

Fishery Management Report No. 06-44

**Lower Kuskokwim River Inseason Subsistence
Salmon Catch Monitoring, 2005**

**Final Report for Study 05-307
USFWS Office of Subsistence Management
Fisheries Information Services Division**

by

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and

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July 2006

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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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.		
meter	m	at	@	Mathematics, statistics	
milliliter	mL	compass directions:		<i>all standard mathematical</i>	
millimeter	mm	east	E	<i>signs, symbols and</i>	
		north	N	<i>abbreviations</i>	
		south	S	alternate hypothesis	H _A
		west	W	base of natural logarithm	<i>e</i>
		copyright	©	catch per unit effort	CPUE
		corporate suffixes:		coefficient of variation	CV
		Company	Co.	common test statistics	(F, t, χ^2 , etc.)
		Corporation	Corp.	confidence interval	CI
		Incorporated	Inc.	correlation coefficient	
		Limited	Ltd.	(multiple)	R
		District of Columbia	D.C.	correlation coefficient	
		et alii (and others)	et al.	(simple)	r
		et cetera (and so forth)	etc.	covariance	cov
		exempli gratia	e.g.	degree (angular)	°
		(for example)		degrees of freedom	df
		Federal Information	FIC	expected value	<i>E</i>
		Code		greater than	>
		id est (that is)	i.e.	greater than or equal to	≥
		latitude or longitude	lat. or long.	harvest per unit effort	HPUE
		monetary symbols		less than	<
		(U.S.)	\$, ¢	less than or equal to	≤
		months (tables and		logarithm (natural)	ln
		figures): first three		logarithm (base 10)	log
		letters	Jan, ..., Dec	logarithm (specify base)	log ₂ , etc.
		registered trademark	®	minute (angular)	'
		trademark	™	not significant	NS
		United States		null hypothesis	H ₀
		(adjective)	U.S.	percent	%
		United States of		probability	P
		America (noun)	USA	probability of a type I error	
		U.S.C.	United States	(rejection of the null	
			Code	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

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				

FISHERY MANAGEMENT REPORT NO. 06-44

**LOWER KUSKOKWIM RIVER INSEASON SUBSISTENCE SALMON
CATCH MONITORING, 2005**

by

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	ii
LIST OF FIGURES.....	ii
LIST OF APPENDICES.....	ii
ABSTRACT.....	1
INTRODUCTION.....	1
Outlook and Management Strategies.....	3
Fishery Management.....	4
Objectives.....	5
METHODS.....	5
Interviews.....	5
RESULTS.....	7
DISCUSSION.....	8
CONCLUSIONS.....	10
RECOMMENDATIONS.....	11
ACKNOWLEDGEMENTS.....	12
REFERENCES CITED.....	12
TABLES AND FIGURES.....	15
APPENDIX A. EXAMPLE OF SURVEY INSTRUMENT.....	37
APPENDIX B. KUSKOKWIM RIVER INSEASON SUBSISTENCE SALMON CATCH MONITORING WEEKLY REPORTS.....	39
APPENDIX C. EXAMPLE OF LOWER KUSKOKWIM RIVER SUBSISTENCE CATCH MONITORING INFORMATION PRESENTED AT KUSKOKWIM RIVER SALMON MANAGEMENT WORKING GROUP MEETINGS.....	47
APPENDIX D. KUSKOKWIM RIVER INSEASON SUBSISTENCE SALMON SUMMARY OF FISHING REPORTS.....	51

LIST OF TABLES

Table	Page
1. Historical utilization of Chinook salmon in the Kuskokwim River, 1960–2005.....	16
2. Historical utilization of chum salmon in the Kuskokwim River, 1960–2005.	18
3. Historical utilization of sockeye salmon in the Kuskokwim River, 1960–2005.	20
4. Historical utilization of coho salmon in the Kuskokwim River, 1960–2005.....	22
5. District 1, Kuskokwim River, commercial fishing and subsistence closure hours, 2005.....	24
6. Kuskokwim River inseason subsistence summary report, summary of salmon fishing, 2005.	25
7. Kuskokwim River subsistence salmon summary, quality of fishing report, 2005.	26
8. Kuskokwim River inseason subsistence survey fishing gear use summary, 2005.	27

LIST OF FIGURES

Figure	Page
1. Composition of subsistence harvest by species as reported by postseason harvest surveys, Kuskokwim Management Area, 10-year average, 1995–2004.	28
2. Subsistence Chinook salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995–2004.....	29
3. Subsistence chum salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995-2004.	30
4. Subsistence sockeye salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995–2004.....	31
5. Subsistence coho salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1994-2003.	32
6. Kuskokwim Management Area.....	33
7. District 1, Subdistricts W-1A and W-1B.....	34
8. Subsistence survey area, 2005.....	35

LIST OF APPENDICES

Appendix	Page
A1. Example of Kuskokwim River subsistence salmon fishing survey form.	38
B1. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 7, 2005.	40
B2. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 13, 2005.....	41
B3. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 20, 2005.....	42
B4. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 27, 2005.....	44
B5. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, July 6, 2005.	45
B6. Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, July 11, 2005.	46
C1. Example of Lower Kuskokwim River inseason subsistence catch monitoring historical information presented at Kuskokwim River Salmon Management Working Group Meetings, 2005.....	48
D1. Kuskokwim River subsistence summary report, summary of salmon fishing, 2001–2005.....	52
D2. Kuskokwim River subsistence salmon summary, quality of fishing report, 2001–2005.....	55

ABSTRACT

Through a collaborative effort with the Alaska Department of Fish and Game (ADF&G) the Orutsararmiut Native Council (ONC) conducted inseason subsistence salmon surveys addressing qualitative assessment of run timing and abundance at selected fish camps and in communities of fishers in the lower Kuskokwim River during the summer of 2005. The project ran for 6 weeks starting May 29 to July 9. Information collected from these surveys was provided to fishery managers on a weekly basis. The Kuskokwim River fishery is cooperatively managed by ADF&G, United States Fish and Wildlife Service (USFWS), and the Kuskokwim River Salmon Management Working Group (Working Group).

Fishery managers are dependent on information from inseason run assessment projects to evaluate salmon run strength in order to achieve management objectives. One of the primary inseason indicators of salmon run strength is information collected from the test fishing project conducted just upstream of Bethel. Information collected from this project provides a general evaluation of the relative strength of the run by species. This index of salmon run strength is affected by the variability of run timing among years and anomalies created by environmental factors. The inseason subsistence catch monitoring project provided additional information to evaluate salmon run strength by obtaining the relative success of some subsistence fishers in achieving their harvest goals. Additionally, this project provided a venue for local user input into the evaluation of salmon abundance and corresponding management strategies. Historically, fishery managers collected information ad hoc from a few subsistence fishers. However, the ONC inseason subsistence monitoring program initiated in 2001 increased the quality and consistency of information obtained from subsistence fishers. This project increased the number and frequency of fishing family interviews, thereby increasing the credibility of the salmon catch information. Comparisons of inseason subsistence catch information now can be made among weeks within a year and among years. Inseason subsistence catch information has been used in combination with other information to determine appropriate inseason management decisions.

Key words: Bethel, Chinook, *Oncorhynchus tshawytscha*, sockeye, *O. nerka*, chum, *O. keta*, coho, *O. kisutch*, salmon, Kuskokwim River, Orutsararmiut Native Council, subsistence, Kuskokwim River Salmon Management Working Group.

INTRODUCTION

The Kuskokwim River drains an area of approximately 50,000 square miles, 11% of the total area of Alaska (Brown 1983). Each year adult salmon return to the river and support subsistence, commercial, and sport fisheries. The Kuskokwim Area subsistence salmon fishery is one of the largest and most important in the state (ADF&G 2005). From June through August the daily activities of many Kuskokwim Area households revolve around harvesting, processing, and preserving salmon for subsistence use. The use of family fish camps has been, and remains an important part of Kuskokwim area subsistence activities. Alaska Department of Fish and Game (ADF&G), Division of Subsistence (SD) studies in the region indicate that fish contribute as much as 85% of the total pounds of fish and wildlife harvested in a community and salmon as much as 53% of the total annual harvest (Coffing 1991). The harvest of salmon for subsistence use is as much as 650 lbs per capita in some Kuskokwim River communities. The average total utilization of Kuskokwim River salmon from 1995–2004 was approximately 700,000 fish (Tables 1–4). The recent 10-year (1995–2004) average subsistence harvest includes 76,980 Chinook salmon *Oncorhynchus tshawytscha*, 57,981 chum salmon *O. keta*, 37,076 sockeye salmon *O. nerka* and 31,729 coho salmon *O. kisutch* (Figure 1) (Krauthoefer and Caylor *In prep*). By comparison, the same 10-year average annual commercial harvest consists of 7,383 Chinook, 109,957 chum, 24,058 sockeye, and 302,935 coho salmon (Whitmore et al. *In prep*).

More than 2,000 households in the Kuskokwim Area annually harvest salmon for subsistence use and many households not directly involved in catching salmon assist family and friends with

cutting, drying, smoking, and associated preservation activities (salting, canning, and freezing). The majority (88%) of Kuskokwim Area households are situated within the Kuskokwim River drainage. Bethel is the largest community in the region, consisting of approximately 1,800 households. In 2004, the postseason survey conducted by ADF&G SD estimated that residents of Bethel accounted for 30% of the Kuskokwim Area subsistence harvests and 32% of all subsistence caught Chinook salmon. ADF&G SD also estimated that 66,687 Chinook salmon were harvested by residents of lower Kuskokwim River villages, or 78% of the total Kuskokwim River Chinook salmon subsistence harvest (Figures 1 and 2) (ADF&G *In prep*).

Alaska Statute 16.05.258. *Subsistence use and allocation of fish and game* establishes a subsistence use priority for reasonable harvest opportunity consistent with sustained yield management. Consistent with State statute, the Alaska Board of Fisheries (BOF) has made a finding of levels of Kuskokwim salmon that are customary and traditionally taken or used for subsistence (5 AAC 01.286). For the Kuskokwim River drainage the BOF found the following amounts of fish are reasonably necessary for subsistence uses: 1) 64,500–83,000 Chinook salmon, 2) 39,500–75,500 chum salmon, 3) 27,500–39,500 sockeye salmon, and 4) 24,500–35,000 coho salmon. ADF&G SD conducts annual postseason household fishing surveys in most of the Kuskokwim Area communities in order to estimate subsistence salmon harvest levels (Krauthoefer and Caylor *In prep*). Postseason Kuskokwim River household surveys indicate salmon harvested in 2004 fell within amounts necessary for subsistence ranges for all species (Figures 2–5).

The Alaska National Interest Lands Conservation Act of 1980 mandates that rural subsistence users have a priority over other users to take wildlife on Federal public lands where recognized customary and traditional use patterns exist (16 U.S.C.A. 3114). On October 1, 1999, the Secretaries of Interior and Agriculture published regulations to expand Federal Management of subsistence fisheries to Alaskan rivers and lakes and limited marine waters within and adjacent to Federal public lands. Federal subsistence fishing regulations are adopted by the Federal Subsistence Board (FSB).

Based on annual postseason subsistence survey estimates, Kuskokwim Area subsistence salmon fisheries consistently rank as one of the largest in the State of Alaska (ADF&G 2005). State and Federal lawmakers have recognized the use and dependence of residents of the area on this resource and have established subsistence use as the highest priority among resource users. In order to maintain the resource, State regulations and policies have been established to provide for sustained yield management. Kuskokwim Area commercial fishing regulations since 1985 have limited gillnet mesh size to 6 inch maximum and, in 1987, the directed Chinook salmon commercial fishery was discontinued (Ward et al. 2003). In response to the guidelines established in the Sustainable Salmon Fisheries Policy (5 AAC 39.222), the BOF classified the Kuskokwim River Chinook and chum salmon stocks as yield concerns in September 2000. This determination was based on the inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above the stock's escapement needs since 1998 and anticipated low adult salmon returns in 2001 (Burkey et al. 2000). In response to the yield concern classification, the Kuskokwim River Salmon Rebuilding Management Plan (5 AAC 07.365) was adopted by the BOF in January 2001 and amended in January 2004 (Bergstrom and Whitmore 2004). The FSB supported this action through Special Action during the 2001 season and more recently through an Interim Memorandum of Agreement. This management plan provides guidelines for the rebuilding and management of the Kuskokwim

River salmon fishery that will result in the sustained yield of salmon stocks large enough to meet escapement goals, provide fishers with a reasonable opportunity to harvest subsistence salmon, and to provide for fisheries other than subsistence.

The Kuskokwim River Salmon Management Working Group (Working Group) was formed in 1988 by the BOF in response to requests from stakeholders in the Kuskokwim River drainage who wanted to take a more active role in the management of salmon fishery resources (Mundy 1995). Since then, the Working Group has become increasingly active in the preseason, inseason, and postseason management of the Kuskokwim River drainage subsistence, commercial, and sport salmon fisheries. In 2001, the Working Group modified its by-laws in order to more effectively address the needs of the Federal Subsistence Management Program by including members of the Coordinating Fisheries Committee of the Yukon-Kuskokwim Delta and Western Interior Regional Advisory Councils (RAC) (Whitmore and Martz 2005). The Working Group now serves as a public forum for Federal and State fisheries managers to meet with local users of the salmon resource to review run assessment information and reach a consensus on how to proceed with management of Kuskokwim River salmon fisheries. The Working Group typically meets first in March or April each calendar year; has intensive and frequent meetings during June, July, and August; and has a wrap-up session in September or October. Working Group meetings provide a forum for area fishers, user representatives, community representatives, RAC representatives, Fish and Game Advisory Committee members, and State and Federal managers to come together and discuss issues relevant to sustained yield fishery management and provides for a subsistence use priority. Working Group meetings provide a venue for the inseason subsistence catch monitoring project to present its findings to Kuskokwim fishery managers and Working Group members.

