

Special Publication No. BOF 2011-06

**Customary and Traditional Use Worksheet: Salmon,
Copper River District, Prince William Sound
Management Area**

by

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and

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November 2011

Alaska Department of Fish and Game

Division of Subsistence



Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols

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

General

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

Measures (fisheries)

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

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations

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

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COPPER RIVER DISTRICT, PRINCE WILLIAM SOUND
MANAGEMENT AREA**

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November 2011

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This document should be cited as:

Holen, Davin, J.A. Fall, and R. La Vine. 2011. Customary and traditional use worksheet: salmon, Copper River District, Prince William Sound Management Area. Alaska Department of Fish and Game Division of Subsistence Special Publication No. BOF 2011-06, Anchorage.

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ABSTRACT

This customary and traditional (C&T) use worksheet updates the worksheet prepared for the Board of Fisheries in 1996 for salmon in the Copper River District of Prince William Sound. This worksheet reviews the history of C&T findings and provides updates for the harvest and use of salmon by residents of Cordova. The worksheet then presents the available data as organized by the eight criteria used by the board to identify customary and traditional use of fish stocks.

Key words: salmon, subsistence fishing, Copper River District, Prince William Sound, Cordova, customary and traditional.

BACKGROUND

Proposal 51 seeks a review from the Alaska Board of Fisheries (board) of the positive customary and traditional use determination (C&T) for salmon stocks of the Copper River District (Figure 1). A review of the current positive C&T finding could result in either a reaffirmation of that positive finding, or in a negative C&T finding. If a negative finding were made, the current subsistence regulations for salmon stocks of the district would be invalid. The board would have the option of creating personal use regulations to replace subsistence regulations.

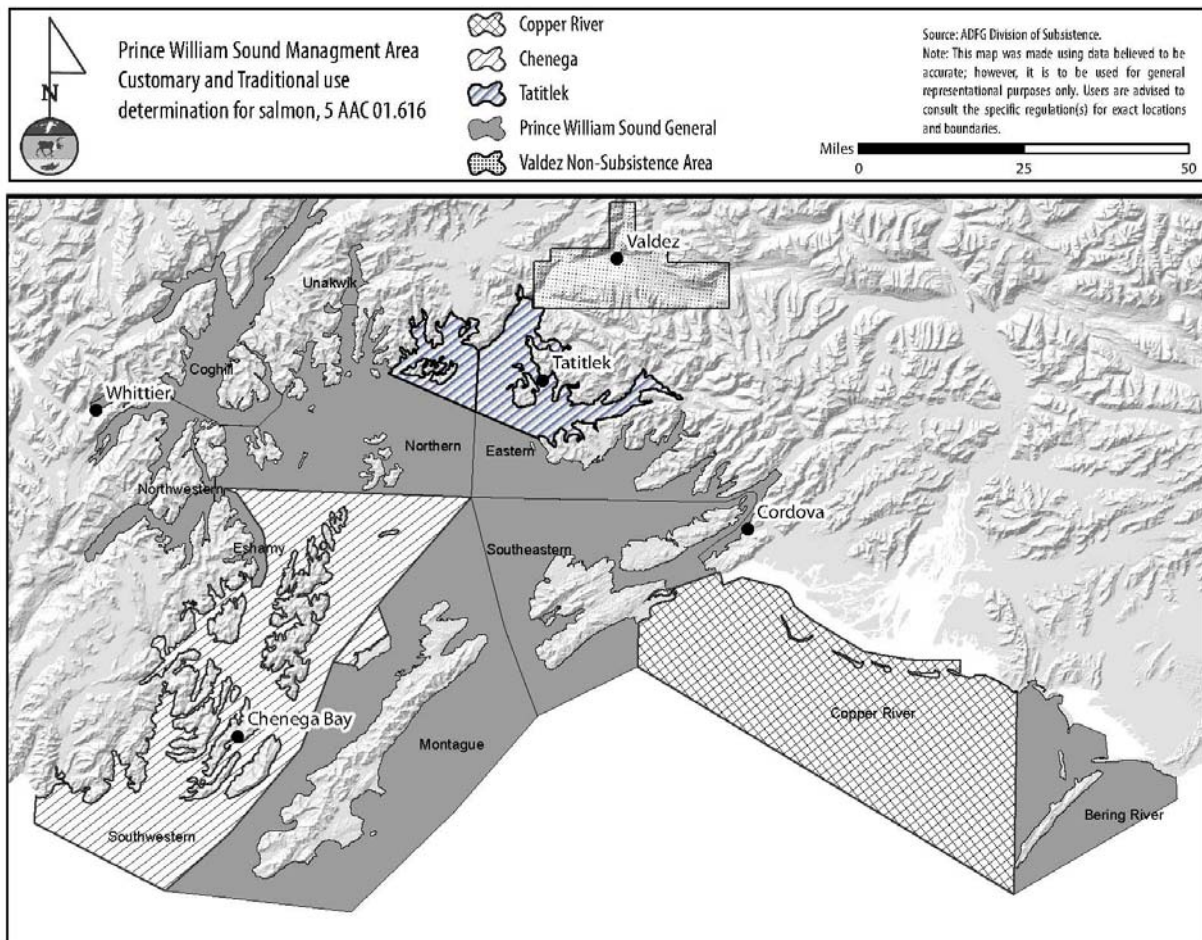


Figure 1.—Prince William Sound management areas.

Under Alaska statute 16.05.258, the board is required to identify the fish stocks, or portions of stocks, that are customarily and traditionally taken or used for subsistence. The board applies regulations found at 5 AAC 99.010. *Joint Boards of Fisheries and Game subsistence procedures*, also known as “the eight criteria,” in making these determinations. In 1996, the board reviewed the available information, as summarized in an “Eight Criteria Worksheet” prepared by the Alaska Department of Fish and Game (ADF&G), concluding that the stocks of the Copper River District support customary and traditional uses, and the fishery, therefore, continued to be managed as a subsistence fishery (as it had since statehood). The board has determined under 5 AAC 01.616 (a) (2)–(6) that, outside the Valdez nonsubsistence area, salmon in the Southwestern District, in the waters along the northwestern shore of Green Island, in the waters north of the line from Porcupine Point to Granite Point and south of a line from Point Lowe to Tongue Point, in the Copper River District, and in the Coghill, Northwestern, Eshamy, Unakwik, Southeastern, Bering River, Northern, Montague, and Eastern districts are customarily and traditionally taken or used for subsistence.

In 2003, the board determined the amount of the harvestable surplus of the salmon stocks of the Copper River District that is reasonably necessary for subsistence uses (an “ANS finding”). The board determined that in a year when there is a harvestable surplus that allows a commercial fishery, 3,000–5,000 salmon are reasonably necessary for subsistence. In years when there is no commercial fishery, 19,000–32,000 salmon are reasonably necessary for subsistence (5 AAC 01.616 (b)(2)).

In March 2010, in response to the decision and order from the state superior court in Fairbanks in *Alaska Fish and Wildlife Conservation Fund v. State of Alaska Board of Fisheries* (Case No. 4FA-09-1515C, Alaska Super. Ct. December 31, 2009), the board adopted a definition of a “subsistence way of life” as “a way of life that is based on consistent, long-term reliance upon fish and game resources for the basic necessities of life” (5 AAC 99.005). The court ruled that the board should re-apply 5 AAC 99.010(b) to the C&T analysis of salmon stocks of the Chitina Subdistrict under a definition of “subsistence way of life” that uses an objective standard supported by law when evaluating Criterion 8. The board did so in March 2010.

The Alaska Department of Law has advised the board that before reconsidering a C&T finding, it must first determine if significant new information is available or if a reconsideration is required by a court ruling. The department recommends that the board determine if either of these conditions applies before reexamining the C&T finding for the salmon stocks of the Copper River District.

This report updates the eight criteria worksheet first prepared for the original C&T deliberations in 1996 to assist the board if it chooses to reexamine the C&T finding for the Copper River District salmon stocks under Proposal 51. In addition to the 1996 C&T worksheet (Appendix A), this report presents data from two subsistence baseline studies conducted by ADF&G (Fall and Utermohle 1999; Fall 2006), as well as an update of the subsistence salmon fishery based on permit data through 2010, the latest year permit data are available. Appendix B includes a history of C&T findings for the Copper River District and Appendix C includes a summary from the 1996 board meeting where a positive C&T finding was made.

CURRENT SUBSISTENCE FISHING REGULATIONS FOR THE COPPER RIVER DISTRICT

Season

Salmon may be taken only from May 15 through October 31 during fishing periods as follows: 1) from May 15 until 2 days before the commercial opening of that salmon district, 7 days per week; 2) during the commercial salmon season, only during open commercial salmon fishing periods in that district; and 3) from 2 days following the closure of the commercial salmon fishing season in that district through October 31, 7 days a week (5 AAC 01.610 (g)).

Gear

Gillnets and seines (5 AAC 01.620), but “in conformance with commercial fishing regulations” which limit gear in the Copper River District to drift net only.

Permit

Required, only 2 issued per household per year.

Bag and possession limits

- 15 salmon for a 1-person household
- 30 salmon for a 2-person household
- 10 salmon for each additional household member
- No more than 5 king salmon per permit (5 AAC 01.645 (b))

CRITERION 1

A long-term consistent pattern of noncommercial taking, use, and reliance on the fish stock or game population that has been established over a reasonable period of time of not less than one generation, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

In the Copper River District between 2005 and 2009, an average of 82.3% of permits was issued to residents of Cordova, who harvested an average of 78.2% of the salmon harvested in the subsistence fishery (Table 1). Figure 2 shows that between 2003 and 2009, this pattern has remained consistent, at around 80% of all permits issued to Cordova residents. Therefore, this section will focus on effort and harvest by Cordova residents.

Substantial archaeological and ethnohistorical data exist which demonstrate the importance of subsistence uses of salmon in the present-day Prince William Sound (PWS) Area generally, as well as the Copper River District (also called the Copper River Delta) by the indigenous Chugach Alutiiq and Eyak Indians in both precontact times and in the 19th and early 20th centuries (Birket-Smith and De Laguna 1938; Birket-Smith 1953; de Laguna 1956).

There were at least 4 Eyak villages in the present-day Cordova area. By 1889, what had been the village of Eyak had become the staging area for the fledgling commercial salmon fishing industry. The city of Cordova was founded in 1906 at the site of “Old Town,” the last Eyak village (Stratton 1989:14–15). Until 1939, Cordova was the terminus of the Copper River and Northwestern Railroad. Since then, commercial fishing and processing have remained important for the cash economy of Cordova (Fall 2006).

Concerning salmon uses in Cordova in the mid and late 1970s, McNeary (1978:7) noted:

In addition to their commercial value, salmon are a major food resource for people in the Cordova area, as indeed they have been for hundreds of years. Although pinks and chum are the most abundant species in Prince William Sound, kings, reds (sockeye), and silvers (coho) are favored for home consumption. The number of subsistence net permits issued is small and the take reported is negligible. Some feeder kings are caught by trolling in Prince William Sound, and sport fishing for coho is very popular, especially in nearby Eyak River. However, many if not most of the salmon consumed are caught with commercial gear.

The following data are derived from 2 sources. The first data set is from comprehensive subsistence household surveys conducted in Cordova between 1985 and 2003 and includes the estimated harvest of salmon as well as the per capita harvest of salmon (Table 2; Table 3). Tables 2 and 3 include harvest of salmon in the subsistence fishery, rod and reel harvests, and removal from commercial harvests. Table 4 details the harvest by gear type. The second data set is from subsistence salmon permits, which have been issued for the Copper River District subsistence salmon fishery between 1965 and 2011. The most up-to-date final analysis of harvest estimates are for 2010, which have been included in tables 1 and 5.

Table 1, based on comprehensive subsistence household surveys, summarizes the harvest of salmon by species from 1985 to 2003 by residents of Cordova. Between 1985 and 2003, the highest harvest of salmon was in 2003, when there was a harvest of 29,154; the low harvest was in 1988, with 20,027 salmon (Figure 3). Between 1985 and 1992, a majority of salmon harvested were coho salmon, while between 1993 and 2003, most salmon harvested were sockeye salmon. The harvest in terms of pounds per capita ranged from a low of 58 pounds per person in 1993 to a high of 77 pounds per person in 2003 (Table 2 and Figure 4).

