	313	99	962
1993	22	17	835	2	50	232	124	1,243
1994	16	8	192	5	77	402	161	837
1995	10	5	152	2	67	67	41	329
1996	7	3	107	0	7	105	46	265
1997	5	4	193	44	30	110	272	649
1998	4	3	114	13	20	65	119	331
1999	14	7	499	57	62	168	101	887
Average	11	6	281	11	33	207	124	655
Recent 5-year average	8	4	213	23	37	103	116	492

¹ Defined as "those waters of the Southwestern District, as described in 5 AAC 24.200, and along the northwestern shore of Green Island" (5 AAC 01.648(a)). Prior to 1988, this area was included in the "general Prince William Sound Area" for purposes of subsistence salmon permits.

Source: ADF&G Division of Subsistence Alaska Subsistence Fisheries Database; Sharp et al. 2000

Table XII-12. Estimated Harvests of Salmon for Home Use, Chenega Bay, 1998

	<u>Estimated Number Harvested</u>			<u>All Methods</u>
	<u>Subsistence</u> <u>Methods</u>	<u>Rod & Reel</u>	<u>Commercial</u>	
Chinook	112	57	21	190
Sockeye	409	41	87	537
Coho	60	78	21	159
Pink	391	112	140	643
Chum	599	73	140	812
Other/Unknown	0	45	0	45
All Salmon	1,571	406	409	2,386
<hr/>				
Number of Households Harvesting ¹	14 households	8 households	4 households	17 households (any method)

¹ Number of households in the community = 21; 15 (71.4 percent) were interviewed

Source: Community Profile Database (Scott et al. 2000)

Table XII-13. Historic Subsistence Salmon Harvests, General Prince William Sound Area, 1960 - 1999

Year	Permits		Estimated Harvests in Number of Salmon					Total
	Issued	Returned	Sockeye	Chinook	Coho	Pink	Chum	
1960	50		139	1	505	1,292	27	1,964
1961	12		41	3	123	732	3	902
1962	9		0	0	119	214	142	475
1963	9		0	0	406	298	24	728
1964	15		11	0	0	900	0	911
1965	22	16	0	0	0	246	34	281
1966	3	3	3	0	19	20	50	92
1967	4	3	0	0	5	5	0	11
1968	4	3	0	0	27	208	0	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	69	0	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	0	0	0	0	0	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	7	0	6	0	0	0
1981	12	8	3	0	29	0	2	0
1982	35	27	109	0	5	40	31	185
1983	26	21	27	0	45	11	98	181
1984	8	8	10	0	0	11	2	23
1985	22	16	37	1	22	19	36	116
1986	25	14	9	0	27	0	0	36
1987	18	17	33	5	6	0	17	61
1988	7	7	51	2	7	10	9	79
1989	11	7	0	0	0	0	5	5
1990	8	8	0	0	7	4	0	11
1991	9	5	4	0	0	0	0	4
1992	10	6	33	0	0	0	0	33
1993	6	6	104	1	10	0	0	115
1994	5	4	0	0	0	0	0	0
1995	4	2	0	0	0	0	0	0
1996	10	2	0	0	0	0	0	0
1997	4	3	4	0	0	0	0	4
1998	4	3	0	0	0	0	0	0
1999	3	3	0	0	0	0	0	0
Recent 5-Year								
Average	5	3	1	0	0	0	0	1
Average	11	7	16	0	44	102	12	173

Source: ADF&G Division of Subsistence Alaska Subsistence Fisheries Database

XIII: SOUTHEAST/YAKUTAT REGION

BACKGROUND

The Southeast/Yakutat Region consists of two management areas for subsistence purposes: the Yakutat Area and the Southeastern Alaska Area. Both are combined for this discussion. The total population of Southeast Alaska in 1999 was estimated at 73,302 (ADLWD 2000). The Alaska Joint Board of Fisheries and Game has identified two nonsubsistence areas in Southeast Alaska: the Ketchikan Nonsubsistence Area and the Juneau Nonsubsistence Area (5 AAC 99.015). Subsistence fisheries may not be authorized in nonsubsistence areas. Depending upon the district and section, non-commercial, non-recreational salmon fishing in Southeast Alaska occurs under subsistence or personal use regulations. In this discussion, harvests and participation rates for both subsistence and personal use fisheries are combined.