OUTLOOK AND MANAGEMENT STRATEGIES

Preseason information provided to fishers regarding the fishery outlook and management strategies affected how they planned and scheduled their fishing activities. In 2005, ADF&G expected the Chinook and chum salmon runs to be similar to the 2004 salmon runs or slightly stronger. In 2004, Chinook and chum salmon run sizes were large enough to provide for both adequate escapements and subsistence harvests throughout most of the drainage. Salmon runs during the 2005 season were expected to be large enough to achieve escapement goals and amounts necessary for subsistence with a harvestable surplus available for fisheries other than subsistence. It was anticipated that a coho salmon directed commercial fishery would occur from late July through August.

For the past two decades, a system has been in place to monitor salmon run timing and run strength by comparison of current year information to historic information. This system includes, but is not limited to, the evaluation of Bethel test fishery (BTF) project catch rates, commercial harvest catch rates, weir passage, sonar passage, and evaluation of the numbers of salmon on spawning grounds through aerial surveys at clear water tributary streams. Evaluation of inseason subsistence harvest information, collected ad hoc, has always been a component of this process.

In 2001, the inseason subsistence fishery monitoring program was initiated to obtain more consistent, qualitative, subsistence harvest information in the Kuskokwim Area (Whitmore et al. 2004). The monitoring program is a result of a cooperative effort between Tribal, State and Federal agencies funded through the United States Fish and Wildlife Service (USFWS), Office

of Subsistence Management (OSM). The program has strengthened the role subsistence catch monitoring information plays in achieving management priorities such as meeting escapement goals, or providing fishers with an opportunity to tell fishery managers how their subsistence salmon harvests are progressing. In the Bethel area, the Orutsararmiut Native Council (ONC), a local tribal organization, conducts the cooperative project and employs technicians who survey subsistence fishers inseason and summarize and report their findings to ADF&G, USFWS and the Working Group on a weekly basis.

FISHERY MANAGEMENT

The Kuskokwim River salmon fishery is managed according to the Kuskokwim River Salmon Rebuilding Management Plan (Rebuilding Plan). The purpose of the Rebuilding Plan is to provide guidelines for rebuilding and management of the Kuskokwim River fishery that will result in the sustained yield of salmon stocks large enough to meet the escapement goals, amounts necessary for subsistence, and for fisheries other than subsistence (5 AAC 07.365). The Rebuilding Plan provides direction for establishing a subsistence fishing schedule allowing salmon net and fish wheel fisheries to be open for 4 consecutive days per week in June and July as announced by emergency order. The schedule is implemented in a step wise progression up the river consistent with salmon run timing and may be altered based on run strength to achieve escapement goals. Once escapement goals are assured for Chinook and chum salmon, subsistence fishing can be allowed 7 days per week. The goal of the windowed subsistence fishing schedule is to spread the subsistence harvest of Chinook and chum salmon out across the run and allow fish to pass through the lower river to spread subsistence fishing opportunity to fishers in upper Kuskokwim River areas.

In 2005, the Kuskokwim River subsistence fishing schedule was in effect from June 5 through June 16. During this time subsistence fishing with gillnets with a mesh size greater than 4 inches and fish wheels was prohibited 3 days per week from Sunday through Tuesday. The first day closed to subsistence salmon fishing was June 5 in all waters downstream of Bogus Creek. On June 12, the schedule was expanded to all waters downstream of Chuathbaluk, and on June 16, the schedule was eliminated (based on a recommendation by the Working Group) prior to becoming effective for the entire Kuskokwim River drainage. Some non-salmon tributaries in the lower and middle Kuskokwim River drainage were not affected by this schedule nor were waters outside of the Kuskokwim River drainage. Therefore, there were 6 days when subsistence fishing was restricted downstream of Bogus Creek and 3 days when subsistence fishing was restricted between Bogus Creek and Chuathbaluk. There was no subsistence fishing restrictions upstream of Chuathbaluk.

The Rebuilding Plan provides further direction to provide for a commercial salmon fishery if it is determined that salmon abundance is in excess of that required to achieve escapement goals and that adequate opportunity is provided for fishers to achieve amounts necessary for subsistence use. It was determined by State and Federal managers and the Working Group that a harvestable surplus of salmon was available to implement a commercial fishery in District W-1 (Figure 6) on June 24, 2005. Initially, 4 commercial fishing periods (2 in Subdistrict W-1A and 2 in Subdistrict W-1B; Figure 7) occurred between June 24 and July 1. The second component of the commercial fishery was directed toward the harvest of coho salmon from August 2 to September 1. Between June 24 and September 1, 15 commercial fishing periods occurred (Table 5).

Subsistence fishing closures associated with commercial fishing periods affect the spatial distribution of subsistence fishers during commercial periods and their harvest success through increased competition for the same resource. The hours closed to subsistence fishing around commercial openings in the Kuskokwim River during the 2005 season was 6 hours before, during, and 3 hours after commercial fishing periods within the subdistrict opened to commercial fishing and in a portion of the adjacent subdistrict. In 2005, commercial fishing activities in the Kuskokwim River resulted in 216 hours of subsistence closures in both subdistricts combined (Table 5).

This report summarizes results from inseason subsistence harvest surveys conducted by ONC in the summer of 2005 with subsistence fishers in the Bethel area of the lower Kuskokwim River (FIS 05-307). This report represents a final report for project FIS 05-307 funded by USFWS OSM. Project 05-307 is a continuation of project FIS 04-353 (operated in 2004) and FIS 01-132 (operated from 2001 through 2003) (Martz and Whitmore 2005).

OBJECTIVES

Objectives for project FIS 05-307, Bethel area inseason subsistence salmon catch monitoring data collection include:

1. Characterize salmon run timing and relative abundance in May, June, and July through weekly interviews with Bethel area subsistence salmon fishers.
2. Characterize fishing activity and gear usage through weekly interviews with Bethel area subsistence salmon fishers in May, June, and July.
3. Build management capacity by providing local input into the management process for the salmon subsistence fishery in May, June, and July through the presentation of weekly summaries of interviews with Bethel area subsistence salmon fishers at Kuskokwim River Salmon Management Working Group meetings.
4. Build local capacity by providing cross training to an ONC technician in other ADF&G and USFWS projects for up to 2 weeks.

METHODS

In consultation with ADF&G staff, ONC hired a fishery technician to: 1) conduct weekly interviews with subsistence fishers along the mainstem Kuskokwim River, 2) summarize those data for Working Group meetings and 3) assist another ONC technician for FIS 05-306 in the collection of biological data from Chinook salmon taken in the subsistence fishery to characterize the age, sex, and length (ASL) composition of the subsistence harvest by gear type. The ONC technician conducted inseason subsistence surveys and collected Chinook salmon biological data in the Lower Kuskokwim River area between Oscarville and the mouth of the Kwethluk River (Figure 8).

INTERVIEWS

The Lower Kuskokwim River subsistence fishery catch monitoring project relies on voluntary participation of local subsistence fishers. Participants are allowed to remain anonymous and most have participated since 2001 when the project began. Most are life-long residents of the Kuskokwim Area and represent some of the most experienced and knowledgeable fishers in the Bethel area. Most participants are of Alaska Native descent with a long tradition of practicing

subsistence as a way of life. The amount of experience in the fishery by those interviewed ranges from 10 to 50 years each. Fishers interviewed represent an estimated cumulative contribution of up to 1,000 years of fishing experience and observation in any given weekly period (40 interviews with 25 years average experience per fisher). The technician employed by ONC to conduct the interviews has approximately 20 years of subsistence fishing experience in the Kuskokwim River.

Nearly all participants are interviewed at seasonal fishing locations (fish camps) that have been maintained across generations in the areas of Gweek River, Church Slough, Steamboat Slough, Straight Slough, Old Bethel Airport, Oscarville Slough, Napaskiak Slough, the mainstem Kuskokwim River, and Bethel (Figure 8). A list of approximately 51 interview participants (developed and maintained since 2001) from 2004 formed the initial list for 2005. The fishery technicians interviewed these 51 families along with opportunistic encounters with fishers at the Bethel boat ramp or in other areas within the city of Bethel, during which additional families wishing to participate were added. Generally, the subsistence fisher responsible for the majority of the subsistence salmon harvest was interviewed at each fish camp. This fisher usually represents a larger group of people participating in the harvest, processing and preserving of subsistence caught salmon. Based on the success in past years, the same family member of a fish camp is interviewed each week.

The interview format was developed in conjunction with staff from ADF&G, USFWS, and ONC. ADF&G staff took the lead in coordinating and finalizing the interview format and protocols (Appendix A). Questions on the form included: family name, community of residence, date household began fishing, fish camp location, fishing area, season harvest goals by species, qualitative assessment of weekly fishing success, progress toward achieving harvest goals, gear types utilized, general comments about fishing conditions, opinion on run timing, fishing difficulties, whether subsistence harvest goals were met, and the date the family completed salmon fishing for each species. The questions were designed to: 1) provide information from interviews with individual subsistence fishing families to provide a qualitative assessment of subsistence fishing success, 2) determine timing of the harvest 3) determine if fishers were selectively harvesting specific salmon species using particular mesh sizes or harvest methods, 4) determine if there were factors other than fish abundance that may have affected the relative success of achieving their harvest goals, and 5) determine a general assessment of salmon run timing based on subsistence fishers' perspective. Fishers were specifically asked: "Compared with this time in a "Normal" year, how were your catch rates for salmon this week?" Their answers were categorized as very good, normal, or poor and together were viewed as an index of relative abundance. In order to provide a general characterization of salmon run timing, subsistence fishers were additionally asked the question: "Does the salmon run appear to be running early, late, or normal (Appendix A)?"

The 2005 project consisted of hiring and training one fisheries technician by the ONC project investigator in consultation with ADF&G project investigators to begin field season preparations on May 23 and subsistence catch monitoring interviews on May 25. This technician worked in partnership with the ONC technician hired for FIS 05-306 and has been employed by ONC since the project began in 2001. Each week the technicians would travel by skiff to 51 outlying fish camps in the lower Kuskokwim River between Oscarville and the mouth of the Kwethluk River contacting the same general fish camp occupants during the 5 years the project has been in operation (Figure 8). Bethel fishers were contacted at home or by phone. The technician

conducted interviews began Thursday of every week through July 15 with subsistence fishers in Bethel and vicinity¹ fish camps. The technician asked questions in order to complete a two page survey instrument form (Appendix A). Interview question responses noted in the survey instrument were then entered into an Excel spreadsheet and summarized across each calendar or weekly fishing period. Completed weekly reports summarizing answers to weekly questions were generally received by ADF&G staff the Monday following the interview week and were distributed to USFWS, RAC members, Working Group members, and the public at Working Group meetings (Appendix B). Collection of this information and distribution of the subsequent summaries provided a venue for local user input into the determination of salmon run abundance, run timing, and corresponding management strategies.

Once interviews were discontinued for 2005, the fisheries technician was cross trained with ADF&G staff at the Tatlawiksuk River weir for approximately one week in late July. The ONC fisheries technician also worked with ADF&G staff to prepare a 10 minute Microsoft™ PowerPoint² presentation that he gave at the 2006 Kuskokwim Area Spring Interagency Meeting in Anchorage, Alaska. The presentation included results from the 2005 catch monitoring program and recommendations for enhancing the collection of subsistence fishing information. The ONC Natural Resource Director regularly attended Working Group meetings and provided oral summaries of the interviews.

RESULTS

In 2005, ONC staff conducted inseason subsistence surveys from May 29 to July 9. Each week between 22 to 48 individual fishing families were interviewed regarding their subsistence fishing activities for the week. A total of 223 interviews were conducted in 2005 (Tables 6 and 7). Six weekly summaries were prepared and presented at Working Group meetings (Appendix B and C).

The most intense fishing activity in the study area occurred during June, as this is the period of greatest Chinook salmon abundance. In June, a total of 169 interviews were conducted (Table 6); during this period 35% to 88% of families interviewed each week reported fishing (Table 7). By the end of June, 114 interviews had reports of people fishing. Out of 114 interviews, 75% had reports of Chinook salmon fishing as very good, normal by 25%. There were no reports of poor Chinook salmon fishing by interviewed fishing families during June. During the weeks ending June 18 and June 25, 76 interviews had reports of families fishing (Table 6). Chum salmon fishing was described as very good in 43% of the 76 interviews while 57% of the 76 interviews had reports of fishing as normal. There were no reports of poor chum salmon fishing by interviewed fishing families during June. In the 76 interviews reporting families fishing during the weeks ending June 18 and 25, 78% described sockeye salmon fishing as very good, 22% of the interviews had reports that fishing for sockeye salmon was normal. There were no reports of poor sockeye salmon fishing during June (Table 6).