Table 5 shows the harvest of salmon in the subsistence fishery as recorded by permits for the Copper River District. The 20-year average harvest estimate is 2,801 salmon, while the 10-year average harvest is 4,022 salmon, and the 5-year average harvest of salmon is 4,403 salmon. Cordova residents represented 82% of permits issued for the Copper River District subsistence fishery in 2009, while 18% were issued to residents of other Alaska communities (Table 1).

Table 1.—Copper River District subsistence salmon permits and estimated salmon harvests by Cordova and other Alaska residents, 2003–2009.

Year	Number and percentage of permits issued					Estimated number of salmon harvested				
	Cordova residents		Other residents		Total	Cordova residents		Other residents		Total
	Number	Percent	Number	Percent	Number	Number	Percent	Number	Percent	Number
2003	320	83.3	64	16.7	384	2,046	83.9	393	16.1	2,439
2004	422	82.6	89	17.4	511	2,669	85.3	460	14.7	3,129
2005	211	89.0	26	11.0	237	909	82.2	197	17.8	1,106
2006	344	81.7	77	18.3	421	3,813	74.3	1,322	25.7	5,135
2007	386	82.3	83	17.7	469	5,798	75.4	1,896	24.6	7,694
2008	403	79.6	103	20.4	506	3,762	79.5	970	20.5	4,732
2009	266	82.4	57	17.6	323	2,021	93.0	152	7.0	2,173
2010 ^a					325					2,283
5-year average ^b	322	82.3	69	17.7	391	3,261	78.2	907	21.8	4,168
7-year average ^b	336	82.5	71	17.5	407	3,003	79.6	770	20.4	3,773

Note Place of residence of permit holders was not included in the permit database until 2003.

a. 2010 data are preliminary. Data on place of residence are not yet available.

b. Does not include 2010 data.

Table 2.—Estimated overall harvest of salmon for home use by Cordova residents, 1985–2003, number of fish.

	1985	1988	1991	1992	1993	1997	2003
Chum salmon	605	1,201	616	0	318	1,099	614
Coho salmon	8,528	10,583	15,090	14,398	11,570	7,480	11,881
King salmon	1,696	1,596	3,004	2,601	2,947	3,450	3,066
Pink salmon	1,673	1,524	1,595	1,262	773	1,693	1,252
Sockeye salmon	7,704	5,123	8,671	9,876	12,789	9,339	12,295
Total, salmon	20,205	20,027	29,207	28,138	28,617	23,061	29,154

Table 3.—Per capita harvest of salmon by Cordova residents, 1985–2003, pounds per person.

	1985	1988	1991	1992	1993	1997	2003
Chum salmon	1.8	3.1	1.7	0.0	0.5	2.7	1.2
Coho salmon	28.8	32.3	44.1	36.4	23.0	19.2	30.9
King salmon	15.0	12.8	21.5	17.5	15.4	22.2	20.8
Pink salmon	1.8	1.6	1.3	1.2	0.5	1.8	1.4
Sockeye salmon	14.8	9.5	17.2	16.2	18.5	16.7	22.9
Total, salmon	62.3	59.3	86.2	71.3	58.3	62.6	77.3

Table 4.—Estimated salmon harvests for home use, by gear type, Cordova residents, 1985, 1988, 1991–1993, 1998, and 2003.

	1985		1988		1991		1992		1993		1998		2003		7-year average	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
King salmon	1,695		1,596		3,004		2,601		2,948		3,450		3,066		2,623	
Subsistence methods	29	1.7	82	5.1	85	2.8	115	4.4	155	5.3	263	7.6	1,755	57.2	355	13.5
Rod and reel	273	16.1	143	9.0	528	17.6	191	7.3	1,410	47.8	636	18.4	193	6.3	482	18.4
Commercial removal	1,393	82.2	1,371	85.9	2,391	79.6	2,295	88.2	1,383	46.9	2,551	73.9	1,119	36.5	1,786	68.1
Chum salmon	604		1,202		616		0		318		1,098		614		636	
Subsistence methods	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10	0.9	292	47.7	43	6.8
Rod and reel	124	20.5	55	4.6	101	16.4	0	0	27	8.5	170	15.5	221	36.0	100	15.7
Commercial removal	480	79.5	1,147	95.4	515	83.6	0	0	291	91.5	918	83.6	100	16.4	493	77.5
Coho salmon	8,528		10,583		15,090		14,398		11,570		7,481		11,881		11,362	
Subsistence methods	4	0.0	97	0.9	881	5.8	0	0.0	0	0.0	863	11.5	1,542	13.0	484	4.3
Rod and reel	4,905	57.5	9,018	85.2	10,126	67.1	10,899	75.7	9,278	80.2	4,631	61.9	8,695	73.2	8,222	72.4
Commercial removal	3,619	42.4	1,468	13.9	4,083	27.1	3,499	24.3	2,292	19.8	1,987	26.6	1,644	13.8	2,656	23.4
Pink salmon	1,673		1,524		1,595		1,261		773		1,693		1,252		1,396	
Subsistence methods	83	5.0	0	0.0	8	0.5	382	30.3	0	0.0	65	3.8	188	15.0	104	7.4
Rod and reel	961	57.4	827	54.3	477	29.9	191	15.1	637	82.4	797	47.1	726	58.0	659	47.2
Commercial removal	629	37.6	697	45.7	1,110	69.6	688	54.6	136	17.6	831	49.1	339	27.0	633	45.3
Sockeye salmon	7,704		5,123		8,670		9,877		12,789		9,339		12,295		9,400	
Subsistence methods	468	6.1	311	6.1	916	10.6	1,769	17.9	1,183	9.3	1,256	13.4	5,194	42.2	1,585	16.9
Rod and reel	899	11.7	499	9.7	1,094	12.6	1,033	10.5	1,828	14.3	1,512	16.2	1,154	9.4	1,146	12.2
Commercial removal	6,337	82.3	4,313	84.2	6,660	76.8	7,075	71.6	9,778	76.5	6,571	70.4	5,947	48.4	6,669	70.9
Unknown salmon	0		0		232		0		218		0		0		64	
Subsistence methods	0	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0	0	0	0	0.0
Rod and reel	0	0	0	70.3	163	70.3	0	0	182	83.5	0	0	0	0	49	76.7
Commercial removal	0	0	0	29.7	69	29.7	0	0	36	16.5	0	0	0	0	15	23.3
All salmon	20,204		20,028		29,207		28,137		28,616		23,061		29,108		25,480	
Subsistence methods	584	2.9	490	2.4	1,890	6.5	2,266	8.1	1,338	4.7	2,457	10.7	8,971	30.8	2,571	10.1
Rod and reel	7,162	35.4	10,542	52.6	12,489	42.8	12,314	43.8	13,362	46.7	7,746	33.6	10,989	37.8	10,658	41.8
Commercial removal	12,458	61.7	8,996	44.9	14,828	50.8	13,557	48.2	13,916	48.6	12,858	55.8	9,148	31.4	12,252	48.1

Note Blank cells note data recorded as no harvest of the resource.

Table 5.—Historical subsistence salmon harvests, Copper River District (Copper River Flats), 1991–2010.

Year	Permits		Estimated salmon harvest					Total
	Issued	Returned	King	Sockeye	Coho	Chum	Pink	
1991	129	115	153	931	43	0	0	1,126
1992	126	113	158	875	47	0	0	1,080
1993	111	93	143	511	35	0	0	689
1994	101	97	171	494	70	0	0	734
1995	126	112	173	779	35	0	0	987
1996	176	157	309	1,086	53	0	0	1,448
1997	269	243	223	1,144	1,967	0	0	3,333
1998	245	230	314	905	724	0	0	1,944
1999	294	275	377	1,422	729	0	0	2,528
2000	416	400	717	4,534	46	18	3	5,318
2001	468	439	881	3,275	75	2	0	4,232
2002	355	331	589	3,289	30	2	0	3,910
2003	384	367	730	1,655	37	0	16	2,439
2004	511	487	1,163	1,910	48	5	3	3,129
2005	237	224	260	830	15	0	1	1,106
2006	421	399	779	4,355	1	0	0	5,135
2007	469	445	1,211	6,458	16	2	6	7,694
2008	506	482	495	4,161	55	0	21	4,732
2009	323	293	232	1,916	23	1	0	2,173
2010	325	314	276	1,980	27	0	0	2,283
5-year average (2006–2010)	409	387	599	3,774	24	1	5	4,403
10-year average (2001–2010)	400	385	720	3,189	105	3	5	4,022
20-year average (1991–2010)	300	281	468	2,125	204	2	3	2,801

Source ADF&G Division of Subsistence Alaska Salmon Fishing Database (ASFDB) 2010.

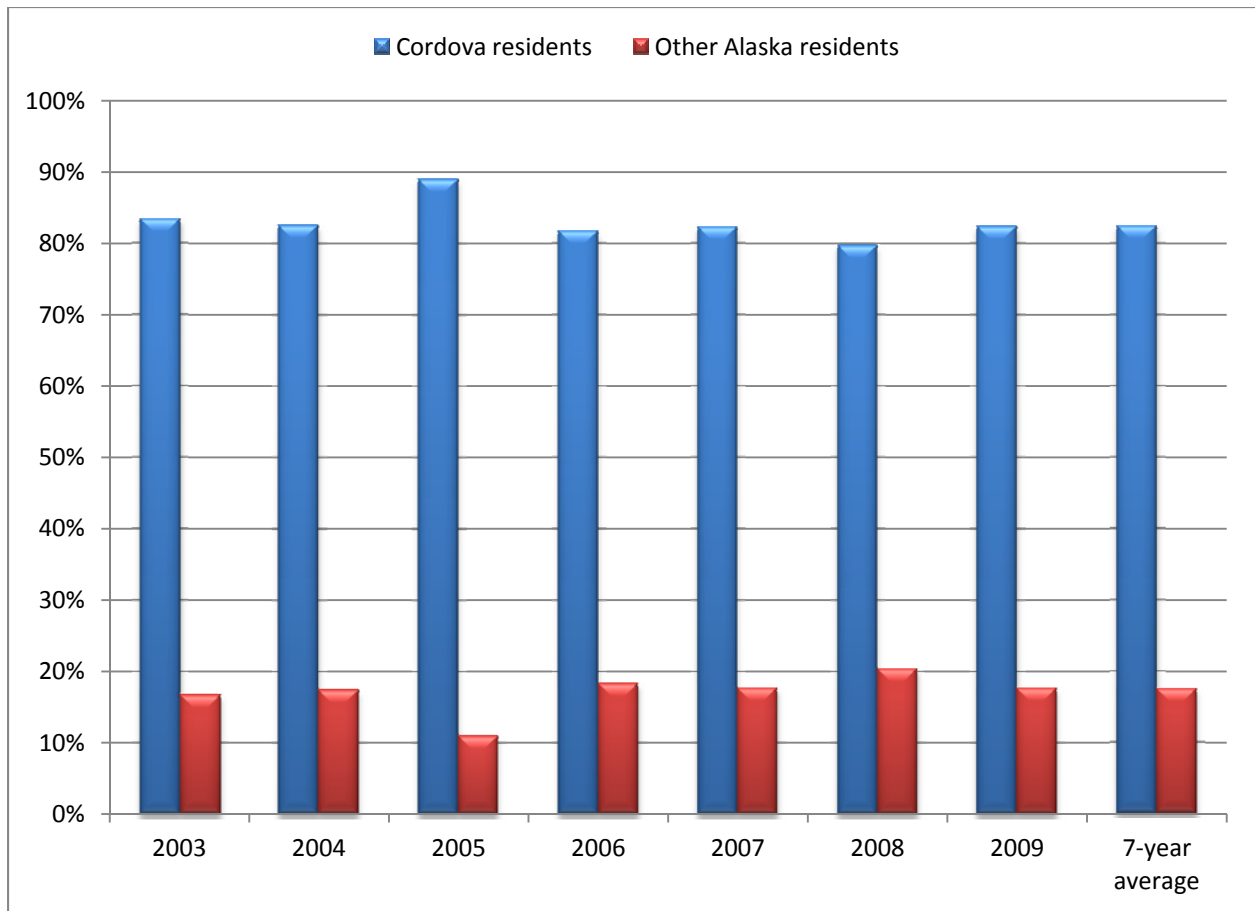


Figure 2.—Percentage of subsistence permit holders, Copper River District, by place of residence.