The salmon of Southeast Alaska have helped sustain the Tlingit and Haida people for generations, and this resource continues to be an important factor in the well being of Southeast Alaska households and communities. Documented subsistence harvests of salmon in 1999 demonstrated this continuing importance. All five species of salmon were taken by subsistence fishers, with sockeye being the most heavily harvested species by far. In Southeast Alaska, salmon are processed by a variety of methods, which include drying, smoking, jarring, and fresh freezing.

REGULATIONS

The Alaska Department of Fish and Game, Division of Commercial Fisheries, regulates and monitors subsistence and personal use fisheries in Southeast Alaska. Area managers based in Juneau, Haines, Petersburg, Sitka and Ketchikan issue the permits to Alaskan residents, and collect the permits and harvest data at the end of the season. In 1999, salmon fishing seasons varied by drainage and by species. Sockeye openings, in most cases, started June 1 and extended through the middle to the end of July, with some rivers remaining open longer. Pink and chum seasons were generally a month later than the sockeye seasons. The only subsistence coho season, in the Hasselborg River, was open from August 1 to October 31. Chinook were harvested incidentally.

In 1999 the means of catching salmon by subsistence permit included beach seines, drift gillnets, dip nets, spears, cast nets, and gaffs.

HARVEST DATA

The area fisheries managers tabulate the data from permits returned to the Department. This information is uploaded to the Alexander Database, maintained at the Southeast Regional office in Juneau, from which the Division of Subsistence obtained the information for this report. Variables include number of permits per community for each stream, as well as overall numbers of different salmon species for each permitted stream. Streams in Southeast Alaska are classified as either subsistence or personal use based on their location within an area determined to be a customary and traditional use area in the Alaska Administrative Code; those that fall within these

areas are subsistence streams, and fishing on those streams is conducted under a subsistence permit. All other streams in Southeast Alaska are classified as personal use.

Table XIII-1 shows preliminary subsistence harvest information for the 15 different commercial fishing districts in Southeast Alaska, based upon permit returns. (These data differ slightly from harvest numbers in Table VIII-2; the latter are based on a larger number of returned permits, but data by harvest area were not available from this more recent data set when this chapter was prepared.) For each district, the number of permits returned and the number of salmon of each species reported for those permits. District 113, the area around Sitka and the Pacific Coast of Baranof and Chichagof Islands, had the highest participation levels, with 630 permits, 15,283 salmon and 15,090 sockeye salmon among those. Customary and traditional use findings in this district determine that all of these salmon are subsistence, rather than personal use, salmon. Other important districts in the Southeast Alaska subsistence and personal use fisheries included 103, the streams that flow into the waters of the west coast of Prince of Wales Island, including the Klawock River, Sarkar Lake, and streams Hetta Inlet. In District 103, 7,371 sockeye were reported, most of which were taken in subsistence streams. District 101, around Ketchikan and Behm Canal, also had a high harvest of sockeye salmon, with 6,548 being reported for 1999. Of those, 6,452 were from Yes Bay Head, a personal use fishery.

Table XIII-2 shows the participation and harvest of fishers from different communities in Southeast Alaska, based upon permit returns. Sitka had the most permits returned (527), and the most salmon reported (14,072). Of those, 13,902 were sockeye. Juneau also had a high level of participation, with 350 permits returned in 1999, but only 3,988 salmon (3,535 sockeye) reported. The 296 permits returned from Ketchikan fishers included 8,135 salmon (6,704 sockeye). Overall, Southeast Alaska communities included 2,318 permits returned, 58,548 salmon reported, and of those, 48,559 sockeye. As noted in the discussion, below, these estimates based solely on subsistence permits very likely substantially underestimate the number of salmon harvested for home use in this region.