All interviewed fishing families in June reported using gillnets. Drift gillnet gear use was reported by 92% of interviews conducted in June while set gillnet gear use was reported by 17%

¹ The Bethel vicinity is defined as: those waters of the mainstem Kuskokwim between Napaskiak and the lower end of Kuskokuak Slough, including Church Slough.

² Product names used in the report are included for scientific completeness, but do not constitute a product endorsement.

of interviewed fishers (Table 8). Of the fishing families interviewed in June, 9% reported using both drift and set gillnet gear. Gillnets with mesh size greater than 6 inches are primarily utilized to target Chinook salmon; 90% of interviewed fishers used gillnets of this mesh size during the month of June. During a June 15 Working Group meeting, a decision was reached to go to 7 days per week subsistence fishing beginning June 16 (J. C. Linderman, Commercial Fisheries Kuskokwim Area Management Biologist, ADF&G, Anchorage; personal communication). An important source of information used by the Working Group was the most recent inseason harvest report from June 11 (Appendix B2) where 77% of the individual fishing families interviewed described Chinook fishing as very good and 23% as normal (Table 7). No fishing families reported fishing as poor during that week.

Participation in the subsistence fishery by interviewed fishing families declined in July (Tables 6 and 7). In the first 2 weeks of July, 54 interviews were conducted. During the weeks ending July 2 and 9, 5 interviews had reports of fishing. During this period, fisher participation was 10% of families interviewed in the 2 weeks of July. Chinook salmon fishing was described as very good by 60% of the 5 reporting fishers and normal by 40%. There were no reports of Chinook salmon fishing being poor. Chum salmon fishing was described as very good in 60% of the 5 interviews and normal in 40% of 5 interviews. There were no reports of chum salmon fishing being poor. Of the 5 interviews reporting fishing during the first 2 weeks of July, 80% described sockeye fishing as very good, 20% described sockeye fishing as normal while no fishing families reported fishing as poor (Table 7). Drift gillnets were used in July by 80% of the fishers interviewed, while 20% of those interviewed reported subsistence fishing with set gillnets. Approximately 80% of the interviewed fishers reported using gillnets with 6 inch or larger mesh size. Approximately 20% reported using 6 inch or smaller mesh (Table 8).

DISCUSSION

Information used to manage the Kuskokwim River fisheries includes: subsistence harvest reports, test fish project summaries, and reports of salmon abundance from weir, sonar, and aerial survey programs as salmon approach clear water tributary spawning grounds. The inseason catch monitoring interviews are important in providing some of the first formal information pertaining to salmon abundance. Based on this information, comparisons of inseason subsistence catch information can be made among weeks, within a year, and among years (Tables 6–8; Appendix D). If the majority of interviewed fishers rate fishing as ‘Very Good’ for a given species and week it can provide general evidence that a particular run is performing well for that time. Likewise, if the majority of interviewed fishers rate subsistence fishing as being ‘Poor’ it would indicate a run is performing poorly for that time. Now that several years of catch monitoring reports have been collected, it is possible to compare responses among years. Used concurrently with Bethel test fish catch data, subsistence catch monitoring information can provide a general assessment of abundance and timing of a particular run of salmon.

The majority of salmon harvested for subsistence uses in the Kuskokwim River are Chinook salmon (Figure 1). Since the directed commercial fishery for Chinook salmon was discontinued in 1987, Chinook salmon subsistence harvest estimates have consistently surpassed the incidental harvest totals from yearly commercial fishing activities (Table 1). In 2005, the Bethel test fish index for Chinook salmon was the second highest on record; the indices for chum and sockeye

were the largest on record (Michael Martz, Commercial Fisheries Biologist, ADF&G, Bethel; unpublished data³). The majority of families interviewed during 2005 inseason subsistence surveys in the Lower Kuskokwim area indicated that Chinook, chum, and sockeye salmon fishing were at least 'Normal' or 'Very Good.' The majority (greater than 60%) of interviewed fishers for each of the first 4 years of the survey reported Chinook salmon fishing as 'Very Good' for the first 2 to 3 weeks of the survey. In 2005, the fifth season of the survey, 0 families described Chinook salmon fishing during the first week of the interview period (week ending June 4) as 'Very Good' (Appendix D). Several reports from interviewed fishers during this week contained comments that the water levels in the Lower Kuskokwim area were fairly high which may have affected catchability. Similarly, the cumulative index from the Bethel test fishery for Chinook salmon at the end of the first week of fishing (June 4) was lower than the index for the same time in 2003 and 2004 and slightly lower than 2002 (Bue 2005; Michael Martz, Commercial Fisheries Biologist, ADF&G, Bethel; unpublished data).

Interviewed families fishing during the first 4 weeks of the survey was greater than 50% each year, reflecting that interviewed fishers near Bethel are targeting the majority of the Chinook salmon run (Appendix D2). Consistent with this, Bethel test fish catch numbers have estimated that 50% of the Chinook salmon run had passed Bethel during the 17 to 23 of June in the years 2001 to 2004 (Bue 2005), after which catch numbers have dropped as well as participation in the subsistence salmon fishery near Bethel by interviewed families. In 2005, the 50% catch date for the Bethel test fishery was June 22, the same as 2004 (Michael Martz, Commercial Fisheries Biologist, ADF&G, Bethel; unpublished data). The average passage date for Chinook salmon in the Bethel test fishery from 1984 to 2003 was estimated to occur on June 21 (Bue 2005).

In 2004, information from the Lower Kuskokwim subsistence catch monitoring project was an important factor in discontinuing the Kuskokwim River subsistence fishing schedule (Martz and Whitmore 2005). Likewise, in 2005, survey summary reports (Appendix B) and a table of historical data (Appendix C) were presented at each Working Group meeting during the survey period. Information from both the Lower Kuskokwim catch monitoring project and inseason run assessment projects such as the Bethel test fishery, were important factors in discontinuing the subsistence fishing schedule (John Linderman, Commercial Fisheries Kuskokwim Area Management Biologist, ADF&G, Anchorage; personal communication). Historical information was also presented at Working Group meetings (Appendix C1). Only the weeks of June and the first 2 weeks of July were used in the comparison as that covers the 2005 survey period. This information, in conjunction with information from the Bethel test fishery, were used by ADF&G to determine if Chinook salmon abundance was sufficient to achieve escapement goals and amounts necessary for subsistence use. At a June 15 Working Group meeting, ADF&G recommended discontinuing the subsistence fishing schedule in the Kuskokwim River after presentations from the Bethel test fishery and the Lower Kuskokwim subsistence catch monitoring project. After a period of deliberation the Working Group voted to unanimously support ADF&G's recommendation.

Chum, sockeye, and coho subsistence fishing descriptions from the inseason subsistence survey are difficult to compare among years because the number of interviewed families fishing vary from week to week, between years. In 2005, the scope of the project changed to adequately

³ Alaska Department of Fish and Game, Bethel salmon drift gillnet test fishery project; information supplied by project leader Michael Martz.

index run timing and relative abundance of salmon through the months of May, June and July. As a result, information on coho salmon subsistence was not gathered in 2005. Chum salmon fishing during the 2005 season was similar to the 2002 season by responses from interviewed fishing families (Appendix D1). Chum salmon catch indices from the Bethel test fishery were higher than any other year on record. The central 50% of the chum salmon catch for the Bethel test fishery occurred between the dates of July 3 and July 14 (Michael Martz, Commercial Fisheries Biologist, ADF&G, Bethel; unpublished data). One reason this may have not been reflected in the subsistence catch monitoring project is that participation in the fishery by interviewed fishers dropped off considerably between the weeks ending June 25 (71% of participants fishing) and July 2 (9% of participants fishing) (Table 6). Comparing descriptions of sockeye salmon subsistence fishing for the same years indicates that sockeye salmon fishing during 2005 was generally better than the 2004 season (Appendix D2). In the week ending June 25, 82% of 34 interviewed fishing families described fishing as 'Very Good,' the highest percentage among all years. Similarly, 2005 sockeye salmon catches in the Bethel test fishery surpassed all years the project has been operational (Michael Martz, Commercial Fisheries Biologist, ADF&G, Bethel; unpublished data).

CONCLUSIONS

The mainstem Kuskokwim River is a corridor for salmon to access tributary spawning streams. Amounts necessary for subsistence are established on a drainage wide basis. Lower river subsistence fishers have the opportunity to harvest fish destined for spawning areas drainage wide while fishers in the middle and upper river areas only have access to fish that travel to tributary streams adjacent to or upstream from the areas that they generally fish. Therefore, during some years, fishers in the upper and middle portions of the Kuskokwim River might have less opportunity for subsistence salmon harvests than those in the lower river. Amounts necessary for subsistence for the Kuskokwim drainage may be achieved during some years due to increased harvests by subsistence fishers from the Lower, or Lower and Middle Kuskokwim River communities. Likewise, subsistence fishers in the Middle or Upper Kuskokwim River communities may have less opportunity to achieve their harvest goals. Management of the Kuskokwim River subsistence salmon fishery is especially difficult because of the limited information that is available during the course of the salmon runs. Incorporating information from an inseason subsistence monitoring program into a management process is beneficial toward managing the Kuskokwim subsistence salmon fisheries. Collection of inseason harvest information early in the run is especially beneficial because run assessment information is limited to the test fish program, since salmon do not arrive at escapement monitoring programs until mid to late June and in the upper Kuskokwim area in July.

The program has been well received by the subsistence fishers interviewed each year, who appreciate the opportunity to provide input to management of the Kuskokwim River fisheries. The information gathered by the inseason subsistence catch monitoring project has become vital to both Working Group members and State and Federal managers in making fishery management decisions. In addition to providing information regarding fish availability, subsistence fishing effort, and qualitative catch rates, the inseason subsistence catch monitoring program provides feedback from subsistence fishers regarding the subsistence fishing schedule, and subsistence fishing closures around commercial fishing periods. This forum provided an excellent

opportunity to discuss subsistence fishing issues with fishers and allows for an exchange of information toward developing a fishery management plan acceptable to a larger number of fishery participants.

Information provided by the inseason subsistence catch monitoring program increased the quality and consistency of information obtained from subsistence fishers in 2005. The number and frequency of interviews of individual fishing families increased the reliability of the salmon catch information. In combination with other information, inseason subsistence catch information was used to aid the decision making process of inseason management actions. The weekly reporting process resulted in discussions of survey data from the lower Kuskokwim River Area, which drew comments from Working Group members and fishers from the Middle and Upper River where surveys were not conducted. These discussions allowed fishers living and fishing upstream of the survey area to be briefed on surveyed fishing family success in the Lower River area and allowed lower river fishers to recognize the difference in fish availability (particularly Chinook salmon) in the middle and upper Kuskokwim River. Specifically, discussions focused on the success of subsistence fishers during the month of June, the abundance of Chinook, chum, and sockeye in the Bethel test fishery, and the elimination of the subsistence fishing schedule in the Kuskokwim River at a June 15 Working Group meeting.

Historically, fishery managers collected inseason information about subsistence activities ad hoc from subsistence fishers. This project has increased the number and frequency of fishing family interviews and has provided a broader representation of subsistence salmon catch information that more accurately reflects the status of the lower Kuskokwim River salmon fishery than information garnered ad hoc. Inseason subsistence catch information was used in conjunction with other information (such as Bethel test fish catch indices) to determine inseason management decisions. Now that multiple years of information have been collected, information on an 'in progress' Kuskokwim River fishery can be compared to prior years' information. In this way, inseason subsistence catch information becomes useful in implementing fishery management actions directed towards achieving escapement goals, providing for a subsistence use priority, and, if harvestable surpluses of salmon are available, to provide an opportunity for other fisheries. Timely evaluation of inseason subsistence catch information has the potential to increase the precision of the Kuskokwim River fishery management system by allowing local subsistence salmon users a venue for input into the determination of salmon run abundance and corresponding management strategies.

RECOMMENDATIONS

During late May to mid July, salmon run assessment information is limited to the Bethel test fishery and is generally not available from escapement monitoring programs. Subsistence information from the lower river is beneficial in assisting inseason management actions. We recommend that ONC includes a census of active and inactive fish camps and those surveyed each week to provide a better definition of the Lower Kuskokwim survey area and gather information on the number of camps that are actively used from a total number in the survey area each week (remain confidential). Interview survey forms should be completely filled out during each interview. We also recommend adding questions seeking the fishers' use of multiple gear types during a week (i.e. set and drift or fishing greater than and less than 6 inch mesh gill nets). These gear use trends should be noted in weekly and yearly summaries. Technicians conducting

the inseason subsistence surveys should insure each fisher has a subsistence catch calendar in their possession and that the fisher fills out the calendar on at least a weekly basis. Fishery managers and Working Group members may benefit by accompanying technicians in order to become more familiar with the program.

Modifications that may enhance the quality, and speed the completion of future reports include: having ONC provide completed data forms (modified to remain confidential) to ADF&G after the season in the event questions arise regarding details on weekly summary sheets, and allowing survey technicians to distribute subsistence salmon catch calendars to interviewed subsistence fishers.