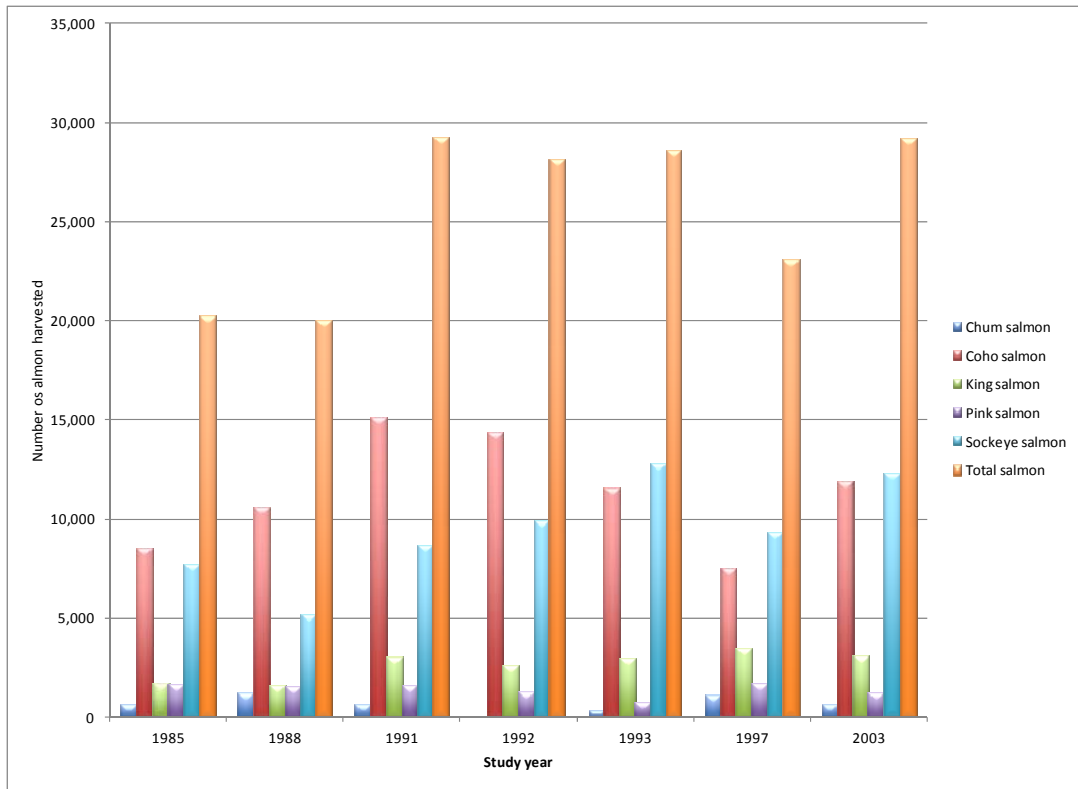


Figure 3.—Estimated harvest of salmon, Cordova residents, 1985–2003.

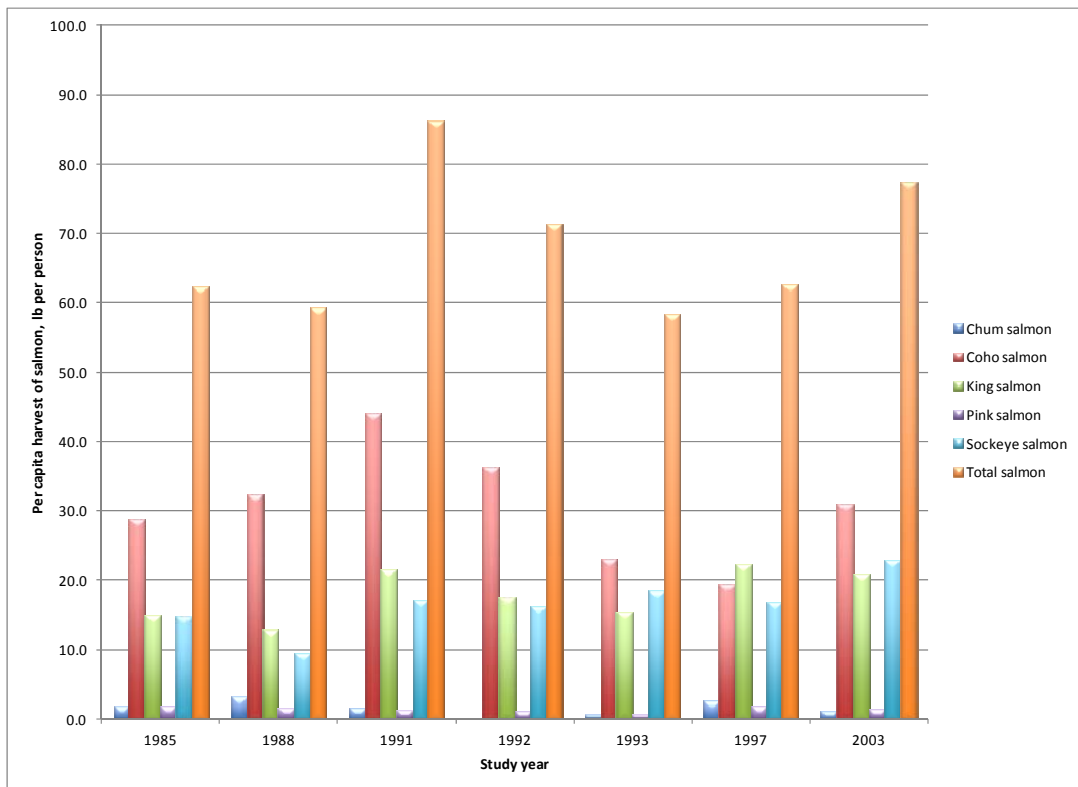


Figure 4.—Per capita harvest of salmon, Cordova residents, 1985–2003.

CRITERION 2

A pattern of taking or use recurring in specific seasons of each year.

Stratton (1989:59) depicts the seasonal round of harvest activities for Cordova. King salmon fishing begins in early May and generally lasts through July. Occasional effort in the winter months of December, January, and February for “white kings” continues today. Subsistence fishing for sockeye salmon takes place from May through August. Pink and chum salmon are caught mainly in July and August. Fishing for coho salmon occurs mostly in September and October.

CRITERION 3

A pattern of taking or use consisting of methods and means of harvest that are characterized by efficiency and economy of effort and cost.

Historically in PWS, salmon were speared and gaffed above weirs placed in stream mouths. They were also taken in traps, with hook and line, and with nets (Birket-Smith 1953:41, 96). In the Cordova area, the Eyak Indians took salmon from the Lower Copper River using spears and dip nets from platforms. They also caught salmon in small traps (Birket-Smith and De Laguna 1938:117–118).

Today, regulations limit subsistence salmon fishing gear in the Copper River District to that allowed in the commercial fishery, namely drift gillnets.

Residents of Cordova also take salmon for home use with rod and reel under sport fishing regulations and by removal from commercial harvests. Figure 5 shows the harvest of salmon by gear type in 2003. Table 4 provides information on salmon harvests by gear type in Cordova for seven study years. In 6 out of the 7 survey years, removal from commercial catches provided the most salmon for home use in Cordova, followed closely by rod and reel (Figure 5).

According to an analysis by Stratton (1989:86–87), in part, the regulatory history for subsistence fishing in PWS accounts for the reliance on removal from commercial catches and rod and reel fishing for obtaining salmon for home use in Cordova. In 1985, these regulations made it difficult for households with commercial fishing permits, or households without commercial fishing gear, to obtain subsistence salmon. According to subsistence salmon fishing regulations that were in place for the 1985 season, a subsistence fishing permit was required in order to participate in the subsistence fishery. Subsistence fishing was allowed only during commercially-open seasons, only in locations open to commercial fishing, and only with the gear type allowed for commercial fishing: gillnet or purse seine. These requirements placed subsistence fishers in direct competition with commercial harvesters. In addition, holders of a salmon limited entry permit for the Copper River/PWS area were not allowed to have a subsistence salmon permit. Nowhere else in the state was this limitation in existence (Stratton 1989:86–87). The board repealed the prohibition against subsistence fishing by commercial permit holders (in place since 1961) in 1987.

Stratton (1989:87) also notes that subsistence annual limits for subsistence salmon in the saltwater portions of the PWS Area, including the Copper River District, declined steadily during statehood, from a high of 100 in 1960, to 10 king salmon, 25 sockeye salmon, and 25 coho salmon in 1962, to a low of 10 total salmon from 1974 through 1980. In 1981, the limits were increased to 15 for 1-person households, 30 for 2-person households, and 10 for each additional household member. These limits remain in effect.

Table 6 shows the number of households using combinations of methods used to harvest salmon for their home use. Table 7 reports the estimated number and percentage of Cordova households using subsistence nets, rod and reel harvests, or removal from commercial harvests as sources of salmon for home use in each of the 7 study years. The number of households using subsistence nets grew from 45 in 1985 (5% of all households in Cordova) to 252 (28%) in 2003. The number of households removing salmon from their commercial harvests for home use dropped from 310 (36%) in 1985 to 228 (25%) in 2003. The average of

336 subsistence permits issued to Cordova households from 2003 to 2009 represents about 36% of the 922 households in the community in 2010 (U.S. Census Bureau 2011).

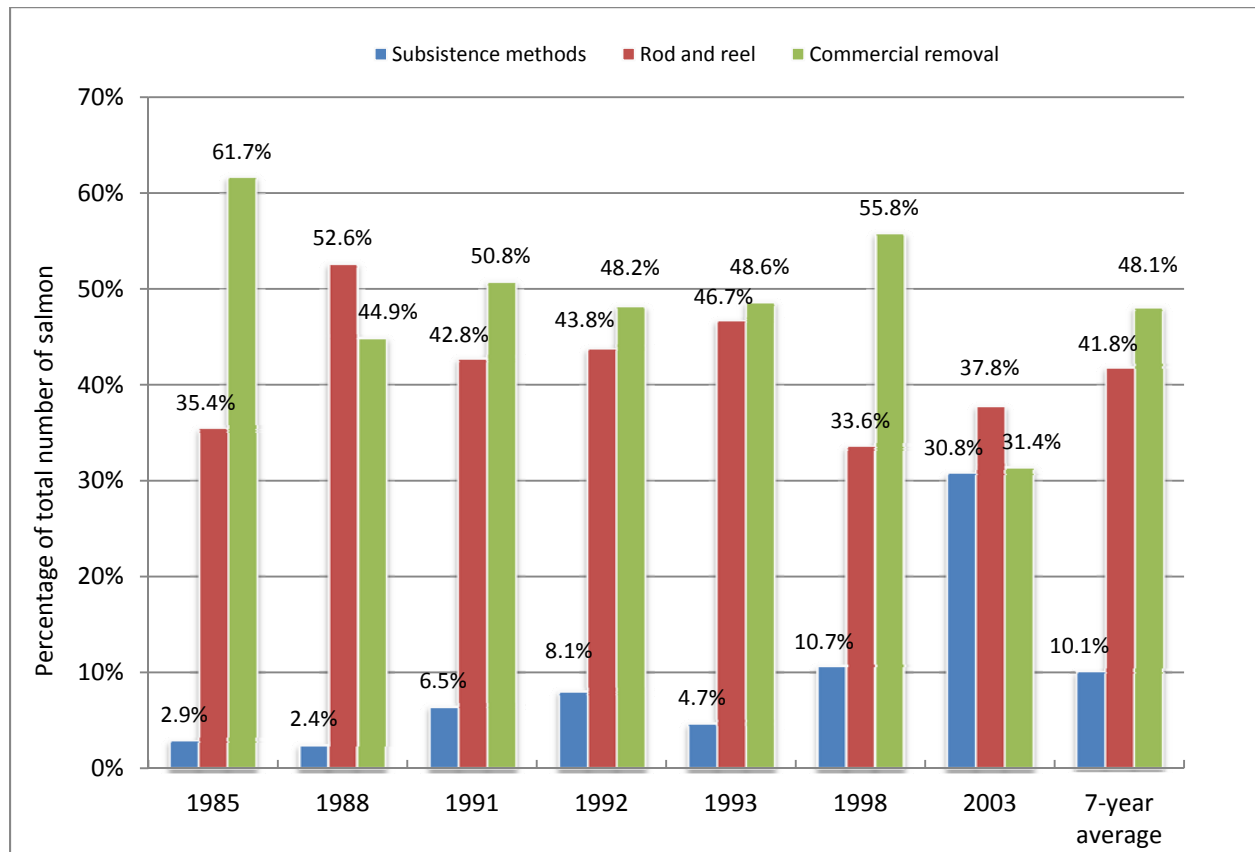


Figure 5.—Percentage of salmon harvests for home use by gear type, Cordova residents, 1985–1993.