Table XIII-3 shows the participation in Southeast Alaska subsistence and personal use salmon fisheries since 1985. The number of permits returned to the Department of Fish and Game (used to indicate overall participation) has almost doubled since 1985. So has the total number of salmon reported harvested, from 25,472 in 1985 to 65,600 in 1998 and 58,548 in 1999. Sockeye harvests increased along a similar trend, with 20,006 reported taken in 1985 and 48,559 taken in 1999.

DISCUSSION

In interviews with Division of Subsistence staff, ADF&G fishery managers for Southeast Alaska expressed uncertainty concerning the extent to which subsistence salmon harvests in Southeast Alaska are documented by the permit system. There is a general view among ADF&G staff and the public that many people in Southeast Alaska engage in subsistence salmon fishing without permits. Also, the harvest assessment program in the Southeast/Yakutat Region does not account for commercially caught salmon withheld for home use. Such harvests are substantial in some communities. Rod and reel harvests are also an important source of salmon for use in this region, but these harvests, too, are not documented through the subsistence permit system.

In 1987, researchers with ADF&G, the US Forest Service, and the University of Alaska's Institute of Social and Economic Research conducted a survey of households in Southeast Alaska communities. Survey findings regarding harvests of salmon for home use can be compared with permit harvest reports for the same year. As reported to the participants in the conference on "Understanding Harvest Assessment in the North" in 1995 (ADF&G and ISER 1996:4-5), harvest estimates that people provided during personal interviews result in a regional harvest estimate that is several times larger than that based on returned permits. The permit calendar system provided an estimate of 30,737 salmon harvested for home use in rural Southeast Alaska in 1987, compared to 172,293 salmon based on household interviews. The researchers gave several reasons for what they concluded was better information from the interviews. They offered confidentiality to respondents, provided broader coverage in terms of gear types and the number of households providing information, and made it easier for users to respond with information. The participants in the conference concluded that more collaboration between users and resource management agencies, among other things, could help improve subsistence fisheries harvest estimates. This is also one of the several recommendations for developing more effective and reliable subsistence fisheries harvest assessment programs developed by the Subsistence Fisheries Harvest Assessment Working Group (ADF&G and AITC 2000a, 2000b) (see Chapter One).

Table XIII-1. Preliminary Subsistence and Personal Use Salmon Harvests by District, Southeast/Yakutat Region 1999

District	Name of Area	Reported Harvests						Total Salmon
		Number of Permits Returned	Chinook	Sockeye	Coho	Pink	Chum	
101	Ketchikan/Behm Canal	283	260	6,548	26	706	869	8,409
102	Clarence Strait/East Prince of Wales Island	64	0	655	7	247	35	944
103	Inside Waters/West Prince of Wales Island	257	1	7,371	58	372	196	7,998
105	West Sumner Strait/East Kuiu Island	4	0	12	2	0	0	14
106	East Sumner Strait/North Clarence Strait	214	1	2,134	142	91	51	2,419
107	East Etolin Island/Wrangell Island/Ernest Sound	64	34	772	1	62	108	977
108	Petersburg/Frederick Sound/Stikine River Mouth	9	0	0	60	4	1	65
109	South Chatham Strait/West Frederick Sound	162	1	2,434	2	93	180	2,710
111	Juneau/Taku Inlet/Stephen's Passage	340	22	2,947	44	145	22	3,180
112	Angeon/North Chatham Strait/East Chichagof	91	0	2,144	274	118	93	2,629
113	Sitka/Outer Baranof and Chichagof/Peril Strait	630	2	15,090	24	112	55	15,283
114	Icy Strait/Glacier Bay	23	0	83	30	123	1,779	2,015
115	Lynn Canal/Chilkat Inlet	246	51	5,386	119	663	967	7,186

Source: based upon preliminary subsistence permit returns to the Division of Commercial Fisheries, ADF&G