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TABLES AND FIGURES

Table 1.—Historical utilization of Chinook salmon in the Kuskokwim River, 1960–2005.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1960	5,969		18,887				24,856	
1961	18,918		28,934				47,852	
1962	15,341		13,582				28,923	
1963	12,016		34,482				46,498	
1964	17,149		29,017				46,166	
1965	21,989		24,697				46,686	
1966	25,545		49,325		285		75,155	
1967	29,986		59,913		766		90,665	
1968	34,278		32,942		608		67,828	
1969	43,997	22,519	40,617	33,240	833		85,447	56,008
1970	39,290	25,851	69,612	38,312	857		109,759	64,498
1971	40,274	27,987	43,242	39,743	756		84,272	68,140
1972	39,454	30,398	40,396	42,424	756		80,606	73,308
1973	32,838	32,480	39,093	42,885	577		72,508	75,909
1974	18,664	32,632	27,139	42,698	1,236		47,039	75,997
1975	22,135	32,646	48,448	45,073	704		71,287	78,457
1976	30,735	33,165	58,606	46,001	1,206		90,547	79,996
1977	35,830	33,750	56,580	45,668	1,264	33	93,707	80,300
1978	45,641	34,886	36,270	46,000	1,445	116	83,472	81,864
1979	38,966	34,383	56,283	47,567	979	74	96,302	82,950
1980	35,881	34,042	59,892	46,595	1,033	162	96,968	81,671
1981	47,663	34,781	61,329	48,404	1,218	189	110,399	84,284
1982	48,234	35,659	58,018	50,166	542	207	107,001	86,923
1983	33,174	35,692	47,412	50,998	1,139	420	82,145	87,887
1984	31,742	37,000	56,930	53,977	231	273	89,176	92,100
1985	37,889	38,576	43,874	53,519	79	85	81,927	93,164
1986	19,414	37,443	51,019	52,761	130	49	70,612	91,171
1987	36,179	37,478	67,325	53,835	384	355	104,243	92,225
1988 ^d	55,716	38,486	70,943	57,303	576	528	127,763	96,654
1989	43,217	38,911	81,176	59,792	543	1,218	126,154	99,639
1990	53,504	40,673	85,979	62,401	512	394	140,389	103,981
1991	37,778	39,685	85,554	64,823	117	401	123,850	105,326
1992	46,872	39,549	64,795	65,501	1,380	367	113,414	105,967
1993	8,735	37,105	87,512	69,511	2,483	587	99,317	107,685
1994	16,211	35,552	93,242	73,142	1,937	1,139	112,529	110,020
1995	30,846	34,847	96,436	78,398	1,421	541	129,244	114,752
1996	7,419	33,648	78,063	81,103	247	1,432	87,161	116,406

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Table 1.–Page 2 of 2.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-yr Avg.
	Annual	10-yr Avg	Annual	10-yr Avg				
1997	10,441	31,074	81,577	82,528	332	1,227	93,577	115,340
1998	17,359	27,238	81,265	83,560	210	1,434	100,268	112,590
1999	4,705	23,387	73,194	82,762	98	252	78,249	107,800
2000	444	18,081	64,893	80,653	64	105	65,506	100,312
2001	90	14,312	73,610	79,459	86	290	74,076	95,334
2002	72	9,632	74,778	80,457	288	300	75,438	91,537
2003	158	8,775	67,788	78,485	409	401	68,756	88,480
2004	2,300	7,383	78,193 ^e	76,980	691	857	82,041	85,432
2005	4,784	4,777	^f		557	^f	^f	
10-yr Avg.								
('95-'04)	7,383		76,980		385	684	85,432	

^a Districts 1 and 2, also includes harvests in District 3 from 1960 to 1965.

^b Estimated subsistence harvest expanded from villages surveyed.

^c Discrepancies in subsistence harvest numbers by area may be attributable to changes in geographic area definitions over time.

^d Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

^e Preliminary estimate.

^f Data not yet available.

Table 2.—Historical utilization of chum salmon in the Kuskokwim River, 1960–2005.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1960	0		301,753 ^d				301,753	
1961	0		179,529 ^d				179,529	
1962	0		161,849 ^d				161,849	
1963	0		137,649 ^d				137,649	
1964	0		190,191 ^d				190,191	
1965	0		250,878 ^d				250,878	
1966	0		175,735 ^d		502 ^e		176,237	
1967	148		208,445 ^d		338		208,931	
1968	187		275,008 ^d		562		275,757	
1969	7,165	750	204,105 ^d		384		211,654	209,443
1970	1,664	916	246,810 ^d	203,020	1,139 ^e		249,613	204,229
1971	68,914	7,808	116,391 ^d	196,706	254		185,559	204,832
1972	78,619	15,670	120,316 ^d	192,553	486		199,421	208,589
1973	148,746	30,544	179,259 ^d	196,714	675		328,680	227,692
1974	171,887	47,733	277,170 ^d	205,412	2,021		451,078	253,781
1975	184,171	66,150	176,389 ^d	197,963	1,062		361,622	264,855
1976	177,864	83,937	223,792 ^d	202,769	2,101		403,757	287,607
1977	248,721	108,794	198,355 ^d	201,760	576	125	447,777	311,492
1978	248,656	133,641	118,809 ^d	186,140	2,153	555	370,173	320,933
1979	261,874	159,112	161,239 ^d	181,853	412	259	423,784	342,146
1980	483,751	207,320	165,172 ^d	173,689	2,058	324	651,305	382,316
1981	418,677	242,297	157,306 ^d	177,781	1,793	598	578,374	421,597
1982	278,306	262,265	190,011 ^d	184,750	504	1,125	469,946	448,650
1983	276,698	275,061	146,876 ^d	181,512	1,069	922	425,565	458,338
1984	423,718	300,244	142,542 ^d	168,049	1,186	520	567,966	470,027
1985	199,478	301,774	94,750	159,885	616	150	294,994	463,364
1986	309,213	314,909	141,931 ^d	151,699	1,693	245	453,082	468,297
1987	574,336	347,471	70,709	138,935	2,302	566	647,913	488,310
1988 ^f	1,381,674	460,773	151,967	142,250	4,379	764	1,538,784	605,171
1989	749,182	509,503	139,687	140,095	2,082	2,023	892,974	652,090
1990	461,624	507,291	126,508	136,229	2,107	533	590,772	646,037
1991	431,802	508,603	93,075	129,806	931	378	526,186	640,818
1992	344,603	515,233	96,491	120,454	15,330	608	457,032	639,527
1993	43,337	491,897	59,396	111,706	8,451	359	111,543	608,125
1994	271,115	476,636	72,025	104,654	11,998	1,280	356,418	586,970
1995	605,918	517,280	67,862	101,965	17,473	226	691,479	626,618
1996	207,877	507,147	88,965	96,669	2,864	280	299,986	611,309

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Table 2.–Page 2 of 2.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1997	17,026	451,416	39,970	93,595	790	86	57,872	552,305
1998	207,809	334,029	63,537	84,752	1,140	291	272,777	425,704
1999	23,006	261,412	43,601	75,143	562	180	67,349	343,141
2000	11,570	216,406	55,371	68,029	1,038	26	68,005	290,865
2001	1,272	173,353	49,874	63,709	1,743	112	53,001	243,546
2002	1,900	139,083	76,842	61,744	2,666	53	81,461	205,989
2003	2,764	135,026	43,320	60,137	1,713	53	47,850	199,620
2004	20,429	109,957	50,471 ^g	57,981	1,810	84	72,794	171,257
2005	69,139	56,279		^h	4,459	^h	^h	
10-yr Avg.								
('95-'04)	109,957		57,981		3,180	139	171,257	

^a Districts 1 and 2 only; no chum harvests were reported in District 3.

^b Estimated subsistence harvest expanded from villages surveyed.

^c Discrepancies in subsistence harvest numbers by area may be attributable changes in geographic area definitions over time.

^d Includes small numbers of small Chinook, sockeye and coho salmon.

^e Includes small numbers of sockeye.

^f Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

^g Preliminary estimate.

^h Data not yet available.

Table 3.—Historical utilization of sockeye salmon in the Kuskokwim River, 1960–2005.

Year	<u>Commercial Harvest^a</u>		<u>Subsistence Harvest^{b,c}</u>		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1960								
1961								
1962								
1963								
1964								
1965								
1966								
1967								
1968								
1969	322	322					322	
1970	117	220					117	
1971	2,606	1,015					2,606	
1972	102	787					102	
1973	369	703					369	
1974	136	609					136	
1975	23	525					23	
1976	2,971	831					2,971	
1977	9,379	1,781					9,379	
1978	733	1,676					733	
1979	1,054	1,749					1,054	
1980	360	1,773					360	
1981	48,375	6,350					48,375	
1982	33,154	9,655					33,154	
1983	68,855	16,504				41	68,896	16,508
1984	48,575	21,348					48,575	21,352
1985	106,647	32,010				72	106,719	32,022
1986	95,433	41,257				196	95,629	41,287
1987	136,602	53,979				217	136,819	54,031
1988 ^b	92,025	63,108				291	92,316	63,190
1989	42,747	67,277	35,224			33	78,004	70,885
1990	84,870	75,728	36,276			61	121,207	82,969
1991	108,946	81,785	52,984			38	161,968	94,329
1992	92,218	87,692	32,066			131	124,415	103,455
1993	27,008	83,507	49,347			348	76,703	104,236
1994	49,365	83,586	37,159			359	86,883	108,066
1995	92,500	82,171	27,791			95	120,386	109,433
1996	33,878	76,016	34,213			315	68,406	106,711

-continued-

Table 3.–Page 2 of 2.

Year	<u>Commercial Harvest^a</u>		<u>Subsistence Harvest^{b,c}</u>		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1997	21,989	64,555	40,097			423	62,509	99,280
1998	60,906	61,443	35,425	38,058		178	96,509	99,699
1999	16,976	58,866	46,677	39,204		54	63,707	98,269
2000	4,130	50,792	41,783	39,754		46	45,959	90,745
2001	84	39,905	50,065	39,462	510	231	50,890	79,637
2002	84	30,692	28,858	39,142	228	26	29,196	70,115
2003	282	28,019	34,452	37,652	646	140	35,520	65,997
2004	9,748	24,058	31,398 ^d	37,076	742	400	42,288	61,537
2005	27,645	17,572		^e	1,062	^e	^e	
10-yr Avg.								
('95-'04)	24,058		37,076		638	191	61,537	

^a Estimated subsistence harvest expanded from villages surveyed.

^b Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

^c Discrepancies in subsistence harvest numbers by area may be attributable to changes in geographic area definitions over time.

^d Preliminary estimate.

^e Data not yet available.

Table 4.—Historical utilization of coho salmon in the Kuskokwim River, 1960–2005.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg				
1960	2,498							
1961	5,044							
1962	12,432							
1963	15,660							
1964	28,613							
1965	12,191							
1966	22,985							
1967	56,313							
1968	127,306							
1969	83,765	36,681						
1970	38,601	40,291						
1971	5,253	40,312						
1972	22,579	41,327						
1973	130,876	52,848						
1974	147,269	64,714						
1975	81,945	71,689						
1976	88,501	78,241						
1977	241,364	96,746						
1978	213,393	105,355						
1979	219,060	118,884						
1980	222,012	137,225						
1981	211,251	157,825						
1982	447,117	200,279						
1983	196,287	206,820				1,375	197,662	
1984	623,447	254,438				1,442	624,889	
1985	335,606	279,804				136	335,742	
1986	659,988	336,953				1,222	661,210	
1987	399,467	352,763				1,767	401,234	
1988 ^b	524,296	383,853				927	525,223	
1989	479,856	409,933	52,918			2,459	535,233	
1990	410,332	428,765	44,791			581	455,704	
1991	500,935	457,733	50,331			1,003	552,269	
1992	666,170	479,638	40,168			1,692	708,030	
1993	610,739	521,084	31,737			980	643,456	
1994	724,689	531,208	33,050			1,925	759,664	
1995	471,461	544,793	36,277			1,497	509,235	
1996	937,299	572,524	32,741			3,423	973,463	

-continued-

Table 4.–Page 2 of 2.

Year	Commercial Harvest ^a		Subsistence Harvest ^{b,c}		Test-Fish	Sport Fish	Total	10-Year
	Annual	10-yr Avg	Annual	10-yr Avg	Harvest	Harvest	Utilization	Average
1997	130,803	545,658	29,032		33,699 ^d	2,408	195,942	585,822
1998	210,481	514,277	24,864	37,591		2,419	237,764	557,076
1999	23,593	468,650	25,003	34,799	213 ^e	1,998	50,807	508,633
2000	261,379	453,755	33,786	33,699	2,828 ^e	1,689	299,682	493,031
2001	192,998	422,961	29,504	31,616	1,723 ^e	1,204	225,429	460,347
2002	83,463	364,691	35,964	31,196	2,484 ^e	2,030	123,941	401,938
2003	284,064	332,023	35,240	31,546	2,377 ^e	3,244	324,925	370,085
2004	433,809	302,935	34,879 ^f	31,729	2,259 ^e	4,996	475,943	341,713
2005	142,319	270,021		^g	1,499 ^e	^g	^g	
10-yr Avg.								
('95-'04)	302,935		31,729		6,512	2,184	370,085	482,419

^a Estimated subsistence harvest expanded from villages surveyed.

^b Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

^c Discrepancies in subsistence harvest numbers by area may be attributable to changes in geographic area definitions over time.

^d Includes Bethel and Aniak test fisheries.

^e Bethel test fishery only.

^f Preliminary estimate.

^g Data not yet available.

Table 5.—District 1, Kuskokwim River, commercial fishing and subsistence closure hours, 2005.