CRITERION 4

The area in which the noncommercial, long-term, and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Historically, most of the PWS and Copper River Delta area was used for subsistence salmon fishing. Presently, most Cordova residents who fish for salmon under subsistence regulations do so on the Copper River Flats. As noted above, by regulation, the subsistence fishery is open only in areas also open to commercial fishing. A few Cordova residents subsistence fish in PWS itself (Fall et al. 2011:22; Stratton 1989:88).

CRITERION 5

A means of handling, preparing, preserving, and storing fish or game that has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

In Cordova, a variety of methods are used to preserve salmon. These include freezing, smoking, canning, preserving in jars (“jarring”), salting, pickling, and kippering (McNeary 1978:7; Stratton 1989:86). In a report to ADF&G, the Native Village of Eyak noted preserving its harvest in the educational fishery through canning and smoking salmon (Cain 2010).

CRITERION 6

A pattern of taking or use that includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Cordova is located near the site of several Eyak Indian villages, the descendants of which, along with descendants of the Chugach people of PWS, continue to reside in the community. Use of salmon by these families, as well as more recent arrivals to Cordova, is commonplace and involves members of several generations (Stratton 1989:133–134).

CRITERION 7

A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

Sharing of salmon is very common in Cordova. According to data collected in Cordova pertaining to 1985, “Surveyed households reported receiving and giving away substantial quantities of salmon” (Stratton 1989:97). In that year, households, on average, received about 40 pounds lb of salmon; those who gave away salmon, on average shared 75 lb of fish with other households. More recently, approximately 56 of Cordova residents reported giving salmon, while 62 reported receiving salmon (Fall 2006). The Native Village of Eyak, after its educational fishery in the summer, distributed the fresh, canned, and smoked salmon to elders in the community (Cain 2010).

Table 6.—Estimated number and percentage of households using combinations of methods used to harvest salmon for home use, Cordova residents, 1985, 1988, 1991–1993, 1998, and 2003.

Method(s)	1985		1988		1991		1992		1993		1998		2003	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Subsistence, commercial, and rod and reel	12	1.5	26	3.0	48	6.1	19	2.4	9	1.0	16	2.0	19	2.1
Subsistence and commercial only	4	0.5	17	2.0	16	2.0	19	2.4	9	1.0	33	3.9	68	7.5
Subsistence and rod and reel only	21	2.4	43	5.0	16	2.0	38	4.9	36	3.8	56	6.7	129	14.2
Subsistence only	8	1.0	9	1.0	16	2.0	19	2.4	18	1.9	20	2.4	33	3.7
Commercial and rod and reel only	149	17.5	276	31.7	184	23.5	191	24.4	136	14.4	134	16.2	80	8.7
Commercial only	186	21.8	147	16.8	32	4.1	57	7.3	82	8.7	69	8.3	36	4.0
Rod and reel only	253	29.6	242	27.7	328	41.8	306	39.0	391	41.3	223	26.9	252	27.7
No harvest, received only	178	20.9	86	9.9	80	10.2	76	9.8	209	22.1	187	22.5	234	25.7
No harvest or use	41	4.9	26	3.0	64	8.2	57	7.3	55	5.8	95	11.5	77	8.1
Estimated total number of households	853		872		784		784		946		830		910	

Table 7.—Estimated number of Cordova households harvesting salmon by gear type, 1985, 1988, 1991–1993, 1998, and 2003.

Method(s)	1985		1988		1991		1992		1993		1998		2003		7-year average	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Subsistence	45	5.3	54	6.2	93	11.9	96	12.2	73	7.7	125	15.0	252	27.7	105	12.3
Rod and reel	435	51.0	547	62.7	559	71.3	688	87.8	573	60.6	427	51.4	437	48.0	524	61.3
Commercial removal	310	36.4	378	43.3	279	35.6	344	43.9	272	28.8	252	30.4	228	25.0	295	34.5
Any method	617	72.3	691	79.3	675	86.1	707	90.2	737	77.9	548	66.0	603	66.2	654	76.6
Estimated total number of households	853		872		784		784		946		830		910		854	

CRITERION 8

A pattern that includes taking, use, and reliance for subsistence purposes upon a wide diversity of fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

Noncommercial resource harvests are relatively large in Cordova, ranging from 128 to 234 pounds per person annually in the 7 study years between 1985 and 2003 (Table 8 and Figure 6). As shown in Table 9, this harvest range is similar to that of other Alaska communities off the road system where commercial fishing is important, including Kodiak, with a per capita harvest of 151 lb in 1993, as well as Sitka, with a per capita harvest of 205 lb in 1996, the last years that comprehensive subsistence baseline studies were conducted in these communities. Overall, wild resource uses in Cordova are relatively diverse, and are made up of a variety of fish, mammals, marine invertebrates, birds, and wild plants (Table 9). In 2003, Cordova households reported using an average of 12.4 different kinds of resources, harvesting an average of 7.4 resources, and attempting to harvest an average of 8.1 resources (Fall 2006:44). Like Sitka and Kodiak, Cordova is outside a nonsubsistence use area established by the Joint Boards of Fisheries and Game in 1992.

For 1985, Stratton (1989:149) concluded that:

Cordova is a small heterogeneous community that demonstrates a mixture of resource use patterns. Resource use and harvest play a significant role not only in the local economy, but also in the social networks, as sharing and bartering are extensive. The seasonal cash economy, that rises and falls with the size of the salmon runs and current market values, underscores the importance of resources to local residents. The fact that so many households chose to bring home salmon from their commercial catches demonstrates that salmon is valued highly by people for more than just its monetary worth.

Conclusions from the 2003 study year were similar to those for 1997, as well as other study years. As a continuing example of the significance of salmon as a subsistence resource for the community of Cordova, in 2003 salmon comprised 44% of the total subsistence harvest for that year (Figure 7) and while modest fluctuations in salmon harvest levels are demonstrated over the years, recent harvest levels remain high (Table 8) and over all subsistence harvest levels remain consistent (Fall 2006:47).

Table 8.–Per capita harvests of resources, Cordova residents, 1985, 1988, 1991–1993, 1997, 2003.

	1985	1988	1991	1992	1993	1997	2003
Salmon	62.3	59.3	86.2	71.3	58.3	62.6	77.3
Nonsalmon fish	36.8	91.4	40.2	40.8	29.9	42.6	29.0
Large land mammals	41.6	48.9	49.2	42.0	24.1	52.4	52.8
Small land mammals	2.4	1.3	0.8	0.5	0.6	2.1	1.9
Marine mammals	1.0	0.8	0.4	0.0	0.8	3.6	3.9
Birds and eggs	1.7	4.7	1.8	1.3	1.1	2.2	2.6
Marine invertebrates	12.5	21.8	5.5	4.6	5.4	5.5	2.8
Vegetation	5.5	5.6	5.2	3.1	7.5	8.4	6.2
All resources	163.8	233.8	189.2	163.5	127.8	179.4	176.4

Table 9.—Comparison of most recently available, primary resource category, harvest and use data for the communities of Cordova, Kodiak City, and Sitka.

Resource and community	Percentage of households					Community harvest				Confidence interval		
	Using	Attempting	Harvesting	Giving away	Receiving	Quantity	Weight (lb)	Per household (lb)	Per capita (lb)	Low	High	95% CIP ±
<u>Salmon</u>												
Cordova	91.9	71.6	66.2	56.1	62.2	29,154	186,910	205.4	77.3	150,652	223,167	19.0
Kodiak City	93.3	73.3	68.6	61.0	73.3	69,553	289,229	145.0	47.7	179,242	399,216	37.0
Sitka	89.4	60.1	58.0	50.6	63.6	83,114	493,542	161.7	57.8	366,154	620,931	28.0
<u>Nonsalmon fish</u>												
Cordova	81.8	56.1	55.4	42.6	64.2	46,156	70,051	77.0	29.0	52,245	87,856	25.0
Kodiak City	95.2	66.7	63.8	61.9	80.0	363,265	363,265	182.2	60.0	251,114	475,416	30.0
Sitka	91.7	60.2	57.3	47.4	66.8	459,665	459,665	150.6	53.9	313,739	605,590	32.0
<u>Marine invertebrates</u>												
Cordova	50.7	31.8	30.4	20.9	35.1	3,596	6,833	7.5	2.8	5,209	8,456	24.0
Kodiak City	79.0	41.0	40.0	41.0	73.3	57,595	57,595	28.9	9.5	29,593	85,597	48.0
Sitka	72.4	44.9	43.7	32.1	60.7	234,496	234,496	76.8	27.5	156,452	312,541	33.0
<u>Large land mammals</u>												
Cordova	73.6	46.6	42.6	37.2	58.8	1,560	127,718	140.3	52.8	102,047	153,388	20.0
Kodiak City	75.2	41.9	30.5	28.6	57.1	2,317	137,012	68.7	22.6	80,066	193,958	41.0
Sitka	64.4	43.6	34.8	23.2	40.6	5,001	434,225	142.2	50.9	277,196	591,255	33.0
<u>Small land mammals</u>												
Cordova	20.3	19.6	16.9	6.8	4.7	2,411	4,534	5.0	1.9	2,362	6,706	48.0
Kodiak City	20.0	19.0	13.3	5.7	11.4	1,994	3,570	1.8	0.6	1,361	5,779	59.0
Sitka	4.3	3.2	3.2	1.2	1.5	2,268	746	0.2	0.1	0	1,718	129.0
<u>Marine mammals</u>												
Cordova	14.9	8.8	8.8	8.8	8.8	435	9,320	10.2	3.9	2,808	16,930	82.0
Kodiak City	1.9	1.0	1.0	1.0	1.9	38	0	0.0	0.0	0	0	186.0
Sitka	17.2	7.6	7.6	10.1	11.5	1,081	62,358	20.4	7.3	31,847	92,869	51.0
<u>Birds and eggs</u>												
Cordova	42.6	29.7	29.1	15.5	21.6	10,024	6,278	6.9	2.6	5,146	7,409	18.0
Kodiak City	20.0	17.1	14.3	6.7	12.4	6,267	4,057	2.0	0.7	1,718	6,396	60.0
Sitka	8.2	8.7	7.8	4.9	0.7	5,761	5,068	1.7	0.6	761	9,376	87.0
<u>Vegetation</u>												
Cordova	75.0	70.9	68.9	45.3	34.5	5,150	15,023	16.5	6.2	12,423	17,622	17.0
Kodiak City	82.9	76.2	76.2	43.8	48.6	60,343	60,343	30.3	10.0	28,911	91,775	52.0
Sitka	69.6	60.6	60.2	28.3	29.4	59,671	59,671	19.5	7.0	45,905	73,437	23.0
<u>Overall</u>												
Cordova	91.9	71.6	68.9	56.1	64.2	98,486	426,667	469	176	332,892	521,534	31.6
Kodiak City	95.2	76.2	76.2	61.0	80.0	561,372	915,071	459	151	572,005	1,258,137	64.1
Sitka	91.7	60.6	60.2	50.6	66.8	851,057	1,749,771	573	205	1,192,054	2,307,717	52.0

Source Community Subsistence Information System, 2011.