Table XIII-2 . 1999 Subsistence and Personal Use Salmon Harvest by Community: Southeast/Yakutat Region

Community	Permits		Reported Salmon Harvest					Total Salmon
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	
Anchorage		15	16	294	2	14	5	331
Angoon		54	0	1,620	291	3	32	1,946
Auke Bay		11	0	134	1	0	3	138
Coffman Cove		31	0	354	0	0	0	354
Cordova		1	0	10	0	0	0	10
Craig		130	0	2,898	20	17	389	3,324
Douglas		46	12	426	8	2	18	466
Edna Bay		2	0	8	0	0	0	8
Fairbanks		3	0	111	0	0	0	111
Gustavus		6	0	48	0	7	16	71
Haines		220	50	4,996	117	854	630	6,647
Hollis		1	0	24	0	0	0	24
Hoonah		49	0	691	32	1,768	149	2,640
Hydaburg		28	0	1,314	0	40	0	1,354
Hyder		1	0	0	1	23	0	24
Juneau		350	70	3,535	42	135	206	3,988
Kake		134	1	2,318	2	200	93	2,614
Kasaan		2	0	50	3	0	8	61
Ketchikan		296	248	6,704	24	616	543	8,135
Klawock		84	1	2,256	38	155	185	2,635
Kotzebue		1	0	10	0	0	0	10
Metlakatla		3	0	18	0	5	6	29
Meyers Chuck		1	0	35	0	0	0	35
Nenana		1	0	10	0	0	0	10
Pelican		13	0	267	0	0	0	267
Petersburg		73	0	570	178	29	10	787
Point Baker		4	1	30	19	28	80	158
Sitka		527	6	13,902	17	51	96	14,072
Skagway		5	0	0	1	60	8	69
Tenakee Springs		1	0	0	0	0	0	0
Thorne Bay		49	0	725	7	2	29	763
Tuluksak		1	0	6	0	0	0	6
Ward Cove		32	11	889	2	81	90	1,073
Whale Pass		1	0	0	3	0	5	8
Wrangell		66	34	862	1	74	61	1,032
Yakutat		76	858	3,444	939	0	107	5,348
Totals		2,318	1,308	48,559	1,748	4,164	2,769	58,548

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database; based solely on permit returns.

Table XIII- 3. Historic Subsistence and Personal Use Salmon Harvests: Southeast Alaska/Yakutat Region, 1985 - 1999

YEAR	Permits		REPORTED SALMON HARVEST					
	Issued	Returned	Chinook	Sockeye	Coho	Chum	Pink	Total
1985		1,271	19	20,006	360	2,951	2,136	25,472
1986		1,354	29	21,974	277	2,840	971	26,091
1987		1,322	34	25,405	117	3,878	1,474	30,908
1988		1,013	94	19,898	97	3,013	1,145	24,247
1989		1,479	580	32,860	1,381	3,113	3,664	41,598
1990		1,543	524	36,376	1,615	3,433	3,529	45,477
1991		1,554	262	37,765	766	3,271	1,741	43,805
1992		1,860	614	53,131	4,939	3,201	2,942	64,827
1993		2,121	537	56,249	3,515	2,583	2,143	65,027
1994		2,239	800	57,097	3,607	4,211	3,639	69,354
1995		2,005	1,203	45,087	3,702	3,370	3,215	56,577
1996		2,171	1,078	54,963	2,488	4,135	2,447	65,111
1997		2,187	739	48,765	2,314	3,612	3,363	58,793
1998		2,374	1,051	53,312	2,838	5,042	3,357	65,600
1999		2,318	1,308	48,559	1,748	4,164	2,769	58,548
1995-1999								
Average		2,211	1,076	50,137	2,618	4,065	3,030	60,926
1990-1999								
Average		2,037	812	49,130	2,753	3,702	2,915	59,312
All Years								
Average		1,787	591	40,763	1,984	3,521	2,569	49,429

SOURCE: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.0; harvest estimates based solely on permit returns

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