Period Number	Date	Subdistrict	Hours fished	Total hours of Subsistence closures
1	Jun 24	1B	4	13
2	Jun 28	1A	3	12
3	Jun 30	1A	4	13
4	Jul 01	1B	4	13
5	Aug 02	1B	6	15
6	Aug 04	1A	6	15
7	Aug 05	1B	6	15
8	Aug 08	1A	6	15
9	Aug 09	1B	6	15
10	Aug 11	1A	6	15
11	Aug 15	1B	6	15
12	Aug 22	1A	6	15
13	Aug 25	1B	6	15
14	Aug 29	1A	6	15
15	Sep 01	1A and 1B	6	15
Total			81	216

Table 6.–Kuskokwim River inseason subsistence summary report, summary of salmon fishing, 2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians ^a												
Week Ending	Number of Families			Chinook Salmon			Chum Salmon			Sockeye Salmon		
	Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
Jun 04	34	12	22	0	12	0						
Jun 11	39	26	13	20	6	0						
Jun 18	48	42	6	36	6	0	14	28	0	31	11	0
Jun 25	48	34	14	29	5	0	19	15	0	28	6	0
Jul 02	32	3	29	3	0	0	2	1	0	3	0	0
Jul 09	22	2	20	0	2	0	1	1	0	1	1	0
Total ^b	223											
Average	37	20	17	15	5	0	9	11	0	16	5	0

^a Represents responses from the question “Compared with this time in a “Normal” year how were catch rates for salmon this week?”

^b Represents the total number of interviews conducted during the survey year, most families were interviewed more than once.

Table 7.–Kuskokwim River subsistence salmon summary, quality of fishing report, 2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians ^a												
Week	Number		Percent	% Describing Chinook Fishing as			% Describing Chum Fishing as			% Describing Sockeye Fishing as		
Ending	Interviewed	Fishing	Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
Jun 04	34	12	35%	0%	100%	0%						
Jun 11	39	26	67%	77%	23%	0%						
Jun 18	48	42	88%	86%	14%	0%	33%	67%	0%	74%	26%	0%
Jun 25	48	34	71%	85%	15%	0%	56%	44%	0%	82%	18%	0%
Jul 02	32	3	9%	100%	0%	0%	67%	33%	0%	100%	0%	0%
Jul 09	22	2	9%	0%	100%	0%	50%	50%	0%	50%	50%	0%
Total ^b	223											
Average	37	20										

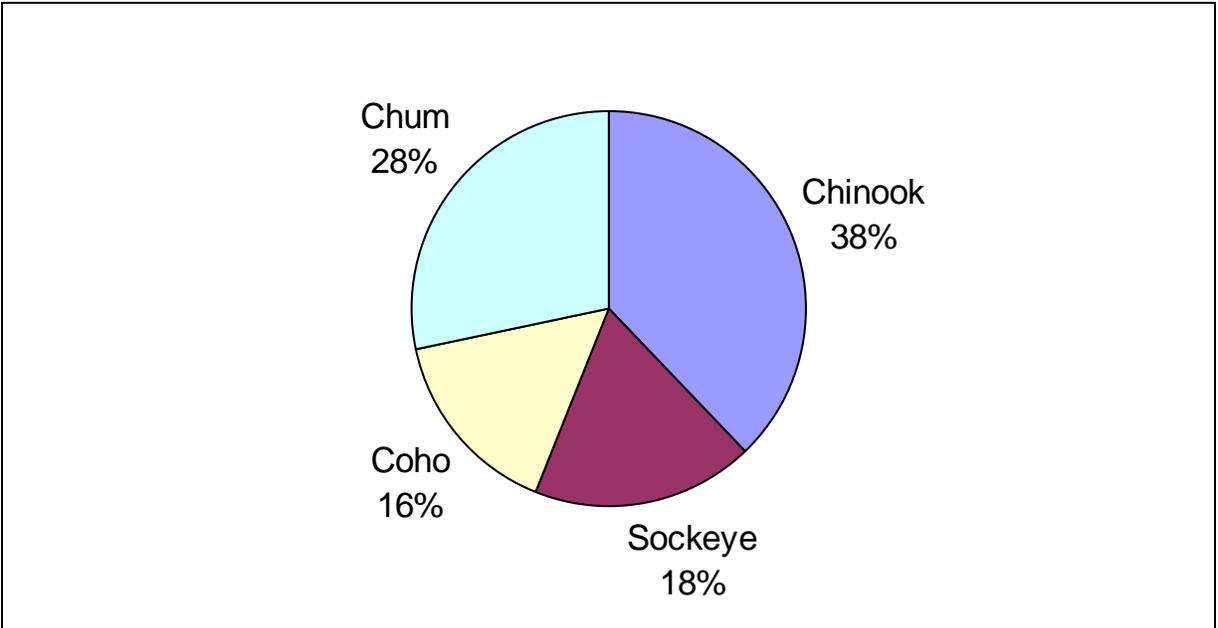
^a Represents responses from the question “Compared with this time in a “Normal” year how were catch rates for salmon this week?”

^b Represents the total number of interviews conducted during the survey year, most families were interviewed more than once.

Table 8.–Kuskokwim River inseason subsistence survey fishing gear use summary, 2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians							
Week	Number of Families		Using	Using	Using	Gillnets	Gillnets
Ending	Interviewed	Fishing	Driftnet	Setnet	Rod & Reel	> 6"	< 6"
Jun 04	34	12	8	6	0	12	2
Jun 11	39	26	25	6	0	26	0
Jun 18	48	42	40	4	0	39	3
Jun 25	48	34	33	3	0	26	8
Jul 02	32	3	2	1	0	2	1
Jul 09	22	2	2	0	0	2	0
Total ^a	223						
Average	37	20	18	3	0	18	2

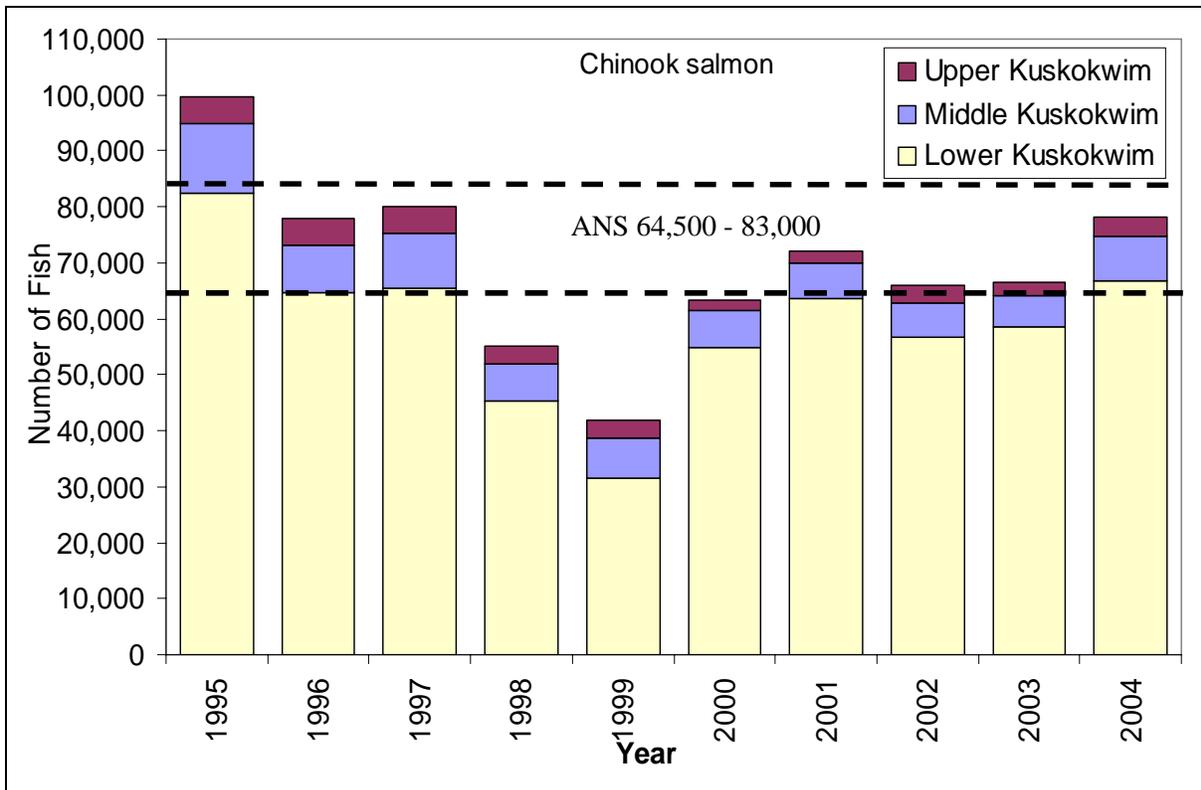
^a Represents the total number of interviews conducted during the survey year, most families were interviewed more than once.



Note: N = 213,002 salmon; based on annual harvest assessment program using calendars and household surveys. 10-year average, 1995–2004. Kuskokwim Management Area, includes Kuskokwim Bay communities.

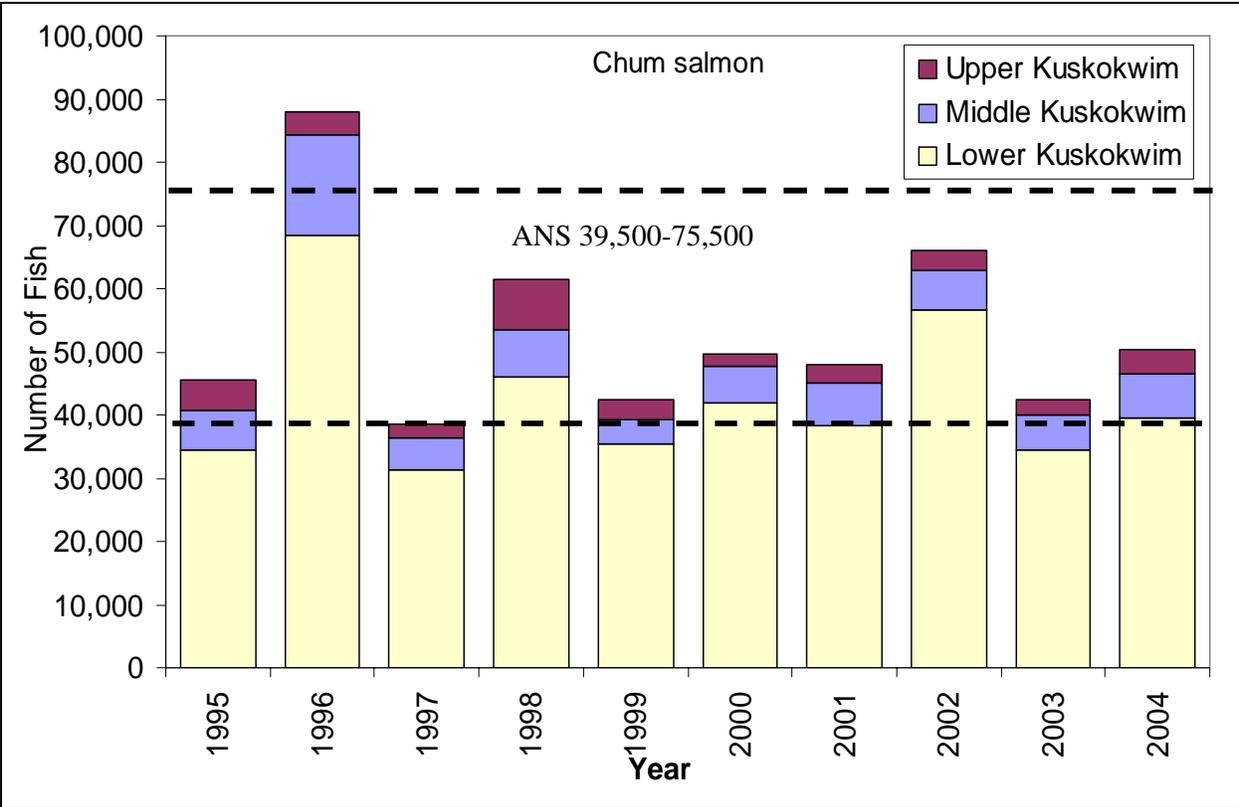
Source: ADF&G *In prep.*

Figure 1.—Composition of subsistence harvest by species as reported by postseason harvest surveys, Kuskokwim Management Area, 10-year average, 1995–2004.