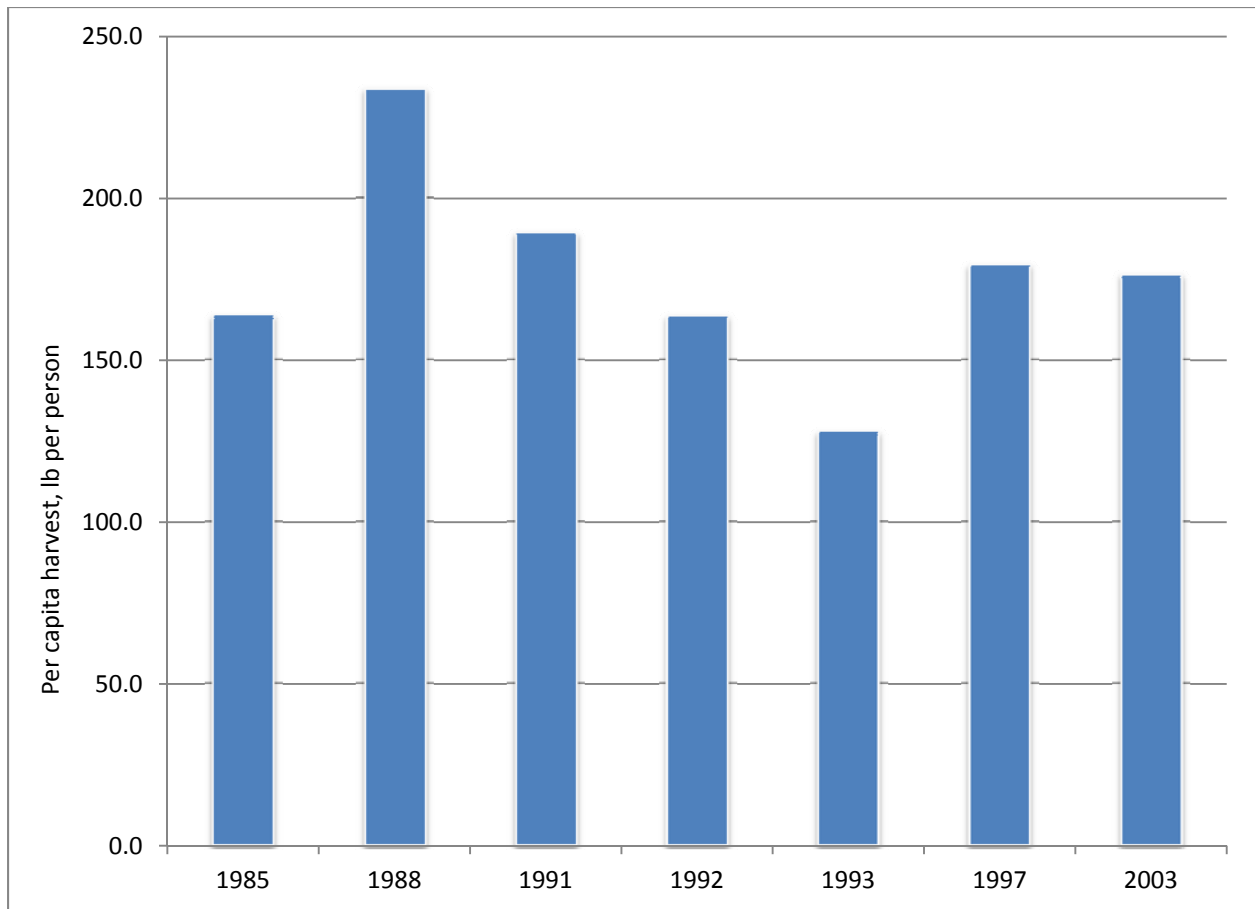


Figure 6.—Per capita harvests of wild resources over time, Cordova residents, 1985–2003.

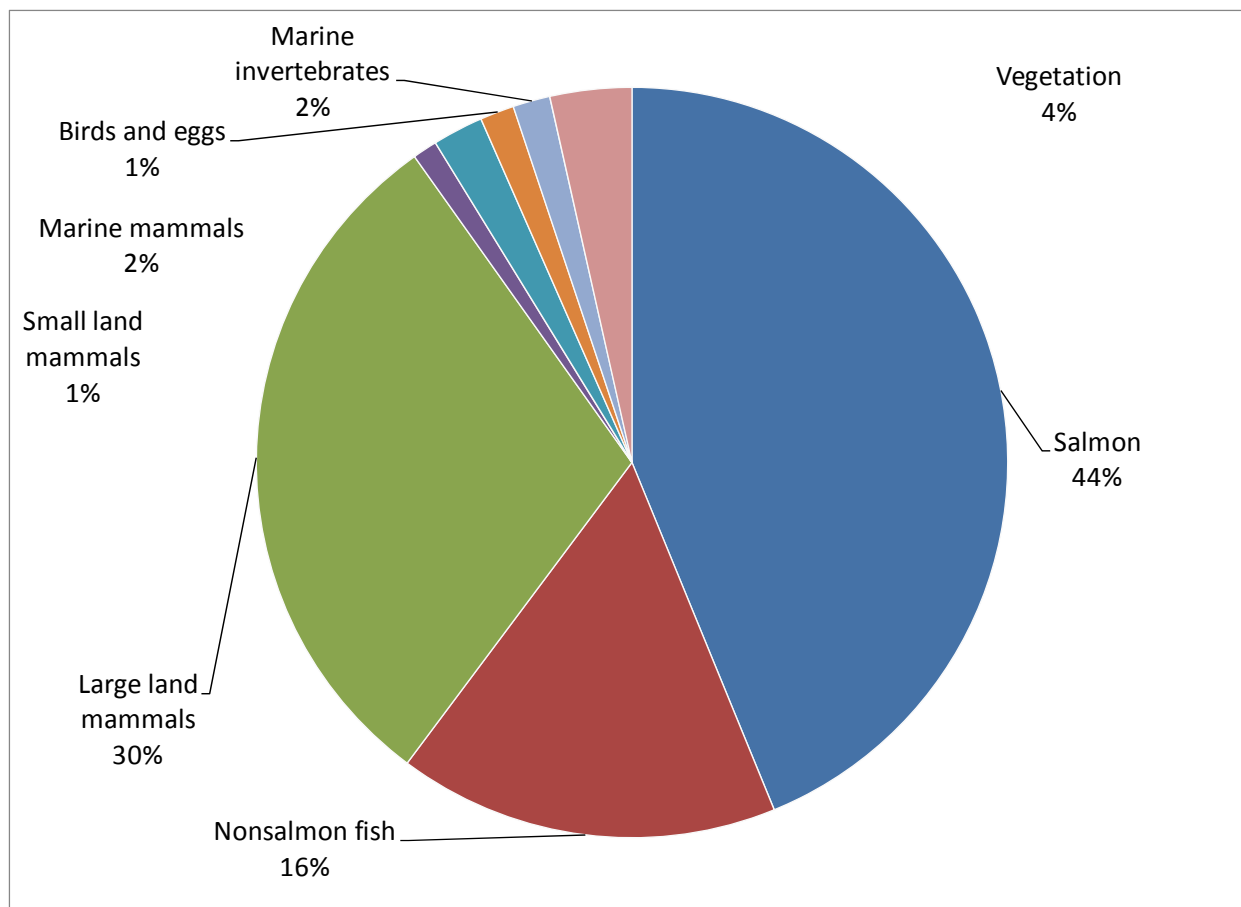


Figure 7.—Composition of wild resource harvests over time, Cordova residents, 2003.

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**APPENDIX A. 1996 CUSTOMARY AND TRADITIONAL USE
WORKSHEET**

CUSTOMARY AND TRADITIONAL USE WORKSHEET

SALMON: PRINCE WILLIAM SOUND MANAGEMENT AREA, COPPER RIVER DISTRICT

Prepared by the Division of Subsistence
Alaska Department of Fish and Game

Alaska Board of Fisheries
December 1996

Background: Proposal Number 54 proposes several changes to subsistence salmon fishing regulations in the Copper River District of the Prince William Sound Management Area. Although this district is currently open to subsistence salmon fishing (and has been since statehood and before), the Board has not made a determination whether the stocks of this district support customary and traditional uses (a "c&t finding"). This worksheet provides information on the patterns of use of salmon in this general area as background if the Board chooses to make such a determination. The information is organized according to the eight criteria for identifying customary and traditional uses as listed in the Joint Boards Subsistence Policy (5 AAC 99.010). (Appendix A summarizes previous c&t findings for the Prince William Sound Management Area.)

Current subsistence regulations for the Copper River District are as follows:

- **Area:** salmon may not be taken in waters closed to commercial fishing (5 AAC 01.625[c])
- **Season:** "in conformance with commercial fishing regulations" (5 AAC 01.645[b]) (that is, subsistence fishing may only occur during open commercial fishing periods)
- **Gear:** gillnets and seines (5 AAC 01.620) but "in conformance with commercial fishing regulations" (5 AAC 01.645[b]) which limit gear in the Copper River District to gillnets.
- **Permit:** required; only one issued per household per year
- **Bag and possession limits** (5 AAC 01.645[b]):
 - 15 salmon for a one person household
 - 30 salmon for a two-person household
 - 10 salmon for each additional household member
 - no more than 5 king salmon per permit
- **Marking:** not required

Note: because the large majority of participants in this fishery are residents of Cordova, this worksheet focuses on uses of salmon and other resources in that community.

Criterion 1. A long-term consistent pattern of use and reliance on the fish stock or game population that has been established over a reasonable period of time, excluding interruption by circumstances beyond the user's control, such as unavailability of the fish or game caused by migratory patterns.

Substantial archaeological and ethnohistorical data exist which demonstrate the importance of the subsistence use of salmon in the present-day Prince William Sound Area generally and the Copper River District (Copper River Delta) in particular (Birket-Smith and de Laguna 1938, Birket-Smith 1953, de Laguna 1956) in precontact times and in the 19th and early 20th centuries by the indigenous Chugach Alutiq and Eyak Indians.

There were at least four Eyak villages in the present-day Cordova area. By 1889, what had been the village of Eyak had become the staging area for the fledgling commercial salmon fishing industry. The city of Cordova was founded in 1906 at the site of "Old Town," the last Eyak village

(Stratton 1989:14-15). Until 1939, Cordova was the terminus of the Copper River and Northwestern Railroad. Since then, commercial fishing and processing has dominated the cash sector of the local economy of Cordova. The population history for the Cordova area is summarized in Table 1.

Table 2 summarizes data on uses and harvests of salmon for home use by Cordova residents, based upon Division of Subsistence harvest surveys and summarized in the Community Profile Data Base (Scott et al. 1996). The table shows that the vast majority (91 percent to 100 percent) of Cordova households use salmon. Table 3 reports home use salmon harvests (as well as other resource categories) in pounds usable weight per person for Cordova for five study years. On average, Cordova households have harvested from 58 pounds per person (in 1993) to 86 pounds per person (in 1991) of salmon for home use. Salmon has made up between 25 percent and 45 percent of the total wild resource harvest for home use in Cordova over the five study years (Table 4).

Concerning salmon uses in Cordova in the mid and late 1970s, McNeary (1978:7) noted:

In addition to their commercial value, salmon are a major food resource for people in the Cordova area, as indeed they have been for hundreds of years. Although pinks and chum are the most abundant species in Prince William Sound, kings, reds (sockeye), and silvers (coho) are favored for home consumption. The number of subsistence net permits issued is small and the take reported is negligible. Some feeder kinds are caught by trolling in Prince William Sound, and sport fishing for coho is very popular, especially in nearby Eyak River. However, many if not most of the salmon consumed are caught with commercial gear.

Table 5 provides subsistence harvest estimates for the Copper River District based on permit data. Most participants in the Copper River District subsistence gill net fishery reside in Cordova (Stratton 1989:88). According to permit data and household surveys, in 1985 about 10 percent of Cordova's households obtained subsistence permits (Stratton 1989:88; Table 5, Table 6). In 1988, survey results found that an estimated 54 Cordova households harvested salmon with subsistence methods (harvesting 490 salmon) (Table 7); permit records indicate that 57 permittees fished in 1988, for a harvest of 454 salmon (Table 5). In 1991, the estimated catch based on permit data was about 1,000 salmon. The household harvest survey conducted with a random sample of Cordova households pertaining to 1991 provided a total salmon harvest estimate with subsistence methods of 1,890 salmon (+/-73%). In 1991, 11.9 percent of the sampled Cordova households used subsistence methods (an estimated 93 households). Estimated harvests with subsistence methods for 1992 and 1993 based upon survey data were also higher than those estimated from permit returns for those years (Table 5, Table 7).

Further discussion of the methods used by Cordova households to obtain salmon for home use appears under Criterion 3.

Criterion 2. A use pattern recurring in specific seasons of each year.

Stratton (1989:59) depicts the current seasonal round of harvest activities for Cordova. King salmon fishing begins in early May and generally lasts through July. Occasional effort in the winter months of December, January and February for "white kings" ("feeder kings") occurred in the past and continues today. Subsistence fishing for sockeyes takes place from May through August. Pinks and chums are caught mainly in July and August. Fishing for cohos occurs mostly in September and October.

Criterion 3. A use pattern consisting of methods and means of harvest which are characterized by efficiency and economy of effort and cost.

In Prince William Sound historically, salmon were speared and gaffed above weirs placed in stream mouths. They were also taken in traps, with hook and line, and with nets (Birket-Smith 1953:41,96). In the Cordova area, the Eyak Indians took salmon from the lower Copper River using spears and dip nets from platforms. They also caught salmon in small traps (Birket-Smith and de Laguna 1938:117, 118).

Presently, regulations limit subsistence salmon fishing gear in the Copper River District to that allowed in the commercial fishery, namely gill nets.

Residents of Cordova also take salmon for home use with rod and reel under sport fishing regulations and by removal from commercial harvests. Table 7 provides information on salmon harvests by gear type in Cordova for five study years. In four out of the five survey years, removal from commercial catches provided the most salmon for home use in Cordova, followed closely by rod and reel (Fig. 1). On average for the five study years, commercial removal provided just over 50 percent of the home use salmon, rod and reel about 45 percent, and subsistence nets about 5 percent.

According to an analysis by Stratton (1989:86-87), in part, the regulatory history for subsistence fishing in Prince William Sound accounts for the reliance on removal from commercial catches and rod and reel fishing for obtaining salmon for home use in Cordova. In 1985, these regulations made it difficult for households with commercial fishing permits, or households without commercial fishing gear, to obtain subsistence salmon. According to subsistence salmon fishing regulations that were in place for the 1985 season, a subsistence fishing permit was required in order to participate in the subsistence fishery. Subsistence fishing was allowed only during commercially open seasons, only in locations open to commercial fishing, and only with the gear type allowed for commercial fishing, gill net or purse seine. These requirements placed subsistence fishers in direct competition with commercial fishers. In addition, no one holding a salmon limited entry permit for the Copper River/Prince William Sound area was allowed to have a subsistence salmon permit. Nowhere else in the state was this latter limitation in existence (Stratton 1989:86-87). The Board of Fisheries repealed the prohibition against subsistence fishing by commercial fishermen (in place since 1961) in 1987.

Stratton (1989:87) also notes that subsistence seasonal limits for subsistence salmon in the salt water portions of the Prince William Sound Area, including the Copper River District, declined steadily during statehood, from a high of 100 in 1960 to 10 kings, 25 sockeyes, and 25 cohos in 1962, to a low of 10 total salmon from 1974 through 1980. In 1981, the limit was increased to 15 for one person households, 30 for two person households, and 10 for each additional household member. These limits remain in effect.

Table 8 reports the percentage and estimated number of Cordova households which used various combinations of methods to harvest or otherwise obtain salmon for home use for the five survey study years. In each year, many households used more than one method. Those households which used subsistence methods but did not have direct access to removing salmon from their commercial catches (that is, the categories: "Subsistence only" and "Subsistence and rod & reel only") numbered between 57 (7.3 percent of all households) in 1992 and 29 (3.4 percent) in 1985.

Criterion 4. The area in which the noncommercial long-term and consistent pattern of taking, use, and reliance upon the fish stock or game population has been established.

Historically, most of the Prince William Sound and Copper River Delta area was used for subsistence salmon fishing. Presently, most Cordova residents who fish for salmon under subsistence regulations do so on the Copper River Flats. As noted above, by regulation, the subsistence fishery is restricted to areas open to commercial fishing. A few Cordova residents subsistence fish in Prince William Sound itself (Stratton 1989:88).

Criterion 5. The means of handling, preparing, preserving, and storing fish or game which has been traditionally used by past generations, but not excluding recent technological advances where appropriate.

In Cordova presently, a variety of methods are used to preserve salmon. These include freezing, smoking, canning, jarring, salting, pickling, and kippering (McNearney 1978:7; Stratton 1989:86).

Criterion 6. A use pattern which includes the handing down of knowledge of fishing or hunting skills, values, and lore from generation to generation.

Cordova is located near the site of several Eyak Indian villages, the descendants of which, along with descendants of the Chugach people of Prince William Sound, continue to reside in the community. Use of salmon by these families as well as more recent arrivals to Cordova is commonplace and involves members of several generations (Stratton 1989:133-134).

Criterion 7. A pattern of taking, use, and reliance where the harvest effort or products of that harvest are distributed or shared, including customary trade, barter, and gift-giving.

Sharing of salmon is very common in Cordova. According to data collected in Cordova pertaining to 1985, "Surveyed households reported receiving and giving away substantial quantities of salmon" (Stratton 1989:97). In that year, households on average received about 40 pounds of salmon; those who gave away salmon on average shared 75 pounds of fish with other households. The percentage of Cordova households receiving and giving salmon in the five survey years is reported in Table 2.

Criterion 8. A pattern that includes taking, use, and reliance for subsistence purposes upon a wide variety of the fish and game resources and that provides substantial economic, cultural, social, and nutritional elements of the subsistence way of life.

Noncommercial resource harvests are relatively large in Cordova, ranging from about 130 to 230 pounds per person annually in the five study years between 1985 and 1993 (Table 3, Fig. 2). As shown in Figure 3, this harvest range is similar to that of Kodiak, another southcentral Alaska community off the road system with a local economy dominated by commercial fishing, and is higher than that of the road-connected communities of Kenai and Valdez, although lower than the small Alaska Native villages of Prince William Sound. Overall, wild resource uses in Cordova are relatively diverse, made up of a variety of fish, mammals, marine invertebrates, birds, and wild plants (Table 4). Figure 4 compares the average number of resources used per household in Cordova for the 1991, 1992, and 1993 study years with that of other selected Alaska communities.

Writing of the 1970s, McNeary (1978:40-41) noted the following about wild resource uses in Cordova:

There is no simple relationship between use of wild food resources and income level [in Cordova]. Some of the most consistent users of wild resources are among the town's middle to upper class. For them, consumption of wild foods is a matter of life-style rather than of economic necessity. A few households combine high levels of subsistence use with relatively low cash incomes. Others pointed out, however, that it is necessary to have at least a minimum level of capital in order to participate in subsistence pursuits. Thus, the complaint that, "I don't hunt and fish much; I got no boat and no car." For most Cordova hunters and fishermen, use of wild foods is not usually an economic necessity, but may be an important income supplement. A number of people pointed out the wide fluctuations in the commercial fishing harvest from year to year and said that in a poor year wild foods would be especially vital to their economic well-being. . .

There are, of course, important values involved in hunting and fishing besides the purely economic. For many Cordova Whites, the opportunities to enjoy the outdoors, to hunt and fish, to eat fresh foods such as salmon or crab, and the pleasures of distributing wild foods or receiving them from friends are very important in making the quality of life in Cordova what it is. These activities, plus the atmosphere of small town living, seem to be the main reasons why people choose to live in Cordova rather than in more urban areas.

For Natives, the above factors all apply, with the addition of the psychological (and political) importance of freely using a land which they have inherited from their ancestors, and the great importance of traditional foods, particularly for the older people.

For 1985, Stratton (1988:149) concluded that:

Cordova is a small heterogeneous community that demonstrates a mixture of resource use patterns. Resource use and harvest play a significant role not only the local economy, but also in the social networks, as sharing and bartering are extensive. The seasonal cash economy, that rises and falls with the size of the salmon runs and current market values, underscores the importance of resources to local residents. The fact that so many households chose to bring home salmon from their commercial catches demonstrates that salmon is valued highly by people for more than just its monetary worth.

Conclusions from the 1988 study year were similar to those for 1985 (Stratton 1992:63).

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Appendix A. Customary and Traditional Use Findings for Salmon Stocks, Prince William Sound Management Area

The Alaska Board of Fisheries has made several findings regarding customary and traditional uses of salmon in the Prince William Sound Management Area. These are as follows:

1. In 1984, the Board found that there are customary and traditional uses of salmon of the Glennallen Subdistrict of the Upper Cooper River District. It also found that the uses of salmon as they occur in the Chitina Subdistrict did not meet the eight criteria for customary and traditional use. Accordingly, the Board amended its Copper River Subsistence Salmon Fisheries Management Plan, adopting provisions for subsistence salmon fishing in the Glennallen Subdistrict only. While the Chitina Subdistrict was closed to subsistence salmon fishing, a personal use fishery was authorized. A Division of Subsistence technical paper (No. 37 [Stratton 1982]) was prepared to provide background information on these fisheries.

2. In 1988, the Board reviewed information about customary and traditional uses of salmon in the Copper River above Slana, including the area around the former village of Batzulnetas. The Board found that customary and traditional uses existed. While the board found that reasonable opportunities were provided below Slana for fishing these stocks, it adopted regulations allowing subsistence fishing in this area to provide additional subsistence opportunities.

3. In 1987, the Board reviewed information regarding customary and traditional uses of salmon in areas traditionally used by the communities of Chenega Bay and Tatitlek in Prince William Sound. It found that customary and traditional uses of salmon existed in the following areas and adopted regulations providing subsistence fishing opportunities for these stocks:

A. The Southwestern District and Green Island [Chenega Bay area].

B. Those waters north of a line from Porcupine Point to Granite Point and south of a line from Point Lowe to Tongue Point [Tatitlek area].

Customary and traditional use findings have not been made for the remaining portions of this management area.

Table 1. Population of Cordova Area, 1880 - 1995

Year	Population		Alaska Native Population (Census Subarea)	
	Cordova City	Cordova Census Subarea		
1880		117 (Ikhiak & Alagann)	117	100.0%
1890		48 (Alaganak)	48	100.0%
1900		222 (Eyak & Orca)		
1910	1152	1779		
1920	955	1555		
1930	980	1620		
1940	938	1459		
1950	1165	1536		
1960	1128	1759		
1970	1164	1875		
1980	1879	2241		
1990	2110	2579	272	10.5%
1995	2568	2601		

Note: The city of Cordova made a major annexation, including Eyak and most of the census subarea, in March 1993.