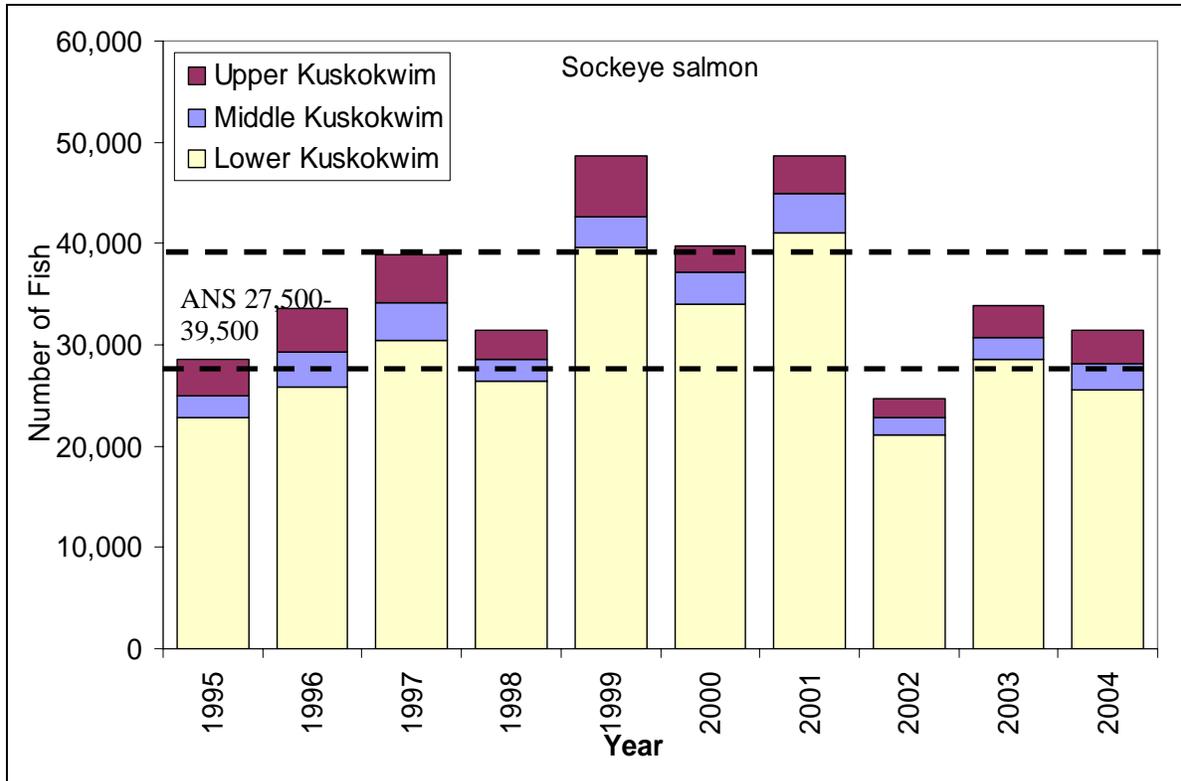
Note: ANS = amount necessary for subsistence.

Figure 2.—Subsistence Chinook salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995–2004.



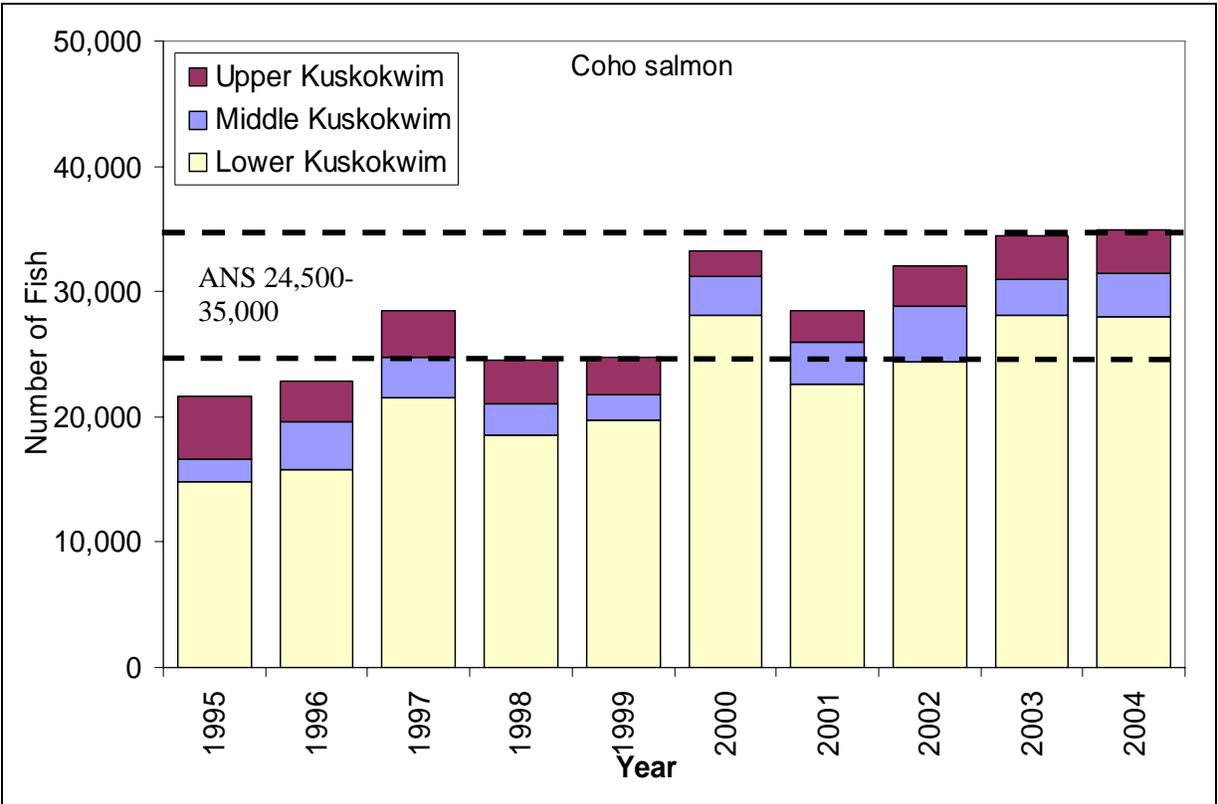
Note: ANS = amount necessary for subsistence.

Figure 3.—Subsistence chum salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995–2004.



Note: ANS = amount necessary for subsistence.

Figure 4.—Subsistence sockeye salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1995–2004.

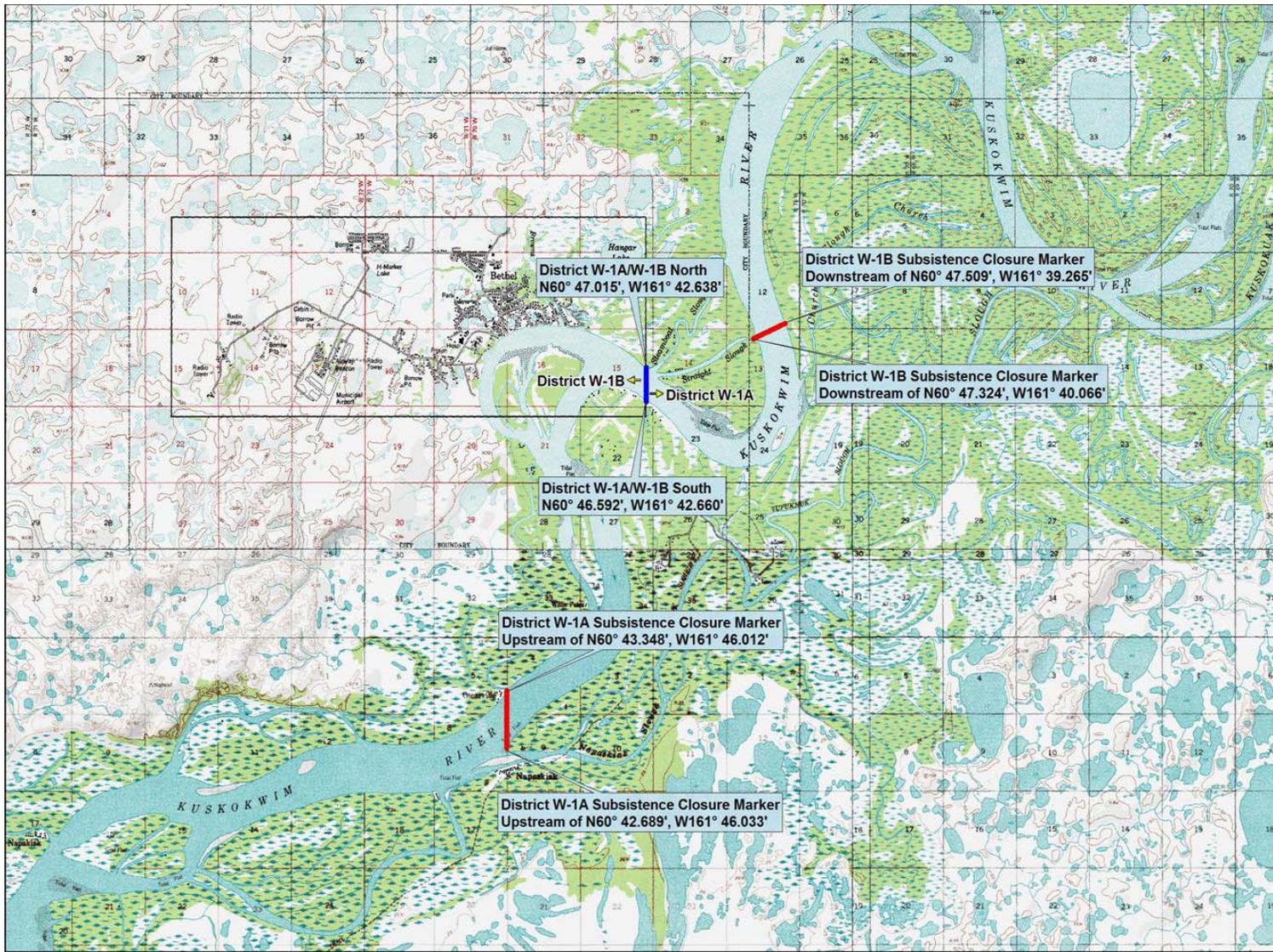


Note: ANS = amount necessary for subsistence.

Figure 5.—Subsistence coho salmon harvest as reported by postseason harvest surveys, Kuskokwim River, 1994–2003.



Figure 6.—Kuskokwim Management Area.



Note: Bethel Area commercial salmon sub-district W-1A and W-1B boundary and subsistence salmon fishing closure boundaries during sub-district W1-A and W-1B commercial openings (ADF&G 2004).

Source: Map not to scale. © 2002 DeLorme (www.delorme.com) 3-D TopoQuads®

Figure 7.—District 1, Subdistricts W-1A and W-1B.

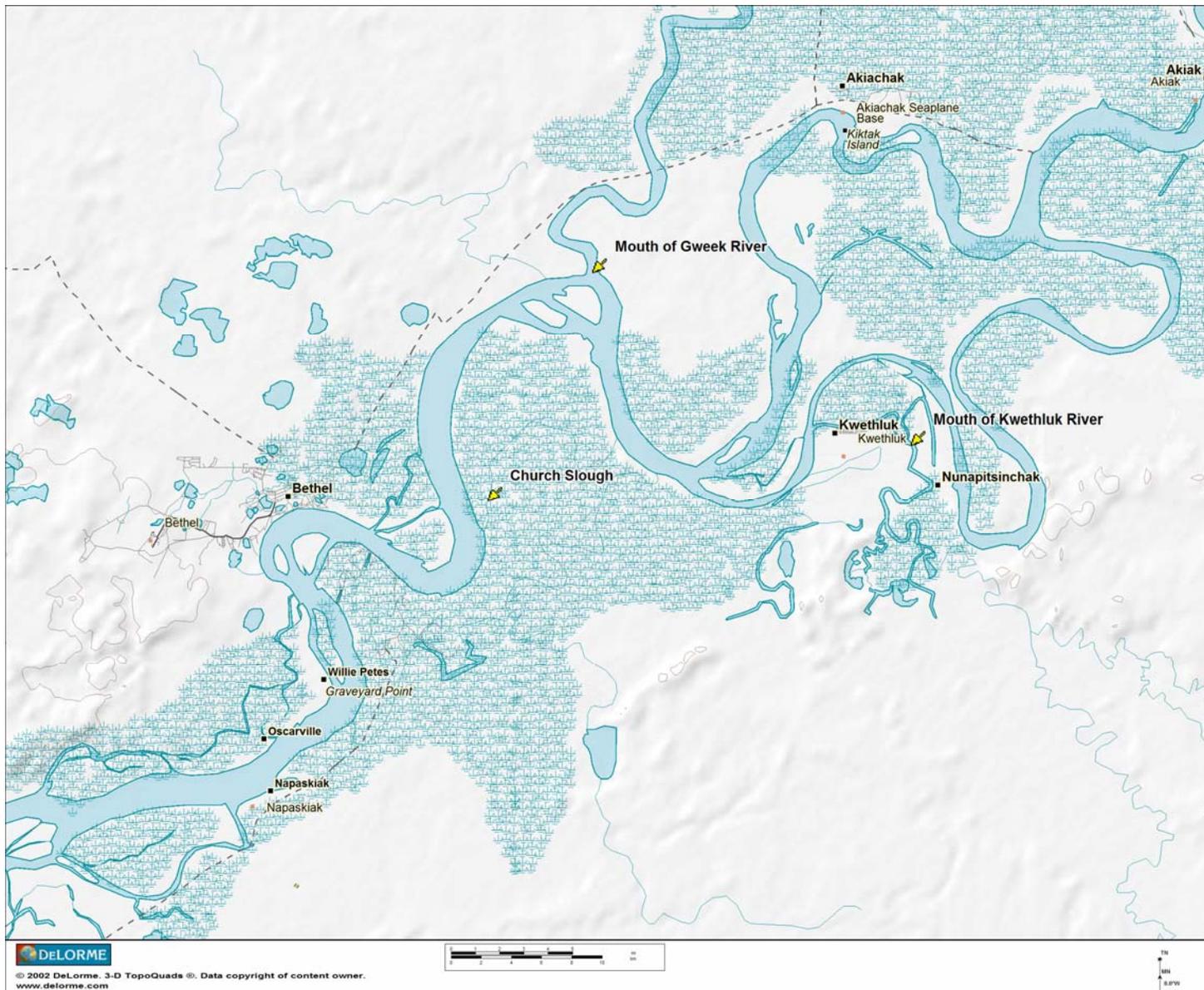


Figure 8.—Subsistence survey area, 2005.