Sources: Rollins 1978, Alaska Department of Labor 1991, 1996

Table 2. Participation in Use, Harvest, and Sharing of Salmon, Cordova

Year	Percentage of Households				
	Using	Fishing For	Harvesting	Receiving	Giving
1985	91.3%	80.1%	72.3%	58.3%	60.7%
1988	95.0%	81.7%	79.3%	53.6%	75.3%
1991	96.0%	87.1%	86.1%	58.4%	70.3%
1992	100.0%	95.1%	90.2%	75.6%	73.2%
1993	100.0%	84.6%	77.9%	76.0%	64.4%

Source: Scott et al. 1996

Table 3. Wild Resource Harvests for Home Use by Category, Cordova, Pounds Usable Weight per Person

	Pounds Usable Weight per Person				
	1985	1988	1991	1992	1993
Salmon	62.3	59.3	86.2	71.3	58.3
Other Fish	36.8	91.4	40.1	40.8	29.9
Shellfish	12.5	21.8	5.5	4.6	5.4
Land Mammals	44.0	50.2	50.0	42.4	24.9
Marine Mammals	1.0	0.8	0.4	0.0	0.8
Birds & Eggs	1.7	4.7	1.8	1.3	1.1
Wild Plants	5.5	5.6	5.2	3.1	7.5
Total	163.8	233.8	189.2	163.5	127.8

Table 4. Composition of Wild Resource Harvests for Home Use, Cordova, by Category

	Percentage of Total Harvest				
	1985	1988	1991	1992	1993
Salmon	38.0%	25.4%	45.6%	43.6%	45.6%
Other Fish	22.5%	39.1%	21.2%	25.0%	23.4%
Shellfish	7.6%	9.3%	2.9%	2.8%	4.2%
Land Mammals	26.8%	21.5%	26.4%	25.9%	19.5%
Marine Mammals	0.6%	0.3%	0.2%	0.0%	0.6%
Birds & Eggs	1.0%	2.0%	1.0%	0.8%	0.9%
Wild Plants	3.4%	2.4%	2.7%	1.9%	5.9%

Table 5. Salmon catch and effort in the Copper River District subsistence gillnet fishery, 1965-95

Year	Total Issued	Permits Issued			Catch			Total
		Fished ^a	Not Fished	Not Returned	Chinook	Sockeye	Coho	
1965	31	15	5	11	12	459	85	556
1966	45	21	10	14	47	175		222
1967	61	37	19	5	83	153		236
1968	17	7	8	2	11	36		47
1969	49	20	13	16	16	63	85	164
1970	32	24	3	5	66	179		245
1971	29	17	9	3	10	32	4	46
1972	104	75	5	24	149	569	53	771
1973	94	89	N/A	5	153	326	180	659
1974	9	3	2	4	5	4	2	11
1975	2	2	N/A	0	0	5	0	5
1976	27	14	N/A	13	1	10	0	11
1977	23	22	N/A	1	10	71	0	81
1978	34	9	19	6	37	18	12	67
1979	49	21	20	8	45	26	17	88
1980	39	18	17	4	19	27	17	63
1981	72	30	21	21	48	145	104	297
1982	108	48	42	18	60	634	106	802 ^b
1983	87	31	42	14	79	107	57	254 ^b
1984	118	57	47	14	68	324	135	549 ^b
1985	94	67	27	0	88	261	83	433 ^b
1986	88	57	28	3	86	348	47	481 ^b
1987	95	39	50	6	49	359	14	510 ^b
1988	114	57	40	17	59	226	42	440 ^b
1989	75	32	32	11	56	339	51	454 ^b
1990	88	38	38	12	60	469	82	611 ^b
1991	129	72	43	14	136	830	38	1,009 ^b
1992	126	67	46	13	142	785	42	999 ^b
1993	111	50	43	18	120	428	29	601 ^b
1994	101	60	37	4	164	474	67	708 ^b
1995	126	72	40	14	154	692	31	880 ^b

^a Includes all permit holders, successful or unsuccessful

^b Total also includes Dolly Varden

Source: Morstad et al. 1996: 118

Table 6. Estimated Number of Cordova Households Harvesting Salmon by Gear Type

	1985		1988		1991		1992		1993		Five-year Average	
	853 households		872 households		784 households		784 households		946 households		848 households	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Subsistence Methods	45	5.3%	54	6.2%	93	11.9%	96	12.2%	73	7.7%	72	8.5%
Rod and Reel	435	51.0%	547	62.7%	559	71.3%	688	87.8%	573	60.6%	560	66.1%
Commercial Removal	310	36.4%	378	43.3%	279	35.6%	344	43.9%	272	28.8%	317	37.4%
Any Method	617	72.3%	691	79.3%	675	86.1%	707	90.2%	737	77.9%	685	80.9%

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Table 7. Salmon Harvests by Gear Type, Cordova, 1985, 1988, 1991, 1992, and 1993

	1985		1988		1991		1992		1993		Five Year Average	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Chinook Salmon	1,695		1,596		3,004		2,601		2,948		2,369	
Subsistence Methods	29	1.7%	82	5.1%	85	2.8%	115	4.4%	155	5.3%	93	3.9%
Rod and Reel	273	16.1%	143	9.0%	528	17.6%	191	7.3%	1,410	47.8%	509	21.5%
Commercial Removal	1,393	82.2%	1,371	85.9%	2,391	79.6%	2,295	88.2%	1,383	46.9%	1,767	74.6%
Chum Salmon	604		1,202		616		0		318		548	
Subsistence Methods	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rod and Reel	124	20.5%	55	4.6%	101	16.4%	0		27	8.5%	61	11.2%
Commercial Removal	480	79.5%	1,147	95.4%	515	83.6%	0		291	91.5%	487	88.8%
Coho Salmon	8,528		10,583		15,090		14,398		11,570		12,034	
Subsistence Methods	4	0.0%	97	0.9%	881	5.8%	0	0.0%	0	0.0%	196	1.6%
Rod and Reel	4,905	57.5%	9,018	85.2%	10,126	67.1%	10,899	75.7%	9,278	80.2%	8,845	73.5%
Commercial Removal	3,619	42.4%	1,468	13.9%	4,083	27.1%	3,499	24.3%	2,292	19.8%	2,992	24.9%
Pink Salmon	1,673		1,524		1,595		1,261		773		1,365	
Subsistence Methods	83	5.0%	0	0.0%	8	0.5%	382	30.3%	0	0.0%	95	6.9%
Rod and Reel	961	57.4%	827	54.3%	477	29.9%	191	15.1%	637	82.4%	619	45.3%
Commercial Removal	629	37.6%	697	45.7%	1,110	69.6%	688	54.6%	136	17.6%	652	47.8%
Sockeye Salmon	7,704		5,123		8,670		9,877		12,789		8,833	
Subsistence Methods	468	6.1%	311	6.1%	916	10.6%	1,769	17.9%	1,183	9.3%	929	10.5%
Rod and Reel	899	11.7%	499	9.7%	1,094	12.6%	1,033	10.5%	1,828	14.3%	1,071	12.1%
Commercial Removal	6,337	82.3%	4,313	84.2%	6,660	76.8%	7,075	71.6%	9,778	76.5%	6,833	77.4%
Unknown Salmon	0		0		232		0		218		90	
Subsistence Methods	0		0		0	0.0%	0		0	0.0%	0	0.0%
Rod and Reel	0		0		163	70.3%	0		182	83.5%	69	76.7%
Commercial Removal	0		0		69	29.7%	0		36	16.5%	21	23.3%
All Salmon	20,204		20,028		29,207		28,137		28,616		25,238	
Subsistence Methods	584	2.9%	490	2.4%	1,890	6.5%	2,266	8.1%	1,338	4.7%	1,314	5.2%
Rod and Reel	7,162	35.4%	10,542	52.6%	12,489	42.8%	12,314	43.8%	13,362	46.7%	11,174	44.3%
Commercial Removal	12,458	61.7%	8,996	44.9%	14,828	50.8%	13,557	48.2%	13,916	48.6%	12,751	50.5%

Source: Scott et al. 1996

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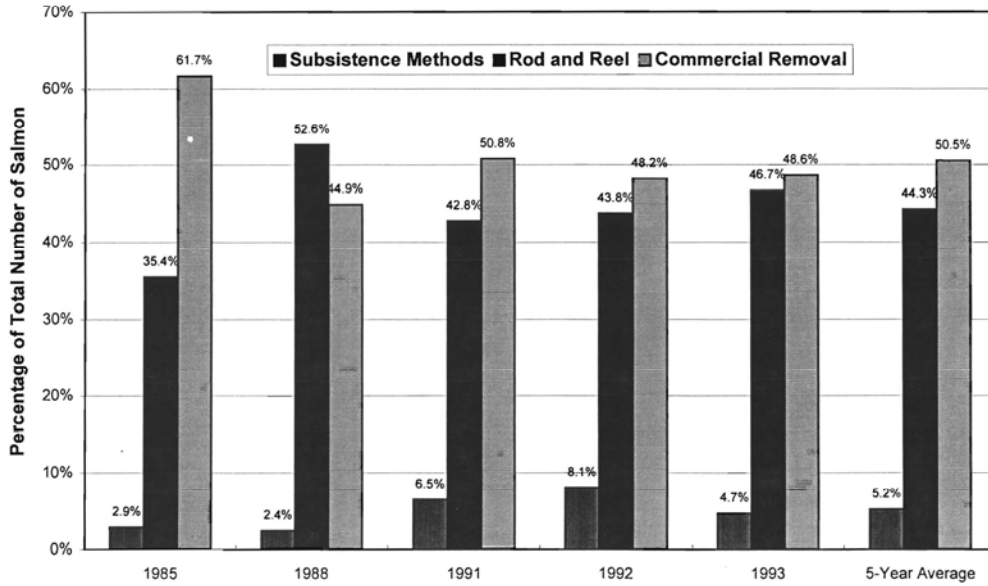
Table 8. Combinations of Methods Used to Harvest Salmon for Home Use, Cordova, 1985, 1988, 1991, 1992, and 1993

Method(s) of Harvest Used:	Study Year 1985		Study Year 1988		Study Year 1991		Study Year 1992		Study Year 1993	
	Estimated Number of Households	Percentage of All Households	Estimated Number of Households	Percentage of All Households	Estimated Number of Households	Percentage of All Households	Estimated Number of Households	Percentage of All Households	Estimated Number of Households	Percentage of All Households
Subsistence, commercial, and rod & reel	12	1.5%	26	3.0%	48	6.1%	19	2.4%	9	1.0%
Subsistence and commercial only	4	0.5%	17	2.0%	16	2.0%	19	2.4%	9	1.0%
Subsistence and rod & reel only	21	2.4%	43	5.0%	16	2.0%	38	4.9%	36	3.8%
Subsistence only	8	1.0%	9	1.0%	16	2.0%	19	2.4%	18	1.9%
Commercial and rod & reel only	149	17.5%	276	31.7%	184	23.5%	191	24.4%	136	14.4%
Commercial only	186	21.8%	147	16.8%	32	4.1%	57	7.3%	82	8.7%
Rod & reel only	253	29.6%	242	27.7%	328	41.8%	306	39.0%	391	41.3%
No harvest, received only	178	20.9%	86	9.9%	80	10.2%	76	9.8%	209	22.1%
No harvest or use	41	4.9%	26	3.0%	64	8.2%	57	7.3%	55	5.8%
Estimated Total Number of Households	853		872		784		784		946	

Source: Alaska Department of Fish and Game, Division of Subsistence Household Surveys

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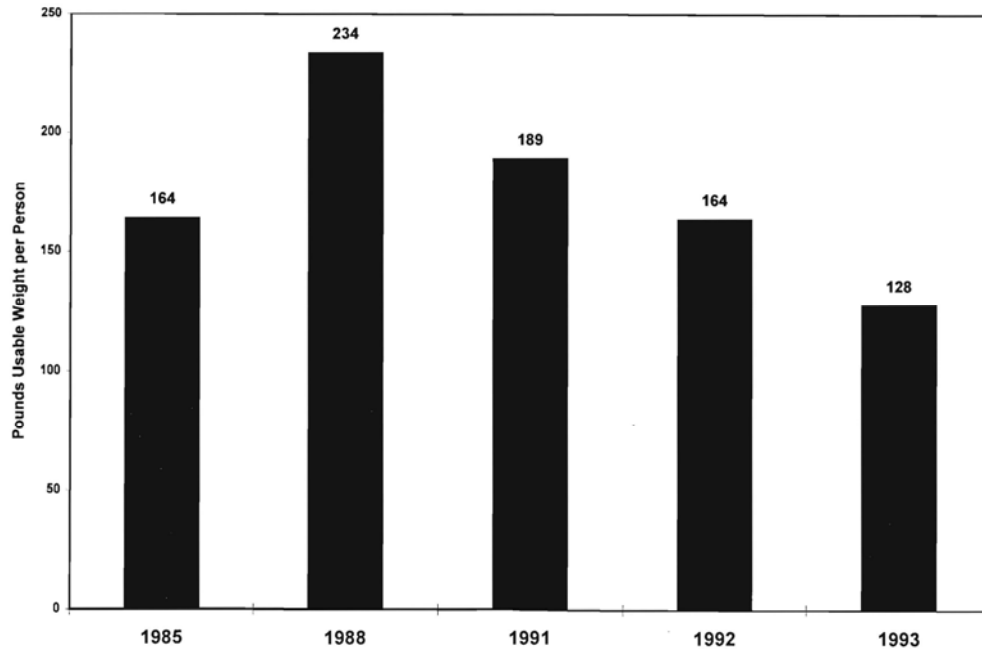
Figure 1. Percentage of Salmon Harvest for Home Use by Gear Type, Cordova



Source: Scott et al. 1996, based on ADFG Division of Subsistence household surveys

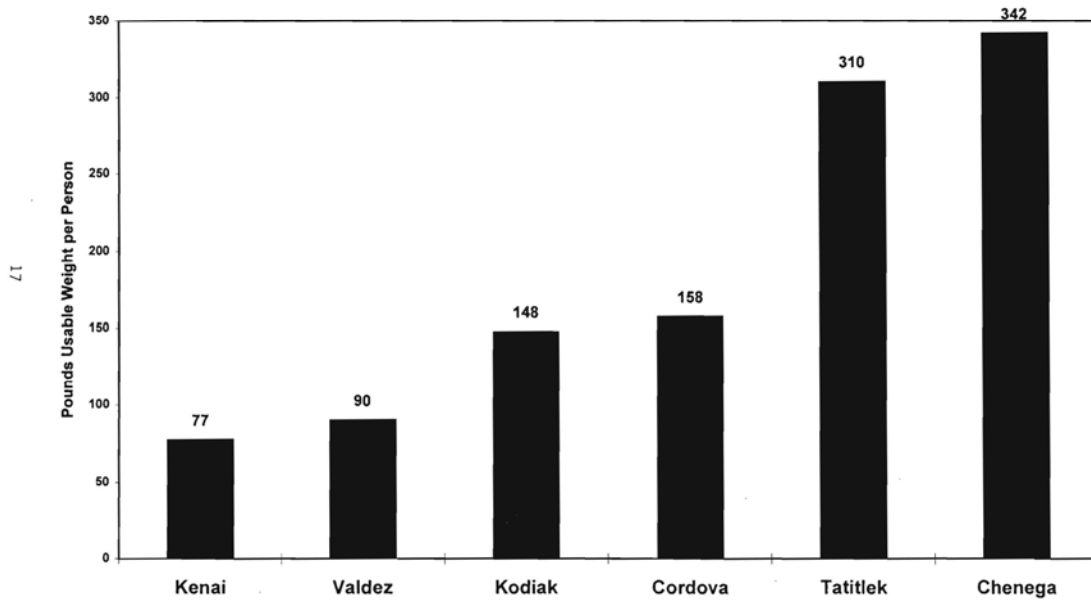
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Figure 2. Wild Resource Harvests for Home Use, Cordova



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Figure 3. Wild Resource Harvests, Selected Communities, 3-Year Average, 1991 - 1993



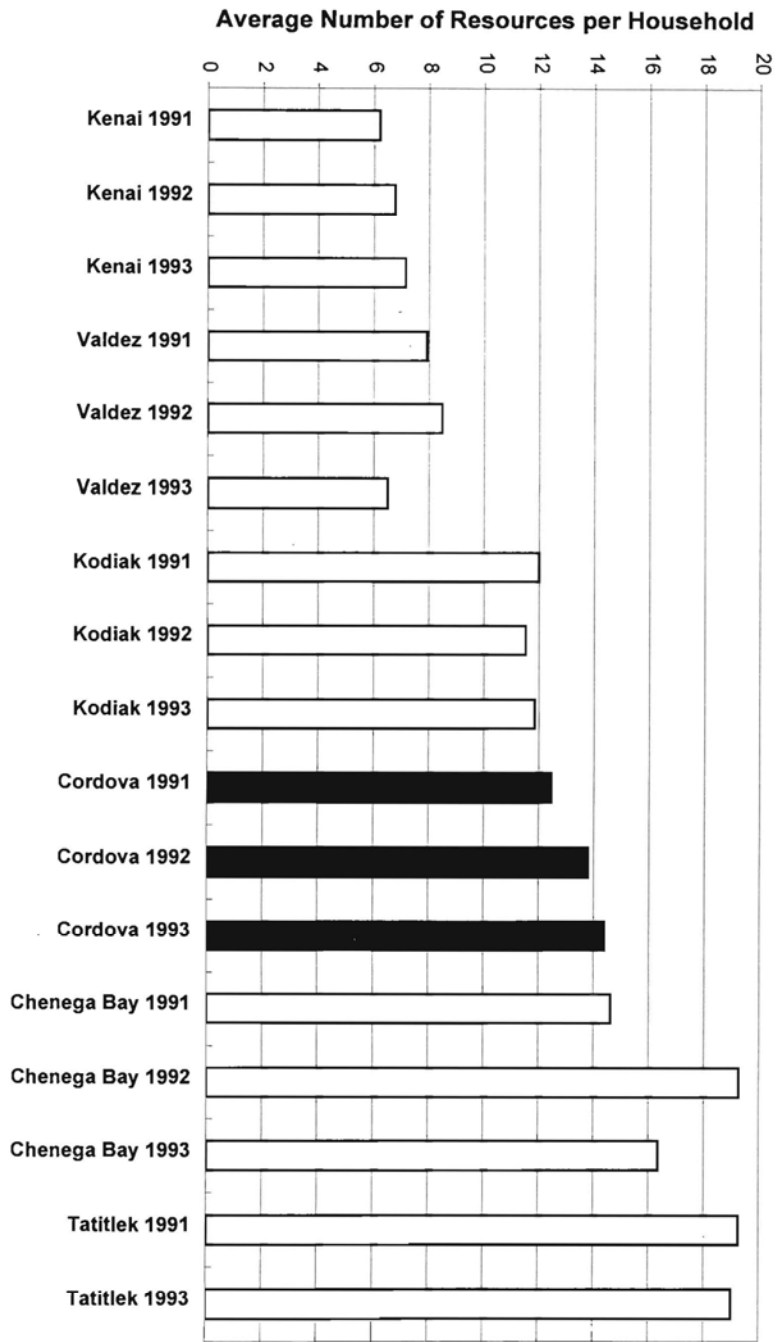


Figure 4. Average Number of Resources Used Per Household, Selected Communities

**APPENDIX B. CUSTOMARY AND TRADITIONAL USE
FINDINGS FOR SALMON STOCKS, PRINCE WILLIAM
SOUND MANAGEMENT AREA**

The Alaska Board of Fisheries (board) has made several findings regarding customary and traditional uses of salmon in the Prince William Sound Management Area. These are as follows:

1. In 1984, the board found that there are customary and traditional uses of salmon of the Glennallen Subdistrict of the Upper Cooper River District. It also found that the uses of salmon as they occur in the Chitina Subdistrict did not meet the eight criteria for customary and traditional use. Accordingly, the Board amended its Copper River Subsistence Salmon Fisheries Management Plan, adopting provisions for subsistence salmon fishing in the Glennallen Subdistrict only. While the Chitina Subdistrict was closed to subsistence salmon fishing, a personal use fishery was authorized. A Division of Subsistence technical paper (No. 37 [Stratton 1982]) was prepared to provide background information on these fisheries.
2. In 1988, the Board reviewed information about customary and traditional uses of salmon in the Copper River above Slana, including the area around the former village of Batzulnetas. The Board found that customary and traditional uses existed. While the board found that reasonable opportunities were provided below Slana for fishing these stocks, it adopted regulations allowing subsistence fishing in this area to provide additional subsistence opportunities.
3. In 1987, the Board reviewed information regarding customary and traditional uses of salmon in areas traditionally used by the communities of Chenega Bay and Tatitlek in Prince William Sound. It found that customary and traditional uses of salmon existed in the following areas and adopted regulations providing subsistence fishing opportunities for these stocks:
 - A. The Southwestern District and Green Island [Chenega Bay area].
 - B. Those waters north of a line from Porcupine Point to Granite Point and south of a line from Point Lowe to Tongue Point [Tatitlek area].

Customary and traditional use findings have not been made for the remaining portions of this management area.

In 2003, the board determined the amount of the harvestable surplus of these stocks that is reasonably necessary for subsistence uses (ANS finding). The Board determined that in a year when there is a harvestable surplus that allows a commercial fishery: 3,000 – 5,000 salmon are reasonably necessary for subsistence. In years when there is no commercial fishery 19,000 – 32,000 are reasonably necessary for subsistence.

**APPENDIX C. ACTION SUMMARY: CUSTOMARY AND
TRADITIONAL USE FINDING FOR SALMON IN THE COPPER
RIVER DISTRICT, PRINCE WILLIAM SOUND AREA, 1996**

PART B. DELIBERATION MATERIALS: PROPOSAL 11

**Prepared by:
Division of Subsistence, Alaska Department of Fish and Game
Alaska Board of Fisheries
December 2005**

Proposal 11, submitted by the Copper River/Prince William Sound Advisory Committee, requests a change to the subsistence fishing regulations for the Copper River District.

AS 16.05.258 (a) requires the Board to identify the fish stocks or portions of stocks that are customarily and traditionally taken or used for subsistence. The Board identifies fish stocks with c&t uses by applying 5 AAC 99.010, the Joint Board of Fisheries and Game Subsistence Procedures ("the eight criteria"). The Board is also charged under AS16.05.258 (b) to determine the amount of the harvestable portion of fish stocks with c&t uses that is reasonably necessary for subsistence uses. This is called an "ANS" finding.

The following summary provides background on the Board's previous actions on c&t uses and ANS for the salmon stocks of the Copper River District.

Action summary: customary and traditional use finding for salmon in the Copper River District, Prince William Sound Area, 1996

Date: finding made at the Board of Fisheries meeting in Cordova, December 1996; specific date of action was December 19, 1996

Proposal prompting action: proposal number 54, submitted by the Copper River/Prince William Sound Advisory Committee (Cordova) to slightly revise subsistence regulations. The proposal itself did not ask for a c&t finding.

A c&t worksheet was prepared by the Division of Subsistence and reviewed at the meeting. The advisory committee had commented that subsistence salmon harvests were "hidden in the commercial fishery." Survey data showed that 50 percent of the salmon harvest for home use in Cordova is from removal from commercial harvests, 45 percent with rod and reel, and 5 percent with subsistence methods. The c&t sheet pointed out that the regulatory history also accounted for relatively low subsistence harvests; commercial fishermen had been prohibited from getting subsistence permits in the past, and subsistence annual limits had been as low as 10 salmon. One Board member (V. Umphenour) suggested that rod & reel also be classified as subsistence gear, but did not pursue this idea when informed of the liberal daily bag limits in the sport fishery.

Action: a positive finding was made, with a 6-0 vote (member Angasan was absent)

The board also established a range of 25,000 to 35,000 salmon as the amount necessary to provide for subsistence uses. This was based on the last three years of Division of Subsistence household harvest survey results, and included harvests with rod & reel, commercial removal, and subsistence methods, plus "room for growth."

Later in the meeting, on December 13, the Board passed, 6-0, Proposal B (RC 109) which established a section in the Prince William Sound Area subsistence regulations listing each c&t finding. This had been inadvertently left out during the 1993 series of "consistency" meetings.

Prepared by: James Fall. 12/16/96