APPENDIX A. EXAMPLE OF SURVEY INSTRUMENT

Appendix A1.—Example of Kuskokwim River subsistence salmon fishing survey form.

Family Name: Lastname Firstname Community Fishcamp Location

Date family started salmon fishing this year (month, day) Primary Subsistence Salmon Fishing Areas

What are your family's salmon harvest goals this year ? (number of salmon) King _____, Chum _____, Sockeye _____,
Chinook "Red"

Staff initials	Week Ending	Salmon Fishing Gear Used This Week						Compared with this time in a "NORMAL" year, how were catch rates for salmon this week?									Does the salmon run appear to be running early, late, or normal?								
		Net Type		Mesh ?		Rod	Fish	King Salmon			Chum Salmon			Sockeye Salmon			King Salmon			Chum Salmon			Sockeye Salmon		
		Drift Net	Set Net	6" or Less	More than 6"	Reel	Wheel	Very Good	OK Normal	Poor	Very Good	OK Normal	Poor	Very Good	OK Normal	Poor	Early	Normal	Late	Early	Normal	Late	Early	Normal	Late
	28-May																								
	4-Jun																								
	11-Jun																								
	18-Jun																								
	25-Jun																								
	2-Jul																								
	9-Jul																								
	16-Jul																								
	31-Jul																								

Comments

Staff initials	Week Ending	Few fish ? Size of Fish ? Drying condiditions?	Lot of fish ? Fish look healthy ? Fishing in more places/areas than usual	Weather affecting fishing? Fishing harder this year ?	Water levels? Fishing harder this year ?
	28-May				
	4-Jun				
	11-Jun				
	18-Jun				
	25-Jun				
	2-Jul				
	9-Jul				
	16-Jul				
	31-Jul				

Were your family's salmon harvest goals achieved ? Kings _____, Chum _____, Sockeye _____.

When did your family stop subsistence fishing for: King Salmon _____, Chum Salmon _____, Sockeye Salmon _____,
(month, day) (month, day) (month, day)

**APPENDIX B. KUSKOKWIM RIVER INSEASON SUBSISTENCE
SALMON CATCH MONITORING WEEKLY REPORTS**

Appendix B1.—Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 7, 2005.

Fishing ending the week of June 4, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
34	22	8	6	0	12	2

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
0	12	0						

Summary: 34 families were interviewed this week. 12 families reported starting their fishing season. 22 families reported not fishing. 8 families reported using driftnets. 6 families reported using set nets. 2 families reported using both drift and set nets. Efforts this week have been focused on recruiting old and new ASL samplers as families prepare their camps for their harvests for the coming season. Kits have been in popular demand this year. Partly due to the prices in gasoline being on the rise, and also as people have grown to be familiar with and understand what the data are used for, more choose to participate. A busy week for fishermen and their families is on its way as it will also be for our surveyors in getting ASL kits distributed earlier and pursuit of more data on the early run of the first Chinook.

Chinook: Out of the 54 camps that are regularly visited on our survey list, 34 reported getting ready to start on this coming opening and following week. Many people have not actively started fishing yet and were unavailable for interviews. No families reported fishing as very good. 12 families that did fish this week reported fishing as normal. No families reported fishing as poor.

Chum: N/A

Sockeye: N/A

Comments: So far, it is still a little early and water level is still a little high. The Chinook are reported swimming deep, and few and far between which is on average for the conditions of the river and the first salmon run for the season. A couple camps compared their start to last year (catch calendars) and report that the fish are about a week behind last years boom in the return and expect this following opening's schedule to be more successful.

Fishing ending the week of June 11, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
39	13	25	6	0	26	0

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
20	6	0	N/A	N/A	N/A	N/A	N/A	N/A

Does the salmon run appear to be running early, late, or normal?

Chinook			Chum			Sockeye		
Early	Normal	Late	Early	Normal	Late	Early	Normal	Late
11	15	0	N/A	N/A	N/A	N/A	N/A	N/A

Summary: Of the 39 families contacted, 26 families reported fishing during this weeks opening. 25 families reported using drift nets. 6 families reported using set nets. 5 families reported using both drift and set nets. 1 family reported using only a set net. The 13 families that reported not fishing yet said they were waiting for the peak of the run to arrive (expected in the following week) before going out, to make the best use of time available between the subsistence closures. 15 other families on the survey route list were not yet available for interviewing and it is anticipated that most (if not all) of them are probably following the same pattern as the 13 that reported not fishing yet.

Chinook: As expected by fishermen last week, the Chinook have picked up during this weeks opening. 20 families reported the fishing as very good. 6 families reported the fishing as normal. No families reported the fishing as poor.

Chum: Fishermen felt it is still too early in the season to offer an assessment on the chum run for this weeks opening. All fishermen surveyed are still using large mesh Chinook gear and report chum catches as only one or two occasional fish.

Sockeye: Fishermen felt it is still too early in the season to offer an assessment on the sockeye run for this weeks opening. As with the chums, people are reporting catching few sockeye as incidental catches, which is primarily attributed to the use of the large mesh Chinook gear.

Comments: Fishermen also commented that the early kings were somewhat smaller this year than in 2004; and in catches this week noted that large kings are becoming more plentiful, and also that there are more of them than in 2004, in which a greater number of small jack salmon were seen.

Appendix B3.—Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 20, 2005.

Fishing ending the week of June 18, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
48	6	40	4	0	39	3

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
36	6	0	14	28	0	31	11	0

Does the salmon run appear to be running early, late, or normal?

Chinook			Chum			Sockeye		
Early	Normal	Late	Early	Normal	Late	Early	Normal	Late
12	30	0	22	20	0	33	9	0

Summary: 8 families on the survey route list were not available for interviewing. Of the 48 families contacted, 42 families reported fishing during this weeks opening. 6 families reported not fishing this week. 40 families reported using drift nets. 4 families reported using setnets. 2 families reported using both drift and setnets. 2 families reported using only a setnet.

Chinook: As expected by fishermen last week, the Chinook have picked up during this weeks opening and the abundance of larger salmon is present. 36 families reported the fishing as very good. 6 families reported the fishing as normal. No families reported the fishing as poor. The larger Chinook are getting thicker in the run and will be expected to keep on passing through this week. 9 families on our survey list reported being finished with their Chinook harvests. 7 more families reported that their Chinook harvests will be done by the end of next week.

Chum: 14 families reported the fishing as very good. 28 families reported the fishing as normal. No families reported fishing as poor. Most fishermen surveyed are still using large mesh Chinook gear and report chum catches as only by catch.

Sockeye: 31 families reported the fishing as very good. 11 families reported the fishing as normal. No families reported the fishing as poor. As with the chums, people are reporting catching sockeye as incidental harvest, which may be primarily attributed to the use of the larger Chinook gear, although they have been reported being early this year. Although fishing with larger mesh gear, fishermen report the presence of sockeye in the river is abundant.

Comments: 4 families reported that using setnets this year makes the fish soft too quickly due

-continued-

to the warmer temperature of the water. 12 families reported the salmon all together came early and plentiful this year. Fishermen also commented that the early Chinook were somewhat smaller this year than in 2004; and in catches this week noted that large Chinook are becoming more plentiful, and also that there are more of them than in 2004, in which a greater number of small jack salmon were seen. 16 families were happy with the lift on the closure and pleased not to hurry on the crowded river while fishing during the openings.

Appendix B4.—Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, June 27, 2005.

Fishing ending the week of June 25, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
48	14	33	3	0	26	8

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
29	5	0	19	15	0	28	6	0

Summary: 6 families on the survey route list were not available for interviewing. Of the 48 families contacted, 34 families reported fishing during this weeks opening. 14 families reported not fishing this week. 33 families reported using drift nets. 3 families reported using setnets. 2 families reported using both drift and setnets. 1 family reported using only a setnet.

Chinook: 29 families reported the fishing as very good. 5 families reported the fishing as normal. No families reported the fishing as poor. The larger Chinook are getting thicker in the run and will be expected to keep on passing through this week. The majority of families on our survey list reported being finished with their Chinook harvests. 7 families reported that their Chinook harvests will be done by the end of this week and will be fishing for canning and freezing. 6 families reported still fishing for their harvests and report that they will be finished by the end of next week.

Chum: 19 families reported the fishing as very good. 15 families reported the fishing as normal. No families reported fishing as poor. Of the 8 fishermen that used smaller mesh gear reported their chum catches as incidental or by catch and plentiful in the run.

Sockeye: 28 families reported the fishing as very good. 6 families reported the fishing as normal. No families reported the fishing as poor. Of the 8 fishermen that used smaller mesh gear reported their efforts to catch their goal was with ease as the sockeye run was reported early in the weeks before and still running strong this week.

Comments: The majority of the camps on our survey list reported being complete with their harvests for Chinook, chum and Sockeye for drying, freezing, and canning. Everybody is happy with the season so far as harvest goals were achieved with not as much effort as some years before.

Appendix B5.—Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, July 6, 2005.

Fishing ending the week of July 2, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
32	29	2	1	0	2	1

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
3	0	0	2	1	0	3	0	0

Summary: Of the 32 families contacted, 3 families reported fishing during this weeks opening. 29 families reported not fishing and being complete with their salmon harvests. 2 families reported using drift nets. 1 family reported using a setnet. No families reported using both drift and setnets.

Chinook: 3 families reported the fishing as very good. No families reported the fishing as normal. No families reported the fishing as poor. All the families on our survey list reported being finished with their Chinook harvests and are thankful for how well the season went this year.

Chum: 2 families reported the fishing as very good. 1 family reported the fishing as normal. No families reported fishing as poor. All the families on our survey list reported being finished with their chum harvests.

Sockeye: 3 families reported the fishing as very good. No families reported the fishing as normal. No families reported the fishing as poor. All the families on our survey list reported being finished with their sockeye harvests and are thankful for how well the season went this year.

Comments: Most of all the camps on our survey list reported being complete with their harvests for Chinook, chums and sockeye for drying, freezing, salting and canning. There are a couple of fishermen that are still planning on going out for a drift to catch enough to kipper. Everybody is happy with the season as harvest goals were achieved quickly and the salmon were plentiful.

Appendix B6.—Kuskokwim River inseason subsistence salmon harvest weekly report, Orutsararmiut Native Council, July 11, 2005.

Fishing ending the week of July 9, 2005.

Families Surveyed	Families Not Fishing	Using Driftnets	Using Setnets	Rod and Reel	Gillnets more than 6" mesh	Gillnets less than 6" mesh
22	20	2	0	0	2	0

Compared with this time in a normal year, how are catch rates for salmon this week?

Chinook			Chum			Sockeye		
Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
0	2	0	1	1	0	1	1	0

Summary: Of the 20 families contacted, 2 families reported fishing during this weeks opening. 20 families reported not fishing and being complete with their salmon harvests. 2 families reported using drift nets. No families reported using a setnet.

Chinook: No families reported the fishing as very good. 2 families reported the fishing as normal. No families reported the fishing as poor. All the families on our survey list reported being finished with their Chinook harvests and are thankful for how well the season went this year.

Chum: 1 family reported the fishing as very good. 1 family reported the fishing as normal. No families reported fishing as poor. All the families on our survey list reported being finished with their chum harvests.

Sockeye: 1 family reported the fishing as very good. 1 family reported the fishing as normal. No families reported the fishing as poor. All the families on our survey list reported being finished with their sockeye harvests and are thankful for how well the season went this year.

Comments: All of the camps on our survey list reported being complete with their harvests for Chinook, chums and sockeye for drying, freezing, and canning. Everybody is happy with the season as harvest goals were achieved quickly and the salmon were plentiful. Families are finishing up smoking their salmon and are focusing on putting their finished fish away for the winter. About 3/4th s or so of the 58 families are planning on fishing for coho when the run is here. Our efforts this week were focused on the collection of the final ASL samples from this season and have gathered 1,593 so far with a few more fishermen to catch up with; we are very pleased with the turn out of samples taken during this season.

**APPENDIX C. EXAMPLE OF LOWER KUSKOKWIM RIVER
SUBSISTENCE CATCH MONITORING INFORMATION
PRESENTED AT KUSKOKWIM RIVER SALMON MANAGEMENT
WORKING GROUP MEETINGS**

Appendix C1.—Example of Lower Kuskokwim River inseason subsistence catch monitoring historical information presented at Kuskokwim River Salmon Management Working Group Meetings, 2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians ^{a,b}													
Year	Week Ending	Number of Families			Chinook Salmon			Chum Salmon			Sockeye Salmon		
		Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
2001	Jun 09	16	16	0	6	6	4						
	Jun 16	39	ND	ND	18	15	6	1	19	15	13	24	1
	Jun 23	35	ND	ND	27	7	1	0	15	20	24	11	0
	Jun 30	40	25	15	8	7	8	5	12	8	19	6	0
	Jul 07	44	7	37	0	1	5	4	1	1	0	5	2
	Jul 14	44	6	38	0	0	4	4	2	0	0	0	4
2002	Jun 08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Jun 15	27	23	4	21	2	0	3	8	7	3	11	3
	Jun 22	33	25	8	17	5	3	12	9	3	2	10	10
	Jun 29	34	22	12	16	6	0	21	0	0	0	3	16
	Jul 06	34	5	29	0	2	3	3	2	0	0	0	5
	Jul 13	36	10	26	0	3	5	8	0	0	0	0	8
2003	Jun 07	18	9	9	7	2	0						
	Jun 14	33	24	9	22	2	0	0	2	0	0	3	0
	Jun 21	48	32	14	30	2	1	1	0	0	7	18	3
	Jun 28	50	34	16	30	4	0	3	9	13	27	7	0
	Jul 05	45	21	24	16	5	0	8	13	0	16	5	0
	Jul 12	46	14	32	0	12	2	13	1	0	0	12	2
2004	Jun 05	31	10	21	6	4	0						
	Jun 12	41	37	4	27	8	2						
	Jun 19	35	31	4	23	8	0	4	27	0	4	27	0
	Jun 26	43	31	12	19	12	0	24	7	0	5	22	4
	Jul 03	44	22	22	3	17	0	10	10	0	0	13	7
	Jul 10	44	13	31	0	10	0	8	2	0	0	4	6

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Appendix C1.–Page 2 of 2.

Year	Week Ending	Number of Families			Chinook Salmon			Chum Salmon			Sockeye Salmon		
		Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
2005	Jun 04	34	12	22	0	12	0						
	Jun 11	39	26	13	20	6	0						
	Jun 18	48	42	6	36	6	0	14	28	0	31	11	0
	Jun 25	48	34	14	25	5	0	19	15	0	28	6	0
	Jul 02	32	3	29	3	0	0	2	1	0	3	0	0
	Jul 09	22	2	20	0	2	0	1	1	0	1	1	0

^a Represents responses from the question “Compared with this time in a “Normal” year how were catch rates for salmon this week?”

^b Only reports from the month of June and the first 2 weeks of July were used for comparison.

**APPENDIX D. KUSKOKWIM RIVER INSEASON SUBSISTENCE
SALMON SUMMARY OF FISHING REPORTS**

Appendix D1.–Kuskokwim River subsistence summary report, summary of salmon fishing, 2001–2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians ^a																
Year	Week Ending	Number of Families		Chinook Salmon			Chum Salmon			Sockeye Salmon			Coho Salmon			
		Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
2001	Jun 09	16	16	0	6	6	4									
	Jun 16	39	ND	ND	18	15	6	1	19	15	13	24	1			
	Jun 23	35	ND	ND	27	7	1	0	15	20	24	11	0	0	0	0
	Jun 30	40	25	15	8	7	8	5	12	8	19	6	0	0	0	0
	Jul 07	44	7	37	0	1	5	4	1	1	0	5	2	0	0	0
	Jul 14	44	6	38	0	0	4	4	2	0	0	0	4	0	0	0
	Jul 21	44	0	44	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Jul 28	44	9	35	0	0	0	1	7	0	0	0	0	0	7	1
	Aug 04	42	20	22				0	1	17				18	2	0
	Aug 11	37	3	34				0	0	0				2	1	0
	Aug 18	37	3	34				0	0	3				1	2	0
	Aug 25	37	3	34				0	0	3				3	0	0
Total ^b		459														
Average		38	9	29	8	5	4	2	6	7	9	8	1	3	1	0
2002	Jun 08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	Jun 15	27	23	4	21	2	0	3	8	7	3	11	3			
	Jun 22	33	25	8	17	5	3	12	9	3	2	10	10			
	Jun 29	34	22	12	16	6	0	21	0	0	0	3	16			
	Jul 06	34	5	29	0	2	3	3	2	0	0	0	5			
	Jul 13	36	10	26	0	3	5	8	0	0	0	0	8	0	0	0
	Jul 20	40	9	31	0	9	0	1	7	1	0	0	9	0	0	0
	Jul 27	35	31	4	0	31	0	0	31	0	0	31	0	9	22	0
	Aug 03	37	13	24	0	0	0	0	10	2	0	0	0	9	4	0
	Aug 10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total ^b		276														
Average		35	17	17	7	7	1	6	8	2	1	7	6	5	7	0
2003	Jun 07	18	9	9	7	2	0									
	Jun 14	33	24	9	22	2	0	0	2	0	0	3	0			

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Appendix D1.–Page 2 of 3.

Year	Week Ending	<u>Number of Families</u>			<u>Chinook Salmon</u>			<u>Chum Salmon</u>			<u>Sockeye Salmon</u>			<u>Coho Salmon</u>		
		Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
2003	Jun 21	48	32	14	30	2	1	1	0	0	7	18	3			
	Jun 28	50	34	16	30	4	0	3	9	13	27	7	0			
	Jul 05	45	21	24	16	5	0	8	13	0	16	5	0			
	Jul 12	46	14	32	0	12	2	13	1	0	0	12	2			
	Jul 19	48	5	43	0	5	0	5	0	0	0	5	0	2	3	0
	Jul 26	48	7	41	0	7	0	4	3	0	0	7	0	6	1	0
	Aug 09	49	11	38	0	0	0	0	0	0	0	0	0	10	1	0
	Aug 16	48	10	38	0	0	0	0	0	0	0	0	0	9	1	0
Total ^b		433														
Average		43	17	26	11	4	0	4	3	1	6	6	1	7	2	0
2004	Jun 05	31	10	21	6	4	0									
	Jun 12	41	37	4	27	8	2									
	Jun 19	35	31	4	23	8	0	4	27	0	4	27	0			
	Jun 26	43	31	12	19	12	0	24	7	0	5	22	4			
	Jul 03	44	22	22	3	17	0	10	10	0	0	13	7			
	Jul 10	44	13	31	0	10	0	8	2	0	0	4	6			
	Jul 17	35	6	29	0	6	0	0	6	0	0	6	0	0	6	0
	Jul 24	46	8	38										0	8	0
	Jul 31	47	7	40										7	0	0
	Aug 07	58	22	36										19	3	0
	Aug 14	44	16	28										16	0	0
Aug 21	52	8	44										8	0	0	
Total ^b		520														
Average		43	18	26	11	9	0	9	10	0	2	14	3	8	3	0
2005	Jun 04	34	12	22	0	12	0									
	Jun 11	39	26	13	20	6	0									
	Jun 18	48	42	6	36	6	0	14	28	0	31	11	0			
	Jun 25	48	34	14	25	5	0	19	15	0	28	6	0			
	Jul 02	32	3	29	3	0	0	2	1	0	3	0	0			

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Appendix D1.–Page 3 of 3.

Year	Week Ending	<u>Number of Families</u>		<u>Chinook Salmon</u>			<u>Chum Salmon</u>			<u>Sockeye Salmon</u>			<u>Coho Salmon</u>			
		Interviewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
2005	Jul 09	22	2	20	0	2	0	1	1	0	1	1	0			
Total ^b		223														
Average		37	20	17	14	5	0	9	11	0	16	5	0	ND	ND	ND

^a Represents responses from the question “Compared with this time in a “Normal” year how were catch rates for salmon this week?”

^b Represents the total number of interviews conducted during the survey year, most families were interviewed more than once.

Appendix D2.—Kuskokwim River subsistence salmon summary, quality of fishing report, 2001–2005.

Summary of Subsistence Salmon Information Collected by ONC Technicians ^a																			
Year	Week Ending	Number Interviewed	Fishing	Percent Fishing	% Describing Chinook fishing as			% Describing Chum fishing as			% Describing Sockeye fishing as			% Describing Coho fishing as					
					Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Very Normal	Normal	Poor		
2001	Jun 09	16	16	100%	38%	38%	25%												
	Jun 16	39	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND						
	Jun 23	35	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0	ND	ND	ND		
	Jun 30	40	25	63%	32%	28%	32%	20%	48%	32%	76%	24%	0%	0	0%	0%	0%		
	Jul 07	44	7	16%	0%	14%	71%	57%	14%	14%	0%	71%	29%	0	0%	0%	0%		
	Jul 14	44	6	14%	0%	0%	67%	67%	33%	0%	0%	0%	67%	0	0%	0%	0%		
	Jul 21	44	0	0%	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
	Jul 28	44	9	20%	0%	0%	0%	11%	78%	0%	0%	0%	0%	0	0%	78%	11%		
	Aug 04	42	20	48%				0%	5%	85%				18	90%	10%	0%		
	Aug 11	37	3	8%				0%	0%	0%				2	67%	33%	0%		
	Aug 18	37	3	8%				0%	0%	100%				1	33%	67%	0%		
	Aug 25	37	3	8%				0%	0%	100%				3	100%	0%	0%		
Total ^b		459																	
Average		38		9														3	
2002	Jun 08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
	Jun 15	27	23	85%	91%	9%	0%	13%	35%	30%	13%	48%	13%						
	Jun 22	33	25	76%	68%	20%	12%	48%	36%	12%	8%	40%	40%						
	Jun 29	34	22	65%	73%	27%	0%	95%	0%	0%	0%	14%	73%						
	Jul 06	34	5	15%	0%	40%	60%	60%	40%	0%	0%	0%	100%						
	Jul 13	36	10	28%	0%	30%	50%	80%	0%	0%	0%	0%	80%	0	0%	0%	0%		
	Jul 20	40	9	23%	0%	100%	0%	11%	78%	11%	0%	0%	100%	0	0%	0%	0%		
	Jul 27	35	31	89%	0%	100%	0%	0%	100%	0%	0%	100%	0%	9	29%	71%	0%		
	Aug 03	37	13	35%	0%	0%	0%	0%	77%	15%	0%	0%	0%	9	69%	31%	0%		
	Aug 10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Total ^b		276																	
Average		35		17														5	

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Summary of Subsistence Salmon Information Collected by ONC Technicians ^a																	
Year	Week Ending	Number Interviewed	Fishing	Percent Fishing	% Describing Chinook fishing as			% Describing Chum fishing as			% Describing Sockeye fishing as			% Describing Coho fishing as			
					Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Very Good	Normal	Poor
2003	Jun 07	18	9	50%	78%	22%	0%										
	Jun 14	33	24	73%	92%	8%	0%	0%	8%	0%	0%	13%	0%				
2003	Jun 21	48	32	67%	94%	6%	3%	3%	0%	0%	22%	56%	9%				
	Jun 28	50	34	68%	88%	12%	0%	9%	26%	38%	79%	21%	0%				
	Jul 05	45	21	47%	76%	24%	0%	38%	62%	0%	76%	24%	0%				
	Jul 12	46	14	30%	0%	86%	14%	93%	7%	0%	0%	86%	14%				
	Jul 19	48	5	10%	0%	100%	0%	100%	0%	0%	0%	100%	0%	2	40%	60%	0%
	Jul 26	48	7	15%	0%	100%	0%	57%	43%	0%	0%	100%	0%	6	86%	14%	0%
	Aug 09	49	11	22%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10	91%	9%	0%
	Aug 16	48	10	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9	90%	10%	0%
Total ^b		433															
Average		43	17	0										7			
2004	Jun 05	31	10	32%	60%	40%	0%										
	Jun 12	41	37	90%	73%	22%	5%										
	Jun 19	35	31	89%	74%	26%	0%	13%	87%	0%	13%	87%	0%				
	Jun 26	43	31	72%	61%	39%	0%	77%	23%	0%	16%	71%	13%				
	Jul 03	44	22	50%	14%	77%	0%	45%	45%	0%	0%	59%	32%				
	Jul 10	44	13	30%	0%	77%	0%	62%	15%	0%	0%	31%	46%				
	Jul 17	35	6	17%	0%	100%	0%	0%	100%	0%	0%	100%	0%	0	0%	100%	0%
	Jul 24	46	8	17%										0	0%	100%	0%
	Jul 31	47	7	15%										7	100%	0%	0%
	Aug 07	58	22	38%										19	86%	14%	0%
	Aug 14	44	16	36%										16	100%	0%	0%
	Aug 21	52	8	15%										8	100%	0%	0%
Total ^b		520															
Average		43	18	0										8			

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Summary of Subsistence Salmon Information Collected by ONC Technicians ^a																	
Year	Week Ending	Number Interviewed	Fishing	Percent Fishing	% Describing Chinook fishing as			% Describing Chum fishing as			% Describing Sockeye fishing as			% Describing Coho fishing as			
					Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	
					Very	Very	Very	Very	Very	Very							
2005	Jun 04	34	12	35%	0%	100%	0%										
	Jun 11	39	26	67%	77%	23%	0%										
	Jun 18	48	42	88%	86%	14%	0%	33%	67%	0%	74%	26%	0%				
	Jun 25	48	34	71%	74%	15%	0%	56%	44%	0%	82%	18%	0%				
2005	Jul 02	32	3	9%	100%	0%	0%	67%	33%	0%	100%	0%	0%				
	Jul 09	22	2	9%	0%	100%	0%	50%	50%	0%	50%	50%	0%				
Total ^b		223															
Average		37	20	0													ND

^a Represents responses from the question “Compared with this time in a “Normal” year how were catch rates for salmon this week?”

^b Represents the total number of interviews conducted during the survey year, most families were interviewed more than once.